CC Bel Road Extension, Allen Parish, Louisiana

Final

Environmental Assessment

Submitted Pursuant to 42 U.S.C. 4332 (2) (c)

(and where applicable, 49 U.S.C. 303)

by the

Coushatta Tribe of Louisiana

February, 2025

__________________ Date of Approval ____________________________ for Coushatta Tribe of Louisiana

__________________ Date of Approval ____________________________ for FHWA

The following persons may be contacted for additional information concerning this document:

____________________________ (Name, address, and telephone number of HA contact)

_____________________________ (Name, address, and telephone FHWA Division contact)

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EXECUTIVE SUMMARY

This project is the design and construction of a proposed linear evacuation roadway for the Sovereign Nation of the Coushatta Tribe of Louisiana (CTLA), funded through a FHWA Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant. The project area is located north of Elton, Louisiana within the Bayou Blue watershed in southern Allen Parish. Flooding of the area's existing low bridges and roadways during heavy rain events isolates the nearly 1,000 members of the Tribe for extended periods of time, cutting off access and egress until area floodwaters drain. The project will utilize the current unimproved roadway footprint for approximately half of the project which minimizes potential impacts and provides a smooth transition to the new improved roadway for current users. This federally funded evacuation link between CC Bel Road and Louisiana State Highway 26 (Highway 26) will relieve numerous public safety issues and promote the wellbeing of all local residents. It is entirely located within Allen Parish.

This Environmental Assessment follows the guidance provided in the Indian Affairs National Environmental Policy Act (NEPA) Guidebook. Research performed for this analysis indicates that the proposed project will bring essential improvements to the community in an environmentally responsible manner.

PROPOSAL AND NEED FOR THE PROJECT

CTLA is proposing a new roadway project that will create an evacuation route between their Reservation and Highway 26, the closest recognized hurricane evacuation route. This project has been evaluated as part of a statewide program to identify roads that require some modification to ensure sustainability of use during flood and other hazard events. The new road alignment will connect CC Bel Road to Highway 26 by upgrading CC Bel Road and constructing a new, nearly straight west to east segment of roadway using existing rights of way, silvicultural pine stands, and forested land. The project will incorporate an existing parish road, Briscoe Road, which is currently unpaved with a semi-hardened surface, substandard width, and that will be upgraded. Additionally, the new road will accommodate drainage and pedestrian safety feature initiatives. This project will fund the engineering design, environmental compliance, right of way acquisition, and construction to upgrade and extend approximately 2.5 miles of CC Bel Road between Powell Road and Highway 26 using a Complete Streets approach.

The project area is regionally located in southeastern Allen Parish, Louisiana and partially within the CTLA reservation. It comprises an approximate 55.3-acre roadway corridor that extends from CC Bel Road and Powell Road to Highway 26 just north of Elton, Louisiana. This linear roadway corridor also overlaps a segment of Briscoe Road and its Right of Way. Other towns nearby are Kinder to the southwest, and Oberlin to the north. Major roadways are U.S. Highway 165, 6.5 miles to the west, and Interstate 10, 19.15 miles to the south (*direct routes*). The center of the project is positioned at -92.6927 and 30.524 decimal degrees within Sections 17- 24, Township 6 South, Range 3 West, Allen Parish, Louisiana. The road corridor extends approximately 9,650 feet east and approximately 3,700 feet west of Bayou Blue.

This road is currently a dirt and gravel roadway on portions of the CTLA Reservation. The project will be designed to meet the 50-year flood plain design standard, includes approximately 1 mile of new construction in the center portion, a new bridge crossing over Bayou Blue, and an 8-foot-wide bicycle and pedestrian pathway. Sections of the planned right of way are on current Tribal Trust land with approximately one mile on existing parish roads (Briscoe Road).

The current roadway becomes impassible during heavy rainfall events preventing residents from the area from evacuating during hurricanes and other major storms by cutting off the access to Highway 26, the closest identified State hurricane evacuation route. The improved condition of the roadway will bring it to a state of good repair, and elevate it above the Base Flood Elevation (BFE). Providing emergency access and egress particularly during flood and hurricane events is essential for the community at the Coushatta Tribe of Louisiana Reservation to continue to thrive. This roadway will provide access and egress for the primary reservation area which lies near the intersection where the concentration of Tribal Agencies/Departments and Services are located.

These include:

- Police-Fire-EMS
- Department of Health
- Wellness Center
- Public Safety
- Administration & Tribal Council
- Public Works
- Historic Preservation
- Environmental & Natural Resources
- Judicial
- Education
- Social Services
- Housing

A site location map showing the project area is found in Attachment A. A conceptual plan view of the roadway layout is found in Attachment B1.

ALTERNATIVES

Three alternative alignments were identified and investigated with the intent of reducing potential environmental impacts. The no-action alternative was considered but wasn't selected. The current roadway into the Reservation is frequently flooded, at times for days, severely restricting emergency and household ingress and regress. The intention of the proposed project is to provide all weather connection to a state highway which is also a hurricane evacuation route. The roadway design provides a "Complete Streets" route including shoulders and a walking path and bike way for community use.

One alternate route was Powell Road from the reservation traveling south to U.S. Highway 190. The route was comparatively short-3.25 miles-but during hurricanes and storms coming off of the gulf, evacuation needs to be to the north. A second identified route was from the reservation to U.S. Highway 165. This route was 7.8 miles and would have exceeded the funding received for this project. The selected route is from the reservation to Highway 26, a recognized hurricane route, 2.5 miles away. This provides the evacuation route necessary and can be addressed with the amount of funding provided for this use.

A conceptual plan view of the roadway layout is found in Attachment B1. The roadway network with the Hurricane Evacuation Routes is found in Attachment B2.

ENVIRONMENTAL IMPACTS

1. Land Resources

As provided on the National Land Cover Database Land-Use map found in Attachment C, the evacuation route is primarily within woody wetlands, evergreen forest, and cultivated crops. Both jurisdictional and non-jurisdictional wetlands have been delineated within the project site. The Jurisdictional Determination Report can be found in Attachment F3.

The project coordinated with the USDA (United States Department of Agriculture)-SCS (Soil Conservation Service), requesting a determination under the Farmland Protection Policy Act and potential impact to Natural Resources Conservation Service projects in the immediate vicinity. The response states that due to the small project footprint it is exempt from the Farmland Protection Policy Act, and that no impacts to NRCS work are predicted. The USDA-SCS response letter is found in Attachments C2 and H.

The underlying near surface geology consists of a series of aquifers including the Chicot Aquifer, Evangeline Aquifer, and Jasper Aquifer System. These aquifers underlie the majority of Allen Parish to a depth starting near the surface in the northern area of the parish extending to depths greater than 3,500 feet in the southern end of the parish. Information on the geology of the parish is found in Attachment D1 & 2.

The topography of Allen Parish is controlled entirely by the nature of Pleistocene sediments laid down as terrace deposits across the parish. In general, the terraces have enough slope that they have well integrated drainage throughout the entire area.

Three distinct levels have been identified: the Prairie, the youngest and most southern; the Montgomery which is second, and the northernmost and farthest inland is the Bentley which is the oldest of the terraces. The thickness of the Prairie has been estimated to be approximately 3,000 feet near the center of maximum accumulation with thicknesses of 1,250 and 1,000 feet measured for the Montgomery and Bentley.

Oil and gas exploration started in 1920, and the first production (gas) was recorded on 6.12.39. Exploration has occurred periodically with a total of 1130 wells drilled in the parish, the most recent being in 2022. The well listing at the Louisiana Department of Energy and Natural Resources doesn't list any wells after 8.24.2022.

An analysis of potential hazardous and other waste materials was done for this specific site by development of an Environmental Radius Report (ERR) from the National Environmental Title Research, LLC (NETR) Online website. This report provides that no sites of concern are identified on Federal, State and other lists. The ERR is included as Attachment C3.

2. Water Resources

The project area is traversed by Bayou Blue which necessitates a bridge crossing for the evacuation route. The National Wetland Inventory (NWI) lists Bayou Blue and its small tributaries as intermittent flowing streams that are either temporarily or seasonally flooded, containing flowing water for only part of the year for brief periods during the growing season. Bayou Blue, which receives all of the water from the project area and surrounding vicinity, is described by the NWI as seasonally flooded so that surface water is periodically present early in the growing season but is absent for the remainder of the year.

Allen Parish utilizes both groundwater resources and surface water resources primarily through public supply, irrigation, and domestic wells. In 2010, a United States Geologic Survey (USGS) report provides that state well-registration records listed a total of 621 active water wells with 355 domestic, 211 irrigation, 42 public supply, and 13 industrial wells. The parish is underlain by a series of aquifers including the Chicot Aquifer, a sole source aquifer. A total of 518 wells were screened in water bearing sands throughout Allen Parish. A copy of the USGS Water Resources of Allen Parish Fact Sheet (June 2012) is provided as Attachment D1.

In Allen Parish, the Chicot aquifer system consists of the shallow sand and the deeper undifferentiated sand. A shallow sand is present within a surficial clay confining unit with a general thickness from around 40 to 80 feet. There are 75 active water wells in this sand including 71 domestic, 2 irrigation, and 2 public supply wells. A deeper undifferentiated sand is present through Allen Parish with depths ranging from approximately 0 feet NGVD 29 at the northern parish line sloping to approximately 500 feet below National Geodetic Vertical Datum (NGVD) along the southern parish line. Generally, water from this undifferentiated sand is soft and does not exceed the US EPA Secondary Maximum Contaminant Levels (SMCLs) for drinking water for color or concentrations of chloride, iron and dissolved solids. Locally, iron concentrations can exceed the SMCL; Manganese concentrations generally are greater than the SMCL. The medial pH value is 6.2, below the SMCL range of 6.5 to 8.5. The project site overlies the Chicot Aquifer in the southeast area of the parish. The Sole Source Aquifer map is included as Attachment D2.

The aquifer underlying the Chicot Aquifer is the Evangeline Aquifer which is present throughout Allen Parish. The altitude of the top of the aquifer is equivalent to the base of the Chicot aquifer system, trending from 0 feet NGVD 29 near the northern parish line to about 400-500 feet below NGVD 29 near the southern parish line, ranging in thickness from 900 feet near the northern parish line to 2000 ft near the southern parish line. Well registration records list 34 active water wells including 25 public supply, 8 industrial, and 1 domestic. Generally, the water from this aquifer is soft and does not exceed SMCLs for color and pH or for concentrations of chloride, iron, manganese, and dissolved solids. Locally, color and concentrations of iron and manganese may exceed their SMCLs.

The Jasper Aquifer System underlies all of Allen Parish, consisting of three smaller aquifers. This aquifer ranges from 1300 feet below NGVD 29 at the northern parish line to about 3000 feet below NGVD 29 near the southern parish line. No active water wells are listed as being screened in the Jasper aquifer system in Allen Parish.

An excerpt from the 1952 Geology of Beauregard and Allen Parishes published by the Department of Conservation and Louisiana Geological Survey can be found in Attachment D3.

Surface water resources are utilized for rice irrigation, aquaculture, and livestock. Approximately 2.1 million gallons per day (MGD) were withdrawn from the Calcasieu River, with 0.33 MGD from Bayou Blue. Other area resources are Whisky Chitto, Sixmile, Tenmile, and Mill Creeks.

Surface water protection will be implemented during construction of the project. The project will require a Louisiana Pollutant Discharge Elimination System (LPDES) Permit Number LAR100000, Storm Water General Permit Associated with Construction Activity of 5 Acres of More, as authorized when EPA delegated the National Pollutant Discharge Elimination System (NPDES) to LDEQ under the Clean Water Act. This permit requires an evaluation of the discharge from the site, development of a Storm Water Pollution Prevention Plan (SWPPP), and completion of the environmental assessment questions on the permit application form. This will be implemented prior to construction at the site.

No water rights discussions for Allen Parish were located during the literature search.

3. <u>Air</u>
A Solicitation of Views request was submitted to the U.S. Environmental Protection Agency asking for a project review with respect to potential air impacts. The agency responded that the project location, Allen Parish, is currently in attainment for National Ambient Air Quality Standards. They did recommend that best management practices be implemented to minimize impacts during construction. The SOV request and response can be found in Attachment H; the response is also in Attachment E.

4. <u>Living Resources</u>
Allen Parish is home to living resources of many kinds, both on private lands and areas under conservation management. An essential part of the Environmental Assessment of potential impacts of this project was a Waters of the US jurisdictional review of the project area which included an Imperiled Species Survey for the potential presence of protected habitats and species located within the site. This survey and the Information for Planning and Consultation (IPaC) website query have been submitted to USACE as part of a permit application package in support for authorization for a Nationwide Permit 14 for this work.

This package includes the Form 4345 application form, Nationwide Permit Comments, the jurisdictional determination for the site, and also transmits the Phase I Cultural Resource Survey. This document is found as Attachment F3.

Research for Allen Parish indicates that several conservation areas have been developed, and are currently operating under both governmental and private direction. The CC Road Savanna Preserve is owned and operated by The Nature Conservancy and consists of 477 acres located in southwest Allen Parish which contains some of the highest quality remaining examples of wet longleaf pine flatwood savanna in the state. The area has documented populations of several endangered and vulnerable species. It is connected ecologically to several tracts of private lands under conservation management, the Calcasieu Wetland Mitigation Bank, and the Calcasieu River floodplain.

A 59,189-acre Louisiana Department of Wildlife and Fisheries Wildlife Management Area is also located in north-central Allen Parish which offers several common species for hunting (deer, squirrel rabbit, woodcock, turkey) and fur trapping in season. Several private hunting areas are also available in the parish.

While Allen Parish does have several soil types that indicate prime farmland, the project area is exempt due to size as documented in both Attachments C and H.

5. Cultural Resources
A Phase I Cultural Resources Survey was completed for the 30.7-acre project area in June, 2024. It established that no cultural resources or historic standing structures were encountered within the project area, and no National Register Historic Places-listed properties exist within the project area. No further cultural resources studies were recommended, and no-historic properties were present within the project area. This report was submitted to the Louisiana Department of Culture, Recreation & Tourism and was accepted on July 8, 2024. The report and acceptance documents are found in Attachments G1 & 2.

6. Socioeconomic conditions
The project will provide all weather access for the tribe where currently frequent significant storm events cause sufficient flooding and the primary access roads become impassable. Having a road that provides all weather access during and following significant storm events is critical for emergency, evacuations and daily access. This project will provide a road that will provide residents access to needed health treatments, training programs, and work opportunities without random, periodic access interruptions. The project also provides for further economic development as consistent operations are needed for existing and future businesses to succeed. Consistent safe access will allow the

community to continue to expand without having to build in contingencies for the periodic weather closures currently experienced.

7. Resource Use Patterns
This project hardens the transportation network available to the Coushatta Tribe by providing all weather access for the tribal community to the nearest Hurricane evacuation highway (Highway 26). This provides opportunity for the community for those activities that require consistent access such as further economic development, participation in training opportunities, and expanded work availability. Traditional activities-hunting, fishing, gathering- will not be affected as the improved roadway generally occupies the footprint of the existing unimproved roadways, with the exception of a segment crossing through a wooded area. Timber harvesting and mineral extraction are not ongoing activities in this area. This roadway provides a significant upgrade to the tribal road network, and would be consistent with land use plans going forward.

8. Other Values
This roadway provides improvements for the reservation while minimizing the conversion of undeveloped land into highway rights of way. Approximately half of the proposed improved roadway utilizes existing roadways, improving approximately 1.2 miles of existing unpaved roadway, a portion of which is on Coushatta Trust Land. 1.3 miles of new improved roadway will be constructed and will include a bridge crossing over Bayou Blue. This improved roadway will allow ingress and egress during major storm events which currently flood existing access roads. These improvements provide a means to improve public health and safety for the tribal community and pose a minimum increase in overall environmental disturbances such as noise and light.

An analysis of potential light and noise impacts was done for the project utilizing accepted engineering practice and current and pending federal regulations. For the light impacts, a warrant analysis of the roadway and community needs was done to review whether lighting should be investigated for this roadway. A score of 15.6 for the Geometric Factors of the roadway was calculated and compared with the commonly accepted point scores. Roadways with a score less than 120 are generally classified as no lighting is warranted. This is the current result of the lighting analysis, and is consistent with the short, remote, sparsely travelled proposed roadway. Details about this analysis can be found in Attachment I.

FHWA has a more robust and formalized evaluation process for determining when noise abatement is required and what kind should be installed. The regulations are codified at 23 CFR 772, and a review of the current Definitions sections provides that the CC Bel Road project is a Type III project which does not require a formal noise analysis under this regulation. This regulation is currently the subject of an Advanced Notice of Public

Rulemaking (ANPR) published on 10.18.2024. That ANPR provides that federally recognized Tribes are exempt from the requirements of 23 CFR 772. These two regulatory sections provide that the CC Bel Road project is exempt from a formal noise analysis.
Attachment I contains an example of the score sheet for assessing lighting needs, and also includes both the current and proposed regulations from 23 CFR 772.

Hazard response activities and coordination with the surrounding area are key activities of tribal government, and are fully supported by the Coushatta Tribe. Copies of the current Evacuation Map, the 2023 Allen Parish Multi-Jurisdictional Hazard Mitigation Plan, and the 2021 Coushatta Tribe of Louisiana Tribal Hazard Mitigation Plan Update have been provided in Attachment J.

MITIGATION MEASURES

According to the guidance, mitigation includes specific means, measures or practices that would reduce or eliminate effects of the proposed action or alternatives. The following provides the mitigation assessment for this project.

- *Avoiding the impact altogether by not taking a certain action or parts of an action.* The project is to design and construct an all-weather evacuation route connected to the closest designated north-south evacuation route, LA Highway 26.
- *Minimizing impact by limiting the degree of magnitude of the action and its implementation.* Three alternatives were evaluated; the selected route is the shortest and least costly, limiting the degree of magnitude of the action.
- *Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.* The project roadway takes full advantage of existing road segments, upgrading them and maintaining the current footprint. A section of the roadway will be new but is not in an area where it will interfere with daily reservation life.
- *Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.* The project road will continue to provide essential access through the lifetime of the road.
- *Compensating for the impact by replacing or providing substitute resources or environments.* The road will be constructed in compliance with all environmental requirements to minimize stormwater and air impacts. Any controls installed for construction will be removed at the end of the construction period. The project as sited and designed does not require parish permits.

CONSULTATION

Tribes and agencies were contacted by email and postal mail and provided a Solicitation of Views (SOV) letter which requested comments and offered the opportunity to participate in this project. The list of agencies and tribes follows.

- Tribes (list from the Housing and Urban Development Tribal Directory Assessment information website)
    - Alabama-Coushatta Tribe of Texas
    - Alabama-Quassarte Tribal Town
    - Apache Tribe of Oklahoma
    - Mississippi Band of Choctaw Indians
    - Seminole Tribe of Florida
- Agencies
    - U.S. Environmental Protection Agency-Multi Media Planning and Permitting
    - U.S. Environmental Protection Agency-Sole Source Aquifer
    - Louisiana Department of Environmental Quality Office of the Secretary
    - Louisiana Department of Transportation and Development-Office of Flood Plain Management
    - Louisiana Department of Wildlife and Fisheries
    - United States Department of Agriculture-Natural Resources Conservation Service

Responses were received from:

- Alabama-Coushatta Tribe of Texas
- United States Environmental Protection Agency Air and Radiation Division
- Louisiana Department of Environmental Quality Office of the Secretary
- Louisiana Department of Transportation and Development Floodplain Administration
- (copy to Allen Parish Floodplain Administration/Permitting)
- USDA-SCS Natural Resource Conservation Service

Other agencies consulted include the Louisiana Department of Cultural Resources which accepted the Project Specific Cultural Resources Study, The US Army Corps of Engineers for Clean Water Act Section 404 Wetlands presence, and the agencies that they are required to consult with.

Tribal SOV letters are found in Attachment H1, Agency SOV Letters in Attachment H2, and the responses received are found in Attachment H3.

ATTACHMENTS

A list of the Attachments which substantiate and augment the information in this assessment is found in the Table of Contents. Also included as Attachment K for completeness of the record is the Preliminary Environmental Assessment dated July, 2018 produced for the Better Utilizing

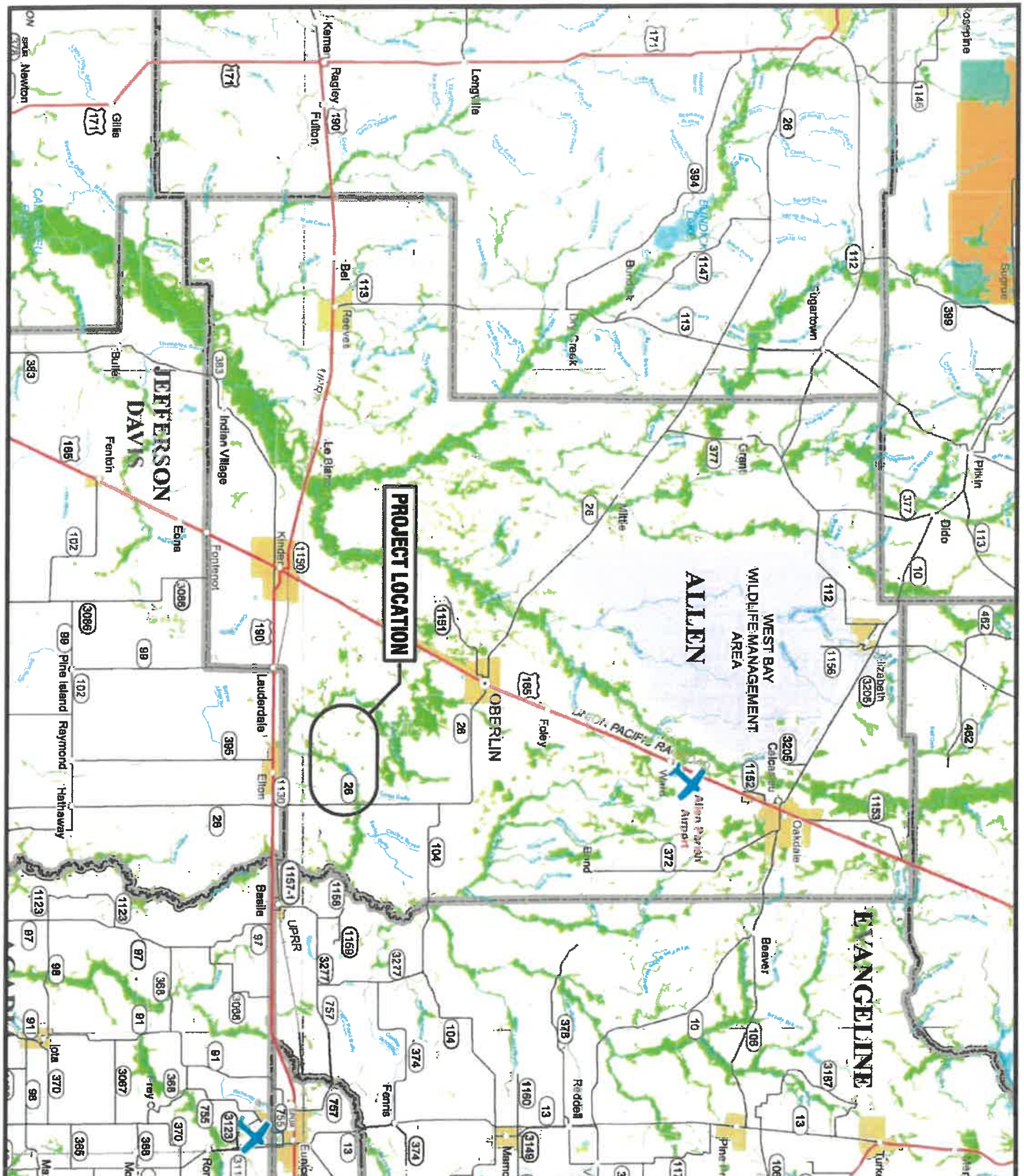
Investments to Leverage Development (BUILD) Transportation Discretionary Grants Program application.

SECTION 4(f) EVALUATION (if any)

This project doesn't use any 4(f) resources.

Attachment A

Project Vicinity Map



mml&h

Meyer, Meyer, LaCroix & Hixson, Inc.
Engineers & Land Surveyors
100 Engineer Place, Alexandria, LA 71303
Phone: (318) 448-0888 - Fax: (318) 448-0885

ALEXANDRIA – RUSTON

COUSHATTA TRIBE OF LOUISIANA
EXTENSION OF CC BEL ROAD
PROJECT VICINITY MAP

ATTACHMENT
A

S:\7501 - 8000\7724 - Coushatta Tribe Evacuation Route\2-Preliminary Plans\e-Exhibits\7724_Wetlands Exhibits.dwg Sep 10, 2024 - 8:54am

Attachment B

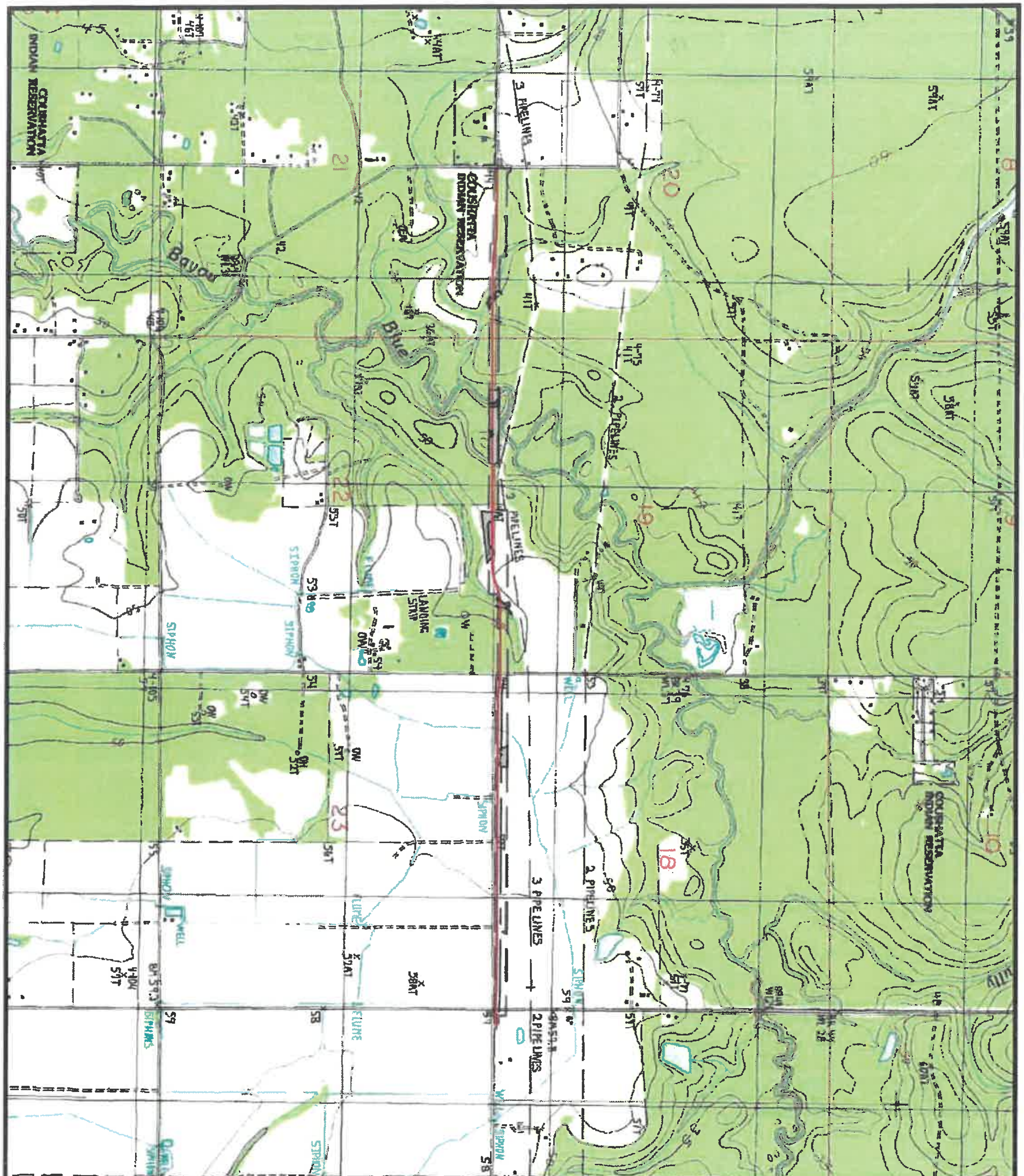
Roadway Network

Maps

Attachment B1

Roadway Conceptual Plan

View



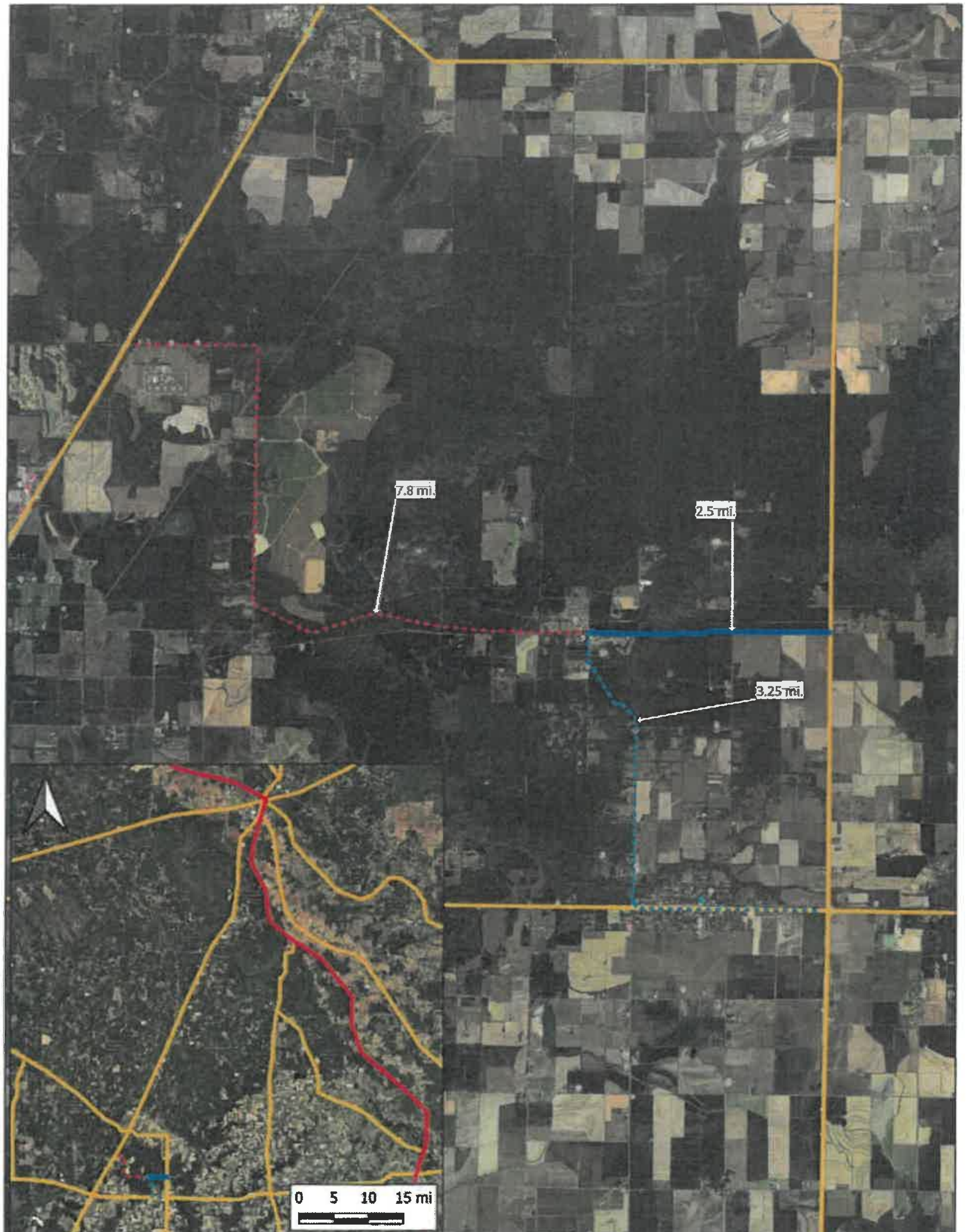
MML&H	Meyer, Meyer, LaCroix & Hixson, Inc. Engineers & Land Surveyors 100 Engineer Place, Alexandria, LA 71303 Phone: (318) 448-0888 - Fax: (318) 448-0885	COUSHATTA TRIBE OF LOUISIANA EXTENSION OF CC BEL ROAD	ATTACHMENT B
	ALEXANDRIA — RUSTON	ROADWAY CONCEPTUAL PLAN VIEW	

S:\7501 - 8000\7724 - Coushatta Tribe Evacuation Route\2-Preliminary Plans\e-Exhibits\7724_Wetlands Exhibits.dwg Sep 10, 2024 - 7:03am

Attachment B2

Hurricane Evacuation Routes

Map



LEGEND

- Proposed Route
- Powell Road South Route
- CC Bel Road West Route
- DOTD Major Hwy Evac Route
- DOTD Secondary Hwy Evac Route

7724 - COUSHATTA TRIBE EVACUATION ROUTE

HURRICANE EVACUATION ROUTES

CLIENT:

SCALE:
0 0.75 1.5 2.25 mi

MAP PROPERTIES:

CRS: NAD83 / Louisiana South (ftUS)
EPSG: 3452
Projection: Lamber Conformal Conic
Scale: 15000
Units: US Feet

Note: The map's CRS nor units do not always reflect the CRS or units of the individual GIS layers.

This map is for GIS purposes only. Not to be used for construction.

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CHECKED BY: SD
DATE: 09/23/2024

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mml&h
Meyer, Meyer, LaCroix & Hixson
Engineers and Land Surveyors

Attachment C

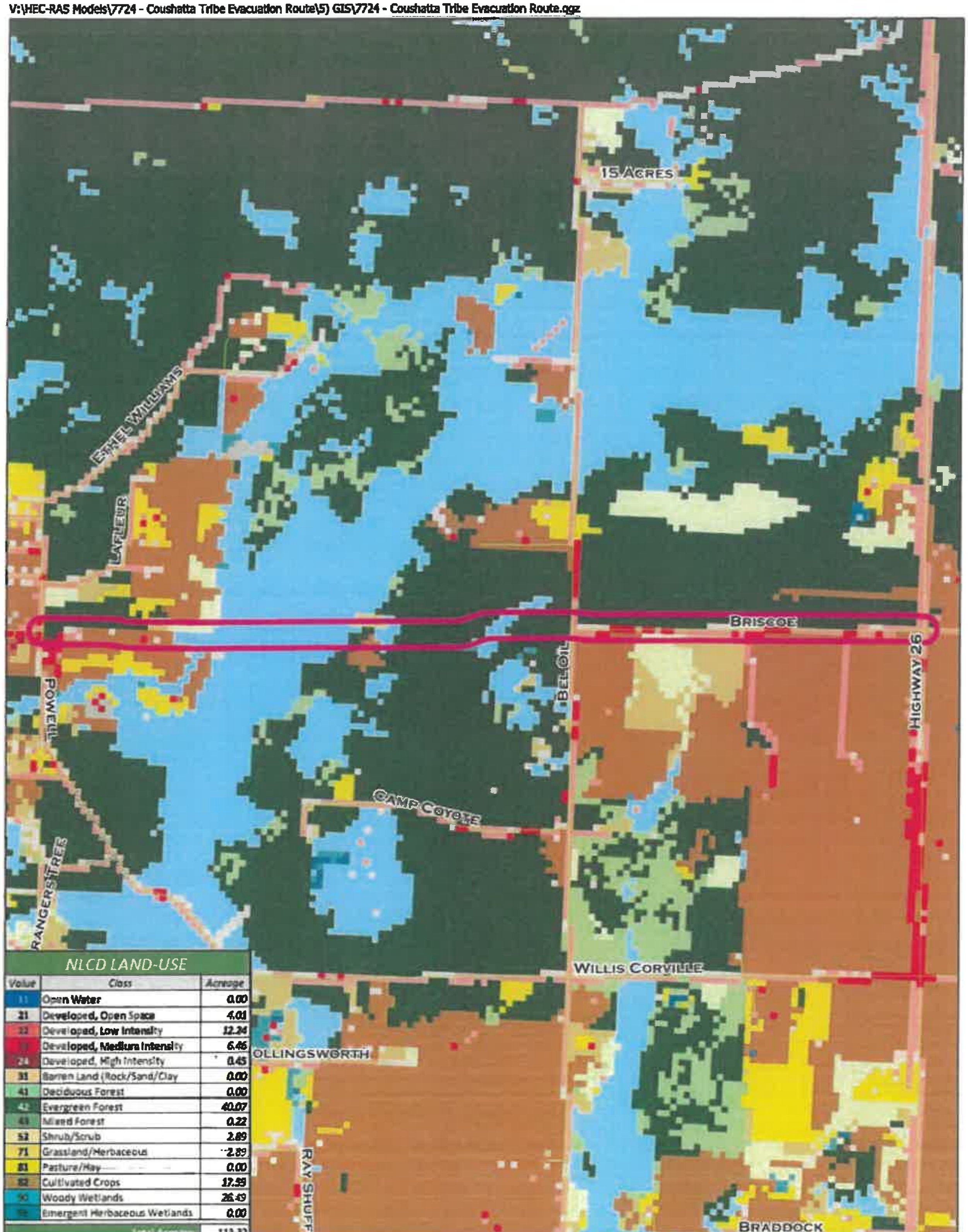
Land Resources

Attachment C 1

National Land Cover

Database Land Use

V:\HEC-RAS Models\7724 - Coushatta Tribe Evacuation Route\5) GIS\7724 - Coushatta Tribe Evacuation Route.qgz



NLCD LAND-USE

Value	Class	Acreage
11	Open Water	0.00
21	Developed, Open Space	4.01
22	Developed, Low Intensity	12.24
[illegible]	Developed, Medium Intensity	6.46
24	Developed, High Intensity	0.45
31	Barren Land (Rock/Sand/Clay	0.00
41	Deciduous Forest	0.00
42	Evergreen Forest	40.07
43	Mixed Forest	0.22
52	Shrub/Scrub	2.89
71	Grassland/Herbaceous	2.89
81	Pasture/Hay	0.00
82	Cultivated Crops	17.59
90	Woody Wetlands	26.49
95	Emergent Herbaceous Wetlands	0.00
	Total Acreage:	113.32

LEGEND

Project Area

LA Roadways

7724 - COUSHATTA TRIBE EVACUATION ROUTE

NLCD LAND USE

CLIENT:

SCALE:
0 1,000 2,000 3,000 ft

MAP PROPERTIES:

CRS: NAD83 / Louisiana South (ftUS)

EPSG:3452

Projection: Lambert Conformal Conic

Units: feet

Note: The map's CRS nor units do not always reflect the CRS or units of the individual GIS layers.

This map is for GIS purposes only. Not to be used for construction.

CREATED BY:	DCL
CHECKED BY:	SD
DATE:	09/04/2024

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Meyer, Meyer, LaCroix & Hixson
Engineers and Land Surveyors

Attachment C 2

USDA-SCS Farmland Protection

Policy Act Exemption

USDA
United States Department of Agriculture

August 5, 2024

Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532
Attn: Kristian Poncho, THPO

RE: Coushatta Tribe of Louisiana
Allen Parish, Louisiana
Potential Impacts to Cultural Resources
MML&H File No.: 7724

Kristian:

I have reviewed the above referenced project for potential requirements of the Farmland Protection Policy Act (FPPA) and potential impact to Natural Resources Conservation Service projects in the immediate vicinity.

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. For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements can be forest land, pastureland, cropland, or other land, but not water or urban built-up land.

The project map and narrative submitted with your request indicates that the construction area associated with this project is of small acreage extent (i.e., 10 acres or less per linear mile or 3 acres where there is an existing bridge or interchange) and therefore is exempt from the rules and regulations of the Farmland Protection Policy Act (FPPA)—Subtitle I of Title XV, Section 1539-1549. Furthermore, we do not predict impacts to NRCS work in the vicinity. For specific information about the soils found in the project area, please visit our Web Soil Survey at the following location: http://websoilsurvey.nrcs.usda.gov/

Please direct all future correspondence to me at the address shown below.

Respectfully,

Brandon Waltman
Assistant State Soil Scientist

Attachment

Natural Resources Conservation Service
State Office
3737 Government Street
Alexandria, Louisiana 71302
Voice: (318) 473-7751 Fax: (844) 325-6947

Helping People Help the Land

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)*	3. Date of Land Evaluation Request 7/15/24	4. Sheet 1 of ____
1. Name of Project Coushatta Tribe of Louisiana Evacuation Rou	5. Federal Agency Involved FHWA	
2. Type of Project Evacuation route improvements	6. County and State Allen Parish, Louisiana	

PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS 7/15/24	2. Person Completing Form Brandon Waltman
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☐ NO ☑		4. Acres Irrigated / Average Farm Size
5. Major Crop(s)	6. Farmable Land in Government Jurisdiction Acres: %	7. Amount of Farmland As Defined in FPPA Acres: %
8. Name Of Land Evaluation System Used	9. Name of Local Site Assessment System	10. Date Land Evaluation Returned by NRCS 8/5/24

PART III *(To be completed by Federal Agency)*		Alternative Corridor For Segment ____ Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly					
B. Total Acres To Be Converted Indirectly, Or To Receive Services					
C. Total Acres In Corridor					
PART IV *(To be completed by NRCS)* **Land Evaluation Information**					
A. Total Acres Prime And Unique Farmland					
B. Total Acres Statewide And Local Important Farmland					
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted					
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value					
PART V *(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)*					
PART VI *(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))*	**Maximum Points**				
1. Area in Nonurban Use	15				
2. Perimeter in Nonurban Use	10				
3. Percent Of Corridor Being Farmed	20				
4. Protection Provided By State And Local Government	20				
5. Size of Present Farm Unit Compared To Average	10				
6. Creation Of Nonfarmable Farmland	25				
7. Availability Of Farm Support Services	5				
8. On-Farm Investments	20				
9. Effects Of Conversion On Farm Support Services	25				
10. Compatibility With Existing Agricultural Use	10				
TOTAL CORRIDOR ASSESSMENT POINTS	160	0	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland (From Part V)	100	0	0	0	0
Total Corridor Assessment (From Part VI above or a local site assessment)	160	0	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	0	0	0	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used? YES ☐ NO ☐

5. Reason For Selection:

Signature of Person Completing this Part: | DATE

NOTE: Complete a form for each segment with more than one Alternate Corridor

Attachment D

Water Resources

Attachment D 1

USGS Water Resources

Of Allen Parish

Prepared in cooperation with the Louisiana Department of Transportation and Development

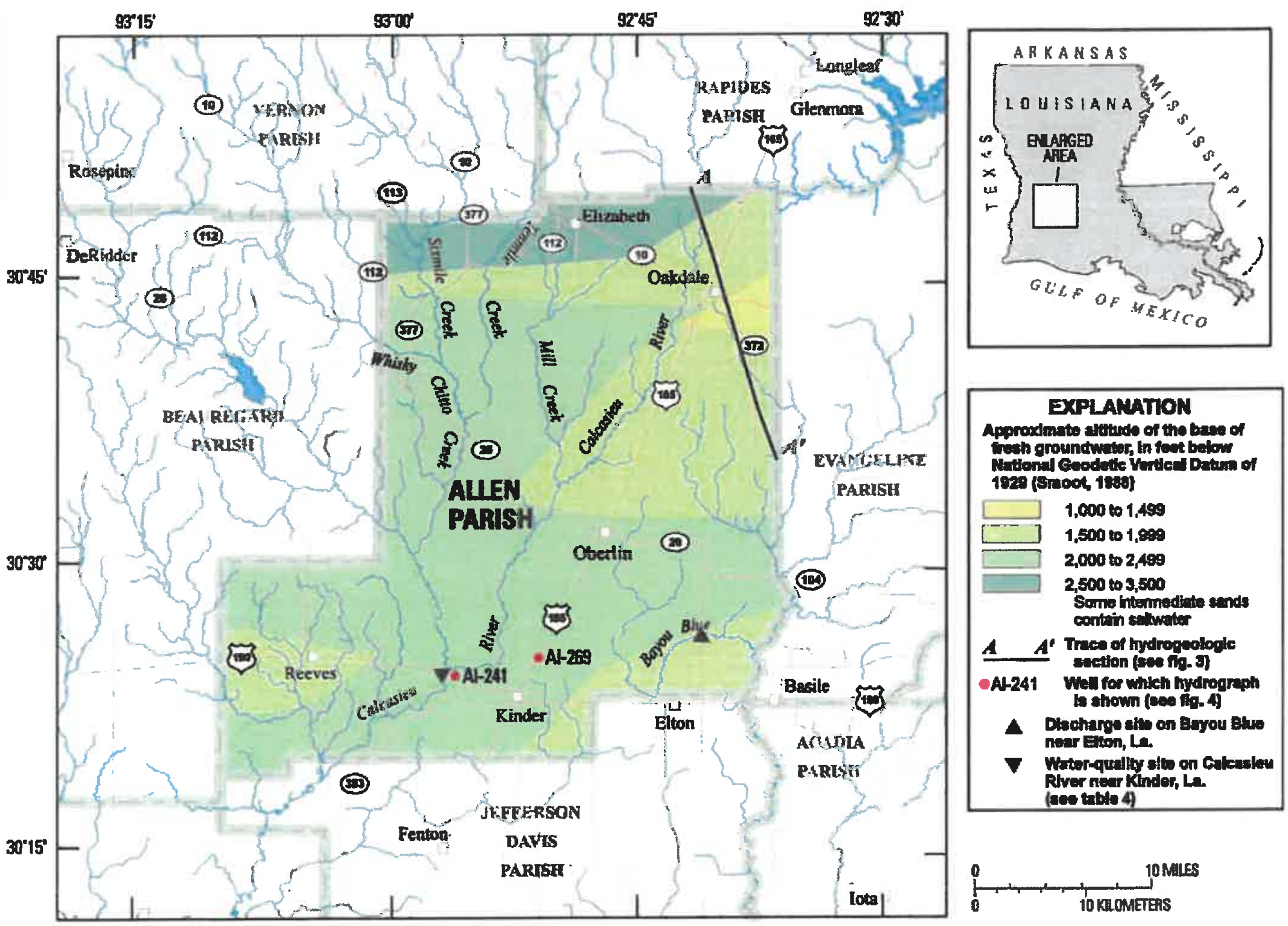
Water Resources of Allen Parish

Introduction

In 2005, approximately 29.2 million gallons per day (Mgal/d) of water were withdrawn in Allen Parish, Louisiana (fig. 1), including about 26.8 Mgal/d from groundwater sources and 2.45 Mgal/d from surface-water sources[1] (table 1). Rice irrigation accounted for 74 percent (21.7 Mgal/d) of the total water withdrawn. Other categories of use included public supply, industrial, rural domestic, livestock, general irrigation, and aquaculture (table 2). Water-use data collected at 5-year intervals from 1960 to 2005 indicate water withdrawals in the parish were greatest in 1960 (119 Mgal/d) and 1980 (98.7 Mgal/d) (fig. 2). The substantial decrease in surface-water use between 1960 and 1965 is primarily attributable to rice-irrigation withdrawals declining from 61.2 to 6.74 Mgal/d.

This fact sheet summarizes information on the water resources of Allen Parish, Louisiana. Information on groundwater and surface-water availability, quality, development, use, and trends is based on previously published reports listed in the Selected References section.

[1]Tabulation of numbers across text and tables may result in different totals because of rounding; nonrounded numbers are used for calculation of totals.



Base map modified from Louisiana Department of Transportation and Development (1986)

Figure 1. Location of study area, Allen Parish, Louisiana.

Table 1. Water withdrawals, in million gallons per day, by source in Allen Parish, Louisiana, 2005 (modified from Sargent, 2007).

Aquifer, aquifer system, or surface-water body	Groundwater	Surface water
Chicot aquifer system	23.07	
Evangeline aquifer	3.68	
Bayou Blue		.33
Calcasieu River		2.10
Miscellaneous streams		.02
Total	26.75	2.45

Table 2. Water withdrawals, in million gallons per day, by category in Allen Parish, Louisiana, 2005 (modified from Sargent, 2007).

Category	Groundwater	Surface water	Total
Public supply	3.71	0.00	3.71
Industrial	.07	.00	.07
Rural domestic	.25	.00	.25
Livestock	.06	.02	.08
Rice irrigation	19.51	2.23	21.74
General irrigation	.20	.00	.20
Aquaculture	2.95	.21	3.15
Total	26.75	2.45	29.20

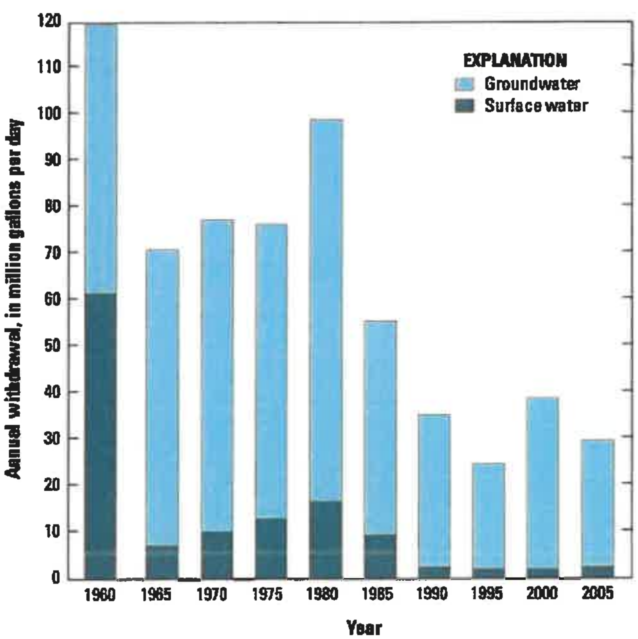


Figure 2. Water withdrawals in Allen Parish, Louisiana, 1960–2005.

Groundwater Resources

The primary groundwater resources of Allen Parish, from near surface to deepest, include the Chicot aquifer system, Evangeline aquifer, and Jasper aquifer system (fig. 3). The Chicot aquifer system and Evangeline aquifer contain freshwater throughout the parish. The Jasper aquifer system contains freshwater in the northwestern half of the parish and saltwater (water with chloride concentrations greater than 250 milligrams per liter [mg/L]) in the southeastern half. The base of fresh groundwater generally ranges from about 1,500 to 3,500 feet (ft) below the National Geodetic Vertical Datum of 1929 (NGVD 29) (sea level) in the northwestern half of the parish and from about 1,500 to 2,200 ft below NGVD 29 in the southeastern half of the parish (fig. 1).

Recharge to aquifers in the parish is from rainfall, leakage from overlying aquifers, and seasonally from rivers. Discharge from the aquifers is by natural flow into rivers, leakage into underlying aquifers, and withdrawals from wells.

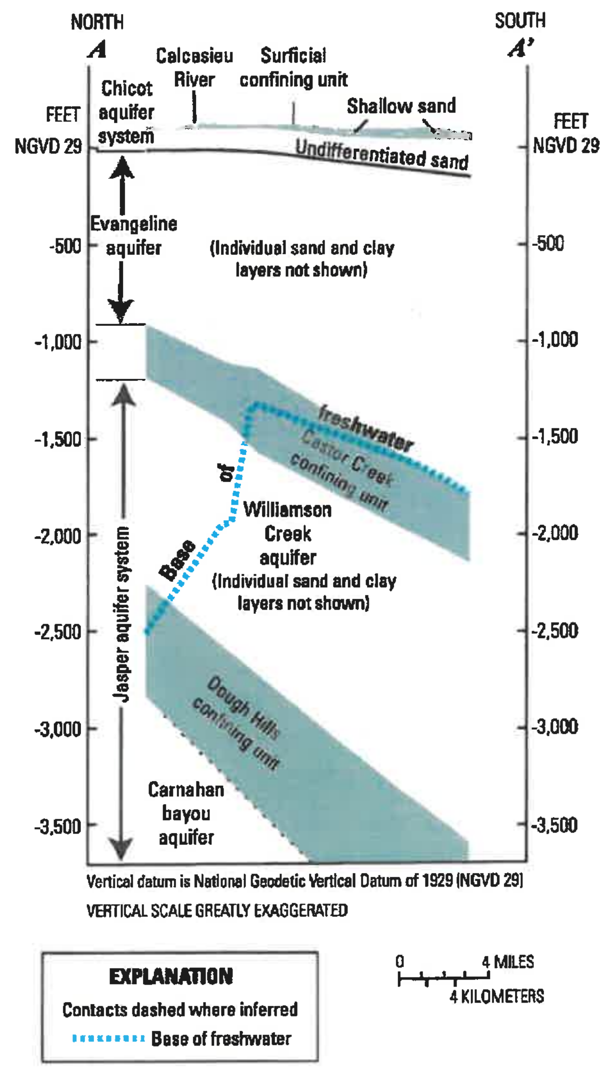


Figure 3. Generalized north-to-south hydrogeologic section through Allen Parish, Louisiana, showing aquifer and confining unit intervals (modified from Whitfield, 1975, pl. 4). Trace of section is shown on figure 1.

State well-registration records listed 621 active water wells in Allen Parish in 2010, including 355 domestic, 211 irrigation, 42 public-supply, and 13 industrial wells. In 2005, groundwater withdrawals for various uses included public supply, industrial, rural domestic, livestock, rice irrigation, general irrigation, and aquaculture (table 2).

Chicot Aquifer System

In Allen Parish, the Chicot aquifer system consists of the shallow sand and the deeper undifferentiated sand. The shallow sand is present as scattered sand streaks, lenses, and beds within a surficial clay confining unit (fig. 3). The confining unit generally ranges in thickness from 40 to 80 ft and is less than 40 ft in some areas of the parish. State well-registration records listed 75 active water wells screened in the shallow sand in Allen Parish in 2010, including 71 domestic, 2 irrigation, and 2 public-supply wells. Depths of these wells ranged from 13 to 100 ft below land surface, with a median depth of 32 ft. In 2005, water withdrawals from the shallow sand of the Chicot aquifer system in Allen Parish totaled about 0.09 Mgal/d.

The undifferentiated sand is present throughout Allen Parish and is the primary component of the Chicot aquifer system within the parish. It typically underlies the surficial confining unit and is composed of beds of clay, silt, sand, and gravel. Individual beds of sand are usually massive and can attain thickness of several hundred feet. Individual sand beds usually contain fine sand at the top and grade to coarse sand and gravel at the base. The undifferentiated sand dips and thickens towards the south and southeast. The altitude of the base of the undifferentiated sand ranges from about 0 ft NGVD 29 near the northern parish line to about 400–500 ft below NGVD 29 along the southern parish line.

Infiltration of precipitation in southern Vernon and Rapides Parishes, northern Beauregard Parish, and northern Allen Parish is the primary source of recharge to the Chicot aquifer system in Allen Parish. Vertical leakage through clays is a secondary source.

In 2003, water levels in the undifferentiated sand in Allen Parish ranged from about 120 ft above NGVD 29 near the Allen-Vernon Parish line to nearly 40 ft below NGVD 29 in the southeastern corner of the parish. Water movement in the undifferentiated sand in Allen Parish generally is to the south or southeast. Water levels in the undifferentiated sand generally fluctuate 5 ft or more because of seasonal withdrawals, as shown in the hydrograph of well Al-241 (fig. 4), located northwest of Kinder in southern Allen Parish (fig. 1).

State well-registration records listed 443 active water wells screened in the undifferentiated sand in Allen Parish in 2010, including 238 domestic, 190 irrigation, 12 public-supply, and 3 industrial wells. Depths of these wells ranged from 16 to 450 ft below land surface, with a median depth of 130 ft. Reported yields from wells screened in the undifferentiated sand in Allen Parish ranged from less than 10 to 7,000 gallons per minute (gal/min).

In 2005, withdrawals from the undifferentiated sand of the Chicot aquifer system in Allen Parish were about 23.0 Mgal/d and included about 0.10 Mgal/d for public supply, 0.21 Mgal/d for rural domestic use, 0.02 Mgal/d for livestock, 19.5 Mgal/d for rice irrigation, 0.20 Mgal/d for general irrigation, and 2.95 Mgal/d for aquaculture.

A statistical summary of selected water-quality characteristics for 81 wells screened in the undifferentiated sand in Allen Parish is listed in table 3. Generally, water from the undifferentiated sand is soft (60 mg/L or less as calcium carbonate) and does not exceed the U.S. Environmental Protection Agency's (EPA)

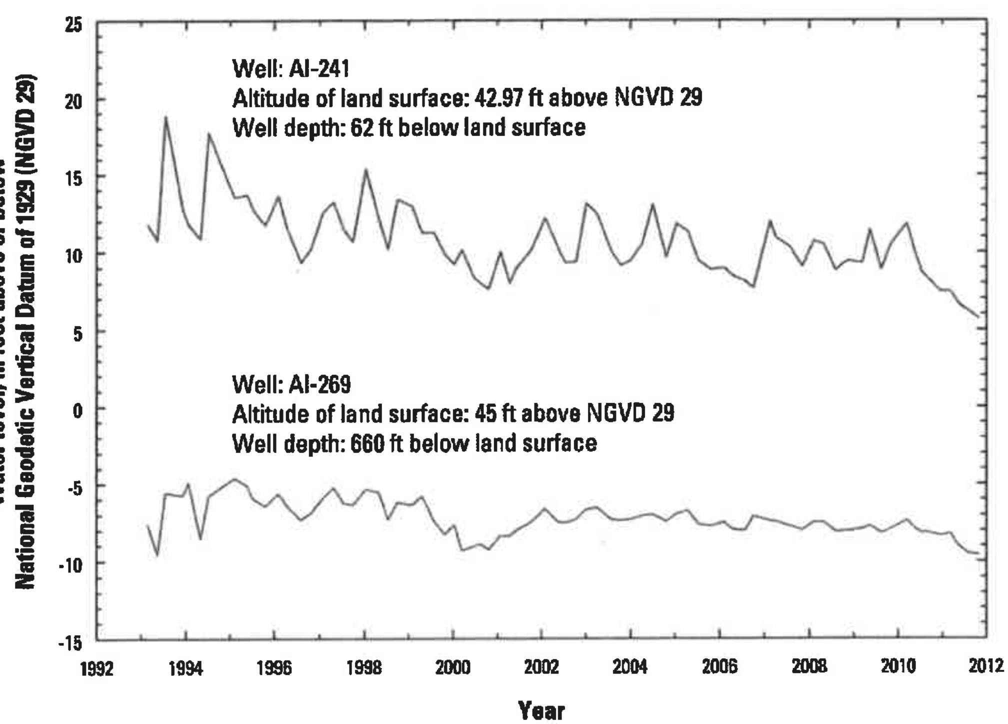


Figure 4. Water levels in well Al-241 screened in the Chicot aquifer system (undifferentiated sand) and well Al-269 screened in the Evangeline aquifer in Allen Parish, Louisiana (see fig. 1 for well locations; U.S. Geological Survey, 2012a). Land surface is measured in feet above the National Geodetic Vertical Datum of 1929 (NGVD 29).

Table 3. Summary of selected water-quality characteristics of freshwater in the Chicot aquifer system (undifferentiated sand) and Evangeline aquifer in Allen Parish, Louisiana (U.S. Geological Survey, 2012b).

[Values are in milligrams per liter, except as noted. °C, degrees Celsius; PCU, platinum cobalt units; µS/cm, microsiemens per centimeter, SU, standard units; $CaCO_3$, calcium carbonate; µg/L, micrograms per liter, <, less than; NA, not applicable; SMCL, Secondary Maximum Contaminant Level established by the U.S. Environmental Protection Agency (2011)]

	Temperature (°C)	Color, (PCU)	Specific conductance, field (µS/cm at 25°C)	pH, field (SU)	Hardness (as $CaCO_3$)	Chloride, filtered (as Cl)	Iron, filtered (µg/L as Fe)	Manganese, filtered (µg/L as Mn)	Dissolved solids, filtered
Chicot aquifer system (undifferentiated sand), 1940–2008 (81 wells)									
Median	20.7	5	151	6.2	30	18	200	55	120
10th percentile	20.0	0	62	5.3	6	5.5	<10	<1	46
90th percentile	21.5	28	271	7.9	73	32	6,700	540	206
Number of samples	51	13	55	44	59	80	31	28	40
Percentage of samples that do not exceed SMCLs	NA	77	NA	41	NA	100	55	50	100
Evangeline aquifer, 1946–95 (44 wells)									
Median	23.5	10	321	8.2	5	8.0	230	20	230
10th percentile	21.5	5	255	7.2	2	4.8	50	0	193
90th percentile	25.0	140	764	8.6	26	25	870	76	494
Number of samples	33	41	42	43	43	44	41	33	40
Percentage of samples that do not exceed SMCLs	NA	59	NA	84	NA	100	61	85	90
SMCLs									
	NA	15	NA	6.5–8.5	NA	250	300	50	500

Secondary Maximum Contaminant Levels (SMCLs)[2] for drinking water for color or for concentrations of chloride, iron, and dissolved solids. Locally, iron concentrations can exceed the SMCL of 300 micrograms per liter (µg/L). Manganese concentrations are generally greater than the SMCL of 50 µg/L. The median pH value of 6.2 is below the SMCL range of 6.5–8.5.

Evangeline Aquifer

The Evangeline aquifer is present throughout Allen Parish and underlies the Chicot aquifer system (fig. 3). It consists primarily of fine to medium sand interbedded with silt, soft to moderately hard green-gray laminated clay, and local beds of coarse sand. Locally, sands within the aquifer are separated and confined by extensive clays. The altitude of the top of the aquifer is equivalent to the base of the Chicot aquifer system and is about 0 ft NGVD 29 near the northern parish line and about 400–500 ft below NGVD 29 near the southern parish line. The approximate thickness of the Evangeline aquifer in Allen Parish ranges from 900 ft near the northern parish line to 2,000 ft near the southern parish line. The aggregate thickness of freshwater sands in the aquifer ranges from about 200 ft near the southern parish line to about 1,000 ft in the western-central area of the parish. Near the town of Elizabeth, aggregate freshwater sand thickness is about 400 ft.

In 2003, water levels in the aquifer generally ranged from about 140 ft above NGVD 29 in the northwestern corner of the parish to about 40 ft below NGVD 29 in its southeastern corner. Water levels at well Al-269, located northeast of the town of Kinder in southern Allen Parish (fig. 1), have generally ranged between 5 and 10 ft below NGVD 29 since 1993 (fig. 4). Water movement in the Evangeline aquifer in Allen Parish is generally towards the south-southeast.

State well-registration records listed 34 active water wells screened in the Evangeline aquifer in Allen Parish in 2010, including 25 for public supply, 8 for industrial use, and 1 for domestic use. Depths of these wells ranged from 390 to 1,720 ft below land surface with a median depth of 749 ft. Yields from wells screened in the Evangeline aquifer in Allen Parish reportedly range from about 9 to 1,000 gal/min. In 2005, withdrawals from the Evangeline aquifer in Allen Parish were about 3.68 Mgal/d (table 1) and included about 3.61 Mgal/d for public supply and 0.07 Mgal/d for industrial use.

[2]The SMCLs are nonenforceable Federal guidelines regarding cosmetic effects (such as tooth or skin discoloration) or aesthetic effects (such as taste, odor, or color) of drinking water. At high concentrations or values, health implications as well aesthetic degradation might exist. SMCLs were established as guidelines for the states by the U.S. Environmental Protection Agency (1992).

A statistical summary of selected water-quality characteristics for 44 wells screened in the Evangeline aquifer in Allen Parish is listed in table 3. Generally, water from the Evangeline aquifer is soft and does not exceed the SMCLs for drinking water for color and pH or for concentrations of chloride, iron, manganese, and dissolved solids. Locally, color and concentrations of iron and manganese may exceed their SMCLs.

Jasper Aquifer System

The Jasper aquifer system underlies all of Allen Parish and consists of the Williamson Creek aquifer, Dough Hills confining unit, and Carnahan Bayou aquifer (fig. 3). The clayey Castor Creek confining unit separates the Jasper aquifer system from the overlying Evangeline aquifer. The aquifer system contains freshwater in the northern and western parts of the parish. Freshwater is present in all the sands of the aquifer system only in the extreme northwest corner of the parish. Toward the southeast, the base of freshwater becomes progressively shallower (fig. 3), and the number of freshwater-bearing sands and the aggregate thickness of freshwater sands decrease proportionately. Light-gray sands with occasional traces of granule-size gravel make up approximately 50 percent of the aquifers within the system. The predominantly sandy Williamson Creek and Carnahan Bayou aquifers are composed of generally well-sorted, very fine to medium sands interbedded with greenish-gray clays.

Thickness of the Jasper aquifer system in Allen Parish generally ranges from about 2,500 ft near the town of Elizabeth to over 3,500 ft near the town of Oberlin (fig. 1). The altitude of the top of the aquifer is about 1,300 ft below NGVD 29 near the northern parish line and about 3,000 ft below NGVD 29 near the southern parish line.

State well-registration records did not list any active water wells screened in the Jasper aquifer system in Allen Parish in 2010. Data from test holes drilled into freshwater areas of the Williamson Creek aquifer in Allen Parish indicate the water is soft, with a pH above 8.0. Iron concentrations generally exceed the SMCL of 300 µg/L.

Surface-Water Resources

In 2005, about 2.45 Mgal/d of surface water were withdrawn in Allen Parish, including about 2.23 Mgal/d for rice irrigation, 0.21 Mgal/d for aquaculture, and 0.02 Mgal/d for livestock (table 2). About 2.10 Mgal/d were withdrawn from the Calcasieu River, and 0.33 Mgal/d were withdrawn from Bayou Blue (table 1). Other notable streams and potential sources of freshwater in the parish include Whisky Chitto, Sixmile, Tenmile, and Mill Creeks (fig. 1).

The mean discharge for the Calcasieu River near Kinder (station number 08015500; U.S. Geological Survey, 2008) from 1923 to 2008 was 2,620 cubic feet per second (1,690 Mgal/d). The drainage area for this site is about 1,700 square miles (mi^2). Water samples analyzed during the period 1966–98 indicate water in the Calcasieu River near Kinder (fig. 1) is generally soft (table 4) and does not exceed the SMCLs for drinking water concentrations of chloride and sulfate. The pH is generally below the SMCL of 6.5 to 8.5 standard units, and iron concentrations can exceed the SMCL of 300 µg/L. Dissolved oxygen is generally greater than 5 mg/L, which is considered the minimum value for a diversified population of fresh, warm-water biota, including sport fish (Louisiana Department of Environmental Quality, 2008).

The drainage area for Bayou Blue at Louisiana Highway 26 near Elton (station number 303209092401800; U.S. Geological Survey, 2012c) (fig. 1) is about 94 mi^2. No discharge data and few water-quality data are available for the bayou.

Table 4. Summary of selected water-quality characteristics for the Calcasieu River in Allen Parish, Louisiana, 1966–98.

[Values are in milligrams per liter, except as noted °C, degrees Celsius; µS/cm, microsiemens per centimeter, SU, standard units; µg/L, micrograms per liter; $CaCO_3$, calcium carbonate; <, less than; NA, not applicable; SMCL, Secondary Maximum Contaminant Level established by the U.S Environmental Protection Agency (2011)]

	Specific conductance, field (µS/cm at 25°C)	Oxygen, dissolved	pH, field (SU)	Hardness (as $CaCO_3$)	Calcium, filtered (as Ca)	Magnesium, filtered (as Mg)	Sodium, filtered (as Na)	Chloride, filtered (as Cl)	Sulfate, filtered (as SO_4)	Iron, filtered (µg/L as Fe)
Calcasieu River near Kinder, Louisiana[1]										
Median	56	8.4	6.4	11	2.8	0.9	5.3	5.4	4.0	260
10th percentile	32	6.9	5.7	7	1.9	0.5	2.6	3.2	2.0	130
90th percentile	82	10.3	7.1	14	3.6	1.2	12	7.4	8.3	420
Number of samples	110	98	110	110	110	110	105	109	105	64
Percentage of samples that do not exceed SMCLs	NA	NA	46	NA	NA	NA	NA	100	100	64
SMCLs										
	NA	NA	6.5–8.5	NA	NA	NA	NA	250	250	300

[1]Station number 08015500 (U.S. Geological Survey, 2012b; specific data at http://nwis.waterdata.usgs.gov/la/nwis/qwdata/?site_no=08015500).

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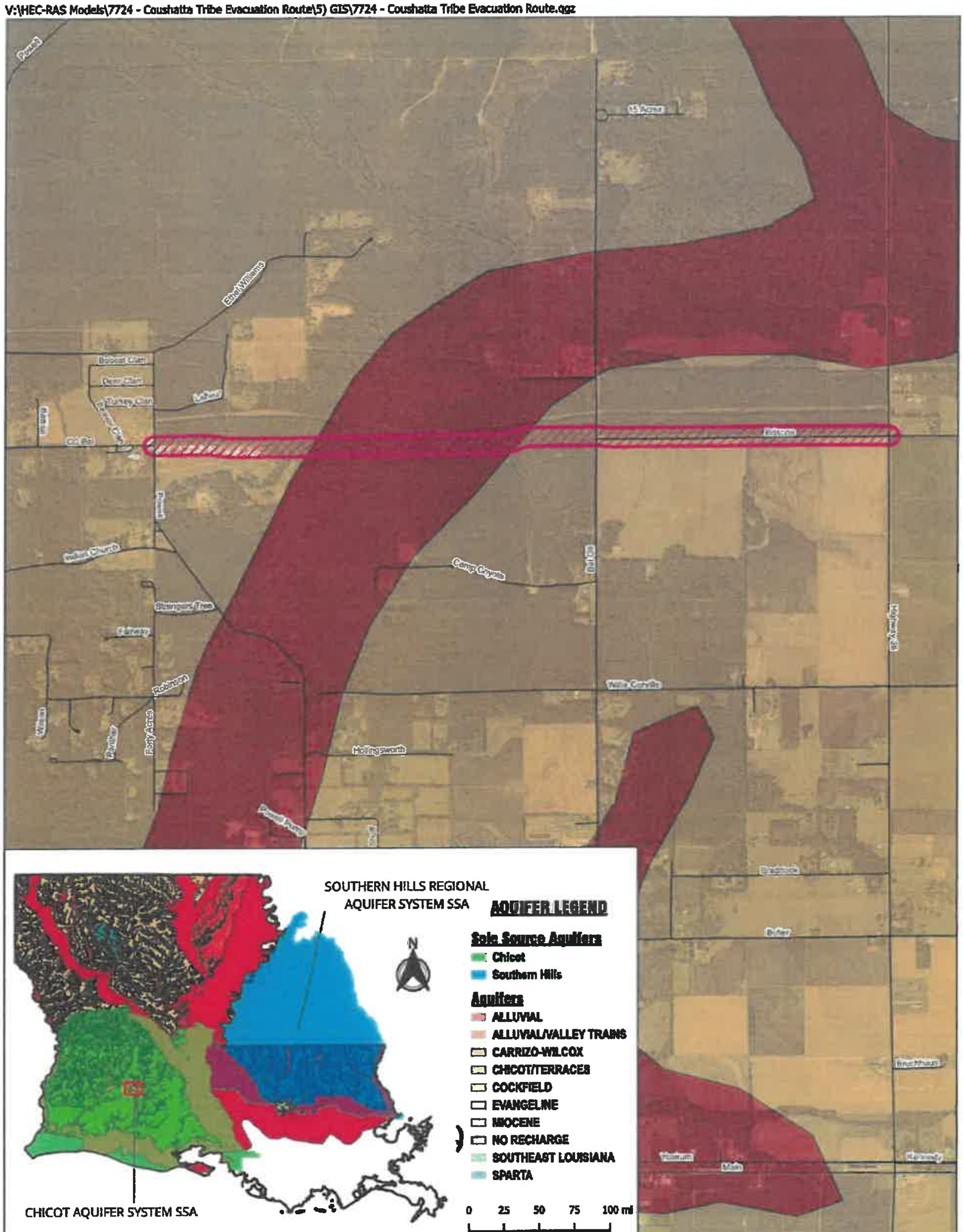
Attachment D 2

Sole Source Aquifer

Map

V:\HEC-RAS Models\7724 - Coushatta Tribe Evacuation Route\5) GIS\7724 - Coushatta Tribe Evacuation Route.qgz



LEGEND

- Project Vicinity
- CC Bel Road Extension
- ALLUVIAL
- CHICOT/TERRACES

7724 - COUSHATTA TRIBE EVACUATION ROUTE

SOLE SOURCE AQUIFERS

CLIENT:

SCALE:
0 1,000 2,000 3,000 4,000 ft

MAP PROPERTIES:

CRS: NAD83 / Louisiana South (ftUS)
EPSG: 3452
Projection: Lamber Conformal Conic
Scale: 15000
Units: US Feet

Note: The map's CRS nor units do not always reflect the CRS or units of the individual GIS layers.

This map is for GIS purposes only. Not to be used for construction.

CREATED BY:	DCL
CHECKED BY:	SD
DATE:	09/10/2024

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MML&H
Meyer, Meyer, LaCroix & Hixson
Engineers and Land Surveyors

Attachment D 3

Geology of Beauregard

And Allen Parishes

GEOLOGY

OF

BEAUREGARD AND ALLEN PARISHES

by

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VII

PHYSIOGRAPHY

Wilbur C. Holland

GENERAL

The physiography of Beauregard and Allen Parishes is controlled entirely by the nature of the Pleistocene sediments; the surface configuration of this area is a reflection of both the mode of accumulation of the terrace deposits and of the subsequent changes that they have undergone. These Pleistocene sediments were laid down as terrace deposits, apparently in response to eustatic changes in sea level during the ice age. Each terrace deposit was laid down as part of a deltaic coastal plain at a time when the sea stood at about its present level. Deposition occurred during interglacial stages of the Pleistocene. Each interglacial system of deltaic coastal plains extended far coastwise with inland fingers extending up drowned valleys and estuaries. Periods of erosion occurred when sea level was lowering during waxing glacial stages. The entrenchment of the old deltaic coastal plains left them as terraces, and continued erosion widened valleys for subsequent alluviation.

Upward movement and tilting of this entire section was going on contemporaneously with the deposition and erosion of Quaternary sediments and is still going on today. This upward movement appears to be an isostatic response to the overloading of the Gulf Coast area in the vicinity of the various Pleistocene deltas. It provided the means whereby each terrace became tilted more steeply toward the Gulf than the one next youngest in age.

Elevations for these two parishes range from 210 feet on the Bentley terrace near De Ridder in the northern part of Beauregard Parish to an elevation of 30 feet on the Prairie terrace in the southern part of the same parish.

PHYSIOGRAPHY

Wilbur C. Holland

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Elevations for these two parishes range from 210 feet on the Bentley terrace near De Ridder in the northern part of Beauregard Parish to an elevation of 30 feet on the Prairie terrace in the southern part of the same parish.

DRAINAGE

Both Beauregard and Allen Parishes are drained by south-flowing streams. (See pl. 3.) The master streams are the Sabine River (fig. 1) on the west side of Beauregard Parish and the Calcasieu River which flows south-southwestward across Allen Parish.

The streams next in importance are Whiskey Chitto Creek and Bundick Creek (fig. 2), which flow southeast across the northeast corner of Beauregard and thence into Allen Parish in more or less parallel courses. In Allen Parish, Bundick Creek turns in a southernly direction and flows into the Whiskey Chitto Creek, which, in turn, flows into the Calcasieu River.

Anacoco Creek flows into the Sabine River at the northwestern corner of Beauregard Parish after having followed the Vernon-Beauregard Parish line for 12 to 15

Figure 1. Sabine River downstream from mouth of Anacoco Creek about 8 miles north of Merryville, sec. 23, T. 2 S., R. 12 W. Photo by P. H. Jones.

DRAINAGE

Both Beauregard and Allen Parishes are drained by south-flowing streams. (See pl. 3.) The master streams are the Sabine River (fig. 1) on the west side of Beauregard Parish and the Calcasieu River which flows south-southwestward across Allen Parish.

The streams next in importance are Whiskey Chitto Creek and Bundick Creek (fig. 2), which flow southeast across the northeast corner of Beauregard and thence into Allen Parish in more or less parallel courses. In Allen Parish, Bundick Creek turns in a southernly direction and flows into the Whiskey Chitto Creek, which, in turn, flows into the Calcasieu River.

Anacoco Creek flows into the Sabine River at the northwestern corner of Beauregard Parish after having followed the Vernon-Beauregard Parish line for 12 to 15

Figure 1. Sabine River downstream from mouth of Anacoco Creek about 8 miles north of Merryville, sec. 23, T. 2 S., R. 12 W. Photo by P. H. Jones.

Figure 2. Bundick Creek looking downstream, Beauregard Parish, sec. 25, T. 4 S., R. 7 W. Photo by P. H. Jones.

miles. Bayou Nezpique parallels the boundary between southeastern Evangeline Parish and southwestern Allen Parish for about 8 or 10 miles.

Other streams in these two parishes are minor tributaries of those already mentioned. Among these is Bayou Blue, which wanders over much of southeastern Allen Parish on the Prairie terrace before flowing into the Nezpique. Other streams of this size in Allen Parish are Ten Mile and Six Mile Creeks, which flow southward into Whiskey Chitto Creek. In Beauregard Parish, Barnes Creek, Hickory Branch, and Beckwith Creek are three south-flowing streams, which eventually join the Calcasieu River in Calcasieu Parish to the south. Bear Head Creek flows in a southwestwardly direction toward the Sabine River, but after entering Calcasieu Parish to the south, it turns eastward and flows into the Calcasieu River. The Sabine River has only short, minor tributaries in Beauregard Parish.

Figure 2. Bundick Creek looking downstream, Beauregard Parish, sec. 25, T. 4 S., R. 7 W. Photo by P. H. Jones.

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The typical stream pattern on the Bentley terrace is dendritic; this same stream pattern may be found in places on the two younger terraces. In Allen Parish on the Montgomery terrace, there are two areas of a swamp network drainage where the streams exhibit a large scale network pattern. On the Prairie terrace, which is very flat in many places, there is no well defined drainage system.

In general, all of these terraces have enough slope so that they have well integrated drainage throughout the entire area. There are only local areas of poor drainage, notably along the flood plains of the major streams and two areas in the northern part of Allen Parish, West Bay and East Bay (pl. 4). Locally, however, the terrace surfaces are flat enough to retard drainage sufficiently to allow water to stand on the surface after a rainfall.

PLEISTOCENE TERRACES

GENERAL

Pleistocene and Recent alluvial deposits cover the entire surface of Beauregard and Allen Parishes. (See geologic maps pls. 1 and 2, and pl. 3.) They form a thick blanket of unconsolidated sediments overlying all Tertiary bed rock; the latter is known only from wells that have penetrated the Quaternary.

In general, the composition of each terrace deposit ranges from gravel near its base, up through sands and silts, to clay near its top. This is true only in the broadest sense, however, because gravel is not present everywhere at the base of each deposit, nor do all of them have clay present near their upper surfaces. Silt and sand, the dominant types of sediments, are present in the shape of lenses, either large or small, depending upon the condition locally prevalent at the time of their deposition. The gravel that is present is primarily local in extent; it was deposited as alluvial fans at the mouths of relatively small streams. The gravel in the Bentley, Montgomery, and Prairie formations of Beauregard and Allen Parishes was derived mostly by erosion of the older Williana formation to the north.

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Typically, the surfaces of the terraces show sand or silt at the top. Since most of the streams have rather low gradients throughout this area, erosion has resulted in the removal of a considerable quantity of the constituent clay particles. This leaves behind a higher concentration of silt and sand, thus giving the impression that they were originally composed of more sand and silt than was actually the case. That there is a high percentage of clay present is shown in road cuts, by the ability of the surface to hold water after rainfall, and by the ease with which water is retained on rice fields on the Prairie terrace in the southern part of Allen Parish.

The topography of this area is essentially that of a youthful plain sloping seaward. In Beauregard and Allen Parishes there are three distinct steplike levels of this plain, which are called terraces. The coastwise terrace is somewhat lower, flatter, and less dissected than the adjoining inland terrace. The youngest of the three terraces, the Prairie, occupies the most southern position. Next inland is the Montgomery, and fartherest inland is the Bentley, which is the oldest of these terraces. These are the coastwise equivalents of the fluviatile terraces that were first named by Fisk (1938, pp. 51-63) in Grant and La Salle Parishes. Each coastwise terrace has fluviatile extensions up the larger streams and, quite typically, also up the larger tributary streams. The innermost margin of each coastwise terrace is somewhat crenulated for the reason that there is a slight erosional break between the deposition of one terrace formation and that of the succeeding formation. The valleys cut during these minor erosional intervals were normally drowned by alluviation during the next depositional stages.

HISTORY OF LITERATURE ON TERRACES

A great deal has been written concerning the alluvial sediments of the Gulf Coast. They have been assigned to ages ranging from the Cretaceous to Recent. They have been called by different formational names in the same re-

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MEANS OF DIFFERENTIATING THE TERRACES

The differentiation of terrace deposits in this area presents a problem not commonly encountered in mapping older deposits. In composition, there is no type of sediment that is characteristic of any particular terrace. No lithological distinction can be made between them because each is composed of large and small lenses of gravel, sand, silt, and clay in no particular sequence, except that, in general, the coarsest deposits are nearest the base of the terrace.

Grain size of the sediments composing the terraces can be used within certain limits. In general, the sediments of the Prairie are finer grained than those of the Montgomery or the Bentley. This criterion, however, can be applied only in a very general way; there are large areas of the two older surfaces which have equally fine grained sediments underlying them. Also, in the Prairie there are some coarser sediments.

The occurrence of finer materials in the Prairie is due not only to its original composition but also to the fact that not as much elutriation has taken place here as in the older terraces. Also, since both the Bentley and the Montgomery terraces have been exposed to erosional agencies for a greater length of time, a greater percentage of the finer clay particles has been removed from their surfaces through erosion than from the Prairie surface.

There is no observable difference in constituent materials of these terraces. They are composed primarily of quartz and clay minerals which must have been derived from essentially the same localities throughout the Quaternary.

Locally, paleontologic evidence cannot be used to separate these formations. Neither the coastwise nor the fluviatile terraces contain any appreciable number of fossils (fig. 3).

Figure 3. Fossiliferous outcrop in the Bentley formation, Beauregard Parish, sec. 28, T. 3 S., R. 8 W. Photo by P. H. Jones.

Theoretically, it should be possible to differentiate terraces on the basis of the amount of weathering that they have undergone. This is based on the assumption that the older terraces should be more deeply weathered than the younger ones. Nevertheless, as a means of mapping, this criterion is not actually practical. The fact that these formations contain such a small amount of lime means that leaching is not a very important factor in weathering. Their composition is variable from place to place, both horizontally and vertically, which makes this factor very hard to apply. Because the depth of weathering is dependent to a certain extent upon subsurface drainage, the variations in percentage of slope are an additional difficulty toward applying this criterion. Locally, erosion has but recently removed the younger sediments from the surface of these terraces, leaving the present surface exposed to weathering agencies for a comparatively short time. Therefore, weathering as a means of differentiating the terraces can be applied only with caution.

In any attempt at differentiating the terraces, cognizance should be taken of the fact that although younger sediments overlie the older in conformance with Hutton's law, the older formations occupy a higher topographic position than the younger formations. This is due to the fact that these deltaic sediments were laid down contemporaneously with a sinking of the Mississippi Delta region and a consequent isostatic uplift of the region farther inland, so that each younger formation was laid down as an overlapping alluvial blanket that succeeded in reaching progressively shorter average distances inland (fig. 5, p. 31).

One of the main criteria used in differentiating terraces, at least those of any large extent, is the attitude of the terrace. Because of the slow, but continuous, tilting that has taken place in this section, the older terraces slope more steeply than the younger ones. (See pl. 3.) The slope of the Bentley terrace in Beauregard Parish is approximately 5 feet per mile; that of the Montgomery, 3 feet per mile; and that of the Prairie in Allen Parish, 2 feet per mile. All of these terraces slope toward the south.

Another very important criterion is the topography of the terrace. Although all three terraces should be thought of as having a youthful topography, the older terraces have a more mature topography than the younger ones. This is due to the fact that the older ones have been exposed to erosion and weathering agencies longer than the younger ones. The Prairie terrace, in general, is quite flat. Lacking the well integrated network of streams of the older terraces and having large areas of swamps, the Prairie terrace is rather poorly drained. In addition, it is nearer base level than the older terraces, which means that erosion is not quite as active as in the older terraces. The flatness of this terrace makes possible the inundation of large areas for growing rice by the construction of low dikes. The Montgomery surface might be described as slightly rolling. Most of the area is in slope, although, particularly in Allen Parish, there are flat areas with poor drainage. Typically, it has a well developed dendritic drainage pattern with the streams and their tributaries well incised. The Bentley surface is the most mature of all. For the larger part it is all in slope, although there are some relatively flat areas, representing fragments of the original surface, left on some of the divides. The relief of this terrace in Beauregard and Allen Parishes is much greater than that of either of the other two. Therefore, by just observing the amount of dissection on a particular surface, it is almost possible to ascertain which terrace it is, although, here too, this criterion cannot be used by itself.

A third criterion which may be used is that of drainage and drainage patterns. This, as a means of differentiating the terraces, is very closely related to the topography, as the surface configuration of any terrace is dependent upon the amount of erosion to which it has been subjected by streams. Streams start out on each terrace as consequent streams and, as the shoreline gradually recedes, become extended consequents. There is no structural control of the streams in this area, with the exception of a small section of Allen Parish, other than the more or less uniform seaward tilting of the entire surface. The drainage pattern, therefore, is dendritic. The older the terrace, the better this drainage pattern is developed. Streams tend to work headward to a terrace escarpment (or perhaps to have started at an escarpment and to have grown as extended consequents) and there to stop, as sufficient time has not elapsed for them to have removed the much greater quantity of material that they would have to erode if they should cut through the escarpment. On a good map it is usually possible to locate the escarpment between two terraces merely by noting where the smaller tributary streams head. Each terrace tends to have its own stream branchwork with only master streams and larger tributaries crossing from one terrace to the next.

In the case of fluviatile terraces there may be rim-swamp streams present. When a stream is actively aggrading, it tends to build natural levees along its course which, combined with the fact that deposition is also going on in its bed, raises the level of the stream above its flood plain. The land surface, therefore, slopes from the natural levee back toward the valley wall. This back-swamp area is frequently drained by a stream which is located along the lowest points, namely, parallel to and against the valley wall. This is a rim-swamp stream. When this flood plain becomes a terrace, following a later period of erosion, the rim-swamp stream will remain, marking the line separating an older terrace (the former valley wall) from the younger terrace (the former flood plain).

Escarpments, if present, are very useful in locating the boundary between two terraces. They are usually present along the major streams but tend to be lower upstream and up the tributaries until eventually the younger terrace feathers out against the older. Coastwise terraces are sometimes separated by escarpments, although, occasionally, these escarpments may be erosional as a result of a slight local difference in composition; in other cases there are no escarpments separating them.

Still another criterion that may be used, but with extreme caution, is that of elevation. (See pl. 3.) The lower terraces are younger than the higher ones. In differentiating by means of elevation, cognizance must be taken of the location that is being mapped, the general elevation of each terrace in that section, and also the direction that the mapping is proceeding with regard to the regional slope. For example, in Beauregard Parish at Merryville the elevation of the Prairie is about 100 feet, while in southern Allen Parish the same terrace has an elevation of less than 50 feet; in northern Beauregard Parish the Bentley terrace has an elevation of about 210 feet, while near Hollingsworth its elevation is only a little over 100 feet.

In the mapping of Beauregard and Allen Parishes, all the criteria that local conditions allowed were applied. Profiles were made along all the good roads by means of a Paulin surveying altimeter. These profiles were made on a scale of one mile to the inch and had a vertical exaggeration of 50×, so they very clearly demonstrated the percentage of slope as well as the amount of dissection. Mapping was usually done contemporaneously with the running of the profiles in order that all criteria could be utilized at the same time.

The value of good altimeter profiles as almost a necessary aid to the mapping of terrace surfaces cannot be overemphasized. In the mapping of Beauregard and Allen Parishes more than 700 miles of profiles were run along all of the main roads and a great number of secondary roads. Profiles proved especially helpful in locating boundaries between terraces where no escarpments were present.

MECHANICS OF FORMATION

The widespread terraces of the Gulf Coast area owe their origin to two factors. The first is the eustatic changes in sea level accompanying glaciation, and the second is the downward sinking of the Mississippi River deltaic region as a result of active sedimentation and the corresponding isostatic uplift of the region farther inland. No other tenable explanation has been offered to explain the cyclic alternation between periods of active erosion and periods of active sedimentation. No theory other than uplift can explain the occurrence of the Williana terrace up to the elevation of nearly 600 feet in the region to the northwest of these parishes in Texas and to the northeast in Mississippi.

Each of the four major ice advances during the Pleistocene covered some four million square miles of the northern part of North America. Other parts of the world, particularly Europe, supported large glaciers at this time also.

Attachment E

Air

From:	Riley, Jeffrey
To:	kponcho@coushatta.org
Cc:	Douglas, Susan
Subject:	RE: Coushatta Tribe of Louisiana Evacuation Route
Date:	Tuesday, July 16, 2024 8:24:35 AM

Good Morning Mr. Poncho,

Thank you for providing the EPA Region 6 office with information on your proposed project. As detailed in the information provided, this project is intended to implement improvements to the evacuation route from the Coushatta Tribe of Louisiana reservation located in Allen Parish, Louisiana. The Infrastructure & Ozone Section of EPA's Region 6 office has reviewed the submitted documents. Our review is limited to actions that might impact the air quality of an area. Therefore, the following comments are based on our review of your project compared to the Clean Air Act requirements for general conformity.

Allen Parish, Louisiana is currently in attainment of all National Ambient Air Quality Standards. As a result, general conformity regulations do not apply and an applicability analysis is not necessary. However, any demolition, construction, rehabilitation, repair, dredging or filling activities have the potential to emit air pollutants and we recommend best management practices be implemented to minimize the impact of any air pollutants to surrounding areas/communities. Furthermore, construction and waste disposal activities should be conducted in accordance with applicable local, state and federal statutes and regulations.

If you have questions, please don't hesitate to contact me at (214)665-8542.

Jeff Riley
US EPA - Region 6
Infrastructure and Ozone Section (6ARSI)
Air & Radiation Division
(214)665-8542
riley.jeffrey@epa.gov

From: Douglas, Susan <susan.douglas@mmlh.com>
Sent: Monday, July 15, 2024 10:50 AM
To: Riley, Jeffrey <Riley.Jeffrey@epa.gov>
Subject: Coushatta Tribe of Louisiana Evacuation Route

> **Caution:** This email originated from outside EPA, please exercise additional caution when deciding whether to open attachments or click on provided links.

As part of the NEPA review process for this project, please provide any information and/or comments regarding the Clean Air Act within the planning area for this project.

Attachment F

Living Resources

Attachment F 1

US Fish and Wildlife

IPaC Form

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Allen County, Louisiana

Local office

Louisiana Ecological Services Field Office

(337) 291-3100
(337) 291-3139

200 Dulles Drive
Lafayette, LA 70506

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Tricolored Bat Perimyotis subflavus Wherever found **No critical habitat has been designated for this species.** https://ecos.fws.gov/ecp/species/10515	**Proposed Endangered**

Birds

NAME	STATUS
Red-cockaded Woodpecker Picoides borealis Wherever found **No critical habitat has been designated for this species.** https://ecos.fws.gov/ecp/species/7614	**Endangered**
Whooping Crane Grus americana **No critical habitat has been designated for this species.** https://ecos.fws.gov/ecp/species/758	EXPN

Reptiles

NAME	STATUS
Alligator Snapping Turtle Macrochelys temminckii Wherever found **No critical habitat has been designated for this species.** https://ecos.fws.gov/ecp/species/4658	**Proposed Threatened**

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found **No critical habitat has been designated for this species.** https://ecos.fws.gov/ecp/species/9743	**Candidate**

Flowering Plants

NAME	STATUS
American Chaffseed Schwalbea americana Wherever found **No critical habitat has been designated for this species.** https://ecos.fws.gov/ecp/species/1286	**Endangered**

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

There are no documented cases of eagles being present at this location. However, if you believe eagles may be using your site, please reach out to the local Fish and Wildlife Service office.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management

- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Prairie Loggerhead Shrike Lanius ludovicianus excubitorides This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8833	**Breeds Feb 1 to Jul 31**

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

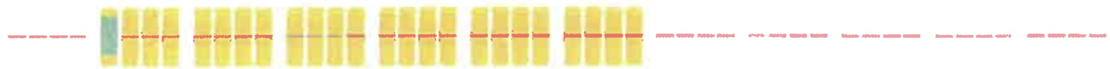
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

■ probability of presence ■ breeding season | survey effort – no data

SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Prairie Loggerhead Shrike BCC - BCR



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Attachment F 2

USDA-SCS Farmland Protection

Policy Act Exemption

USDA
United States Department of Agriculture

August 5, 2024

Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532
Attn: Kristian Poncho, THPO

RE: Coushatta Tribe of Louisiana
Allen Parish, Louisiana
Potential Impacts to Cultural Resources
MML&H File No.: 7724

Kristian:

I have reviewed the above referenced project for potential requirements of the Farmland Protection Policy Act (FPPA) and potential impact to Natural Resources Conservation Service projects in the immediate vicinity.

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. For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements can be forest land, pastureland, cropland, or other land, but not water or urban built-up land.

The project map and narrative submitted with your request indicates that the construction area associated with this project is of small acreage extent (i.e., 10 acres or less per linear mile or 3 acres where there is an existing bridge or interchange) and therefore is exempt from the rules and regulations of the Farmland Protection Policy Act (FPPA)—Subtitle I of Title XV, Section 1539-1549. Furthermore, we do not predict impacts to NRCS work in the vicinity. For specific information about the soils found in the project area, please visit our Web Soil Survey at the following location: http://websoilsurvey.nrcs.usda.gov/

Please direct all future correspondence to me at the address shown below.

Respectfully,

Brandon Waltman
Assistant State Soil Scientist

Attachment

Natural Resources Conservation Service
State Office
3737 Government Street
Alexandria, Louisiana 71302
Voice: (318) 473-7751 Fax: (844) 325-6947

Helping People Help the Land

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)*	3. Date of Land Evaluation Request 7/15/24	4. Sheet 1 of ____	
1. Name of Project Coushatta Tribe of Louisiana Evacuation Rou	5. Federal Agency Involved FHWA		
2. Type of Project Evacuation route improvements	6. County and State Allen Parish, Louisiana		
PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS 7/15/24	2. Person Completing Form Brandon Waltman	
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☐ NO ☑		4. Acres Irrigated	Average Farm Size
5. Major Crop(s)	6. Farmable Land in Government Jurisdiction Acres: %	7. Amount of Farmland As Defined in FPPA Acres: %	
8. Name Of Land Evaluation System Used	9. Name of Local Site Assessment System	10. Date Land Evaluation Returned by NRCS 8/5/24	

PART III *(To be completed by Federal Agency)*		Alternative Corridor For Segment ____ Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly					
B. Total Acres To Be Converted Indirectly, Or To Receive Services					
C. Total Acres In Corridor					
PART IV *(To be completed by NRCS)* ***Land Evaluation Information***					
A. Total Acres Prime And Unique Farmland					
B. Total Acres Statewide And Local Important Farmland					
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted					
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value					
PART V ***(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)***					
PART VI ***(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))***	**Maximum Points**				
1. Area in Nonurban Use	15				
2. Perimeter in Nonurban Use	10				
3. Percent Of Corridor Being Farmed	20				
4. Protection Provided By State And Local Government	20				
5. Size of Present Farm Unit Compared To Average	10				
6. Creation Of Nonfarmable Farmland	25				
7. Availablility Of Farm Support Services	5				
8. On-Farm Investments	20				
9. Effects Of Conversion On Farm Support Services	25				
10. Compatibility With Existing Agricultural Use	10				
TOTAL CORRIDOR ASSESSMENT POINTS	160	0	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland (From Part V)	100	0	0	0	0
Total Corridor Assessment (From Part VI above or a local site assessment)	160	0	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	0	0	0	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used? YES ☐ NO ☐

5. Reason For Selection:

Signature of Person Completing this Part: | DATE

NOTE: Complete a form for each segment with more than one Alternate Corridor

Attachment F 3

Jurisdictional Delineation Report

October 30, 2024

Army Corps of Engineers
New Orleans District Regulatory Office
7400 Leake Avenue
New Orleans, Louisiana 70118

Re: CTLA Evacuation Route
Allen Parish, Louisiana

To whom it concerns,

Please see attached a new permit application for an evacuation route on the lands of the Coushatta Tribe of Louisiana in Allen Parish, Louisiana. The purpose of this evacuation route is to provide access to the reservation and area residents during and following significant storm events. Impacts to Waters of the United States have been avoided, except for the impacts resulting from the installation of a bridge crossing and a retaining wall. The applicant is requesting authorization for this activity through NWP-14. Please see the application package and permit drawings for more details.

Enclosed is:
1. ENG FORM 4345
2. Nationwide Permit Comments
3. Drawing Package
4. Attachment A – State Louisiana Evacuation Route Map
5. Attachment B – JD
6. Attachment C – Phase I Cultural Resource Survey
7. Exhibit Package

Should you need any other supporting documentation, or if you would like to conduct a site visit, please let us know.

Respectfully,

Chris Bosso

Chris Bosso, M.S.
Senior Project Manager
Pensacola Branch Office
cbosso@teamues.com

2003.047 MMLH – CTLA

U.S. Army Corps of Engineers (USACE) **APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT** For use of this form, see 33 CFR 325. The proponent agency is CECW-COR.	***Form Approved -*** ***OMB No. 0710-0003*** ***Expires: 2027-03-31***

The public reporting burden for this collection of information, OMB Control Number 0710-0003, is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR APPLICATION TO THE ABOVE EMAIL.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned. System of Record Notice (SORN). The information received is entered into our permit tracking database and a SORN has been completed (SORN #A1145b) and may be accessed at the following website: http://dpcld.defense.gov/Privacy/SORNsIndex/DOD-wide-SORN-Article-View/Article/570115/a1145b-ce.aspx

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First - Kristian Middle - Last - Poncho	First - Chris Middle - Last - Bosso
Company - Coushatta Tribe of Louisiana	Company - UES
E-mail Address - KPoncho@coushatta.org	E-mail Address - cbosso@teamues.com
6. APPLICANT'S ADDRESS:	9. AGENT'S ADDRESS:
Address- 1940 CC Bel Road	Address- 3298 Summit Blvd., Ste. 44
City - Elton State - LA Zip - 70532 Country - USA	City - Pensacola State - FL Zip - 32503 Country - USA
7. APPLICANT'S PHONE NOs. w/AREA CODE	10. AGENTS PHONE NOs. w/AREA CODE
a. Residence b. Business 337-275-1350 c. Fax	a. Residence b. Business 850-435-9367 c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, UES to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

K Poncho 10/11/2024

SIGNATURE OF APPLICANT DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

CC Bel Road Extension

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
Bayou Blue	Address CC Bel Road
15. LOCATION OF PROJECT	
Latitude: °N 30.52440919 Longitude: °W -92.69980896	City - Elton State- LA Zip- 70532

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID Multiple Parcel IDs Municipality Allen Parish

Section - 17-24 Township - 6 Range - 3

17. DIRECTIONS TO THE SITE

From New Orleans, take I-10 W to Jefferson Davis Parish. Stay on I-10 W for +/- 17 miles. Take exit 64 towards Elton. Merge onto LA-26 W/Elton Rd. Stay on this road for +/- 19.5 miles to the intersection of Briscoe Road. The is the eastern end of the proposed project. The proposed road upgrade of Briscoe Road proceeds west 1.02 miles to where it intersects with Bel Oil Road. The project proceeds another 1.5 miles westerly through natural lands to the CC Bel/Powell Road intersection.

18. Nature of Activity (Description of project, include all features)

The proposed project involves upgrading and extending approximately 2.5 miles of CC Bel Road for accessibility and to meet the 50-year design frequency standard for evacuation routes. The project will include approximately 1.5-miles of new roadway construction, the improvement of approximately 1.2 miles of existing unpaved roadway, a new bridge crossing over Bayou Blue, and an 8-foot wide bicycle and pedestrian pathway along the entire length of the road. Of the approximately 1.2 miles of existing unpaved roadway, approximately 0.2 miles of roadway improvements will occur on an existing aggregate drive, a portion of which is on Coushatta Trust Land. 1.0 mile of existing roadway improvements on Briscoe Road will terminate at LA Highway 26. To accomplish this the applicant proposes a 30' wide by 120' long bridge over Bayou Blue with four 24" PCC concrete pilings, dredging of 4,733 sq. ft./0.109-acres to increase the hydrological cross-section of the crossing requiring removal of 396 cubic yards of material, and 1,807 sq. ft./0.041-acres/134 c.y. of clean rip-rap to armor the bridge headwalls and protect the side slope bank from scour and erosion. In addition, 516 sq. ft./0.012-acres/111 c.y. of fill will be placed in WOTUS to ensure proper grades of the slope of the banks. Finally, approximately 885 sq. ft./0.020-acres/422 c.y. of clean fill will be needed for slope shaping and backfill behind a headwall. The project impacts a total of 0.182-acres of WOTUS.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

The Coushatta Tribe reservation and surrounding areas frequently experience significant storm events which cause both of the primary access roads, Powell Road and CC Bel Road, to become impassable. This isolates the reservation until flood waters slowly recede, eliminating ready access to emergency aid and interrupting daily commutes. Bridges on both of these roads were replaced by LADOTD, but the existing road grades and bridge profiles were not raised due to limited R/W and funding. The proposed extension of CC Bel Road east to LA Highway 26, the closest designated hurricane evacuation route, will resolve these accessibility issues and provide access to the reservation and area residents during and following significant storm events.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

The proposed activities will impact 0.182 acres of WOTUS. This is a result of the construction of a new bridge crossing over Bayou Blue.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
Dredge=396 (east WOTUS only)	Fill=533 (west and east WOTUS)	Riprap=134 (east WOTUS only)

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres 0.182

or

Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

Impacts to WOTUS were greatly minimized by aligning the proposed roadway with an existing unpaved road and an existing paved road (Briscoe Rd). Impacts to WOTUS will result from a new bridge crossing over Bayou Blue. These impacts cannot be avoided because the entire purpose of the project is to construct an evacuation route that will not be flooded during significant storm events. In order to accomplish this goal the evacuation route must be elevated out of the flood zone of Bayou Blue.

24. Is Any Portion of the Work Already Complete? ☐ Yes ☒ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- N/A for NWP 14 - can be provided upon request.

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

K Poncho ___ SIGNATURE OF APPLICANT | 2024-10-08 ___ DATE | Chris Bosso ___ SIGNATURE OF AGENT | 10/28/24 ___ DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

CC BEL ROAD EXTENSION/EVACUATION ROUTE

FOR

CC BEL ROAD, ELTON
ALLEN PARISH, LOUISIANA

Prepared for:
Meyer, Meyer, LaCroix & Hixson
for Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, Louisiana, 70532

Prepared by:

UES™

September 2024
2003.047

Coushatta Tribe of Louisiana
CC Bel Road Extension/Evacuation Route
Allen Parish, Louisiana
Linear Transportation Comments

Project Description
The Coushatta Tribe of Louisiana (CTLA) has been awarded $11.4 MM in federal funding through the U.S. Department of Transportation (USDOT) under the **Rebuilding American Infrastructure with Sustainability and Equity (RAISE)** Grant Program. The purpose of the grant program is to provide for safer roads more resilient to extreme weather directed at regions defined as historically disadvantaged or areas of persistent poverty. This funding will be used to upgrade and extend approximately 2.5-miles of CC Bel Road implementing the complete streets design approach for accessibility and meet the 50-year design storm frequency standard for evacuation routes. The project will include approximately 1.3-miles of new roadway construction, a new bridge crossing over Bayou Blue, and an 8-foot wide bicycle and pedestrian pathway along the entire length of the road. The grant will fund the engineering design, surveying, environmental compliance, right-of-way acquisition and construction of the project.

The proposed 2.5-mile roadway will connect Powell Road to LA Highway 26 by improving approximately 1.2 miles of existing unpaved roadway and constructing 1.3 miles of new roadway. Approximately 0.2-miles of roadway improvements will occur on an existing graded aggregate drive, a portion of which is on Coushatta Trust Land; and 1.0 mile of existing roadway improvements are planned for Briscoe Road terminating at LA Highway 26. Approximately 1.3 miles of new roadway will be constructed through a forested area to connect these existing road segments and will include a bridge crossing over Bayou Blue. The proposed 2.5-mile roadway will be designed to meet federal highway USDOT and LADOTD standards for roadway construction, creating an all-weather emergency access evacuation route from the CTLA Tribal Reservation to a designated state hurricane evacuation route (State Highway LA 26) in Allen Parish, Louisiana. When completed, the road will provide the only ingress and egress for the CTLA Reservation during significant storm and flooding events.

Background
We are providing you with the information for concurrence with the Nationwide 14 criteria for the proposed CC Bel Road Extension/Evacuation Route to serve the Coushatta Tribal Community north of Elton in Allen Parish, Louisiana. The Coushatta Tribe owns approximately 6,000-acres in Louisiana, including acreage in Allen Parish. The federally recognized Coushatta Tribe of Louisiana tribal reservation is generally situated at the intersection of two secondary parish roads (Powell Road and CC Bel Road) which are prone to closure by flooding during significant storm events, effectively isolating the reservation and the immediate area. The primary reservation area lies near the intersection of where the concentration of Tribal Agencies/Departments and Services are located (see **Exhibit 1**) and includes:

Police – Fire – EMS

Department of Health
Wellness Center
Public Safety
Administration & Tribal Council
Public Works
Historic Preservation
Environmental & Natural Resources
Judicial
Education
Social Services
Housing

Purpose and Need

The CTLA reservation and surrounding areas frequently experience significant storm events which cause both primary access roads, Powell Road and CC Bel Road, to become impassable. This isolates the reservation, specifically the Tribal Agencies/Departments, until flood waters slowly recede, eliminating ready access to emergency aid and interrupting daily commutes. **Exhibit 2** outlines the primary reservation site and illustrates the surrounding FEMA A/AE Flood Hazard areas. This exhibit also shows the closest three existing evacuation routes to the centralized services area; US Highways 190 and 165 and Louisiana State Highway 26. These routes are shown on the Louisiana Emergency Evacuation Map included as **Attachment A**. The Coushatta Tribe's services area lies nearly central to the three highways and routes and is surrounded by and separated from all three evacuation routes by A/AE Flood Hazard area. This is better substantiated by the USGS Topographic Map **(Exhibit 3)** that matches the location of the Flood Hazard areas with Bayou Blue that is located both east and west of the services area, merges south, then flows under Powell Road. Recently bridges constructed on both of these roads were replaced by Louisiana Department of Transportation and Development (LADOTD), but the existing road grades and bridge profiles were not raised due to limited R/W and funding. The proposed extension of CC Bel Road east to LA Highway 26, the closest designated hurricane evacuation route, will resolve these accessibility issues and provide access to the reservation and area residents during and following significant storm events.

Project Site

The proposed road extension segment is in a rural residential area primarily dominated by pine silviculture, and to a lesser extent agricultural farming, grazing, municipal facilities, roads, and utility gas line servitudes. Soil data **(Exhibit 4)** from the NRCS indicates that the proposed project alignment contains four (4) soil types: two soil types associated with uplands, Glenmora Silt Loam (non-hydric), and Kinder-Gis Complex (non-hydric) and two types associated with wetland conditions, Guyton-Ouachita Complex (hydric), and Prairieland Silt Loam (hydric). This mapping unit was limited to a portion of the alignment and aligned within the field delineated wetlands on-site.

A jurisdictional delineation was performed by UES Ecologists between May 22 and July 11, 2024, on the site using the 1987 Corps Manual and the Atlantic and Gulf Coastal Plain Regional

Supplement. The "Jurisdictional Delineation Report Prepared for the Coushatta Tribe of Louisiana" is enclosed as **Attachment B.** An Approved Jurisdictional Request (AJD) was submitted to the New Orleans District Office in advance of this application On October 1, 2024.

Proposed Impacts

The proposed 2.5-mile roadway construction will be designed to meet federal highway USDOT and LADOTD standards for evacuation routes. This will require an additional 9' of elevation to achieve grades above the frequent flood (A/AE) elevations. The proposed re-alignment project consists of two-encroachments of Bayou Blue: the first a bridged crossing and the second a filled slope encroachment that will impact 7911-sq. ft. / 0.182-acres of wetlands. Cumulatively, the project will require 667 cubic yards of fill and riprap in WOTUS and also require the excavation and removal of 396 cubic yards of spoil.

Avoidance and Minimization

Avoidance and minimization measures have been incorporated in both the planning and design phases of the project. The overall objective is to provide an ingress/egress evacuation route from the Coushatta Tribe's centralized Tribal Agencies/Departments to an existing evacuation route. As stated above, the Tribal Agencies/Departments lie central to three existing evacuation routes; US Highways 190 and 165 and Louisiana State Highway 26. Connectors to each of these existing evacuation routes were developed to evaluate for the proposed route and are shown on **Exhibit 5**. FEMA's Resilience Analysis and Planning Tool (RAPT) was used to determine/map the A/AE Flood zones that are shown on **Exhibit 6**. The proposed connector to the east to LA Highway 26 is the shortest route to an existing evacuation route and was chosen as the proposed alternative. In general, evacuation in this portion of southwest Louisiana is directed north towards Alexandria along US Highway 165. The need to travel north eliminates the Alternative 1 connector to US Highway 190 as a practical alternative for most evacuation scenarios, since it is south of the CTLA Tribal Agency/Department complex. The second alternative to Highway 165 would be the costliest alternative as it would require improvements (correction of elevation deficiencies) to approximately 7.7 miles or 3 times more than the proposed alternative, and require more potential floodplain impacts than the proposed alternative.

Additional avoidance is incorporated into the project through construction design. The project has been designed as an open bridge over Bayou Blue that spans from upland to upland and is supported by four clusters of concrete pilings. The design maximizes the cross-section flow and limits WOTUS impacts through riprap that will aid in protecting the structure from scour and erosion.

Finally, the project has been designed to meet the Nationwide Permit criteria, which is a form of minimization.

Mitigation

The project will have minimal impacts to areas of Bayou Blue. The crossing design consists of a steep bank slope and open water, limiting any riparian fringe or wetland in general. A mitigation plan will be developed after the initial review and comments have been received which addresses the applicant avoidance and minimization measures.

Erosion and Sediment Control

The applicant proposes to place erosion control devices such as staked hay bales, silt fencing, sand bags, and temporary berms along the perimeter of the project site and all other construction activities that result in more than minimal soil disturbance. The silt fence will be trenched 4 to 6 inches underground and backfilled on the uphill side of the upland/wetland interface to prevent under washing and sedimentation into wetlands.

Floating turbidity screen will be utilized as necessary to prevent turbidity during the piling installation process.

The applicant will take all measures necessary to prevent erosion and sedimentation.

Supplies and materials will be staged on the upland areas of the project and any disturbed areas will be seeded or sodded until permanent stabilization is achieved.

2021 Nationwide Permits

14. Linear Transportation Projects.

Notification: The permittee will submit a pre-construction notification to the district engineer prior to commencing the activity because 1) the loss and waters of the United States exceeds 1/10-acre and2) there will be discharge of dredged or fill material in a special aquatic site, including wetlands. This submittal will serve as the pre-construction notification.

Note 1: The proposed project will impact Bayou Blue at 2 (two) separate locations approximately 400 feet apart.

Note 2: This note is not applicable to the proposed project, which is for an evacuation route.

Note 3: No other NWPs are being applied for as part of the proposed project.

NOTIFICATION: We are providing notification and requesting verification that the project described above qualifies for the Nationwide Permit 14 – Linear Transportation Projects.

Nationwide Permit General Conditions

1. Navigation. The proposed project is not located in navigable waters and will not impact navigation.

2. Aquatic Life Movements. The project will not impact aquatic life movement. The bridge structure that is proposed will prevent the disruption of the necessary life cycle movements of those species of aquatic life indigenous to the waterbody.

3. Spawning Areas. The proposed project will not be located in spawning areas. However, the timing of the project will be planned outside of spawning season in order to avoid any potential adverse impacts.

4. Migratory Bird Breeding Areas. The proposed project will not be located in migratory bird breeding areas, and, therefore, no adverse impacts are anticipated.

5. Shellfish Beds. The proposed project will not be located in shellfish beds, and, therefore, adverse impacts are not expected.

6. Suitable Material. The project will utilize clean materials. No deleterious fill material will be utilized for the project.

7. Water Supply Intakes. The proposed project will not impact any water intake structures.

8. Adverse Effects From Impoundments. The project will not create an impoundment of water. The bridge is designed to direct the flow of water under the road during high rainfall events.

9. Management of Water Flows. The project will not create an impoundment of water. The bridge is designed to increase the flow of water under the road during high rainfall events.

10. Fills Within 100-Year Floodplains. The project has been designed to meet the applicable FEMA floodplain management requirements.

11. Equipment. All equipment and materials will be stored in the uplands portion of the right-of-way. There will be no need to utilize wetlands or other waters to store or stage equipment.

12. Soil Erosion and Sediment Controls. Appropriate erosion control measures will be utilized as required during the construction activities. Filter fencing and staked hay bales will be placed at the toe areas of all graded slopes and will be maintained until permanent stabilization has been achieved.

13. Removal of Temporary Structures and Fills. No temporary fills will be needed to complete the project.

14. Proper Maintenance. All structures will be initially maintained as necessary by the CTLA. It is the intent to turn maintenance over to the Allen Parish Police Jury in the future.

15. Single and Complete Project. The proposed evacuation route is permanent in nature and is part of a single and complete project.

16. Wild and Scenic Rivers. The project is not within, nor will it impact, a Wild and Scenic River.

17. Tribal Rights. The proposed project is for the benefit of the Coushatta Tribe of Louisiana. Therefore, the project will not impair reserved tribal rights.

18. Endangered Species. During site review inspections, no threatened and endangered species or habitat was observed within or immediately adjacent to the project site. A threatened and endangered species report is included in the submittal (Attachment D).

19. Migratory Birds and Bald and Golden Eagles. The proposed project will not result in a "take" of a migratory birds, bald eagles, or golden eagles.

20. Historic Properties. A letter from the Louisiana Office of Cultural Development, Division of Archaeology, states "Based on the description of the Area of Potential Effect (APE), the proposed ground-disturbing activities, and the identification of historic properties within the APE, our office concurs that no historic properties will be affected by this project." See Attachment C.

21. Discovery of Previously Unknown Remains and Artifacts. The applicant agrees to contact the District Engineer immediately if previously unknown remains or artifacts are found. Additionally, all work that could possibly affect remains or artifacts will be avoided until the required coordination has been completed.

22. Designated Critical Resource Waters. Bayou Blue will be the only WOTUS impacted and has not been named as a "Designated Critical Resource Waters".

23. Mitigation. The project will have minimal impacts to areas of Bayou Blue consisting of a steep bank slope associated with bridge installation. Open waters and wetlands in general have been avoided through careful construction design. A mitigation plan will be developed after receipt of the Corp's comments and recommendations assessing the applicant's avoidance and minimization measures.

24. Safety of Impoundment Structures. The project is not an impoundment project.

25. Water Quality. Erosion control measures and turbidity curtains will be utilized to ensure water quality will not be degraded as a result of the construction activities.

26. Coastal Zone Management. The project is not located in the Coastal Zone area of Louisiana and is therefore not applicable to this application.

27. Regional and Case-by-Case Conditions. The project has been designed to meet the Louisiana regional conditions. See the Regional Condition list below.

28. Use of Multiple Nationwide Permits. The discharge is part of a single and complete project. No other Nationwide permits are required or sought for the completion of the project.

29. Transfer of Nationwide Permit Verifications. The project will be completed by the Applicant, and a transfer of the permit is not anticipated.

30. Compliance Certification. A Compliance Certification letter will be provided upon completion of the authorized work documenting completion of the work.

31. Activities Affecting Structures or Works Built by the United States. The proposed project will not affect any structures or works built by the United States.

32. Pre-Construction Notification. A pre-construction notification will be submitted to the district engineer prior to commencing the proposed project, as required by Nationwide Permit 14. This application will serve as the pre-construction notification.

State of Louisiana
2021 Nationwide Permit (NWP) Regional Conditions

Part 1 – Regional Conditions for all NWPS:

Regional Condition 1
The proposed project will not cause the permanent loss or conversion of greater than ½ acre of cypress swamp and/or cypress-tupelo swamp. The project is limited to less than 0.182-acre of impact to fringe forested wetlands and open waters.

Regional Conditions 2
The proposed project will not cause the permanent loss of conversion of greater than ½ acre of coastal prairie, pine savanna, and/or pitcher plant bogs. The project is limited to less than 0.182-acre of impact to fringe forested wetlands and open waters.

Regional Conditions 3
The proposed project will not have an adverse impact upon a federal or state designated rookery and/or bird sanctuary.

Regional Conditions 4
Dredge/fill material placed in wetlands and other waters as part of the proposed project will be free of contaminants.

Regional Conditions 5
The proposed project will not take place within the Louisiana Coastal Zone and/or the Outer Continental Shelf off Louisiana.

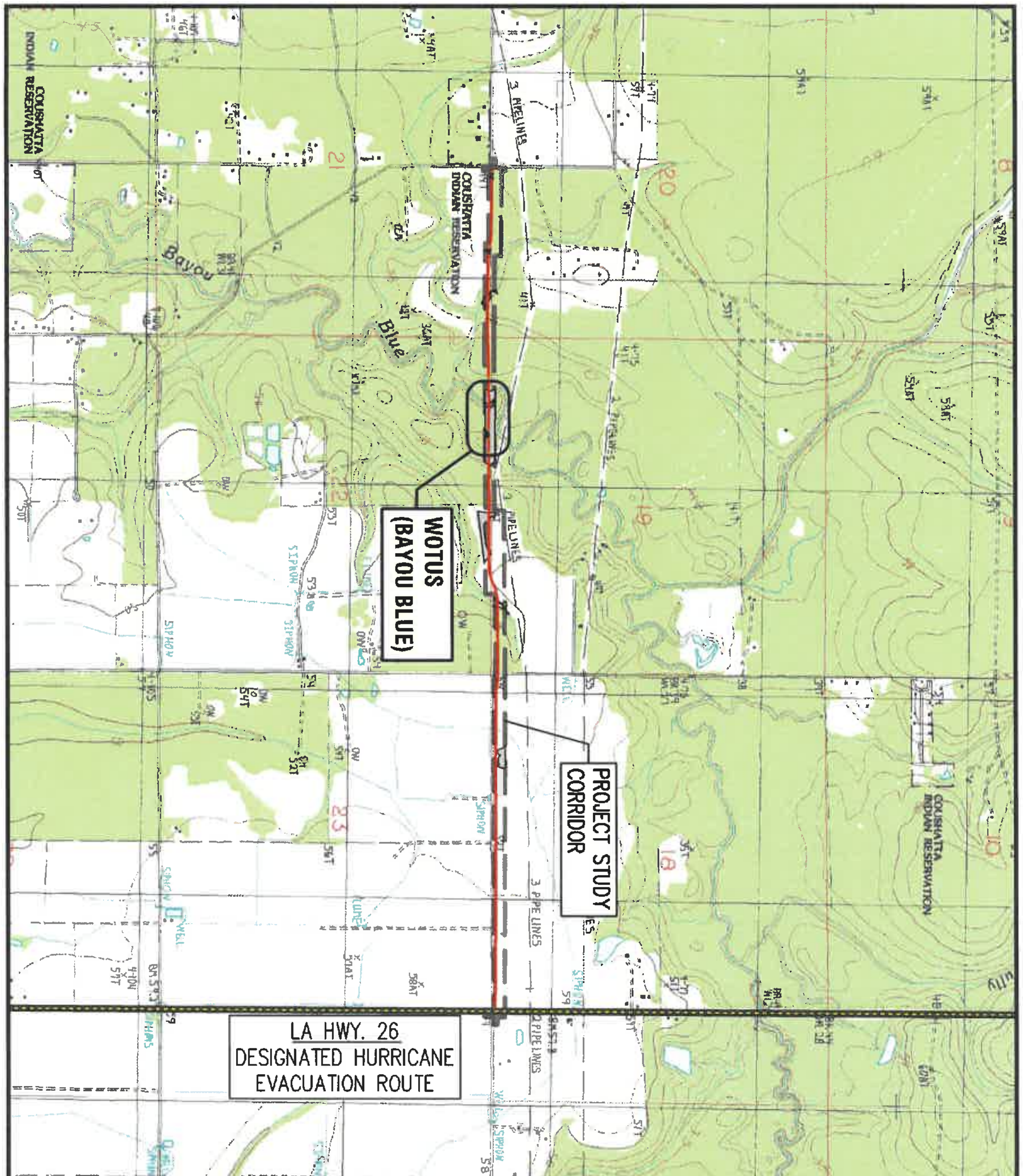
Regional Conditions 6
A pre-construction notification, as defined in nationwide general condition 32, is not required for the proposed activity. However, this document will serve as notification and a request for verification that the project described above qualifies for the Nationwide 14 Permit.

Regional Conditions 7
N/A. Culverts are not included as part of the proposed project.

Regional Conditions 8
Understood.

DRAWING PACKAGE

SHEETS 1-6



mml&H
Meyer, Meyer, LaCroix & Hixson, Inc.
Engineers & Land Surveyors
100 Engineer Place, Alexandria, LA 71303
Phone: (318) 448-0888 - Fax: (318) 448-0885
ALEXANDRIA — RUSTON

COUSHATTA TRIBE OF LOUISIANA
EXTENSION OF CC BEL ROAD
OVERALL WOTUS EXHIBIT

FIGURE NO.
SHT. 1

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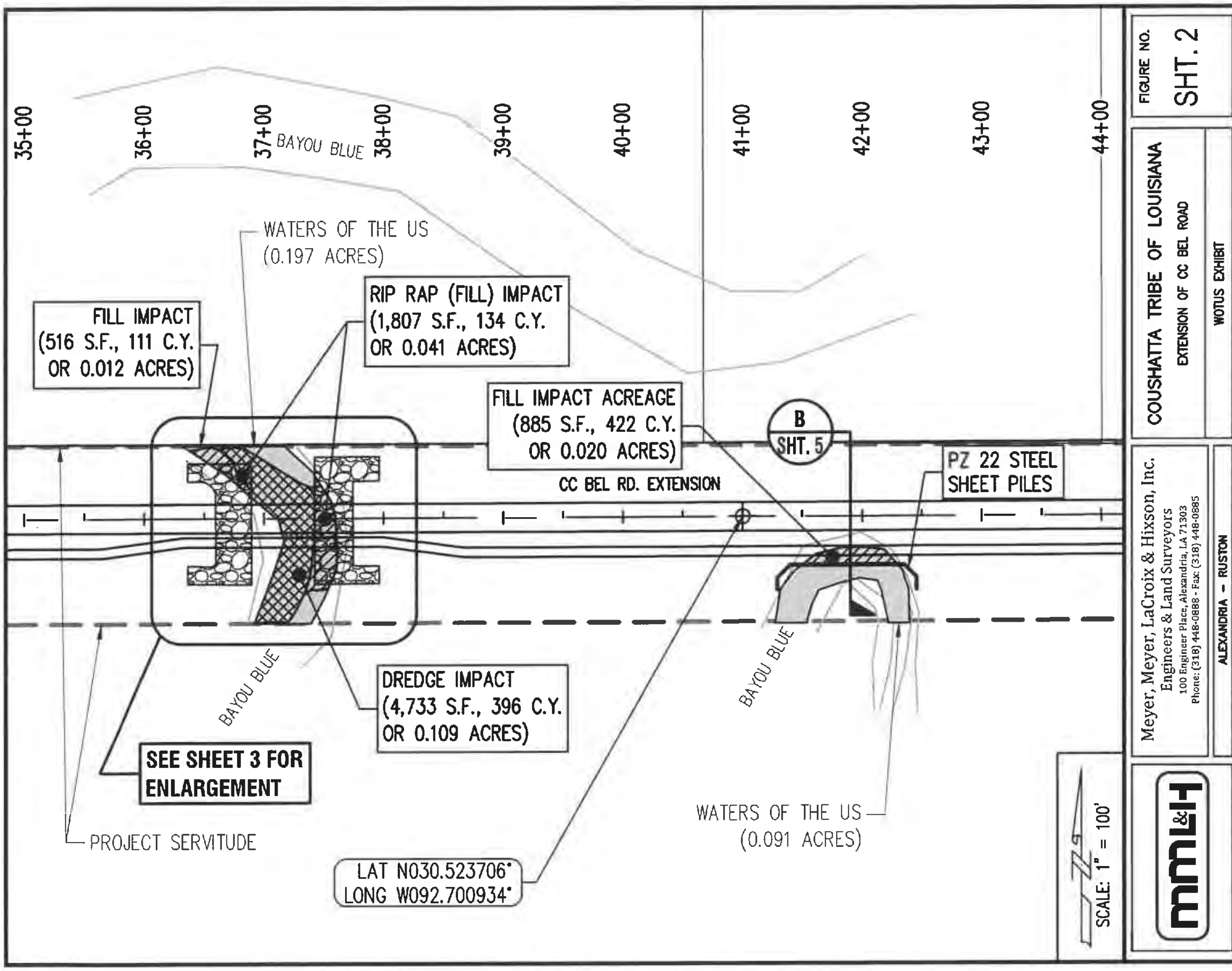
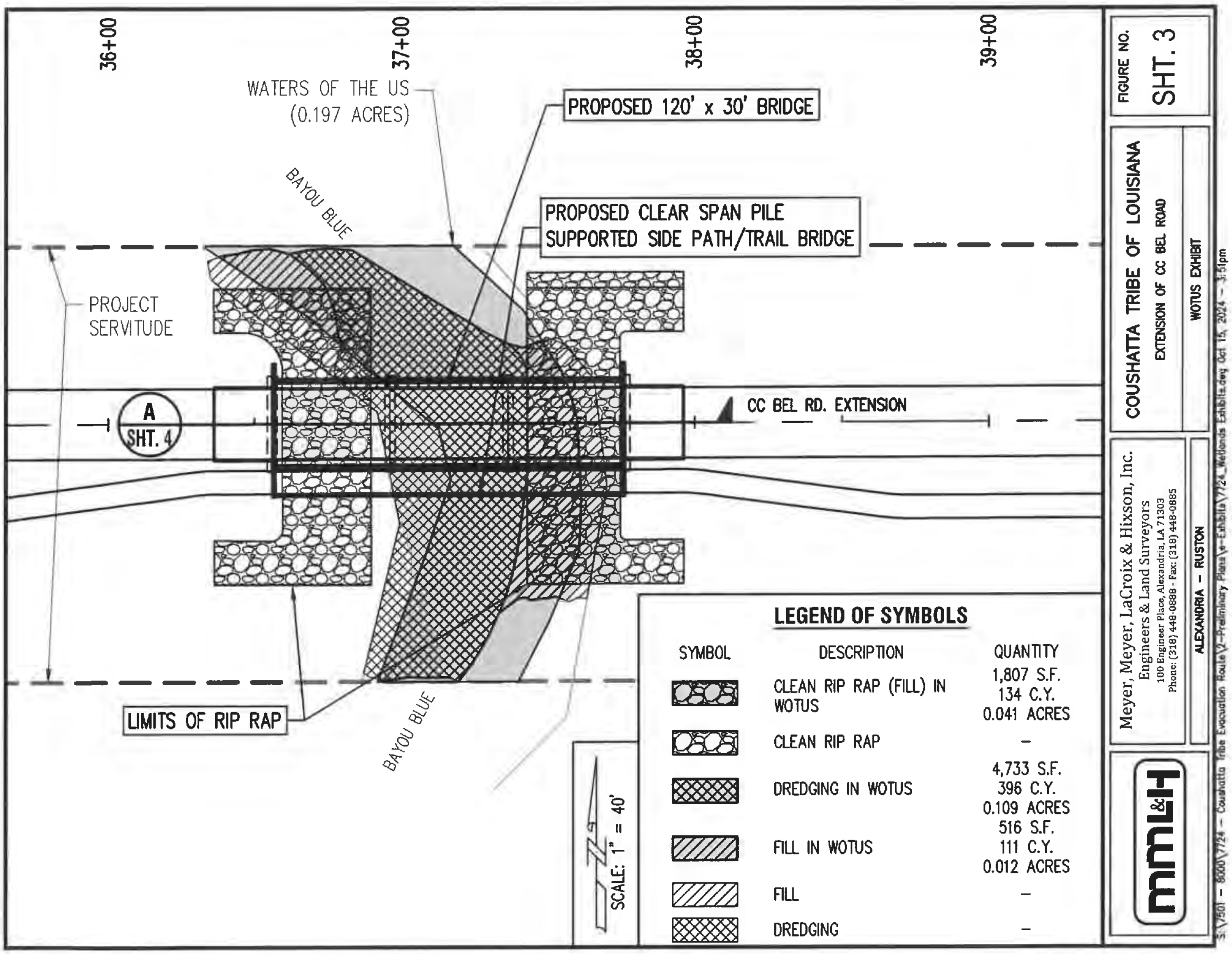
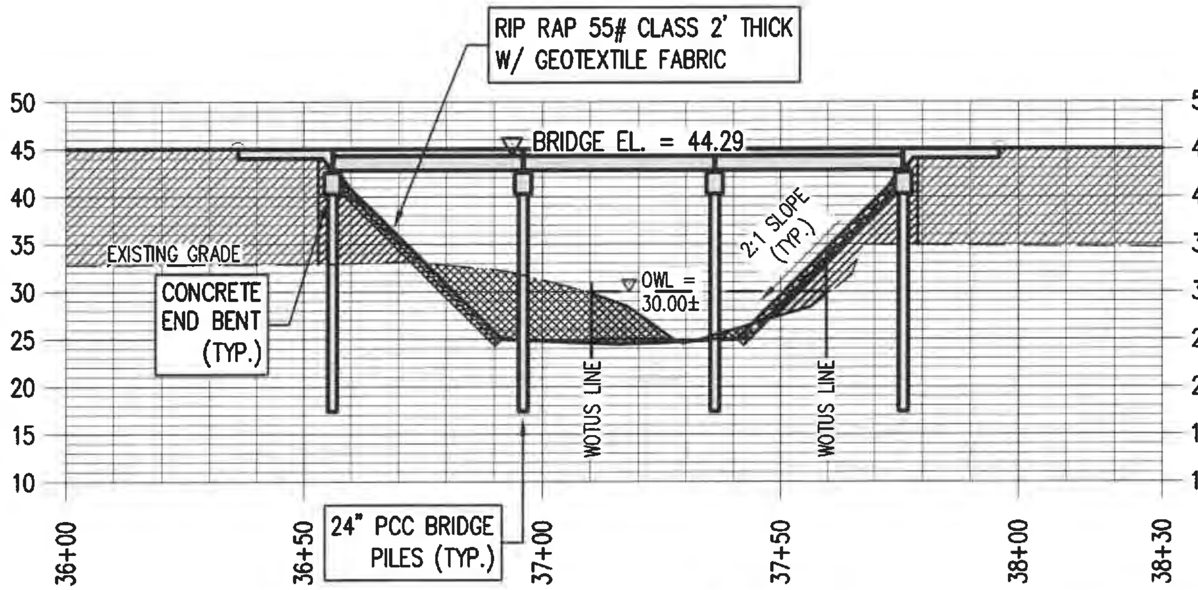

35+00
36+00
37+00
38+00
39+00
40+00
41+00
42+00
43+00
44+00
BAYOU BLUE
WATERS OF THE US
(0.197 ACRES)
FILL IMPACT
(516 S.F., 111 C.Y.
OR 0.012 ACRES)
RIP RAP (FILL) IMPACT
(1,807 S.F., 134 C.Y.
OR 0.041 ACRES)
FILL IMPACT ACREAGE
(885 S.F., 422 C.Y.
OR 0.020 ACRES)
B
SHT. 5
PZ 22 STEEL
SHEET PILES
CC BEL RD. EXTENSION
BAYOU BLUE
BAYOU BLUE
DREDGE IMPACT
(4,733 S.F., 396 C.Y.
OR 0.109 ACRES)
SEE SHEET 3 FOR
ENLARGEMENT
PROJECT SERVITUDE
LAT N030.523706°
LONG W092.700934°
WATERS OF THE US
(0.091 ACRES)
SCALE: 1" = 100'
FIGURE NO.
SHT. 2
COUSHATTA TRIBE OF LOUISIANA
EXTENSION OF CC BEL ROAD
WOTUS EXHIBIT
Meyer, Meyer, LaCroix & Hixson, Inc.
Engineers & Land Surveyors
100 Engineer Place, Alexandria, LA 71303
Phone: (318) 448-0888 - Fax: (318) 448-0885
ALEXANDRIA - RUSTON
MML&H


36+00
37+00
38+00
39+00
WATERS OF THE US (0.197 ACRES)
PROPOSED 120' x 30' BRIDGE
PROPOSED CLEAR SPAN PILE SUPPORTED SIDE PATH/TRAIL BRIDGE
BAYOU BLUE
PROJECT SERVITUDE
A SHT. 4
CC BEL RD. EXTENSION
LIMITS OF RIP RAP
BAYOU BLUE
SCALE: 1" = 40'
LEGEND OF SYMBOLS
SYMBOL
DESCRIPTION
QUANTITY
CLEAN RIP RAP (FILL) IN WOTUS
1,807 S.F. 134 C.Y. 0.041 ACRES
CLEAN RIP RAP
-
DREDGING IN WOTUS
4,733 S.F. 396 C.Y. 0.109 ACRES
FILL IN WOTUS
516 S.F. 111 C.Y. 0.012 ACRES
FILL
-
DREDGING
-
FIGURE NO.
SHT. 3
COUSHATTA TRIBE OF LOUISIANA
EXTENSION OF CC BEL ROAD
WOTUS EXHIBIT
Meyer, Meyer, LaCroix & Hixson, Inc.
Engineers & Land Surveyors
100 Engineer Place, Alexandria, LA 71303
Phone: (318) 448-0888 - Fax: (318) 448-0885
ALEXANDRIA - RUSTON
MML&H



A SHT. 4 SECTION

SCALE: 1" = 30' HOR.
1" = 15' VER.

0 15' 30' 60'
SCALE: 1" = 30'-0"

LEGEND OF SYMBOLS

SYMBOL	DESCRIPTION	QUANTITY
	CLEAN RIP RAP (FILL) IN WOTUS	1,808 S.F. 134 C.Y. 0.042 ACRES
	CLEAN RIP RAP	-
	DREDGING IN WOTUS	5,018 S.F. 396 C.Y. 0.115 ACRES
	FILL IN WOTUS	2,009 S.F. 111 C.Y. 0.046 ACRES
	FILL	-
	DREDGING	-

FIGURE NO. SHT. 4

COUSHATTA TRIBE OF LOUISIANA
EXTENSION OF CC BEL ROAD
WOTUS EXHIBIT

Meyer, Meyer, LaCroix & Hixson, Inc.
Engineers & Land Surveyors
100 Engineer Place, Alexandria, LA 71303
Phone: (318) 448-0888 - Fax: (318) 448-0885
ALEXANDRIA - RUSTON

MML&H

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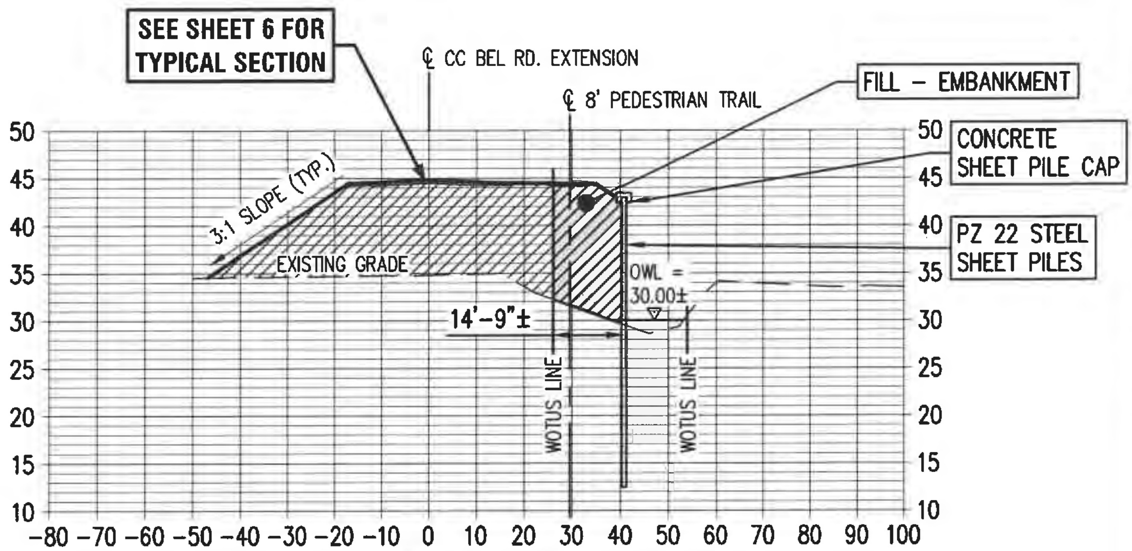


B SECTION
SHT. 5

SCALE: 1" = 30' HOR.
1" = 15' VER.

0 15' 30' 60'
SCALE: 1" = 30'-0"

LEGEND OF SYMBOLS

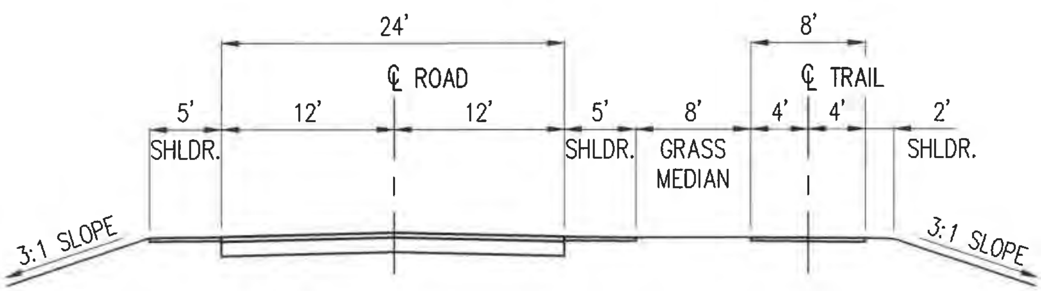
SYMBOL	DESCRIPTION	QUANTITY
	FILL IN WOTUS	885 S.F. 422 C.Y. 0.020 ACRES
	FILL	–

FIGURE NO. SHT. 5

COUSHATTA TRIBE OF LOUISIANA
EXTENSION OF CC BEL ROAD
WOTUS EXHIBIT

Meyer, Meyer, LaCroix & Hixson, Inc.
Engineers & Land Surveyors
100 Engineer Place, Alexandria, LA 71303
Phone: (318) 448-0888 - Fax: (318) 448-0885
ALEXANDRIA – RUSTON
MMLH

S:\7501 – 8000\7724 – Coushatta Tribe Evacuation Route\2-Preliminary Plans\e-Exhibits\7724_Wetlands Exhibits.dwg Oct 15, 2024 – 3:52pm



C
SHT. 6

REQUIRED TYPICAL SECTION

SCALE: N.T.S.

NOTE: COMPLIANT WITH FHWA COMPLETE STREETS INITIATIVE.

FIGURE NO.
SHT. 6

COUSHATTA TRIBE OF LOUISIANA
EXTENSION OF CC BEL ROAD
WOTUS EXHIBIT

Meyer, Meyer, LaCroix & Hixson, Inc.
Engineers & Land Surveyors
100 Engineer Place, Alexandria, LA 71303
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ALEXANDRIA – RUSTON

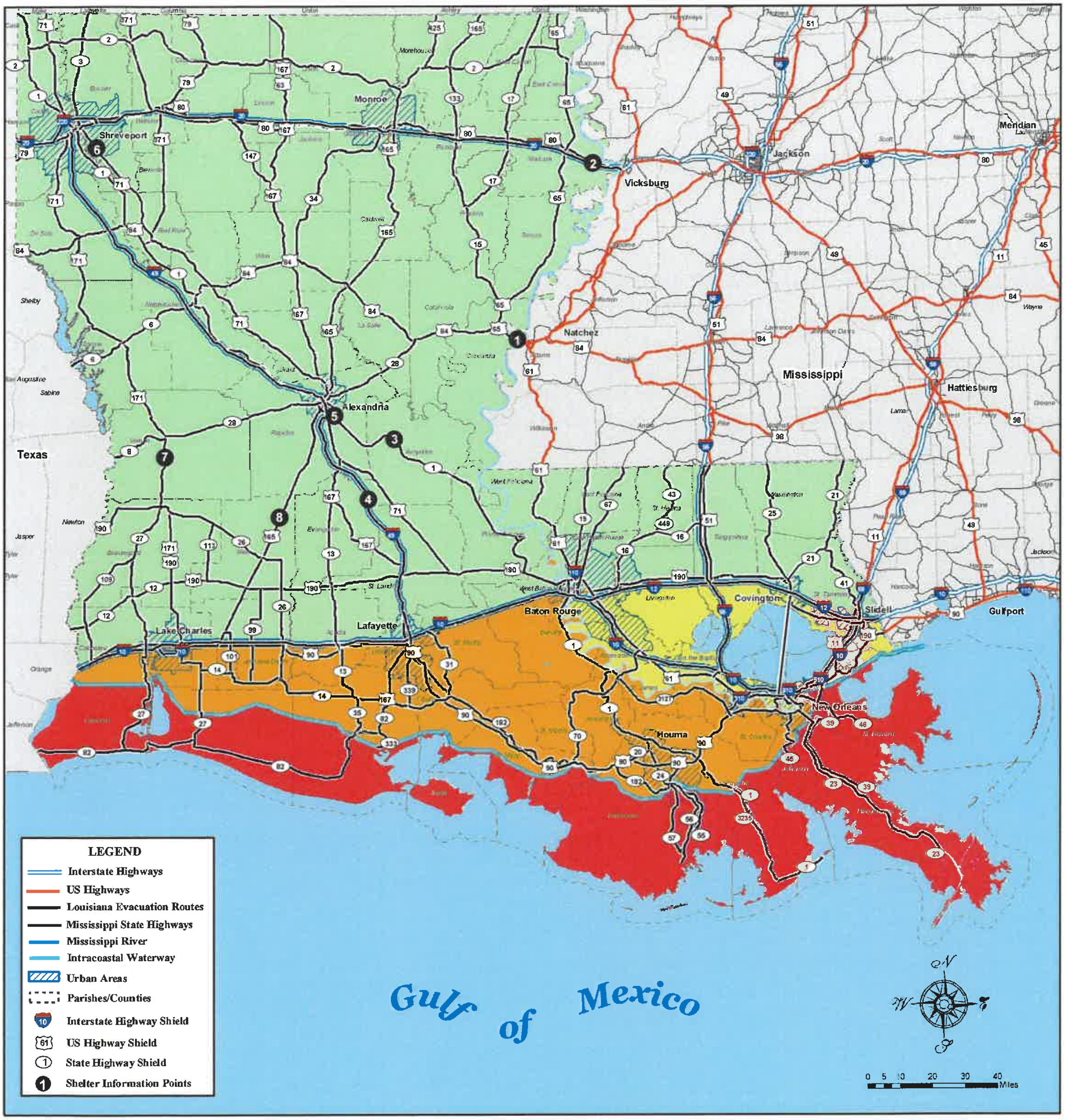
MML&H

S:\7501 – 8000\7724 – Coushatta Tribe Evacuation Route\2-Preliminary Plans\e-Exhibits\7724_Wetlands Exhibits.dwg Oct 15, 2024 – 3:52pm

ATTACHMENT A

State of Louisiana Evacuation Route Map

LOUISIANA EMERGENCY EVACUATION MAP



Phased Evacuation

During a threat of a hurricane, a phased evacuation will be based on geographic location and time in which tropical storm winds are forecasted to reach the affected areas.

Phase I - 50 Hours before onset of tropical storm winds. Includes areas south of the Intracoastal Waterway. These areas are outside any levee protection system and are vulnerable to Category 1 and 2 storms. These areas are depicted in RED on the Evacuation Map. During Phase I there are no route restrictions.

Phase II - 40 Hours before onset of tropical storm winds. Includes areas south of the Mississippi River which are levee protected but remain vulnerable to Category 2 or higher storms. These areas are depicted in ORANGE on the Evacuation Map. During Phase II there are no route restrictions.

Phase III - 30 Hours before onset of tropical storm winds. Includes areas on the East Bank of the Mississippi River in the New Orleans Metropolitan Area which are within the levee protection system but remain vulnerable to a slow-moving Category 3 or any Category 4 or 5 storm. These areas are depicted in YELLOW on the Evacuation Map. During Phase III, certain routes will be directed and the Contraflow Plan implemented.

Phased evacuation procedures are for traffic management purposes only. Consult your local Office of Emergency Preparedness Director for further evacuation information.

Louisiana is blessed with some of the Nation's greatest resources. When a crisis threatens, we must take steps to protect the most precious of those resources – our people. State and local agencies have worked together on a plan to evacuate Louisiana citizens from harm's way. Regardless of the location or nature of the threat, this evacuation plan is your guide to a safe and efficient evacuation. Please take the time to familiarize yourself with the contents of this guide, and discuss evacuation preparedness with your family. Working together, we can assure the safety of all our citizens during times of crisis. For more information, please visit my web site at: www.gov.la.gov

Sincerely,

Kathleen Babineaux Blanco
Governor

EMERGENCY EVACUATION GUIDE

I. Information points

LOUISIANA SHELTER TASK FORCE EMERGENCY SHELTER INFORMATION POINTS FOR HURRICANE EVACUATIONS:

EVACUATION AREA OF THE STATE	INFORMATION POINT LOCATION	ADDRESS
Re-entry from Mississippi on US 65 & US 84	❶ Tourist Welcome Center	US 65 & 84 1401 Carter St. (US 84) Vidalia, LA
Re-entry from Mississippi on I-20	❷ Tourist Welcome Center	836 I-20 West Tallulah, LA
From the Southeast area on LA 1	❸ Paragon Casino	711 Paragon Place Marksville, LA
From the Southeast/Central areas on I-49	❹ Sammy's Truck Stop	I-49, Exit 53 3601 LA 115 W Bunkie, LA
From the Southeast/Central areas on US 71	❺ Med Express Office	7525 US 71 Alexandria, LA
From the Southeast/Southwest/Central areas on US 171 and I-49	❻ P.E. Gym LSU-Shreveport	One University Place Shreveport, LA
From the Southwest area on US 171	❼ Pickering High School	180 Lebleu Rd. Leesville, LA
From the Southwest/Central areas on US 165	❽ Mowad Civic Center	5th Ave. and 10th St. 1 blk. off US 165 Oakdale, LA

II. Agency Contact Information

A. **American Red Cross** — (866) GET-INFO or (866) 438-4636
www.preparelouisiana.redcross.org

1. Acadiana Chapter (Lafayette) — (337) 234-7371
2. Central Louisiana Chapter (Alexandria) — (318) 442-6621
3. Louisiana Capital Area Chapter (Baton Rouge) — (225) 291-4533
4. Northeast Louisiana Chapter (Monroe) — (318) 323-5141
5. Northwest Louisiana Chapter (Shreveport) — (318) 865-9545
6. Southeast Louisiana Chapter (Greater New Orleans) — (800) 229-8191
7. Southwest Louisiana Chapter (Lake Charles) — (337) 478-5122
8. St. Bernard Parish Chapter (Chalmette) — (504) 277-8163

B. **Louisiana Department of Transportation and Development** — (225) 379-1232
www.dotd.state.la.us

C. **Louisiana Office of Homeland Security and Emergency Preparedness** — (800) 256-7036
www.ohsep.louisiana.gov

D. **Louisiana State Police** Road Closure Information (800) 469-4828
www.lsp.org

1.	Troop A (Baton Rouge)	(800) 969-2059
2.	Troop B (Kenner)	(800) 964-8076
3.	Troop C (Gray)	(800) 659-5907
4.	Troop D (Lake Charles)	(888) 225-5577
5.	Troop E (Alexandria)	(800) 256-4160
6.	Troop F (Monroe)	(866) 292-8320
7.	Troop G (Bossier City)	(866) 853-6580
8.	Troop I (Lafayette)	(888) 768-8746
9.	Troop L (Covington)	(888) 339-8659

or dial *LSP (*577) from a cellular phone

E. **Federal Emergency Management Agency**
www.ready.gov

F. **National Weather Service**
www.srh.noaa.gov

G. **Louisiana Department of Social Services**
www.dss.state.la.us

H. **Louisiana Department of Health and Hospitals**
www.dhh.state.la.us

III. Public Shelter information

Shelters are operated by trained individuals and ensure that the safety, security, and basic needs of its residents are met.

A. **What to bring to a shelter**

- Change of clothing, blanket and pillow for each family member
- Your disaster supply kit, including food, medications, comfort items and special items for infant or elderly family members.

B. **What NOT to bring**
There are no weapons, drugs, alcohol or pets (service animals excluded) allowed in shelters.

IV. Shelter-in-place information

"Sheltering-in-place" is a precaution aimed at keeping citizens safe while remaining indoors. **This is not the same thing as evacuating to a shelter and not recommended for hurricanes.** When a "shelter-in-place" order is given by either local or state government, citizens within the affected area should take the following protective measures:

- Go indoors and close all windows and doors.
- Turn off all sources of outside air (i.e. air conditioners and ventilation fans/ducts).
- Remain indoors until notified that it is safe to move outdoors.
- Stay tuned to your local radio/television station to receive official notices.
- Limit telephone usage for emergency calls only. This is to prevent the telephone lines from being overloaded with non-emergency calls.

IF YOU MUST BE OUTDOORS
Protect your breathing by covering your mouth and nose with a cloth or handkerchief.

IF YOU ARE IN YOUR VEHICLE AND CANNOT GET TO A SAFE BUILDING:

- Pull over to the side of the road.
- Turn off the engine and close windows and vents.
- Listen to the radio regularly for updated advice, instructions and conditions.

V. Family Communications Plan

Setting up a communication plan ahead of time will help make sure you and your family can connect as easily and quickly as possible.

- Designate an individual outside of the state to serve as a family point of contact. (After a disaster, it's often easier to call out-of-state than within the affected area.)
- Make sure that all family members know who this person is and how to contact him/her.
- After a disaster or evacuation, all family members should make contact with the designated individual. Try choosing a certain time for everyone to check in.

VI. Family Disaster Supply Kit

There are six basics that you should stock for your disaster supply kit: water, food, clothing and bedding, first aid supplies, tools and emergency supplies and special items. Keep these items in a waterproof container that can be easily transported from your home to your car and your safe place. Assemble your kit now to allow for immediate action during an emergency. Your family's disaster supply kit should include at least a three-day supply of:

- Water - One gallon of water per person per day
- Non-perishable food - Select food items that are compact and lightweight. Include:
  - Ready-to-eat canned meats, fruits and vegetables
  - Canned juices
  - High energy foods
  - Vitamins
  - Comfort goods
  - Condiments
  - Food for infant
- Clothing and bedding

  Include at least one complete change of clothing and footwear per person and the following weather-appropriate items:
  - Sturdy shoes or work boots
  - Rain gear
  - Blankets or sleeping bags
  - Hat and gloves
  - Thermal underwear
  - Sunglasses
- First aid supplies - Assemble a first aid kit for your home and one for each car
- Tools and emergency supplies
  - Mess kits, paper cups, plates and plastic utensils
  - Emergency preparedness manual
  - Battery-operated radio and extra batteries
  - Flashlight and extra batteries
  - Cash or traveler's checks, change
  - Non-electric can opener, utility knife
  - Fire extinguisher: small canister ABC-type
  - Tube tent
  - Pliers
  - Tape
  - Compass
  - Matches in a waterproof container
  - Aluminum foil
  - Plastic storage containers
  - Signal flare
  - Paper, pencil
  - Needles, thread
  - Medicine dropper
  - Shut-off wrench to turn off household gas and water
  - Whistle
  - Plastic sheeting

- o Sanitation supplies
- o Official DOTD Travel Map
- o Louisiana Citizen Awareness and Disaster Evacuation Guide

■ **Special items**

- o Infant and medical supplies: Remember supplies for family members with special requirements, such as infants, elderly or disabled persons and persons taking medications.
- o Entertainment - Games and books
- o Important family documents
  - ❖ Wills, insurance policies, contracts, deeds, stocks and bonds
  - ❖ Passports, social security cards and immunization records
  - ❖ Bank account numbers
  - ❖ Credit card account numbers and company addresses
  - ❖ Inventory of valuable household goods and important telephone numbers
  - ❖ Family records (birth, marriage, death certificates)

Store your kit in a convenient place known to all family members. Keep a smaller version of the supply kit in the trunk of your car. Change your stored water supply every six months so it stays fresh. Replace your stored food every six months. Re-think your kit and family needs at least once a year. Replace batteries, update clothes, etc.

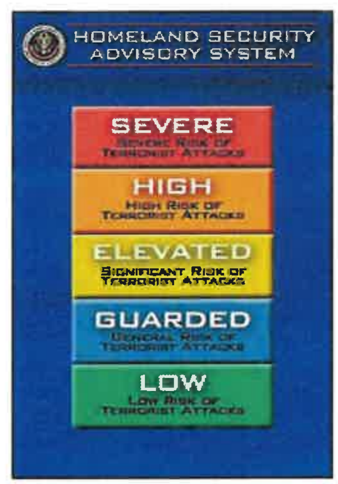
VII. Preparing your pets

If you are a pet owner, your family's disaster plan must include your pets. In the event of a disaster, if you must evacuate, the best thing you can do to protect your pets is to evacuate them too.

- Identify boarding facilities, veterinarians or hotels outside of the affected areas that can accept your pets. If you have notice of an impending disaster, call ahead for reservations.
- Pet-friendly shelters may be opened during an evacuation. This information will be available at shelter information points.
- Create a disaster readiness kit for your pet including food, water, first aid supplies, feeding dishes, leashes, carrier, blanket, etc.
- Make sure all family members are aware of these preparations.

VIII. Homeland Security Advisory System

The Homeland Security Advisory System, established in March of 2002, is a tool used to describe threat conditions for a possible terrorist attack. A color-coded threat level system is used to communicate the five threat levels to the American public. Prepare your family for these types of emergencies by following the recommendations in this guide or visit www.ready.gov. For more information on Homeland Security advisories, visit the Louisiana Office of Homeland Security and Emergency Preparedness link: www.ohsep.louisiana.gov/homeland/HSThreatAdvisory.htm.



IX. Radio Frequency System

A. Louisiana Emergency Alert System

The following radio stations are key participants in the Louisiana Emergency Alert System. In the event of an emergency, these stations will broadcast emergency information.

Alexandria
AM 970 (KSYL)
AM 580/FM 96.9 (KZMZ)
FM 93.1(KQID)

Baton Rouge
AM 1150 (WJBO)
FM 102.5 (WFMF)

Crowley
FM 102.9 (KAJN)

Lafayette
AM 1330 (KVOL)
FM 99.9 (KTDY)

Lake Charles
AM 1470 (KLCL)
FM 99.5 (KHLA)

New Orleans
AM 870 (WWL)
FM 101.9 (WLMG)

Northeast
AM 540/FM 101.9 (KNOE)

Ruston
AM 1490 (KRUS)
FM 107.5 (KXKZ)

Shreveport
AM 1130/FM 94.5 (KWKH)

B. NOAA Weather Radio

NOAA Weather Radio is a nationwide network of radio stations broadcasting continuous weather information direct from a nearby National Weather Service office. NWR broadcasts National Weather Service warnings, watches, forecasts and other hazard information 24 hours a day.

X. Severe Weather Terms to know:

Natural disasters most likely to occur in Louisiana, particularly in low-lying areas bordering the Gulf of Mexico, include hurricanes and flooding due to heavy rains. Residents should be familiar with several terms that describe severe weather conditions:

A. **Storm Surge:** An abnormal rise of the sea along a shore as the result, primarily, of the winds from a storm.

B. **Watch:** Adverse conditions are **possible** in the specified area of the WATCH, usually within 36 hours. May be applied to thunderstorms, tornadoes, floods, or hurricanes.

C. **Warning**: Adverse conditions are **expected** in the specified area of the WARNING, usually within 24 hours. May be applied to thunderstorms, tornadoes, floods, or hurricanes.

XI. Measuring Hurricane Strength – The Saffir-Simpson Hurricane Scale

Category 1: Minimal Damage. Winds 74-95 mph. Storm surge generally 4-5 ft. above normal.
Category 2: Moderate Damage. Winds 96-110 mph. Storm surge generally 6-8 ft. above normal
Category 3: Extensive Damage. Winds 111-130 mph. Storm surge generally 9-12 ft. above normal.
Category 4: Extreme Damage. Winds 131-155 mph. Storm surge generally 13-18 ft. above normal.
Category 5: Catastrophic Damage. Winds greater than 155 mph. Storm surge generally greater than 18 ft above normal.

Citizen Corps is a nationwide grass roots movement to actively involve all Americans in making our communities and our nation safer, stronger and better prepared for all hazards and threats. We all have a role in hometown security and Citizen Corps provides local opportunities for everyone to prepare, train and volunteer. At the community level, Citizen Corps activities are coordinated by a Citizen Corps Council. These Councils bring together local leaders, citizen volunteers and the network of first responder organizations, such as fire departments, police departments and emergency medical personnel. Local Citizen Corps Councils:

- Promote and strengthen the Citizen Corps programs at the community level;
- Provide opportunities for special skills and interests;
- Develop targeted outreach for the community, including special needs groups;
- Provide training for citizens in first aid and emergency preparedness;
- Organize special projects and community events;
- Encourage cooperation and collaboration among community leaders;
- Capture smart practices and report accomplishments; and
- Create opportunities for all residents to participate.

The **Community Emergency Response Team (CERT) Program** educates people about disaster preparedness and trains them in basic disaster response skills, such as fire safety, light search and rescue, and disaster medical operations. Using their training, CERT members can assist others in their neighborhood or workplace following an event and can take a more active role in preparing their community. The program is administered by the Department of Homeland Security (DHS).

The Fire Corps promotes the use of citizen advocates to enhance the capacity of resource-constrained fire and rescue departments at all levels: volunteer, combination, and career. Citizen advocates can assist local fire departments in a range of activities including fire safety outreach, youth programs, and administrative support. Fire Corps provides resources to assist fire and rescue departments in creating opportunities for citizen advocates and promotes citizen participation. Fire Corps is funded through DHS and is managed and implemented through a partnership between the National Volunteer Fire Council, the International Association of Fire Fighters, and the International Association of Fire Chiefs.

An expanded **Neighborhood Watch Program (NWP)** incorporates terrorism awareness education into its existing crime prevention mission, while also serving as a way to bring residents together to focus on emergency preparedness and emergency response training. Funded by Department of Justice (DOJ), Neighborhood Watch is administered by the National Sheriffs' Association.

The **Medical Reserve Corps (MRC) Program** strengthens communities by helping medical, public health and other volunteers offer their expertise throughout the year as well as during local emergencies and other times of community need. MRC volunteers work in coordination with existing local emergency response programs and also supplement existing community public health initiatives, such as outreach and prevention, immunization programs, blood drives, case management, care planning, and other efforts. The MRC program is administered by Health and Human Services (HHS).

Volunteers in Police Service (VIPS) works to enhance the capacity of state and local law enforcement to utilize volunteers. VIPS serves as a gateway to resources and information for and about law enforcement volunteer programs. Funded by DOJ, VIPS is managed and implemented by International Association of Chiefs of Police.

To Join Citizen Corps contact the Citizen Corps Coordinator
at (225) 925-7500

ATTACHMENT B

JURISDICTIONAL DELINEATION REPORT

JURISDICTIONAL DELINEATION REPORT

PREPARED FOR: Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, Louisiana 70532

PREPARED BY: UES
3298 Summit Boulevard, Suite 44
Pensacola, Florida 32503
Contact: Pat Imhof, Ecologist
pimhof@teamues.com
(850)232-7385

Ecological Services & Environmental Permitting

This report contains proprietary, business-confidential, and/or privileged material. The information transmitted by this document is intended only for the recipient and represents the work product of UES who owns the information and has provided it to the recipient under terms and conditions. The recipient is authorized by UES to transmit this information to others as necessary to accomplish their objectives. That transmission, however, does not obligate UES to interpret or otherwise consult with additional recipients of the substance of this report.

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EXHIBITS

TABLE

ATTACHMENTS

EXECUTIVE SUMMARY

UES investigated the ecological field conditions within an identified 55.3-acre review area associated with a proposed linear evacuation roadway project for the Sovereign Nation of the Coushatta Tribe of Louisiana, funded through a FHWA RAISE Grant. All existing Waters of the US (WOTUS) resources within a predetermined roadway corridor were identified and examined for federal regulatory jurisdiction. The review area is located just north of Elton, Louisiana within the Bayou Blue watershed in southern Allen Parish. The overall purpose of this investigation is in support of the design Team's goal of producing the engineering required to construct this much-needed evacuation roadway for the Tribe. Flooding of the area's existing low bridges and roadways during heavy rain events isolates the nearly 1,000 members of the Tribe for extended periods of time. This federally funded evacuation link between CC Bel Road and State Highway 26 will relieve numerous public safety issues and promote the wellbeing of all local residents. It is entirely located within Allen Parish.

The results of this jurisdictional delineation will supplement U.S. Army Corps of Engineers (CE) regulatory permitting efforts that will precede construction of the new evacuation roadway as outlined in the Coushatta Tribe of Louisiana 2020 Strategic Transportation Safety Plan Update (12/2020). The jurisdictional delineation work was performed by UES's Ecologists, Chris Bosso and Pat Imhof between May 22, and July 11, 2024. WOTUS and wetlands features were identified and delineated in the field based on the CE's three-parameter approach (1987 Manual) in which wetlands are defined by the presence of hydrophytic vegetation, hydric soils, and presence of wetlands hydrology indicators.

Based on our findings we identified nine (9) wetlands and three (3) drainage ditch systems. All of these features were field delineated and are graphically displayed on the report exhibits. Combined, the delineated features account for approximately 5.87 acres, of which, we have concluded that only 0.27 acres are federally regulated. Additionally, we identified approximately 10,657 lineal feet of roadside ditches and 320 lineal feet of drainage ditches. None of these drainage ditches were determined to be jurisdictional. Subsequent to the field delineation, each identified wetland and drainage feature was evaluated for federal jurisdiction pursuant to notably relative federal court case opinions (Rapanos v. United States, 547 U.S. 715, 742, 126 S. Ct. 2208, 2226 (2006), Sackett v. EPA, 598 U.S. 651, 669-70 (2023), and Lewis v. USA, No. 21-30163 (5th Cir. 2023)). These court cases have defined a drastically narrower regulatory reach than the CE has been exerting under the U.S. Clean Water Act (CWA).

FINDINGS

Site:	**55.3 acres**
Non-Jurisdictional WOTUS:	**5.60 acres**
CE Jurisdiction:	**0.27 acres (WOTUS)**
Ditches:	**10,977 lineal feet of waters (non-jurisdictional)**
Uplands:	**55.03 acres (non-jurisdictional)**

1.0 INTRODUCTION

This Waters of the US (WOTUS) Delineation Report (report) has been prepared for the Sovereign Nation of the Coushatta Tribe of Louisiana (CTLA) and their consulting engineer, Meyer, Meyer, Lacroix, and Hixson (MMLH) to provide ecological baseline data within a ca. 55-acre roadway corridor. The goal of this report is to support the preparatory design work necessary to address the impassability of the current roadway network for vehicular traffic into and out of the reservation during and after significant storm events. The isolation of the reservation endangers nearly 1,000 members of the Tribe, making this an essential and necessary public safety project.

Our data covers the type and extent of resources occurring under the regulatory jurisdiction of the U.S. Army Corps of Engineers (CE) within the Bayou Blue Watershed. It also identifies all non-jurisdictional wetland and water features. Information contained herein is based on numerous site investigations performed by Pat Imhof and Chris Bosso, between May 22, and July 11, 2024.

1.1 PROJECT LOCATION

The review area is regionally located in southeastern Allen Parish, Louisiana and partially within the CTLA reservation (Exhibits 1 and 2). It comprises a ca. 55.3-acre roadway corridor that extends from CC Bel Road and Powell Road to State Highway 26 just north of Elton, Louisiana (Exhibit 3). It comprises a linear roadway corridor and overlaps a segment of Brisco Road and its Right of Way. Other towns nearby are Kinder to the southwest, and Oberlin to the north. Major roadways are U.S. Highway 165, 6.5 miles to the west and Interstate 10, 19.15 miles to the south (*direct paths*). The center of the site is positioned at -92.6927 and 30.524 decimal degrees within Sections 17-24, Township 6 South, Range 3 West, Allen Parish, Louisiana. The road corridor extends approximately 9,650 feet east and approximately 3,700 feet west of Bayou Blue.

EXHIBIT 1: REGIONAL LOCATION
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

INSPECTION BOUNDARY

08/05/2024

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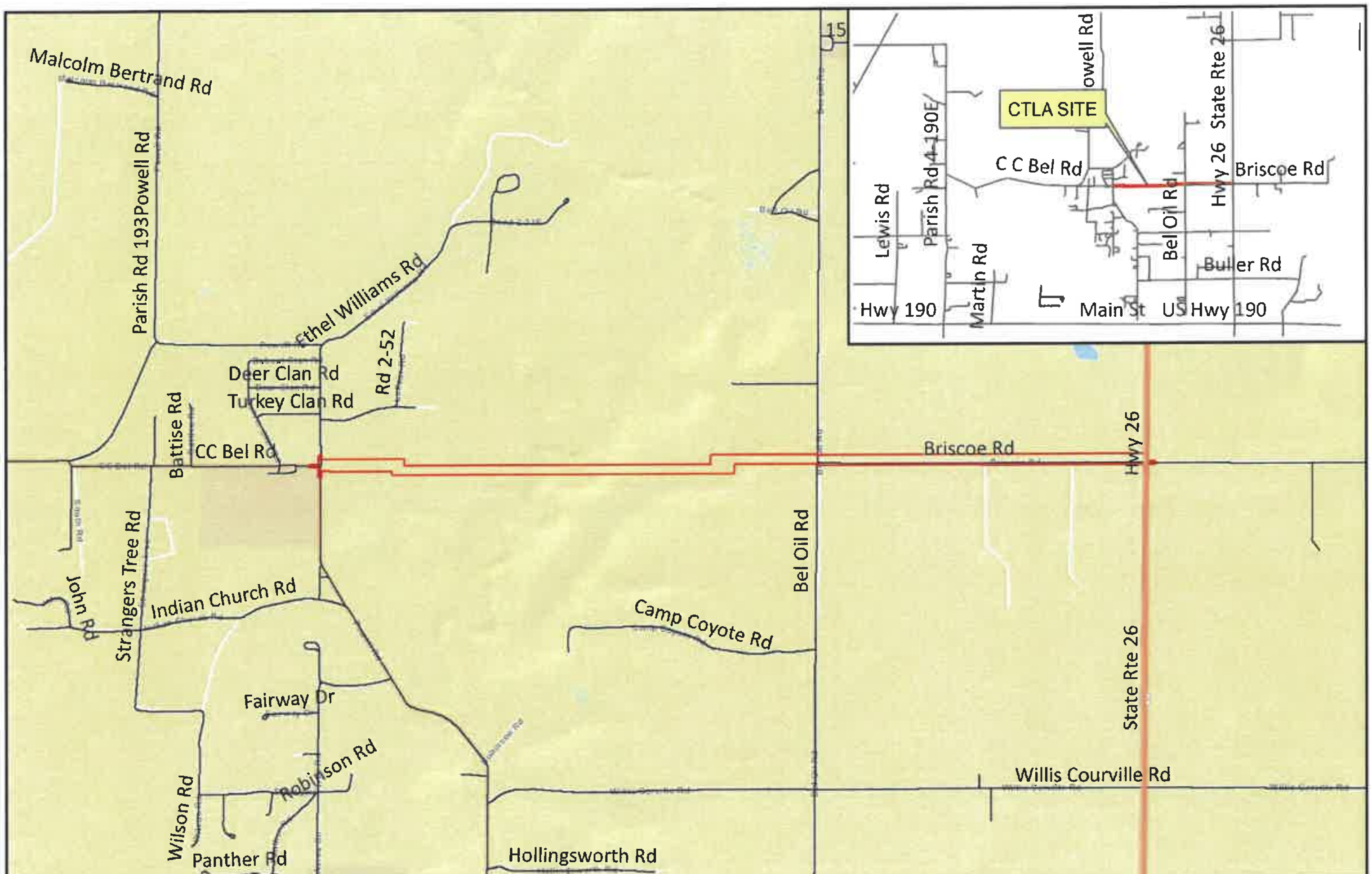

EXHIBIT 2: LOCAL LOCATION
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

PROJECT REVIEW AREA

08/05/2024

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1.2 EXISTING CONDITIONS

The review area is located at the northern extent of the Gulf Coast Prairies and Marshes ecoregion, just below the forested Coastal Uplands Ecoregion. Being transitional to both of these designations, the site's terrain has accommodated characteristics of both these ecoregions. The western two thirds of the review area appropriately fits within the Gulf Coast Prairies and Marshes ecoregion due to its flat terrace landform position. The remaining eastern third rises in elevation and best meets the forest Coastal Uplands Ecoregion (Exhibits 3 & 4). Anthropogenic activities predominate the entire landscape. Most notably, pine silviculture was evident throughout. Exhibits 5 and 6 identify several areas that have since been converted from grazing/row crop to pine silviculture. To a lesser extent, other land use conversions identified include agricultural farming, grazing, municipal facilities, roads, and utility and gas line servitudes. A narrow portion in the western section is used for active buffalo grazing. Maintenance mowing of road rights of way and grounds buildings provide low cut turf for parking and outdoor activities.

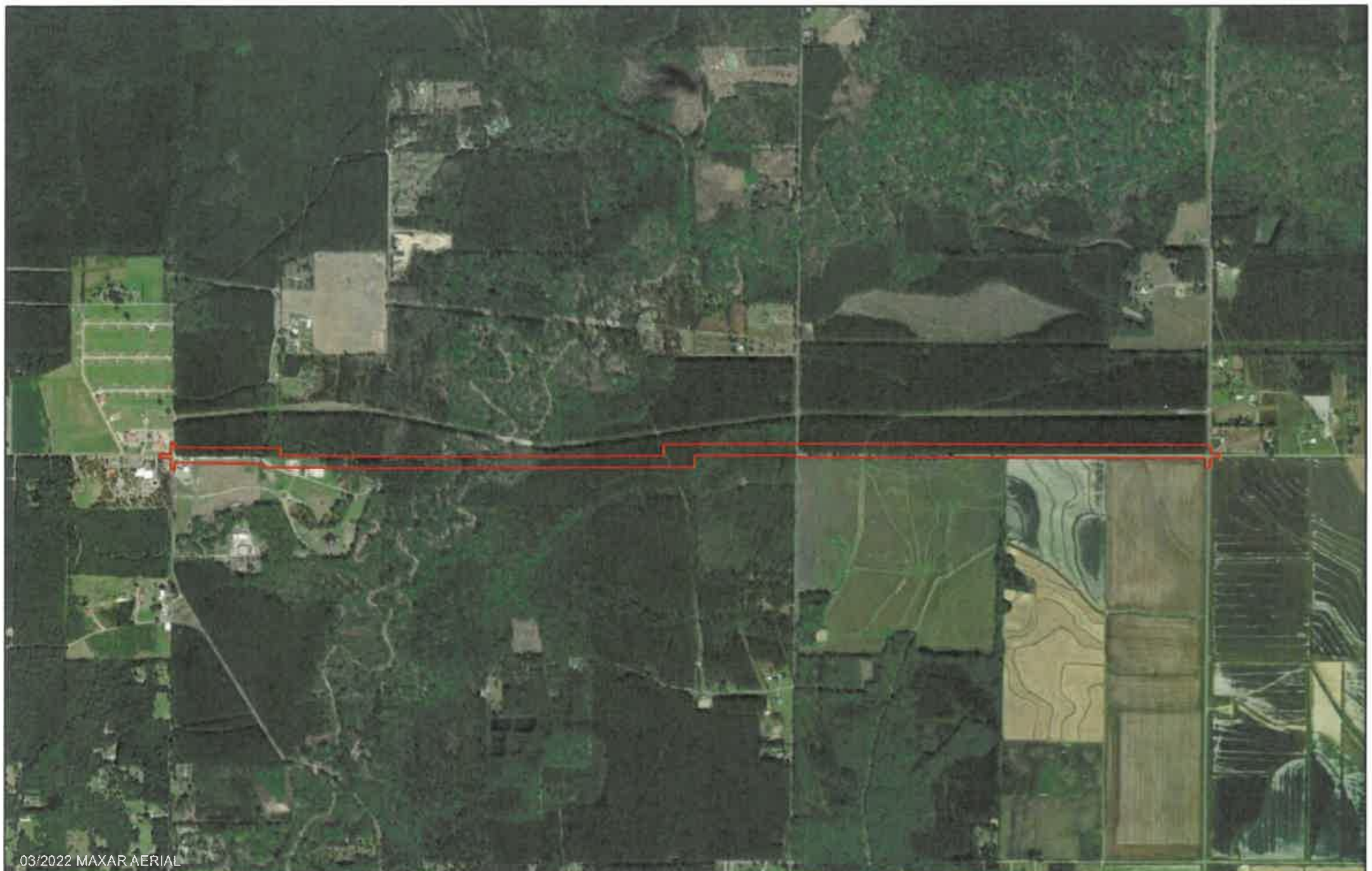

EXHIBIT 3: PROJECT LIMITS
SITE INFORMATION
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

PROJECT REVIEW AREA

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Pockets of remnant mixed upland and wetland hardwoods were discovered within the larger stands of pines, but the landscape is predominated by canopies of densely planted pine stands. Furrowing between the pine beds was common and mostly appeared to coincide with contour elevation lines for promoting erosion control, timber growth yield and proper drainage. Some areas where the beds are cross aligned with the natural grade, excess stormwater is trapped causing prolonged ponding in otherwise upland conditions. Wetland B (Exhibit 14) is an example of this. Stunted pines were evident in areas where this issue persisted. These areas were also prone to invasive species like primrose willow, Carolina willow, and Chinese tallow tree. The pine stands are principally grown from beds less than 12 inch high; however, taller beds were common in the concave landscape positions where soils tend to be saturated or ponded during the wet season.

The review area lies entirely within the Bayou Blue Watershed, Hydrologic Unit Code (HUC 12) 080802010402. Bayou Blue is a relatively permanent water (RPW) that discharges into Bayou Nezpique, a Traditionally Navigable Waterway (TNW) and then to Mermentau River (TNW), that empties into the Gulf of Mexico (TNW). The Mermentau River is the nearest TNW to which the review area is connected. It is approximately 57.0 river miles downstream to the confluence with Mermentau River which is 2.1 river miles upstream of the U.S. Highway 90 bridge in Mermentau, Louisiana.

Bayou Blue crosses the review area from south to north in a southwest to northeast direction. Its channel bed represents the lowest elevation within the review area at 28.7 feet above sea level. This measurement was recorded by the MMLH survey crew through the performance of a topographic survey and mapping task. According to this topographic survey, the highest elevation was recorded at 56.8 feet above sea level. This position is marked at the extreme eastern edge of the site near the Brisco Road and Highway 26 intersection. Unverified USGS and LiDAR elevation data are reflected in Exhibits 7 and 8. Drainage ditches and swales were observed along the roadways, through the Reservation culverted structures, and within the pine plantation stands to accommodate stormwater drainage.

EXHIBIT 5: PROJECT LIMITS
2004 INFRARED AERIAL IMAGERY
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

INSPECTION BOUNDARY

08/05/2024

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EXHIBIT 6: PROJECT LIMITS
1998 INFRARED AERIAL IMAGERY
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

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INSPECTION BOUNDARY

08/05/2024

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According to the Soil Survey of Allen Parish, there are four soils underlying the review area. All of these are comprised of silt loam on nearly level to slightly sloping landforms. Native vegetation identified formed complexes of mixed hardwood uplands and wetlands. Elevated positions were dominated loblolly pine, but inclusions of native upland vegetation scattered throughout encompassed, sweetgum, water oak, red oak, southern magnolia, American hophornbeam, post oak, Chinese privet, blackberry cane, beauty berry, and bracken fern. Wetlands and lower landform positions were comprised of red maple, American elm, hackberry, willow oak, swamp chestnut oak, bald cypress, and popcorn trees. Subtending the canopy layer were red maple, muscle wood, arrow-wood, wood oats, lizard tail, and Virginia dayflower.

Our initial site visit occurred directly at the end of prolonged rainy conditions. As such, Bayou Blue was flooded beyond its banks and there was water present in all of the swales, ditches, and drains. Pine tree furrows were saturated throughout the entire site. The water receded within several days through soil infiltration, evapotranspiration, and subsequent hot and dry weather conditions.

1.3 PROJECT DESCRIPTION

CTLA is proposing a new roadway project that will create an evacuation route between their Reservation and Highway 26, a recognized hurricane evacuation route. The new road alignment will connect CC Bel Road to Highway 26 by upgrading CC Bel Road and constructing a new, nearly straight west to east segment of roadway through existing rights of way, silvicultural pine stands, and forested land. Like CC Bel Road, Brisco Road is an unpaved, semi hardened surface that will be upgraded. Additionally, the new road will accommodate drainage and pedestrian safety feature initiatives.

1.4 REGULATORY AUTHORITY

The Federal Water Pollution Control Act of 1948 as amended in 1972 is commonly referred to as The Clean Water Act (CWA) and represents the fundamental protection of "Waters of the United States" (WOTUS) including wetlands and other waters. Regulatory authority under the CWA was granted by Congress to the Environmental Protection Agency (EPA) which sets pollution standards and governs regulatory programs. Practical administration of the permit program for authorizing discharges of "dredged material" into WOTUS and other (CWA Section 404) wetlands is undertaken by the CE.

Although recent court cases have limited the jurisdictional reach of the CE, UES elected to document all wetlands according to the 1987 CE wetlands delineation manual (pre-Sackett and Lewis court rulings). We are in no way implying CE jurisdiction. The delineation of all wetlands and water features is only to satisfy the formal Approved Jurisdictional Determination (AJD) request and our basis for determining the applicability of federal jurisdiction.

The Corps of Engineers Wetland Delineation Manual, 1987, defines wetlands as having essentially three dominant characteristics: a dominance of hydrophytic vegetation, hydric soils, and wetland hydrology. This is commonly referred to as the "three parameter method" and wetlands, under normal conditions must have all three components to be classified as a "wetland." This approach was employed during our field investigations.

Drainage features that were considered non-wetland waters were delineated according to the presence of an ordinary high-water mark along the channel banks or by the presence of a water that had a Continuous Surface Connection (CSC) to Relatively Permanent Waters (RPW) or Traditionally Navigable Waters (TNW).

The New Orleans District office will be the responsible regulatory agency reviewing this delineation report, making the jurisdictional determination, and conducting the subsequent permitting review for this project. Activities that result in fill impacts to jurisdictional wetlands/waters of the U.S. will require permitting review by the CE.

2.0 METHODS

The analysis contained in this report uses the results of field surveys conducted by UES ecologists/regulatory specialists Pat Imhof and Chris Bosso between May 22, and July 11, 2024. Literature and maps were reviewed for the preparation of all field work and are outlined in Section 2.1. The field methodology to determine non-wetlands/waters from jurisdictional wetlands/waters is summarized in Section 2.2. Otherwise, the U.S. Army Corps of Engineers' 1987 Wetland Delineation Manual was used to delineate the waterward extents of all aquatic resources.

2.1 LITERATURE AND MAPPING DATA REVIEW

Prior to conducting the delineation field investigations, UES reviewed all public available raster and cadastral data. This included but was not limited to true color, infrared, black and white aerial raster images for the years between 1950 and 2023. Digital elevation modeling data and 2-Foot LiDAR contour data were used prior to site topographic survey efforts. Additionally, contemporary, and historic 7.5' series USGS topographic maps were studied. Soil survey data from the Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA NRCS 2024), the National Hydric Soils List (USDA NRCS 2012), and the National Wetlands Inventory's (NWI) Wetland Mapper (USFWS 2023) were utilized.

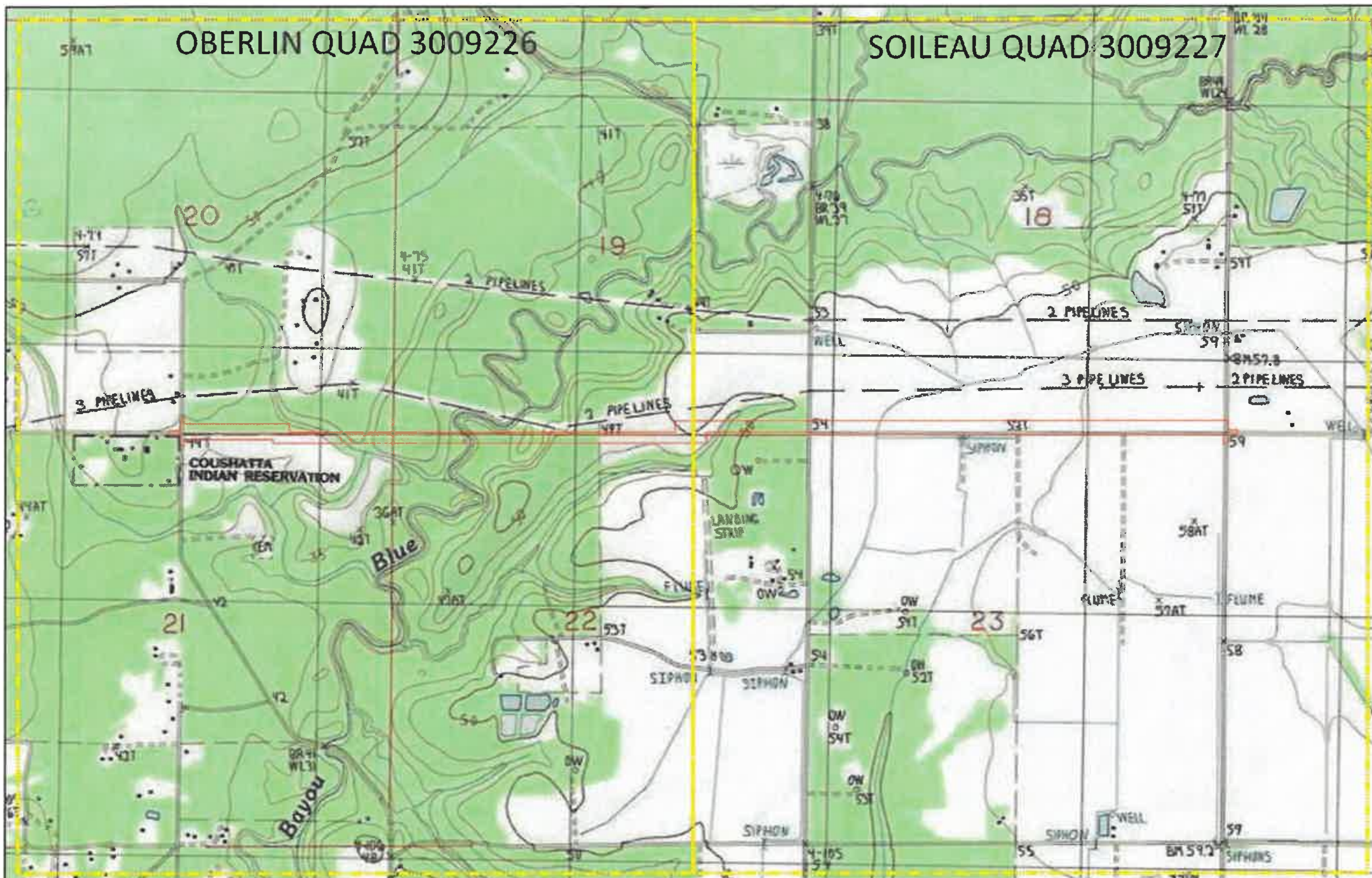

EXHIBIT 7: PROJECT LIMITS
USGS TOPOGRAPHIC MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

INSPECTION BOUNDARY

08/05/2024

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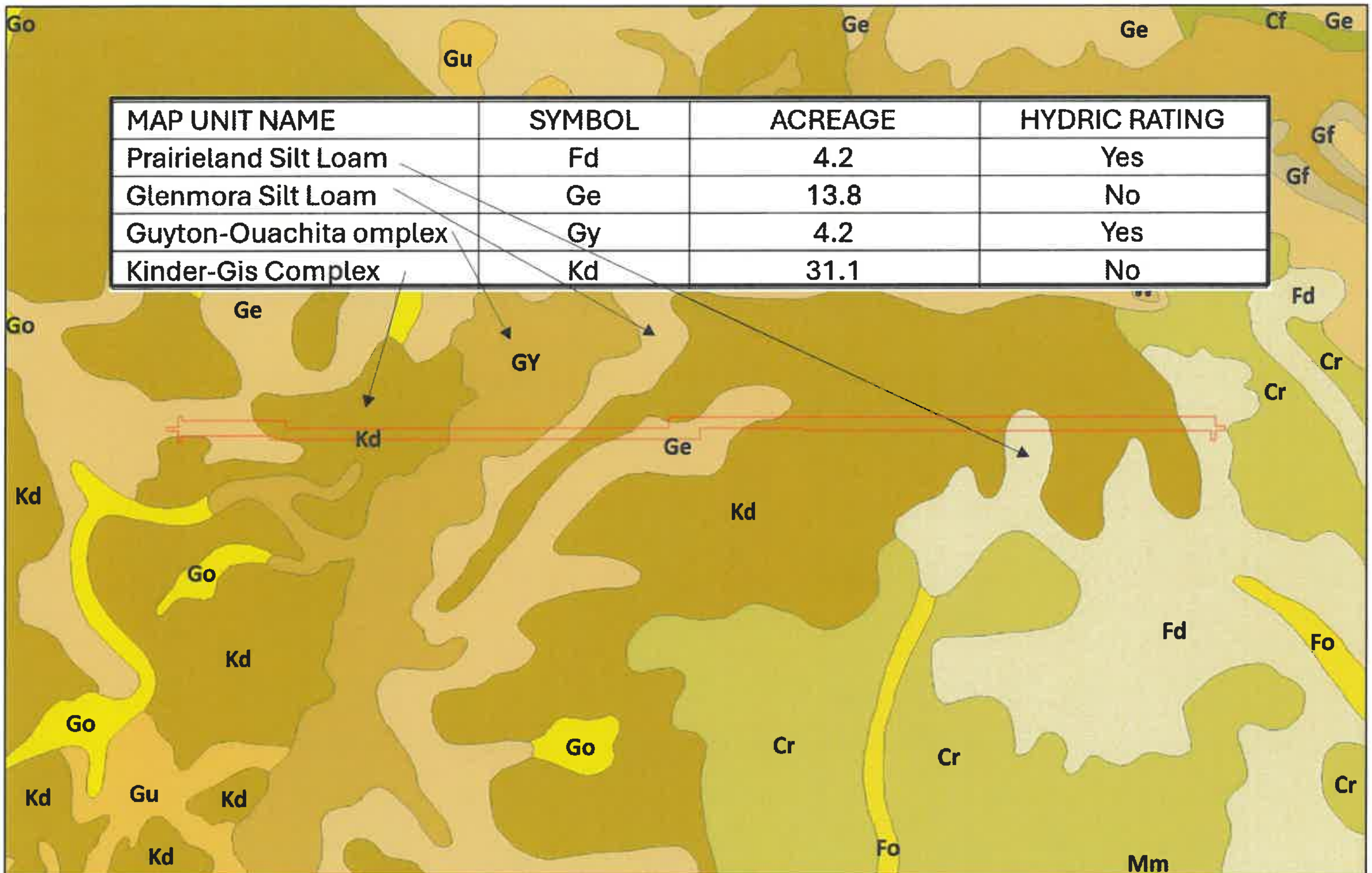

MAP UNIT NAME	SYMBOL	ACREAGE	HYDRIC RATING
Prairieland Silt Loam	Fd	4.2	Yes
Glenmora Silt Loam	Ge	13.8	No
Guyton-Ouachita omplex	Gy	4.2	Yes
Kinder-Gis Complex	Kd	31.1	No

EXHIBIT 8: PROJECT LIMITS
USDA NRCS SOIL SURVEY MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

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2.2 FIELD DELINEATION

Delineation of the onsite resources was conducted through numerous field survey transects. A georeferenced shapefile of the review area was uploaded to a handheld, sub-meter accurate GPS device. This allowed for careful examination of the terrestrial landscape while staying within the project scope boundaries. Data points were collected using this technology and transferred to UES's GIS server for interpolation. The entire review area was first circumnavigated to identify wetlands and waters that crossed into the site limits. Transects crisscrossing the entire site were then walked to record the different vegetative structures and ecological components associated with wetlands and to detail the waters on the site.

This field investigation used the Corps of Engineers Wetland Delineation Manual, 1987, which defines wetlands as having essentially three dominant characteristics: a dominance of hydrophytic vegetation, hydric soils, and wetland hydrology. Using this method, wetlands, under normal conditions must have all three components to be classified as a "wetland."

Drainage features that were considered non-wetland waters were delineated according to the presence of an ordinary high-water mark along the channel banks or by the presence of a water that had a Continuous Surface Connection (CSC) to Relatively Permanent Waters (RPW) or Traditionally Navigable Waters (TNW).

2.2.1 Vegetation

Hydrophytic vegetation (or hydrophytes) is defined as any macrophytic plant that "grows in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content; plants typically found in wet habitats" (Environmental Laboratory, 1987). Specifically, these plant species have specialized morphological, physiological, or other adaptations for surviving in permanently saturated to periodically saturated soils where oxygen levels are very low, or the soils are anaerobic.

- **Obligate WETLAND (OBL):** These wetland-dependent plants (herbaceous or woody) require standing water or seasonally saturated soils (or more consecutive days) near the surface to ensure adequate growth, development, and reproduction and to maintain healthy populations. These plants consist of four types:

- **Submerged:** plants that conduct virtually all of their growth and reproductive activity underwater.

- **Floating:** plants that grow with leaves and most often their vegetative and reproductive organs floating on the water surface.

- **Floating-leaved**: plants that are rooted in sediment but also have leaves that float on the water surface.

- **Emergent**: herbaceous and woody plants that grow with their bases submerged and rooted in inundated sediment or seasonally saturated soil and their upper portions, including most of the vegetative and reproductive organs, growing above the water level.

- **Facultative Wetlands (FACW):** These plants depend on and predominantly occur with hydric soils, standing water, or seasonally high-water tables in wet habitats for ensuring optimal growth, development, and reproduction and for maintaining healthy populations. These plants often grow in geomorphic locations where water saturates soils or floods the soil surface at least seasonally.

- **Facultative (FAC):** These plants can occur in wetlands or uplands.

- **Facultative Upland (FACU):** These plants are not wetland dependent. They can grow on hydric and seasonally saturated soils, but they develop optimal growth and healthy populations on predominantly drier or more mesic sites. Unlike FAC plants, these plants are non-wetlands plants by habitat preference.

- **Upland (UPL):** These plants occupy mesic to xeric habitats. They almost never occur in standing water or saturated soils. Typical growth forms include herbaceous, shrubs, woody vines, and trees.

2.2.2 Soils

- The National Technical Committee for Hydric Soils (NTCHS) defines a hydric soil as a soil that has formed under conditions of saturation, flooding, or ponding that occurs long enough during the growing season to develop anaerobic conditions (absence of oxygen) at or near the soil surface and that favor the establishment of hydrophytic vegetation (USDA NRCS 2016). It should be noted that hydric soils created under artificial conditions of flooding and inundation sufficient for the establishment of hydrophytic vegetation would also meet these hydric soils indicators. The soil conditions are verified by digging test pits along each transect to a depth of at least 20 inches (except where a restrictive layer occurs in areas containing hard pan, cobble, or solid rock).

- The Munsell Soil Color Chart aids in designating soils by color labels based on gradations of three simple variables: hue, value, and chroma.
- Any indicators of hydric soils, such as the following, are also recorded on the Data Form: redoximorphic features (i.e., areas where iron is reduced under anaerobic conditions and oxidized following a return to aerobic conditions); buried organic matter; organic streaking; reduced soil conditions; gleyed (i.e., soils having a characteristic bluish-gray or greenish-gray color) or low-chroma soils; or sulfuric odor. If hydric soils are found, progressive pits are dug along the transect moving laterally away from the active channel area until hydric soil features are no longer present in the top 20 inches of the soil.

2.2.3 Hydrology

- Wetland hydrology indicators provide evidence that a site has a continuing hydrologic regime. wetlands hydrology is represented by either (1) all of the hydrological elements or characteristics of areas permanently or periodically inundated or (2) areas containing soils that are saturated for a sufficient duration of time to create hydric soils suitable for the establishment of plant species that are typically adapted to anaerobic soil conditions. The presence of wetland hydrology is evaluated at each intersection by recording the extent of observed surface flows; the depth of inundation; the depth to saturated soils; and the depth to free water in soil test pits.

3.0 LITERATURE AND RESOURCE REVIEW

3.1 MULTIPLE YEAR COLOR AERIAL PHOTOGRAPHY

UES reviewed all available color aerial photography prior to conducting the field delineation to identify the extent of any drainages/waterbodies and riparian vegetation occurring in the survey area. The wider drainage patterns and contrasting vegetative signatures are clearly visible in Exhibit 4. Aerial imagery from Bing, Google Earth and other public providers were studied.

Surface water is visible on aerial images that are absent obscure features like clouds and thick vegetation during the wet season or following rain events.

3.2 UNITED STATES GEOLOGICAL SURVEY (USGS)

USGS quadrangle maps express elevation data, geologic formations, anthropogenic features, and their characteristics; they describe the physical settings of an area through topographic contour lines and other major surface features. These features include lakes, streams, rivers, buildings, roadways, landmarks, and other features that may fall under the jurisdiction of one or more regulatory agencies. In addition, the USGS maps provide topographic information that is useful in determining approximate elevations, latitude and longitude, and Universal Transverse Mercator (UTM) Grid coordinates for a survey area. The reach of Bayou Blue that crosses the site is located on USGS' Oberlin and Soileau 7.5-minute quadrangle maps. According to this data, the bayou cuts across the review area at approximately 25-feet above mean sea level (msl) (Exhibit 7).

3.3 U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE (NRCS)

NRCS' primary mission is to provide conservation support for the nation's farmers through their early work mapping the country's soils. A key component to understanding wetland soil v. upland soil is the soil's relationship with water. The presence of hydric soils is one of the chief indicators of jurisdictional wetlands. UES reviewed the USDA's soil data for the survey area (Exhibit 9).

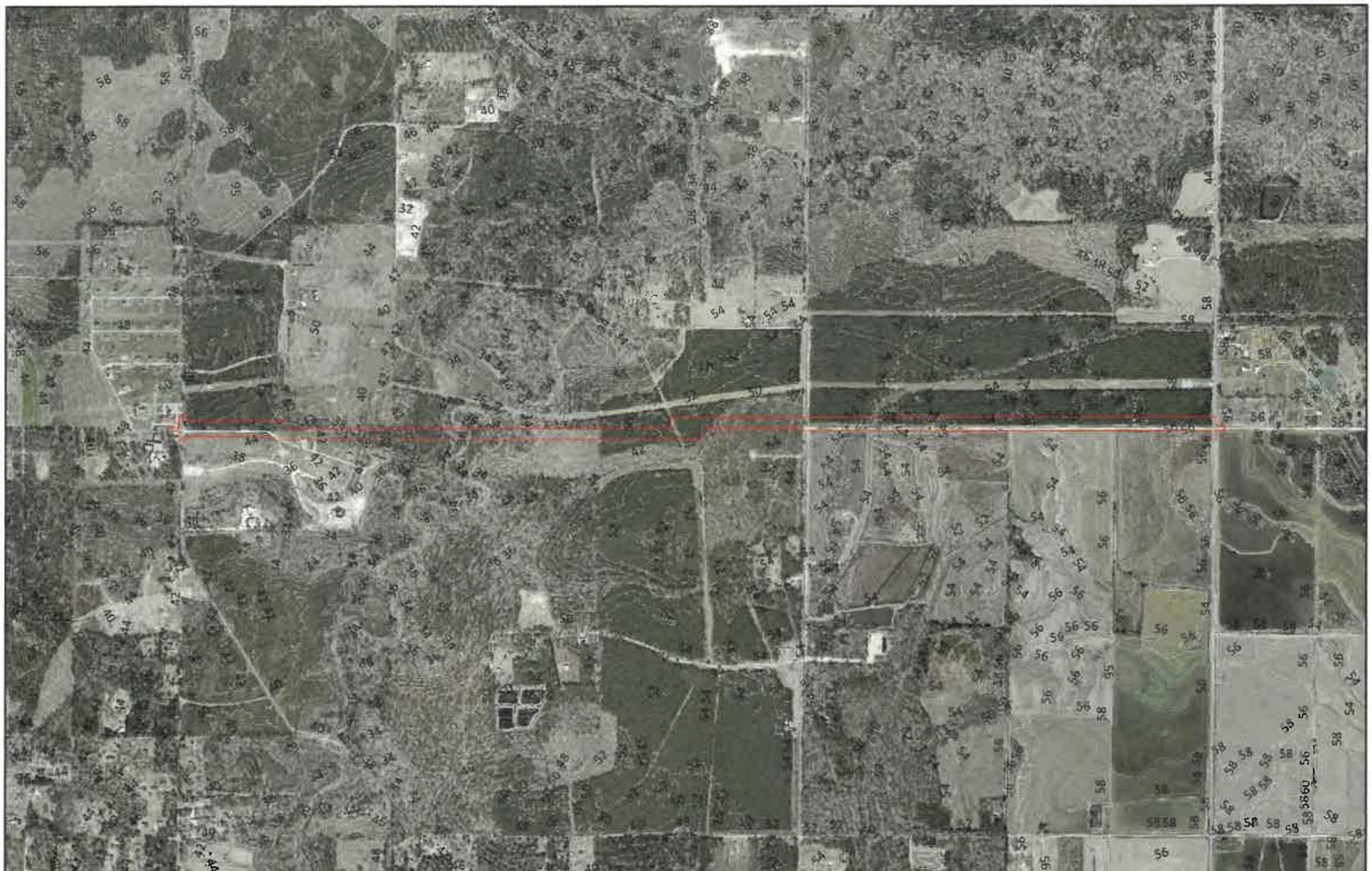

EXHIBIT 9: PROJECT LIMITS
2FT CONTOUR LIDAR OVERLAY
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

INSPECTION BOUNDARY

2-FOOT CONTOURS

08/05/2024

PJI

THIS IS NOT A SURVEY

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Feet

UES ™

For the purposes of this jurisdictional determination, we followed water from the Gulf of Mexico, through Four Mile Cutoff, to the Intracoastal Waterway, into Lake Arthur to the mouth of Mermentau River. This River and its previously mentioned downstream waters are defined as "Traditionally Navigable Waters" according to the CE Mississippi Valley Division (MVD).

The Navigable Waters (Rivers and Harbors Act Section 10) of the United States (Traditional) are "administratively defined to mean waters that have been used in the past, are now used, or are susceptible to use as a means to transport interstate or foreign commerce up to the head of navigation. A determination of the navigability, once made, applies laterally over the entire surface of the water body to the ordinary high-water mark (OHW). The OHW mark for inland fresh waters is the line on the shores established by physical characteristics such as a clear, natural line impressed on the bank; shelving, changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider characteristics of the surrounding areas. Section 10 or Section 404 permits are required for construction activities in these waters.

3.4 U.S. FISH AND WILDLIFE SERVICE, NATIONAL WETLAND INVENTORY (NWI)

National Wetlands Inventory mapping data was initially gathered by the United States Fish and Wildlife Service about 50 years ago to inventory the nation's wetlands and to catalog aquatic and terrestrial resources. This information was compiled to provide conservationists and others with ecological data in support of the freshly promulgated Clean Water Act. Today, this data is digitally available, through the FWS's Wetland Mapper application. It allows for easy access to the most update wetland resources available from the wetlands Spatial Data Layer of the National Spatial Data Infrastructure (USFWS 2017). This resource provides the classification of known wetlands following the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979, FGDC 2013, Exhibit 10.1)). Aquatic resources that are identified by the NWI are shown in Exhibit 10. NWI data is overlain on corresponding 7.5 minute, U.S.G.S. Topographic Quadrangle Maps. Therefore, the drawing scale is small (1:24,000) relative to the size of the CTLA project. This information is generally used as a guide for preliminary desktop review work, however, as with this site, it is broadly reliable information.

The NWI lists Bayou Blue and its small tributaries as intermittent flowing streams that are either temporarily or seasonally flooded. That means, they contain flowing water for only part of the year for only brief periods during the growing season. Bayou Blue, which receives all of the water from the review area and surrounding vicinity, is described by the NWI as seasonally flooded so that surface water is periodically present early in the growing season but is absent for the remainder of the year.

This classification system is arranged in a hierarchy of (1) Systems that share the influence of similar hydrologic, geomorphologic, chemical, or biological factors (i.e., Marine Estuarine, Riverine, Lacustrine, and Palustrine); (2) Subsystems (i.e., Subtidal and Intertidal; Tidal, Lower Perennial, Upper Perennial, and Intermittent; or Littoral and Limnetic); (3) Classes, which are based on substrate material and flooding regime or on vegetative life forms; (4) Subclasses; and (5) Dominance Types, which are named for the dominant plant or wildlife forms. In addition, there are modifying terms applied to Classes or Subclasses.

R: System RIVERINE. The Riverine System includes all wetlands and deepwater habitats contained in natural or artificial channels periodically or continuously containing flowing water or which forms a connecting link between the two bodies of standing water. Upland islands or Palustrine wetlands may occur in the channel, but they are not part of the Riverine System.

- ***4: Subsystem INTERMITTENT.*** This Subsystem includes channels that contain flowing water only part of the year but may contain isolated pools when the flow stops.
  - ***SB: Class STREAMBED.*** This Class includes all wetlands contained within the Intermittent Subsystem of the Riverine System and all channels of the Estuarine System or of the Tidal Subsystem of the Riverine System that are completely dewatered at low tide.
    - ***A: Water Regime Modifier TEMPORARY FLOODED***: Surface water is present for brief periods (from a few days to a few weeks) during the growing season, but the water table usually lies well below the ground surface for most of the season.
    - ***C: Water Regime Modifier SEASONALLY FLOODED.*** This modifier refers to areas where surface water is present for extended periods, especially early in the growing season but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface, in which water covers the land surface throughout the year in all years.

P: System Palustrine. Includes nontidal wetlands that are dominated by trees, shrubs, and other vegetation. It also includes areas within tidal systems that have ocean-derived salinities of less than 0.05%.

- ***FO: Class Forested*** is defined as having a minimum of 30% forest cover and at least 5% cover overall.
  - ***1: Broad-leaved Deciduous*** is a subclass reflecting a forest dominated woody vegetation such as buttonbush, alders, willows, dogwoods, and saplings.
  - ***A: Water Regime Modifier TEMPORARY FLOODED***: Surface water is present for brief periods (from a few days to a few weeks) during the growing season, but the water table usually lies well below the ground surface for most of the season.
  - ***C: Water Regime Modifier SEASONALLY FLOODED.*** This modifier refers to areas where surface water is present for extended periods, especially early in the growing season but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface, in which water covers the land surface throughout the year in all years.

Aquatic resources that are identified by the NWI are shown in Exhibit 10. NWI data is overlain on corresponding 7.5 minute, U.S.G.S. Topographic Quadrangle Maps. Therefore, the drawing scale is small (1:24,000) relative to the size of the CTLA project. This information is generally used as a guide for preliminary desktop review work, however, as with this site, it is broadly reliable information.

The NWI lists Bayou Blue and its small tributaries as intermittent flowing streams that are either temporarily or seasonally flooded. That means, they contain flowing water for only part of the year for only brief periods during the growing season. Bayou Blue, which receives all of the water from the review area and surrounding vicinity, is described by the NWI as seasonally flooded so that surface water is periodically present early in the growing season but is absent for the remainder of the year.

The following is a list of the Classification of Wetlands and Deepwater Habitats (Cowardin) classifications as mapped in Exhibit 10 relative to the CTLA site:

PFO1A-Palustrine Forested, Broad-Leaved Deciduous, Temporarily Flooded: This classification comprises the delineated aquatic resources in Exhibit 12. Wetland lines "H, J, K and L" bind the landward limits of these features. Both complexes are wet season flowing channels, are steeply incised, and lack vegetation within the banks. Erosion is high and transported debris litters the channel bottoms. The larger of the two channels is naturally formed and jogs across the site in two locations. The smaller channel to the east is likely excavated for stormwater drainage. There are multiple culverts and wooden boardwalks that cross under and over both of these features. Sharp, narrow transitions bind the channel banks with the adjacent uplands. After rain events, water in both of these channels discharges into Bayou Blue. They are only temporarily flooded.

PFO1C-Palustrine Forested, Broad-Leaved Deciduous, Seasonally Flooded: Bayou Blue forms the limits of this classification identified as Wetland Line M. The NWI closely resembles our delineation. The wetland complex is dominated by palustrine forested wetlands that are seasonally flooded outside the banks of Bayou Blue (Exhibit 13). This classification comprises the bayou channel and the riparian deciduous hardwoods, upslope to a narrow ecotonal boundary with the elevated uplands and planted pine stand.

R4SBC-Riverine, Intermittent, Streambed, Seasonally Flooded: Delineated Wetlands B, C, D and Ditch E are identified as this classification. The NWI appears to classify an excavated drainage ditch as the intermittent streambed which is just to the west of this feature. The ditch was likely excavated after the initial NWI mapping was conducted. Otherwise, it would have been more accurately labeled as an anthropogenic feature (R5UBFx). Both channels are in close proximity to one another with channels that are devoid of vegetation and sharp incised banks. The sides and bottoms are composed of mineral soils with flat bottoms. Exhibit 14 illustrates these two features along with headwater wetlands of Bayou Blue.

R5UBFx-Riverine, Unknown Perennial, Semi-Permanently Flooded, Seasonally Saturated, Unconsolidated Bottom, Excavated: This classification represents a long linear ditch that provides surface water drainage for the uplands at the eastern end of the review area along with roadside swales and ditches and farm crop fields. These are anthropogenic features that are maintained for effective flow characteristics during and after rain events.

4.0 WATERS OF THE U.S. DELINEATION

The Supreme Court of the US (SCOTUS) ruled in Sackett v. EPA, referring to its prior 2006 decision in *Rapanos vs. United States*, that "the *Rapanos* plurality was correct: the CWA's use of 'waters' encompasses only those relatively permanent, standing or continuously flowing bodies of water forming geographical features that are described in ordinary parlance as streams, oceans, rivers, and lakes." As a result, the Court found that the reach of the Clean Water Act "extends to only those wetlands that are as a practical matter indistinguishable from waters of the United States."

Justice Samuel Alito authored the majority opinion that "the CWA extends to only those wetlands with a continuous surface connection to bodies that are "waters of the United States" in their own right, so that they are 'indistinguishable' from those waters. This means that the wetland must have "a continuous surface connection" to an adjacent body of water that itself is "a relatively permanent body of water connected to traditional interstate navigable waters." The continuous surface connection required for federal jurisdiction to exist according to the United States Court of Appeals for the Fifth Circuit was recently further clarified in Lewis v. US Corps of Engineers, over jurisdictional wetlands in Satsuma, Louisiana. The court ruled that jurisdictional wetlands "have 'a continuous surface connection to bodies that are "waters of the United States" in their own right, so that there is no clear demarcation between "waters" and wetlands'" 143 S.Ct. 1322, 1340 (2023) "wetlands be such that it is "difficult to determine where the water ends and the wetland begins." These two rulings are exceedingly clear, the CWA covers only those waters that have a continuous connection to traditionally navigable waters.

By this clear understanding of the federal regulatory limits of authority over wetlands and waters, we conclude that Bayou Blue is likely covered under the Clean Water Act as a wetland. Therefore, all other tributaries and wetlands that are upstream of the delineated Bayou Blue channel are non-jurisdictional features since they do not have a continuous surface connection and are clearly distinguishable in their own right from Waters of the U.S.

Waters of the U.S. were determined through direct in-situ observation in accordance with published SCOTUS and 5th Circuit Court of Appeals rulings. Each individual feature within the review area and its jurisdictional status as a WOTUS and/or a navigable water of the U.S. follows.

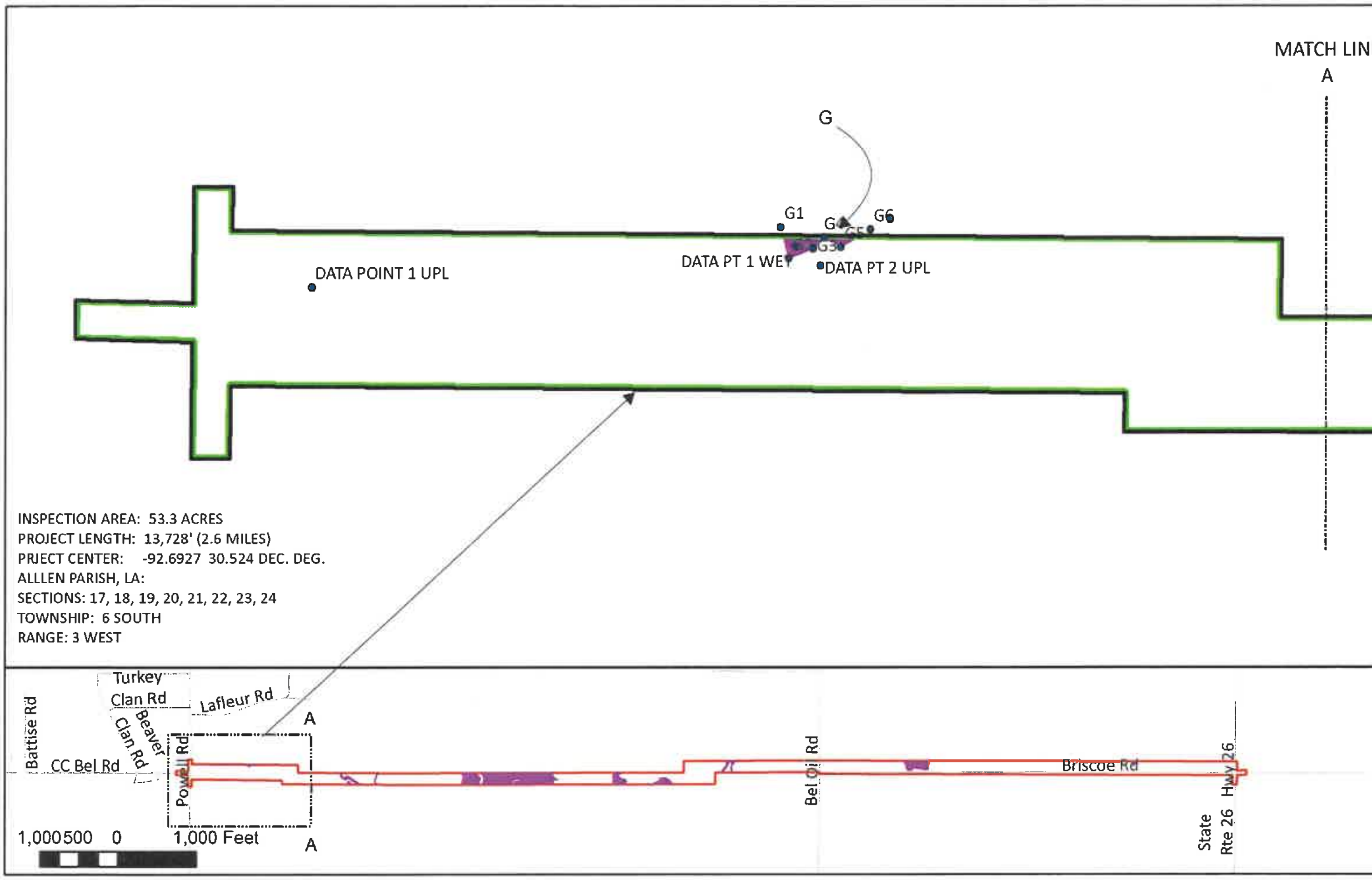
TABLE 1 SUMMARY OF JURISDICTIONAL WATERS

Feature Designation	Delineation	Applicable Regulatory Section
Wetland G	Non-jurisdictional	Section 404
Surface Water H	Non-jurisdictional	Section 404
Surface Water J,K,L	Non-jurisdictional	Section 404
Wetland M	Non-jurisdictional	Section 404
Bayou Blue	Jurisdictional	Section 404
Wetland B	Non-jurisdictional	Section 404
Wetland C	Non-jurisdictional	Section 404
Wetland D	Non-jurisdictional	Section 404
Ditch E	Non-jurisdictional	Section 404
Ditch E1	Non-jurisdictional	Section 404
Wetland BB	Non-jurisdictional	Section 404
Wetland A	Non-jurisdictional	Section 404
Roadside Ditches /Swales Brisco Road & Bel Oil Road	Non-jurisdictional	Section 404

Details of each feature evaluated follow below:

Wetland G (Exhibit 11): Wetland G contains 0.38 acres of pine/mixed hardwoods located along the northern edge of the inspection boundary in the western portion of the alignment. It is dominated by planted loblolly pines (Pinus taeda), with scattered sweetgum (Liquidambar styraciflua) and red maple (Acer rubrum). These deciduous trees are underlain by southern arrowwood (Viburnum dentatum) in a sparse subcanopy, and clumps of groundcover dominated by long leaf wood oats (Chasmanthium sessiliflorum) and greenbrier (Smilax rotundifolia). It encroaches from the north and occupies a slightly concave closed depression on the landscape. Flow only occurs across the surface in sheets following heavy rain events. This flow is mostly to the north towards an ephemeral stream. Wetland G is obscured on the aerials by planted pines, but it is completely avoided by the proposed road alignment. No impacts are proposed within Wetland G.

The wetland has an elevation less than 42.6 feet. This is the minimum elevation of the surrounding uplands. The nearest stream channel is a first order ephemeral tributary of Bayou Blue. There is no channel or surface feature connecting Wetland G that would carry continuous flow to this tributary which is approximately 500' away (straight line distance). The ephemeral tributary is not mapped on the USGS quadrangle map and does not receive continuous surface flow from Wetland G. It is not adjacent to a RPW and therefore is determined not to be a water of the U.S.



INSPECTION AREA: 53.3 ACRES
PROJECT LENGTH: 13,728' (2.6 MILES)
PRJECT CENTER: -92.6927 30.524 DEC. DEG.
ALLEN PARISH, LA:
SECTIONS: 17, 18, 19, 20, 21, 22, 23, 24
TOWNSHIP: 6 SOUTH
RANGE: 3 WEST

EXHIBIT 11: AREA G
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- NON-JURISDICTIONAL
- WETLAND - COMPLEX

08/05/2024

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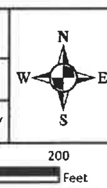

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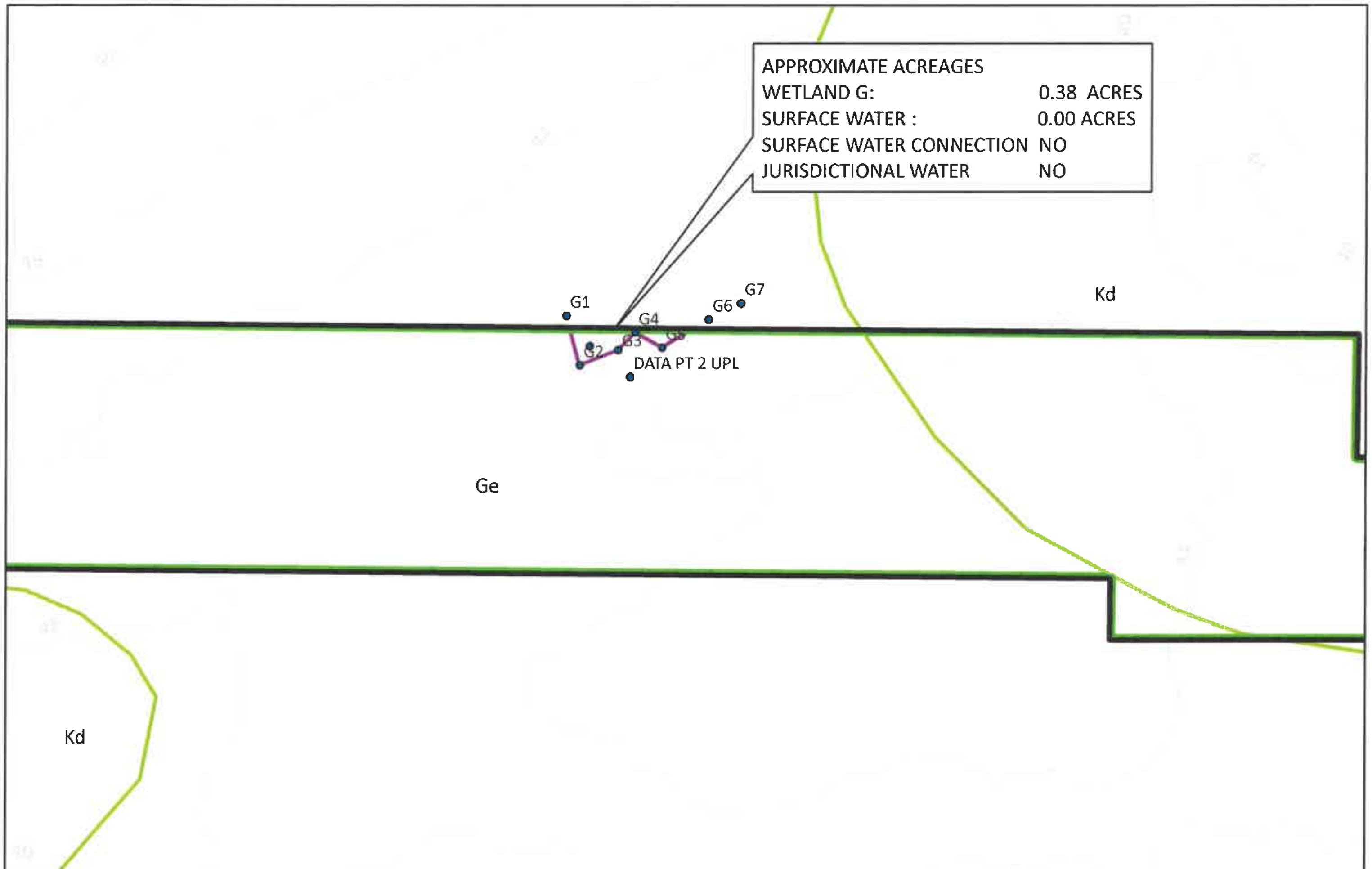

EXHIBIT 11.1 AREA "G"
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- NON-JURISDICTIONAL
- WETLAND - COMPLEX

08/05/2024

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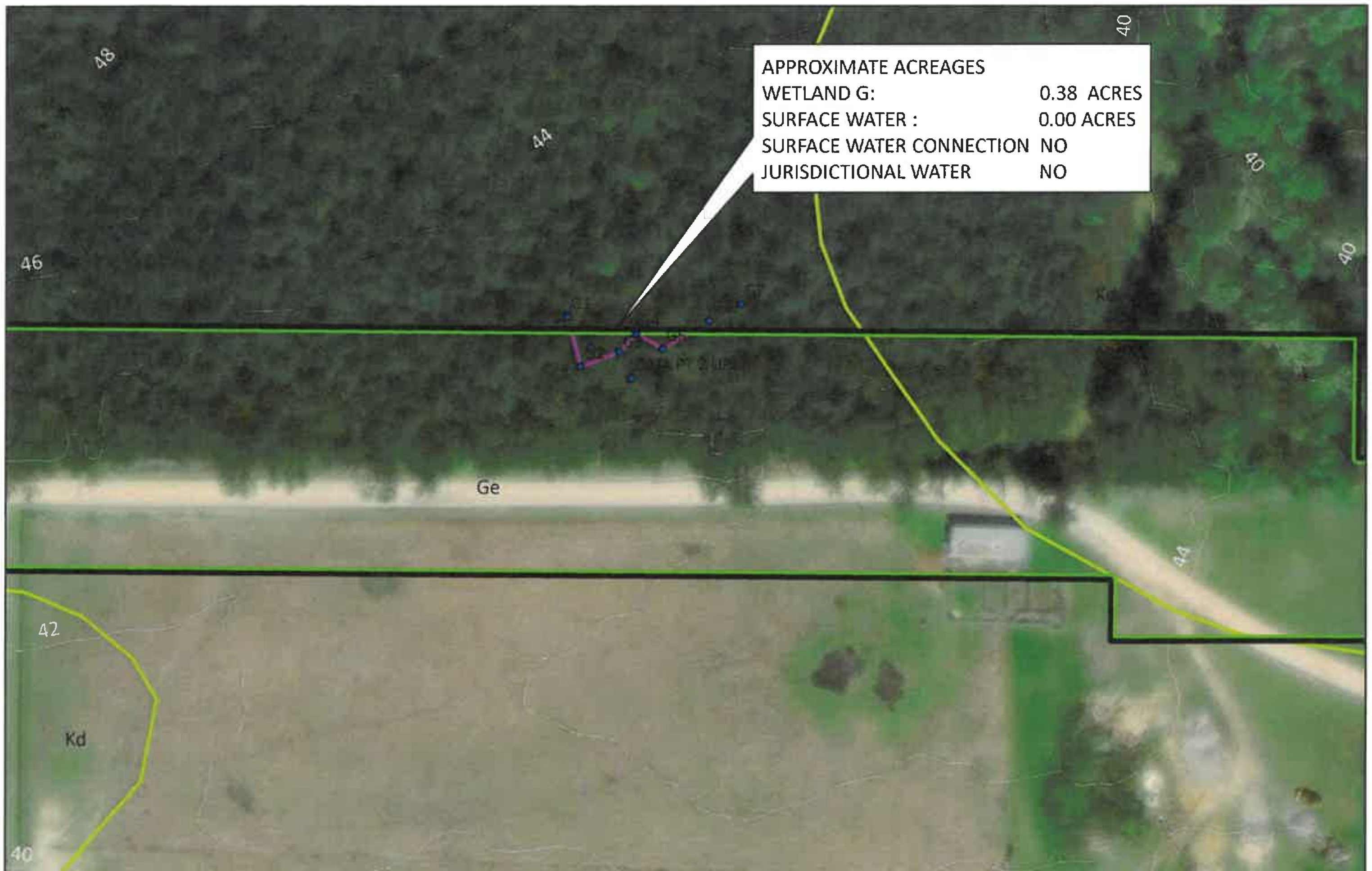

EXHIBIT 11.2 AREA "G" 2022 AERIAL
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- NON-JURISDICTIONAL
- WETLAND - COMPLEX

08/05/2024

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N W E S

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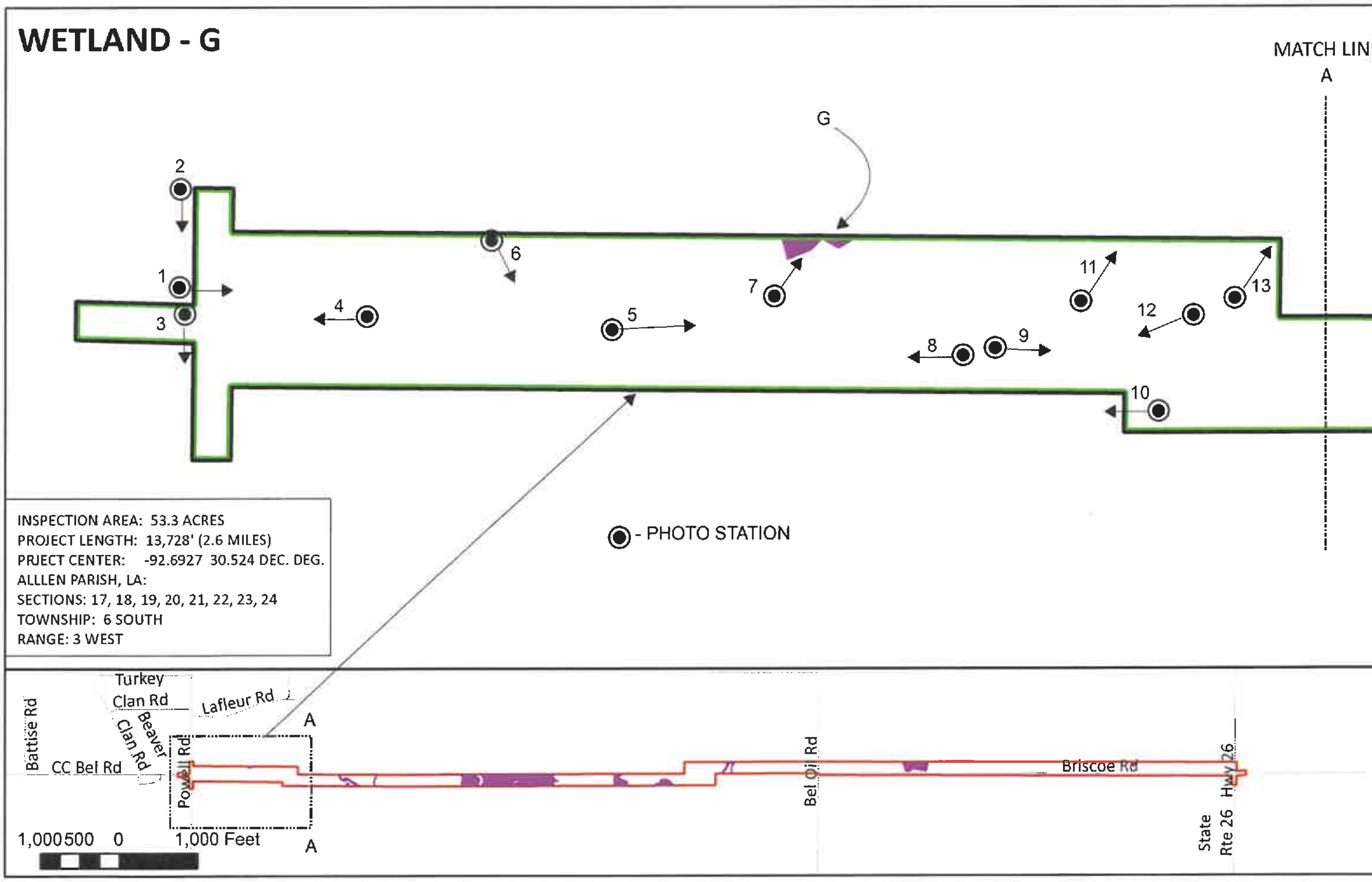
UES ™

WETLAND - G



INSPECTION AREA: 53.3 ACRES
PROJECT LENGTH: 13,728' (2.6 MILES)
PRJECT CENTER: -92.6927 30.524 DEC. DEG.
ALLLEN PARISH, LA:
SECTIONS: 17, 18, 19, 20, 21, 22, 23, 24
TOWNSHIP: 6 SOUTH
RANGE: 3 WEST

EXHIBIT 11.3: PHOTO STATIONS
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- NON-JURISDICTIONAL
- WETLAND - COMPLEX

08/05/2024

PJI

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N W E S

0 100 200 Feet

UES ™

Surface Water Feature H (Exhibit 12): This feature consists of an approximately 10-foot-wide stream channel that has sharply incised, mineral soil banks. It carries excess storm water during the wet season and remains dry most of the year. The channel is flanked by deciduous upland hardwoods comprised of red oak (Quercus falcata), southern magnolia (Magnolia grandiflora), pignut hickory (Carya glabra), Darlington oak (Q. hemisphaerica) hornbeam (Ostrya virginiana), French mulberry (Callicarpa americana), twinberry, blackberry, and muscadine (Vitis rotundifolia). Scattered, immature loblolly pines, including seedlings have naturally recruited within this complex and

Low volume water flow was present in the ephemeral tributary during our June 11, 2024, site visit only. This date was preceded by the end of the wet season and heavy rains. This tributary contributes downstream flow (5,774 river feet) to Bayou Blue, a RPW that contributes indirectly to Mermentau River, a TNW, via Nezpique Bayou. Surface water feature H lacks all three wetland parameters, doesn't have a continuous surface water connection to a TNW and doesn't pass the indistinguishability test from wetland

Surface Water Feature J,K,L (Exhibit 12): This feature is segmented into three parts due to its culverted nature. It is a small tributary of surface water H and lies to the east of that feature as identified in exhibit 12. It consists of a crooked channel that is culverted and crossed in several places with metal pipe and wooden walkways. The surrounding uplands are used for outdoor activities that are regularly maintained by turf mowing. These grounds are compact and covered with turf grasses and readily shed water towards this bare channel. Its bed is highly eroded with steep incised banks that have exposed tree and shrub roots. The bed was irregularly carved with loamy mineral bottom with loose alluvium deposits. This upstream tributary of surface water H is erosional in nature and does not contain a continuous surface water connection to a TNW. It also doesn't pass the indistinguishability test from WOTUS since it doesn't carry water except for after rain events.

AREAS - H, J, K, L

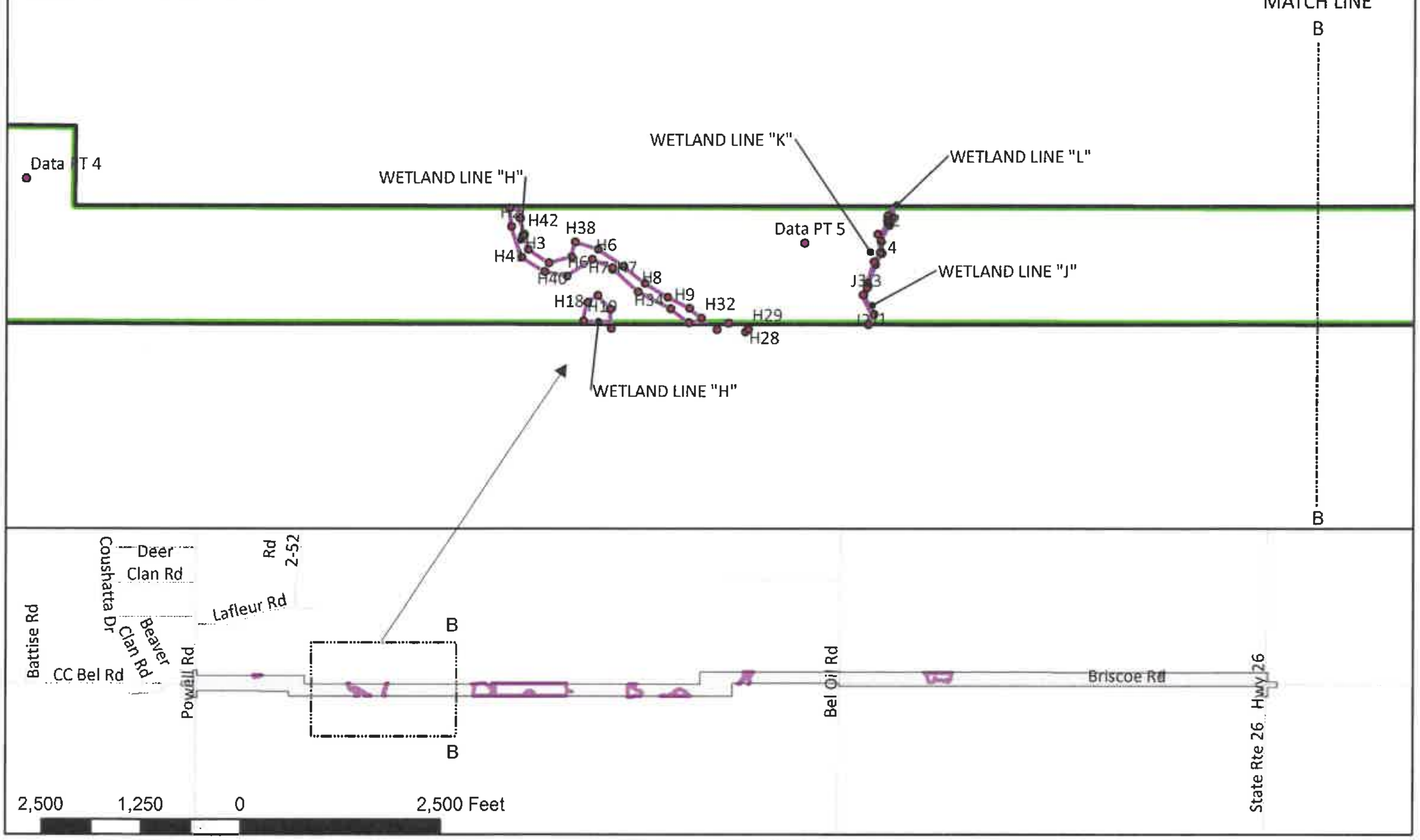

EXHIBIT 12: AREAS - H, J, K, L
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- NON-JURISDICTIONAL
- WETLAND COMPLEX
- DATA_POINT_LOCATIONS

08/05/2024

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0 100 200 Feet

UES ™

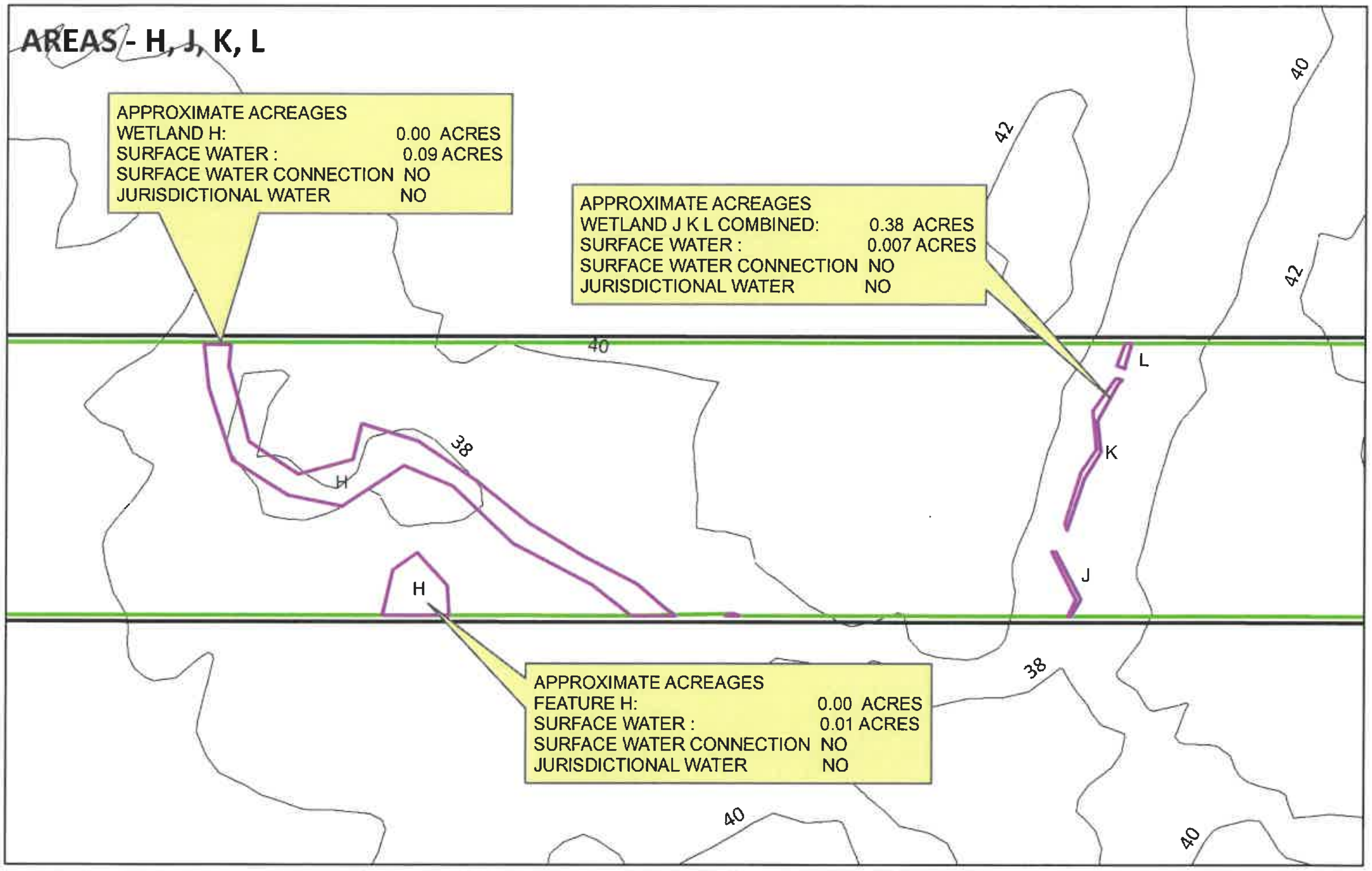

EXHIBIT 12.1: AREAS - H, J, K, L
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- NON-JURISDICTIONAL
- WETLAND COMPLEX

08/05/2024

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N W E S

0 40 80 Feet

UES ™

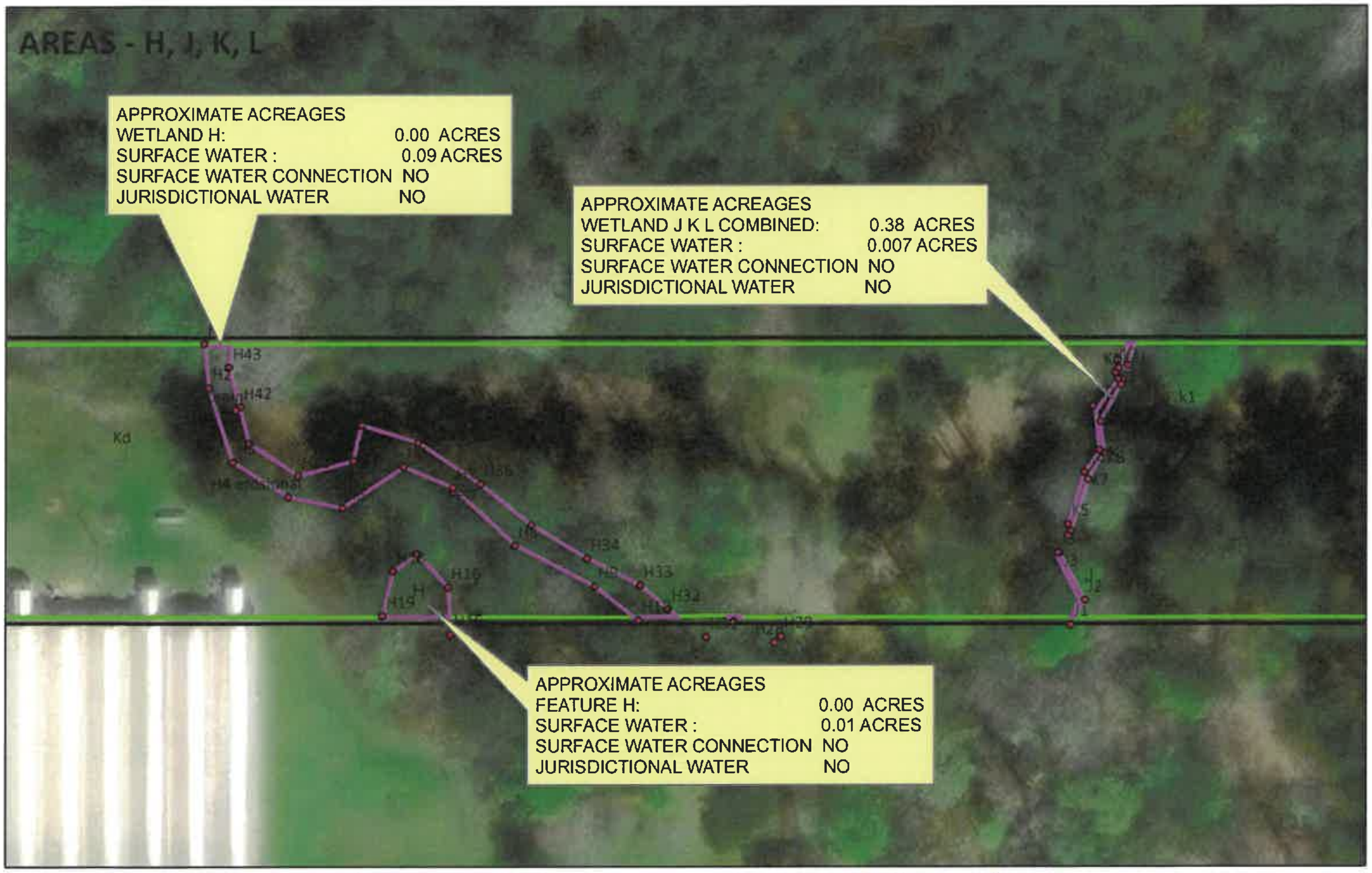

EXHIBIT 12.2: AREAS-H,J,K,L '22 AERIAL UES DELINEATION MAP CTLA EVACUATION ROUTE ARMY CORPS OF ENGINEERS NEW ORLEANS DISTRICT JURISDICTIONAL DETERMINATION & DELIINEATION REQUEST	**LEGEND** INSPECTION BOUNDARY NON-JURISDICTIONAL WETLAND COMPLEX	08/05/2024 PJI THIS IS NOT A SURVEY	N W E S 0 40 80 Feet	UES ™

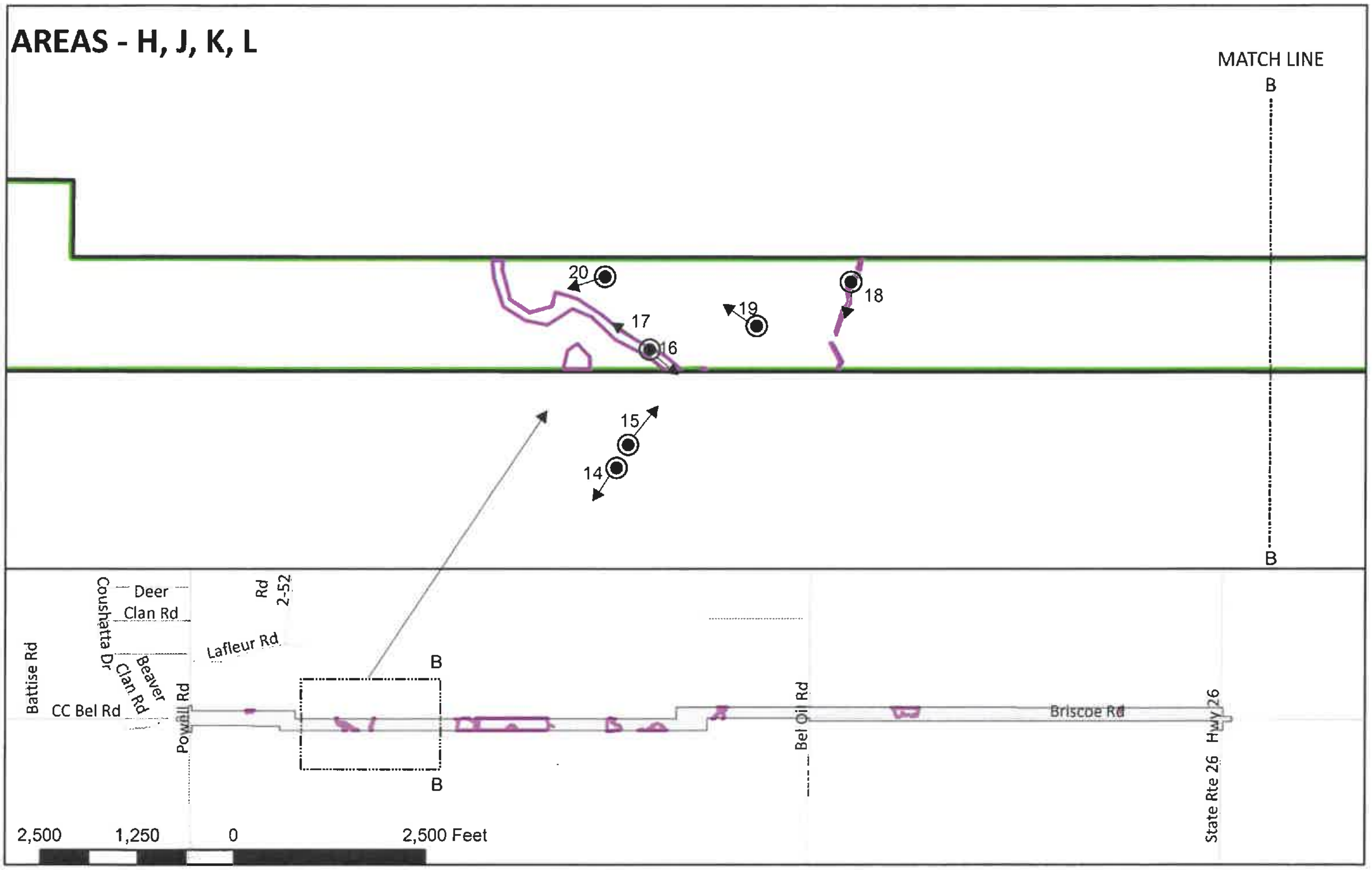

EXHIBIT 12.3: PHOTO STATIONS
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- NON-JURISDICTIONAL
- WETLAND COMPLEX

08/05/2024

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N W E S

0 100 200 Feet

UES ™

***Wetland M (Exhibit 13)*:** Wetland M comprises the flanking palustrine forested wetlands behind the banks of the Bayou Blue channel. We assert that the waters within the primary banks of Bayou Blue are relatively permanent and thus, regulated Section 404 surface waters (Exhibit 13). This flow makes up a continuous surface water connection downstream to Bayou Nezpique and then Mermentau River, a TNW. CWA coverage extends across the surface of this water to an ordinary high-water line approximately 2-3 feet below the top of the creek bank.

The adjacent floodplain meets all three wetland parameters between the backside of the natural levee up to a point on the landscape where soils, hydrology, and vegetation, combined no longer prevail. Jurisdictional surface waters are confined to the bayou banks and excluded from the floodplain due to surface water discontinuity. The floodplain wetland was comprised of deciduous hardwoods dominated by a canopy of bald cypress (Taxodium distichum), basket oak (Q. michauxii), and loblolly pine, with scattered red maple, swamp tupelo (Nyssa sylvatica var. biflora), water elm (Ulmus aquatica) and water oak (Q. nigra). Thin patches of blue-stemmed palmetto, (Sabal minor), arrow-wood, Chinese tallow (Sapium sebiferum) were intermixed with Virginia dayflower (Commelina virginica) and swamp fern (Blechnum serrulatum).

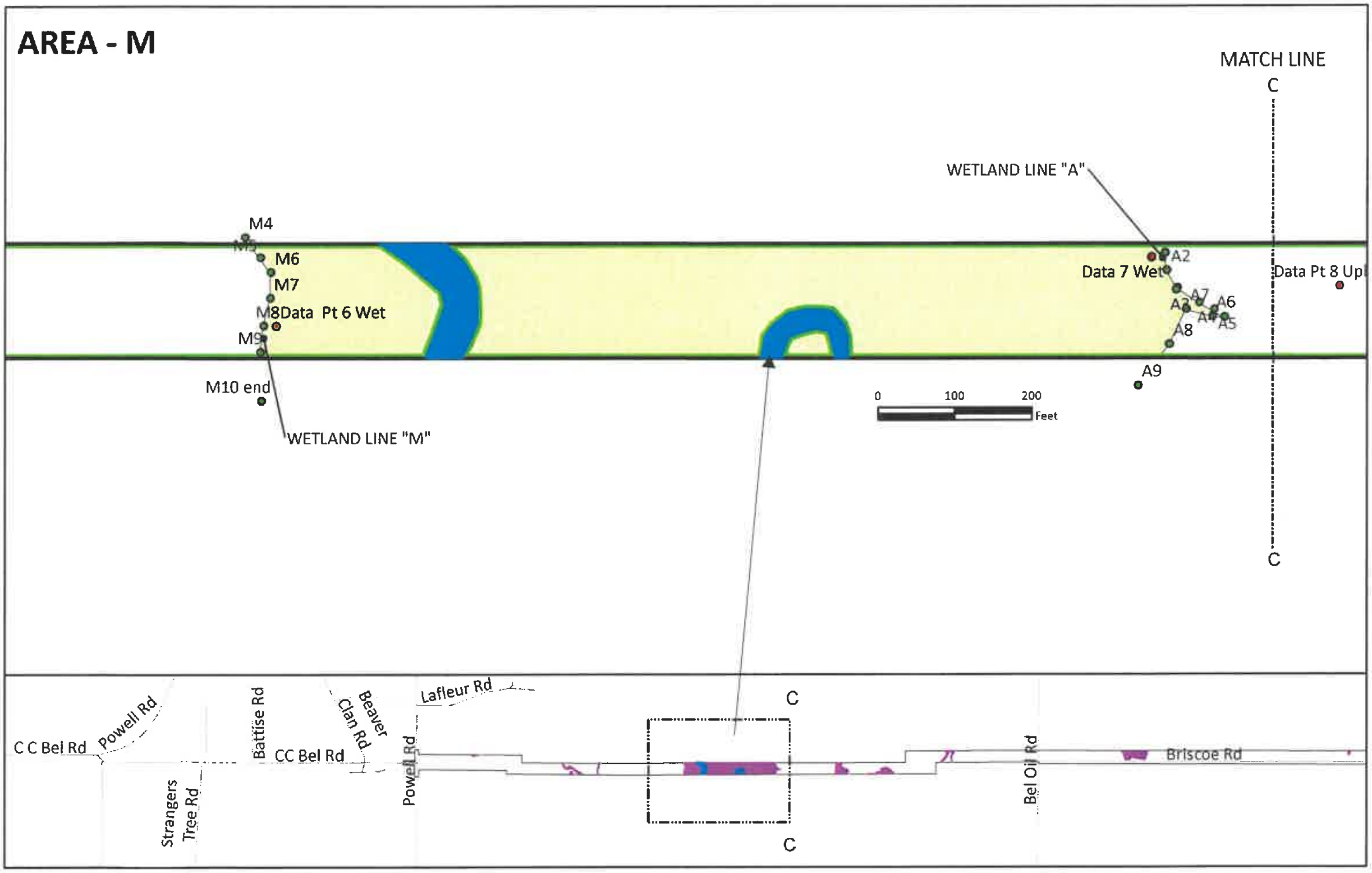

EXHIBIT 13: AREA "M"
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- WETLAND COMPLEX
- NON-WETLAND-WATERS
- NON-JURISDICTIONAL
- DATA POINT LOCATIONS

08/05/2024

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THIS IS NOT A SURVEY

N W E S

0 500 1,000 2,000 Feet

UES™

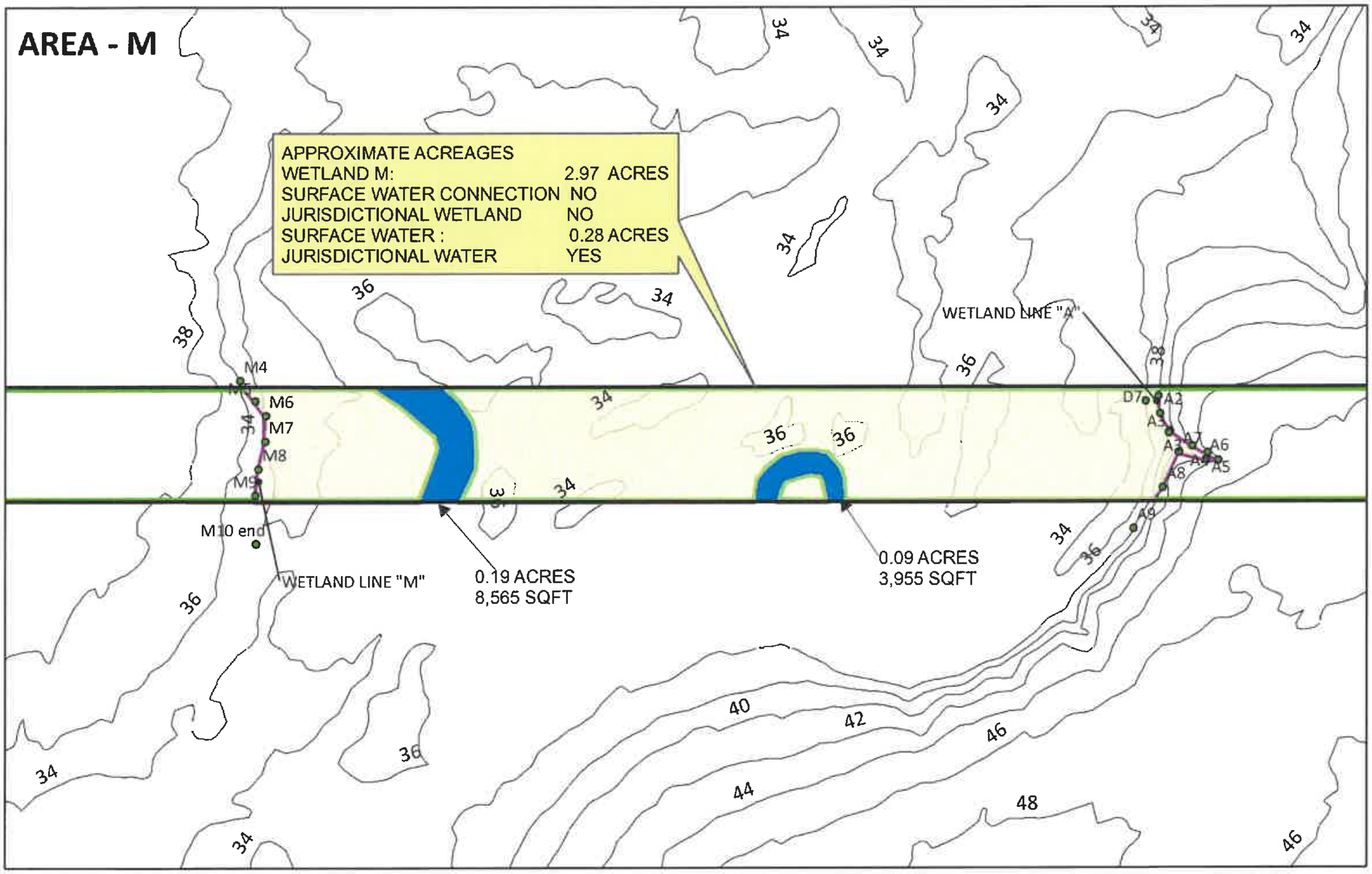

EXHIBIT 13.1: AREA "M"
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- NON-JURISDICTIONAL
- NON-WETLAND-WATERS
- WETLAND_M

08/05/2024

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THIS IS NOT A SURVEY

N E S W

0 100 200 Feet

UES ™

EXHIBIT 13.2: AREA "M" 2022 AERIAL UES DELINEATION MAP CTLA EVACUATION ROUTE ARMY CORPS OF ENGINEERS NEW ORLEANS DISTRICT JURISDICTIONAL DETERMINATION & DELIINEATION REQUEST	**LEGEND** INSPECTION BOUNDARY WETLAND COMPLEX M NON-WETLAND-WATERS NON-JURISDICTIONAL	08/05/2024 PJI THIS IS NOT A SURVEY 0 100 200 Feet	N W E S

UES™

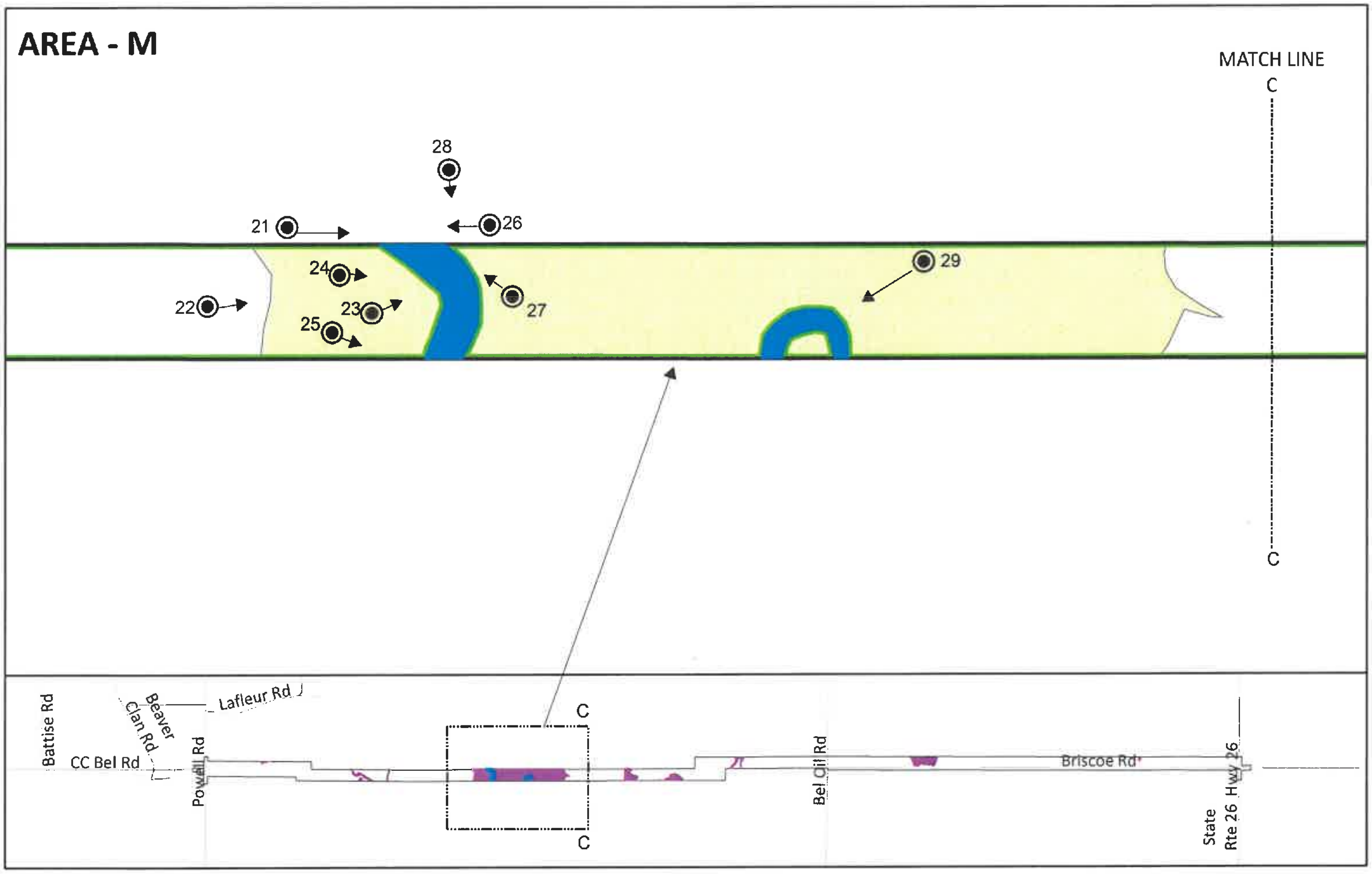

EXHIBIT 13:3 PHOTO STATIONS
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- WETLAND COMPLEX
- NON-WETLAND-WATERS
- NON-JURISDICTIONAL

08/05/2024

PJI

THIS IS NOT A SURVEY

N W E S

0 100 200 Feet

UES ™

Wetland B (Exhibit 14): This feature comprises an impounded portion of the pine plantation that is bordered on its west side by an elevated earthen berm. Pine row beds are constructed in an east to west orientation and terminate into the north to south berm that crosses the review area to the south. Upgradient surface water is trapped along the east side of the berm causing it to attenuate under the beds of stunted pines. Scattered among the pines was an assemblage of hackberry (Celtis laevigata), Chinese tallow, arrow-wood, red maple, pepper vine (Nekemias arborea) and poison ivy (Toxicodendron radicans). Thick, water-stained leaf litter comprised of pine needles covered the soil surface. This wetland is hydrologically dependent on impounded surface sheet flow and would otherwise be non-wetland if the berm was removed. It lies over 400 feet upslope from a seasonally flooded streambed. Wetland B does not present as a continuous surface feature to TNWs at any time and is clearly distinguishable from wetland. As such, it is not covered as a jurisdictional wetland under the CWA.

Wetland C (Exhibit 14): Wetland C lies east of Wetland B and occupies a half-moon shaped polygon that is impounded from an earthen berm separating it from a seasonally flooded streambed. The genesis of the berm has not been ascertained but it may be for trapping sediments from the downslope streambed during the wet season. The wetland complex is comprised of the same species composition as Wetland B. It also has a surface that is graded with tall beds for pine growth. This wetland is over 250 feet upslope from the seasonally flooded streambed and numerous east to west elevated pine beds. Wetland C lacks a continuous surface feature to wetland and is clearly distinguishable from TNWs.

Wetland D (Exhibit 14): Wetland D is a surface water feature that comprises a narrow, meandering seasonal stream channel. It is devoid of vegetation in its bed due to high velocity flow during the wet season. The remainder of the year it is a dry bed of alluvium soil components. The banks are steep and undercut. It crosses the site from north to south and empties into a seasonally flooded streambed making up the headwaters of Bayou Blue. It is formed from a small water basin stretching north and east of the review area, collecting water from Bel Oil Road drainage ditches and a portion of a wide gas line servitude located just north of the review area. Channel flow from Wetland D is conveyed 0.6 miles to the southwest where it discharges into Bayou Blue south of the review area.

Ditch E (Exhibit 14): This feature lies to the west of a natural drainage channel that was excavated to construct the earthen berm that surrounds this pine stand. The ditch also accommodates excess surface flow from Wetland D. It comprises a linear channel with a mineral soil bed. The banks are undercut from high volume storm events. It crosses the review area from north to south along a topographic contour line nearly equidistant and parallel to Wetland D. Water oak (Q. nigra), Chinese privet (Ligustrum sinense), yaupon (Ilex vomitoria), greenbrier (Smilax auriculata), Virginia creeper (Parthenocissus quinquefolia), and loblolly pine are scattered through the uplands along both banks of the ditch, extending to either side of Wetland D. Water flowing into this ditch is seasonal and not sustained throughout the year. It is an upland ditch wholly excavated from uplands that only drains uplands. It lacks a surface water connection to wetland and is clearly distinguishable from TNWs.

AREAS - B, C, D, E

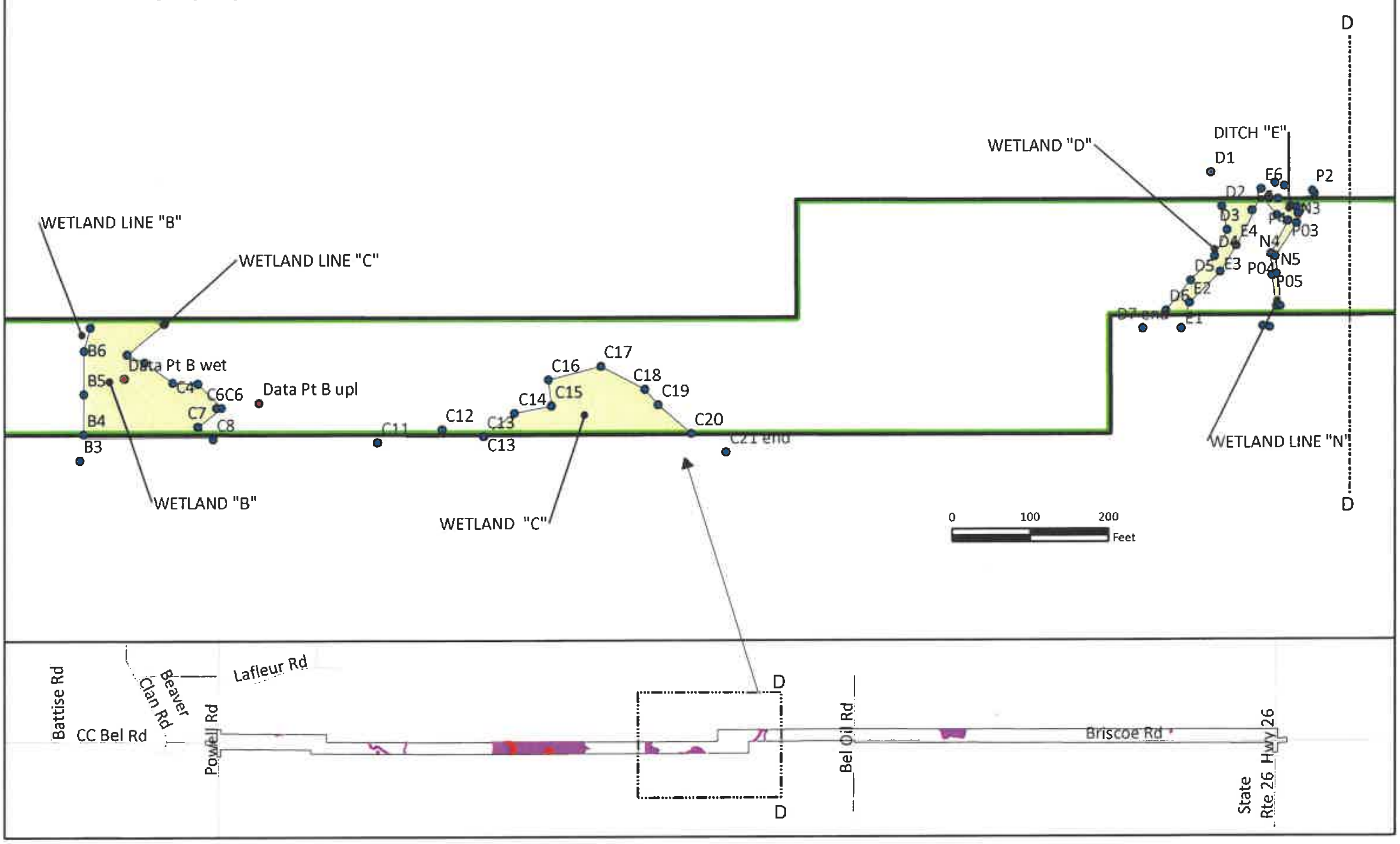

EXHIBIT 14: AREAS: B, C, D, E
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- NON-JURISDICTIONAL
- WETLAND COMPLEX

08/05/2024

PJI

THIS IS NOT A SURVEY

N W E S

0 500 1,000 2,000 Feet

UES ™

WETLAND - B

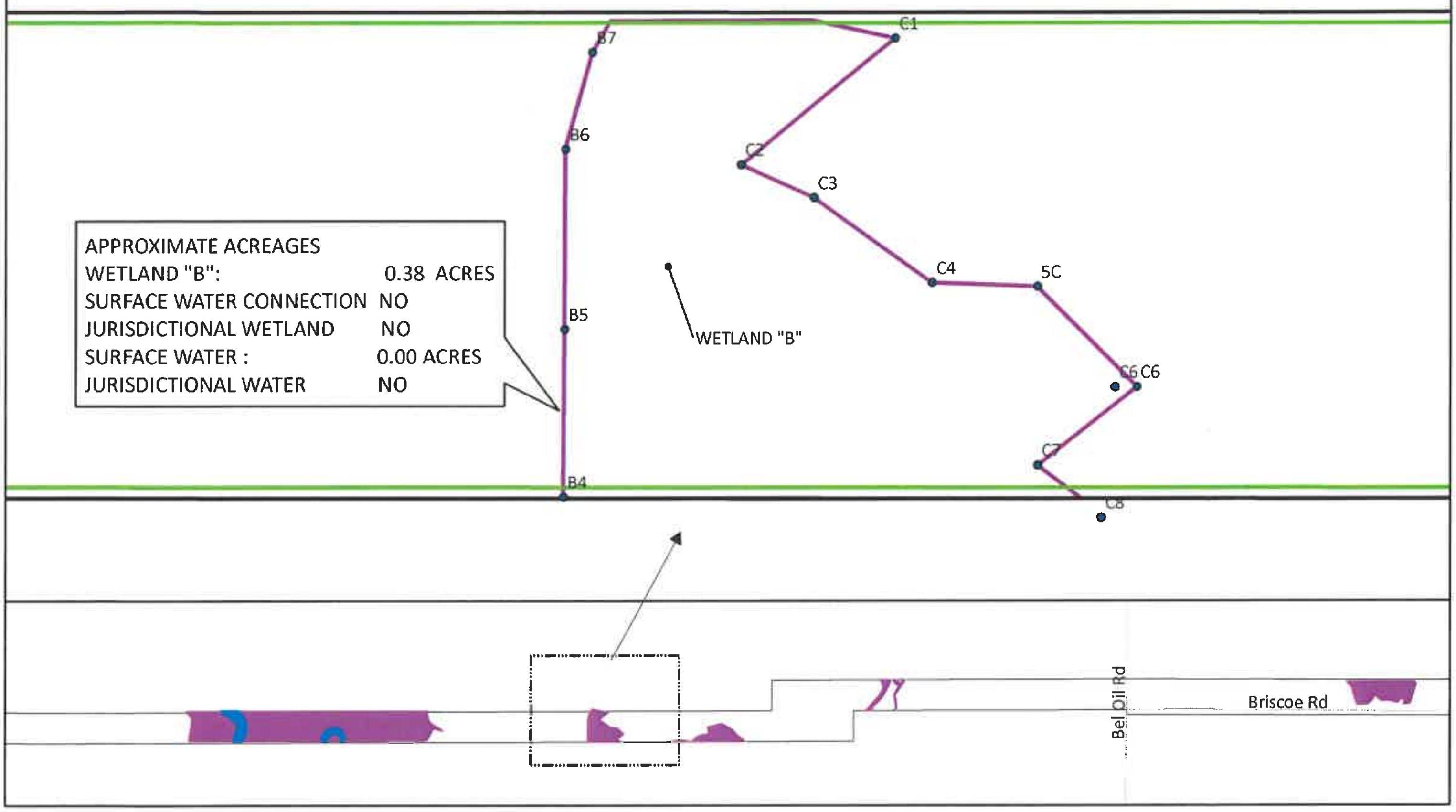

EXHIBIT 14.1: WETLAND B
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- NON-JURISDICTIONAL
- WETLAND B

08/05/2024

PJI

THIS IS NOT A SURVEY

N W E S

0 0.0045 0.009 Miles

UES ™

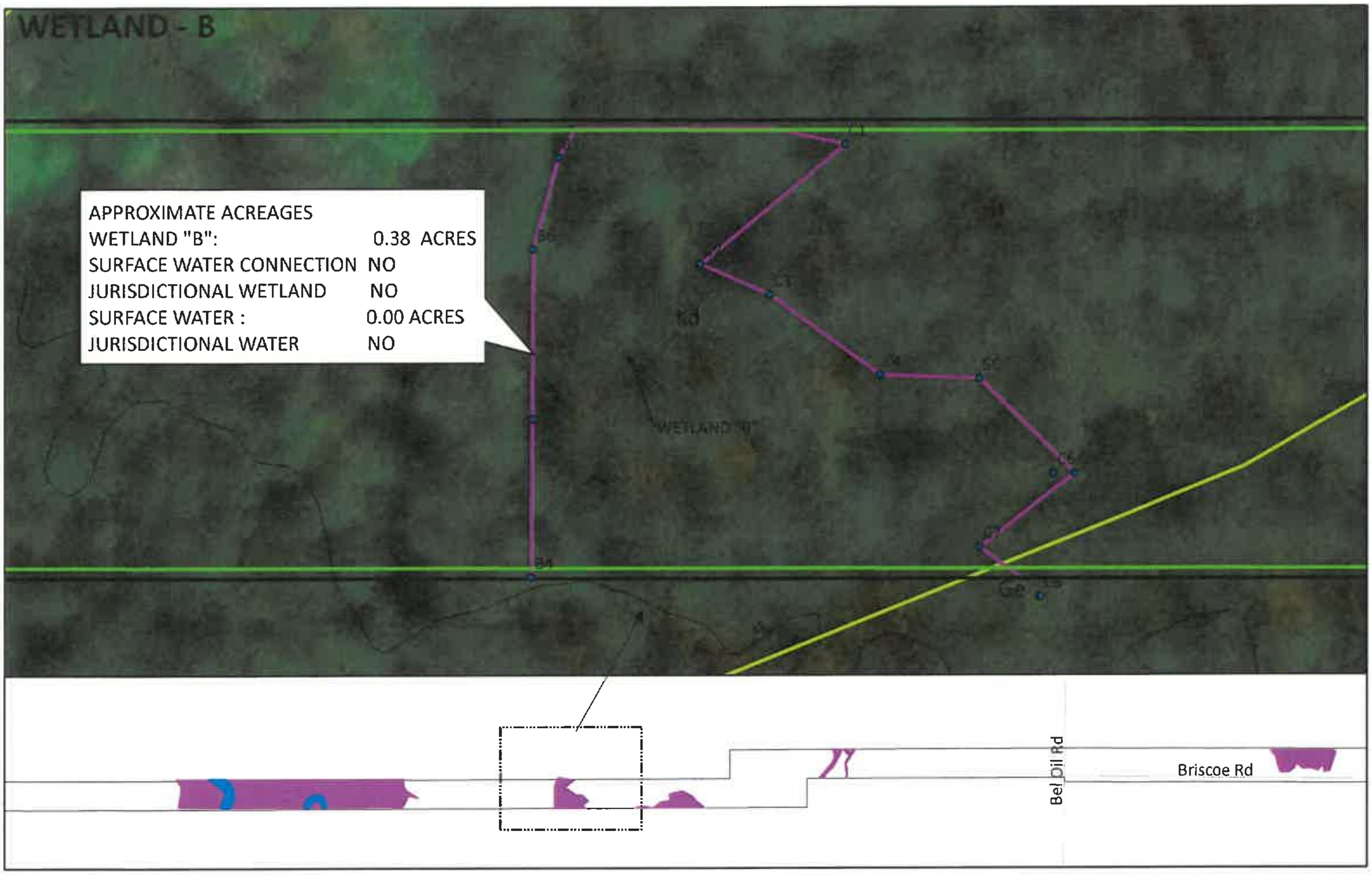

EXHIBIT 14.1.2 WETLAND B AERIAL UES DELINEATION MAP CTLA EVACUATION ROUTE ARMY CORPS OF ENGINEERS NEW ORLEANS DISTRICT JURISDICTIONAL DETERMINATION & DELIINEATION REQUEST	**LEGEND** INSPECTION BOUNDARY NON-JURISDICTIONAL WETLAND B	08/05/2024 PJI THIS IS NOT A SURVEY 0 0.0045 0.009 Miles	N W E S UES ™

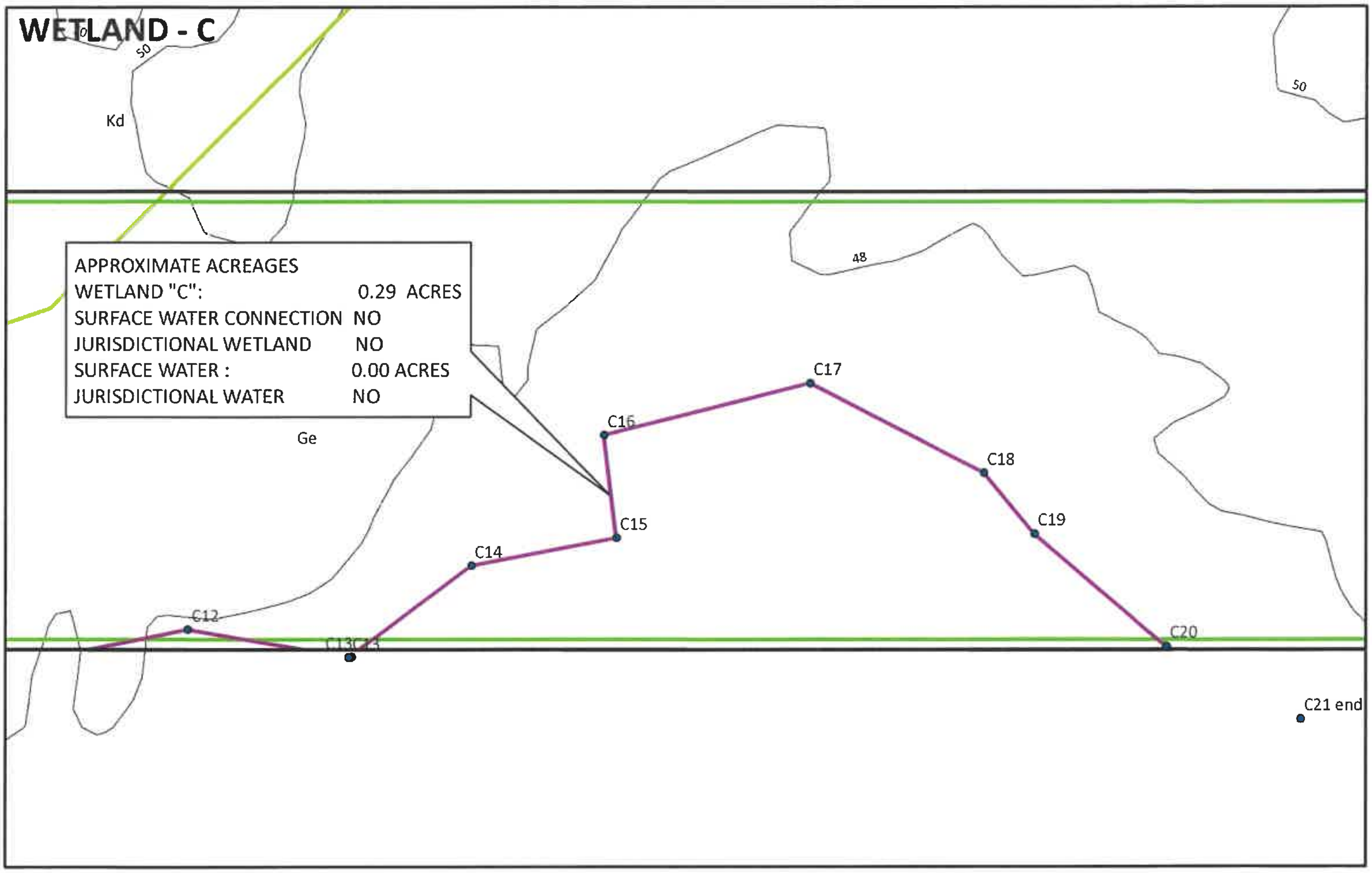

EXHIBIT 14.2: WETLAND C
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

INSPECTION BOUNDARY
WETLAND C
NON-JURISDICTIONAL

08/05/2024
PJI
THIS IS NOT A SURVEY

N W E S

0 25 50 Feet

UES ™

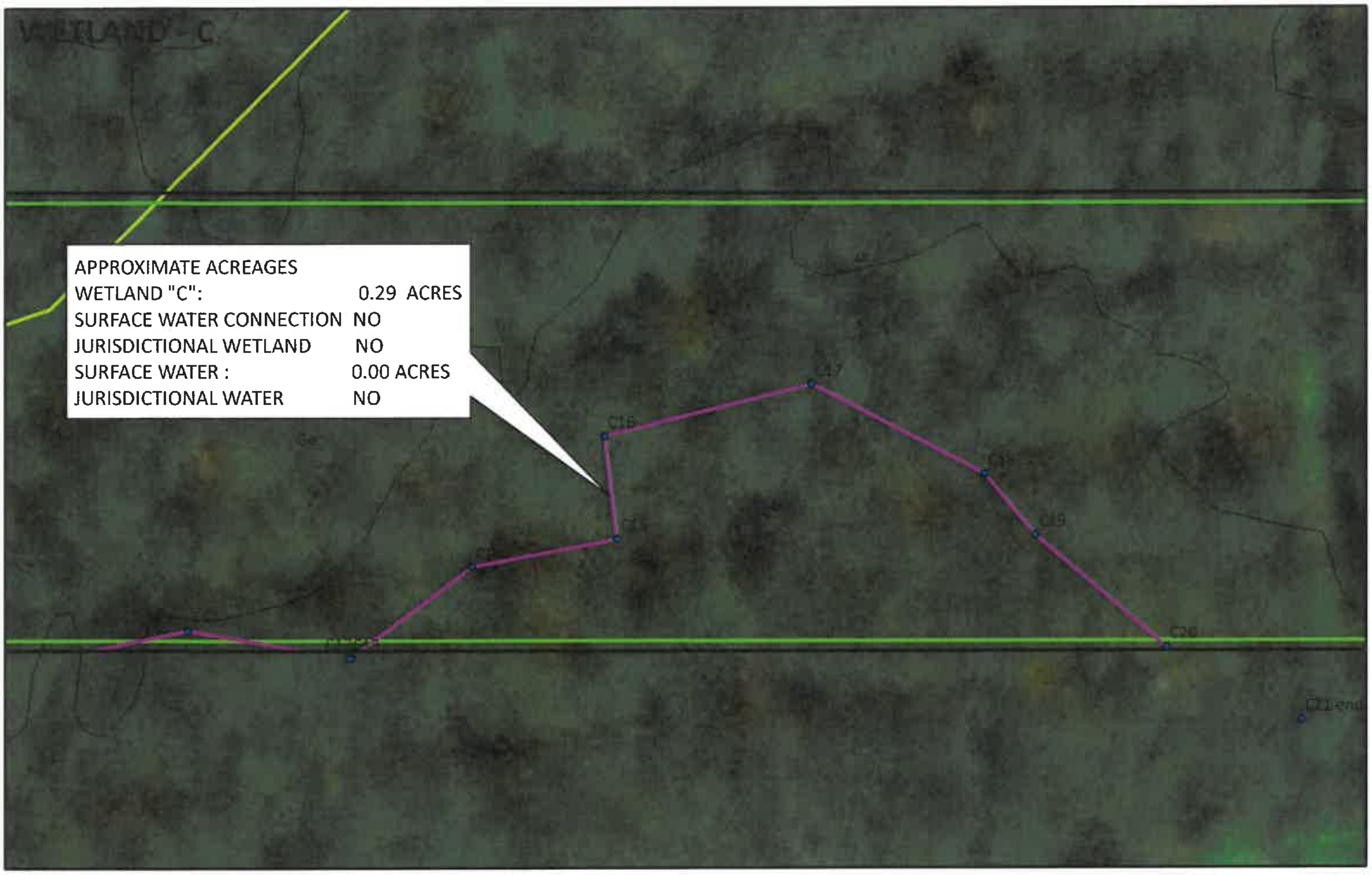

EXHIBIT 14.2: WETLAND"C" 2022 AERIAL
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- WETLAND C
- NON-JURISDICTIONAL

08/05/2024

PJI

THIS IS NOT A SURVEY

N W E S

0 25 50 Feet

UES ™

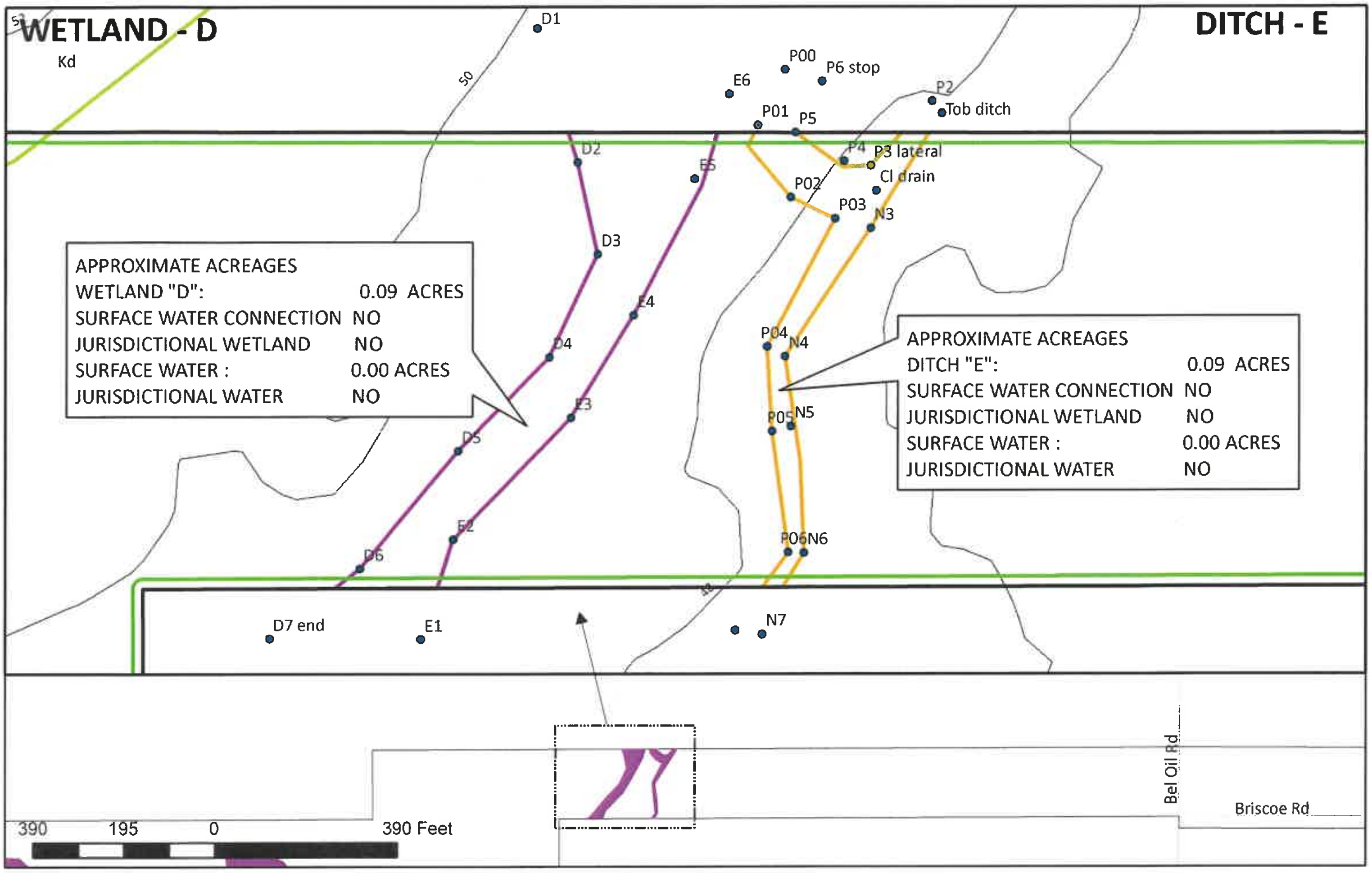

EXHIBIT 14.3: WETLAND D & DITCH E
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- NON-JURISDICTIONAL
- WETLAND D
- DITCH E

08/05/2024

PJI

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Feet

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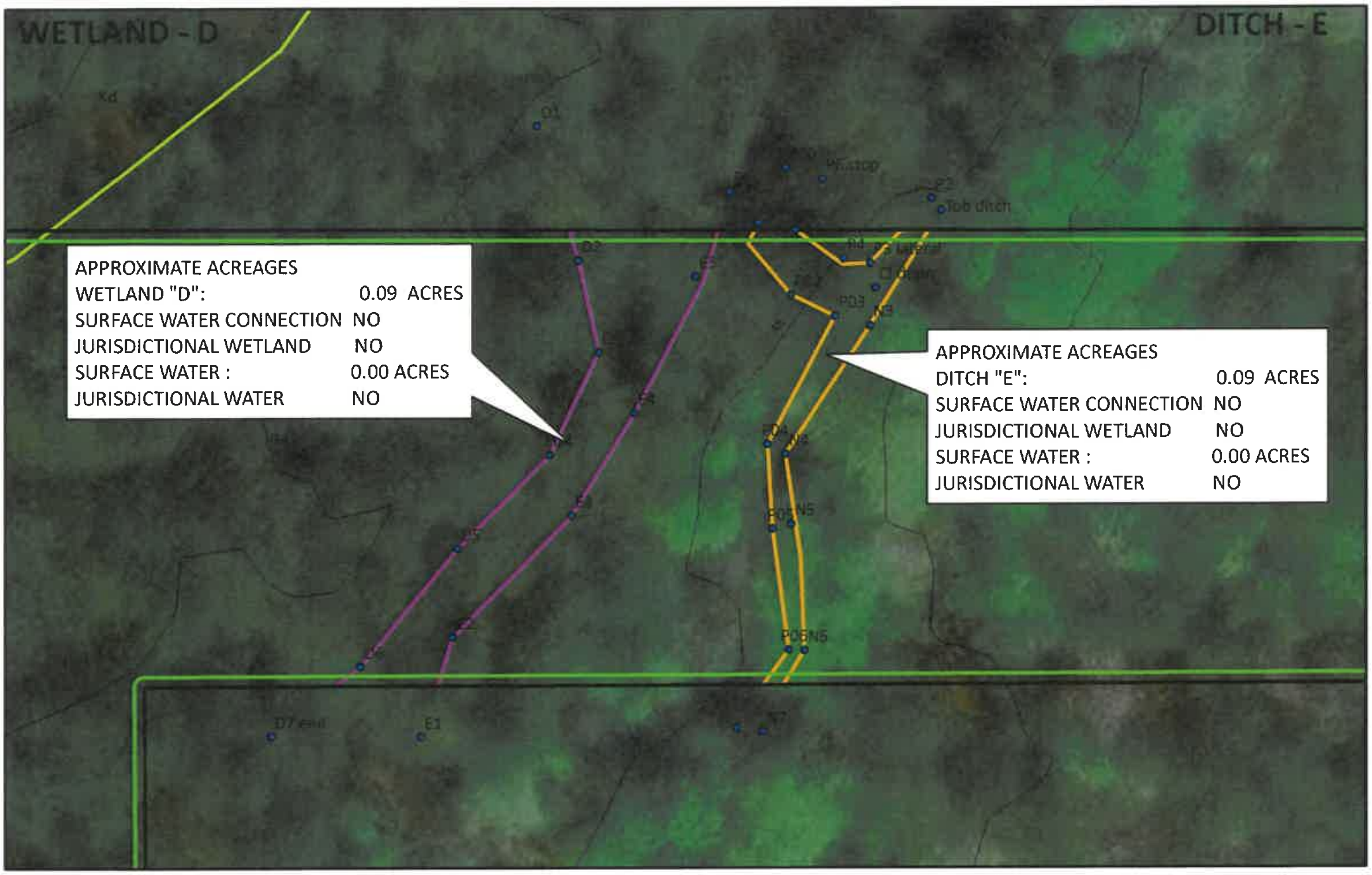

EXHIBIT 14.3: D & E 2022 AERIAL
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND
- INSPECTION BOUNDARY
- NON-JURISDICTIONAL
- WETLAND D
- DITCH E

08/05/2024
PJI
THIS IS NOT A SURVEY

N W E S

0 25 50 Feet

UES ™

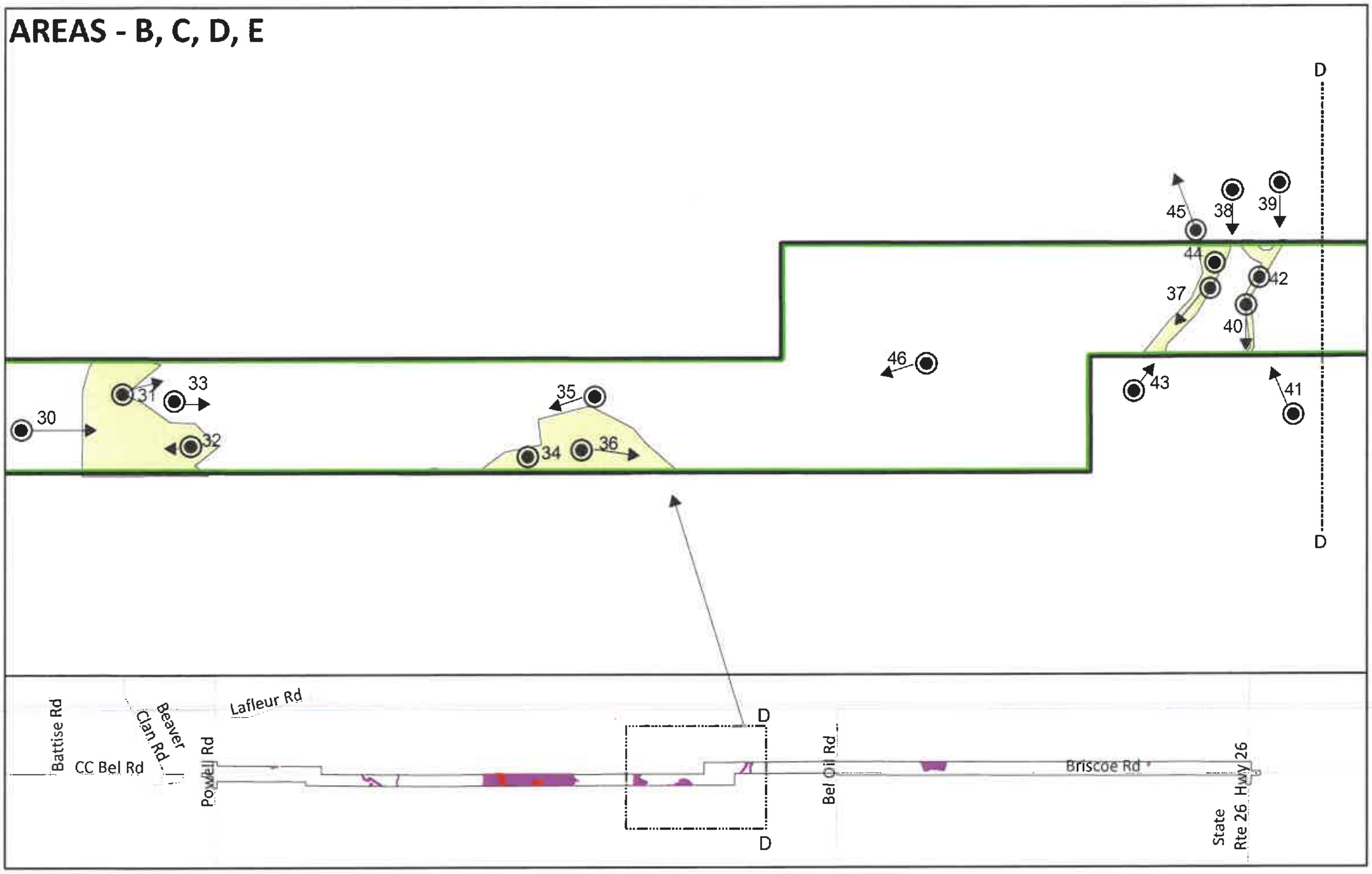

EXHIBIT 14.4: PHOTO STATIONS
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- NON-JURISDICTIONAL
- WETLAND COMPLEX

08/05/2024

PJI

THIS IS NOT A SURVEY

N W E S

0 100 200 Feet

UES™

***Ditch E1 (Exhibit 15)*:** This is an upland drainage ditch excavated for agricultural purposes. Adjacent to the review area are fields that are flooded for agricultural purposes and then drained into this ditch. It has a long and circuitous path before discharging into Bayou Blue southwest of the review area approximately 2 miles away. The ditch is culverted in multiple locations but crosses the site to the north of Brisco Road in an open trench configuration. It maintains weedy emergent vegetation in areas where water collects along the uneven bottom. Pickerel weed (Pontederia cordata), Juncus coriaceous (needle rush) and grass leaved arrowhead (Sagittaria graminea) prevailed. Thick Johnson grass (Sorghum halepense) lined both banks from the inside scarp across the berm crown. Ditch E1 does not have a continuous surface connection to wetland, nor does it have sufficient volume to overcome the flat terrain to provide continuous flow to wetland. It is clearly discernible from TNWs as it passes through numerous underground culverts and water control structures over its loamy substrate bed.

Wetland BB (Exhibit 15): This Wetland complex is located within a closed depressional landform that encroaches into the site from north to south. It terminates prior to reaching Brisco Road due to a tall 5-to-6-foot earthen berm that parallels Brisco Road. Wetland BB lies to the east of ditch E1 and has an overtly ephemeral appearance. It is anthropogenically modified through timber harvesting and planting. It is isolated and ponds shallow pools of water at the surface during the wet season. Scattered hardwoods intermix with the planted loblolly and make up a pine-Wetland hardwood community. The hardwoods were nearly outcompeted by Chinese tallow and Carolina willow (Salix caroliniana). Native hardwoods were dominated by sweetgum, red maple, and water oak. The midstory was thick with sapling water oaks and Chinese tallow tangled together by greenbriers and blackberry brambles. All three wetland parameters were met however, this complex is clearly isolated, and it lacks a continuous surface connection to wetland. It is also distinguishable from TNWs.

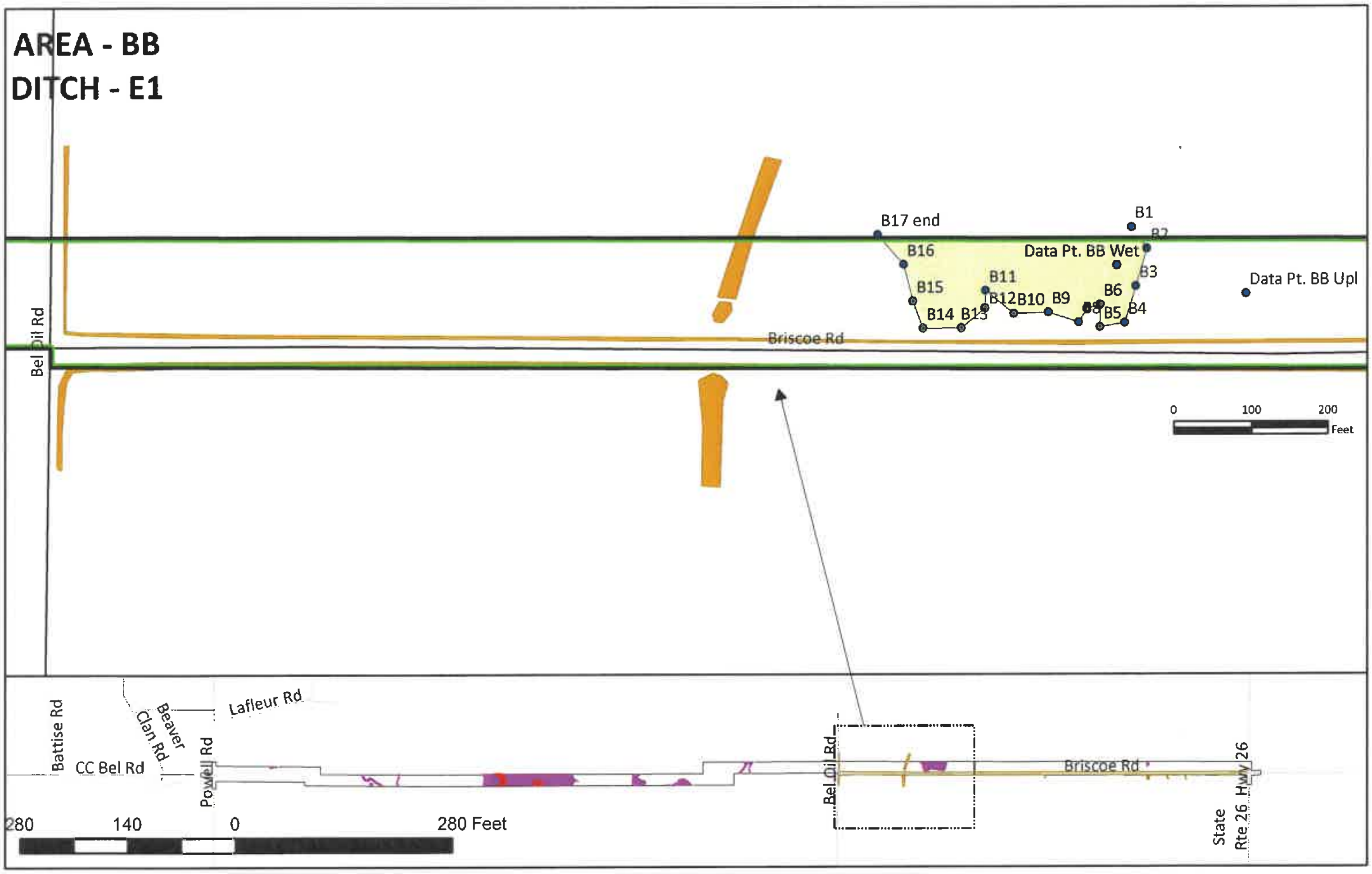

EXHIBIT 15: AREA: BB & E1
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- NON-JURISDICTIONAL
- WETLAND COMPLEX
- DITCH

08/05/2024

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Feet

UES™

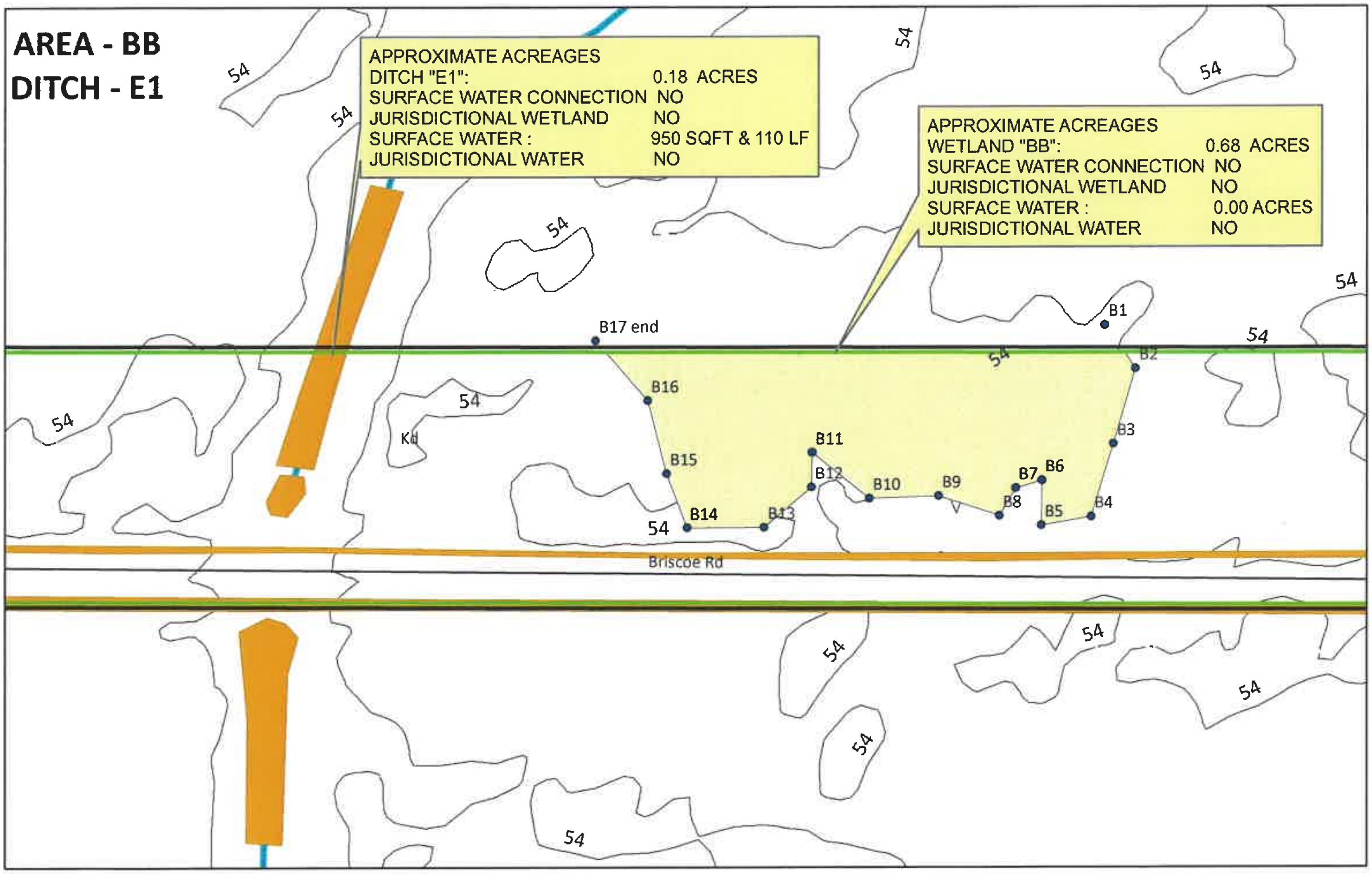

EXHIBIT 15.1: AREA: BB & E1
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- NON-JURISDICTIONAL
- WETLAND COMPLEX
- DITCH

08/05/2024

PJI

THIS IS NOT A SURVEY

N W E S

0 50 100 Feet

UES ™

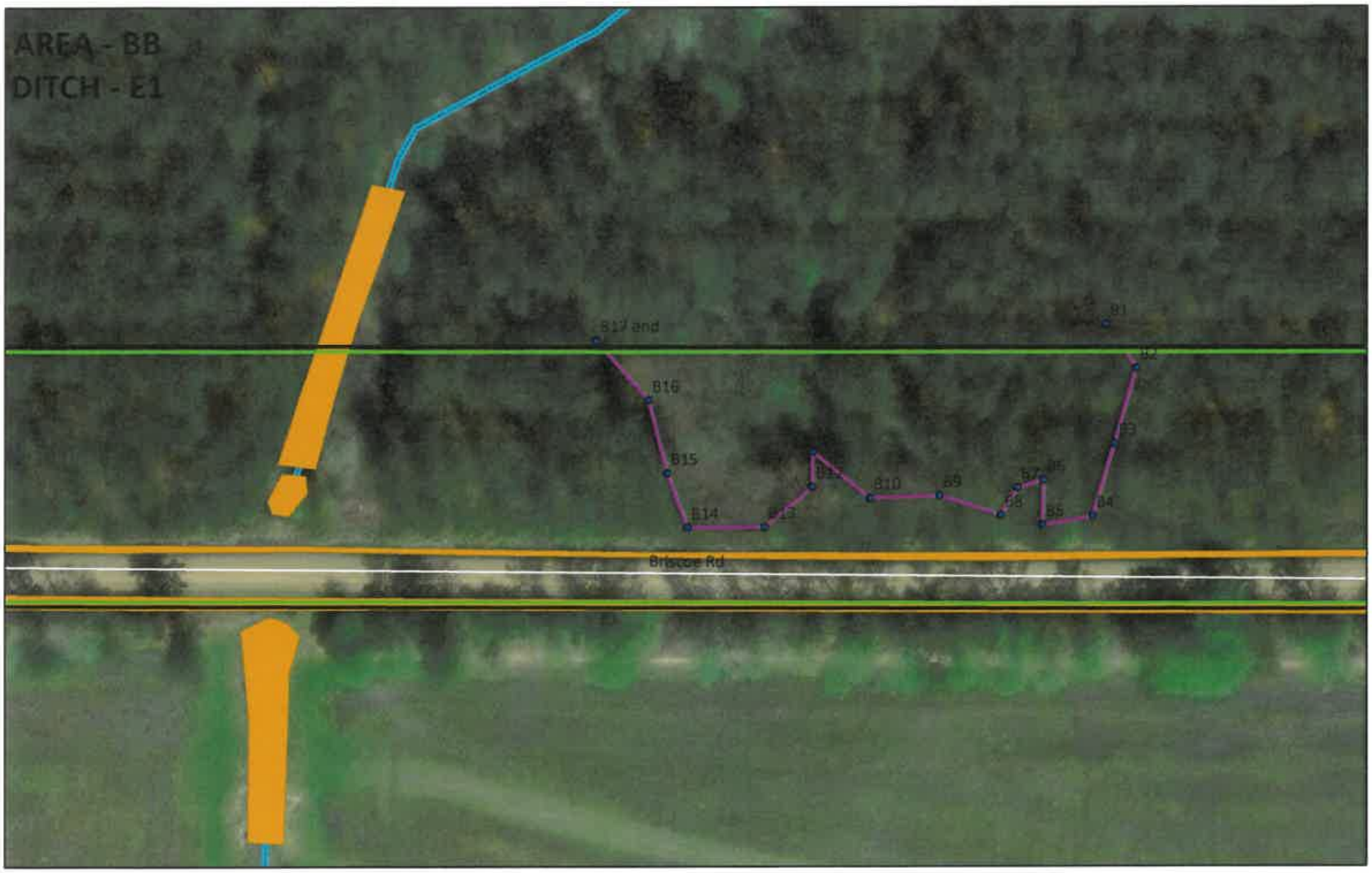

EXHIBIT 15.2: AREA: BB & E1 AERIAL UES DELINEATION MAP CTLA EVACUATION ROUTE ARMY CORPS OF ENGINEERS NEW ORLEANS DISTRICT JURISDICTIONAL DETERMINATION & DELIINEATION REQUEST	**LEGEND** INSPECTION BOUNDARY NON-JURISDICTIONAL WETLAND COMPLEX DITCH	08/05/2024 PJI THIS IS NOT A SURVEY 0 50 100 Feet	N W E S	UES ™

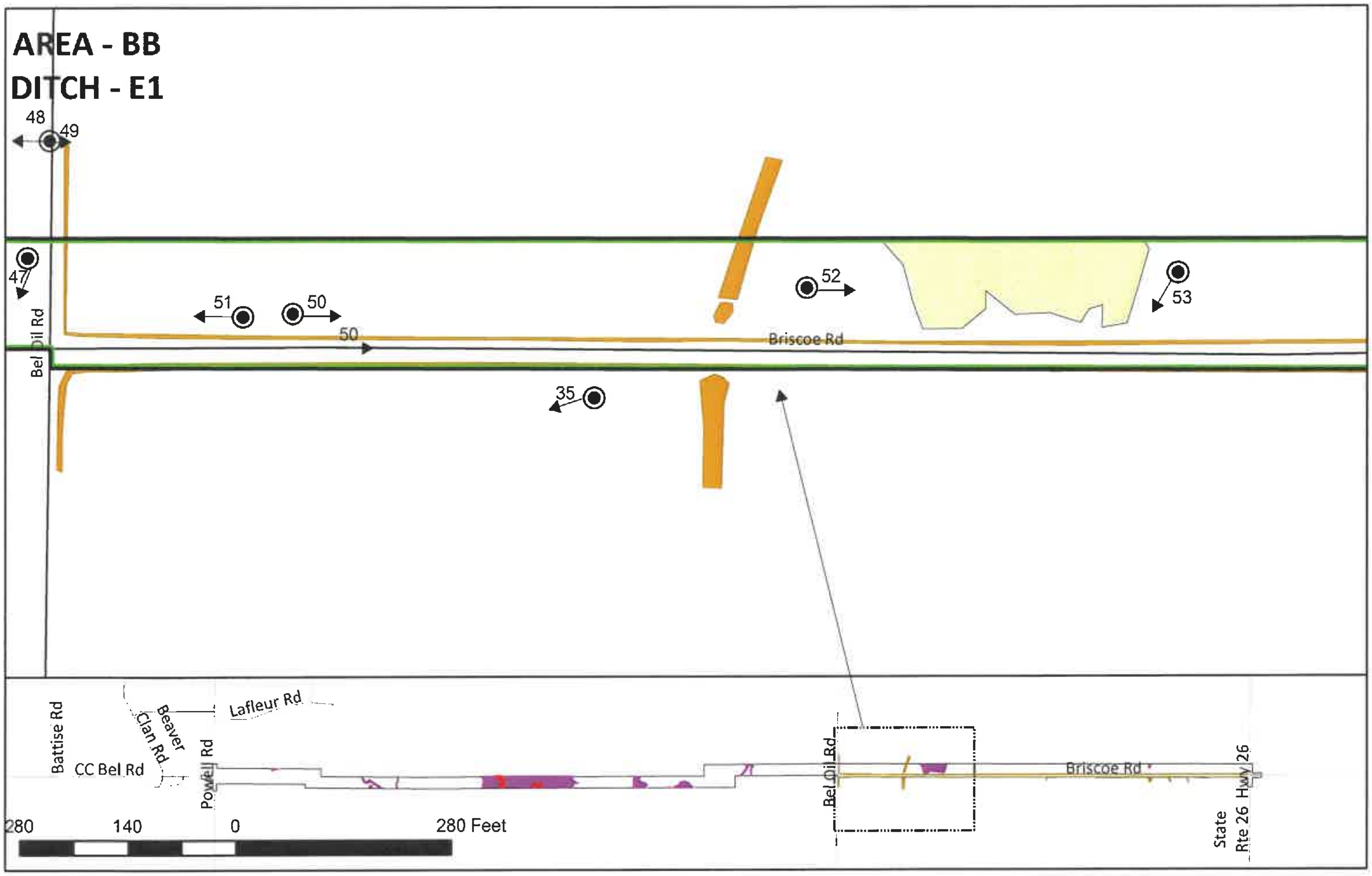

EXHIBIT 15.3: PHOTO STATION
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- NON-JURISDICTIONAL
- WETLAND COMPLEX
- DITCH

08/05/2024

PJI

THIS IS NOT A SURVEY

N W E S

0 100 200 Feet

UES ™

Wetland A (Exhibit 16): This is an exceedingly small micro depression that encroaches into the review area from the north near the eastern end of the review area. It is contained by uplands and lies within the highest portion of the site. It is dominated by sweetgum and planted loblolly pine. It impounds water due to the large roadside berm directly to the south and the east to west pine beds. The furrows within this area puddle rainwater during the wet season and allow primrose willow (Ludwigia peruviana), leathery rush, and alligator weed (Alternanthera philoxeroides) to persist through the growing season. Wetland A occupies 0.03 acres of isolated planted pine and mixed hardwood habitat. It does not have a continuous surface water connection to wetland and is not covered under the CWA. It is also distinguishable from TNWs.

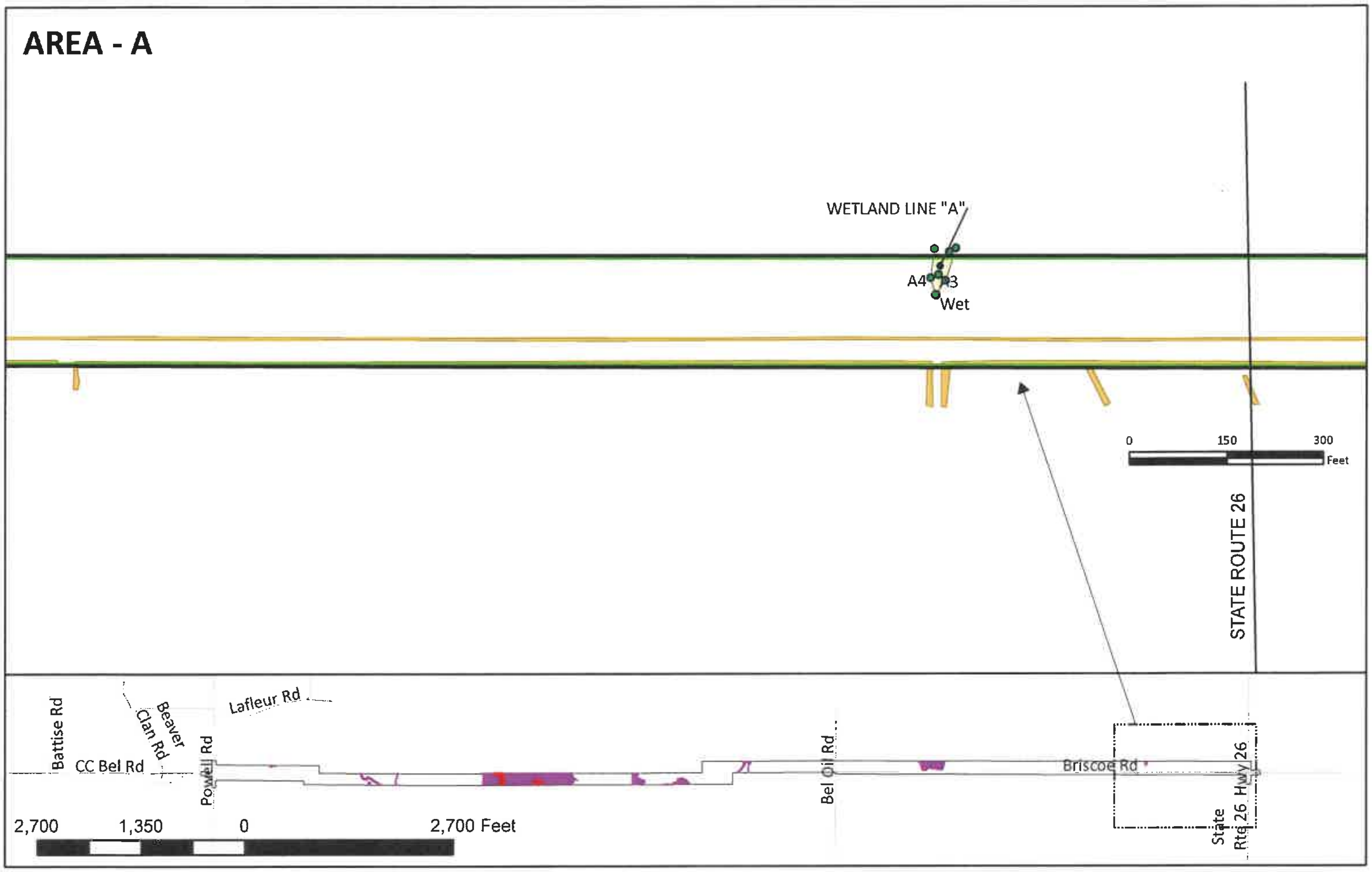

EXHIBIT 16: AREA "A"
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- NON-JURISDICTIONAL
- WETLAND COMPLEX
- DITCH

08/05/2024

PJI

THIS IS NOT A SURVEY

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0 500 1,000 2,000 Feet

UES™

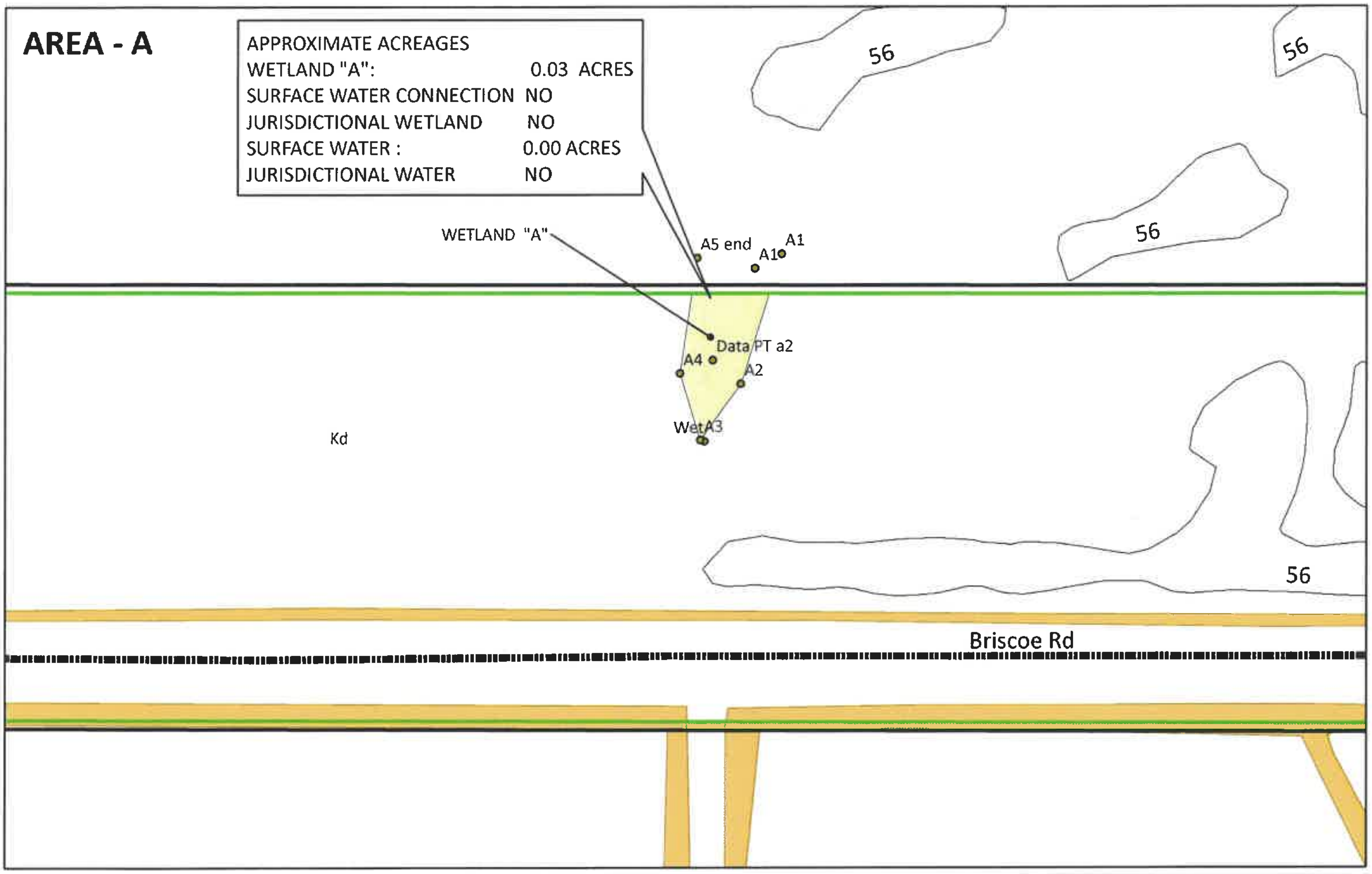

EXHIBIT 16.1: AREA "A"
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- NON-JURISDICTIONAL
- DITCH

08/05/2024

PJI

THIS IS NOT A SURVEY

N W E S

0 30 60 Feet

UES ™

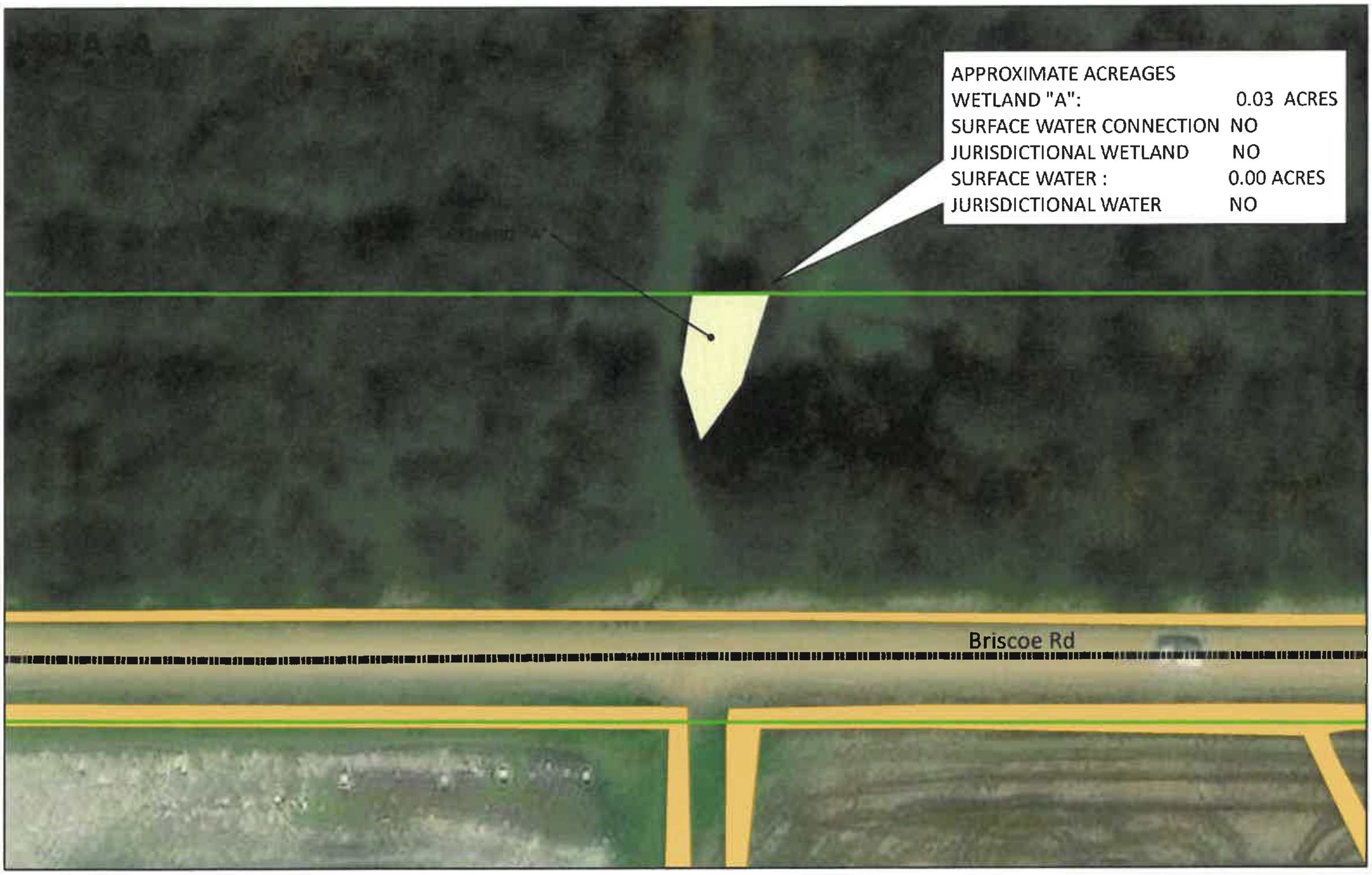

EXHIBIT 16.2: AREA "A" 2022 AERIAL
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- NON-JURISDICTIONAL
- WETLAND COMPLEX
- DITCH

08/05/2024

PJI

THIS IS NOT A SURVEY

N W E S

0 30 60 Feet

UES™

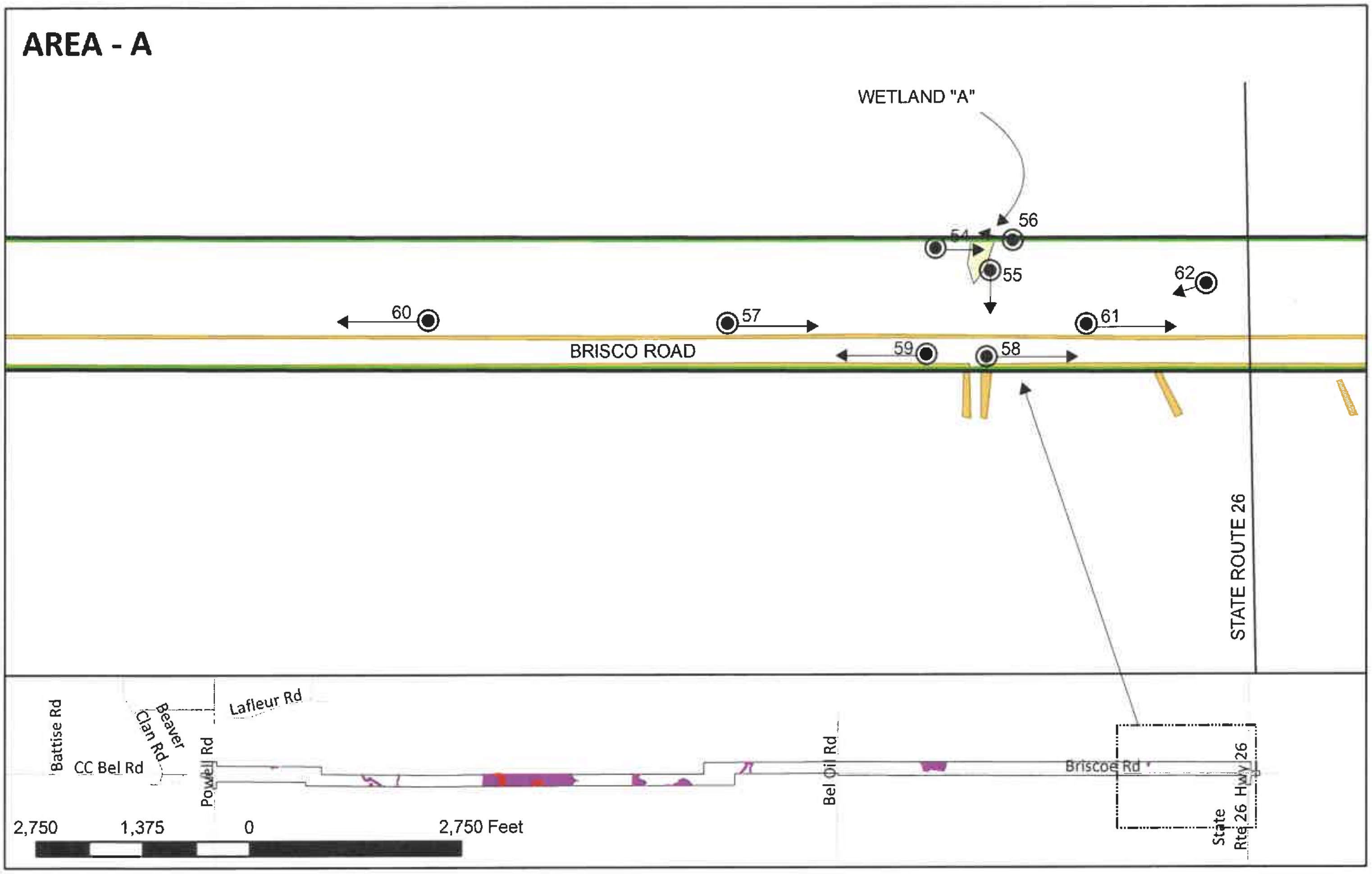

EXHIBIT 16.3: AREA "A"
UES DELINEATION MAP
CTLA EVACUATION ROUTE
ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
JURISDICTIONAL DETERMINATION &
DELIINEATION REQUEST

LEGEND

- INSPECTION BOUNDARY
- NON-JURISDICTIONAL
- WETLAND COMPLEX
- DITCH

08/05/2024

PJI

THIS IS NOT A SURVEY

N W E S

0 100 200 Feet

UES ™

Roadside Swales/ Ditches Briscoe Road, Bel Oil Road: There are roadside swales and ditches on the north and south shoulders of Brisco Road and along the east side of Bel Oil Road. These ditches appear to receive water from the crop fields to the south and the road surfaces they parallel. They are all interconnected to ditch E1 through a series of culverts under Brisco Road, collecting to the south of the main ditch branch and discharging in a southwesterly direction. Portions of these ditches contained wetland vegetation where the grades were over excavated allowing water to pond. Alligator weed and primrose willow were the dominant species to persist in these areas but there were no dense colonies of wetland plants in these ditches. The proposed roadway alignment will temporarily impact these ditches as they have been redesigned to accommodate stormwater treatment and downstream erosion. These features are ephemeral in nature, manmade and do not have a continuous surface water connection to wetland.

5.0 CONCLUSION

Our field investigations have resulted in the identification, delineation, and location of 13 aquatic resources within the review area. It is our best professional opinion, however, that jurisdictional coverage under the Clean Water Act only applies to the relatively permanent waters within the banks of Bayou Blue. The standard for qualifying jurisdictional reach was established within the U.S. Supreme Court's Sackett ruling: "the Agencies may only regulate (1) "those relatively permanent, standing or continuously flowing bodies of water 'forming geographic[al] features' that are described in ordinary parlance as 'streams, oceans, rivers, and lakes,'" *Sackett*, 598 U.S. at 671 (quoting *Rapanos v. United States*, 547 U.S. 715, 739 (2006) (plurality opinion)); and (2) "Wetlands" (i) with a "continuous surface connection" to such waters and (ii) that are "'as a practical matter indistinguishable from waters of the United States,' such that it is 'difficult to determine where the "water" ends and the "wetland" begins,'" *id.* at 678 (quoting *Rapanos*, 547 U.S. at 742). If a wetland does not satisfy these conditions, it is, as a matter of law, not among the regulable "navigable waters." As such we contend that the remaining 12 delineated features do not carry or maintain relatively permanent waters or contribute a continuous downstream flow to a TNW.

SIGNATURE OF ENVIRONMENTAL PROFESSIONAL

I declare that I possess sufficient skill and experience to accurately identify and delineate jurisdictional wetlands and waters. I have conducted and/or reviewed this assessment and support the data and conclusions contained therein.

Patrick J. Imhof **Date**

Environmental Scientist

UES

REFERENCES:

a. "Revised Definition of 'Waters of the United States,'" 88 FR 3004 (18 January 2023) (2023 Rule)
b. "Revised Definition of 'Waters of the United States,' Conforming" 88 FR 3004 (61964 (8 September 2023)
c. Sackett v. EPA, 598 U.S. 651, 143 S. Ct. 1322 (2023)
d. Lewis et al. v. U.S. et al. No. 21-30163, (5th Cir. Dec. 18, 2023)
e. U.S. Army Corps of Engineers, Mississippi Valley Division, "Navigable Waters (Section 10) of the United States" (Traditional)
f. U.S.G.S.
g. U.S.D.A. N.R.C.S. Web Soil Survey
h. U.S.D.A. Soil Survey of Allen Parish, Louisiana
i. U.S.F.W.S. National Wetland Inventory
j. U.S.F.W.S. Wetlands Mapper *https://www.fws.gov/program/national-WETLANDs-inventory/WETLANDs-mapper*

ATTACHMENTS

A WETLAND DATA FORMS

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region** See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R	*OMB Control #: 0710-0024, Exp: 11/30/2024* *Requirement Control Symbol EXEMPT:* *(Authority: AR 335-15, paragraph 5-2a)*

Project/Site: CTLA EVACUATION ROUTE City/County: ALLEN PARISH Sampling Date: JULY 10, 2026

Applicant/Owner: COUSHATTA TRIBE LOUISIANA State: LA Sampling Point: 1 W

Investigator(s): PAT IMHOF Section, Township, Range: 18-3S-3W

Landform (hillside, terrace, etc.): DEPRESSION Local relief (concave, convex, none): FLAT Slope (%): 0

Subregion (LRR or MLRA): LRR T, MLRA 152B Lat: 30.524037 Long: -92.711590 Datum: NAD 83

Soil Map Unit Name: GLENMORA SILT LOAM NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ___ Hydric Soil Present? Yes X No ___ Wetland Hydrology Present? Yes X No ___	**Is the Sampled Area within a Wetland? Yes X No ___**

Remarks:
SLIGHT CONCAVE DEPRESSION WITHIN UPLAND TERRACE. STUNTED PLANTED LOBLOLLY PINES WITHIN ISOLATED COMPLEX.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Aquatic Fauna (B13)
___ High Water Table (A2)	___ Marl Deposits (B15) **(LRR U)**
___ Saturation (A3)	___ Hydrogen Sulfide Odor (C1)
___ Water Marks (B1)	___ Oxidized Rhizospheres on Living Roots (C3)
___ Sediment Deposits (B2)	___ Presence of Reduced Iron (C4)
___ Drift Deposits (B3)	___ Recent Iron Reduction in Tilled Soils (C6)
X Algal Mat or Crust (B4)	___ Thin Muck Surface (C7)
___ Iron Deposits (B5)	___ Other (Explain in Remarks)
___ Inundation Visible on Aerial Imagery (B7)	
x Water-Stained Leaves (B9)	

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
X Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
X FAC-Neutral Test (D5)
___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
ISOLATED/CLOSED DEPRESSIONAL COMPLEX.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: 1 W

Tree Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus taeda*	70	Yes	FAC
2.			
3.			
4.			
5.			
6.			
	70	=Total Cover	
50% of total cover: 35		20% of total cover:	14
Sapling Stratum (Plot size: 50')			
1. *Pinus taeda*	10	Yes	FAC
2. *Liquidambar styraciflua*	10	Yes	FAC
3. *Acer rubrum*	5	No	FAC
4. *Quercus nigra*	5	No	FAC
5. *Sapium sebiferum*	5	No	FAC
6.			
	35	=Total Cover	
50% of total cover: 18		20% of total cover:	7
Shrub Stratum (Plot size: 50')			
1. *Viburnum dentatum*	2	No	FAC
2.			
3.			
4.			
5.			
6.			
	2	=Total Cover	
50% of total cover: 1		20% of total cover:	1
Herb Stratum (Plot size: 50')			
1. *Arundinaria gigantia*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
		=Total Cover	
50% of total cover:		20% of total cover:	
Woody Vine Stratum (Plot size: 50')			
1. *Toxicodendron radicans*	1	No	FAC
2. *Parthenocissus quinquefolia*	1	No	FAC
3.			
4.			
5.			
	2	=Total Cover	
50% of total cover: 1		20% of total cover:	1

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	109	x 3 =	327
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	109 (A)		327 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: 1 W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/3	100					Loamy/Clayey	Grayish brown
5-10	10YR 6/3	100					Loamy/Clayey	Brown
10-20	10YR 5/6	100					Loamy/Clayey	Gray

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
? Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**

___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
X Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
X Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Coast Prairie Redox (A16) **(MLRA 149A)**
? Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ________

Depth (inches): ________

Hydric Soil Present? **Yes** X **No** ___

Remarks:

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region** See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R	*OMB Control #: 0710-0024, Exp: 11/30/2024* *Requirement Control Symbol EXEMPT:* *(Authority: AR 335-15, paragraph 5-2a)*

Project/Site: CTLA EVACUATION ROUTE City/County: ALLEN PARISH Sampling Date: JULY 10, 2026

Applicant/Owner: COUSHATTA TRIBE LOUISIANA State: LA Sampling Point: 2

Investigator(s): PAT IMHOF Section, Township, Range: 20-3S-3W

Landform (hillside, terrace, etc.): TERRACE Local relief (concave, convex, none): FLAT Slope (%): 0-1

Subregion (LRR or MLRA): LRR T, MLRA 152B Lat: 30.523959 Long: -92.711488 Datum: NAD 83

Soil Map Unit Name: GLENMORA SILT LOAM NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes ___ No X	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 2

Tree Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus taeda*	60	Yes	FAC
2. *Quercus falcata*	5	No	FACU
3. *Liquidambar styraciflua*	5	No	FAC
4.			
5.			
6.			
	70	=Total Cover	
50% of total cover:	35	20% of total cover:	14

Sapling Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus nigra*	1	No	FAC
2. *Liquidambar styraciflua*	10	Yes	FAC
3. *Quercus falcata*	5	Yes	FACU
4.			
5.			
6.			
	16	=Total Cover	
50% of total cover:	8	20% of total cover:	4

Shrub Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ilex vomitoria*	5	Yes	UPL
2.			
3.			
4.			
5.			
6.			
	5	=Total Cover	
50% of total cover:	3	20% of total cover:	1

Herb Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Campsis radicans*	3	Yes	FAC
2. *Lygodium japonicum*	3	Yes	FACU
3. *Parthenocissus quinquefolia*	3	Yes	FACU
4. *Smilax bona-nox*	1	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	10	=Total Cover	
50% of total cover:	5	20% of total cover:	2

Woody Vine Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Vitis rotundifolia*	10	Yes	FAC
2. *Parthenocissus quinquefolia*	10	Yes	FACU
3.			
4.			
5.			
	20	=Total Cover	
50% of total cover:	10	20% of total cover:	4

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 44.4% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	90	x 3 =	270
FACU species	26	x 4 =	104
UPL species	5	x 5 =	25
Column Totals:	121 (A)		399 (B)

Prevalence Index = B/A = 3.30

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-2	10YR 5/2	100					Loamy/Clayey	Grayish brown, Silty loam
2-8	10YR 7/3	100					Loamy/Clayey	Brown, Silty loam
8-14	10YR 6/4	100					Loamy/Clayey	Yellowish brown, Silty loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
_?_ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Coast Prairie Redox (A16) **(MLRA 149A)**
___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

Hydric Soil Present? Yes ___ No _X_

Remarks:
Well drained silty loam soil. Weak and friable with deep seasonal high water table.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: CTLA EVACUATION ROUTE City/County: ALLEN PARISH Sampling Date: JULY 10, 2026

Applicant/Owner: COUSHATTA TRIBE LOUISIANA State: LA Sampling Point: 3

Investigator(s): PAT IMHOF Section, Township, Range: 20-3S-3W

Landform (hillside, terrace, etc.): TERRACE Local relief (concave, convex, none): FLAT Slope (%): 0-1

Subregion (LRR or MLRA): LRR T, MLRA 152B Lat: 30.523846 Long: -92.710357 Datum: DD

Soil Map Unit Name: Kinder-Gis Complex NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ? Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 3

Tree Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Sapling Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Cercis canadensis*	5	Yes	UPL
2. *Sapium sebiferum*	10	Yes	FAC
3. *Quercus falcata*	5	Yes	FACU
4. *Quercus nigra*	5	Yes	FAC
5. *Nyssa sylvatica*	5	Yes	FAC
6.			
	30	=Total Cover	
50% of total cover:	15	20% of total cover:	6

Shrub Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ilex vomitoria*	10	Yes	UPL
2. *Quercus falcata*	5	Yes	UPL
3.			
4.			
5.			
6.			
	15	=Total Cover	
50% of total cover:	8	20% of total cover:	3

Herb Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Chasmanthium laxum*	1	No	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	1	=Total Cover	
50% of total cover:	1	20% of total cover:	1

Woody Vine Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Campsis radicans*	10	Yes	FAC
2. *Lygodium japonicum*	10	Yes	FAC
3. *Smilax auriculata*	10	Yes	FACU
4. *Lonicera sp*	10	Yes	FACU
5.			
	40	=Total Cover	
50% of total cover:	20	20% of total cover:	8

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 11 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 45.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	1	x 2 =	2
FAC species	40	x 3 =	120
FACU species	25	x 4 =	100
UPL species	20	x 5 =	100
Column Totals:	86 (A)		322 (B)

Prevalence Index = B/A = 3.74

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (If observed, list morphological adaptations below.)
Edge of powerline easement.

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 5/2	100					Loamy/Clayey	Grayish brown
3-11	10YR 6/3	100					Loamy/Clayey	Brown
11-15	10YR 6/4	98	10YR 4/6	2	C	M	Loamy/Clayey	Yellowish brown

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
? Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Coast Prairie Redox (A16) **(MLRA 149A)**
___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ___
Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
Well drained soil. No hydric soil indicators present.

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region** See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R	*OMB Control #: 0710-0024, Exp: 11/30/2024* *Requirement Control Symbol EXEMPT:* *(Authority: AR 335-15, paragraph 5-2a)*

Project/Site: CTLA EVACUATION ROUTE City/County: ALLEN PARISH Sampling Date: JULY 10, 2026

Applicant/Owner: COUSHATTA TRIBE LOUISIANA State: LA Sampling Point: 5 UPL

Investigator(s): PAT IMHOF Section, Township, Range: 21-3S-3W

Landform (hillside, terrace, etc.): TERRACE Local relief (concave, convex, none): FLAT Slope (%): 0-1

Subregion (LRR or MLRA): LRR T, MLRA 152B Lat: 30.523710 Long: -92.706702 Datum: DD

Soil Map Unit Name: Kinder-Gis Complex NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes ___ No X	

Remarks:
Maintained recreational area.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 5 UPL

Tree Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
=Total Cover			
50% of total cover:		20% of total cover:	

Sapling Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
=Total Cover			
50% of total cover:		20% of total cover:	

Shrub Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
=Total Cover			
50% of total cover:		20% of total cover:	

Herb Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Eremochloa ophiuroides*	70	Yes	UPL
2. *Paspalum notatum*	10	No	UPL
3. *Cyperus echinatus*	1	No	FAC
4. *Geranium carolinianum*	1	No	UPL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
=Total Cover	82		
50% of total cover:	41	20% of total cover:	17

Woody Vine Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
=Total Cover			
50% of total cover:		20% of total cover:	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	1	x 3 =	3
FACU species	0	x 4 =	0
UPL species	81	x 5 =	405
Column Totals:	82 (A)		408 (B)

Prevalence Index = B/A = 4.98

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (If observed, list morphological adaptations below.)
Edge of powerline easement.

SOIL

Sampling Point: 5 UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 6/4	100					Loamy/Clayey	Yellowish Brown
4-18	10YR 4/6	100					Loamy/Clayey	Yellowish Brown

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Coast Prairie Redox (A16) **(MLRA 149A)**
___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

Hydric Soil Present? Yes ___ No X

Remarks:
Well drained soil. No hydric soil indicators present.

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region** See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R	*OMB Control #: 0710-0024, Exp: 11/30/2024* *Requirement Control Symbol EXEMPT:* *(Authority: AR 335-15, paragraph 5-2a)*

Project/Site: CTLA EVACUATION ROUTE City/County: ALLEN PARISH Sampling Date: JULY 10, 2026

Applicant/Owner: COUSHATTA TRIBE LOUISIANA State: LA Sampling Point: 6 Wet

Investigator(s): PAT IMHOF Section, Township, Range: 22-3S-3W

Landform (hillside, terrace, etc.): Bottom-Floodplain Local relief (concave, convex, none): FLAT Slope (%): 0

Subregion (LRR or MLRA): LRR T, MLRA 152B Lat: 30.523582 Long: -92.702851 Datum: DD

Soil Map Unit Name: Guyton-Ouchita Complex NWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes x No ___	**Is the Sampled Area within a Wetland?** Yes x No ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:
Data point 15 feet east of pt M8 within the wetland.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Aquatic Fauna (B13)
x High Water Table (A2)	___ Marl Deposits (B15) **(LRR U)**
___ Saturation (A3)	___ Hydrogen Sulfide Odor (C1)
x Water Marks (B1)	___ Oxidized Rhizospheres on Living Roots (C3)
___ Sediment Deposits (B2)	___ Presence of Reduced Iron (C4)
x Drift Deposits (B3)	___ Recent Iron Reduction in Tilled Soils (C6)
___ Algal Mat or Crust (B4)	___ Thin Muck Surface (C7)
___ Iron Deposits (B5)	___ Other (Explain in Remarks)
___ Inundation Visible on Aerial Imagery (B7)	
x Water-Stained Leaves (B9)	

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes x	No ___	Depth (inches): 6

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 6 Wet

Tree Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus phellos*	20	Yes	FACW
2. *Nyssa sylvatica var biflora*	10	Yes	OBL
3. *Carya aquatica*	10	Yes	OBL
4. *Taxodium distichum*	5	No	OBL
5. *Sapium sebiferum*	5	No	FAC
6.			
	50	=Total Cover	
50% of total cover: 25		20% of total cover:	10

Sapling Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Sapium sebiferum*	10	Yes	FAC
2.			
3.			
4.			
5.			
6.			
	10	=Total Cover	
50% of total cover: 5		20% of total cover:	2

Shrub Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Herb Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Commelina virginica*	30	Yes	FACW
2. *Toxicodendron radicans*	10	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	40	=Total Cover	
50% of total cover: 20		20% of total cover:	8

Woody Vine Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	50	x 2 =	100
FAC species	25	x 3 =	75
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (If observed, list morphological adaptations below.)
Edge of powerline easement.

SOIL

Sampling Point: 6 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 5/1	95	10YR 4/4	5	C	M	Loamy/Clayey	gray
6-13	10YR 6/2	100	10YR 4/4	20	C	M	Loamy/Clayey	Light gray

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**

___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
? Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
x Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Coast Prairie Redox (A16) **(MLRA 149A)**
? Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
? Piedmont Floodplain Soils (F19) **(LRR P, T)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:
Bottomland hardwood with silty loam soil that is mottled through the E horizon. Poorly drained.

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region** See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R	*OMB Control #: 0710-0024, Exp: 11/30/2024* *Requirement Control Symbol EXEMPT:* *(Authority: AR 335-15, paragraph 5-2a)*

Project/Site: CTLA EVACUATION ROUTE City/County: ALLEN PARISH Sampling Date: JULY 10, 2026

Applicant/Owner: COUSHATTA TRIBE LOUISIANA State: LA Sampling Point: 7 Wet

Investigator(s): PAT IMHOF Section, Township, Range: 19-3S-3W

Landform (hillside, terrace, etc.): Bottom-Floodplain Local relief (concave, convex, none): FLAT Slope (%): 0

Subregion (LRR or MLRA): LRR T, MLRA 152B Lat: 30.523860 Long: -92.699243 Datum: DD

Soil Map Unit Name: Guyton-Ouchita Complex NWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ___ Hydric Soil Present? Yes X No ___ Wetland Hydrology Present? Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Aquatic Fauna (B13)
x High Water Table (A2)	___ Marl Deposits (B15) **(LRR U)**
___ Saturation (A3)	___ Hydrogen Sulfide Odor (C1)
x Water Marks (B1)	___ Oxidized Rhizospheres on Living Roots (C3)
___ Sediment Deposits (B2)	___ Presence of Reduced Iron (C4)
x Drift Deposits (B3)	___ Recent Iron Reduction in Tilled Soils (C6)
___ Algal Mat or Crust (B4)	___ Thin Muck Surface (C7)
___ Iron Deposits (B5)	___ Other (Explain in Remarks)
___ Inundation Visible on Aerial Imagery (B7)	
x Water-Stained Leaves (B9)	

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
X FAC-Neutral Test (D5)
___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes x	No ___	Depth (inches): 6

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: 7 Wet

Tree Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Liquidambar styraciflua*	30	Yes	FAC
2. *Sapium sebiferum*	20	Yes	FAC
3. *Celtis laevigata*	10	No	FACW
4.	5	No	
5.	5	No	
6.			
	70	=Total Cover	
50% of total cover: 35		20% of total cover:	14

Sapling Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Sapium sebiferum*	10	Yes	FAC
2.	10	Yes	FAC
3.			
4.			
5.			
6.			
	20	=Total Cover	
50% of total cover: 10		20% of total cover:	4

Shrub Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Sapium sebiferum*	10	Yes	FAC
2. *Ilex amelanchier*	2	No	OBL
3. *Ligustrum sinense*	2	No	FAC
4.			
5.			
6.			
	14	=Total Cover	
50% of total cover: 7		20% of total cover:	3

Herb Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Woody Vine Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Toxicodendron radicans*	10	Yes	FACW
2.			
3.			
4.			
5.			
	10	=Total Cover	
50% of total cover: 5		20% of total cover:	2

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2	x 1 =	2
FACW species	20	x 2 =	40
FAC species	82	x 3 =	246
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	104 (A)		288 (B)

Prevalence Index = B/A = 2.77

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (If observed, list morphological adaptations below.)
Edge of powerline easement.

SOIL

Sampling Point: 7 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 5/1	95	10YR 4/4	5	C	M	Loamy/Clayey	Gray
6-15	10YR 6/2	85	10YR 4/4	15	C	M	Loamy/Clayey	Light gray

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
_X_ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
_x_ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Coast Prairie Redox (A16) **(MLRA 149A)**
___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

Hydric Soil Present? **Yes** _X_ **No** ___

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: CTLA EVACUATION ROUTE City/County: ALLEN PARISH Sampling Date: JULY 10, 2026

Applicant/Owner: COUSHATTA TRIBE LOUISIANA State: LA Sampling Point: 8 UPL

Investigator(s): PAT IMHOF Section, Township, Range: 22-3S-3W

Landform (hillside, terrace, etc.): TERRACE Local relief (concave, convex, none): FLAT Slope (%): 1

Subregion (LRR or MLRA): LRR T, MLRA 152B Lat: 30.523767 Long: -92.698461 Datum: DD

Soil Map Unit Name: GLENMORA SILT LOAM NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:
Pine plantation upland that has mixture of FAC species present on non-hydric soils.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 8 UPL

Tree Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus taeda*	20	Yes	FAC
2. *Sapium sebiferum*	10	Yes	FAC
3. *Quercus falcata*	10	Yes	FACU
4.	5	No	
5.	5	No	
6.			
	50	=Total Cover	
50% of total cover: 25		20% of total cover:	10

Sapling Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Sapium sebiferum*	10	Yes	FAC
2. *Liquidambar styraciflua*	5	Yes	FAC
3. *Quercus falcata*	5	Yes	FACU
4.			
5.			
6.			
	20	=Total Cover	
50% of total cover: 10		20% of total cover:	4

Shrub Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Calicarpa americana*	5	Yes	FACU
2. *Ilex vomitoria*	2	Yes	FAC
3. *Ligustrum sinense*	2	Yes	FAC
4.			
5.			
6.			
	9	=Total Cover	
50% of total cover: 5		20% of total cover:	2

Herb Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Chasmanthium sessiflorum*	1	No	FAC
2. *Quercus falcata*	1	No	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	2	=Total Cover	
50% of total cover: 1		20% of total cover:	1

Woody Vine Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Vitis rotundifolia*	5	Yes	FAC
2. *lygodium*	5	Yes	FACU
3.			
4.			
5.			
	10	=Total Cover	
50% of total cover: 5		20% of total cover:	2

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 11 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 63.6% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	55	x 3 =	165
FACU species	26	x 4 =	104
UPL species	0	x 5 =	0
Column Totals:	81 (A)		269 (B)

Prevalence Index = B/A = 3.32

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (If observed, list morphological adaptations below.)
Edge of powerline easement.

SOIL

Sampling Point: 8 UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/2	100					Loamy/Clayey	Dk. Gray Brown
6-10	10YR 6/2	100					Loamy/Clayey	Tan
10-16	10YR 5/6	100					Loamy/Clayey	Yellowish brown

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
_x_ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Coast Prairie Redox (A16) **(MLRA 149A)**
___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** _X_

Remarks:
Well drained soil in pine plantation

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: CTLA EVACUATION ROUTE City/County: ALLEN PARISH Sampling Date: JULY 10, 2026
Applicant/Owner: COUSHATTA TRIBE LOUISIANA State: LA Sampling Point: 9 UPL
Investigator(s): PAT IMHOF Section, Township, Range: 19-3S-3W
Landform (hillside, terrace, etc.): TERRACE Local relief (concave, convex, none): FLAT Slope (%): 2
Subregion (LRR or MLRA): LRR T, MLRA 152B Lat: 30.524161 Long: -92.688660 Datum: DD
Soil Map Unit Name: KINDER-GIS NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes ___ No X	

Remarks:
Upland

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)
- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)
- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:
Surface Water Present? Yes ___ No x Depth (inches): ___
Water Table Present? Yes ___ No x Depth (inches): ___
Saturation Present? Yes ___ No x Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 9 UPL

Tree Stratum (Plot size: 50')

	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus taeda*	40	Yes	FAC
2.			
3.			
4.			
5.			
6.			
	40	=Total Cover	

50% of total cover: 20 20% of total cover: 8

Sapling Stratum (Plot size: 50')

	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus falcata*	60	Yes	FACU
2. *Liquidambar styraciflua*	15	Yes	FAC
3.			
4.			
5.			
6.			
	75	=Total Cover	

50% of total cover: 38 20% of total cover: 15

Shrub Stratum (Plot size: 50')

	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus falcata*	2	Yes	FACU
2. *Carya glabra*	2	Yes	FAC
3. *Ilex vomitoria*	2	Yes	FAC
4. *Callicarpa americana*	2	Yes	FACU
5.			
6.			
	8	=Total Cover	

50% of total cover: 4 20% of total cover: 2

Herb Stratum (Plot size: 50')

	Absolute % Cover	Dominant Species?	Indicator Status
1. *Chasmanthium sessiflorum*	1	No	FAC
2. *Quercus falcata*	1	No	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	2	=Total Cover	

50% of total cover: 1 20% of total cover: 1

Woody Vine Stratum (Plot size: 50')

	Absolute % Cover	Dominant Species?	Indicator Status
1. *Vitis rotundifolia*	5	Yes	FAC
2. *lygodium japonicum*	2	Yes	FACU
3.			
4.			
5.			
	7	=Total Cover	

50% of total cover: 4 20% of total cover: 2

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 55.6% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	65	x 3 =	195
FACU species	67	x 4 =	268
UPL species	0	x 5 =	0
Column Totals:	132 (A)		463 (B)

Prevalence Index = B/A = 3.51

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (If observed, list morphological adaptations below.)
Edge of powerline easement.

SOIL

Sampling Point: 9 UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/3	100					Loamy/Clayey	Brown
3-7	10YR 5/3	100					Loamy/Clayey	Brown
7-16	10YR 6/6	100					Loamy/Clayey	Brownish yellow

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
_x_ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Coast Prairie Redox (A16) **(MLRA 149A)**
___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ____________
Depth (inches): ____________

Hydric Soil Present? **Yes** ___ **No** _X_

Remarks:
Well drained soil in pine plantation former upland deciduous hardwood forest

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region** See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R	*OMB Control #: 0710-0024, Exp: 11/30/2024* *Requirement Control Symbol EXEMPT:* *(Authority: AR 335-15, paragraph 5-2a)*

Project/Site: CTLA EVACUATION ROUTE City/County: ALLEN PARISH Sampling Date: JULY 10, 2026

Applicant/Owner: COUSHATTA TRIBE LOUISIANA State: LA Sampling Point: B UPL

Investigator(s): PAT IMHOF Section, Township, Range: 22-3S-3W

Landform (hillside, terrace, etc.): TERRACE Local relief (concave, convex, none): FLAT Slope (%): 0-1

Subregion (LRR or MLRA): LRR T, MLRA 152B Lat: 30.523643 Long: -92.696007 Datum: DD

Soil Map Unit Name: Kinder-Gis Complex NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	**Is the Sampled Area within a Wetland?**	**Yes** ___ **No** X
Hydric Soil Present?	Yes ___ No X		
Wetland Hydrology Present?	Yes ___ No X		

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Aquatic Fauna (B13)
___ High Water Table (A2)	___ Marl Deposits (B15) **(LRR U)**
___ Saturation (A3)	___ Hydrogen Sulfide Odor (C1)
___ Water Marks (B1)	___ Oxidized Rhizospheres on Living Roots (C3)
___ Sediment Deposits (B2)	___ Presence of Reduced Iron (C4)
___ Drift Deposits (B3)	___ Recent Iron Reduction in Tilled Soils (C6)
___ Algal Mat or Crust (B4)	___ Thin Muck Surface (C7)
___ Iron Deposits (B5)	___ Other (Explain in Remarks)
___ Inundation Visible on Aerial Imagery (B7)	
___ Water-Stained Leaves (B9)	

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: B UPL

Tree Stratum (Plot size: 50')

	Species	Absolute % Cover	Dominant Species?	Indicator Status
1.	*Pinus taeda*	50	Yes	FAC
2.				
3.				
4.				
5.				
6.				
		50	=Total Cover	

50% of total cover: 25 20% of total cover: 10

Sapling Stratum (Plot size: 50')

	Species	Absolute % Cover	Dominant Species?	Indicator Status
1.	*Quercus rubra*	10	Yes	FACU
2.	*Sapium sebiferum*	10	Yes	FAC
3.	*Quercus falcata*	5	No	FACU
4.	*Quercus nigra*	5	No	FAC
5.				
6.				
		30	=Total Cover	

50% of total cover: 15 20% of total cover: 6

Shrub Stratum (Plot size: 50')

	Species	Absolute % Cover	Dominant Species?	Indicator Status
1.	*Ilex vomitoria*	10	Yes	UPL
2.	*Quercus falcata*	5	Yes	UPL
3.				
4.				
5.				
6.				
		15	=Total Cover	

50% of total cover: 8 20% of total cover: 3

Herb Stratum (Plot size: 50')

	Species	Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
			=Total Cover	

50% of total cover: ____ 20% of total cover: ____

Woody Vine Stratum (Plot size: 50')

	Species	Absolute % Cover	Dominant Species?	Indicator Status
1.	*Campsis radicans*	10	Yes	FAC
2.	*Lygodium japonicum*	10	Yes	FAC
3.	*Rubus trivialis*	10	Yes	FACU
4.				
5.				
		30	=Total Cover	

50% of total cover: 15 20% of total cover: 6

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	85	x 3 =	255
FACU species	25	x 4 =	100
UPL species	15	x 5 =	75
Column Totals:	125 (A)		430 (B)

Prevalence Index = B/A = 3.44

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: B UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 5/2	100					Loamy/Clayey	Grayish brown
3-11	10YR 6/3	100					Loamy/Clayey	Brown
11-15	10YR 6/4	100					Loamy/Clayey	Yellowish brown

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Coast Prairie Redox (A16) **(MLRA 149A)**
___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ___ No X

Remarks:
Well drained soil. No hydric soil indicators present.

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region** See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R	***OMB Control #: 0710-0024, Exp: 11/30/2024*** ***Requirement Control Symbol EXEMPT:*** ***(Authority: AR 335-15, paragraph 5-2a)***

Project/Site: CTLA EVACUATION ROUTE City/County: ALLEN PARISH Sampling Date: JULY 10, 2026

Applicant/Owner: COUSHATTA TRIBE LOUISIANA State: LA Sampling Point: B WET

Investigator(s): PAT IMHOF Section, Township, Range: 22-3S-3W

Landform (hillside, terrace, etc.): DEPRESSION Local relief (concave, convex, none): FLAT Slope (%): 0

Subregion (LRR or MLRA): LRR T, MLRA 152B Lat: 30.523727 Long: -92.696555 Datum: DD

Soil Map Unit Name: KINDER-GIS COMPLEX NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** Yes X No ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:
SLIGHTLY CONCAVE DEPRESSION WITHIN PINE PLANTATION. IMPOUNDED SURFACE WATER FROM BERMING AND SILVICULTURAL TREE BEDDING.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- x Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- X Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 4	
Water Table Present?	Yes ___	No X	Depth (inches): 0	
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0	**Wetland Hydrology Present?** Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
ISOLATED/CLOSED DEPRESSIONAL COMPLEX.

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: B WET

Tree Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus taeda*	70	Yes	FAC
2. *Liquidambar styraciflua*	10	No	FAC
3. *Quercus phellos*	3	No	FACW
4.			
5.			
6.			
	83	=Total Cover	
50% of total cover: 42		20% of total cover:	17

Sapling Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus taeda*	10	Yes	FAC
2. *Acer rubrum*	10	Yes	FAC
3. *Fraxinus caroliniana*	5	No	OBL
4. *Quercus nigra*	5	No	FAC
5. *Sapium sebiferum*	5	No	FAC
6.			
	35	=Total Cover	
50% of total cover: 18		20% of total cover:	7

Shrub Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Viburnum dentatum*	2	No	FAC
2. *Ilex vomitoria*	2	No	FAC
3.			
4.			
5.			
6.			
	4	=Total Cover	
50% of total cover: 2		20% of total cover:	1

Herb Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Arundinaria gigantia*	5	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	5	=Total Cover	
50% of total cover: 3		20% of total cover:	1

Woody Vine Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Toxicodendron radicans*	1	No	FAC
2.			
3.			
4.			
5.			
	1	=Total Cover	
50% of total cover: 1		20% of total cover:	1

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	8	x 2 =	16
FAC species	115	x 3 =	345
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	128 (A)		366 (B)

Prevalence Index = B/A = 2.86

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: B WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/2	95	10YR 4/1	5	C	PL	Loamy/Clayey	DARK GRAY
8-15	10YR 4/1	75	10YR 4/1	25	C	PL/M	Loamy/Clayey	GRAY

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- X Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(MLRA 149A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region** See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R	*OMB Control #: 0710-0024, Exp: 11/30/2024* *Requirement Control Symbol EXEMPT:* *(Authority: AR 335-15, paragraph 5-2a)*

Project/Site: CTLA EVACUATION ROUTE City/County: ALLEN PARISH Sampling Date: JULY 10, 2026

Applicant/Owner: COUSHATTA TRIBE LOUISIANA State: LA Sampling Point: BB upl

Investigator(s): PAT IMHOF Section, Township, Range: 18-3S-3W

Landform (hillside, terrace, etc.): TERRACE Local relief (concave, convex, none): FLAT Slope (%): 0-1

Subregion (LRR or MLRA): LRR T, MLRA 152B Lat: 30.524271 Long: -92.683424 Datum: NAD 83

Soil Map Unit Name: KINDER-GIS COMPLEX NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes ___ No X	

Remarks:
TYPICAL UPLAND WITHIN THE PINE PLANTATION EXTENDING TO HWY 26.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Marl Deposits (B15) **(LRR U)**
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___
Water Table Present? Yes ___ No X Depth (inches): ___
Saturation Present? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
UPLAND PINE STAND WITH GOOD SURFACE DRAINAGE.

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: BB upl

Tree Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus taeda*	60	Yes	FAC
2. *Quercus falcata*	5	No	FACU
3. *Liquidambar styraciflua*	5	No	FAC
4. *Quercus rubra*	5	No	FACU
5.			
6.			
	75	=Total Cover	
50% of total cover: 38		20% of total cover:	15

Sapling Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus falcata*	1	No	FACU
2. *Liquidambar styraciflua*	1	No	FAC
3.			
4.			
5.			
6.			
	2	=Total Cover	
50% of total cover: 1		20% of total cover:	1

Shrub Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ilex vomitoria*	5	Yes	UPL
2. *Callicarpa americana*	5	Yes	FACU
3.			
4.			
5.			
6.			
	10	=Total Cover	
50% of total cover: 5		20% of total cover:	2

Herb Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Campsis radicans*	5	Yes	FAC
2. *Lygodium japonicum*	3	Yes	FACU
3. *Parthenocissus quinquefolia*	2	No	FACU
4. *Smilax bona-nox*	1	No	FAC
5. *Rubus trivialis*	1	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	12	=Total Cover	
50% of total cover: 6		20% of total cover:	3

Woody Vine Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	72	x 3 =	216
FACU species	22	x 4 =	88
UPL species	5	x 5 =	25
Column Totals:	99 (A)		329 (B)

Prevalence Index = B/A = 3.32

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: BB upl

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 5/2	100					Loamy/Clayey	Grayish brown, Silty loam
5-12	10YR 7/3	100					Loamy/Clayey	Brown, Silty loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Coast Prairie Redox (A16) **(MLRA 149A)**
___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ___
Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:
Well drained silty loam soil. Weak and friable with deep seasonal high water table.

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region** See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R	*OMB Control #: 0710-0024, Exp: 11/30/2024* *Requirement Control Symbol EXEMPT:* *(Authority: AR 335-15, paragraph 5-2a)*

Project/Site: CTLA EVACUATION ROUTE City/County: ALLEN PARISH Sampling Date: JULY 10, 2026

Applicant/Owner: COUSHATTA TRIBE LOUISIANA State: LA Sampling Point: BB Wet

Investigator(s): PAT IMHOF Section, Township, Range: 18-3S-3W

Landform (hillside, terrace, etc.): DEPRESSIONAL Local relief (concave, convex, none): FLAT Slope (%): 0

Subregion (LRR or MLRA): LRR T, MLRA 152B Lat: 30.524360 Long: -92.683958 Datum: NAD 83

Soil Map Unit Name: GLENMORA SILT LOAM NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:
SMALL CONCAVE DEPRESSION THAT APPEARS TO HAVE BEEN HISTORICALLY SCRAPED DOWN FOR WATER RETENTION.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- x Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 3

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: BB Wet

Tree Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus taeda*	30	Yes	FAC
2. *Sapium sebiferum*	30	Yes	FAC
3. *Liquidambar styraciflua*	10	No	FAC
4.			
5.			
6.			
	70	=Total Cover	
50% of total cover: 35		20% of total cover:	14

Sapling Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Liquidambar styraciflua*	10	Yes	FAC
2. *Sapium sebiferum*	10	Yes	FAC
3. *Acer rubrum*	2	No	FAC
4. *Quercus nigra*	1	No	FAC
5.			
6.			
	23	=Total Cover	
50% of total cover: 12		20% of total cover:	5

Shrub Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Viburnum dentatum*	2	No	FAC
2. *Myrica ceriferum*	1	No	FAC
3.			
4.			
5.			
6.			
	3	=Total Cover	
50% of total cover: 2		20% of total cover:	1

Herb Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Arundinaria gigantia*	2	No	FACW
2. *Chasmanthium laxum*	1	No	FACW
3. *Ludwigia peruviana*	1	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	4	=Total Cover	
50% of total cover: 2		20% of total cover:	1

Woody Vine Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Toxicodendron radicans*	1	No	FAC
2.			
3.			
4.			
5.			
	1	=Total Cover	
50% of total cover: 1		20% of total cover:	1

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species	3	x 2 =	6
FAC species	97	x 3 =	291
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	101 (A)		298 (B)

Prevalence Index = B/A = 2.95

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: BB Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	90	10YR 2/1	10	D	PL/M	Loamy/Clayey	Gray
10-15	10YR 5/1	95	10YR 3/1	5	C	PL/M	Loamy/Clayey	Gray

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
_X_ Depleted Dark Surface (F7)
_X_ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
_X_ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Coast Prairie Redox (A16) **(MLRA 149A)**
___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes _X_ No ___

Remarks:

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region** See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R	*OMB Control #: 0710-0024, Exp: 11/30/2024* *Requirement Control Symbol EXEMPT:* *(Authority: AR 335-15, paragraph 5-2a)*

Project/Site: CTLA EVACUATION ROUTE City/County: ALLEN PARISH Sampling Date: JULY 10, 2026

Applicant/Owner: COUSHATTA TRIBE LOUISIANA State: LA Sampling Point: 1 UPL

Investigator(s): PAT IMHOF Section, Township, Range: 18-3S-3W

Landform (hillside, terrace, etc.): TERRACE Local relief (concave, convex, none): FLAT Slope (%): 0-1

Subregion (LRR or MLRA): LRR T, MLRA 152B Lat: 30.523875 Long: -92.713561 Datum: NAD 83

Soil Map Unit Name: GLENMORA SILT LOAM NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	**Is the Sampled Area within a Wetland?**	**Yes** ___ **No** X
Hydric Soil Present?	Yes ___ No X		
Wetland Hydrology Present?	Yes ___ No X		

Remarks:
SAMPLING POINT LOCATED WITHIN FORMER PINE/MIXED HARDWOOD UPLAND THAT HAS BEEN CONVERTED TO LOBLOLLY PINE PLANTATION. IT IS TYPICAL OF THE UPLANDS WITIHIN THE REVIEW AREA.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Aquatic Fauna (B13)
___ High Water Table (A2)	___ Marl Deposits (B15) **(LRR U)**
___ Saturation (A3)	___ Hydrogen Sulfide Odor (C1)
___ Water Marks (B1)	___ Oxidized Rhizospheres on Living Roots (C3)
___ Sediment Deposits (B2)	___ Presence of Reduced Iron (C4)
___ Drift Deposits (B3)	___ Recent Iron Reduction in Tilled Soils (C6)
___ Algal Mat or Crust (B4)	___ Thin Muck Surface (C7)
___ Iron Deposits (B5)	___ Other (Explain in Remarks)
___ Inundation Visible on Aerial Imagery (B7)	
___ Water-Stained Leaves (B9)	

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: 1

Tree Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus taeda*	70	Yes	FAC
2.			
3.			
4.			
5.			
6.			
	70	=Total Cover	
50% of total cover: 35		20% of total cover:	14

Sapling Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus falcata*	10	Yes	FACU
2. *Liquidambar styraciflua*	10	Yes	FAC
3. *Quercus stellata*	5	Yes	UPL
4.			
5.			
6.			
	25	=Total Cover	
50% of total cover: 13		20% of total cover:	5

Shrub Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Callacarpa americana*	5	Yes	UPL
2. *Ilex vomitoria*	5	Yes	FAC
3.			
4.			
5.			
6.			
	10	=Total Cover	
50% of total cover: 5		20% of total cover:	2

Herb Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Mitchella repens*	10	Yes	FACU
2. *Mimosa quadrivalvis*	5	Yes	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	15	=Total Cover	
50% of total cover: 8		20% of total cover:	3

Woody Vine Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Vitis rotundifolia*	10	Yes	FAC
2. *Parthenocissus quinquefolia*	10	Yes	FACU
3.			
4.			
5.			
	20	=Total Cover	
50% of total cover: 10		20% of total cover:	4

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	95	x 3 =	285
FACU species	30	x 4 =	120
UPL species	15	x 5 =	75
Column Totals:	140 (A)		480 (B)

Prevalence Index = B/A = 3.43

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/3	100					Loamy/Clayey	Grayish brown, Silty loam
6-10	10YR 6/3	100					Loamy/Clayey	Brown, Silty loam
10-15	10YR 5/6	100					Loamy/Clayey	Yellowish brown, Silty loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
_?_ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Coast Prairie Redox (A16) **(MLRA 149A)**
___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ___
Depth (inches): ___

Hydric Soil Present? Yes ___ No _X_

Remarks:
Well drained silty loam soil. Weak and friable with deep seasonal high water table.

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region** See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R	***OMB Control #: 0710-0024, Exp: 11/30/2024*** ***Requirement Control Symbol EXEMPT:*** ***(Authority: AR 335-15, paragraph 5-2a)***

Project/Site: CTLA EVACUATION ROUTE City/County: ALLEN PARISH Sampling Date: JULY 10, 2026

Applicant/Owner: COUSHATTA TRIBE LOUISIANA State: LA Sampling Point: A2 WET

Investigator(s): PAT IMHOF Section, Township, Range: 18-3S-3W

Landform (hillside, terrace, etc.): DEPRESSION Local relief (concave, convex, none): FLAT Slope (%): 0

Subregion (LRR or MLRA): LRR T, MLRA 152B Lat: 30.524459 Long: -92.675517 Datum: NAD 83

Soil Map Unit Name: GLENMORA SILT LOAM NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ___	**Is the Sampled Area within a Wetland?**	**Yes** X **No** ___
Hydric Soil Present? Yes X No ___		
Wetland Hydrology Present? Yes X No ___		

Remarks:
SMALL CONCAVE DEPRESSION WITHIN UPLAND PINE PLANTATION.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Aquatic Fauna (B13)
___ High Water Table (A2)	___ Marl Deposits (B15) **(LRR U)**
X Saturation (A3)	___ Hydrogen Sulfide Odor (C1)
X Water Marks (B1)	___ Oxidized Rhizospheres on Living Roots (C3)
___ Sediment Deposits (B2)	___ Presence of Reduced Iron (C4)
___ Drift Deposits (B3)	___ Recent Iron Reduction in Tilled Soils (C6)
X Algal Mat or Crust (B4)	___ Thin Muck Surface (C7)
___ Iron Deposits (B5)	___ Other (Explain in Remarks)
___ Inundation Visible on Aerial Imagery (B7)	
x Water-Stained Leaves (B9)	

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 6

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: A2 WET

Tree Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus taeda*	70	Yes	FAC
2.			
3.			
4.			
5.			
6.			
	70	=Total Cover	
50% of total cover: 35		20% of total cover: 14	

Sapling Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Liquidambar styraciflua*	10	Yes	FAC
2. *Sapium sebiferum*	5	Yes	FAC
3. *Acer rubrum*	5	Yes	FAC
4. *Quercus nigra*	1	No	FAC
5.			
6.			
	21	=Total Cover	
50% of total cover: 11		20% of total cover: 5	

Shrub Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Viburnum dentatum*	2	No	FAC
2. *Myrica ceriferum*	1	No	FAC
3.			
4.			
5.			
6.			
	3	=Total Cover	
50% of total cover: 2		20% of total cover: 1	

Herb Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Arundinaria gigantia*	10	Yes	FACW
2. *Chasmanthium laxum*	5	Yes	FACW
3. *Ludwigia peruviana*	2	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	17	=Total Cover	
50% of total cover: 9		20% of total cover: 4	

Woody Vine Stratum (Plot size: 50')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Toxicodendron radicans*	1	No	FAC
2.			
3.			
4.			
5.			
	1	=Total Cover	
50% of total cover: 1		20% of total cover: 1	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2	x 1 =	2
FACW species	15	x 2 =	30
FAC species	95	x 3 =	285
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	112 (A)		317 (B)

Prevalence Index = B/A = 2.83

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: A2 WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/1	100					Loamy/Clayey	Dark Gray
7-14	10YR 5/1	95	10YR 3/1	5	C	PL/M	Loamy/Clayey	Gray

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
X Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
X Depleted Dark Surface (F7)
X Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
X Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Coast Prairie Redox (A16) **(MLRA 149A)**
___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

ATTACHMENTS

B Site Photographs

Photo 1: Road alignment center line from western tie in point to CC Bel Road facing west past Powell Road.

Photo 2: Facing south from starting point along Powell Road. Buffalo Run store on left.

Photo 3: Facing north from starting point along Powell Road. Site is on the right inside the tree line. CTLA public buildings on left.

Photo 4: Facing west through young pine stand within the upland.

Photo 5: Facing east and into pine stand with typical ground cover and underbrush within the upland.

Photo 6: Facing south into upland and typical vegetation and landscape

Photo 7: Wetland "G" vegetative structure.

Hydric soil in wetland "G"

Photo 8: Facing west along north side of CC Bel Road. Buffalo pasture to the left of fence.

Photo 8: Facing west along the north side of CC Bel Road.

Photo 9: Facing east along center of review area and CC Bel Road.

Photo 10: Facing west across active buffalo pasture.

Photo 11: Facing northeast along a maintained utility servitude.

Photo 12: Upland vegetation within the pine stand.

Photo 13: Survey monumentation at old fence line.

Photo 14: Facing north upslope inside an upland drainage swale.

Photo 15: Facing south into the review area where the swale discharges into the site.

Photo 16: Downstream view (southeast) of ephemeral streambed (H) that has short interval flow after rain events.

Photo 17: Upstream (northwest) view of streambed H.

Photo 18: Streambed K and its deeply incised banks with sparse streambed vegetation. Short burst drainage flow.

Photo 19: Upland pineywoods between H and K.

Photo 20: Facing upstream into H at pooling area following recent rain event.

Photo 21: Downstream view of lateral drain just north of the site that discharges to Bayou Blue in background.

Photo 22: Ecotone at just landward of wetland M.

Photo 23: Eastern view of Bayou Blue following heavy rain event. Rapidly receding flood stage of Bayou. Channel submerged in the background.

Photo 24: South bank of Bayou Blue flood stage at Bayou Blue.

Photo 25: South bank of Bayou Blue and wetland M during flood stage.

Photo 26: Facing west from wetland M north bank at pipeline servitude.

Photo 27: Wetland M toe slope profile.

Photo 28: General landform profile facing south from gas line servitude.

Photo 29: Southbank of wetland M facing upstream (south) of flood waters.

Photo 30: Facing east into wetland B. Uplands to the right.

Photo 31: Facing east into uplands at wetland B delineation line.

Photo 32: Pine row bedding within wetland B. Facing west from wetland delineation line.

Photo 33: Uplands between wetland B and C. Typical vegetative landscape view.

Photo 34: Ground cover in wetland C. Willow oak seedlings and poison ivy.

Photo 35: Wetland C facing west along the wetland line. Wetland C left of flag.

Photo 36: Typical vegetation inside of Wetland C facing east.

Photo 37: Wetland D along channelized reach. Facing downstream to the southwest.

Photo 38: Ditch E from northern extent of review area facing downstream, south.

Photo 39: Ditch E narrow channel facing south.

Photo 40: Ditch E, facing south, downstream near southern review area boundary.

Photo 41: Bottom of ditch E facing north upstream just south of project review area.

Photo 42: Ditch E from top of bank.

Photo 43: Ditch E narrow channel.

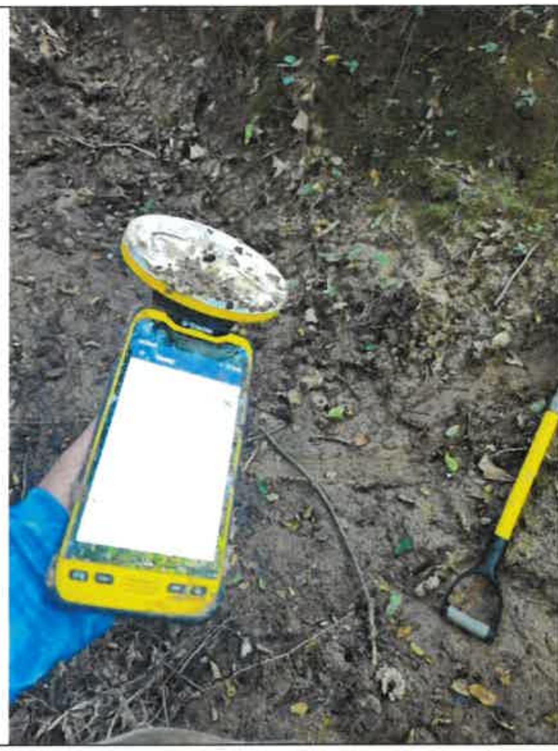

Photo 44: Ditch E bed and bank.

Photo 45: Ditch E facing north.

Photo 46: Upland hardwoods within the pine stand.

Photo 47: Uplands adjacent to Bel Oil Road and upper reach of wetland D.

Photo 48: Facing west, downstream at discharge culvert north of the site. Bel Oil Road.

Photo 49: Facing east. Receiving culvert at Bel Oil Road north of the site.

Photo 50: Facing east between Brisco Road and timberline.

Photo 51: Facing west between roadside berm and timber line.

Photo 52: Uplands west of Wetland B.

Photo 53: Typical upland vegetation adjacent to wetland B.

Photo 54: Wetland B ecotone facing southwest.

Photo 54: West side of wetland A facing east.

Photo 55: West of wetland A facing south.

Photo 56: Facing south from wetland A.

Photo 57: Facing east along Brisco Road.

Photo 58: Facing east towards Brisco Road and Highway 26 intersection. Southern extent of site.

Photo 59: Facing west from Highway 26 along Brisco Road.

Photo 60: Facing west along Brisco Road swale and adjacent berm.

Photo 61: Facing east towards Highway 26 between pine stand and berm.

Photo 62: Upland adjacent to wetland A.

ATTACHMENT C

PHASE I CULTURAL RESOURCE SURVEY

Attachment G

Cultural Resources Report

And Acceptance

Attachment G 1

Cultural Resources Report

All Phases Archaeology

JUNE 5, 2024

A PHASE I CULTURAL RESOURCES SURVEY FOR THE PROPOSED CC BEL ROAD EXTENSION, ALLEN PARISH, LOUISIANA

NEGATIVE FINDINGS

Prepared for:
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A PHASE I CULTURAL RESOURCES SURVEY FOR THE PROPOSED CC BEL ROAD EXTENSION, ALLEN PARISH, LOUISIANA

NEGATIVE FINDINGS

BY
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PRINCIPAL INVESTIGATOR

WILLIAM J. GLASS, RPA

LEAD AGENCY: FEDERAL HIGHWAY ADMINISTRATION
APA REPORT NO. 2024.106

JUNE 5, 2024

ABSTRACT

On May 20-21, 2024, All Phases Archaeology (APA) of Mobile, Alabama performed a Phase I cultural resources survey for the proposed CC Bel Road Extension project located in Allen Parish, Louisiana. Much of the survey area was conducted on the Coushatta Indian Reservation. The lead agency is the Federal Highway Administration (FHWA) with funding administered through a RAISE grant. The project area encompasses 30.7 acres. No cultural resources or historic standing structures were encountered within the project area and there were no NRHP-listed properties in the project area. All paperwork and supporting documents will be curated at the Troy University Archaeological Research Center in Troy, Alabama. No further cultural resources studies are recommended. No historic properties are present within the APE.

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ACKNOWLEDGMENTS

The Principal Investigator for this Phase I survey was William J. Glass, who was assisted by Dr. Virgil "Duke" Beasley, Lucinda Freeman, Dale Pate, and Parker Chouest. Natalie Ledesma and Stacey Baggett digitized the maps and Lucinda Freeman produced the report. This work was accomplished for Meyer, Meyer, La Croix & Hixson, Inc. of Alexandria, Louisiana.

CHAPTER 1
INTRODUCTION

All Phases Archaeology (APA) of Mobile, Alabama was contracted by Meyer, Meyer, La Croix & Hixson, Inc. (MMLH) of Alexandria, Louisiana to conduct a cultural resources survey for the proposed CC Bel Road Extension project in Allen Parish, Louisiana. The survey was conducted for the Coushatta Tribe of Louisiana. The lead federal agency for the project is the Federal Highway Administration (FHWA) with funding administered through a RAISE grant.

The Phase I survey was performed on May 20-21, 2024. The Principal Investigator for the survey was William J. Glass, who was assisted by Dr. Virgil "Duke" Beasley, Lucinda Freeman, Dale Pate, and Parker Chouest. The purpose of this study was to determine if any prehistoric or historic properties exist within the limits of the project area, and if so, to document and assess each based on the National Register of Historic Places (NRHP) criteria. The project area (PA) is the same as the area of potential effect (APE).

The approximate 30.7-acre project area lies north of Interstate (I) 10, west of I 49 and east of U.S. Highway 165 on the north side of CC Bel Road between Powell Road and Louisiana Highway 26 (Figure 1). The project area is found within Sections 17-20 and 23-24 in Township 6 South, Range 3 West as seen on the 1986 Soileau, Louisiana USGS 7.5' series topographic quadrangle (Figure 1.2). The purpose of the study is for the extension and improvement of CC Bel Road between Powell Road and Louisiana 26 for use as a hurricane evacuation route. The project area is a linear corridor stretching 2.5 miles (4.07 kilometers) with a 100 ft right-of-way. This lies mostly within Coushatta tribal land.

This report of our investigations is presented as follows. Chapter 2 contains information regarding land use history in the project area. Chapter 3 examines any previous sites or surveys in or near the project area. Chapter 4 presents the field and laboratory methodology as well as curation. Chapter 5 consists of the results of fieldwork. Chapter 6 concludes the report and summarizes our findings and recommendations. Appendix A is the curation agreement.

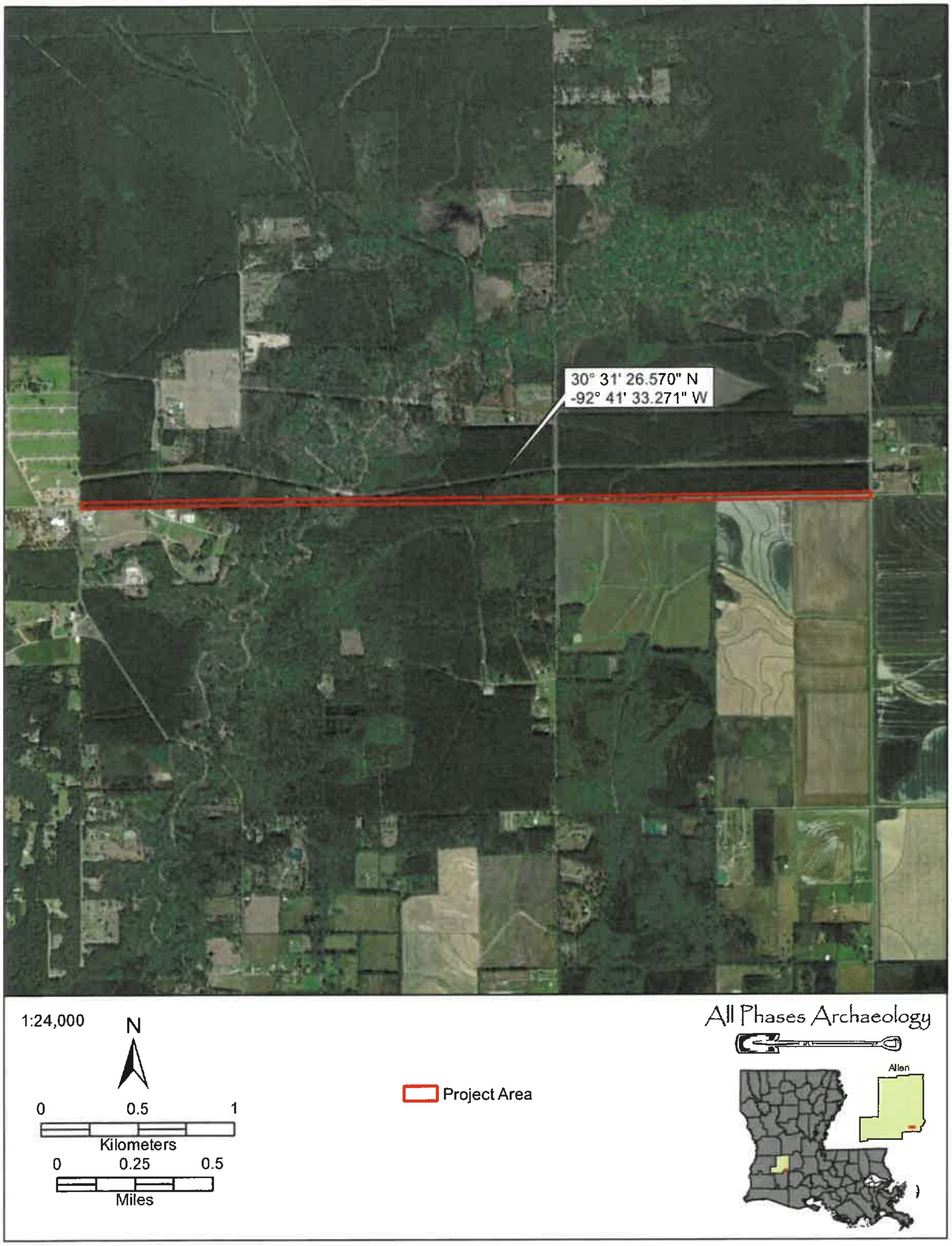

Figure 1.1. *Aerial image showing the project area.*

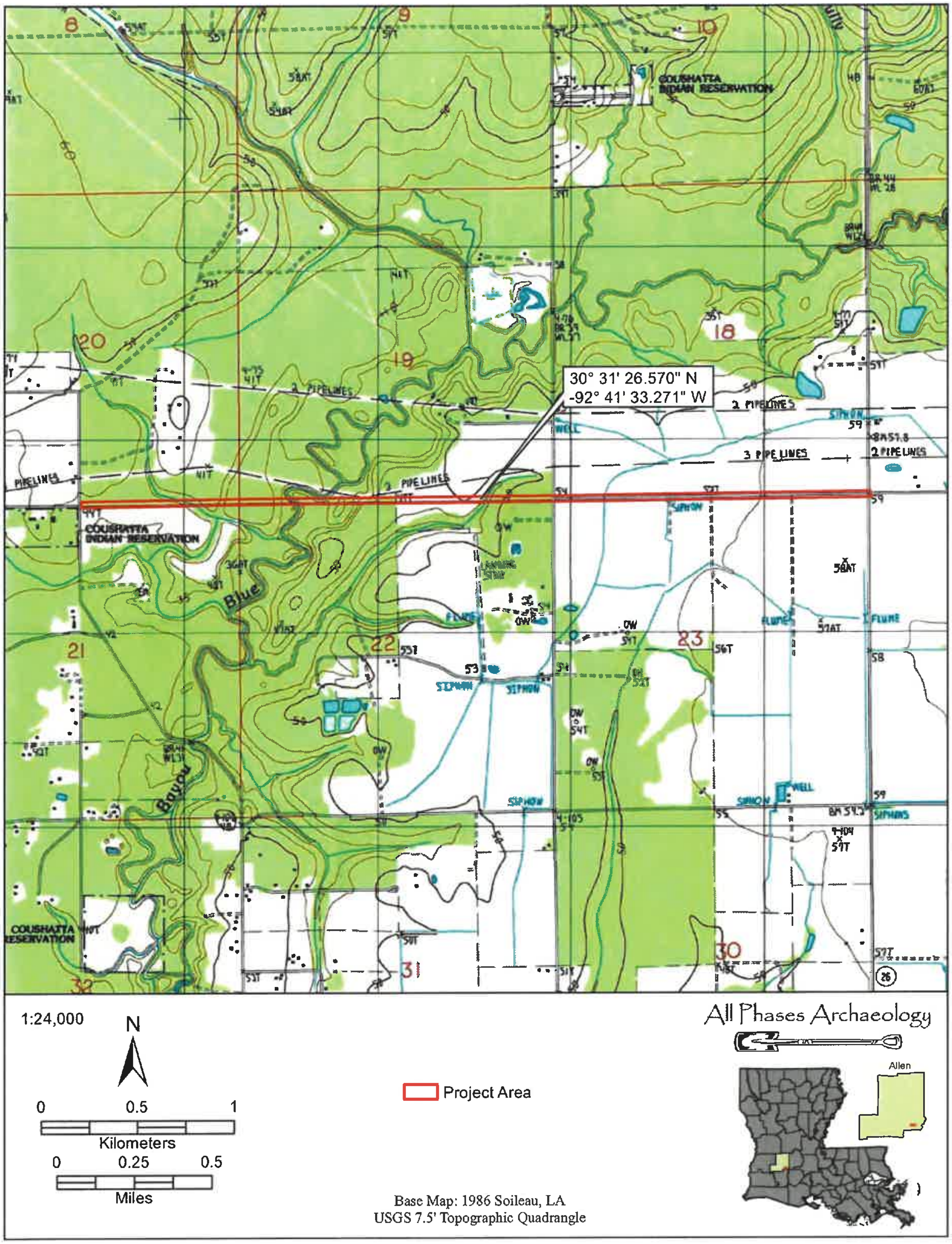

Figure 1.2. *Topographic map showing the project area.*

4 - CC Bel Road Extension

CHAPTER 2
LAND USE HISTORY

The survey area is located in southwest Louisiana within the Northern Humid Gulf Coast Prairie of the Western Gulf Coastal Plain. The region is typically gently sloping coastal plain. The vegetation was historically grasslands with gallery forests along the waterways. Grasslands include big and little bluestem, yellow Indiangrass, switchgrass and brownseed paspalum mixed with hundreds of other herbaceous species. Most of the prairie has been converted to cropland, pasture, aquaculture, or for urban land uses. Soils in this region are mostly poorly or somewhat poorly drained and are derived from Quaternary-age deltaic sands, silts, clays and gravel (Daigle et al. 2006). Elevation in the survey area is approximately 35-55 ft above mean sea level.

A search of the BLM GLO records produced 12 patents for the lands contained within the project corridor (Table 2.1). Some of the lands were purchased under the Cash Sale Act of 1820 (3 Stat. 566), while the majority were issued under the authority of the Homestead Act of 1862 (12 Stat. 392). Under the Homestead Act, claimants were required to live on and improve the land through cultivation.

The earliest map available is the 1949 Bayou Blue 1:31680 topographic map (Figure 2.1). This revealed no structures within the project area, although there is a structure located very close to the eastern end of the project corridor (Figure 2.1). The footprints of Powell Road, Bel Oil Road and LA 26 are in place, and the Coushatta Indian School is located just south of the project corridor's eastern terminus. An old railroad grade and an unimproved road are shown passing through the project area on the west side of Bayou Blue.

The 1961 Castor Creek, Louisiana 15' USGS topographic quadrangle shows no structures within or adjacent to the project area (Figure 2.2). The area surrounding the project area has changed very little. The Coushatta Indian School is now called the Leeds School and Saint Peters Cemetery has been established. The footprint of Briscoe Road is now in place but the old railroad grade and the unimproved road are no longer depicted.

As there were no other historic topographic maps were available for review, historic aerial photographs were also examined. The earliest aerial images (1954 and 1956) depict most of the project are as cleared land with a large swath of mature trees on either side of Bayou Blue and its tributaries. These images also depict a complex of structures south of the project area, at the location of the adjacent structure seen on the 1949 topographic map. The 1981, 1982 and 1998 images still show most of the project area as open fields, however, the structure is no longer depicted adjacent to the project area. By the 2004 aerial photograph, most of the open fields have be planted with pine trees.

Table 2.1. Project area land patents.

Section	Aliquots	Patent Name	Patent Date	Authority
17	S 1/2 SW 1/4	Joseph O. Miller	8/20/1907	1820 Cash Sale (3 Stat. 566)
18	S 1/2 SE 1/4	Walter G. Moeling	12/1/1909	1820 Cash Sale (3 Stat. 566)
18	S 1/2 SW 1/4	Walter G. Moeling	12/1/1909	1820 Cash Sale (3 Stat. 566)
19	S 1/2 SE 1/4	Emile Buller	12/20/1884	1820 Cash Sale (3 Stat. 566)
19	SW 1/4	Jefferson Aby	10/23/1894	1820 Cash Sale (3 Stat. 566)
20	SE 1/4	George Abbot	7/3/1902	1862 Homestead Act (12 Stat. 392)
20	SW 1/4	John L. Grossenbacher	3/12/1906	1862 Homestead Act (12 Stat. 392)
23	NW 1/4	Albert Jones	9/10/1898	1862 Homestead Act (12 Stat. 392)
23	E1/2 NE 1/4	Karl Rampmaier	6/28/1900	1862 Homestead Act (12 Stat. 392)
23	W 1/2 NE 1/4	William Rees	10/23/1894	1862 Homestead Act (12 Stat. 392)
24	NE 1/4	August Miller	4/13/1903	1862 Homestead Act (12 Stat. 392)
24	NW 1/4	Frederick Huber	1/26/1898	1862 Homestead Act (12 Stat. 392)

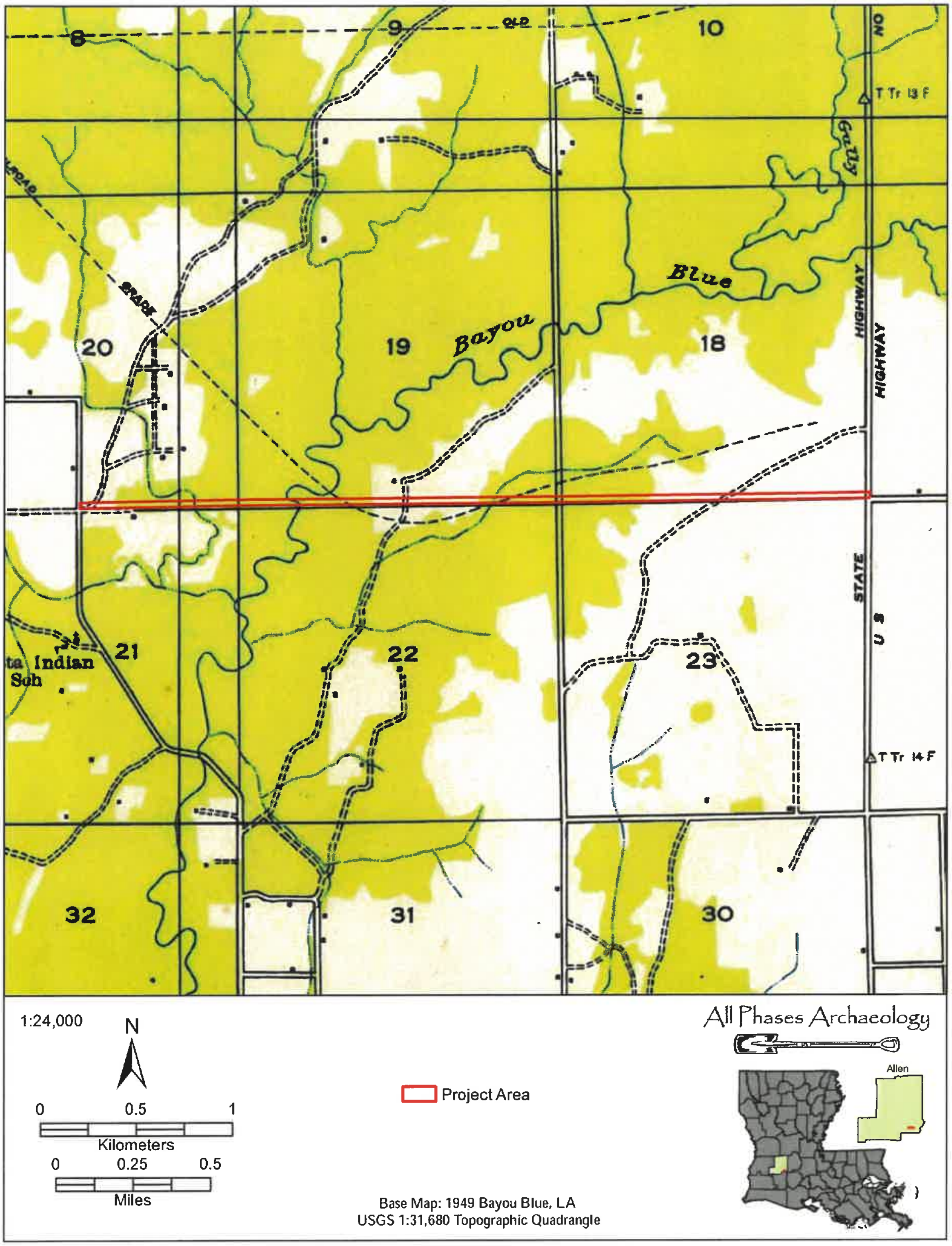

Figure 2.1. *Historic 1949 map showing the project area.*

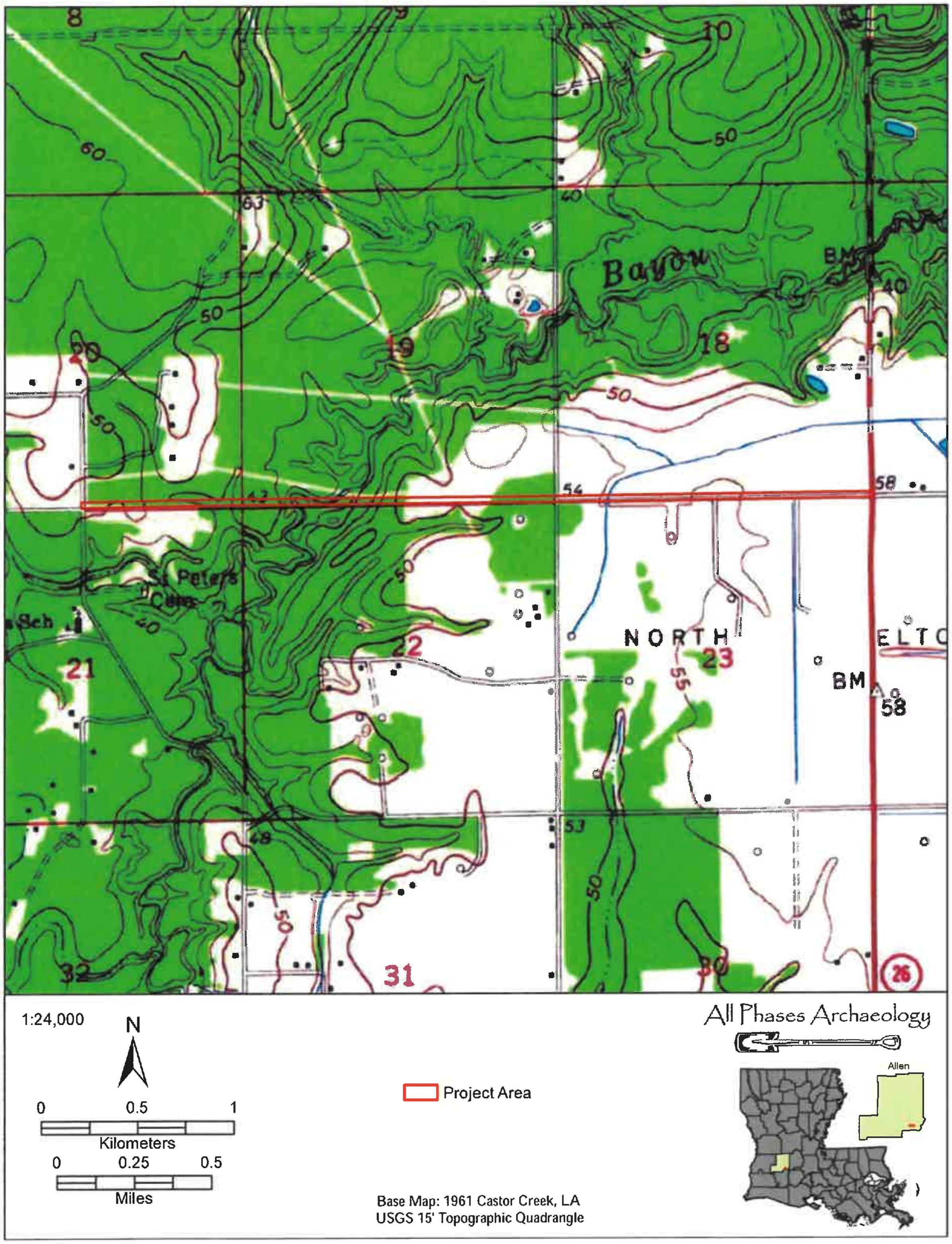

Figure 2.2. Historic 1961 map showing the project area.

The entire project area is a low-lying landscape which is frequently subjected to flooding. Bayou Blue crosses through the project area as well two of its small tributaries making access to fresh water easier. While this may indicate a high probability of encountering prehistoric cultural materials, there are no prehistoric archaeological sites are located within a mile of the project area. The structure seen in 1954 and 1956 near the western terminus is located outside of the project area. Before 2004, the rest of the project area included the forest around Bayou Blue and open fields that appear to have been pastures and are unlikely to produce evidence of significant cultural activities.

CHAPTER 3
PREVIOUS INVESTIGATIONS

LITERATURE AND DOCUMENT SEARCH

Background research was conducted prior to the survey to identify previously recorded historic and prehistoric properties within a one-mile radius of the proposed CC Bel Road Extension project located in Allen Parish, Louisiana. This search included an online query of the Louisiana Site Files (Louisiana Division of Archaeology [LDOA] 2024). A one-mile (1.6 km) radius search was conducted around the proposed project area for previously recorded archaeological sites and previous cultural resources surveys. Lastly, a query into the National Register of Historic Places (NRHP) (National Park Service 2024) was conducted.

Research of the site files (LDOA 2024) identified two previously recorded archaeological sites and four documented cultural resource reports (Table 3.1) within a mile of the study area (Figure 3.1). Background research revealed one recorded historic resource and a recorded historic cemetery within a mile of the study area (see Figure 3.1). An examination of the NRHP online files identified no National Register properties within the one mile search radius. One of the surveys, 22-3455, overlaps with the current project area.

Site 16AL28 was recorded in 1984 by Mark T. Swanson during survey 22-0925. The site is an elevated railroad grade on both sides of Bayou Blue. This would have been the location of a small bridge for the railroad crossing. The bridge likely dated to the early twentieth century. No cultural material was encountered at this location. This site is recommended ineligible for the NRHP as the research potential of this site is poor.

Site 16AL51, CRN0610A-01, was recorded in 2000 by Christina Ramazani-Necessary during survey 22-5727. The site represents a mid-twentieth century dump site. Historic ceramic and glass were found on the surface and up to a depth of 10 cmbs. This site has little research potential and is recommended ineligible for the NRHP.

Table 3.1. Previous surveys within one mile of the project area.

Report number	*Report Title*	*Author & Date*
22-0925	*A Cultural Resources Survey of the Proposed Transcontinental Gas Pipeline Corporation Mainline Expansion, Allen and Pointe Coupee Parishes, Louisiana*	Mark T. Swanson 1983
22-0985	*A Cultural Resources Survey of Proposed Transcontinental Gas Pipeline Main Line Expansion, Allen and Evangeline Parishes, Louisiana*	New World Research, Inc. 1984
22-3455	*Phase I Cultural Resources Investigation- Camp Coushatta Road Construction, Allen Parish, Louisiana*	Martin Handly 2010
22-5727	*Phase I Cultural Resource Investigations of the Proposed Port Arthur Pipeline Louisiana Connector in Jefferson County, Texas and Cameron, Calcasieu, Beauregard, Allen and Evangeline Parishes, Louisiana*	Peter Cropley, Susan Barrett Smith, Jill Enersen, Kelly Morgan, Ashley Sanders Hale, Nathanael Heller, Wayne Boyko, and William P. Athens 2017

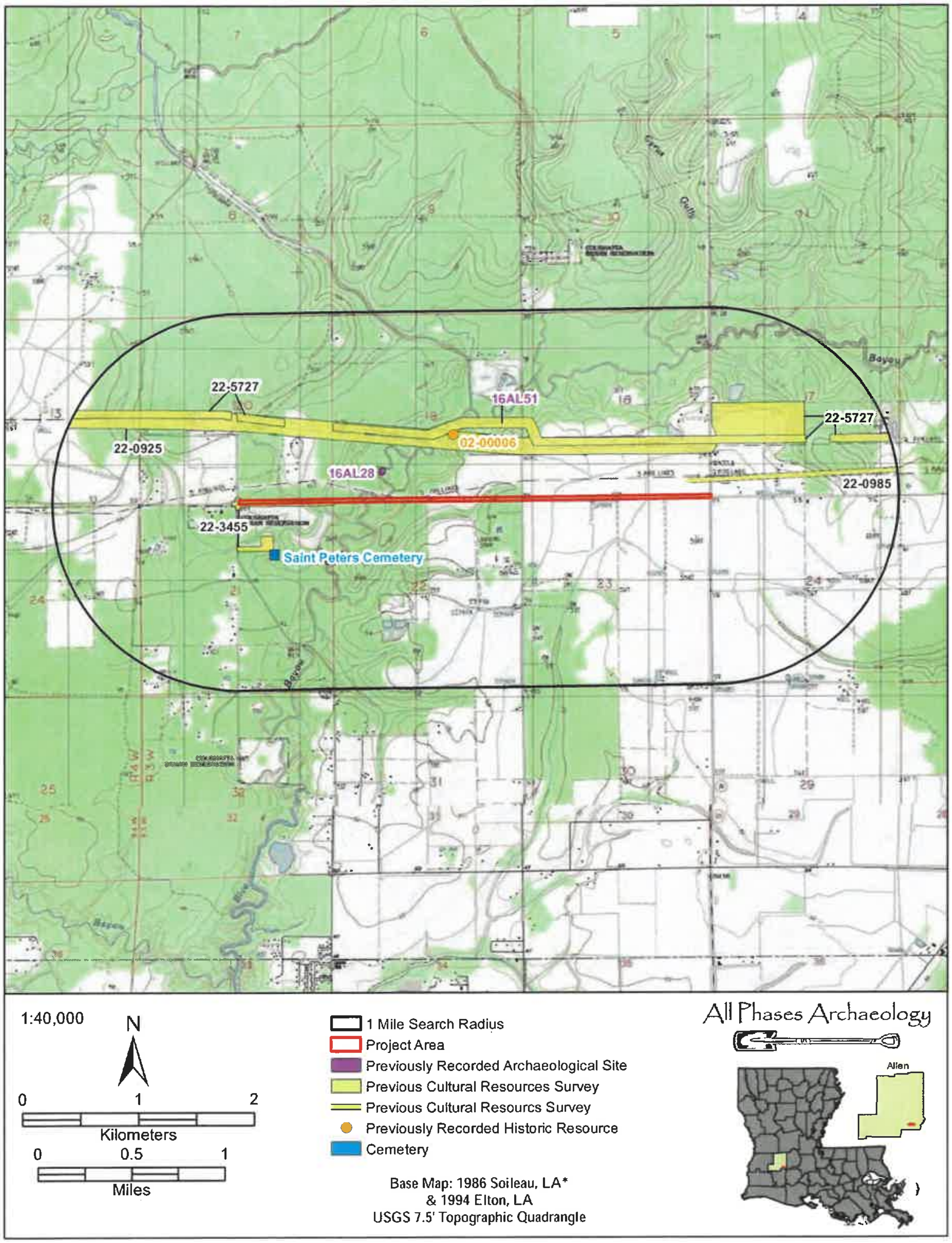

Figure 3.1. *Map showing the previous surveys, the previously recorded sites, the historic resource, and the historic cemetery within one mile of the project area.*

Survey 22-3455, *Phase I Cultural Resources Investigation- Camp Coushatta Road Construction, Allen Parish, Louisiana*, was conducted by URS Corporation in 2010. The survey overlaps with the west end of the current project area. Due to the survey area's distance from the nearest water source, the project area was deemed to have a low probability of archaeological sites. As such, the entire project area was visually inspected and shovel tested in intervals of 50 m. No cultural material was encountered in the survey area (Handly 2010).

Historic resource 02-00006 is a farmstead complex including two dwellings, a greenhouse and a garage. None of the buildings exhibit any distinguishing features or styles. The main house was constructed c. 1925, and the second dwelling appears to have been constructed around 1940. The greenhouse is a small, rounded A-frame building with a metal roof and multi-pane windows and two doors resting on a continuous concrete block foundation and was likely constructed c. 1935. The construction date of the garage is unknown. The NRHP eligibility of the resource is unknown.

Saint Peters Cemetery is located on Coushatta tribal land. According to findagrave.com (2024), the cemetery holds 150 marked burials ranging from the earliest date of death, 1919, to the most recent burial in early 2024. The cemetery has a mix of in-ground burials and sunken burial vaults. No other information is provided.

12 - CC Bel Road Extension

CHAPTER 4
METHODOLOGY

STANDING STRUCTURES

Historic maps were reviewed before the fieldwork was accomplished to ascertain the presence or absence of possible historic resources within the project area. The 1949 Bayou Blue 1:31680 and the 1961 Castor Creek 15' series topographic maps do not depict structures within the project area (see Figures 2.1-2.2). Field reconnaissance corroborated that no standing structures were located within the project area.

ARCHAEOLOGICAL FIELD METHODS

The field survey conducted implemented standard archaeological survey techniques. Full land coverage requirements were achieved through visual inspections of the entire survey area and subsurface testing. While conducting visual inspections, any exposed surfaces were carefully examined for cultural material.

Subsurface testing was comprised of shovel tests spaced 30 m apart. Standard shovel tests consist of 30 centimeter (cm) diameter cylindrical holes excavated to the top of the sterile subsoil layer or until the water table or other obstruction was encountered. Soils from each test are screened through 1/4-inch (0.64 cm) hardware cloth for the purpose of recovering any cultural material that may exist at that location. When cultural material is encountered, the material is sorted by provenience and placed into bags labeled with the pertinent excavation information before being transported to APA's laboratory. If cultural material is identified during transecting, it is further examined in order to better define its horizontal and vertical limits. Delineations are conducted by placing additional shovel tests around positive tests. These additional tests are placed at 10 m intervals off of the original positive tests or cultural features in cardinal directions within the project area. This testing is conducted until two negative shovel tests are encountered in each direction or until delineations extend beyond the project boundary. A hand held Garmin GPS unit is used to record the site center and a sketch map is drawn by compass and pace and plotted to scale. Digital photographs are taken for any site recorded as well as for the survey area. For the CC Bel Road Extension project, 137 shovel tests were attempted (Figure 4.1-4.2). Twenty-one shovel tests could not be excavated due to standing water, waterways, and asphalt surfaces. The remaining 116 shovel tests were negative.

LABORATORY METHODS

All cultural materials recovered during field projects are delivered to APA's laboratory in Mobile, Alabama for processing. Upon initial receipt of materials and field forms, bag lists are entered into a computer database for use with a labeling program. Materials are cleaned and, if necessary, stabilized before classification and quantification by laboratory analysts. Cultural materials are sorted on the basis of morphologic attributes, raw-material type (i.e., chert, quartz, etc.), measurements, and/or function. Previously defined types are often used to facilitate chronological assessments and intrasite comparisons. No material was recovered during this investigation.

CURATION

Along with any cultural material, all project records, photographs, and maps produced while conducting the investigation are transported for curation at the Troy University Archaeological Research Center, Troy, Alabama (Appendix A).

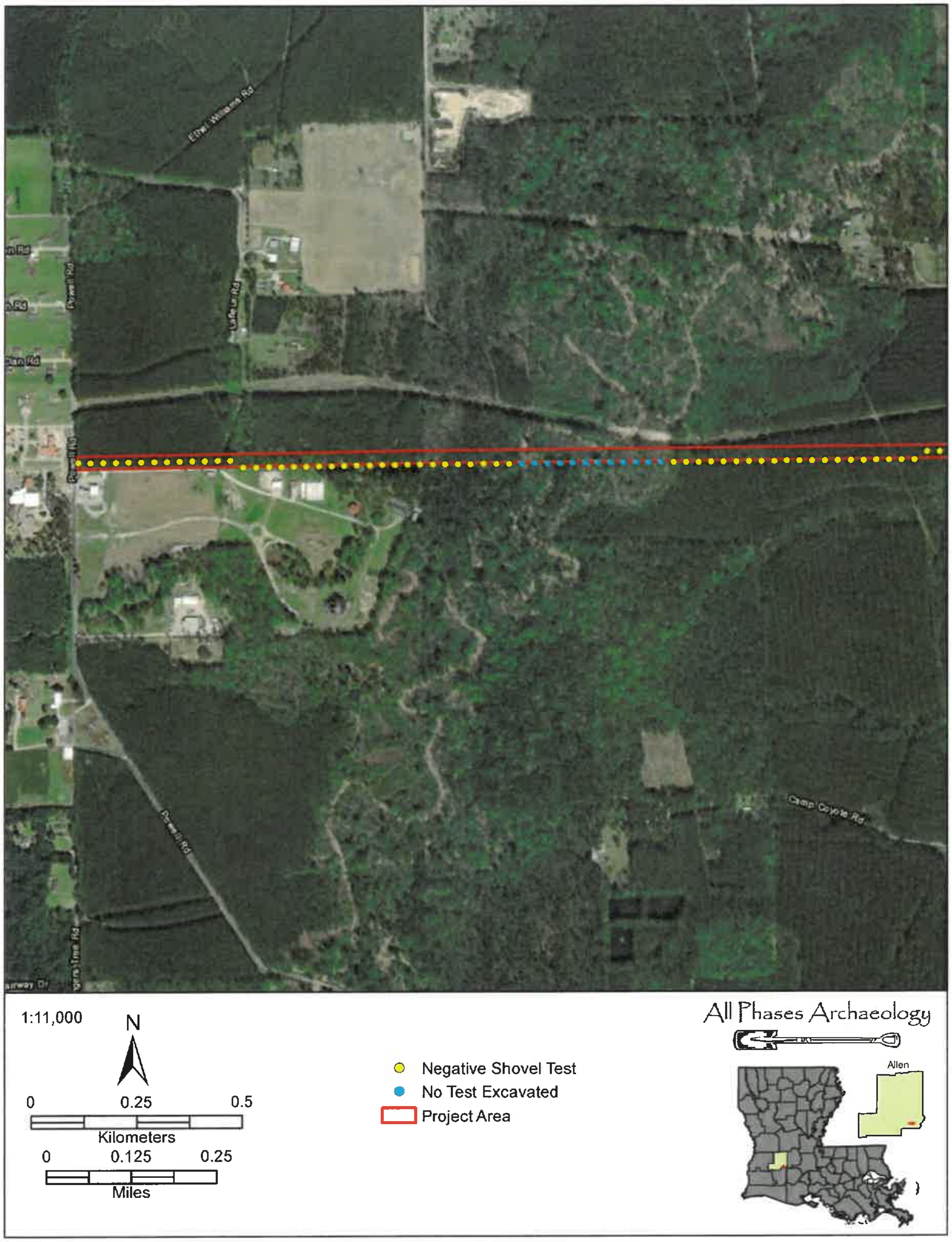

Figure 4.1. *Aerial image showing shovel tests within the project area.*

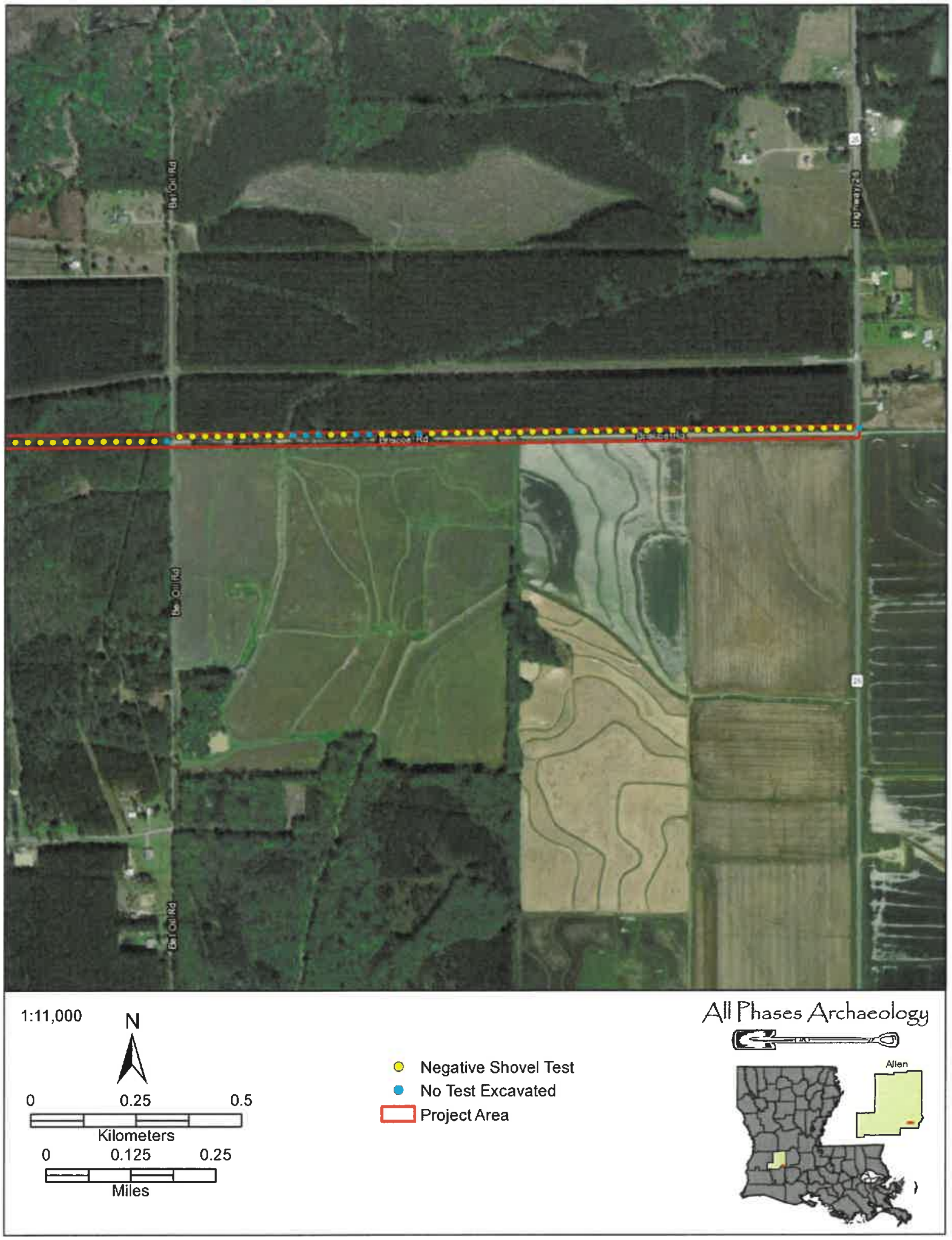

Figure 4.2. *Aerial image showing shovel tests within the project area.*

16 - CC Bel Road Extension

CHAPTER 5
RESULTS

OVERVIEW

The project area begins at Powell Road across the intersection from CC Bel Road and stretches east crossing Blue Bayou, two of its tributaries, and Bel Oil Road before terminating at LA 26. The western two-thirds of the project area is covered with planted pine and/or mixed hardwoods with a sparse to moderate understory of yaupon, beauty berry, other shrubs, vines and occasionally briars. The westernmost portion is located on the north side of the existing CC Bel Road. A Buffalo Run gas station is located just to the south. A small portion of the project corridor along the west end is co-located with a powerline corridor. The eastern third of the project area consists of Briscoe Road, a roadside drainage and the elevated powerline easement on the north side. Most of this area was covered with patchy grasses, low growing ground covers, and bare areas. Standing water covered many areas of the project area. The majority of the observed modern debris noted in the project area was along roadways or within the powerline easements. Ground surface visibility was poor due to leaf litter and pine straw.

This Phase I investigation included the placement of 137 transect shovel tests (see Figure 4.1). Twenty-one shovel tests could not be excavated due to standing water, the waterways, and asphalt surfaces. Right of entry access was limited in portions of the study area to the edges of the study area. As such, shovel testing was conducted accordingly in these areas and not always down the centerline. A map is provided showing land ownership (Figure 5.1). Only modern material was encountered within the project area. A typical shovel test consisted of 6 cm of very dark gray (10YR 3/1) silty loam over a grayish brown (10YR 5/2) silty clay to 10 cmbs, and underlain by yellowish brown (10YR 5/6) silty clay loam to 50 cmbs (Figure 5.2). A common variation seen in the tests consisted of 20 cm of brown (10YR 5/3) silt loam over a light gray (10YR7/2) silty clay mottled with strong brown (7.5YR 5/6) clay loam (Figures 5.3). Figures 5.4-5.13 depict the present condition of the project area.

SITES

No archaeological sites were encountered within the project area.

STANDING STRUCTURES

There are no standing structures within the project area boundaries.

HISTORIC AREAS

No historic areas are located within the project area boundaries.

Figure 5.1. Aerial image showing land ownership and right of entry agreements (project area in blue).

Figure 5.2. *Typical shovel test profile.*

Figure 5.3. *Common variation of the typical shovel test.*

Figure 5.4. *View from the western terminus of the project area showing the CC Bel Road just south of the study area, facing east.*

Figure 5.5. *Typical vegetation in the westernmost portion of the project area, facing west.*

Figure 5.6. *View of the mixed hardwoods on the west side of Bayou Blue, facing west.*

Figure 5.7. *View of the standing water on the west side of Bayou Blue in the project area, facing east.*

Figure 5.8. *View of the Bayou Blue crossing in the project area, facing west.*

Figure 5.9. *View of the project area between Bayou Blue and Bel Oil Road, facing west.*

Figure 5.10. *View of Bel Oil road crossing through the project area, facing east.*

Figure 5.11. *View of the standing water on the east side of Bel Oil Road, facing west.*

***Figure 5.12**. View of the drier portion of the corridor along Briscoe Road, facing west.*

***Figure 5.13**. View towards the eastern terminus, facing east.*

CHAPTER 6
SUMMARY AND RECOMMENDATIONS

APA, under contract with MMLH of Alexandria, Louisiana, performed the Phase I cultural resources survey for the proposed CC Bel Road Extension project located in Allen Parish, Louisiana. The Phase I survey was performed on May 20-21, 2024. The investigation did not identify any new archaeological sites or historic resources within the project area. No further cultural resources studies are recommended for the CC Bel Road Extension project. No historic properties are present within the APE.

REFERENCES

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Handly, Martin

2010 *Phase I Cultural Resources Investigation- Camp Coushatta Road Construction, Allen Parish, Louisiana.* Survey 22-3455.

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2024 Louisiana Archaeological Site Files. Louisiana Division of Archaeology, Baton Rouge, Louisiana. Assessed online May 2024.

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APPENDIX A
CURATION AGREEMENT

TROY UNIVERSITY

Archaeological Research Center

Date: Nov. 1, 2023

Jon Glass
All Phases Archaeology
257 Pinehill Drive
Mobile, AL 36606

Dear Jon,

Per your request, this letter is to confirm our standing agreement to provide curation services for archaeological collections to All Phases Archaeology on an as-needed basis. As you know, we are recognized by a variety of Federal agencies as a repository meeting the standards in 36 CFR Part 79 and have formal agreements to provide curation under these guidelines to multiple federal agencies such as the Army National Guard and Natural Resources Conservation Service.

Please be advised that once a year we must be notified of all reports in which we were named as the repository. Project collections must be submitted within one calendar year of completion. Small projects may be complied for periodic submission. The AHC survey policy specifies which materials must be curated (Administrative Code of Alabama, Chapter 460-X-9). Renewal of this agreement is contingent upon compliance.

We appreciate this opportunity to be of assistance and look forward to working with you in the future.

Stephen Carmody
Director
Archaeological Research Center
Troy University

EXHIBIT PACKAGE

EXHIBITS 1-6

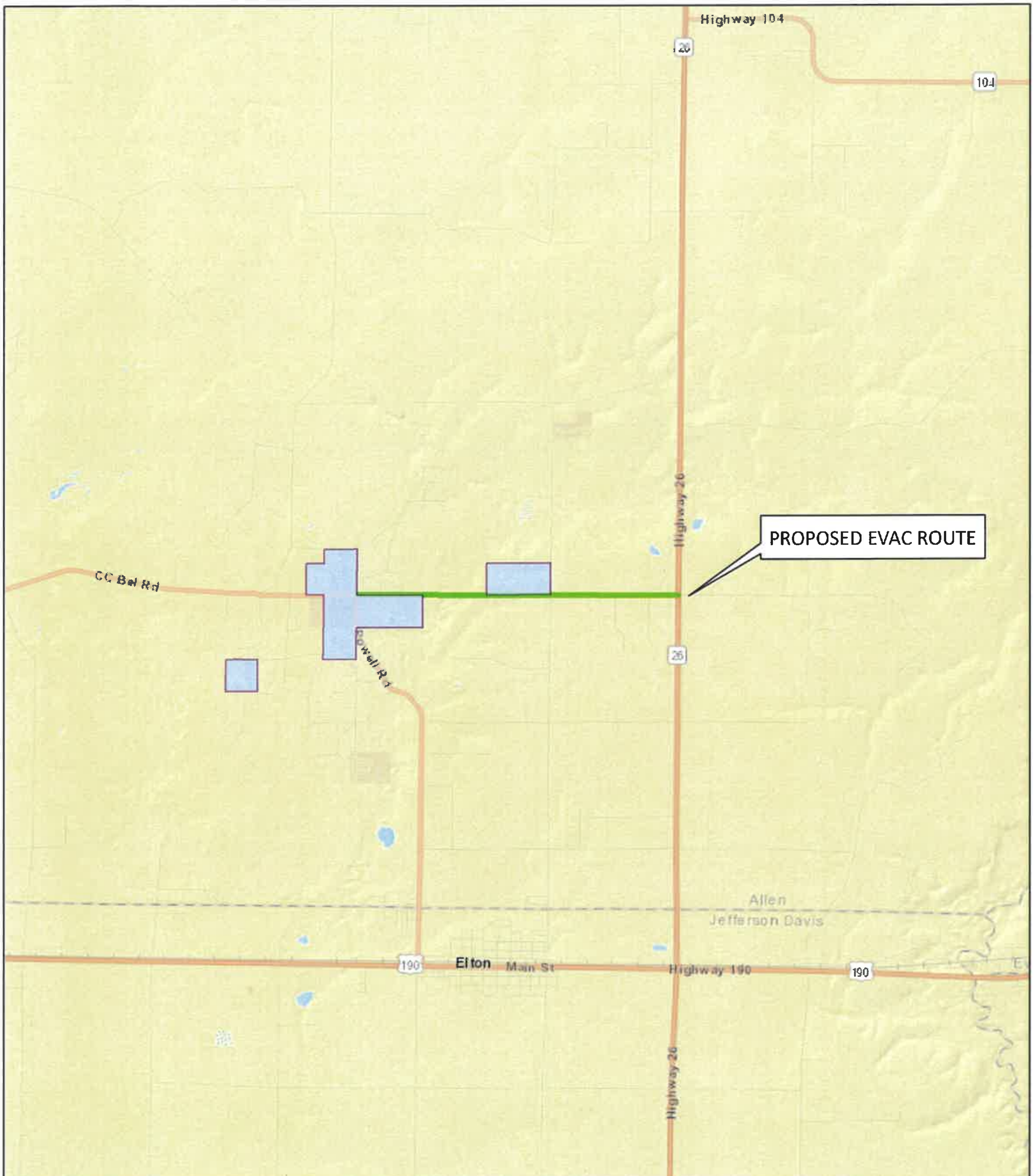

EXHIBIT 1
SITE LOCATION
ALLEN PARISH
CTLA

LEGEND

PROPOSED EVAC ROUTE

TRIBAL AGENCIES/ DEPARTMENTS AND SERVICES

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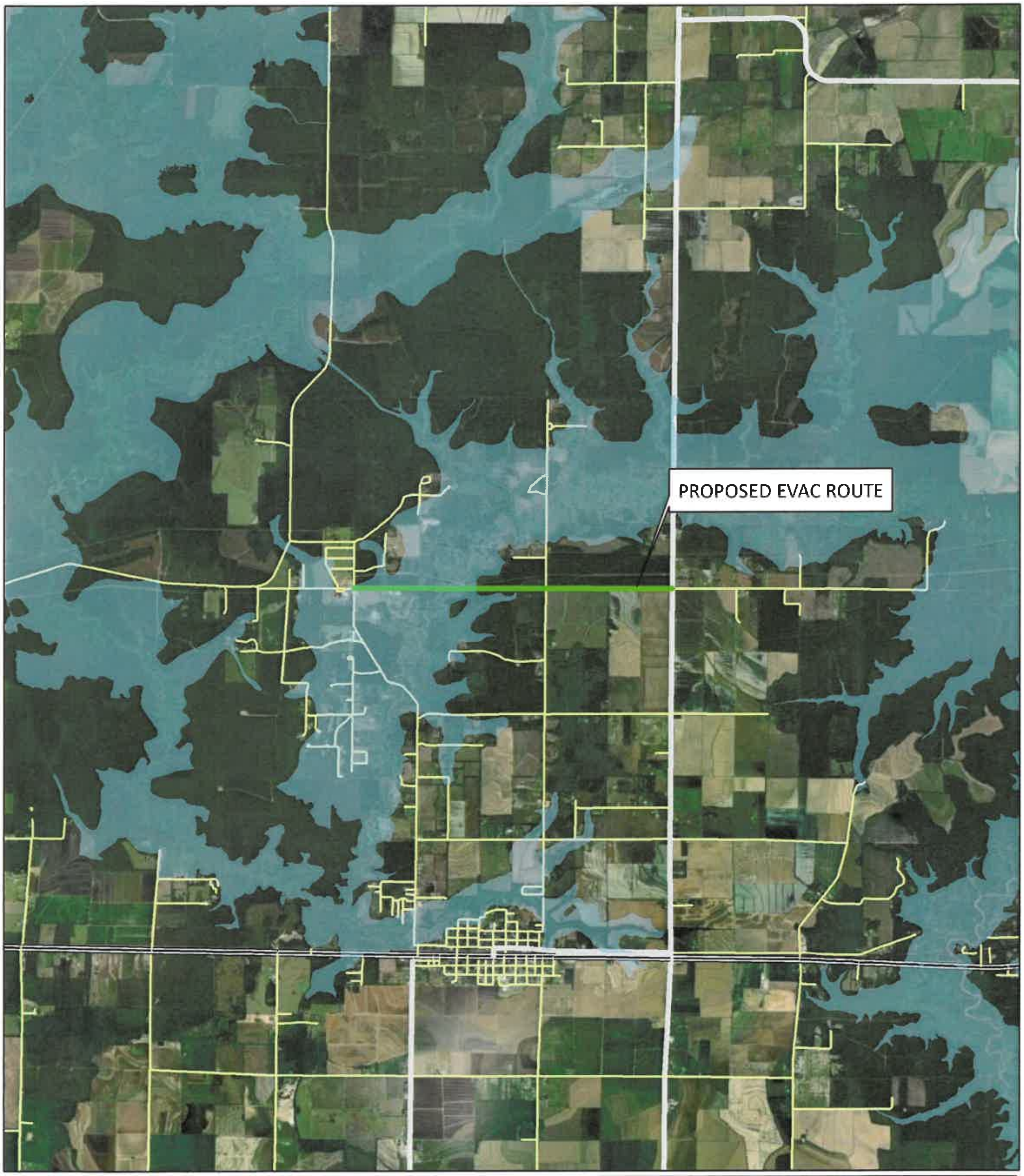

EXHIBIT 2
FLOOD HAZARD
ALLEN PARISH
CTLA

LEGEND

FLOOD HAZARD

A/AE

ROADS

SECONDARY HIGHWAY OR MAJOR CONNECTING ROAD

CONNECTING ROAD

LOCAL ROAD

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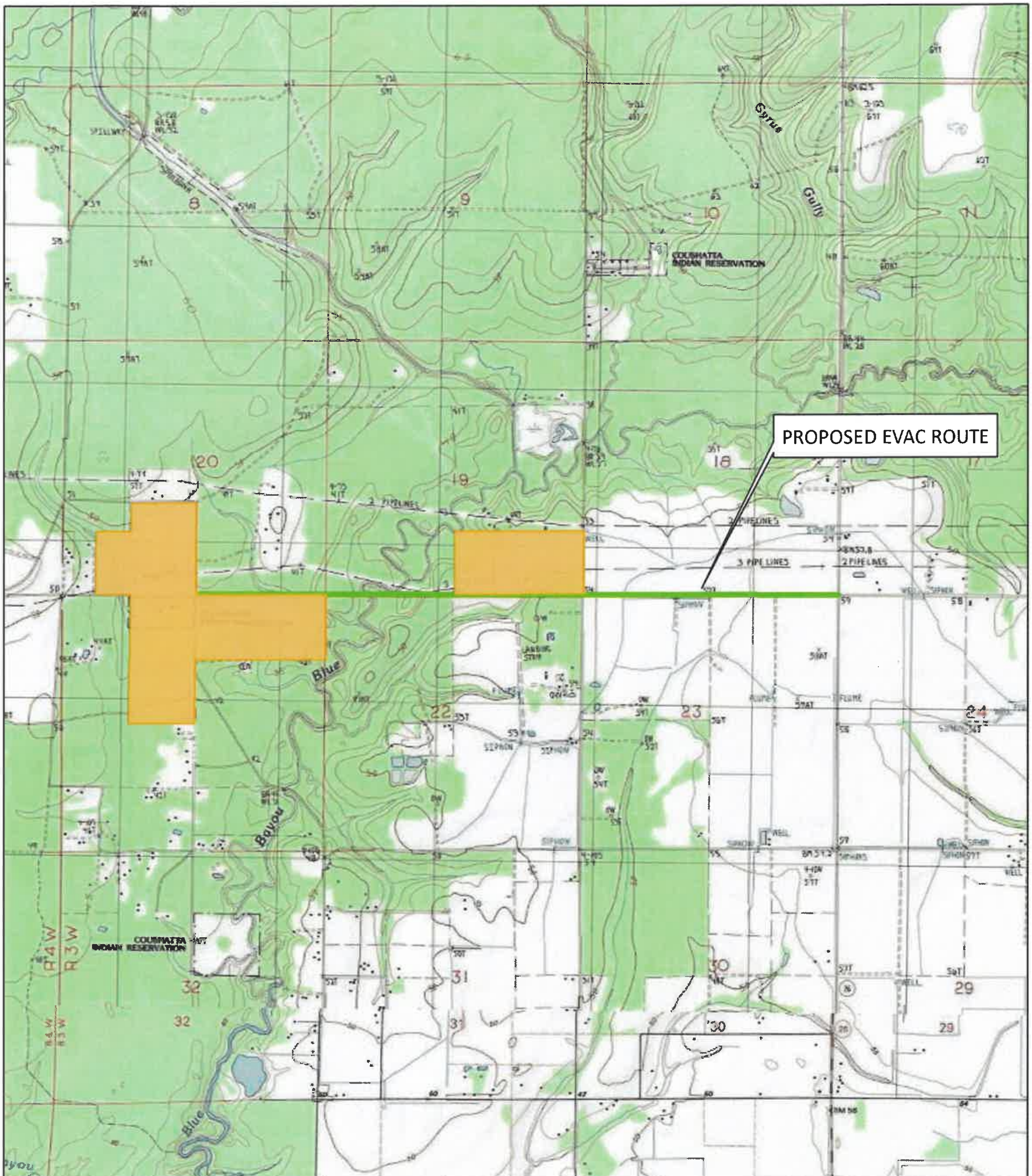

EXHIBIT 3 USGS TOPO MAP
ALLEN PARISH
CTLA

LEGEND

PROPOSED EVAC ROUTE

TRIBAL AGENCIES/ DEPTS AND SERVICES

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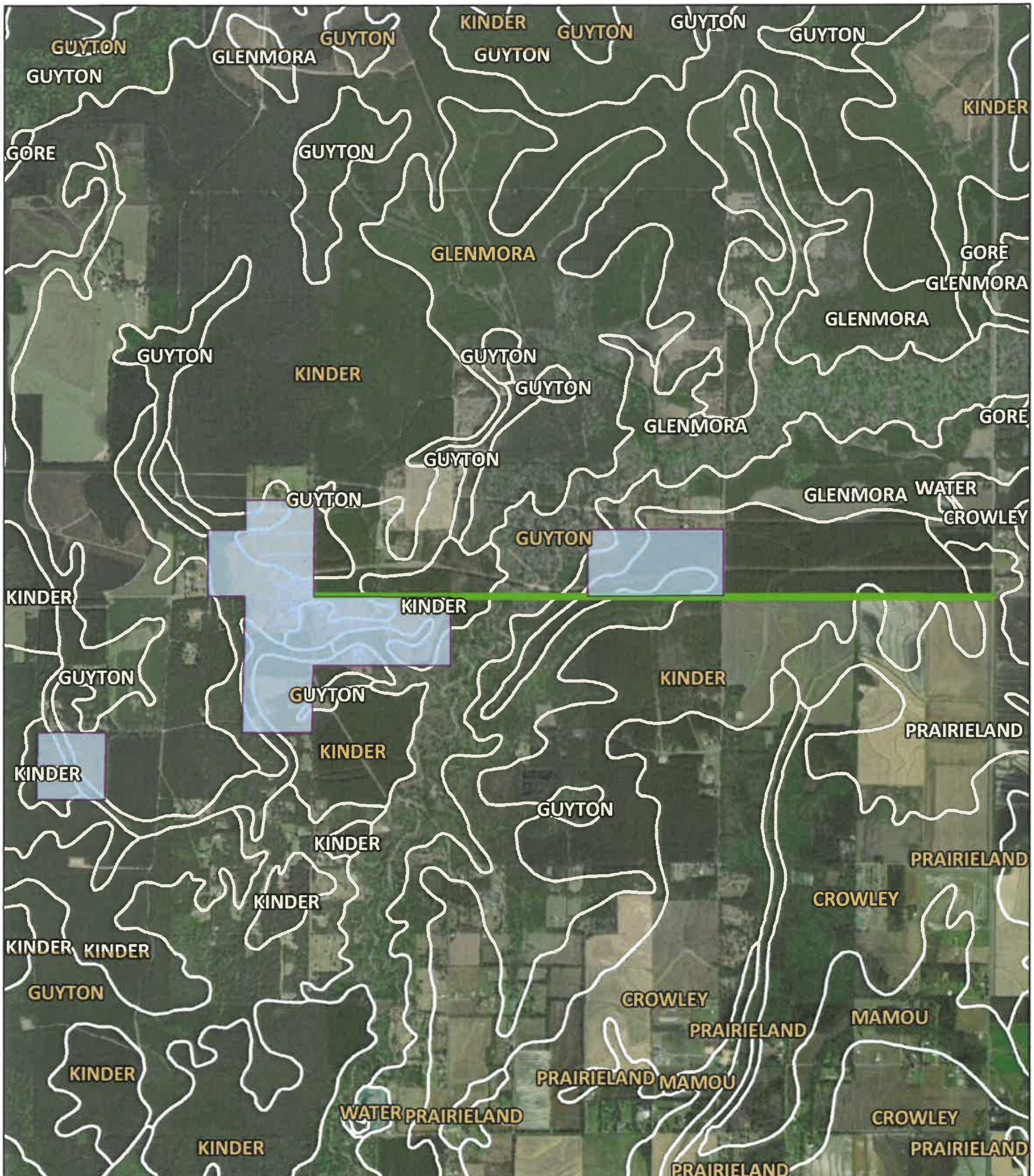

EXHIBIT 4
NRCS SOILS MAP
ALLEN PARISH
MULTIPLE PIDS
MMLH

LEGEND

PROPOSED EVAC ROUTE

TRIBAL AGENCIES/ DEPTS AND SERVICES

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9/9/2024

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EXHIBIT 5
RECENT AERIAL IMAGERY
ALLEN PARISH
CTLA

LEGEND
PROPOSED EVAC ROUTE
ALT_1
ALT_2
TRIBAL AGENCIES/ DEPTS AND SERVICES

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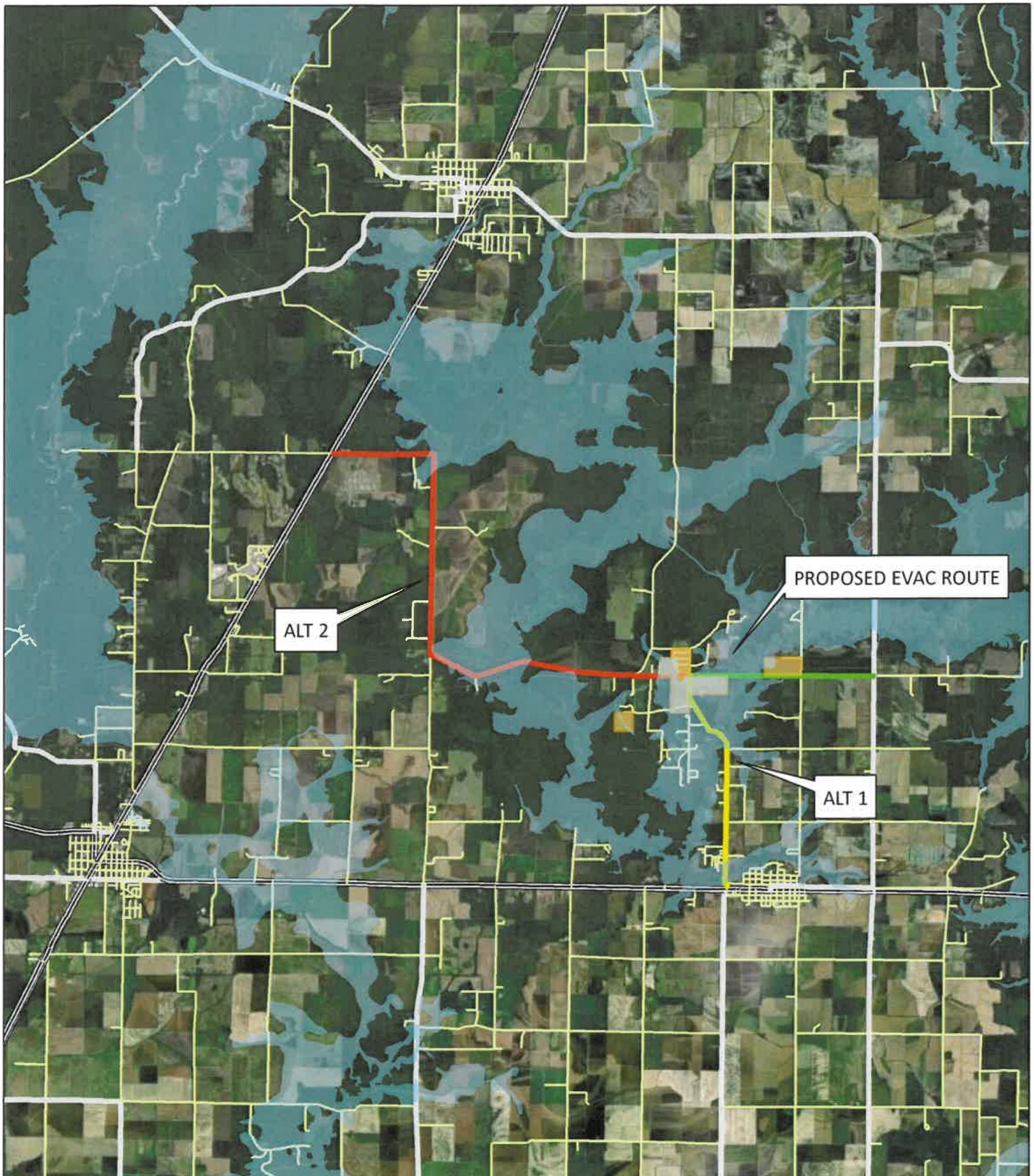

EXHIBIT 6 **ALTERNATE ROUTES** **W/FLOOD HAZARD** **ALLEN PARISH** **CTLA**	**LEGEND** FLOOD HAZARD A/AE ROADS SECONDARY HIGHWAY OR MAJOR CONNECTING ROAD CONNECTING ROAD LOCAL ROAD TRIBAL AGENCIES/DEPTS AND	2003.047 HLW 9/9/2024 0 0.75 1.5 Miles	N W E S	UES THIS IS NOT A SURVEY

ATTACHMENT D

IMPERILED SPECIES REPORT

FEDERAL IMPERILED SPECIES
PRESENCE / ABSENCE
EVALUATION

for the

COUSHATTA TRIBE OF LOUISIANA
EVACUATION ROUTE CONNECTOR
CC BEL ROAD/ BRISCOE ROAD
ALLEN PARISH, LOUISIANA

Prepared by:

UES™

Job #: 2003.047
July 2024

Table of Contents

INTRODUCTION

The following report is meant to provide an affects determination for any listed species and protected habitats of listed species within the "Coushatta Tribe of Louisiana Evacuation Route Connector" proposed action area, also known as the "Site." This report is being submitted in support of the Federal Section 404 Permit application to the U. S. Army Corp of Engineers to coordinate with the U.S. Fish and Wildlife Service. UES Professional Solutions, LLC (UES) has engaged in a preliminary assessment, or an "Imperiled Species Survey" for the potential presence of protected habitats and species located within the "Site." The purpose of the survey is to assess the site for the presence of listed animal species and/or their suitable habitat which may be affected by the development of the site. The specific objectives of this report are to introduce the site and generalize biological site conditions, define the potential listed animal species within the site, and identify and discuss any potential impact on critical habitat. This Imperiled Species Survey report is meant to seek USFWS concurrence with a "No Effect" determination with the Endangered Species Act of 1973. UES conducted site investigations between May 22 and July 11, 2024.

PROPERTY LOCATION

The review area is regionally located in southeastern Allen Parish, Louisiana and partially within the CTLA reservation **(Exhibits 1** and **2**). It comprises of a ca. 55.3-acre roadway corridor that extends from CC Bel Road and Powell Road to State Highway 26 just north of Elton, Louisiana as shown on the 2022 Aerial Photograph (**Exhibit 3**). It comprises of a linear roadway corridor and overlaps a segment of Brisco Road and its right-of-way. Other towns nearby are Kinder to the southwest, and Oberlin to the north. Major roadways are U.S. Highway 165, 6.5 miles to the west and Interstate 10, 19.15 miles to the south (*direct paths*). The center of the site is positioned at -92.6927 and 30.524 decimal degrees within Sections 17-24, Township 6 South, Range 3 West, Allen Parish, Louisiana. The road corridor extends approximately 9,650 feet east and approximately 3,700 feet west of Bayou Blue.

EXISTING CONDITIONS

The review area is located at the northern extent of the Gulf Coast Prairies and Marshes ecoregion, just below the forested Coastal Uplands Ecoregion. Being transitional to both designations, the site's terrain has accommodated characteristics of both these ecoregions. The western two thirds of the review area appropriately fit within the Gulf Coast Prairies and Marshes ecoregion due to its flat terrace landform position. The remaining eastern third rises in elevation and best meets the forest Coastal Uplands. Anthropogenic activities dominate the entire landscape, most notably, pine silviculture was evident throughout and adjacent to the alignment. To a lesser extent, other land use conversions identified include agricultural farming, grazing, municipal facilities, roads, and utility and gas line servitudes. A narrow portion in the western end of the alignment is used for active buffalo grazing. Maintenance mowing of road rights of way and grounds buildings provide low cut turf for parking and outdoor activities.

In the central portion of the proposed alignment the landscape is dominated by canopies of densely planted pine stands with scattered pockets of remnant mixed upland and wetland hardwoods. Furrowing between the pine beds was common and mostly appeared to coincide with contour elevation lines for promoting erosion control, timber growth yield and proper drainage. Some areas where the beds are cross aligned with the natural grade, excess stormwater is trapped causing prolonged ponding in otherwise upland conditions. Stunted pines were evident in areas where this issue persisted. These areas were also prone to invasive species like primrose willow, Carolina willow, and Chinese tallow tree. The pine stands are principally grown from beds less than 12 inch high; however, taller beds were common in the concave landscape positions where soils tend to be saturated or ponded during the wet season.

Bayou Blue crosses the review area from south to north in a southwest to northeast direction as shown on the USGS Topographic map **(Exhibit 4)**. Its channel bed represents the lowest elevation within the review area at 28.7 feet above sea level. This measurement was recorded by the MMLH survey crew through the performance of a topographic survey and mapping task. According to this topographic survey, the highest elevation was recorded at 56.8 feet above sea level. This position is marked at the extreme eastern edge of the site near the Brisco Road and Highway 26 intersection. Drainage ditches and swales were observed along the roadways, through the Reservation culverted structures, and within the pine plantation stands to accommodate stormwater drainage.

SOIL TAXONOMY

According to the NRCS Soil Survey of Allen Parish, there are four soils underlying the review area, see (**Exhibit 5**). All of these are comprised of silt loam on nearly level to slightly sloping landforms. The data indicates that the proposed project alignment contains four (4) soil types: two soil types associated with uplands, Glenmora Silt Loam (non-hydric), and Kinder-Gis Complex (non-hydric) and two types associated with wetland conditions, Guyton-Ouachita Complex (hydric), and Prairieland Silt Loam (hydric). This mapping unit was limited to a portion of the alignment and aligned within the field delineated wetlands on-site.

NATURAL COMMUNITIES

The process of evaluation of the presence or absence of imperiled species on a property begins with the identification and classification of ecosystems and communities occupying the site. Native vegetation identified formed complexes of mixed hardwood uplands and wetlands. Elevated positions were dominated loblolly pine, but inclusions of native upland vegetation scattered throughout encompassed, sweetgum, water oak, red oak, southern magnolia, American hophornbeam, post oak, Chinese privet, blackberry cane, beauty berry, and bracken fern. Wetlands and lower landform positions were comprised of red maple, American elm, hackberry, willow oak, swamp chestnut oak, bald cypress, and popcorn trees. Subtending the canopy layer were red maple, muscle wood, arrow-wood, wood oats, lizard tail, and Virginia dayflower. Our initial site visit occurred directly at the end of prolonged rainy conditions. As such, Bayou Blue was flooded beyond its banks and there was water present in all the swales, ditches, and drains. Pine tree furrows were saturated throughout the entire site. The water receded within several days through soil infiltration, evapotranspiration, and subsequent hot and dry weather conditions. The subsequent July site inspections found more normalized site conditions with no standing water in ditches and water levels well within the bank margins of Bayou Blue.

IMPERILED SPECIES

To meet the objectives of this report for federally protected animal species, UES queried the US Fish and Wildlife Service's (FWS) Information for Planning and Consultation "IPaC" website to identify a list of potential species that could be impacted by activities within the geographic area of the site. The results of these queries can be found in **Attachment A**.

Physical traits and habitat requirements for the listed species were reviewed and considered before fieldwork. Before initiating on-site survey efforts, the following publicly accessible databases were thoroughly reviewed:

- Fish and Wildlife Service (USFWS), IPaC Guide
- NRCS Web Soil Survey
- USGS 7.5-minute topographic maps
- Aerial Imagery from Earth Explorer

A review of the USDA Natural Resources Conservation Service (NRCS) "Web Soil Survey" site was used to research and identify the soils underlying the site for indicators of potential habitat for imperiled species.

Field reconnaissance for this project was conducted to determine presence/absence by establishing pedestrian transects suitable for species and habitat types. This survey is not intended to be a 100% survey for any species listed nor is it meant to estimate species population within the site. Field reconnaissance survey efforts were conducted by experienced UES ecologists on May 22-24, and July 9-11, 2024. Data collected during the field reconnaissance phase of the study was documented using handheld Arrow Gold series, sub-meter accurate GPS units. Color aerial images from the through 2022 along with USGS topographic quadrangles were studied before and during the survey to identify representative and least-disturbed community types for reconnaissance. Remote sensing techniques were also utilized to identify potentially suitable habitats which may support listed species. The following is a summary of those species identified for investigation:

Tricolored Bat (*Perimyotis subflavus*)

Federal Protection Status: Proposed Endangered

The tricolored bat is a small species of bat with yellowish-brown color, pink forearms, and black wings. They roost within caves, dead or live tree foliage, tree cavities, rock crevices, mines, bridges, and occasionally buildings and other man-made structures. They prefer open forests and woodland edges in or near riparian areas. During the winter months, they hibernate in caves or mines with high humidity. White-nose syndrome has caused significant declines in tricolored bat populations. This species *may occur* during the warmer months on snags, mature pine, and shaggy-barked trees that provide roosting habitat on the project site.

Results: No individuals were observed onsite during this assessment; however, we recommend site contractors remain vigilant during development-related activities to avoid disturbing this species.

Red-cockaded Woodpecker (*Picoides borealis*)

Federal Protection Status: Endangered

The red-cockaded woodpecker, or "RCW", is a small black and white woodpecker. The males have a small red patch on the rear of their heads. They resemble downy woodpeckers but have a much narrower niche and rapidly diminishing preferred habitat range. The RCW are the only members of the woodpecker family which physically excavate their nesting cavities in living mature pine trees. To be able to excavate cavities, the birds are dependent on old growth stands of longleaf pine (Pinus palustris) and secondarily, loblolly (Pinus taeda) and slash pine (Pinus elliottii). As pine trees mature, they soften at the center, called "heart rot," which enable to birds to excavate their nesting cavities. The birds are dependent on fire-maintained, climax communities of sandhill pine and mesic flatwoods. A regular fire regime is critical for this species to increase understory diversity and reduce mid-story vegetation, which inhibits predation.

Results: Due to the elevated level of disturbance on the site, lack of potential nesting trees, and little to no habitat support, there is little to no potential for the species to be present on the site.

Whooping Crane (*Grus americana*)

Federal Protection Status: Experimental Population

The whooping crane is one of biggest and rarest birds in North America. Whooping cranes are found in wetlands, mashes, mudflats, wet prairies, and fields. They were historically found in the coastal marshes of Louisiana as both year-round residents and wintering migrants from their northern Canadian breeding grounds. The conversion of prairie and wetland habitat led to the decline of the species. This species was absent from Louisiana for decades and only recently been reintroduced to the area.

Results: Most of the alignment does not contain appropriate habitat for the species. The agricultural fields south of Briscoe Road are periodically flooded, however, are planted and harvested and provide no habitat support. There is little to no potential for the species to be present on the site and none were observed during the inspection.

Alligator Snapping Turtle (*Macrochelys temminckii*)

Federal Protection Status: Proposed Threatened

Alligator snapping turtles are found in large rivers and major tributaries; however, they are also found in a variety of small streams, bayous, canals, swamps, lakes, reservoirs, and ponds. They prefer habitats including fresh and brackish areas of stagnant or slow-moving water, rivers, lakes and backwater swamps within the panhandle and Big Bend region of Florida. The alligator snapping turtle nest in sandy soils adjacent to their home waters.

Results: Alligator snapping turtles were not observed within the site boundaries; however, any work near the MHWL/OHWL should note the potential presence of species.

American Chaffseed (*Schwalbea americana*)

Federal Protection: Endangered

American chaffseed is a perennial, erect herb in the figwort family with large, purplish-yellow tubular flowers. The fruit is a long and narrow capsule, enclosed in a loose-fitting sac-like structure that provides the basis for the common name. Flowering occurs from April to June (USFWS 1992a). American chaffseed occurs in sandy acidic, seasonally moist to dry soils and flowers from April to June. It typically occurs in fire-maintained ecosystems, such as the longleaf pine-wiregrass ecosystem of the southeastern coastal plain, open, moist pine flatwoods, and fire-maintained savannas. American chaffseed seems to require fire for persistence. One of the most serious threats to its continued existence is fire-suppression.

Results: Due to the lack of habitat available for this species, we have determined that the proposed project will have no effect on American chaffseed.

CONCLUSION

UES has assessed the presence of imperiled species subject to protections under the Endangered Species Act. Our evaluation of the proposed action area revealed a disturbed site with little residual natural area and occupied by previously disturbed pine plantation. The survey identified neither habitat nor populations of imperiled animal species on the property. Development of the subject property should have no effect on the threatened or endangered species identified in this report. The results of the Imperiled Species Presence/Absence investigation indicate that

Biome Consulting Group did find positive indications of any other protected species and habitats within the Site. The results of the Imperiled Species Presence/Absence Report failed to positively conclude the presence of protected species and habitats within the Site. This concludes the species FWC Imperiled Species Presence/Absence Survey and Report.

Signature of Environmental Professional

I declare that I have conducted and / or reviewed this assessment and support the data and conclusions contained therein.

August 29, 2024

Chris Bosso, M.S.
Ecological Consultant
UES

EXHIBITS

EXHIBIT 1
REGIONAL LOCATION
CTLA EVACUATION ROUTE
ALLEN PARISH

LEGEND

INSPECTION BOUNDARY

08/05/2024

PJI

THIS IS NOT A SURVEY

N W E S

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UES™

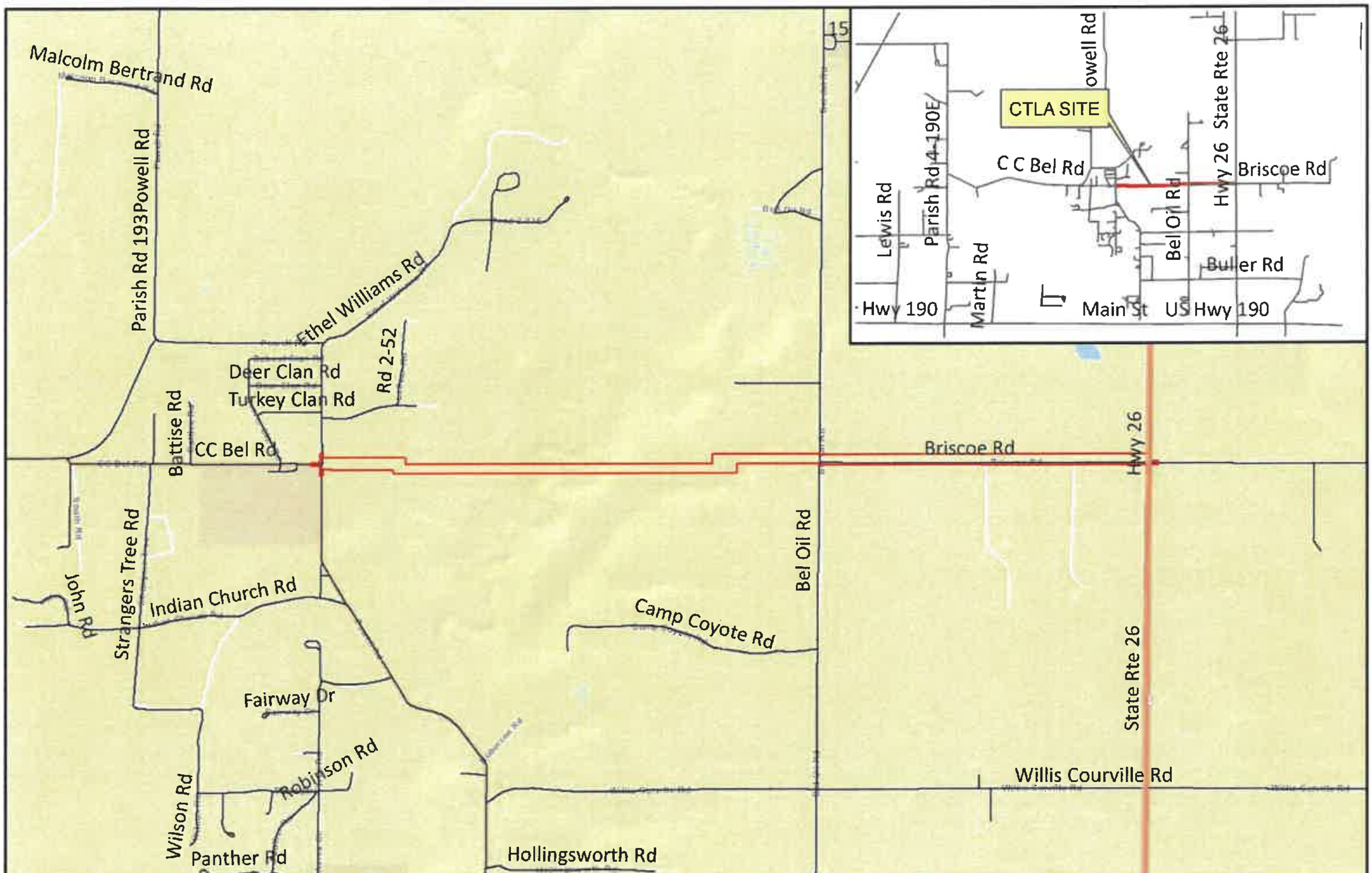

EXHIBIT 2
LOCAL LOCATION
CTLA EVACUATION ROUTE
ALLEN PARISH

LEGEND

PROJECT REVIEW AREA

08/05/2024

PJI

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UES ™

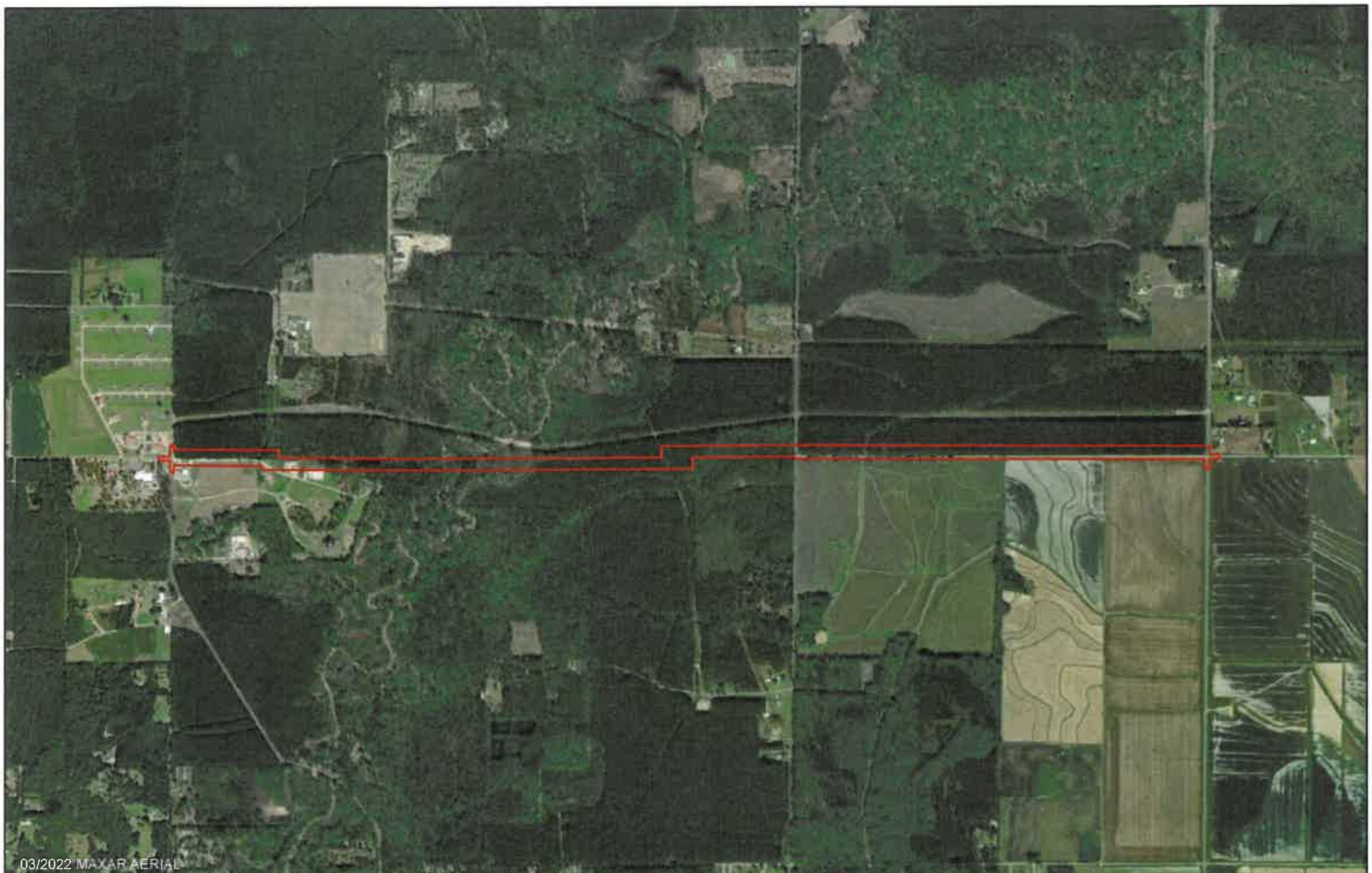

EXHIBIT 3
2022 AERIAL PHOTOGRAPH
CTLA EVACUATION ROUTE
ALLEN PARISH

LEGEND

PROJECT REVIEW AREA

08/05/2024

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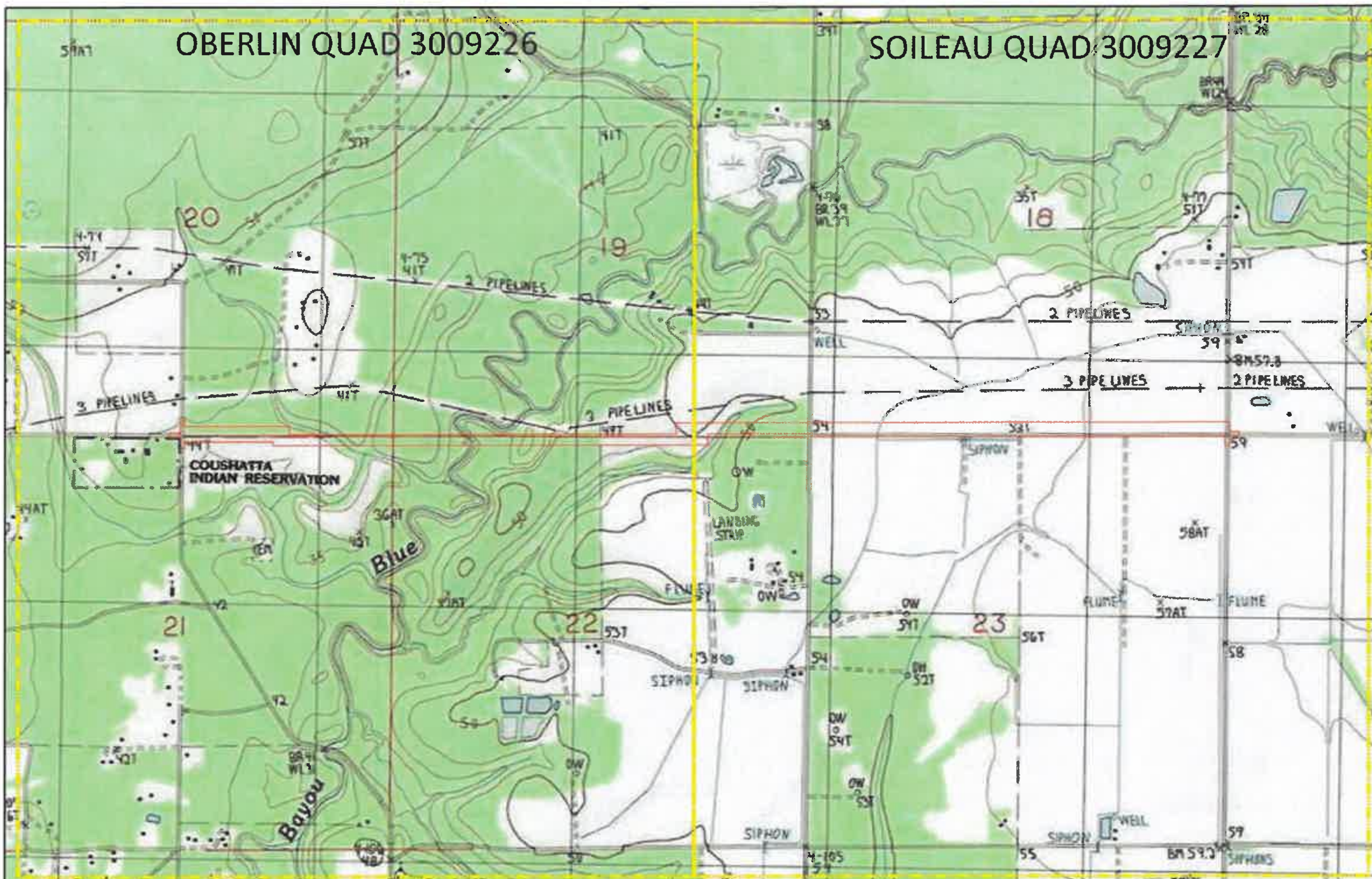

EXHIBIT 4
USGS TOPOGRAPHIC MAP
CTLA EVACUATION ROUTE
ALLEN PARISH

LEGEND

INSPECTION BOUNDARY

08/05/2024

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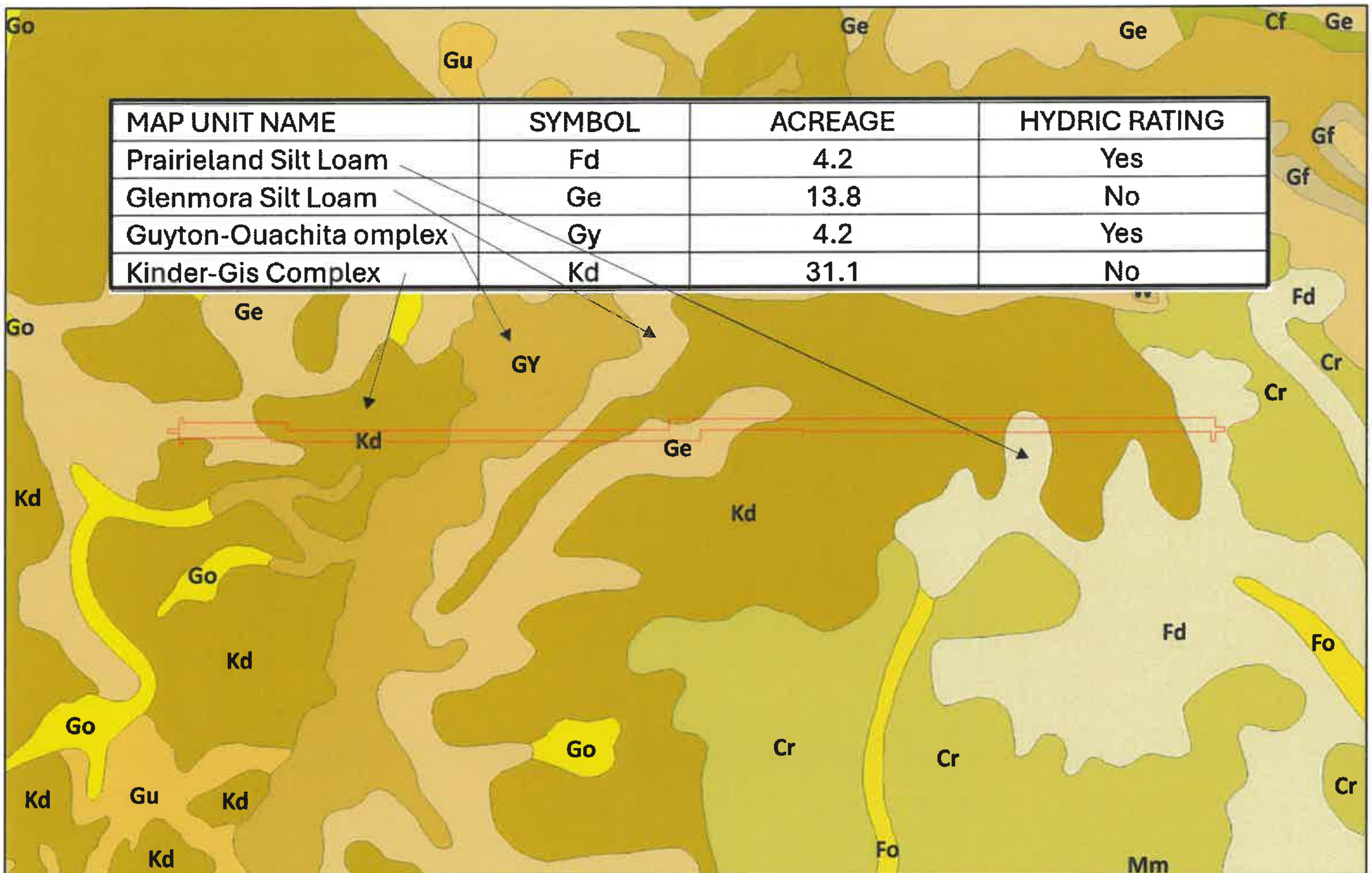


MAP UNIT NAME	SYMBOL	ACREAGE	HYDRIC RATING
Prairieland Silt Loam	Fd	4.2	Yes
Glenmora Silt Loam	Ge	13.8	No
Guyton-Ouachita omplex	Gy	4.2	Yes
Kinder-Gis Complex	Kd	31.1	No

EXHIBIT 5
USDA NRCS SOIL SURVEY MAP CTLA
EVACUATION ROUTE
ALLEN PARISH

LEGEND

INSPECTION BOUNDARY

08/05/2024

PJI

THIS IS NOT A SURVEY

N W E S

0 1,000 2,000 Feet

UES™

ATTACHMENT A

U.S. FISH AND WILDLIFE SERVICE IPAC RESOURCE LIST

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Allen County, Louisiana

Local office

Louisiana Ecological Services Field Office

(337) 291-3100
(337) 291-3139

200 Dulles Drive
Lafayette, LA 70506

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Tricolored Bat Perimyotis subflavus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

Birds

NAME	STATUS
Red-cockaded Woodpecker Picoides borealis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7614	Endangered
Whooping Crane Grus americana No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/758	EXPN

Reptiles

NAME	STATUS
Alligator Snapping Turtle Macrochelys temminckii Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4658	Proposed Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME	STATUS
American Chaffseed Schwalbea americana Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1286	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

There are no documented cases of eagles being present at this location. However, if you believe eagles may be using your site, please reach out to the local Fish and Wildlife Service office.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management

- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Prairie Loggerhead Shrike Lanius ludovicianus excubitorides This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8833	**Breeds Feb 1 to Jul 31**

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence ( )

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

■ probability of presence ■ breeding season | survey effort – no data

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Louisiana Ecological Services Field Office
200 Dulles Drive
Lafayette, LA 70506
Phone: (337) 291-3100 Fax: (337) 291-3139

In Reply Refer To: 09/03/2024 15:08:45 UTC
Project code: 2024-0138521
Project Name: Evacuation Route, Coushatta Tribe of Louisiana, Allen Parish

Subject: Consistency letter for the project named 'Evacuation Route, Coushatta Tribe of Louisiana, Allen Parish' for specified threatened and endangered species that may occur in your proposed project location pursuant to the Louisiana Endangered Species Act project review and guidance for other federal trust resources determination key (Louisiana DKey).

Dear Susan Douglas:

The U.S. Fish and Wildlife Service (Service) received on September 03, 2024 your effects determination(s) for the 'Evacuation Route, Coushatta Tribe of Louisiana, Allen Parish' (the Action) using the Louisiana DKey within the Information for Planning and Consultation (IPaC) system. The Service developed this system in accordance with the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based on your answers, and the assistance in the Service's Louisiana DKey, you made the following effect determination(s) for the proposed Action:

Species	**Listing Status**	**Determination**
American Chaffseed (*Schwalbea americana*)	Endangered	No effect
Red-cockaded Woodpecker (*Picoides borealis*)	Endangered	No effect

Your agency has met consultation requirements for these species by informing the Service of the "no effect" determinations. No further consultation for this project is required for these species. This consistency letter confirms you may rely on effect determinations you reached by considering the Louisiana DKey to satisfy agency consultation requirements under Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat. 884, as amended 16 U.S.C. 1531 et seq.; ESA).

The Service recommends that your agency contact the Service or re-evaluate the project in IPaC if: 1) the scope or location of the proposed project is changed significantly, 2) new information reveals that the action may affect listed species or designated critical habitat; 3) the action is modified in a manner that causes effects to listed species or designated critical habitat; or 4) a new species is listed or critical habitat designated. If any of the above conditions occurs, additional consultation should take place before project changes are final or resources committed.

This IPaC-generated letter only applies to the species in the above table and **does not** apply to the following ESA-protected species that also may occur in the Action Area:

- Alligator Snapping Turtle *Macrochelys temminckii* Proposed Threatened
- Monarch Butterfly *Danaus plexippus* Candidate
- Tricolored Bat *Perimyotis subflavus* Proposed Endangered
- Whooping Crane *Grus americana* Experimental Population, Non-Essential

Please Note: If the Federal Action may impact bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act (BGEPA) (54 Stat. 250, as amended, 16 U.S.C. 668a-d) may be required. Please contact Ulgonda Kirkpatrick (phone: 321/972-9089, e-mail: ulgonda_kirkpatrick@fws.gov) with any questions regarding potential impacts to bald or golden eagles.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

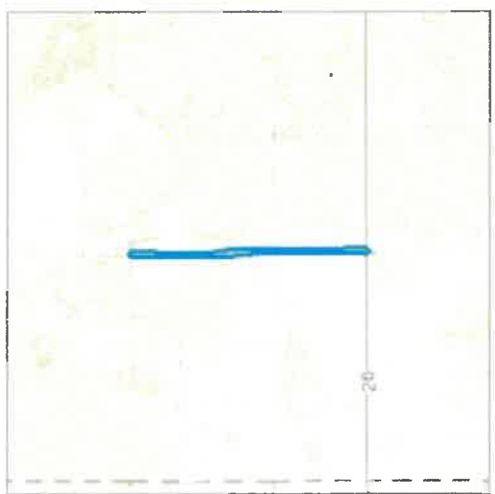
Evacuation Route, Coushatta Tribe of Louisiana, Allen Parish

2. Description

The following description was provided for the project 'Evacuation Route, Coushatta Tribe of Louisiana, Allen Parish':

> This project is to upgrade existing reservation roads and construct a connecting two-lane road connecting the reservation to a hurricane evacuation route which will provide access and egress during major storm events. Currently the reservation is cut off due to the existing roads flooding, and this project will provide emergency access to the community.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@30.523924049999998,-92.6951336855141,14z



QUALIFICATION INTERVIEW

1. Is the action authorized, funded, or being carried out by a Federal agency?

   Yes

2. Is the action authorized, funded, or being carried out by the:

   e. Other

3. Please identify your agency or organization type:

   c. Other

4. [Hidden Semantic] Does the project intersect the red-cockaded woodpecker (RCW) AOI?

   Automatically answered
   Yes

5. Will the project involve removal of suitable RCW foraging habitat (pine or pine/hardwood stands in which 50 percent or more of the dominant trees are pines and the dominant pine trees are 30 years of age or older)?

   No

6. Will the project occur within suitable RCW nesting habitat (pine or pine/hardwood stands that contain pines 60 years of age or older)?

   No

7. [Hidden Semantic] Does the project intersect the pink mucket mussel AOI ?

   Automatically answered
   No

8. [Hidden Semantic] Does the project intersect the American chaff-seed AOI?

   Automatically answered
   Yes

9. Is the proposed project located on or around "pimple mounds" ?

   Note: Pimple mounds are low, flattened, roughly circular, or elliptical domes consisting of sandy loam that are entirely distinct from surrounding soils within long-leaf pine flatwoods. They have a basal diameter ranging from 3 meters (m) to more than 30 m and a height ranging from 30 centimeters to more than 2 m.

   No

10. (Semantic) Does the project intersect the Louisiana black bear Range?

    Automatically answered
    No

IPAC USER CONTACT INFORMATION

Agency: Coushatta Tribe of Louisiana
Name: Susan Douglas
Address: 100 Engineer Place
City: Alexandria
State: LA
Zip: 71303
Email susan.douglas@mmlh.com
Phone: 3184480888

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Coushatta Tribe of Louisiana
Name: Christian Poncho
Email: KPoncho@coushatta.org
Phone: 3182751350

Attachment G 2

State Historic Preservation

Officer Acceptance

8 July 2024

Jon Glass
President
All Phases Archaeology
257 Pinehill Drive
Mobile, AL 36606

Re: Draft Report
La Division of Archaeology Report No. 22-7601
Phase I Cultural Resources Survey for the Proposed CC Bel Road Extension, Allen Parish, Louisiana

Dear Jon Glass:

We acknowledge receipt of your letter dated 20 June 2024 and one copy of the above referenced report.

Based on the description of the Area of Potential Effect (APE), the proposed ground-disturbing activities, and the identification of historic properties within the APE, our office concurs that no historic properties will be affected by this project. Our office has no further concerns for this project.

Consultation with the State Historic Preservation Office does not constitute consultation with Tribal Historic Preservation Offices, other Native American tribes, local governments, or the public. If archaeological materials are encountered during construction, the procedures codified at 36 CFR 800.13(b) will apply. Archaeological materials consist of any items, fifty years old or older, which were made or used by man. These items include but are not limited to, stone projectile points (arrowheads), ceramic sherds, bricks, worked wood, bone and stone, metal, and glass objects. The federal agency or the applicant receiving federal assistance should contact our office immediately. If human remains are encountered, the provisions of the Louisiana Unmarked Human Burial Sites Preservation Act (Revised Statute 8:671-681) should be followed.

We have accepted the report as final; no further submissions are necessary. If you have any questions, please contact Chip McGimsey at cmcgimsey@crt.la.gov or 225-219-4598.

Sincerely,

Kristin P. Sanders

Kristin Sanders
State Historic Preservation Officer

Attachment H

Coordination with Other Agencies

Attachment H1

Tribal Consultation Letters

COUSHATTA TRIBE
OF LOUISIANA

July 15, 2024

Alabama-Coushatta Tribe of Texas
Chairman Ricky Sylestine
571 State Park Road 56
Livingston, TX 77351

Re: Coushatta Tribe of Louisiana
Allen Parish, Louisiana
Potential Impacts to Cultural Resources
MML&H File No.: 7724

Dear Chairman Sylestine:

The Coushatta Tribe of Louisiana (CTLA) intends to construct a project to improve the evacuation route from the reservation located in Allen Parish utilizing funding provided through the Federal Highway Administration (FHWA) RAISE Grant program. CTLA is acting as the project sponsor for this project, and is coordinating with FHWA and the Bureau of Indian Affairs (BIA) to satisfy the environmental review responsibilities for this project.

We would like to invite you to be a consulting party in this review to help identify additional potential impacts to cultural resources in the planned area for this project. This letter transmits the recently accepted Cultural Resources Study and documentation of acceptance from the Louisiana State Historic Preservation Officer. We have also included a location map to assist in understanding the project location and environment.

The proposed project funds the engineering design, environmental compliance, right-of-way, and construction to upgrade and extend approximately 2.5 miles of CC Bel Road which is currently a dirt and gravel roadway in portions on the CTLA Reservation. The roadway will be designed to meet the 50-year flood plain standard as a minimum, includes an approximate 1-mile new roadway through the middle portion, a new bridge crossing over Bayou Blue, and an 8-foot-wide bicycle and pedestrian pathway. This will elevate the roadway above the flood zone, providing safe passage during high volume rain events. The roadway will directly connect to a designated Hurricane Evacuation route.

CTLA requests that you please provide any information and/or comments that your Tribe may have regarding potential impacts to cultural resources in the planning area for this project.

To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days by mailing your response to:

Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532
Attn: Kristian Poncho, THPO

337-584-1401 337-584-1507 (fax) P.O. Box 818 Elton, Louisiana 70532

If you have any initial concerns with impacts of the project, please note them in your response. If you have any questions or need any additional information, please contact Kristian Poncho at 337-584-1401, or by email at KPoncho@coushatta.org.

Sincerely,

KPoncho

Kristian Poncho
Tribal Historic Preservation Officer

cc: Ms. Susan Douglas, Meyer, Meyer, LaCroix & Hixson, Inc.

COUSHATTA TRIBE
OF LOUISIANA

July 15, 2024

Alabama-Coushatta Tribe of Texas
THPO Bryant Celestine
571 State Park Road 56
Livingston, TX 77351

Re: Coushatta Tribe of Louisiana
Allen Parish, Louisiana
Potential Impacts to Cultural Resources
MML&H File No.: 7724

Dear THPO Celestine:

The Coushatta Tribe of Louisiana (CTLA) intends to construct a project to improve the evacuation route from the reservation located in Allen Parish utilizing funding provided through the Federal Highway Administration (FHWA) RAISE Grant program. CTLA is acting as the project sponsor for this project, and is coordinating with FHWA and the Bureau of Indian Affairs (BIA) to satisfy the environmental review responsibilities for this project.

We would like to invite you to be a consulting party in this review to help identify additional potential impacts to cultural resources in the planned area for this project. This letter transmits the recently accepted Cultural Resources Study and documentation of acceptance from the Louisiana State Historic Preservation Officer. We have also included a location map to assist in understanding the project location and environment.

The proposed project funds the engineering design, environmental compliance, right-of-way, and construction to upgrade and extends approximately 2.5 miles of CC Bel Road which is currently a dirt and gravel roadway in portions on the CTLA Reservation. The roadway will be designed to meet the 50-year flood plain standard as a minimum, includes an approximate 1-mile new roadway through the middle portion, a new bridge crossing over Bayou Blue, and an 8-foot-wide bicycle and pedestrian pathway. This will elevate the roadway above the flood zone, providing safe passage during high volume rain events. The roadway will directly connect to a designated Hurricane Evacuation route.

CTLA requests that you please provide any information and/or comments that your Tribe may have regarding potential impacts to cultural resources in the planning area for this project.

To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days by mailing your response to:

Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532

Sincerely,

Kristian Poncho
Tribal Historic Preservation Officer

cc: Ms. Susan Douglas, Meyer, Meyer, LaCroix & Hixson, Inc.

COUSHATTA TRIBE
OF LOUISIANA

July 15, 2024

Apache Tribe of Oklahoma
Chairman Matthew Tselee
P.O. Box 1330
Anadarko, OK 73005

Re: Coushatta Tribe of Louisiana
Allen Parish, Louisiana
Potential Impacts to Cultural Resources
MML&H File No.: 7724

Dear Chairman Tselee:

The Coushatta Tribe of Louisiana (CTLA) intends to construct a project to improve the evacuation route from the reservation located in Allen Parish utilizing funding provided through the Federal Highway Administration (FHWA) RAISE Grant program. CTLA is acting as the project sponsor for this project, and is coordinating with FHWA and the Bureau of Indian Affairs (BIA) to satisfy the environmental review responsibilities for this project.

We would like to invite you to be a consulting party in this review to help identify additional potential impacts to cultural resources in the planned area for this project. This letter transmits the recently accepted Cultural Resources Study and documentation of acceptance from the Louisiana State Historic Preservation Officer. We have also included a location map to assist in understanding the project location and environment.

The proposed project funds the engineering design, environmental compliance, right-of-way, and construction to upgrade and extend approximately 2.5 miles of CC Bel Road which is currently a dirt and gravel roadway in portions on the CTLA Reservation. The roadway will be designed to meet the 50-year flood plain standard as a minimum, includes an approximate 1-mile new roadway through the middle portion, a new bridge crossing over Bayou Blue, and an 8-foot-wide bicycle and pedestrian pathway. This will elevate the roadway above the flood zone, providing safe passage during high volume rain events. The roadway will directly connect to a designated Hurricane Evacuation route.

CTLA requests that you please provide any information and/or comments that your Tribe may have regarding potential impacts to cultural resources in the planning area for this project.

To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days by mailing your response to:

Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532
Attn: Kristian Poncho, THPO

If you have any initial concerns with impacts of the project, please note them in your response. If you have any questions or need any additional information, please contact Kristian Poncho at 337-584-1401, or by email at KPoncho@coushatta.org.

Sincerely,

Kristian Poncho
Tribal Historic Preservation Officer

cc: Ms. Susan Douglas, Meyer, Meyer, LaCroix & Hixson, Inc.

COUSHATTA TRIBE
OF LOUISIANA

July 15, 2024

Alabama-Quassarte Tribal Town
Chief Wilson Yargee
2122 Highway 27
Wetumka, OK 74883

Re: Coushatta Tribe of Louisiana
Allen Parish, Louisiana
Potential Impacts to Cultural Resources
MML&H File No.: 7724

Dear Chief Yargee:

The Coushatta Tribe of Louisiana (CTLA) intends to construct a project to improve the evacuation route from the reservation located in Allen Parish utilizing funding provided through the Federal Highway Administration (FHWA) RAISE Grant program. CTLA is acting as the project sponsor for this project, and is coordinating with FHWA and the Bureau of Indian Affairs (BIA) to satisfy the environmental review responsibilities for this project.

We would like to invite you to be a consulting party in this review to help identify additional potential impacts to cultural resources in the planned area for this project. This letter transmits the recently accepted Cultural Resources Study and documentation of acceptance from the Louisiana State Historic Preservation Officer. We have also included a location map to assist in understanding the project location and environment.

The proposed project funds the engineering design, environmental compliance, right-of-way, and construction to upgrade and extend approximately 2.5 miles of CC Bel Road which is currently a dirt and gravel roadway in portions on the CTLA Reservation. The roadway will be designed to meet the 50-year flood plain standard as a minimum, includes an approximate 1-mile new roadway through the middle portion, a new bridge crossing over Bayou Blue, and an 8-foot-wide bicycle and pedestrian pathway. This will elevate the roadway above the flood zone, providing safe passage during high volume rain events. The roadway will directly connect to a designated Hurricane Evacuation route.

CTLA requests that you please provide any information and/or comments that your Tribal Town may have regarding potential impacts to cultural resources in the planning area for this project.

To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days by mailing your response to:

Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532
Attn: Kristian Poncho, THPO

If you have any initial concerns with impacts of the project, please note them in your response. If you have any questions or need any additional information, please contact Kristian Poncho at 337-584-1401, or by email at KPoncho@coushatta.org.

Sincerely,

Kristian Poncho
Tribal Historic Preservation Officer

cc: Ms. Susan Douglas, Meyer, Meyer, LaCroix & Hixson, Inc.

COUSHATTA TRIBE
OF LOUISIANA

July 15, 2024

Alabama-Quassarte Tribal Town
THPO Brina Williams
2122 Highway 27
Wetumka, OK 74883

Re: Coushatta Tribe of Louisiana
Allen Parish, Louisiana
Potential Impacts to Cultural Resources
MML&H File No.: 7724

Dear THPO Williams:

The Coushatta Tribe of Louisiana (CTLA) intends to construct a project to improve the evacuation route from the reservation located in Allen Parish utilizing funding provided through the Federal Highway Administration (FHWA) RAISE Grant program. CTLA is acting as the project sponsor for this project, and is coordinating with FHWA and the Bureau of Indian Affairs (BIA) to satisfy the environmental review responsibilities for this project.

We would like to invite you to be a consulting party in this review to help identify additional potential impacts to cultural resources in the planned area for this project. This letter transmits the recently accepted Cultural Resources Study and documentation of acceptance from the Louisiana State Historic Preservation Officer. We have also included a location map to assist in understanding the project location and environment.

The proposed project funds the engineering design, environmental compliance, right-of-way, and construction to upgrade and extend approximately 2.5 miles of CC Bel Road which is currently a dirt and gravel roadway in portions on the CTLA Reservation. The roadway will be designed to meet the 50-year flood plain standard as a minimum, includes an approximate 1-mile new roadway through the middle portion, a new bridge crossing over Bayou Blue, and an 8-foot-wide bicycle and pedestrian pathway. This will elevate the roadway above the flood zone, providing safe passage during high volume rain events. The roadway will directly connect to a designated Hurricane Evacuation route.

CTLA requests that you please provide any information and/or comments that your Tribal Town may have regarding potential impacts to cultural resources in the planning area for this project.

To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days by mailing your response to:

Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532
Attn: Kristian Poncho, THPO

If you have any initial concerns with impacts of the project, please note them in your response. If you have any questions or need any additional information, please contact Kristian Poncho at 337-584-1401, or by email at KPoncho@coushatta.org.

Sincerely,

Kristian Poncho
Tribal Historic Preservation Officer

cc: Ms. Susan Douglas, Meyer, Meyer, LaCroix & Hixson, Inc.

COUSHATTA TRIBE
OF LOUISIANA

July 15, 2024

Jena Band of Choctaw Indians
Acting THPO Johnna Flynn
P.O. Box 14
Jena, LA 71342

Re: Coushatta Tribe of Louisiana
Allen Parish, Louisiana
Potential Impacts to Cultural Resources
MML&H File No.: 7724

Dear Acting THPO Flynn:

The Coushatta Tribe of Louisiana (CTLA) intends to construct a project to improve the evacuation route from the reservation located in Allen Parish utilizing funding provided through the Federal Highway Administration (FHWA) RAISE Grant program. CTLA is acting as the project sponsor for this project, and is coordinating with FHWA and the Bureau of Indian Affairs (BIA) to satisfy the environmental review responsibilities for this project.

We would like to invite you to be a consulting party in this review to help identify additional potential impacts to cultural resources in the planned area for this project. This letter transmits the recently accepted Cultural Resources Study and documentation of acceptance from the Louisiana State Historic Preservation Officer. We have also included a location map to assist in understanding the project location and environment.

The proposed project funds the engineering design, environmental compliance, right-of-way, and construction to upgrade and extend approximately 2.5 miles of CC Bel Road which is currently a dirt and gravel roadway in portions on the CTLA Reservation. The roadway will be designed to meet the 50-year flood plain standard as a minimum, includes an approximate 1-mile new roadway through the middle portion, a new bridge crossing over Bayou Blue, and an 8-foot-wide bicycle and pedestrian pathway. This will elevate the roadway above the flood zone, providing safe passage during high volume rain events. The roadway will directly connect to a designated Hurricane Evacuation route.

CTLA requests that you please provide any information and/or comments that your Band may have regarding potential impacts to cultural resources in the planning area for this project.

To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days by mailing your response to:

Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532
Attn: Kristian Poncho, THPO

If you have any initial concerns with impacts of the project, please note them in your response. If you have any questions or need any additional information, please contact Kristian Poncho at 337-584-1401, or by email at KPoncho@coushatta.org.

Sincerely,

Kristian Poncho
Tribal Historic Preservation Officer

cc: Ms. Susan Douglas, Meyer, Meyer, LaCroix & Hixson, Inc.

COUSHATTA TRIBE
OF LOUISIANA

July 15, 2024

Jena Band of Choctaw Indians
Tribal Chief Libby Rogers
1052 Chanaha Hine Street
Trout, LA 71371

Re: Coushatta Tribe of Louisiana
Allen Parish, Louisiana
Potential Impacts to Cultural Resources
MML&H File No.: 7724

Dear Tribal Chief Rogers:

The Coushatta Tribe of Louisiana (CTLA) intends to construct a project to improve the evacuation route from the reservation located in Allen Parish utilizing funding provided through the Federal Highway Administration (FHWA) RAISE Grant program. CTLA is acting as the project sponsor for this project, and is coordinating with FHWA and the Bureau of Indian Affairs (BIA) to satisfy the environmental review responsibilities for this project.

We would like to invite you to be a consulting party in this review to help identify additional potential impacts to cultural resources in the planned area for this project. This letter transmits the recently accepted Cultural Resources Study and documentation of acceptance from the Louisiana State Historic Preservation Officer. We have also included a location map to assist in understanding the project location and environment.

The proposed project funds the engineering design, environmental compliance, right-of-way, and construction to upgrade and extend approximately 2.5 miles of CC Bel Road which is currently a dirt and gravel roadway in portions on the CTLA Reservation. The roadway will be designed to meet the 50-year flood plain standard as a minimum, includes an approximate 1-mile new roadway through the middle portion, a new bridge crossing over Bayou Blue, and an 8-foot-wide bicycle and pedestrian pathway. This will elevate the roadway above the flood zone, providing safe passage during high volume rain events. The roadway will directly connect to a designated Hurricane Evacuation route.

CTLA requests that you please provide any information and/or comments that your Band may have regarding potential impacts to cultural resources in the planning area for this project.

To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days by mailing your response to:

Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532
Attn: Kristian Poncho, THPO

337-584-1401 337-584-1507 (fax) P.O. Box 818 Elton, Louisiana 70532

If you have any initial concerns with impacts of the project, please note them in your response. If you have any questions or need any additional information, please contact Kristian Poncho at 337-584-1401, or by email at KPoncho@coushatta.org.

Sincerely,

Kristian Poncho
Tribal Historic Preservation Officer

cc: Ms. Susan Douglas, Meyer, Meyer, LaCroix & Hixson, Inc.

COUSHATTA TRIBE
OF LOUISIANA

July 15, 2024

Mississippi Band of Choctaw Indians
Chief Cyrus Ben
101 Industrial Road
Choctaw, MS 39350

Re: Coushatta Tribe of Louisiana
Allen Parish, Louisiana
Potential Impacts to Cultural Resources
MML&H File No.: 7724

Dear Chief Ben:

The Coushatta Tribe of Louisiana (CTLA) intends to construct a project to improve the evacuation route from the reservation located in Allen Parish utilizing funding provided through the Federal Highway Administration (FHWA) RAISE Grant program. CTLA is acting as the project sponsor for this project, and is coordinating with FHWA and the Bureau of Indian Affairs (BIA) to satisfy the environmental review responsibilities for this project.

We would like to invite you to be a consulting party in this review to help identify additional potential impacts to cultural resources in the planned area for this project. This letter transmits the recently accepted Cultural Resources Study and documentation of acceptance from the Louisiana State Historic Preservation Officer. We have also included a location map to assist in understanding the project location and environment.

The proposed project funds the engineering design, environmental compliance, right-of-way, and construction to upgrade and extend approximately 2.5 miles of CC Bel Road which is currently a dirt and gravel roadway in portions on the CTLA Reservation. The roadway will be designed to meet the 50-year flood plain standard as a minimum, includes an approximate 1-mile new roadway through the middle portion, a new bridge crossing over Bayou Blue, and an 8-foot-wide bicycle and pedestrian pathway. This will elevate the roadway above the flood zone, providing safe passage during high volume rain events. The roadway will directly connect to a designated Hurricane Evacuation route.

CTLA requests that you please provide any information and/or comments that your Band may have regarding potential impacts to cultural resources in the planning area for this project.

To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days by mailing your response to:

Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532
Attn: Kristian Poncho, THPO

If you have any initial concerns with impacts of the project, please note them in your response. If you have any questions or need any additional information, please contact Kristian Poncho at 337-584-1401, or by email at KPoncho@coushatta.org.

Sincerely,

Kristian Poncho
Tribal Historic Preservation Officer

cc: Ms. Susan Douglas, Meyer, Meyer, LaCroix & Hixson, Inc.

COUSHATTA TRIBE
OF LOUISIANA

July 15, 2024

Seminole Tribe of Florida
Chairman Marcellus Osceola
6300 Stirling Road
Hollywood, FL 33024

Re: Coushatta Tribe of Louisiana
Allen Parish, Louisiana
Potential Impacts to Cultural Resources
MML&H File No.: 7724

Dear Chairman Osceola:

The Coushatta Tribe of Louisiana (CTLA) intends to construct a project to improve the evacuation route from the reservation located in Allen Parish utilizing funding provided through the Federal Highway Administration (FHWA) RAISE Grant program. CTLA is acting as the project sponsor for this project, and is coordinating with FHWA and the Bureau of Indian Affairs (BIA) to satisfy the environmental review responsibilities for this project.

We would like to invite you to be a consulting party in this review to help identify additional potential impacts to cultural resources in the planned area for this project. This letter transmits the recently accepted Cultural Resources Study and documentation of acceptance from the Louisiana State Historic Preservation Officer. We have also included a location map to assist in understanding the project location and environment.

The proposed project funds the engineering design, environmental compliance, right-of-way, and construction to upgrade and extend approximately 2.5 miles of CC Bel Road which is currently a dirt and gravel roadway in portions on the CTLA Reservation. The roadway will be designed to meet the 50-year flood plain standard as a minimum, includes an approximate 1-mile new roadway through the middle portion, a new bridge crossing over Bayou Blue, and an 8-foot-wide bicycle and pedestrian pathway. This will elevate the roadway above the flood zone, providing safe passage during high volume rain events. The roadway will directly connect to a designated Hurricane Evacuation route.

CTLA requests that you please provide any information and/or comments that your Tribe may have regarding potential impacts to cultural resources in the planning area for this project.

To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days by mailing your response to:

Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532
Attn: Kristian Poncho, THPO

If you have any initial concerns with impacts of the project, please note them in your response. If you have any questions or need any additional information, please contact Kristian Poncho at 337-584-1401, or by email at KPoncho@coushatta.org.

Sincerely,

Kristian Poncho
Tribal Historic Preservation Officer

cc: Ms. Susan Douglas, Meyer, Meyer, LaCroix & Hixson, Inc.

COUSHATTA TRIBE
OF LOUISIANA

July 15, 2024

Seminole Tribe of Florida
THPO Tina Marie Osceola
30290 Josie Billie Highway
Pmb 1004
Clewston, FL 33440

Re: Coushatta Tribe of Louisiana
Allen Parish, Louisiana
Potential Impacts to Cultural Resources
MML&H File No.: 7724

Dear THPO Osceola:

The Coushatta Tribe of Louisiana (CTLA) intends to construct a project to improve the evacuation route from the reservation located in Allen Parish utilizing funding provided through the Federal Highway Administration (FHWA) RAISE Grant program. CTLA is acting as the project sponsor for this project, and is coordinating with FHWA and the Bureau of Indian Affairs (BIA) to satisfy the environmental review responsibilities for this project.

We would like to invite you to be a consulting party in this review to help identify additional potential impacts to cultural resources in the planned area for this project. This letter transmits the recently accepted Cultural Resources Study and documentation of acceptance from the Louisiana State Historic Preservation Officer. We have also included a location map to assist in understanding the project location and environment.

The proposed project funds the engineering design, environmental compliance, right-of-way, and construction to upgrade and extend approximately 2.5 miles of CC Bel Road which is currently a dirt and gravel roadway in portions on the CTLA Reservation. The roadway will be designed to meet the 50-year flood plain standard as a minimum, includes an approximate 1-mile new roadway through the middle portion, a new bridge crossing over Bayou Blue, and an 8-foot-wide bicycle and pedestrian pathway. This will elevate the roadway above the flood zone, providing safe passage during high volume rain events. The roadway will directly connect to a designated Hurricane Evacuation route.

CTLA requests that you please provide any information and/or comments that your Tribe may have regarding potential impacts to cultural resources in the planning area for this project.

To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days by mailing your response to:

Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532
Attn: Kristian Poncho, THPO

If you have any initial concerns with impacts of the project, please note them in your response. If you have any questions or need any additional information, please contact Kristian Poncho at 337-584-1401, or by email at KPoncho@coushatta.org.

Sincerely,

Kristian Poncho
Tribal Historic Preservation Officer

cc: Ms. Susan Douglas, Meyer, Meyer, LaCroix & Hixson, Inc.

Attachment H2

Agency Consultation

Letters

COUSHATTA TRIBE
OF LOUISIANA

July 15, 2024

U.S. Environmental Protection Agency
Source Water Protection Branch (6WQ-SG)
1201 Elm Street
Suite 500 Mail Code WDPN
Dallas, TX 75270-210
Attn : Mr. Omar Martinez

Re: Coushatta Tribe of Louisiana
Allen Parish, Louisiana
Potential Impacts to Cultural Resources
MML&H File No.: 7724

Dear Mr. Martinez:

The Coushatta Tribe of Louisiana (CTLA) intends to construct a project to improve the evacuation route from the reservation located in Allen Parish utilizing funding provided through the Federal Highway Administration (FHWA) RAISE Grant program. CTLA is acting as the project sponsor for this project, and is coordinating with FHWA and the Bureau of Indian Affairs (BIA) to satisfy the environmental review responsibilities for this project.

The proposed project funds the engineering design, environmental compliance, right-of-way, and construction to upgrade and extend approximately 2.5 miles of CC Bel Road which is currently a dirt and gravel roadway in portions on the CTLA Reservation. The roadway will be designed to meet the 50-year flood plain standard as a minimum, includes an approximate 1-mile new roadway through the middle portion, a new bridge crossing over Bayou Blue, and an 8-foot-wide bicycle and pedestrian pathway. This will elevate the roadway above the flood zone, providing safe passage during high volume rain events. The roadway will directly connect to a designated Hurricane Evacuation route.

As part of the NEPA-like review process for this project, please provide any information and/or comments associated with the project. Maps reviewed indicate that the project may be over part of the Chicot Aquifer.

To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days by mailing your response to:

Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532
Attn: Kristian Poncho, THPO

If you have any initial concerns with impacts of the project, please note them in your response. If you have any questions or need any additional information, please contact Kristian Poncho at 337-584-1401, or by email at KPoncho@coushatta.org.

Sincerely,

Kristian Poncho
Tribal Historic Preservation Officer

cc: Ms. Susan Douglas, Meyer, Meyer, LaCroix & Hixson, Inc.

COUSHATTA TRIBE
OF LOUISIANA

July 15, 2024

U.S. Environmental Protection Agency
Multi-Media Planning and Permitting
1201 Elm Street
Dallas, TX 75270
Attn: Mr. Jeffrey Riley

Re: Coushatta Tribe of Louisiana
Allen Parish, Louisiana
Potential Impacts to Cultural Resources
MML&H File No.: 7724

Dear Mr. Riley:

The Coushatta Tribe of Louisiana (CTLA) intends to construct a project to improve the evacuation route from the reservation located in Allen Parish utilizing funding provided through the Federal Highway Administration (FHWA) RAISE Grant program. CTLA is acting as the project sponsor for this project, and is coordinating with FHWA and the Bureau of Indian Affairs (BIA) to satisfy the environmental review responsibilities for this project.

We would like to invite you to be a consulting party in this review to help identify additional potential impacts to cultural resources in the planned area for this project. This letter transmits the recently accepted Cultural Resources Study and documentation of acceptance from the Louisiana State Historic Preservation Officer. We have also included a location map to assist in understanding the project location and environment.

The proposed project funds the engineering design, environmental compliance, right-of-way, and construction to upgrade and extend approximately 2.5 miles of CC Bel Road which is currently a dirt and gravel roadway in portions on the CTLA Reservation. The roadway will be designed to meet the 50-year flood plain standard as a minimum, includes an approximate 1-mile new roadway through the middle portion, a new bridge crossing over Bayou Blue, and an 8-foot-wide bicycle and pedestrian pathway. This will elevate the roadway above the flood zone, providing safe passage during high volume rain events. The roadway will directly connect to a designated Hurricane Evacuation route.

CTLA requests that you please provide any information and/or comments that your agency may have regarding potential impacts to cultural resources in the planning area for this project.

To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days by mailing your response to:

Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532
Attn: Kristian Poncho, THPO

If you have any initial concerns with impacts of the project, please note them in your response. If you have any questions or need any additional information, please contact Kristian Poncho at 337-584-1401, or by email at KPoncho@coushatta.org.

Sincerely,

Kristian Poncho
Tribal Historic Preservation Officer

cc: Ms. Susan Douglas, Meyer, Meyer, LaCroix & Hixson, Inc.

COUSHATTA TRIBE
OF LOUISIANA

July 15, 2024

Louisiana Department of Environmental Quality
Office of the Secretary
P. O. Box 4301
Baton Rouge, LA 70821-4301
Attn : Ms. Marissa Jimenez

Re: Coushatta Tribe of Louisiana
Allen Parish, Louisiana
Potential Impacts to Cultural Resources
MML&H File No.: 7724

Dear Ms. Jimenez:

The Coushatta Tribe of Louisiana (CTLA) intends to construct a project to improve the evacuation route from the reservation located in Allen Parish utilizing funding provided through the Federal Highway Administration (FHWA) RAISE Grant program. CTLA is acting as the project sponsor for this project, and is coordinating with FHWA and the Bureau of Indian Affairs (BIA) to satisfy the environmental review responsibilities for this project.

We would like to invite you to be a consulting party in this review to help identify additional potential impacts to cultural resources in the planned area for this project. This letter transmits the recently accepted Cultural Resources Study and documentation of acceptance from the Louisiana State Historic Preservation Officer. We have also included a location map to assist in understanding the project location and environment.

The proposed project funds the engineering design, environmental compliance, right-of-way, and construction to upgrade and extend approximately 2.5 miles of CC Bel Road which is currently a dirt and gravel roadway in portions on the CTLA Reservation. The roadway will be designed to meet the 50-year flood plain standard as a minimum, includes an approximate 1-mile new roadway through the middle portion, a new bridge crossing over Bayou Blue, and an 8-foot-wide bicycle and pedestrian pathway. This will elevate the roadway above the flood zone, providing safe passage during high volume rain events. The roadway will directly connect to a designated Hurricane Evacuation route.

CTLA requests that you please provide any information and/or comments that your agency may have regarding potential impacts to cultural resources in the planning area for this project.

To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days by mailing your response to:

Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532
Attn: Kristian Poncho, THPO

337-584-1401 337-584-1507 (fax) P.O. Box 818 Elton, Louisiana 70532

If you have any initial concerns with impacts of the project, please note them in your response. If you have any questions or need any additional information, please contact Kristian Poncho at 337-584-1401, or by email at KPoncho@coushatta.org.

Sincerely,

Kristian Poncho
Tribal Historic Preservation Officer

cc: Ms. Susan Douglas, Meyer, Meyer, LaCroix & Hixson, Inc.

COUSHATTA TRIBE
OF LOUISIANA

July 15, 2024

Louisiana Department of Transportation and Development
Office of Flood Plain Management
P. O. Box 94245
Baton Rouge, LA 70804-9245
Attn : Ms. Susan Veillon

Re: Coushatta Tribe of Louisiana
Allen Parish, Louisiana
Potential Impacts to Cultural Resources
MML&H File No.: 7724

Dear Ms. Veillon:

The Coushatta Tribe of Louisiana (CTLA) intends to construct a project to improve the evacuation route from the reservation located in Allen Parish utilizing funding provided through the Federal Highway Administration (FHWA) RAISE Grant program. CTLA is acting as the project sponsor for this project, and is coordinating with FHWA and the Bureau of Indian Affairs (BIA) to satisfy the environmental review responsibilities for this project.

We would like to invite you to be a consulting party in this review to help identify additional potential impacts to cultural resources in the planned area for this project. This letter transmits the recently accepted Cultural Resources Study and documentation of acceptance from the Louisiana State Historic Preservation Officer. We have also included a location map to assist in understanding the project location and environment.

The proposed project funds the engineering design, environmental compliance, right-of-way, and construction to upgrade and extend approximately 2.5 miles of CC Bel Road which is currently a dirt and gravel roadway in portions on the CTLA Reservation. The roadway will be designed to meet the 50-year flood plain standard as a minimum, includes an approximate 1-mile new roadway through the middle portion, a new bridge crossing over Bayou Blue, and an 8-foot-wide bicycle and pedestrian pathway. This will elevate the roadway above the flood zone, providing safe passage during high volume rain events. The roadway will directly connect to a designated Hurricane Evacuation route.

CTLA requests that you please provide any information and/or comments that your agency may have regarding potential impacts to cultural resources in the planning area for this project.

To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days by mailing your response to:

Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532
Attn: Kristian Poncho, THPO

If you have any initial concerns with impacts of the project, please note them in your response. If you have any questions or need any additional information, please contact Kristian Poncho at 337-584-1401, or by email at KPoncho@coushatta.org.

Sincerely,

Kristian Poncho
Tribal Historic Preservation Officer

cc: Ms. Susan Douglas, Meyer, Meyer, LaCroix & Hixson, Inc.

COUSHATTA TRIBE
OF LOUISIANA

July 15, 2024

Louisiana Department of Wildlife and Fisheries
Wildlife Diversity Program
P.O. Box 98000
Baton Rouge, LA 70898-9000
Attn : Ms. Caroline Michon

Re: Coushatta Tribe of Louisiana
Allen Parish, Louisiana
Potential Impacts to Cultural Resources
MML&H File No.: 7724

Dear Ms. Michon:

The Coushatta Tribe of Louisiana (CTLA) intends to construct a project to improve the evacuation route from the reservation located in Allen Parish utilizing funding provided through the Federal Highway Administration (FHWA) RAISE Grant program. CTLA is acting as the project sponsor for this project, and is coordinating with FHWA and the Bureau of Indian Affairs (BIA) to satisfy the environmental review responsibilities for this project.

We would like to invite you to be a consulting party in this review to help identify additional potential impacts to cultural resources in the planned area for this project. This letter transmits the recently accepted Cultural Resources Study and documentation of acceptance from the Louisiana State Historic Preservation Officer. We have also included a location map to assist in understanding the project location and environment.

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CTLA requests that you please provide any information and/or comments that your agency may have regarding potential impacts due to this project.

To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days by mailing your response to:

Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532
Attn: Kristian Poncho, THPO

If you have any initial concerns with impacts of the project, please note them in your response. If you have any questions or need any additional information, please contact Kristian Poncho at 337-584-1401, or by email at KPoncho@coushatta.org.

Sincerely,

Kristian Poncho
Tribal Historic Preservation Officer

cc: Ms. Susan Douglas, Meyer, Meyer, LaCroix & Hixson, Inc.

COUSHATTA TRIBE
OF LOUISIANA

July 15, 2024

U.S. Department of Agriculture
Natural Resources Conservation Service
3737 Government Street
Alexandria, LA 71302
Attn : Mr. Richard Kacir
State Conservationist

Re: Coushatta Tribe of Louisiana
Allen Parish, Louisiana
Potential Impacts to Cultural Resources
MML&H File No.: 7724

Dear Mr. Kacir:

The Coushatta Tribe of Louisiana (CTLA) intends to construct a project to improve the evacuation route from the reservation located in Allen Parish utilizing funding provided through the Federal Highway Administration (FHWA) RAISE Grant program. CTLA is acting as the project sponsor for this project, and is coordinating with FHWA and the Bureau of Indian Affairs (BIA) to satisfy the environmental review responsibilities for this project.

We would like to invite you to be a consulting party in this review to help identify additional potential impacts to cultural resources in the planned area for this project. This letter transmits the recently accepted Cultural Resources Study and documentation of acceptance from the Louisiana State Historic Preservation Officer. We have also included a location map to assist in understanding the project location and environment.

The proposed project funds the engineering design, environmental compliance, right-of-way, and construction to upgrade and extend approximately 2.5 miles of CC Bel Road which is currently a dirt and gravel roadway in portions on the CTLA Reservation. The roadway will be designed to meet the 50-year flood plain standard as a minimum, includes an approximate 1-mile new roadway through the middle portion, a new bridge crossing over Bayou Blue, and an 8-foot-wide bicycle and pedestrian pathway. This will elevate the roadway above the flood zone, providing safe passage during high volume rain events. The roadway will directly connect to a designated Hurricane Evacuation route.

CTLA requests that you please provide any information and/or comments that your agency may have regarding potential impacts to cultural resources in the planning area for this project.

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Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532
Attn: Kristian Poncho, THPO

If you have any initial concerns with impacts of the project, please note them in your response. If you have any questions or need any additional information, please contact Kristian Poncho at 337-584-1401, or by email at KPoncho@coushatta.org.

Sincerely,

Kristian Poncho
Tribal Historic Preservation Officer

cc: Ms. Susan Douglas, Meyer, Meyer, LaCroix & Hixson, Inc.

Attachment H 3

Response Letters

ALABAMA-COUSHATTA TRIBE OF TEXAS
TRIBAL HISTORICAL PRESERVATION OFFICE
571 State Park Road 56 • Livingston, TX 77351 • (936) 563-1181

July 26, 2024

Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, Louisiana 70532
Attn: Kristian Poncho, THPO
337.584.1401

Re: Potential Impacts to Cultural Resources
MML&H File No.: 7724

Dear Kristian Poncho, THPO:

The Alabama-Coushatta Tribal Historical Preservation Office is deeply committed to the historic preservation of its history, heritage, and historic lands. We seek the preservation of our historic lands, culture, artifacts, and natural habitat. We agree that this is an important project and that after full investigation that there will be no adverse effects to historic properties and agree that the work should proceed.

We would like to be a consulting party on this project as it is of high importance to both of our nations. Please keep us abreast of further developments and how we may be of assistance.

We urge caution and care in protection of natural resources and of any cultural items of interest may potentially be disturbed but we understand the urgent need for a safe, viable and reliable evacuation route in times of flooding and inclement weather. Please keep in contact with us as this work develops further.

Thank you,

Delvin Johnson, Tribal Historical Preservation Officer
Alabama Coushatta Tribe of Texas
571 State Park Rd 56, Livingston, TX 77315
Johnson.Delvin@actribe.org
936.563.1181

July 23, 2024

MML&H File No.: 7724
Project Name: Proposed CC Bel Road Extension
Route: CC Bel Road
Parish: Allen

Coushatta Tribe of Louisiana
Attn: Kristian Poncho, Tribal Historic Preservation Officer
1940 CC Bel Road
Elton, LA 70532

Subject: Solicitation of Views

Dear Ms. Poncho:

The Coushatta Tribe of Louisiana does not participate in the National Flood Insurance Program (NFIP), therefore, there are no floodplain requirements to meet for the portion of the project that falls within the Tribe's jurisdiction. However, for the portion of the project that falls in Allen Parish, there will be requirements to meet since Allen Parish does participate in the NFIP. Attached is a copy of Allen Parish's Flood Insurance Rate Map (FIRM) indicating the proposed project site.

During the construction, consideration must be given for the occurrence of a base flood inundation. At this time, consideration should also be given to the responsibility for clearing debris and keeping the area cleared so as not to interfere with its function. Also, there must be no instance of the creation of flooding where there was no flooding prior to construction.

In order to assure compliance with requirements for the National Flood Insurance Program (NFIP), and ensure that appropriate permits are obtained, please contact the floodplain administrator for the Allen Parish. The floodplain administrator for Allen Parish is Emily Durio. The mailing address is P.O. Drawer G, Oberlin, Louisiana 70655, and telephone number is 337-639-4328 ext. 26.

In addition to local requirements, please be advised that additional permits may be required from other government agencies. These may include, but are not limited to Coastal Use permits (CUP) through the State of Louisiana Department of Energy and Natural Resources;

Louisiana Pollution Elimination System (LPDES) permits through the Louisiana Department of Environmental Quality; Section 10, Section 404, and Section 103 permits through the Army Corps of Engineers, New Orleans or Vicksburg Districts; and permits required by the Endangered Species Act which is jointly administered by the U.S. Fish & Wildlife Service and the National Marine Fisheries Services.

We thank you for the opportunity to comment on this project. If you need additional information, please contact our office, (225) 379-3005.

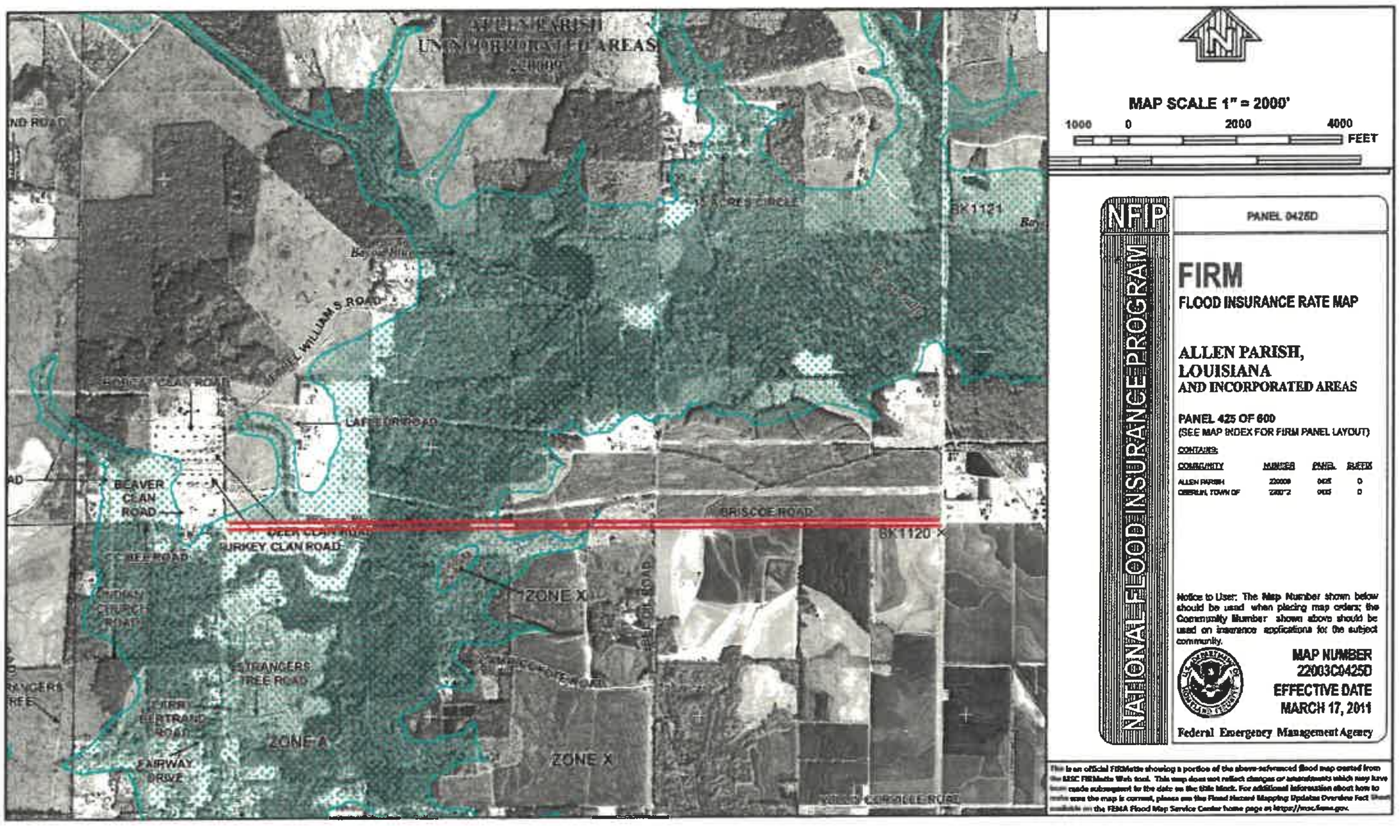
Sincerely,

Angela Gil

Angela Gil
Floodplain Management Program Specialist

Enclosure
cc: Emily Durio, FPA Allen Parish

MML&H File No. 7724 Proposed CC Bel Road Extension



COUSHATTA TRIBE
OF LOUISIANA

July 15, 2024

Louisiana Department of Transportation and Development
Office of Flood Plain Management
P. O. Box 94245
Baton Rouge, LA 70804-9245
Attn : Ms. Susan Veillon

Re: Coushatta Tribe of Louisiana
Allen Parish, Louisiana
Potential Impacts to Cultural Resources
MML&H File No.: 7724

Dear Ms. Veillon:

The Coushatta Tribe of Louisiana (CTLA) intends to construct a project to improve the evacuation route from the reservation located in Allen Parish utilizing funding provided through the Federal Highway Administration (FHWA) RAISE Grant program. CTLA is acting as the project sponsor for this project, and is coordinating with FHWA and the Bureau of Indian Affairs (BIA) to satisfy the environmental review responsibilities for this project.

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Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532
Attn: Kristian Poncho, THPO

If you have any initial concerns with impacts of the project, please note them in your response. If you have any questions or need any additional information, please contact Kristian Poncho at 337-584-1401, or by email at KPoncho@coushatta.org.

Sincerely,

Kristian Poncho
Tribal Historic Preservation Officer

cc: Ms. Susan Douglas, Meyer, Meyer, LaCroix & Hixson, Inc.

All Phases Archaeology

JUNE 5, 2024

A PHASE I CULTURAL RESOURCES SURVEY FOR THE PROPOSED CC BEL ROAD EXTENSION, ALLEN PARISH, LOUISIANA

NEGATIVE FINDINGS

Prepared for:
Meyer, Meyer, La Croix & Hixson, Inc.
100 Engineer Place
Alexandria, Louisiana 71303

Prepared by:
All Phases Archaeology, LLC
257 Pinehill Drive
Mobile, Alabama 36606

All Phases Archaeology, LLC
www.allphasesarchaeology.com

A PHASE I CULTURAL RESOURCES SURVEY FOR THE PROPOSED CC BEL ROAD EXTENSION, ALLEN PARISH, LOUISIANA

NEGATIVE FINDINGS

BY
LUCINDA FREEMAN

PREPARED BY
ALL PHASES ARCHAEOLOGY, LLC
257 PINEHILL DRIVE
MOBILE, ALABAMA 36606

PREPARED FOR
MEYER, MEYER, LA CROIX & HIXSON, INC.
100 ENGINEER PLACE
ALEXANDRIA, LOUISIANA 71303

PRINCIPAL INVESTIGATOR

WILLIAM J. GLASS, RPA

LEAD AGENCY: FEDERAL HIGHWAY ADMINISTRATION
APA REPORT NO. 2024.106

JUNE 5, 2024

ABSTRACT

On May 20-21, 2024, All Phases Archaeology (APA) of Mobile, Alabama performed a Phase I cultural resources survey for the proposed CC Bel Road Extension project located in Allen Parish, Louisiana. Much of the survey area was conducted on the Coushatta Indian Reservation. The lead agency is the Federal Highway Administration (FHWA) with funding administered through a RAISE grant. The project area encompasses 30.7 acres. No cultural resources or historic standing structures were encountered within the project area and there were no NRHP-listed properties in the project area. All paperwork and supporting documents will be curated at the Troy University Archaeological Research Center in Troy, Alabama. No further cultural resources studies are recommended. No historic properties are present within the APE.

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ACKNOWLEDGMENTS

The Principal Investigator for this Phase I survey was William J. Glass, who was assisted by Dr. Virgil "Duke" Beasley, Lucinda Freeman, Dale Pate, and Parker Chouest. Natalie Ledesma and Stacey Baggett digitized the maps and Lucinda Freeman produced the report. This work was accomplished for Meyer, Meyer, La Croix & Hixson, Inc. of Alexandria, Louisiana.

CHAPTER 1
INTRODUCTION

All Phases Archaeology (APA) of Mobile, Alabama was contracted by Meyer, Meyer, La Croix & Hixson, Inc. (MMLH) of Alexandria, Louisiana to conduct a cultural resources survey for the proposed CC Bel Road Extension project in Allen Parish, Louisiana. The survey was conducted for the Coushatta Tribe of Louisiana. The lead federal agency for the project is the Federal Highway Administration (FHWA) with funding administered through a RAISE grant.

The Phase I survey was performed on May 20-21, 2024. The Principal Investigator for the survey was William J. Glass, who was assisted by Dr. Virgil "Duke" Beasley, Lucinda Freeman, Dale Pate, and Parker Chouest. The purpose of this study was to determine if any prehistoric or historic properties exist within the limits of the project area, and if so, to document and assess each based on the National Register of Historic Places (NRHP) criteria. The project area (PA) is the same as the area of potential effect (APE).

The approximate 30.7-acre project area lies north of Interstate (I) 10, west of I 49 and east of U.S. Highway 165 on the north side of CC Bel Road between Powell Road and Louisiana Highway 26 (Figure 1). The project area is found within Sections 17-20 and 23-24 in Township 6 South, Range 3 West as seen on the 1986 Soileau, Louisiana USGS 7.5' series topographic quadrangle (Figure 1.2). The purpose of the study is for the extension and improvement of CC Bel Road between Powell Road and Louisiana 26 for use as a hurricane evacuation route. The project area is a linear corridor stretching 2.5 miles (4.07 kilometers) with a 100 ft right-of-way. This lies mostly within Coushatta tribal land.

This report of our investigations is presented as follows. Chapter 2 contains information regarding land use history in the project area. Chapter 3 examines any previous sites or surveys in or near the project area. Chapter 4 presents the field and laboratory methodology as well as curation. Chapter 5 consists of the results of fieldwork. Chapter 6 concludes the report and summarizes our findings and recommendations. Appendix A is the curation agreement.

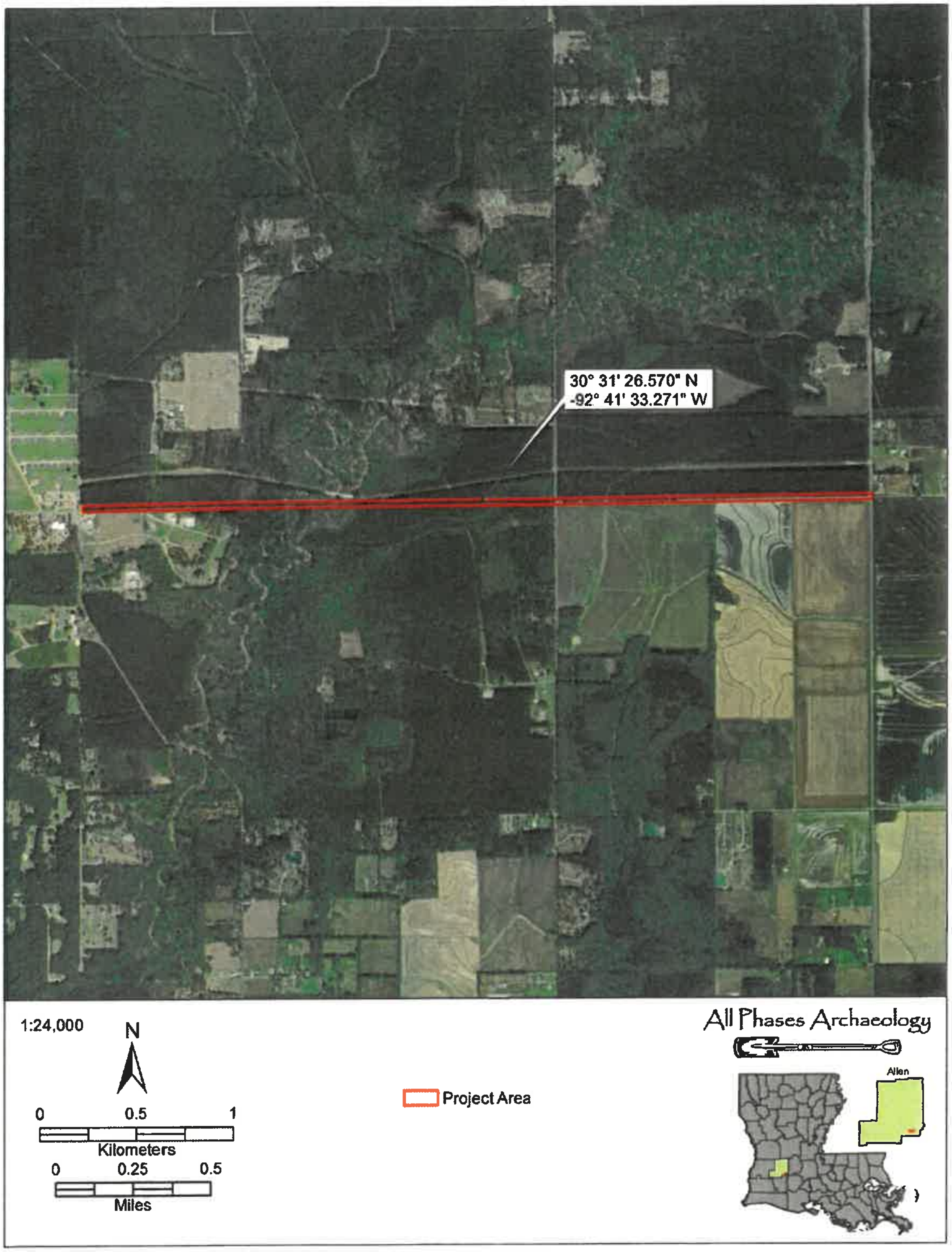

Figure 1.1. *Aerial image showing the project area.*

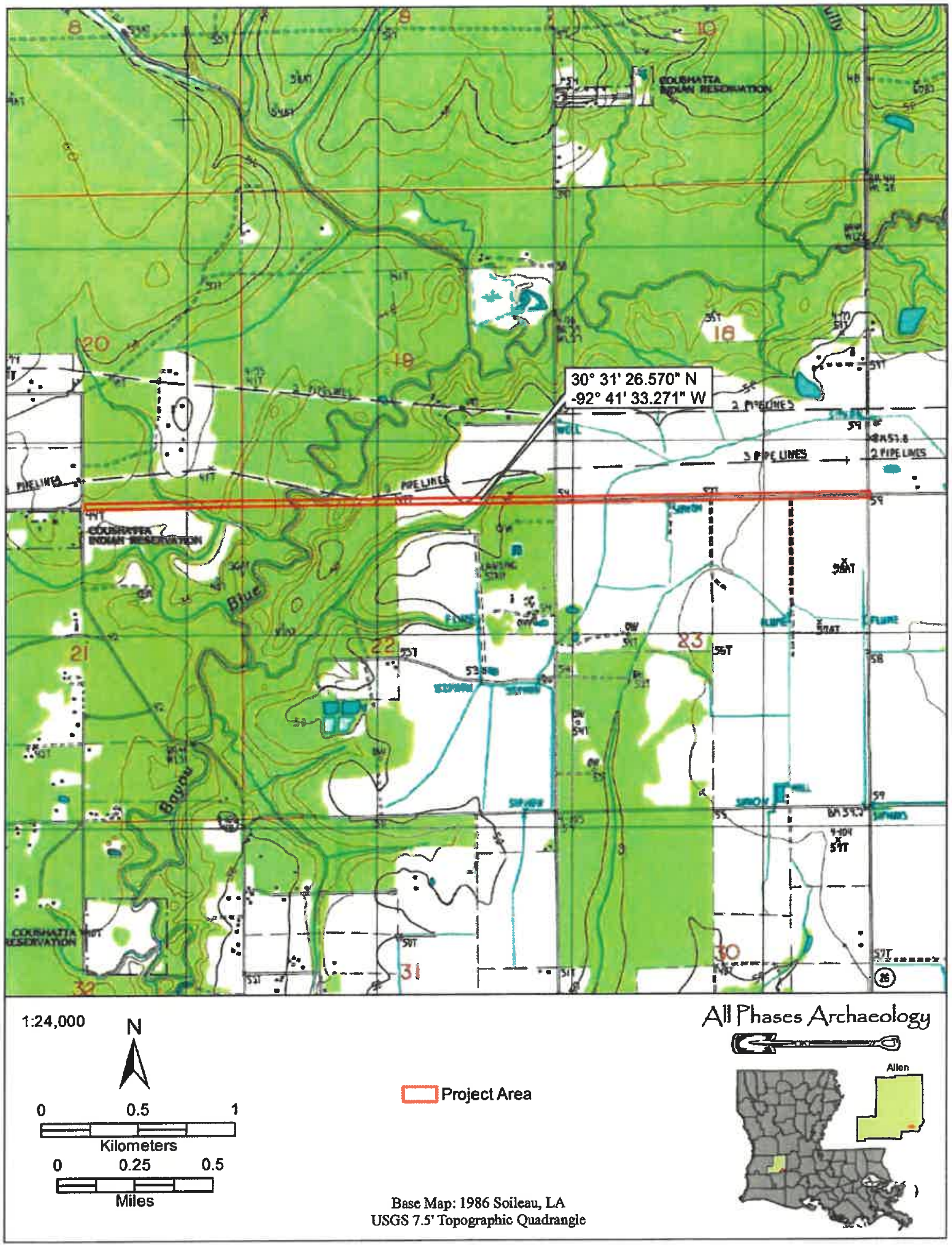

Figure 1.2. Topographic map showing the project area.

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CHAPTER 2
LAND USE HISTORY

The survey area is located in southwest Louisiana within the Northern Humid Gulf Coast Prairie of the Western Gulf Coastal Plain. The region is typically gently sloping coastal plain. The vegetation was historically grasslands with gallery forests along the waterways. Grasslands include big and little bluestem, yellow Indiangrass, switchgrass and brownseed paspalum mixed with hundreds of other herbaceous species. Most of the prairie has been converted to cropland, pasture, aquaculture, or for urban land uses. Soils in this region are mostly poorly or somewhat poorly drained and are derived from Quaternary-age deltaic sands, silts, clays and gravel (Daigle et al. 2006). Elevation in the survey area is approximately 35-55 ft above mean sea level.

A search of the BLM GLO records produced 12 patents for the lands contained within the project corridor (Table 2.1). Some of the lands were purchased under the Cash Sale Act of 1820 (3 Stat. 566), while the majority were issued under the authority of the Homestead Act of 1862 (12 Stat. 392). Under the Homestead Act, claimants were required to live on and improve the land through cultivation.

The earliest map available is the 1949 Bayou Blue 1:31680 topographic map (Figure 2.1). This revealed no structures within the project area, although there is a structure located very close to the eastern end of the project corridor (Figure 2.1). The footprints of Powell Road, Bel Oil Road and LA 26 are in place, and the Coushatta Indian School is located just south of the project corridor's eastern terminus. An old railroad grade and an unimproved road are shown passing through the project area on the west side of Bayou Blue.

The 1961 Castor Creek, Louisiana 15' USGS topographic quadrangle shows no structures within or adjacent to the project area (Figure 2.2). The area surrounding the project area has changed very little. The Coushatta Indian School is now called the Leeds School and Saint Peters Cemetery has been established. The footprint of Briscoe Road is now in place but the old railroad grade and the unimproved road are no longer depicted.

As there were no other historic topographic maps were available for review, historic aerial photographs were also examined. The earliest aerial images (1954 and 1956) depict most of the project are as cleared land with a large swath of mature trees on either side of Bayou Blue and its tributaries. These images also depict a complex of structures south of the project area, at the location of the adjacent structure seen on the 1949 topographic map. The 1981, 1982 and 1998 images still show most of the project area as open fields, however, the structure is no longer depicted adjacent to the project area. By the 2004 aerial photograph, most of the open fields have be planted with pine trees.

Table 2.1. Project area land patents.

Section	Aliquots	Patent Name	Patent Date	Authority
17	S 1/2 SW 1/4	Joseph O. Miller	8/20/1907	1820 Cash Sale (3 Stat. 566)
18	S 1/2 SE 1/4	Walter G. Moeling	12/1/1909	1820 Cash Sale (3 Stat. 566)
18	S 1/2 SW 1/4	Walter G. Moeling	12/1/1909	1820 Cash Sale (3 Stat. 566)
19	S 1/2 SE 1/4	Emile Buller	12/20/1884	1820 Cash Sale (3 Stat. 566)
19	SW 1/4	Jefferson Aby	10/23/1894	1820 Cash Sale (3 Stat. 566)
20	SE 1/4	George Abbot	7/3/1902	1862 Homestead Act (12 Stat. 392)
20	SW 1/4	John L. Grossenbacher	3/12/1906	1862 Homestead Act (12 Stat. 392)
23	NW 1/4	Albert Jones	9/10/1898	1862 Homestead Act (12 Stat. 392)
23	E1/2 NE 1/4	Karl Rampmaler	6/28/1900	1862 Homestead Act (12 Stat. 392)
23	W 1/2 NE 1/4	William Rees	10/23/1894	1862 Homestead Act (12 Stat. 392)
24	NE 1/4	August Miller	4/13/1903	1862 Homestead Act (12 Stat. 392)
24	NW 1/4	Frederick Huber	1/26/1898	1862 Homestead Act (12 Stat. 392)

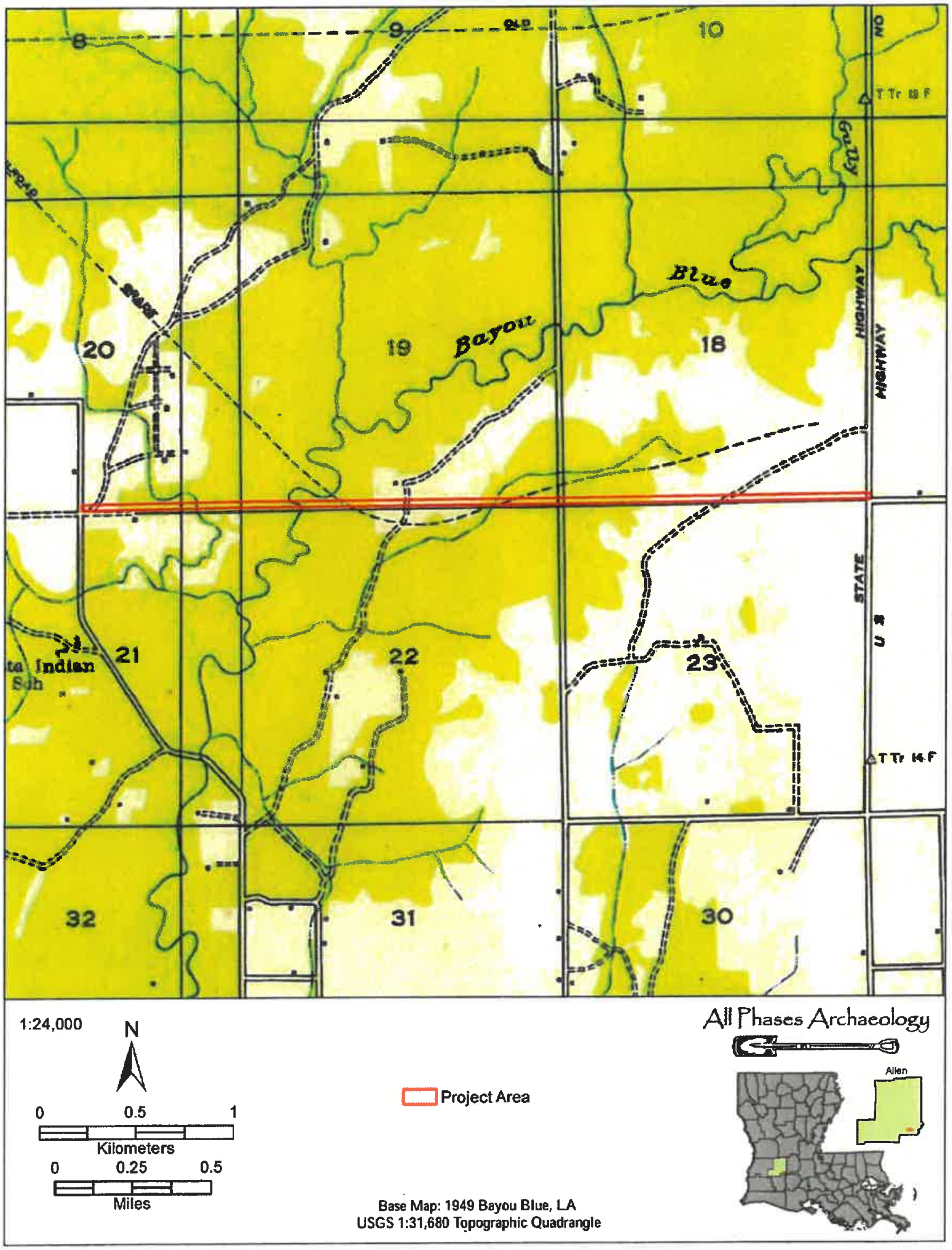

Figure 2.1. *Historic 1949 map showing the project area.*

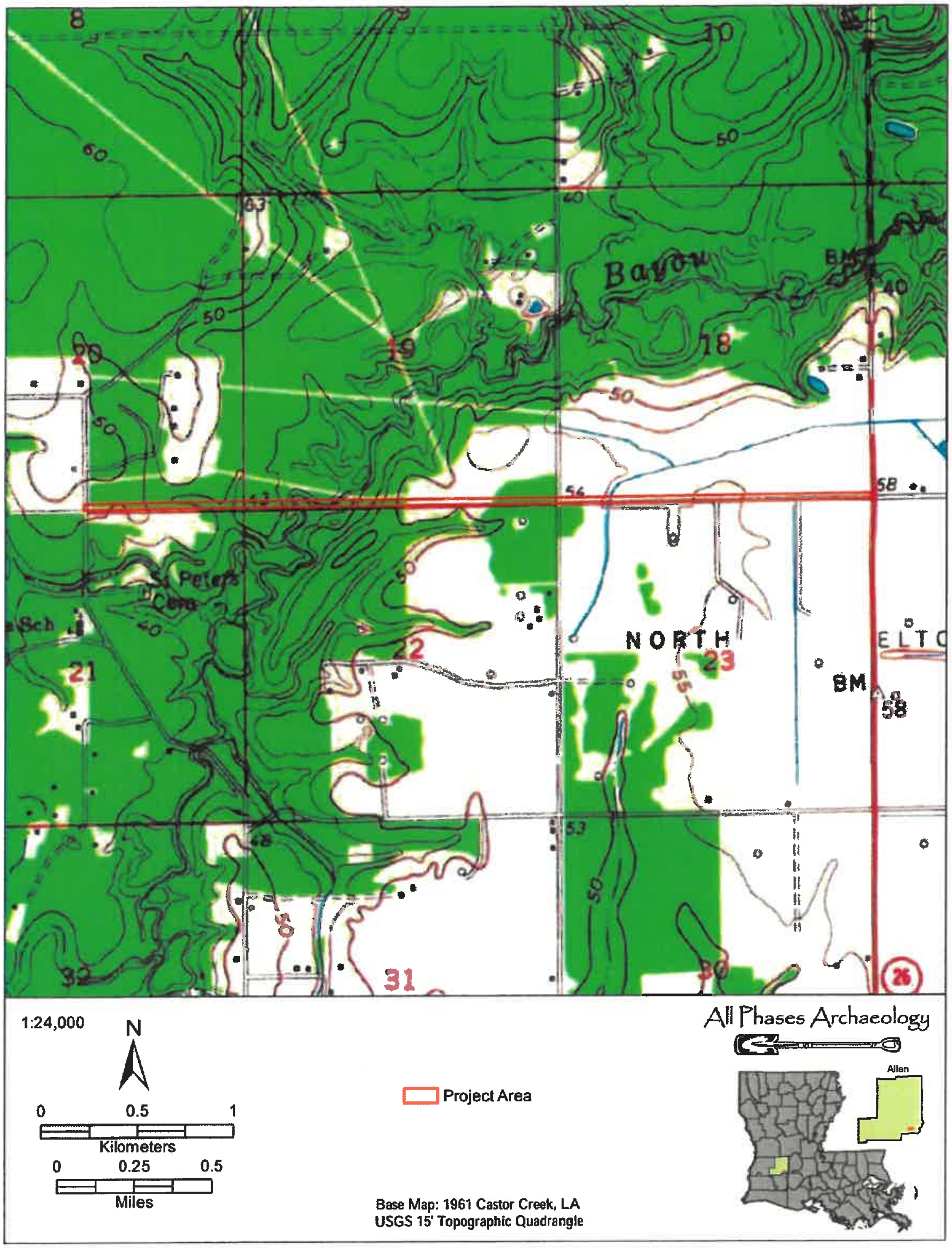

Figure 2.2. Historic 1961 map showing the project area.

The entire project area is a low-lying landscape which is frequently subjected to flooding. Bayou Blue crosses through the project area as well two of its small tributaries making access to fresh water easier. While this may indicate a high probability of encountering prehistoric cultural materials, there are no prehistoric archaeological sites are located within a mile of the project area. The structure seen in 1954 and 1956 near the western terminus is located outside of the project area. Before 2004, the rest of the project area included the forest around Bayou Blue and open fields that appear to have been pastures and are unlikely to produce evidence of significant cultural activities.

CHAPTER 3
PREVIOUS INVESTIGATIONS

LITERATURE AND DOCUMENT SEARCH

Background research was conducted prior to the survey to identify previously recorded historic and prehistoric properties within a one-mile radius of the proposed CC Bel Road Extension project located in Allen Parish, Louisiana. This search included an online query of the Louisiana Site Files (Louisiana Division of Archaeology [LDOA] 2024). A one-mile (1.6 km) radius search was conducted around the proposed project area for previously recorded archaeological sites and previous cultural resources surveys. Lastly, a query into the National Register of Historic Places (NRHP) (National Park Service 2024) was conducted.

Research of the site files (LDOA 2024) identified two previously recorded archaeological sites and four documented cultural resource reports (Table 3.1) within a mile of the study area (Figure 3.1). Background research revealed one recorded historic resource and a recorded historic cemetery within a mile of the study area (see Figure 3.1). An examination of the NRHP online files identified no National Register properties within the one mile search radius. One of the surveys, 22-3455, overlaps with the current project area.

Site 16AL28 was recorded in 1984 by Mark T. Swanson during survey 22-0925. The site is an elevated railroad grade on both sides of Bayou Blue. This would have been the location of a small bridge for the railroad crossing. The bridge likely dated to the early twentieth century. No cultural material was encountered at this location. This site is recommended ineligible for the NRHP as the research potential of this site is poor.

Site 16AL51, CRN0610A-01, was recorded in 2000 by Christina Ramazani-Necessary during survey 22-5727. The site represents a mid-twentieth century dump site. Historic ceramic and glass were found on the surface and up to a depth of 10 cmbs. This site has little research potential and is recommended ineligible for the NRHP.

Table 3.1. Previous surveys within one mile of the project area.

Report number	Report Title	Author & Date
22-0925	*A Cultural Resources Survey of the Proposed Transcontinental Gas Pipeline Corporation Mainline Expansion, Allen and Pointe Coupee Parishes, Louisiana*	Mark T. Swanson 1983
22-0985	*A Cultural Resources Survey of Proposed Transcontinental Gas Pipeline Main Line Expansion, Allen and Evangeline Parishes, Louisiana*	New World Research, Inc. 1984
22-3455	*Phase I Cultural Resources Investigation- Camp Coushatta Road Construction, Allen Parish, Louisiana*	Martin Handly 2010
22-5727	*Phase I Cultural Resource Investigations of the Proposed Port Arthur Pipeline Louisiana Connector in Jefferson County, Texas and Cameron, Calcasieu, Beauregard, Allen and Evangeline Parishes, Louisiana*	Peter Cropley, Susan Barrett Smith, Jill Enersen, Kelly Morgan, Ashley Sanders Hale, Nathanael Heller, Wayne Boyko, and William P. Athens 2017

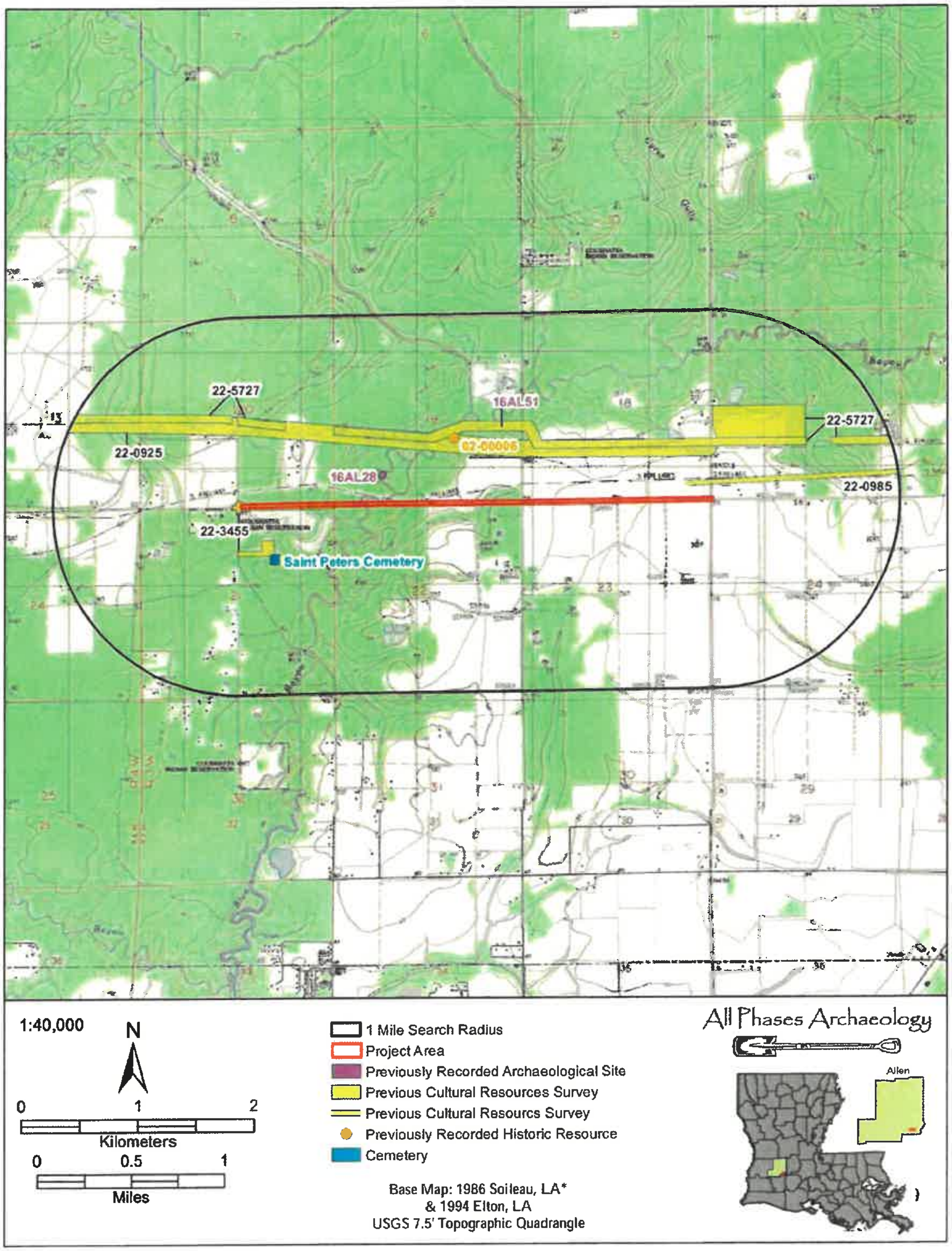

Figure 3.1. *Map showing the previous surveys, the previously recorded sites, the historic resource, and the historic cemetery within one mile of the project area.*

Survey 22-3455, *Phase I Cultural Resources Investigation- Camp Coushatta Road Construction, Allen Parish, Louisiana*, was conducted by URS Corporation in 2010. The survey overlaps with the west end of the current project area. Due to the survey area's distance from the nearest water source, the project area was deemed to have a low probability of archaeological sites. As such, the entire project area was visually inspected and shovel tested in intervals of 50 m. No cultural material was encountered in the survey area (Handly 2010).

Historic resource 02-00006 is a farmstead complex including two dwellings, a greenhouse and a garage. None of the buildings exhibit any distinguishing features or styles. The main house was constructed c. 1925, and the second dwelling appears to have been constructed around 1940. The greenhouse is a small, rounded A-frame building with a metal roof and multi-pane windows and two doors resting on a continuous concrete block foundation and was likely constructed c. 1935. The construction date of the garage is unknown. The NRHP eligibility of the resource is unknown.

Saint Peters Cemetery is located on Coushatta tribal land. According to findagrave.com (2024), the cemetery holds 150 marked burials ranging from the earliest date of death, 1919, to the most recent burial in early 2024. The cemetery has a mix of in-ground burials and sunken burial vaults. No other information is provided.

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CHAPTER 4
METHODOLOGY

STANDING STRUCTURES

Historic maps were reviewed before the fieldwork was accomplished to ascertain the presence or absence of possible historic resources within the project area. The 1949 Bayou Blue 1:31680 and the 1961 Castor Creek 15' series topographic maps do not depict structures within the project area (see Figures 2.1-2.2). Field reconnaissance corroborated that no standing structures were located within the project area.

ARCHAEOLOGICAL FIELD METHODS

The field survey conducted implemented standard archaeological survey techniques. Full land coverage requirements were achieved through visual inspections of the entire survey area and subsurface testing. While conducting visual inspections, any exposed surfaces were carefully examined for cultural material.

Subsurface testing was comprised of shovel tests spaced 30 m apart. Standard shovel tests consist of 30 centimeter (cm) diameter cylindrical holes excavated to the top of the sterile subsoil layer or until the water table or other obstruction was encountered. Soils from each test are screened through 1/4-inch (0.64 cm) hardware cloth for the purpose of recovering any cultural material that may exist at that location. When cultural material is encountered, the material is sorted by provenience and placed into bags labeled with the pertinent excavation information before being transported to APA's laboratory. If cultural material is identified during transecting, it is further examined in order to better define its horizontal and vertical limits. Delineations are conducted by placing additional shovel tests around positive tests. These additional tests are placed at 10 m intervals off of the original positive tests or cultural features in cardinal directions within the project area. This testing is conducted until two negative shovel tests are encountered in each direction or until delineations extend beyond the project boundary. A hand held Garmin GPS unit is used to record the site center and a sketch map is drawn by compass and pace and plotted to scale. Digital photographs are taken for any site recorded as well as for the survey area. For the CC Bel Road Extension project, 137 shovel tests were attempted (Figure 4.1-4.2). Twenty-one shovel tests could not be excavated due to standing water, waterways, and asphalt surfaces. The remaining 116 shovel tests were negative.

LABORATORY METHODS

All cultural materials recovered during field projects are delivered to APA's laboratory in Mobile, Alabama for processing. Upon initial receipt of materials and field forms, bag lists are entered into a computer database for use with a labeling program. Materials are cleaned and, if necessary, stabilized before classification and quantification by laboratory analysts. Cultural materials are sorted on the basis of morphologic attributes, raw-material type (i.e., chert, quartz, etc.), measurements, and/or function. Previously defined types are often used to facilitate chronological assessments and intrasite comparisons. No material was recovered during this investigation.

CURATION

Along with any cultural material, all project records, photographs, and maps produced while conducting the investigation are transported for curation at the Troy University Archaeological Research Center, Troy, Alabama (Appendix A).

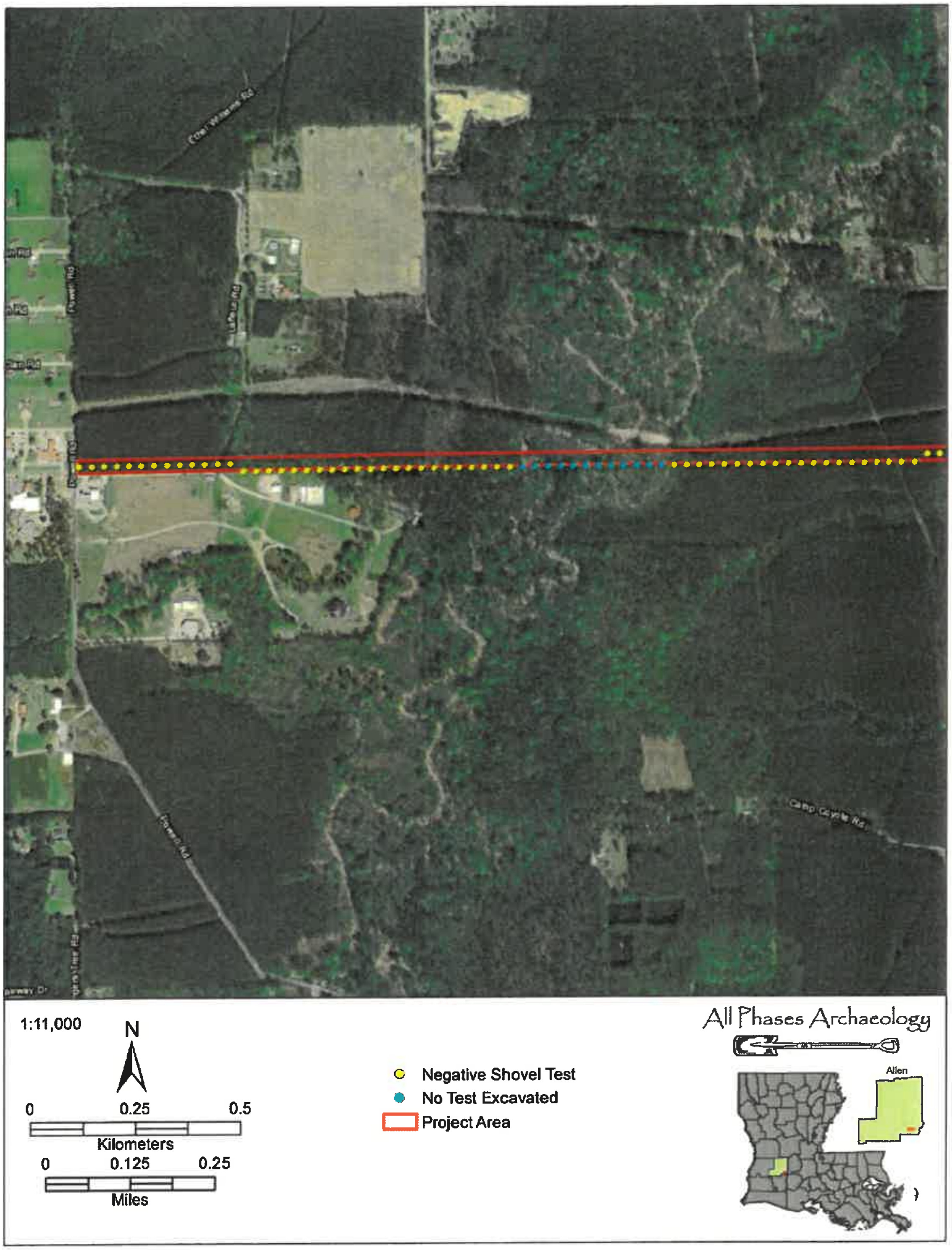


Figure 4.1. Aerial image showing shovel tests within the project area.

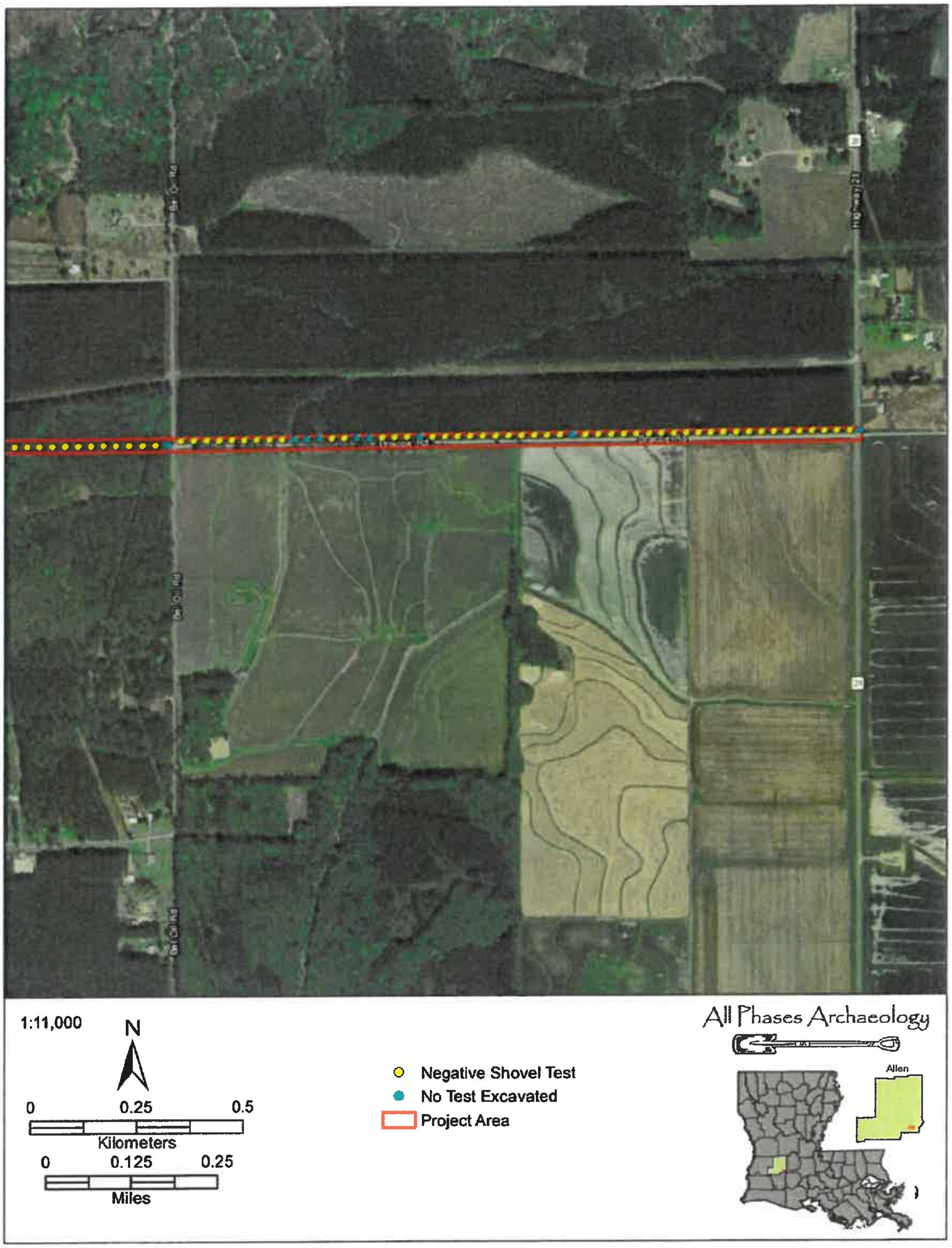


Figure 4.2. Aerial image showing shovel tests within the project area.

16 - CC Bel Road Extension

CHAPTER 5
RESULTS

OVERVIEW

The project area begins at Powell Road across the intersection from CC Bel Road and stretches east crossing Blue Bayou, two of its tributaries, and Bel Oil Road before terminating at LA 26. The western two-thirds of the project area is covered with planted pine and/or mixed hardwoods with a sparse to moderate understory of yaupon, beauty berry, other shrubs, vines and occasionally briars. The westernmost portion is located on the north side of the existing CC Bel Road. A Buffalo Run gas station is located just to the south. A small portion of the project corridor along the west end is co-located with a powerline corridor. The eastern third of the project area consists of Briscoe Road, a roadside drainage and the elevated powerline easement on the north side. Most of this area was covered with patchy grasses, low growing ground covers, and bare areas. Standing water covered many areas of the project area. The majority of the observed modern debris noted in the project area was along roadways or within the powerline easements. Ground surface visibility was poor due to leaf litter and pine straw.

This Phase I investigation included the placement of 137 transect shovel tests (see Figure 4.1). Twenty-one shovel tests could not be excavated due to standing water, the waterways, and asphalt surfaces. Right of entry access was limited in portions of the study area to the edges of the study area. As such, shovel testing was conducted accordingly in these areas and not always down the centerline. A map is provided showing land ownership (Figure 5.1). Only modern material was encountered within the project area. A typical shovel test consisted of 6 cm of very dark gray (10YR 3/1) silty loam over a grayish brown (10YR 5/2) silty clay to 10 cmbs, and underlain by yellowish brown (10YR 5/6) silty clay loam to 50 cmbs (Figure 5.2). A common variation seen in the tests consisted of 20 cm of brown (10YR 5/3) silt loam over a light gray (10YR7/2) silty clay mottled with strong brown (7.5YR 5/6) clay loam (Figures 5.3). Figures 5.4-5.13 depict the present condition of the project area.

SITES

No archaeological sites were encountered within the project area.

STANDING STRUCTURES

There are no standing structures within the project area boundaries.

HISTORIC AREAS

No historic areas are located within the project area boundaries.

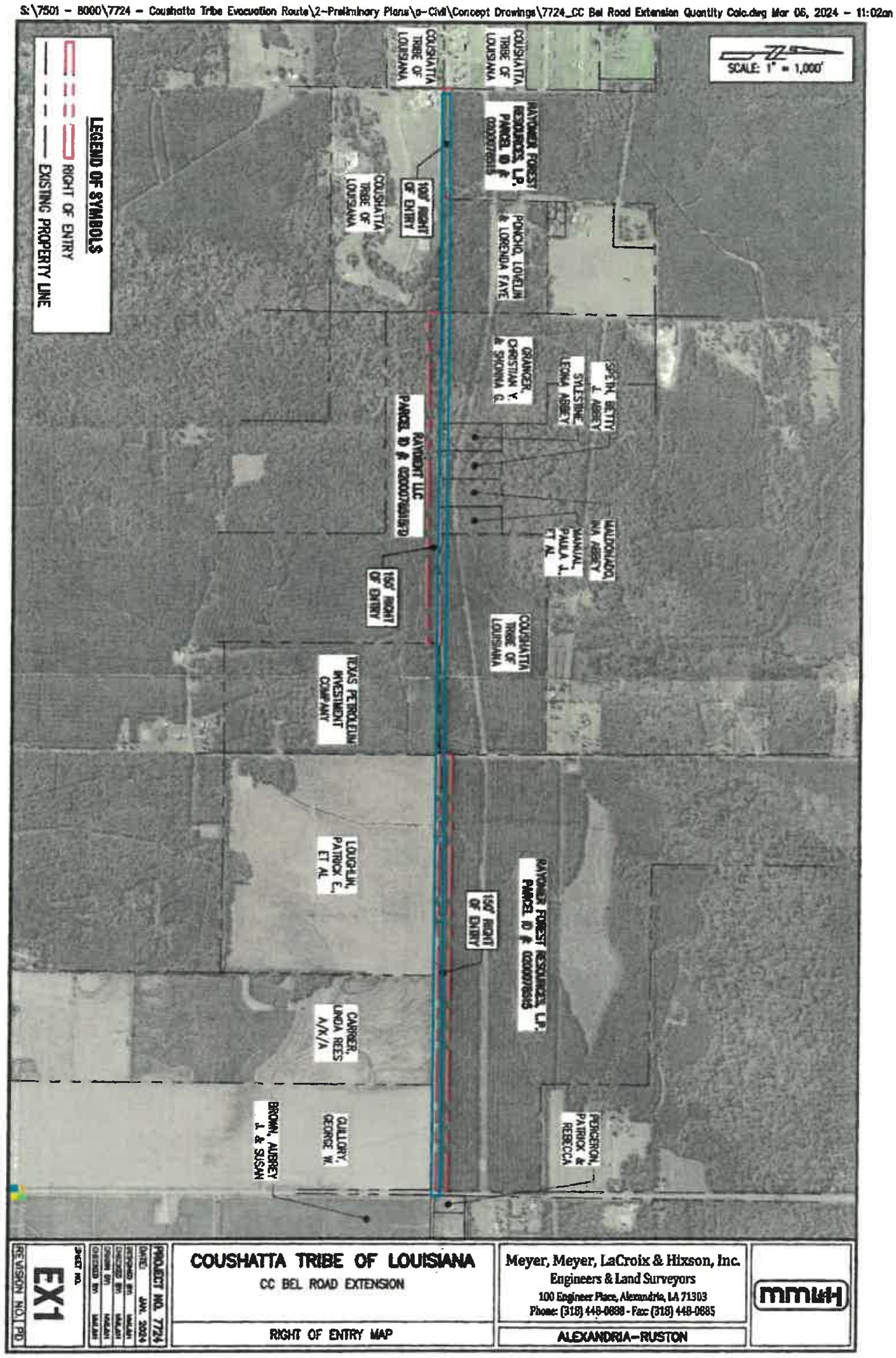


***Figure 5.1.** Aerial image showing land ownership and right of entry agreements (project area in blue).*

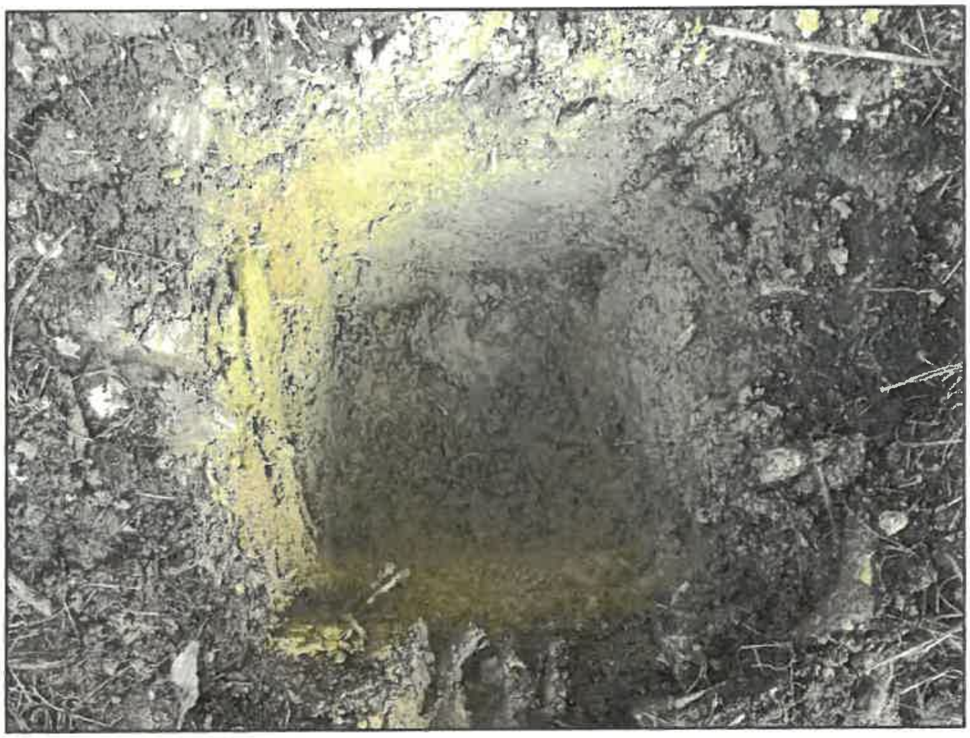


Figure 5.2. Typical shovel test profile.

Figure 5.3. Common variation of the typical shovel test.

Figure 5.4. *View from the western terminus of the project area showing the CC Bel Road just south of the study area, facing east.*

Figure 5.5. *Typical vegetation in the westernmost portion of the project area, facing west.*

Figure 5.6. *View of the mixed hardwoods on the west side of Bayou Blue, facing west.*

Figure 5.7. *View of the standing water on the west side of Bayou Blue in the project area, facing east.*

Figure 5.8. *View of the Bayou Blue crossing in the project area, facing west.*

Figure 5.9. *View of the project area between Bayou Blue and Bel Oil Road, facing west.*

Figure 5.10. *View of Bel Oil road crossing through the project area, facing east.*

Figure 5.11. *View of the standing water on the east side of Bel Oil Road, facing west.*

***Figure 5.12**. View of the drier portion of the corridor along Briscoe Road, facing west.*

***Figure 5.13**. View towards the eastern terminus, facing east.*

CHAPTER 6
SUMMARY AND RECOMMENDATIONS

APA, under contract with MMLH of Alexandria, Louisiana, performed the Phase I cultural resources survey for the proposed CC Bel Road Extension project located in Allen Parish, Louisiana. The Phase I survey was performed on May 20-21, 2024. The investigation did not identify any new archaeological sites or historic resources within the project area. No further cultural resources studies are recommended for the CC Bel Road Extension project. No historic properties are present within the APE.

REFERENCES

Daigle, J.J., G.E. Griffith, J.M. Omernik, P.L. Faulkner, R.P. McCulloh, L.R. Handley, L.M. Smith, and S.S. Chapman
2006 Ecoregions of Louisiana (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey.

Findagrave.com
2024 Saint Peters Cemetery. Electronic document, https://www.findagrave.com/cemetery/68879/saint-peters-cemetery Accessed June 2024.

Handly, Martin
2010 *Phase I Cultural Resources Investigation- Camp Coushatta Road Construction, Allen Parish, Louisiana.* Survey 22-3455.

Louisiana Division of Archaeology (LDOA)
2024 Louisiana Archaeological Site Files. Louisiana Division of Archaeology, Baton Rouge, Louisiana. Assessed online May 2024.

National Park Service
2024 *National Register of Historic Places*. Department of the Interior, Washington, D.C. Available online at www.cr.nps.gov/nr, accessed May 2024.

APPENDIX A
CURATION AGREEMENT

TROY UNIVERSITY

Archaeological
Research Center

Date: Nov. 1, 2023

Jon Glass
All Phases Archaeology
257 Pinehill Drive
Mobile, AL 36606

Dear Jon,

Per your request, this letter is to confirm our standing agreement to provide curation services for archaeological collections to All Phases Archaeology on an as-needed basis. As you know, we are recognized by a variety of Federal agencies as a repository meeting the standards in 36 CFR Part 79 and have formal agreements to provide curation under these guidelines to multiple federal agencies such as the Army National Guard and Natural Resources Conservation Service.

Please be advised that once a year we must be notified of all reports in which we were named as the repository. Project collections must be submitted within one calendar year of completion. Small projects may be complied for periodic submission. The AHC survey policy specifies which materials must be curated (Administrative Code of Alabama, Chapter 460-X-9). Renewal of this agreement is contingent upon compliance.

We appreciate this opportunity to be of assistance and look forward to working with you in the future.

Stephen Carmody
Director
Archaeological Research Center
Troy University

BILLY NUNGESSER
LIEUTENANT GOVERNOR

State of Louisiana
OFFICE OF THE LIEUTENANT GOVERNOR
DEPARTMENT OF CULTURE, RECREATION & TOURISM
OFFICE OF CULTURAL DEVELOPMENT
DIVISION OF ARCHAEOLOGY

KRISTIN P. SANDERS
ASSISTANT SECRETARY

8 July 2024

Jon Glass
President
All Phases Archaeology
257 Pinehill Drive
Mobile, AL 36606

Re: Draft Report
La Division of Archaeology Report No. 22-7601
Phase I Cultural Resources Survey for the Proposed CC Bel Road Extension, Allen Parish, Louisiana

Dear Jon Glass:

We acknowledge receipt of your letter dated 20 June 2024 and one copy of the above referenced report.

Based on the description of the Area of Potential Effect (APE), the proposed ground-disturbing activities, and the identification of historic properties within the APE, our office concurs that no historic properties will be affected by this project. Our office has no further concerns for this project.

Consultation with the State Historic Preservation Office does not constitute consultation with Tribal Historic Preservation Offices, other Native American tribes, local governments, or the public. If archaeological materials are encountered during construction, the procedures codified at 36 CFR 800.13(b) will apply. Archaeological materials consist of any items, fifty years old or older, which were made or used by man. These items include but are not limited to, stone projectile points (arrowheads), ceramic sherds, bricks, worked wood, bone and stone, metal, and glass objects. The federal agency or the applicant receiving federal assistance should contact our office immediately. If human remains are encountered, the provisions of the Louisiana Unmarked Human Burial Sites Preservation Act (Revised Statute 8:671-681) should be followed.

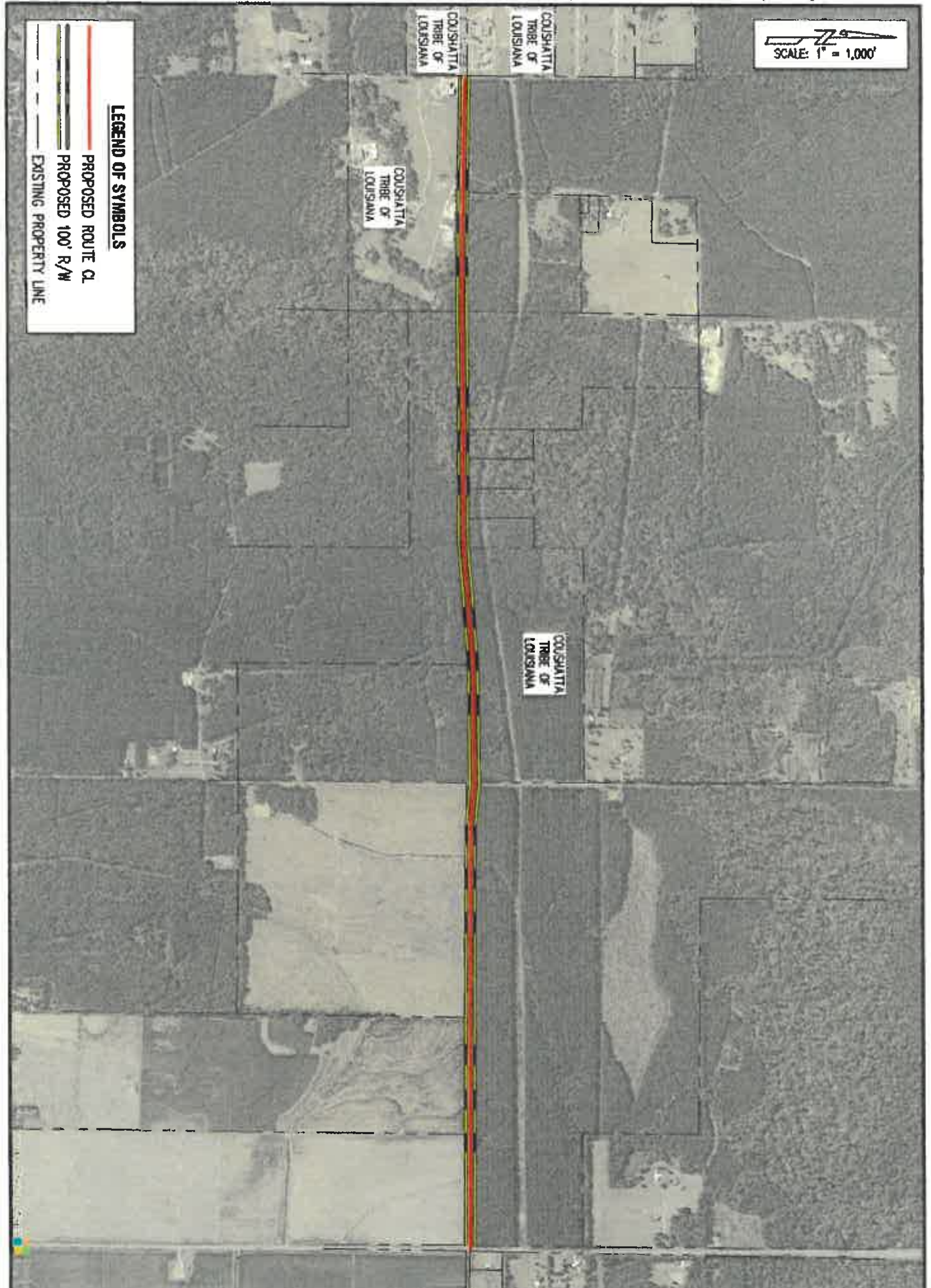
We have accepted the report as final; no further submissions are necessary. If you have any questions, please contact Chip McGimsey at cmcgimsey@crt.la.gov or 225-219-4598.

Sincerely,

Kristin P. Sanders

Kristin Sanders
State Historic Preservation Officer

S:\7501 - 8000\7724 - Coushatta Tribe Evacuation Route\2-Preliminary Plans\a-Civil\Concept Drawings\7724_CC Bel Road Extension Quantity Calc.dwg Jul 11, 2024 - 7:43am



PROJECT NO. 7724 DATE: JAN. 2024 DESIGNED BY: MML&H CHECKED BY: MML&H DRAWN BY: MML&H CHECKED BY: MML&H SHEET NO. **EX1** REVISION NO. PD	**COUSHATTA TRIBE OF LOUISIANA** CC BEL ROAD EXTENSION CC BEL ROAD EXTENSION - PROPOSED ROUTE	Meyer, Meyer, LaCroix & Hixson, Inc. Engineers & Land Surveyors 100 Engineer Place, Alexandria, LA 71303 Phone: (318) 448-0888 - Fax: (318) 448-0885 ALEXANDRIA-RUSTON	MML&H

From: Riley, Jeffrey
To: kponcho@coushatta.org
Cc: Douglas, Susan
Subject: RE: Coushatta Tribe of Louisiana Evacuation Route
Date: Tuesday, July 16, 2024 8:24:35 AM

Good Morning Mr. Poncho,

Thank you for providing the EPA Region 6 office with information on your proposed project. As detailed in the information provided, this project is intended to implement improvements to the evacuation route from the Coushatta Tribe of Louisiana reservation located in Allen Parish, Louisiana. The Infrastructure & Ozone Section of EPA's Region 6 office has reviewed the submitted documents. Our review is limited to actions that might impact the air quality of an area. Therefore, the following comments are based on our review of your project compared to the Clean Air Act requirements for general conformity.

Allen Parish, Louisiana is currently in attainment of all National Ambient Air Quality Standards. As a result, general conformity regulations do not apply and an applicability analysis is not necessary. However, any demolition, construction, rehabilitation, repair, dredging or filling activities have the potential to emit air pollutants and we recommend best management practices be implemented to minimize the impact of any air pollutants to surrounding areas/communities. Furthermore, construction and waste disposal activities should be conducted in accordance with applicable local, state and federal statutes and regulations.

If you have questions, please don't hesitate to contact me at (214)665-8542.

Jeff Riley
US EPA - Region 6
Infrastructure and Ozone Section (6ARSI)
Air & Radiation Division
(214)665-8542
riley.jeffrey@epa.gov

From: Douglas, Susan <susan.douglas@mmlh.com>
Sent: Monday, July 15, 2024 10:50 AM
To: Riley, Jeffrey <Riley.Jeffrey@epa.gov>
Subject: Coushatta Tribe of Louisiana Evacuation Route

As part of the NEPA review process for this project, please provide any information and/or comments regarding the Clean Air Act within the planning area for this project.

JEFF LANDRY
GOVERNOR

AURELIA S. GIACOMETTO
SECRETARY

STATE OF LOUISIANA

DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF THE SECRETARY

July 26, 2024

Kristian Poncho, Tribal Historic Preservation Officer
Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532
Kponcho@coushatta.org; susan.douglas@mmlh.com

RE: 240715/0845

Coushatta Tribe of Louisiana Evacuation Route
Federal Highway Administration (FHWA) RAISE Grant Program Funding
Allen Parish

Dear Mr. Poncho:

The Louisiana Department of Environmental Quality (LDEQ) has received your request for comments on the above referenced project.

After reviewing your request, the Department has no objections based on the information provided in your submittal. However, for your information, the following general comments have been included. Please be advised that if you should encounter a problem during the implementation of this project, you should immediately notify LDEQ's Single-Point-of-contact (SPOC) at (225) 219-3640.

Please review all items below that may affect your project/s success:

1. Please take any necessary steps to obtain and/or update all necessary approvals and environmental permits regarding this proposed project.
2. **If the project concerns flood control in residential and business areas that modify infrastructure and/or drainage:**
    a. **Modeling for areas of interest, as well as both upstream and downstream connecting waterways, is preferred to evaluate potential impacts of increased flow on up/downstream flooding, hydrology, and water quality**
    b. **Receiving channels should be designed and sized with consideration of natural channel design methodologies and principles, as improper design can result in increased velocities and channel degradation (scouring), erosion, bank instability, and water quality degradation**
        i. **Increased stream velocities can jeopardize residential properties, pipelines, bridges, and other infrastructure, and may cause increased pollutant loads (e.g., sediment, metals, low oxygen levels) to waterways through channel(s) realignment and configuration. The reestablishment of floodplains, naturally vegetated banks, meanders, and original lengths and slopes for stabilization can reduce such potential issues.**
        ii. **Natural channel design and other nature-based solutions should be considered to address these, and storm water issues, before entry to downstream waters**
            1. **https://watershed.la.gov/nature-based-solutions**

JEFF LANDRY
GOVERNOR

AURELIA S. GIACOMETTO
SECRETARY

STATE OF LOUISIANA

DEPARTMENT OF ENVIRONMENTAL QUALITY

OFFICE OF THE SECRETARY

2. **https://www.epa.gov/green-infrastructure/green-infrastructure-design-and-implementation**

    c. **Detention pond design and operating practices, including but not limited to high flow releases over long durations, can affect channels as described above**

    d. **Flood control projects should be evaluated in combination with other flood mitigation projects proposed or ongoing in the watershed**

3. **If the project involves bridge and/or lateral/inline structures (e.g., culverts, weirs, sluice/lift gates)**
    a. **Design to allow water to flow freely at the structure without restrictions during all flow regimes to preserve the natural functions of the stream channels, maintain appropriate channel dimensions, and flow regimes**
        i. **Consequences of improper design and maintenance can lead to debris build-up against structures restricting flow, leading to decreases in velocity, reaeration, and dissolved oxygen levels**
4. If your project results in a discharge to waters of the state, submittal of a Louisiana Pollutant Discharge Elimination System (LPDES) application may be necessary.
    a. The applicant must follow regional/local permitting requirements for sewage and storm water management
5. 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 the additional wastewater.
6. All precautions should be observed to control nonpoint source pollution from construction activities. LDEQ has stormwater general permits for construction areas equal to or greater than one acre. It is recommended that you contact Debbie Bissett (Debbie.Bissett@la.gov) or Melissa Reboul (Melissa.Reboul@la.gov) with the LDEQ Water Permits Division at (225) 219-3590 to determine if your proposed project requires a permit.
7. If your project will include a sanitary wastewater treatment facility, a Sewage Sludge and Biosolids Use or Disposal Permit is required. An application form or Notice of Intent will need to be submitted if the sludge management practice includes preparing biosolids for land application or preparing sewage sludge to be hauled to a landfill. Additional information may be obtained on the LDEQ website at https://deq.louisiana.gov/page/sewage-biosolids or by contacting Ronda Burtch with the LDEQ Water Permits Division at (225) 219- 3213 or Ronda.Burtch@la.gov.
8. 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, you should contact the Corps directly regarding permitting issues. If a Corps permit is required, part of the application process may involve a water quality certification from LDEQ.
9. All precautions should be observed to protect the groundwater of the region.
10. Please be advised that water softeners generate wastewaters that may require special limitations depending on local water quality considerations. Therefore if your water system improvements include water softeners, you are advised to contact the LDEQ Water Permits to determine if special water quality-based limitations will be necessary.
11. Any renovation or remodeling must comply with 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.
12. 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 or SPOC@la.gov is required. Additionally, precautions should be taken to protect workers from these hazardous constituents.

13. **The proposed project is located within LDEQ defined water unit LA050304_00. According to the LDEQ 2024 Integrated Report, this unit has water quality impairments for lead, oxygen, and bacteria. According to LDEQ's Water Quality Management Plan, total maximum daily load pollution control allocations are in effect for the first two impairments. Nonpoint source controls should follow (6) above, as disturbance and sedimentation can worsen water quality.**
14. **If the project will involve the disturbance of any soils in former UST areas which may exceed the Screening Option Standards established by the LDEQ Risk Evaluation/Corrective Action Program (RECAP) Regulation, these materials may be considered a waste and disposed of at a permitted facility, or might be managed as part of a Solid Waste Beneficial Use or Soil Reuse Plan in accordance with LAC 33:VII.Chapter 11. Alternately, a site-specific RECAP Evaluation might be conducted and submitted to the LDEQ.**

    If any underground storage tanks are encountered during the project, they must be in compliance with the regulations found in LAC 33:XI of the Environmental Regulatory Code. If any contaminated soil or groundwater is encountered, the findings should be reported to LDEQ.

Currently, Allen Parish is classified as attainment with the National Ambient Air Quality Standards and has no general conformity determination obligations.

Please send all Solicitation of Views (SOVs) requests and questions to SOVs@la.gov.
For Air Planning & Assessment questions/inquiries, please contact John Babin at 225-219-1801 or John.Babin@la.gov.
For Water Planning & Assessment question/inquiries, please contact Kori Blitch at 225-219-3499 or Kori.Blitch@la.gov.
For Remediation question/inquiries, please contact Keith Horn at 225-219-3717 or Keith.Horn@la.gov.
For Underground Storage Tank questions/inquiries, please contact Chris Means at 225-219-3652 or Chris.Means@la.gov or Carey Dicharry at 225-219-3803 or Carey.Dicharry@la.gov.

Sincerely,

mcjimenez

Marissa Jimenez
Environmental Scientist Manager
Louisiana Department of Environmental Quality
Office of the Secretary

USDA

United States Department of Agriculture

August 5, 2024

Coushatta Tribe of Louisiana
1940 CC Bel Road
Elton, LA 70532
Attn: Kristian Poncho, THPO

RE: Coushatta Tribe of Louisiana
Allen Parish, Louisiana
Potential Impacts to Cultural Resources
MML&H File No.: 7724

Kristian:

I have reviewed the above referenced project for potential requirements of the Farmland Protection Policy Act (FPPA) and potential impact to Natural Resources Conservation Service projects in the immediate vicinity.

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. For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements can be forest land, pastureland, cropland, or other land, but not water or urban built-up land.

The project map and narrative submitted with your request indicates that the construction area associated with this project is of small acreage extent (i.e., 10 acres or less per linear mile or 3 acres where there is an existing bridge or interchange) and therefore is exempt from the rules and regulations of the Farmland Protection Policy Act (FPPA)—Subtitle I of Title XV, Section 1539-1549. Furthermore, we do not predict impacts to NRCS work in the vicinity. For specific information about the soils found in the project area, please visit our Web Soil Survey at the following location: http://websoilsurvey.nrcs.usda.gov/

Please direct all future correspondence to me at the address shown below.

Respectfully,

Brandon Waltman
Assistant State Soil Scientist

Attachment

Natural Resources Conservation Service
State Office
3737 Government Street
Alexandria, Louisiana 71302
Voice: (318) 473-7751 Fax: (844) 325-6947

Helping People Help the Land

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)*	3. Date of Land Evaluation Request 7/15/24	4. Sheet 1 of ___
1. Name of Project Coushatta Tribe of Louisiana Evacuation Rou	5. Federal Agency Involved FHWA	
2. Type of Project Evacuation route improvements	6. County and State Allen Parish, Louisiana	
PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS 7/15/24	2. Person Completing Form Brandon Waltman
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☐ NO ☑		4. Acres Irrigated | Average Farm Size
5. Major Crop(s)	6. Farmable Land in Government Jurisdiction Acres: %	7. Amount of Farmland As Defined in FPPA Acres: %
8. Name Of Land Evaluation System Used	9. Name of Local Site Assessment System	10. Date Land Evaluation Returned by NRCS 8/5/24

PART III *(To be completed by Federal Agency)*	Maximum Points	Alternative Corridor For Segment ___ Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly					
B. Total Acres To Be Converted Indirectly, Or To Receive Services					
C. Total Acres In Corridor					
PART IV *(To be completed by NRCS)* **Land Evaluation Information**					
A. Total Acres Prime And Unique Farmland					
B. Total Acres Statewide And Local Important Farmland					
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted					
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value					
PART V *(To be completed by NRCS)* ***Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)***					
PART VI *(To be completed by Federal Agency)* ***Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))***	**Maximum Points**				
1. Area in Nonurban Use	15				
2. Perimeter in Nonurban Use	10				
3. Percent Of Corridor Being Farmed	20				
4. Protection Provided By State And Local Government	20				
5. Size of Present Farm Unit Compared To Average	10				
6. Creation Of Nonfarmable Farmland	25				
7. Availablility Of Farm Support Services	5				
8. On-Farm Investments	20				
9. Effects Of Conversion On Farm Support Services	25				
10. Compatibility With Existing Agricultural Use	10				
TOTAL CORRIDOR ASSESSMENT POINTS	160	0	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland (From Part V)	100	0	0	0	0
Total Corridor Assessment (From Part VI above or a local site assessment)	160	0	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	0	0	0	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used? YES ☐ NO ☐

5. Reason For Selection:

Signature of Person Completing this Part: | DATE

NOTE: Complete a form for each segment with more than one Alternate Corridor

Attachment I

Other Values:

Light and Noise Analysis

Analysis: Potential Light and Noise Impacts
CC Bel Road Evacuation Project
Allen Parish, Louisiana

The CC Bel Road project extends and elevates a critical road allowing travel to and from the reservation during high volume rainfall events. While it is a badly needed roadway upgrade, the rural nature of the road exempts it from several of the requirements that FHWA has implemented for higher volume arterials. Analyses utilizing FHWA practices for lighting and noise are presented below.

Lighting

There are no true requirements for lighting in place at this time for FHWA projects. Funding for lighting projects is determined through a warrant analysis of the roadway and community needs. Warrants do not represent requirements to light roads but are an indication of situations where lighting should be investigated. A commonly used tool for evaluating warrants for lighting Arterial, Collector, and Local Roads is a Warranting Analysis Sheet developed by the Transportation Association of Canada in 2006. An example of this worksheet is attached.

The worksheet evaluates four major areas: Geometric Factors, Operational Factors, Environmental Factors, and Collision Factors. Of these, only the Geometric Factors are present for this road. The Pedestrian Activity Level could possibly enter in if tribal members elect to use the facility, but there is no way to evaluate this future possibility for this road.

Item	Geometric Factors	Rating Factor, R	Weight, W	Score, R x W
1	Number of Lanes	<4, 1	0.25	0.25
2	Lane Width	>3.6m, 1	0.35	0.35
3	Median Openings/km	>9, 5	1.4	7
4	Driveways and Entrances/km	<20, 1	1.4	1.4
5	Horizontal Curve Radius	>600, 1	5.9	5.9
6	Vertical Grades	<3, 1	0.35	0.35
7	Sight Distance	>200, 1	0.25	0.25
8	Parking	Prohibited, 1	0.10	0.10
	Total			**15.6**

The warrant analysis is compared with the following proposed point scores:

Total Score	Amount of Lighting
240 or more	Full Lighting
151 to 239	Partial Lighting
120 to 150	Delineation Lighting
Less than 120	No lighting is warranted

From this warrant analysis, the CC Bel Road project does not require lighting.

Noise

FHWA has regulations in place that govern noise impacts and mitigation of noise impacts from federally funded road projects. For regulations currently in force, the Definitions regulation,23 CFR 772.5, provides definition of three different levels of project with corresponding requirements for noise abatement. Type I projects are those projects that provide for increases in vehicle counts, such as the construction of a highway on a new location, or addition of auxiliary lanes or through traffic lanes (HOV lanes). Type II projects are those projects that provide noise abatement on an existing highway. Type III projects are defined as a federal or federal-aid project that does not meet classification as a Type I or II. Type III projects do not require a noise analysis. The CC Bel Road project does not meet classification as either a Type I or II, and therefore is a Type III and does not require a noise analysis.

Further, there are currently regulatory changes to this section under development. An Advanced Notice of Proposed Rulemaking (ANPR) was published for the changes on 10.18, 2024. Within the ANPR the new definition for recipient was described. This definition includes an exemption from 23 CFR 772 for federally recognized Tribes.

Copies of the current definition of the different Types of projects and of the relevant pages of the ANPR are attached.

Conclusion

Regulatory guidance and regulations indicate that no further analysis is needed for the CC Bel Road Project with respect to potential lighting and noise impacts.

Warrants for Lighting Arterial, Collector and Local Roads

Item No.	Classification Factor	Rating Factor (R)					Weight (W)	Enter R Here	Score (R × W)	
		1	2	3	4	5				
	Geometric Factors (see note 6)									
1	Number of Lanes	≤ 4	5	6	7	≥ 8	0.15		0	
2	Lane Width	>3.6	3.4 to 3.6	3.2 to 3.4	3.0 to 3.2	<3.0	0.35		0	
3	Median Openings/km	<2.5 or 1-Way	2.5 to 5.0	5.0 to 7.2	7.2 to 9.0	>9.0 or No Median	1.40		0	
4	Driveways and Entrances/km	<20	20 to 40	40 to 60	60 to 80	>80	1.40		0	
5	Horizontal Curve Radius	>600	450 to 600	225 to 450	175 to 225	<175	5.90		0	
6	Vertical Grades	<3	3 to 4	4 to 5	5 to 7	>7	0.35		0	
7	Sight Distance	>210	150 to 210	90 to 150	60 to 90	<60	0.15		0	
8	Parking	Prohibited	Loading	Off Peak	One Side	Both Sides	0.10		0	
								Subtotal Geometric Factors	0	G
	Operational Factors									
9	Signalized Intersections (%)	80 to 100	70 to 80	60 to 70	50 to 60	0 to 50	0.15		0	
10	Left Turn Lane	All Major Intersections or 1-Way	Substantial Number of Major Intersections	Most Major Intersections	Half of Major Intersections	Infrequent Number or TWTL (See Notes 1 & 3)	0.70		0	
11	Median Width (m)	>10	6 to 10	3 to 6	1.2 to 3	0 to 1.2	0.35		0	
12	Operating or Posted Speed (km/h) (See Note 5)	≤ 40	50	60	70	≥ 80	0.60		0	
13	Pedestrian Activity Level (See note 2)			Low	Med	High	3.15		0	
								Subtotal Operational Factors	0	O
	Environmental Factors									
14	Percentage of Development Adjacent to Roadway (m) (See Note)	nil	nil to 30	30 to 60	60 to 90	>90	0.15		0	
15	Area Classification	Rural	Industrial	Residential	Commercial	Downtown	0.15		0	
16	Distance from Development to Roadway (m) (See Note 4)	>60	45 to 60	30 to 45	15 to 30	<15	0.15		0	
17	Ambient (off Roadway) Lighting	Nil	Sparse	Moderate	Distracting	Intense	1.38		0	
18	Raised Curb Median	None	Continuous	At all Intersections (100%)	At most Intersections (51% to 99%)	At Few Intersections (≤ 50%) (See Note 7)	0.35		0	
								Subtotal Environmental Factors	0	E
	Collision Factors									
19	Night-to-Day-Collision Ratio	<1.0	1.0 to 1.2	1.2 to 1.5	1.5 to 2.0	>2.0 (See Note 1)	5.55		0	
								Subtotal Collision Factors	0	A
								G + O + E + A = Total Warranting Points	0	
								Warranting Condition	60	
								Difference 1	-60	D

Notes:

1 Lighting Warranted
2 Pedestrian Activity Level (Refer to 9.1.3 - Pedestrian Definitions)
3 Two-way Left Turn Lane
4 Development Defined as Commercial, Industrial or Residential Buildings
5 85th Percentile Night Speed Should Be Used If Available, Otherwise Posted Speed Shall Be Used
6 Worst Case Geometric Factors for a Segment of Roadway Shall Apply
7 Also Includes Isolated Medians (Non-Continuous) Between Intersections

v1.0

Figure 37. Image. Example warranting analysis sheet for warrant for arterial, collector, and local roadways (TAC, 2006).

3.3.4 Crash Factors (Night and Day)

Crash factors are included in the warranting forms based on the night-to-day crash rate ratio for the given length of road to which the warrant is being applied. As the warrant point score for this category is heavily based on the night-to-day crash ratio, it is important that detailed and well-defined crash data be applied. Where crash ratios are not known, engineering judgment should be applied using crash statistics from similar roads for which data are available.

Statement of likelihood. A statement provided in the environmental clearance document based on the feasibility and reasonableness analysis completed at the time the environmental document is being approved.

Substantial construction. The granting of a building permit, prior to right-of-way acquisition or construction approval for the highway.

Substantial noise increase. One of two types of highway traffic noise impacts. For a Type I project, an increase in noise levels of 5 to 15 dB(A) in the design year over the existing noise level.

Traffic noise impacts. Design year build condition noise levels that approach or exceed the NAC listed in Table 1 for the future build condition; or design year build condition noise levels that create a substantial noise increase over existing noise levels.

Type I project.

(1) The construction of a highway on new location; or,

(2) The physical alteration of an existing highway where there is either:

(i) Substantial Horizontal Alteration. A project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition; or,

(ii) Substantial Vertical Alteration. A project that removes shielding therefore exposing the line-of-sight between the receptor and the traffic noise source. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor; or,

(3) The addition of a through-traffic lane(s). This includes the addition of a through-traffic lane that functions as a HOV lane, High-Occupancy Toll (HOT) lane, bus lane, or truck climbing lane; or,

(4) The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane; or,

(5) The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange; or,

(6) Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane; or,

(7) The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.

(8) If a project is determined to be a Type I project under this definition then the entire project area as defined in the environmental document is a Type I project.

Type II project. A Federal or Federal-aid highway project for noise abatement on an existing highway. For a Type II project to be eligible for Federal-aid funding, the highway agency must develop and implement a Type II program in accordance with section 772.7(e).

Type III project. A Federal or Federal-aid highway project that does not meet the classifications of a Type I or Type II project. Type III projects do not require a noise analysis.

§ 772.7 Applicability.

(a) This regulation applies to all Federal or Federal-aid Highway Projects authorized under title 23, United States Code. Therefore, this regulation applies to any highway project or multimodal project that:

(1) Requires FHWA approval regardless of funding sources, or

definition would align with the noise reduction requirement rather than have multiple criteria. A defined threshold that is consistently applied would support fairness in decisionmaking and more equitable outcomes.

Cost average. Existing § 772.13(k) allows a State DOT, on Type I or Type II projects, the option to cost average noise abatement among benefitted receptors within a project, if certain criteria are met. State DOTs are familiar with this concept in noise abatement, and FHWA proposes to add the definition to § 772.3 to facilitate implementation by recipients.

Date of public knowledge. The FHWA is proposing to remove this definition, as it is described and used entirely in proposed § 772.11 Analysis of traffic noise abatement.

Exempt project. The FHWA proposes to add this new definition for Type I projects that are not expected to have noise impacts and are thus exempt from noise analysis and consideration of abatement under proposed § 772.5(c).

Feasibility. The FHWA is proposing to remove this term and definition from the rule. The concepts and criteria that are under feasibility in the existing regulation would be covered under the consideration of effective noise abatement described in proposed § 772.11(e).

Impacted receptor. The FHWA proposes to modify this definition for clarity, by replacing "[t]he recipient" with "[a] receptor" that has a traffic noise impact.

L_{10}. The FHWA proposes to remove this definition and noise metric to reflect existing practice. All State DOTs now use the L_{EQ} noise metric.

Multifamily dwelling. The FHWA proposes to remove this definition by combining it with the more general term *Residence.* The descriptions in both of these terms are repetitive and can be covered by the more general of the two. The regulatory provision in the existing definition of *multifamily dwelling,* requiring that each residence in a multifamily structure be counted as one receptor when determining impacted and benefitted receptors, was moved to proposed § 772.7(d).

Noise analysis area. The FHWA proposes to add this new definition to identify the areas within or beyond the project limits that may have noise impacts. This would allow project sponsors to focus analysis on the areas that may have noise impacts. Currently, if a project is determined to be a Type I project, then the entire project area as defined in the environmental document is required to be analyzed, per paragraph (8) under the definition of Type I project in existing § 772.5. The proposed approach to determining the noise analysis area would provide flexibility and avoid establishing a distance for study based on other factors that may not be appropriate for noise analyses. Use of TNM is the recommended method for determining the extent of impacts from a specific highway. Impacts may be contained within the project area, but may also extend beyond the project limits. The FHWA is seeking comments on the new definition of *noise analysis area* from the entire project to the areas that are most likely to have a noise impact from the roadway.

Noise Impact Criteria. The FHWA proposes to add this definition to reflect the proposed change of the title of table 1 from "Noise Abatement Criteria" to "Noise Impact Criteria." The term *Noise Impact Criteria,* proposed to mean the values in table 1 or lower (more stringent) values as specified in a State noise policy, would better reflect that the sound levels in the table are the levels at which noise impacts are considered to occur. Analysis of abatement would occur after the identification of traffic noise impacts. This approach was made clear in footnote 2 to Table 1 in the current regulation.

Noise policy. The FHWA proposes to add this new definition to clarify what constitutes a State noise policy. A State may title its noise policy by other names, but this definition and the associated regulatory text would aid State DOTs in fulfilling the requirements.

Noise reduction requirement. The FHWA proposes to rename the existing term *Noise Reduction Design Goal* to the more accurate *Noise Reduction Requirement,* to reflect existing practice. The FHWA also proposes to align the noise reduction requirement with the acoustic effectiveness standard in § 772.11(e). Under the current rule, highway agencies analyze feasibility by achieving at least a 5 dB(A) highway traffic noise reduction at impacted receptors, then analyze which receptors are considered benefitted, and then finally analyze how many benefitted receptors achieve the reasonableness acoustic criterion ('noise reduction design goal') of at least 7 dB(A). To clarify the standard, FHWA proposes that the acoustic feasibility, benefitted receptor, and noise reduction design goal be consolidated into a single 'effectiveness' criterion for acoustics entitled the 'noise reduction requirement.' This value would be at least 5 dB(A) but not more than 10 dB(A) at the given number of receptors as defined in a State noise policy. In addition, FHWA proposes to add the flexibility of allowing a combination of abatement measures to achieve the specified noise reduction rather than a single measure. Accordingly, as proposed, the *Noise reduction requirement* would mean any measure, or combination of measures, that mitigates noise impacts to receptors by reducing design year noise levels by 5 to 10 dB(A) as defined in a State noise policy.

Permitted. The FHWA proposes to revise this definition such that a definite commitment to develop land can be evidenced not only by the issuance of a building permit, but also by the equivalent. This would address situations for which a building permit is not applicable to that type of development. For example, projects in government jurisdictions that do not use building permits for certain types of developments, such as mobile homes, would be considered for impacts and abatement, as long as the jurisdiction can prove a commitment. This proposed change reflects common practice and addresses a gap in the existing rule.

Reasonableness. The FHWA is proposing to remove this term and definition from part 772. The concepts and criteria that are under reasonableness in the existing regulation would be covered under the consideration of effective noise abatement described in § 772.11(e).

Receiver. The FHWA proposes to add this new definition to clarify that this term refers to a modeling object inside TNM. The proposed definition also would clarify that a modeled receiver can represent one or more real-world receptors, provided that they share a common noise environment.

Receptor. The FHWA proposes to modify this definition to mean a real-world location only. The concept of "representative" locations in a noise model is described in the definition of the term *Receiver.* Receptors are modeled using the Receiver input object in TNM.

Recipient. The FHWA proposes to add this new definition to clarify requirements and responsibilities belong to any entity with a project that is subject to this part. A recipient means an entity that receives a Federal award directly or via a pass-through entity from FHWA. The project can be funded with apportioned or discretionary funding, or subject to an FHWA approval action. A recipient can be a State, regional, county, or local government or other project sponsor such as a grant recipient undertaking a highway project. For the purposes of 23

CFR part 772, recipients do not include federally recognized Tribes.

Residence. The FHWA proposes to combine this definition with the current definition of *Multifamily dwelling,* as previously discussed.

State department of transportation. The FHWA proposes to add this new definition to clarify what actions are the exclusive responsibility of a State DOT rather than the responsibility of other non-State DOT recipients.

Statement of likelihood. The FHWA proposes to replace the phrase "feasibility and reasonableness analysis" in the definition with "impact and abatement analysis" to reflect the replacement of the feasibility and reasonableness concepts with the proposed effective noise abatement criteria described in § 772.11(e).

Substantial construction. The FHWA proposes to remove this definition, as it is described entirely in § 772.13.

Substantial noise increase. The FHWA proposes to change the definition of substantial noise increase from a level between 5 and 15 dB(A) to between 5 and 10 dB(A) in the design year over the existing noise level as defined in a State noise policy. The FHWA believes that setting the substantial increase to between 5 and 10 dB(A) would provide clarity for what constitutes a "substantial increase" in noise level. A 10 dB(A) increase is perceived as a doubling in loudness, and will have a noticeable impact on people living, working, or playing in the near-road environment. Noise increases above 10 dB(A) are rare and infrequent. For example, a 10 dB(A) noise increase can be caused by 10-fold increase in traffic volume. An increase of 15 dB(A) can be caused by 31-fold increase in traffic volume, based on the logarithmic scale of the decibel unit of measurement. These changes consider what is mathematically defensible and understandable to the public; what is recommended by research conducted into the health-impacts and speech interference from noise; and what is an achievable reduction using current technology. The FHWA proposes to retain the flexibility for a State DOT to choose the criteria in its noise policy within the given range. This proposed change in definition also would be better aligned with the proposed noise reduction requirement of 5 to 10 dB(A), discussed in § 772.11. The FHWA is seeking comments on the proposed change to *substantial noise increase.*

Traffic noise impacts. The FHWA proposes to revise this definition to incorporate proposed changes in the regulation, specifically the title change of table 1 to part 772 from Noise Abatement Criteria to Noise Impact Criteria, and to remove the term and concept of an "approach" level, the value of which is incorporated directly into table 1. States would retain the option to define a lower impact criteria than the values in table 1. The proposed definition otherwise would remain the same, in that it would describe that there are two ways in which a traffic noise impact may occur—either when design year build condition noise levels: (1) meet or exceed the criteria listed in table 1; or (2) create a substantial noise increase over existing levels.

Type I project. The FHWA proposes to simplify the definition of Type I project and move the specific examples to § 772.5.

Type II project. The FHWA proposes to revise the existing definition by adding a clause to clarify for the public that a Type II project is a retrofit noise abatement project on an existing highway in the absence of an associated highway project.

Type III project. The FHWA proposes to revise the existing definition by adding a sentence to clarify that a Type III project is not likely to change the noise environment.

The FHWA is not proposing any changes to the following existing definitions: *Common noise environment, Design year, Existing noise levels, Impacted receptor,* L_{EQ}, *Noise barrier,* and *Property owner.*

Section 772.5 Applicability

This section is proposed to be renumbered and revised to include the detailed descriptions of Project Types that are found in the existing Definitions section, introduce the new concept of exempt projects, and describe the State DOT noise policies and minimum criteria for inclusion in such policies.

The FHWA proposes to clarify in renumbered § 772.5(a)(1) that the proposed rule applies to any highway project or multimodal project that requires FHWA approval, regardless of funding sources, or that is funded with Federal-aid highway funds.

Type I Projects

The FHWA proposes to move the list of example projects that are currently found in the Definitions section to renumbered § 772.5. The FHWA proposes in § 772.5(b) to organize the list of Type I projects into four broad categories that would cover all of the project types under the existing definition of the term "Type I project": (1) construction of a roadway on a new location; (2) substantial physical alteration of an existing highway; (3) a substantial change in the operations of an existing highway when those changes are because of the proposed highway project; and (4) other projects which may cause a traffic noise impact during regular operation. The list of Type I projects in proposed § 772.5(b) would not be exclusive.

Proposed § 772.5(b)(3) would explicitly describe a substantial change in operations for clarity, where it is currently implied by the example project types listed as being primarily work on an existing alignment. These projects include restriping existing pavement to add an auxiliary lane or through traffic lane, including for a high occupancy vehicle (HOV) lane, high occupancy toll (HOT) lane, bus lane, or truck climbing lane; and the addition of a new or a substantial alteration of a weigh station, rest area, ride-share lot, or toll plaza. The FHWA proposes to move "except for when the auxiliary lane is a turn lane" from paragraph (4) of the existing definition of a "Type I project" to the proposed project exemptions in proposed § 772.5(c)(1) for clarity. In proposed § 772.5(b)(3)(v), FHWA would add an explanation to describe "substantial alteration" from existing Analysis and Abatement Guidance (2011) [2] and to account for the projects that are eligible for assistance under title 23, including projects funded by discretionary grants under title 23 or administered as if Federal-aid projects under chapter 1 of title 23.

In addition, projects proposing to use apportioned funding or discretionary grants under title 23, or projects that are administered as if they are Federal-aid projects under chapter 1 of title 23, to build noise abatement on existing roadways, should be subject to the same requirements of a Type I projects because the acoustic performance of the noise abatement measure can only be predicted and analyzed by performing a noise analysis. Such projects would include changing the pavement surface or building noise barriers in the roadway right-of-way.

Projects proposing to use Federal-aid funds to build independent noise abatement on existing roadways are Type II projects and can only obtain the FHWA funding and approval by being part of an approved Type II program priority list. On the other hand, projects proposing to use discretionary grant funding to build independent noise abatement on existing roadways must follow the eligibility requirements of the

[2] FHWA, "Analysis and Abatement Guidance" (FHWA–HEP–10–025) (June 2010; revised December 2010), available at: *https://www.fhwa.dot.gov/environment/noise/regulations_and_guidance/analysis_and_abatement_guidance/.*

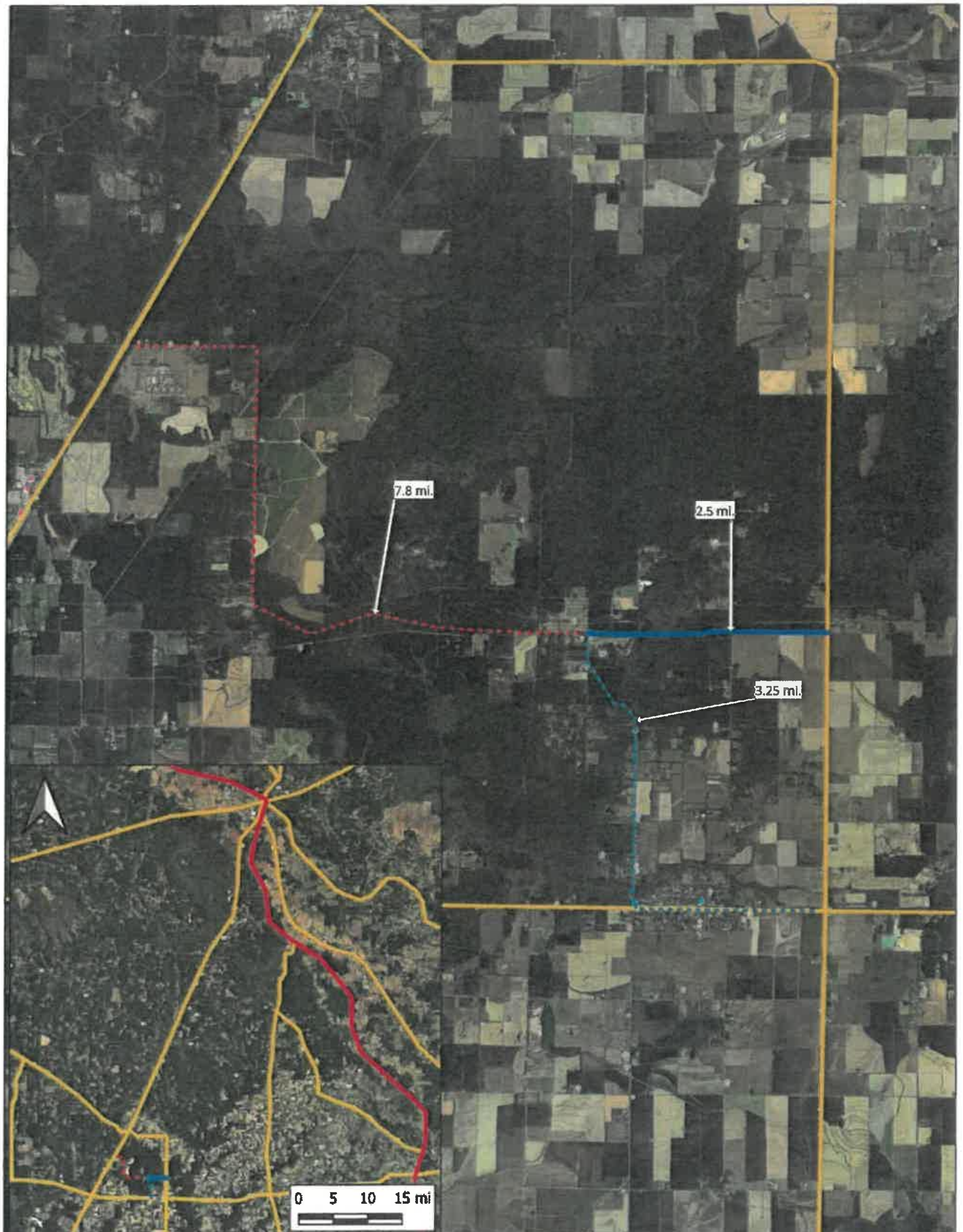
Attachment J

Evacuation Maps, and Parish

And Tribal Hazard Mitigation Plans

Attachment J 1

Evacuation Map



LEGEND

- Proposed Route
- Powell Road South Route
- CC Bel Road West Route
- DOTD Major Hwy Evac Route
- DOTD Secondary Hwy Evac Route

7724 - COUSHATTA TRIBE EVACUATION ROUTE

HURRICANE EVACUATION ROUTES

CLIENT:

COUSHATTA TRIBE

SCALE:
0 0.75 1.5 2.25 mi

MAP PROPERTIES:

CRS: NAD83 / Louisiana South (ftUS)
EPSG: 3452
Projection: Lamber Conformal Conic
Scale: 15000
Units: US Feet

Note: The map's CRS nor units do not always reflect the CRS or units of the individual GIS layers.

This map is for GIS purposes only. Not to be used for construction.

CREATED BY:	CJC
CHECKED BY:	SD
DATE:	09/23/2024

N

MML&H

Meyer, Meyer, LaCroix & Hixson
Engineers and Land Surveyors

Attachment J 2

2023 Allen Parish

Multi-Jurisdictional Hazard

Mitigation Plan

2023 ALLEN PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

UNINCORPORATED ALLEN PARISH, ELIZABETH, KINDER, OAKDALE, OBERLIN, REEVES

ALLEN PARISH
MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN UPDATE

Prepared for:

Allen Parish

Prepared by:

Stephenson Disaster Management Institute

Mr. Brant Mitchell, CEM
Mrs. Lauren Morgan, MEPP
Mr. Chris Rippetoe, CFM
Dr. Joseph B. Harris, PhD
Mr. Jason Martin

Louisiana State University – Louisiana Emerging Technology Center
Baton Rouge, LA 70803

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ACKNOWLEDGMENTS

This 2023 Allen Parish Hazard Mitigation Plan Update was coordinated by the Allen Parish Hazard Mitigation Plan Update Planning Committee, in collaboration with community stakeholders and the general public. The participating jurisdictions are made up of the following communities:

Unincorporated Allen Parish
Town of Elizabeth
Town of Kinder
City of Oakdale
Town of Oberlin
Village of Reeves

Special thanks is directed to all of those who assisted in contributing their expertise and feedback on this document, especially the Allen Parish Office of Homeland Security and Emergency Management. These combined efforts have made this project possible. The Allen Parish Planning Committee consists of the following individuals, who are credited in the creation of this document:

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Jacob Dillehay	Allen Parish Police Jury
Gene Paul	City of Oakdale
Wayland LaFargue	Town of Kinder
Larry Alexander	Town of Oberlin
Mandy Green	Village of Elizabeth
Chris Guillory	Village of Reeves
Amy Michiels	GOHSEP

The 2023 Allen Parish Hazard Mitigation Plan Update was written by the Stephenson Disaster Management Institute, Louisiana State University. Further comments should be directed to the Allen Parish Office of Homeland Security and Emergency Preparedness: 602 Court Street, Oberlin, LA 70655.

Contents

2023 ALLEN PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

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Contents

1. Introduction

Hazard Mitigation is defined as sustained actions taken to reduce or eliminate long-term risk from hazards and their effects. Hazard Mitigation Planning is the process through which natural hazards that threaten communities are identified, likely impacts of those hazards are determined, mitigation goals are set, and appropriate strategies that would lessen the impacts are determined, prioritized, and implemented.

In that regard, this plan (a) documents the Allen Parish Hazard Mitigation Plan Update (HMPU) process; (b) identifies natural hazards and risks within the parish; and (c) identifies the parish's hazard mitigation strategy to make Allen Parish and its jurisdictions less vulnerable and more disaster resilient. It also includes mitigation project scoping to further identify scopes of work, funding sources, and implementation timing requirements of proposed selected mitigation projects. Information in the plan will be used to help guide and coordinate mitigation and local policy decisions affecting future land use.

The Allen Parish Hazard Mitigation Plan is a multi-jurisdictional plan that includes the following jurisdictions which participated in the planning process:

- Unincorporated Allen Parish
- Town of Elizabeth
- Town of Kinder
- City of Oakdale
- Town of Oberlin
- Village of Reeves

The Federal Emergency Management Agency (FEMA), now under the Department of Homeland Security, has made reducing losses from natural disasters one of its primary goals. The Hazard Mitigation Plan (HMP) and subsequent implementation of recommended projects, measures, and policies is the primary means to achieving these goals. Mitigation planning and project implementation has become even more significant in a post-Katrina/Rita, Gustav/Ike, and Laura/Delta environment in south Louisiana.

This Hazard Mitigation Plan is a comprehensive plan for disaster resiliency in Allen Parish. The parish is subject to natural hazards that threaten life and health and have caused extensive property damage. To better understand these hazards and their impacts on people and property, and to identify ways to reduce those impacts, the parish's Office of Homeland Security and Emergency Preparedness undertook this Natural Hazards Mitigation Plan. "Hazard mitigation" does not mean that all hazards are stopped or prevented. It does not suggest complete elimination of the damage or disruption caused by such incidents. Natural forces are powerful and most natural hazards are well beyond our ability to control. Mitigation does not mean quick fixes. It is a long-term approach to reduce hazard vulnerability. As defined by FEMA, "hazard mitigation" means any sustained action taken to reduce or eliminate the long-term risk to life and property from a hazard event.

Every community faces different hazards, and every community has different resources and interests to bring to bear on its problems. Because there are many ways to deal with natural hazards and many agencies that can help, there is no one solution for managing or mitigating their effects. Planning is one of the best ways to correct these shortcomings and produce a program of activities that will best mitigate the impact of local hazards and meet other local needs. A well-prepared plan will ensure that all possible activities are reviewed and implemented so that the problem is addressed by the most appropriate and efficient solutions. It can also ensure that activities are coordinated with each other and with other goals and programs, preventing conflicts and reducing the costs of implementing each individual activity.

Under the Disaster Mitigation Act of 2000 (42 USC 5165), a mitigation plan is a requirement for Federal mitigation funds. Therefore, a mitigation plan will both guide the best use of mitigation funding and meet the prerequisite for obtaining such funds from FEMA. FEMA also recognizes plans through its Community Rating System (CRS), a program that reduces flood insurance premiums in participating communities. This program is further described in Section Three: Capability Assessment.

This plan identifies activities that can be undertaken by both the public and the private sectors to reduce safety hazards, health hazards, and property damage caused by natural hazards. It fulfills the Federal mitigation planning requirements, qualifies for CRS credit, and provides Allen Parish and its communities with a blueprint for reducing the impacts of these natural hazards on people and property.

Geography, Population and Economy

Geography

Located in the southwestern portion of Louisiana, Allen Parish is an irregular-shaped parish that is located about thirty miles northeast of Lake Charles and about thirty-five miles southwest of Alexandria *(Figure 1-1)*. Surrounding Allen Parish is Rapides Parish to the northeast, Evangeline Parish to the east, Acadia Parish to the southeast, Jefferson Davis Parish to the south, Calcasieu Parish to the southwest, Beauregard Parish to the west, and Vernon Parish to the northwest. The total area of the parish is approximately 490,265 acres, of which 1,999 acres is water.

Figure 1-1: Location of Allen Parish in the State of Louisiana

Figure 1-2: Incorporated Jurisdictions within Allen Parish

The topography of Allen Parish is primarily flat, particularly in the central and southern portions of the parish. While the majority of Allen Parish is composed of rural farmland and woodlands, several waterways are also located in the parish, including the Calcasieu River, Bayou Nezpique, and Ouiska Chitto Creek—one of Louisiana's officially designated "Scenic and Natural Rivers". Allen Parish also includes the one hundred square mile West Bay Wildlife Management Area, which is located in the north-central portion of the parish to the west of the Calcasieu River. It is a forested refuge for migratory birds, deer, fish and ducks.

Allen Parish weather is typically warm and humid. Variations in daily temperature are determined by distance from the Gulf of Mexico and, to a much lesser degree, by differences in elevation. The average annual temperature for the state as a whole is 68ºF. January is typically the coldest month for Louisiana, averaging approximately 54ºF, while July is typically the warmest at an average of 83ºF. Winter months are usually mild with cold spells of short duration. For Allen Parish in particular, the summer months are usually quite warm, with an average daily maximum temperature in July and August of 92°F. Winters are typically mild. Snowfall averages less than one inch per year. Average annual rainfall for the area is 63 inches. Allen Parish is susceptible to the normal weather dangers, such as thunderstorms and flooding, but due to its location within the state and its proximity to the Gulf of Mexico, the parish is highly susceptible to tropical cyclones. Hurricane season lasts from June 1st to November 30th, with most hurricanes forming in August, September, and October.

Allen Parish is located in Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) Region 5 (*Figure 1-3*).

As noted above, Allen Parish is located in the south-west region of Louisiana.

Figure 1-3: Louisiana Homeland Security Regions

Population

The population of Allen Parish is estimated at 22,750 (*2020 Census*) with a population percent change from April 1, 2010 – April 1, 2020 of -13.25%.

Table 1-1: Allen Parish Population
(Source: US Census)

	2010 Census	2016 Estimate	2020 Census	Percent Change 2010 -2020
Total Population	25,764	25,713	22,750	-13.25%
Population Density (Pop/Sq. Mi.)	31.6		29.9	-5.69%
Total Households	9,733	9,787	9,591	-1.48%
Persons Per Household			2.47	-------

Economy

Very rural in nature, Allen Parish has historically had an agrarian based economy. The parish has some of the most fertile farmland in the South. This low, flat land is particularly conducive to rice and soybean cultivation, as well as cattle production. Along with the farmland, the area is also covered by dense forest, which helps to bolster the booming timber production industry.

Tourism has recently begun to emerge as a force within the Allen Parish economy. Home to four Natural and Scenic Rivers, including the spring-fed Ouiska Chitto, Allen Parish is a great location for fishing and canoeing. Other activities geared toward the outdoor enthusiast including hunting and bird watching in the West Bay Wildlife Management Area. As for some indoor recreation, the Coushatta Tribe of Louisiana operates Louisiana's premier land-based casino resort, Coushatta Casino & Resort, and Koasati Pines Golf Course, its 18-hole championship course near Kinder.

Industry data for business patterns in Allen Parish can be found in the table below:

Table 1-2: Allen Parish Business Patterns
(Source: US Census, CBP)

Business Description	Number of Establishments	Number of Employees	Annual Payroll ($1,000)
Retail Trade	64	658	15,777
Manufacturing	8	755	45,565
Health Care and Social Assistance	39	748	26,537
Transportation and Warehousing	5	62	3,970
Construction	13	46	1,428
Administration/Support and Waste	10	308	9,405
Real Estate and Rental and Leasing	5	16	516
Wholesale Trade	3	21	509
Other Services (except Public Administration)	40	179	5,547
Accommodation and Food Services	30	416	5,116
Financial and Insurance	30	106	4,509
Professional, Scientific, and Technical Services	23	64	2,473
Agriculture, Forestry, Fishing and Hunting	5	56	2,412
Mining, Quarrying, and Oil and Gas Extraction	4	54	2,550
Utilities	3	17	952
Arts, Entertainment, and Recreation	3	7	63
Educational Services	3	25	394
Information	6	23	989

Hazard Mitigation

To fully understand hazard mitigation efforts in Allen Parish and throughout Louisiana, it is first crucial to understand how hazard mitigation relates to the broader concept of emergency management. In the early 1980s, the newly-created Federal Emergency Management Agency (FEMA) was charged with developing a structure for how the federal, state, and local governments would respond to disasters. FEMA developed the *four phases of emergency management*, an approach which can be applied to all disasters. The four phases are as follows:

- **Hazard Mitigation**—described by FEMA and the Disaster Mitigation Act of 2000 (DMA 2000) as "any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event." The goal of mitigation is to save lives and reduce property damage. Besides significantly aiding in the obviously desirous goal of saving human lives, mitigation can reduce the enormous cost of disasters to property owners and all levels of government. In addition, mitigation can protect critical community facilities and minimize community disruption, helping communities return to usual daily living in the aftermath of disaster. Examples of mitigation involve a range of activities and actions including the following: land-use planning, adoption and enforcement of building codes, and construction projects (e.g., flood proofing homes through elevation, or acquisition or relocation away from floodplains).

- **Emergency Preparedness**—includes plans and preparations made to save lives and property and to facilitate response operations in advance of a disaster event.
- **Disaster Response**—includes actions taken to provide emergency assistance, save lives, minimize property damage, and speed recovery immediately following a disaster.
- **Disaster Recovery—**includes actions taken to return to a normal or improved operating condition following a disaster.

Figure 1-4 illustrates the basic relationship between these phases of emergency management. While hazard mitigation may occur both before and after a disaster event, it is significantly more effective when implemented before an event occurs. This is one of the key elements of this plan and its overall strategy: reduce risk before disaster strikes in order to minimize the need for post-disaster response and recovery.

As *Figure 1-4* demonstrates, mitigation relies on updating in the wake of disaster. This can give the appearance that mitigation is only reactive rather than proactive. In reality, post-disaster revision is a vital component of improving mitigation. Each hazardous event affords an opportunity to reduce the consequences of future occurrences.

Figure 1-4: The Four Phases of Emergency Management and their Relation to Future Hazard Mitigation (Source: Louisiana State Hazard Mitigation Plan 2014)

Unfortunately, this cycle can be painful for a community. For instance, the risks of disasters that could create catastrophic incidents in Louisiana were thought to be relatively well-understood prior to 2005. However, the impact of the 2005 hurricane season on the Gulf Coast region of the United States prompted a new level of planning and engagement related to disaster response, recovery, and hazard mitigation. Hurricanes Katrina and Rita hit three weeks apart and together caused astonishing damage to human life and to property. The two storms highlighted a hurricane season that spawned 28 storms—unparalleled in American history. The 2005 hurricane season confirmed Louisiana's extreme exposure to natural disasters and both the positive effects and the concerns resulting from engineered flood-protection solutions. More recently, the historically impactful 2020 hurricane season reinforced the need for proper planning and mitigation strategies.

The catastrophic tropical events of 2005 and 2020, coupled with the unprecedented flooding events of 2016 have had profound impacts on emergency management and hazard mitigation throughout Louisiana. As detailed later in this document, significant funding has been made available to the State of Louisiana and its parishes for the purpose of hazard mitigation planning. The storms also raised awareness of the importance of hazard mitigation among decision-makers and the general population, which has been particularly important since natural hazards will likely be increasing in frequency, magnitude, and impact in the coming years due to climate change.

General Strategy

During the last update to the Louisiana State Hazard Mitigation Plan, the State Hazard Mitigation Team (SHMT) began a long-term effort to better integrate key components of all plans with hazard mitigation implications in Louisiana to ensure that the programs, policies, recommendations, and implementation strategies are internally consistent. As each of these documents has been adopted by various agencies within the state, the SHMT has worked to incorporate this information into the decision process.

Part of the ongoing integration process is that the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) encourages the parishes and the local communities with independent hazard mitigation plans to utilize the same plan format and methodologies as the State Hazard Mitigation Plan in order to create continuity of information from local to state mitigation plans and programs.

The 2023 Allen Parish Hazard Mitigation Plan (HMP) maintains much of the information from the 2018 plan version, but it now incorporates the order and methodologies of the 2019 Louisiana State Hazard Mitigation Plan.

The sections in the 2018 Allen Parish HMP were as follows:

- Section One Introduction
- Section Two Hazard Identification and Parish-Wide Risk Assessment
- Section Three Capability Assessment
- Section Four Mitigation Strategy
- Appendix A Planning Process
- Appendix B Plan Maintenance
- Appendix C Essential Facilities
- Appendix D Plan Adoption
- Appendix E State Required Worksheets

This plan update also coheres with the Plain Writing Act of 2010, which requires federal agencies to use clear communication that is accessible, consistent, understandable, and useful to the public. While the State of Louisiana and its political subdivisions are not required to meet such standards, the Act aligns with best practices in hazard mitigation. Since successful hazard mitigation relies on full implementation and cooperation at all levels of government and community, a successful hazard mitigation plan must also be easily used at all of these levels. Nevertheless, the Allen Parish Hazard Mitigation Planning Committee recognized the benefits from the successful analysis and mitigation planning executed in previous plan updates, as well as improvements to be made in the 2023 update. This plan update remains coherent with those documents, retaining language and content when needed, deleting it when appropriate, and augmenting it when constructive.

2023 Plan Update

This 2023 plan update proceeds with the previous goals of the Allen Parish Hazard Mitigation Plan. The current goals are as follows:

1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
2. Protect Parish schools, homes, and businesses from damage
3. Give special attention to repetitively flooded areas

This plan update makes a number of textual changes throughout, but the most obvious changes are data related and structural edits. First, the National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information's (NCEI) Storm Events Database was used in the analysis, which provides historical hazard data from 1950 to 2023. The planning committee was also instrumental in providing detailed data where appropriate to more accurately reflect hazard impacts on the parish and jurisdictions. Furthermore, all of the sections were updated to reflect the most current information and the most current vision of the plan update. The most significant changes are the newly developed hazard profiles and risk assessments, as well as the removal of much repetition between sections from the previous plan updates.

The 2023 plan update is organized in the same format as the 2018 update, with one minor change to this 2023 update as outlined below:

- Section One Introduction
- Section Two Hazard Identification and Parish-Wide Risk Assessment
- Section Three Capability Assessment
- Section Four Mitigation Strategies
- Appendix A Planning Process
- Appendix B Plan Maintenance
- Appendix C Critical Facilities
- Appendix D Plan Adoption
- Appendix E State Required Worksheets

Table 1-3: 2023 Plan Update Crosswalk

Plan Update Crosswalk	
2018 Update	**2023 Update**
Section 1: Introduction	Section 1: Introduction
Section 2: Hazard Identification and Parish-Wide Risk Assessment	Section 2: Hazard Identification and Parish-Wide Risk Assessment
Section 3: Capability Assessment	Section 3: Capability Assessment
Section 4: Mitigation Strategy	Section 4: Mitigation Strategy
Appendix A: Planning Process	Appendix A: Planning Process
Appendix B: Plan Maintenance	Appendix B: Plan Maintenance
Appendix C: Essential Facilities	Appendix C: Critical Facilities
Appendix D: Plan Adoptions	Appendix D: Plan Adoptions
Appendix E: State Required Worksheets	Appendix E: State Required Worksheets

Despite changes in this plan update, the plan remains consistent in its emphasis on the few types of hazards that pose the most risk to loss of life, injury, and property in Allen Parish and its municipalities. The extent of this risk is dictated primarily by its geographic location. Most significantly, Allen Parish remains at high risk of water inundation from various sources, including flooding, tornadoes, and tropical cyclone activity. The entire parish is also at high risk of damages from high winds and wind-borne debris caused by various meteorological phenomena. The 2016 flooding events, along with the 2020 hurricane season were both felt heavily in all parts of Allen Parish. Other hazards threaten the parish and/or its municipalities, although not to such great degrees and not in such widespread ways. In all cases, the relative social vulnerability of areas threatened and affected plays a significant role in how governmental agencies and their partners (local, parish, state, and federal) prepare for and respond to disasters.

Mitigation efforts related to particular hazards are highly individualized by jurisdiction. Flexibility in response and planning is essential. The most important step forward to improve hazard management capability is to improve coordination and information sharing between the various levels of government regarding hazards.

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2. Hazard Identification and Parish-Wide Risk Assessment

Overview

The risk assessment identifies and assesses a large variety of threats and hazards that impact the parish to identify a strategy for mitigation. Having identified the categories of hazards, emergencies, disasters, and catastrophes, this section describes the risks associated with each identified hazard of concern. Each section (1) defines the hazard, (2) explains how each hazard is measured, (3) provides the hazard's geographic extent, (4) analyzes the previous occurrences, (5) evaluates each hazard's future likelihood of occurrence, and (6) identifies the worst-case scenario for each hazard. The following steps were used to define the risk of each hazard:

- Profile and describe each hazard
  - Geographic areas most affected by the hazard
  - Previous occurrences and detailed description of events occurring in the last 5-years
  - Occurrence probability/frequency estimates
  - Worst-case scenarios
- Determine exposure to each hazard
  - Exposure was determined by overlaying hazard maps with an inventory of structures, facilities, and systems to determine which of them would be exposed to each hazard
  - Vulnerability analysis for people and infrastructure

The primary source for historical data used throughout the risk assessment is the National Centers for Environmental Information (NCEI) Storm Events Database, which provides natural hazard event data from 1950 to the present. In staying consistent with climatological studies, the NCEI Storm Events Database was evaluated for the past 30 years (1993 – 2022) to determine the future probability and frequency of a hazard occurring when data was available.

Data Limitations

Throughout the planning process, every effort was made to use the best available data. Much of the historic natural-hazard occurrence information was obtained through the National Oceanic and Atmospheric Administration's (NOAA) NCEI. The NCEI Storm Events Database contains data from January 1950 to the present (i.e., within the past few months); however, there are some issues with events recorded prior to 1996. From the years 1950 to 1954, the NCEI Storm Events Database only contain information on tornado events, until thunderstorm wind and hail events were added to the database for the time period between 1955 and 1992. All event types identified in the National Weather Service (NWS) Directive 10-1605 (48 in total) are recorded from 1996 to the present. For these hazards, only 27 years (1996 – 2022) worth of data was evaluated to determine the future probability and frequency of a hazard occurring. Additionally, property damage and crop damage estimates from the NCEI Storm Events Database are a "best guess" based on all available data at the time of the event publication.

The NCEI Storm Events Database does not record all events, only occurrences that have sufficient intensity to cause loss of life, injuries, significant property damage, and/or disruption to commerce. Even then, there are events that may not be covered due to changes in data collection and processing procedures over time. Also, events such as tornadoes or hailstorms rely heavily on eye-witness accounts which creates a reporting bias in urban areas. The inception of Doppler radar in 1980 significantly decreased this bias, especially for tornado events, but records prior to 1980 are not as detailed or complete as post 1980-records.

The Storm Prediction Center (SPC) National Severe Weather Database browser examines convective/thunderstorm-related winds only and does not include wind data from hurricane or non-thunderstorm wind damage. This data contains measured and estimated wind gusts including wind damage without estimated wind speeds. For many observations, this results in several thunderstorm wind events with no estimated or actual wind speed estimates.

The vulnerability estimates provided herein use the best data currently available, and the methodologies applied result in an approximation of risk. These estimates may be used to understand the relative risk from hazards and potential losses. However, uncertainties are inherent in any loss estimation methodology, arising in part from incomplete scientific knowledge concerning hazards and their effects on the built environment, as well as approximations and simplifications that are necessary for a comprehensive analysis.

Identifying Hazards

Several emergency management and hazard mitigation documents at the state and local levels were reviewed to identify a comprehensive list of hazards that may impact the parish. These documents addressed a wide range of hazards including natural, technological, and human-caused. The two main documents referenced in finalizing the parish's comprehensive hazard list were the 2018 Hazard Mitigation Plan for the parish and the state of Louisiana's 2019 Hazard Mitigation Plan. Typically, unless otherwise noted in the plan, all hazards previously identified in the parish's 2018 Hazard Mitigation Plan and all hazards in the state of Louisiana's 2019 Hazard Mitigation Plan identified as medium or high risk by the state are profiled in the risk assessment. The table below provides a comprehensive list of the hazards selected based on the above criteria.

Table 2-1: Hazard Profile Summary.

Hazard	Profiled in Previous Plan	Considered Medium or High Risk in the State's HM Plan	Profiled in the 2023 Update
Drought			X
Excessive Heat			X
Flooding	X	X	X
Thunderstorms (Hail, Lightning, & Wind)	X	X	X
Tornadoes	X	X	X
Tropical Cyclones	X		X
Wildfires	X		X
Winter Weather	X		X

Historical Context and Previous Occurrences

The table below and the figures on the next page display past Presidential Declaration occurrences and provides background on the type of natural disasters that have affected the parish in the past.

Table 2-2: Major Disaster Declarations in the Parish.

Disaster Number	Year	Declaration
604	9/25/1979	Severe Storms and Flooding
675	1/11/1983	Severe Storms and Flooding
829	5/20/1989	Severe Storms and Flooding
835	7/17/1989	Tropical Storm Allison
956	8/26/1992	Tropical Cyclone – Hurricane Andrew
2337	9/11/2000	LA- Western Louisiana Fire Complex – 9/8/00
1437	10/3/2002	Tropical Cyclone – Hurricane Lili
3172	2/1/2003	Loss of Space Shuttle Columbia
1603	8/29/2005	Tropical Cyclone – Hurricane Katrina
1607	9/24/2005	Tropical Cyclone – Hurricane Rita
1668	11/2/2006	Severe Storms and Flooding
1786	9/2/2008	Tropical Cyclone – Hurricane Gustav
1792	9/13/2008	Tropical Cyclone – Hurricane Ike
4080	8/29/2012	Tropical Cyclone – Hurricane Isaac
4236	3/13/2016	Flood
4484	03/24/2020	COVID-19 Pandemic
3527	6/7/2020	Tropical Cyclone – Tropical Storm Cristobal
3538	8/23/2020	Tropical Cyclone – Tropical Storms Laura and Marco
4570	10/16/2020	Tropical Cyclone – Hurricane Delta
4577	1/12/2021	Tropical Cyclone – Hurricane Zeta
3556	2/18/2021	Severe Winter Weather
4590	3/9/2021	Severe Winter Weather
4611	8/29/2021	Tropical Cyclone – Hurricane Ida
3574	9/13/2021	Tropical Cyclone – Tropical Storm Nicholas

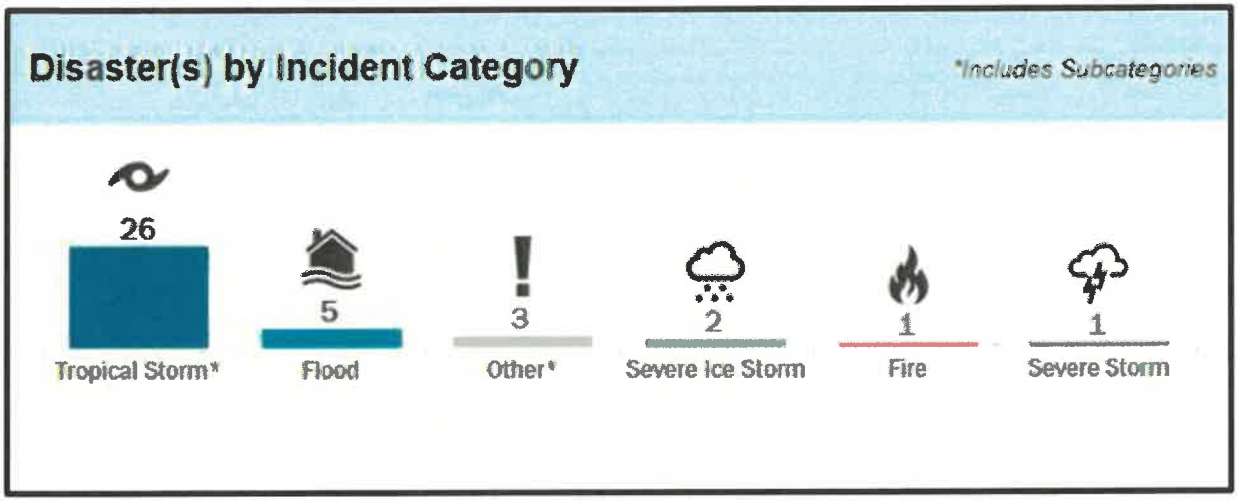


Figure 2-1: Presidential Disaster Declarations for the Parish by Disaster Type Since 1950. (Source: FEMA Disaster Declarations Summary: Open Government Dataset)

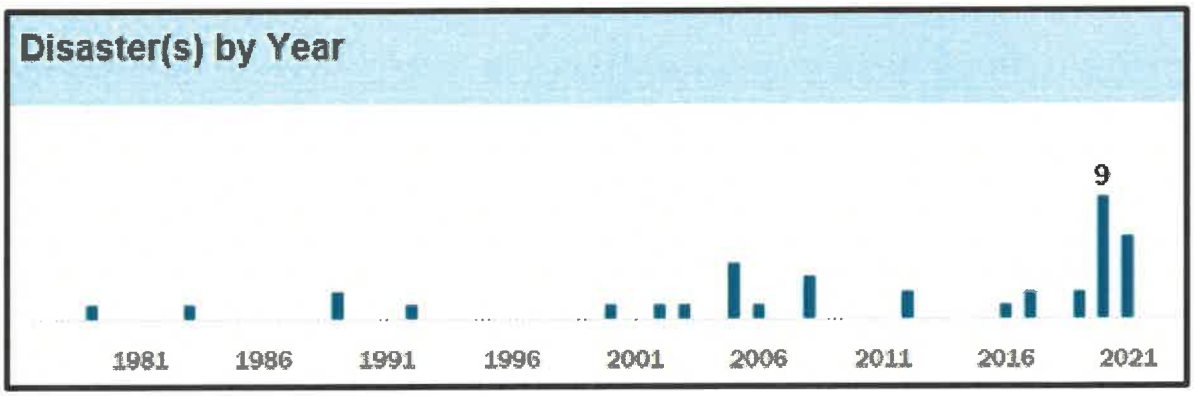


Figure 2-2: Total Presidential Disaster Declarations Yearly Totals for the Parish from 1950 to 2022. (Source: FEMA Disaster Declarations Summary: Open Government Dataset)

Probability of Future Threats and Hazards

The probability of each hazard occurring in the parish is estimated in the following table:

Table 2-3: Probability of Future Hazard Reoccurrence.

Hazard	Probability					
	Unincorporated Allen Parish	Elizabeth	Kinder	Oakdale	Oberlin	Reeves
Drought	11%	11%	11%	11%	11%	11%
Excessive Heat	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%
Flooding	7%	4%	19%	22%	< 1%	< 1%
Thunderstorms - Hail	100%	100%	100%	100%	100%	100%
Thunderstorms - Lightning	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%
Thunderstorms - Winds	100%	100%	100%	100%	100%	100%
Tornadoes	78%	78%	78%	78%	78%	78%
Tropical Cyclones	43%	43%	43%	43%	43%	43%
Wildfires	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%
Winter Weather	37%	37%	37%	37%	37%	37%

Assessing Vulnerability Overview

The purpose of assessing vulnerability is to quantify and/or qualify exposure and determine how various threats and hazards impact life, property, the environment, and critical operations of the parish. Vulnerability can be defined as the manifestation of the inherent states of the system (e.g., physical, technical, organizational, cultural) that can be exploited to adversely affect (cause harm or damage to) that system. For example, identifying areas within the parish that suffer disproportional damage compared to other areas, or overall exposure of the entire parish to flooding. Identifying and understanding vulnerability to each threat and hazard provides a strong foundation for developing and pursuing mitigation actions.

The vulnerability analysis builds upon the information provided in the risk assessment by assessing the potential impact and amount of damage that each hazard has on the parish. To complete the analysis, the best available data were collected from a variety of sources, including local, state, and federal agencies and multiple analyses were performed qualitatively and quantitatively. The estimates provided in the vulnerability analysis should be used to understand the relative risk from each hazard and the potential losses that may be incurred; however, uncertainties are inherent in any loss estimation methodology, arising in part from incomplete scientific knowledge concerning specific hazards and their effects on the built environment, as well as incomplete datasets and from approximations and simplifications that are necessary to provide a meaningful and complete analysis. Further, most datasets used in this assessment contain relatively short periods of records, which increases the uncertainty of any statistically based analysis.

Vulnerability Analysis Methodology

To direct the vulnerability analysis effort for the parish, two distinct methodologies were applied. The first includes a quantitative analysis that relies upon the best available data and technology, while the second methodology includes a qualitative analysis that relies more on local knowledge and rational decision-making. Upon completion, the methodologies are combined to create a vulnerability analysis that allows for some degree of quality control and assurance. The quantitative assessment focuses on potential hazard loss estimates, while the qualitative assessment is comprised of a scoring system built around values assigned by the Planning Team as to the likelihood of occurrence, spatial extent, and potential impact of each hazard.

Quantitative Methodology

The quantitative methodology consists of utilizing Hazus, a geographic information system (GIS)-based loss estimation software available from the Federal Emergency Management Agency (FEMA), as well as a detailed GIS-based approach independent of the Hazus software. These two GIS-based studies together help form a quantitative vulnerability analysis. GIS technology allows for the identification and analysis of potentially at-risk community assets such as people and infrastructure. This analysis was completed for hazards that can be spatially defined in a meaningful manner (i.e., hazards with an official and scientifically determined geographic extent) and for which GIS data were readily available.

Additionally, the National Risk Index developed by FEMA was utilized to determine the composite risk to 18 natural hazards to include avalanche, coastal flooding, cold wave, drought, earthquake, hail, heat wave, hurricane, ice storm, landslide, lightning, riverine flooding, strong wind, tornado, tsunami, volcanic activity, wildfire, and winter weather. Historic loss ratio, expected annual loss, and overall risk factor for any of the above hazards which are profiled in this plan are provided in the vulnerability analysis to provide further context on the risk associated to the hazard. Expected annual loss and the risk factor are calculated using the following formulas:

Expected Annual Loss = Exposure * Annualized Frequency * Historic Loss Ratio

Risk Index = Expected Annual Loss * Social Vulnerability / Community Resilience

Qualitative Methodology

The qualitative assessment relies less on technology, but more on historical and anecdotal data regarding expected hazard impacts. The qualitative assessment completed for the parish is based on the Priority Risk Index (PRI). The purpose of the PRI is to prioritize all potential hazards, and then group them into three categories of high, moderate, or low risk to identify and prioritize mitigation opportunities.

The PRI is a good practice to use when prioritizing hazards because it provides a standardized numerical value for hazards to be compared. Adapted PRI scores were calculated using five categories:

- Probability
- Impact
- Spatial Extent
- Warning Time
- Duration

Each degree of risk is assigned a value (1-4) and a weighting factor. To calculate the Risk Factor for a given hazard, the assigned risk value for each category is multiplied by the weighted factor, and the sum of all five categories is totaled together for a final score. The highest possible Risk Factor is a 4.0.

Risk Factor = [(Probability * 0.25) + (Impact * 0.25) + (Spatial Extent * 0.20) + (Warning Time *0.15) + (Duration * 0.15)]

Priority Risk Index and Hazard Risk

Hazard risk is determined by calculating the Risk Factor for each hazard impacting the parish. A summary of the PRI is found in the table on the next page. The conclusions drawn from the qualitative and quantitative assessments are fitted into three categories based on High, Moderate, or Low designations. Hazards identified as high risk have a risk factor of 2.5 or greater. Risk factors ranging from 2.0 to 2.4 are deemed moderate risk hazards while hazards with risk factors less than 2.0 are considered low risk.

Table 2-4: Summary of the Priority Risk Index.

PRI Category	Degree of Risk: Level	Degree of Risk: Criteria	Degree of Risk: Index Value	Assigned Weighting Factor
Probability	Unlikely	Less than 1% annual probability	1	25%
	Possible	Between 1 and 10% annual probability	2	
	Likely	Between 10 and 100% probability	3	
	Highly Likely	100% annual probability	4	
Impact	Minor	Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of critical facilities.	1	25%
	Limited	Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than one day.	2	
	Critical	Multiple deaths/injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than a week.	3	
	Catastrophic	High number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.	4	
Spatial Extent	Negligible	Less than 1% of area affected	1	20%
	Small	Between 1 and 10% of area affected	2	
	Moderate	Between 10 and 50% of area affected	3	
	Large	Between 50 and 100% of area affected	4	
Warning Time	More than 24 hours	Self-explanatory	1	15%
	12 to 24 hours	Self-explanatory	2	
	6 to 12 hours	Self-explanatory	3	
	Less than 6 hours	Self-explanatory	4	
Duration	Less than 6 hours	Self-explanatory	1	15%
	Less than 24 hours	Self-explanatory	2	
	Less than one week	Self-explanatory	3	
	More than one week	Self-explanatory	4	

Table 2-5: Associated Risk Factor with PRI Value Range.

Risk Factor	PRI Range
High Risk	2.5 to 4.0
Moderate Risk	2.0 to 2.4
Low Risk	0 to 1.9

Vulnerability Analysis (NRI & PRI)

The first table is the overall risk associated with each threat and hazard with 2.5 or above deemed high risk, 2.0 to 2.4 deemed medium risk, and less than 2.0 deemed low risk. The final table summarizes the composite risk of 18 natural hazards outlined previously on the parish by expected annual loss, social vulnerability, community resilience, and overall risk rating.

Table 2-6: PRI Vulnerability Analysis for the Parish.

Hazard	Probability	Impact	Spatial Extent	Warning Time	Duration	Overall Risk
Drought	3	2	4	2	3	2.8
Excessive Heat	1	3	4	1	2	2.25
Flooding	3	4	3	4	3	3.4
Thunderstorms - Hail	4	2	3	3	1	2.7
Thunderstorms - Lightning	3	2	2	3	1	2.25
Thunderstorms - Wind	4	2	3	3	1	2.7
Tornadoes	3	3	2	4	3	3.2
Tropical Cyclones	3	4	4	1	4	3.3
Wildfires	1	3	4	1	2	2.25
Winter Weather	3	4	4	1	2	3

Table 2-7: National Risk Index (NRI) Summarization of Risk to Eighteen Natural Hazards for the Parish. (Source: National Risk Index)

Expected Annual Loss	Social Vulnerability	Community Resilience	Overall Risk Rating
Relatively Low	Relatively High	Relatively Low	Relatively Low

Inventory of Assets for the Entire Parish

As part of the Risk Assessment, the planning team identified essential facilities throughout the parish. Within the entire planning area, there is an estimated value of $3,236,081,000 in structures throughout the parish. The tables below provide the total estimated value for each type of structure by occupancy.

Table 2-8: Estimated Total of Potential Losses throughout the Parish.

Occupancy	Allen Parish	Unincorporated Area	Elizabeth	Kinder
Agricultural	$11,376,000	$7,916,000	$894,000	$660,000
Commercial	$409,491,000	$116,889,000	$3,174,000	$88,207,000
Government	$37,434,000	$21,544,000	$530,000	$4,024,000
Industrial	$97,259,000	$66,458,000	$2,133,000	$1,112,000
Religion	$122,374,000	$60,294,000	$2,224,000	$14,500,000
Residential	$2,522,643,000	$1,351,880,000	$65,781,000	$267,760,000
Education	$35,504,000	$9,412,000	$0	$6,560,000
Total	**$3,236,081,000**	**$1,634,393,000**	**$74,736,000**	**$382,823,000**

Table 2-9: Estimated Total of Potential Losses throughout the Parish

Occupancy	Oakdale	Oberlin	Reeves
Agricultural	$142,000	$1,764,000	$0
Commercial	$171,909,000	$27,750,000	$1,562,000
Government	$7,926,000	$3,144,000	$266,000
Industrial	$26,638,000	$918,000	$0
Religion	$38,514,000	$4,424,000	$2,418,000
Residential	$629,787,000	$189,513,000	$17,922,000
Education	$5,592,000	$10,064,000	$3,876,000
Total	**$880,508,000**	**$237,577,000**	**$26,044,000**

Critical Facilities of the Parish

The following figures show the locations and names of the essential facilities within the parish:

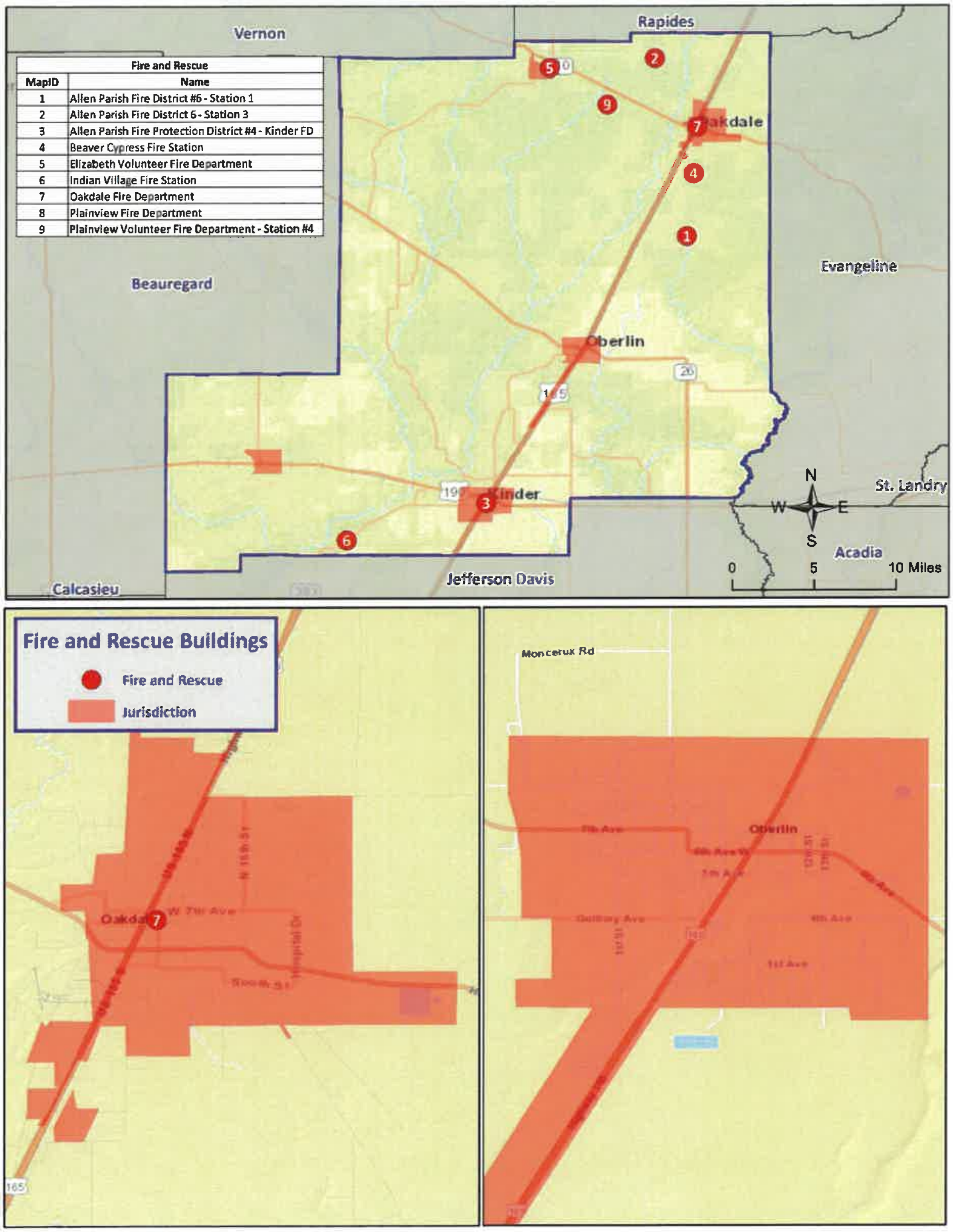


Figure 2-3: Fire and Rescue Facilities in the Parish.

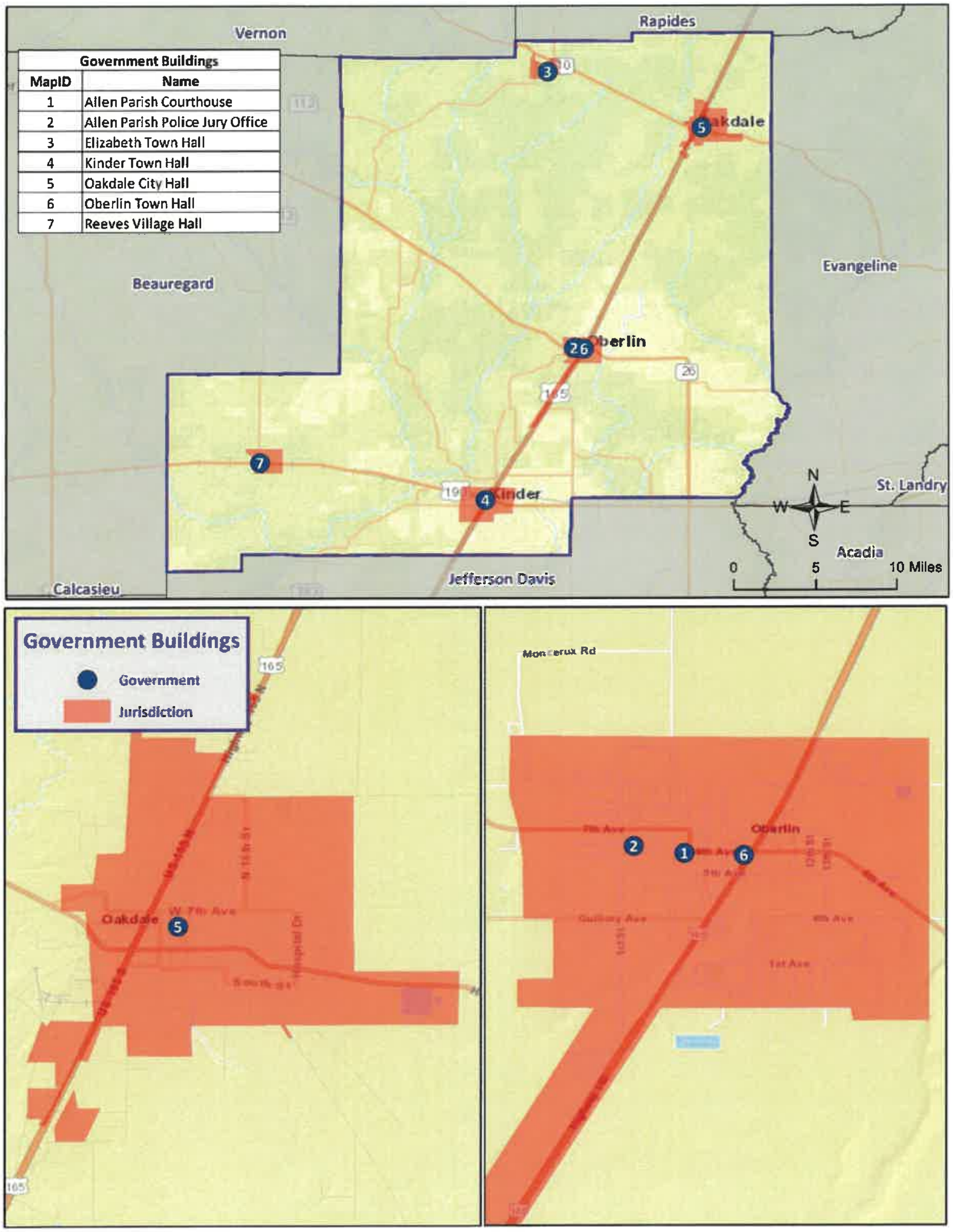


Figure 2-4: Government Buildings in the Parish.

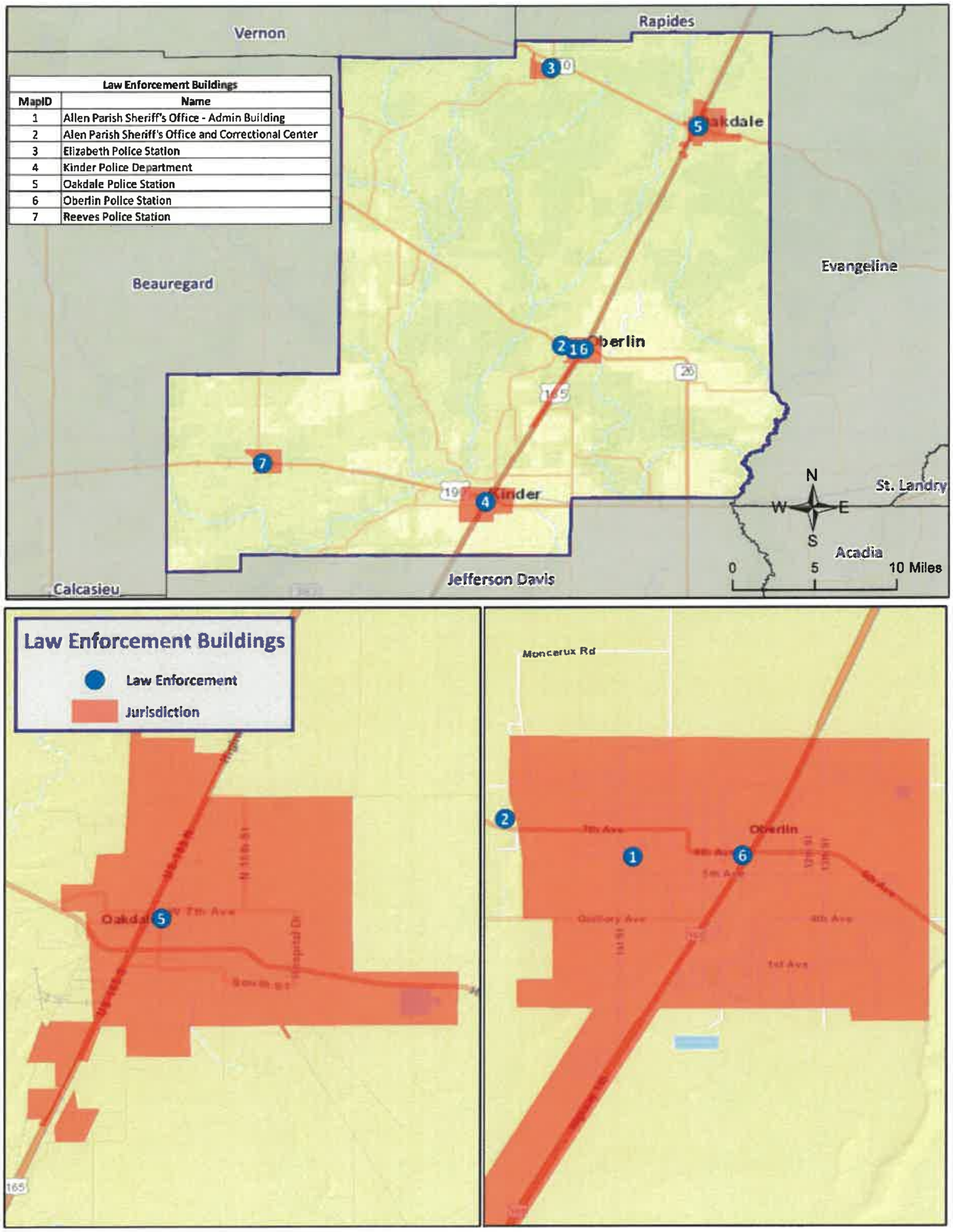


Figure 2-5: Law Enforcement in the Parish.

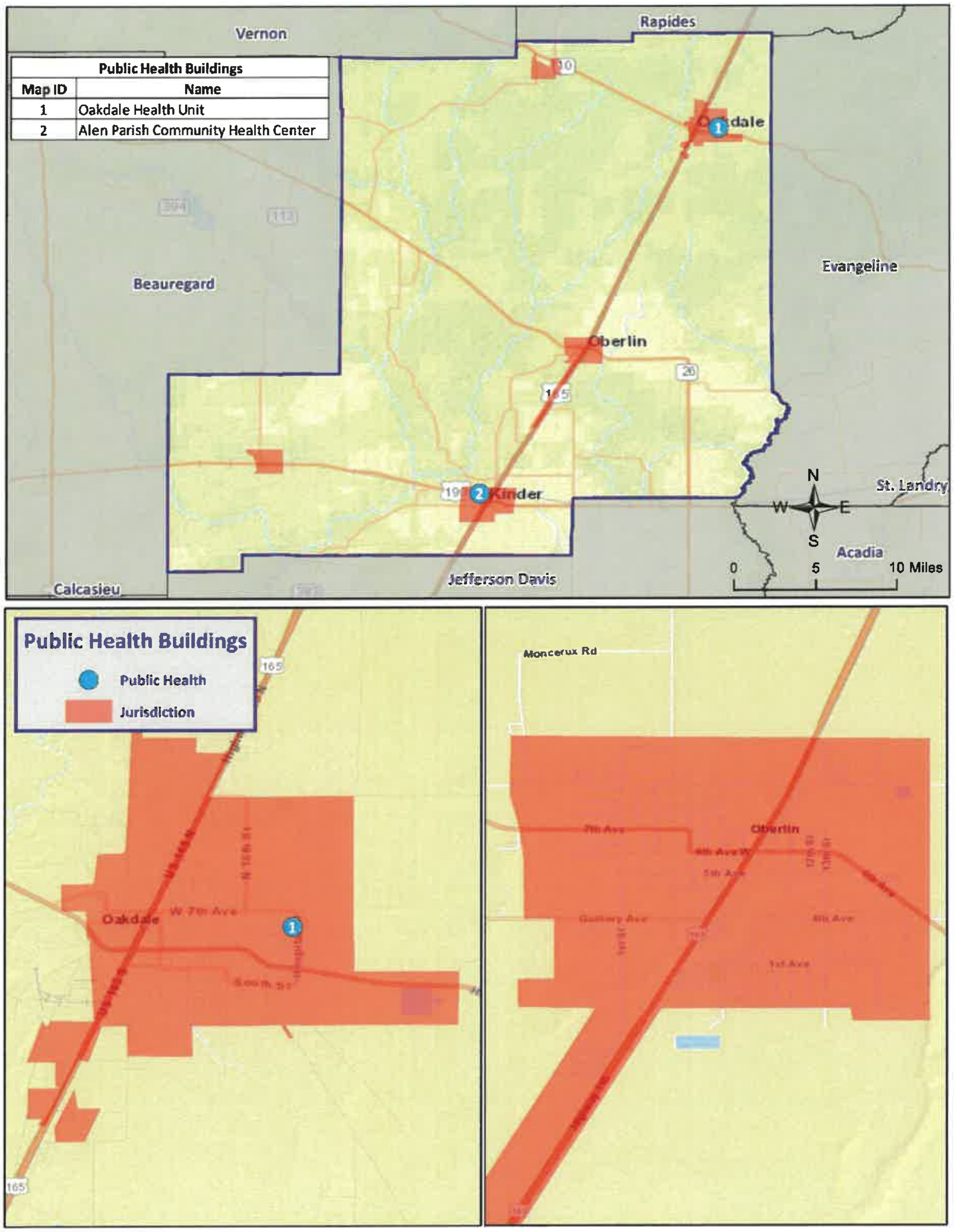


Figure 2-6: Public Health Facilities in the Parish.

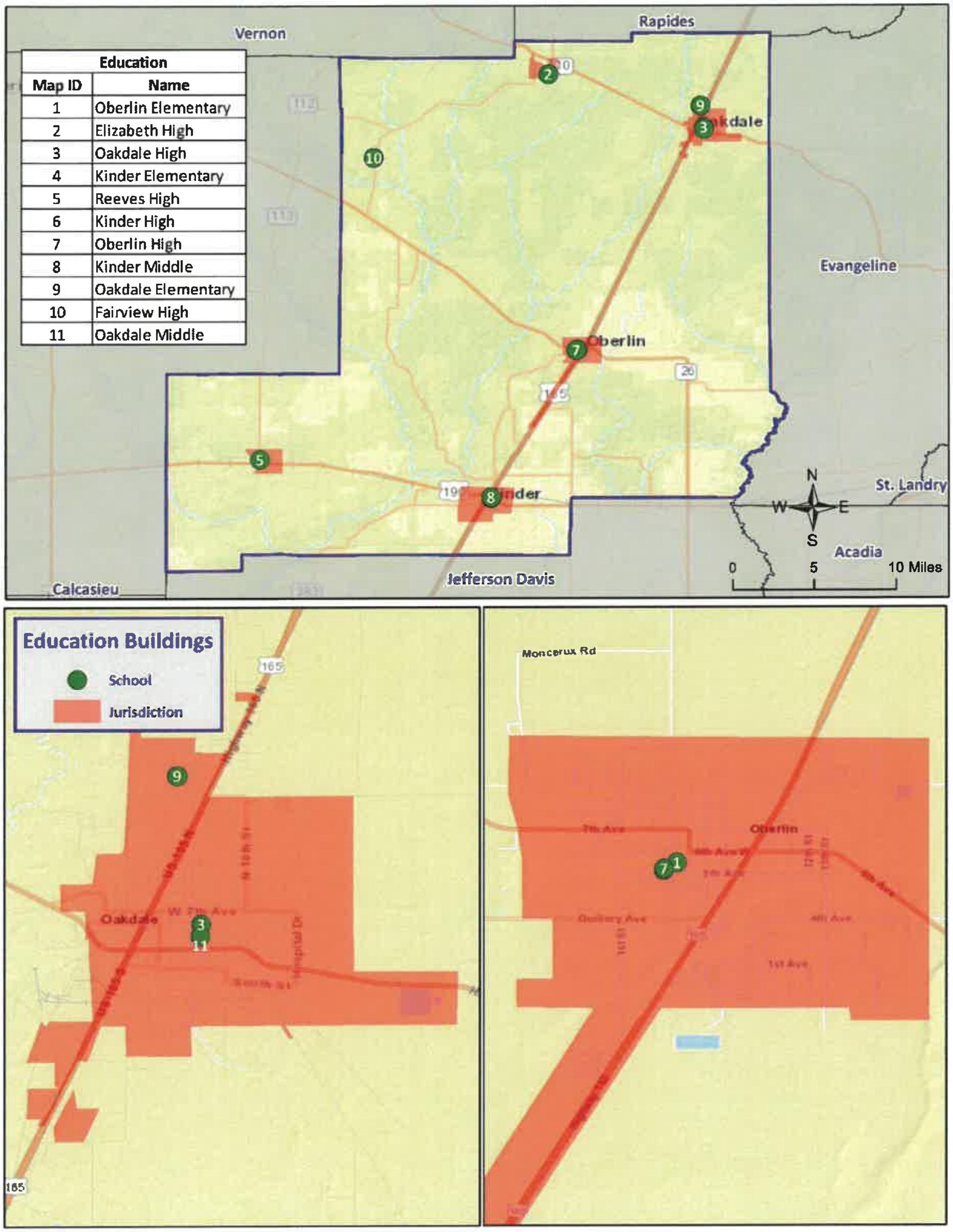


Figure 2-7: Educational Facilities in the Parish.

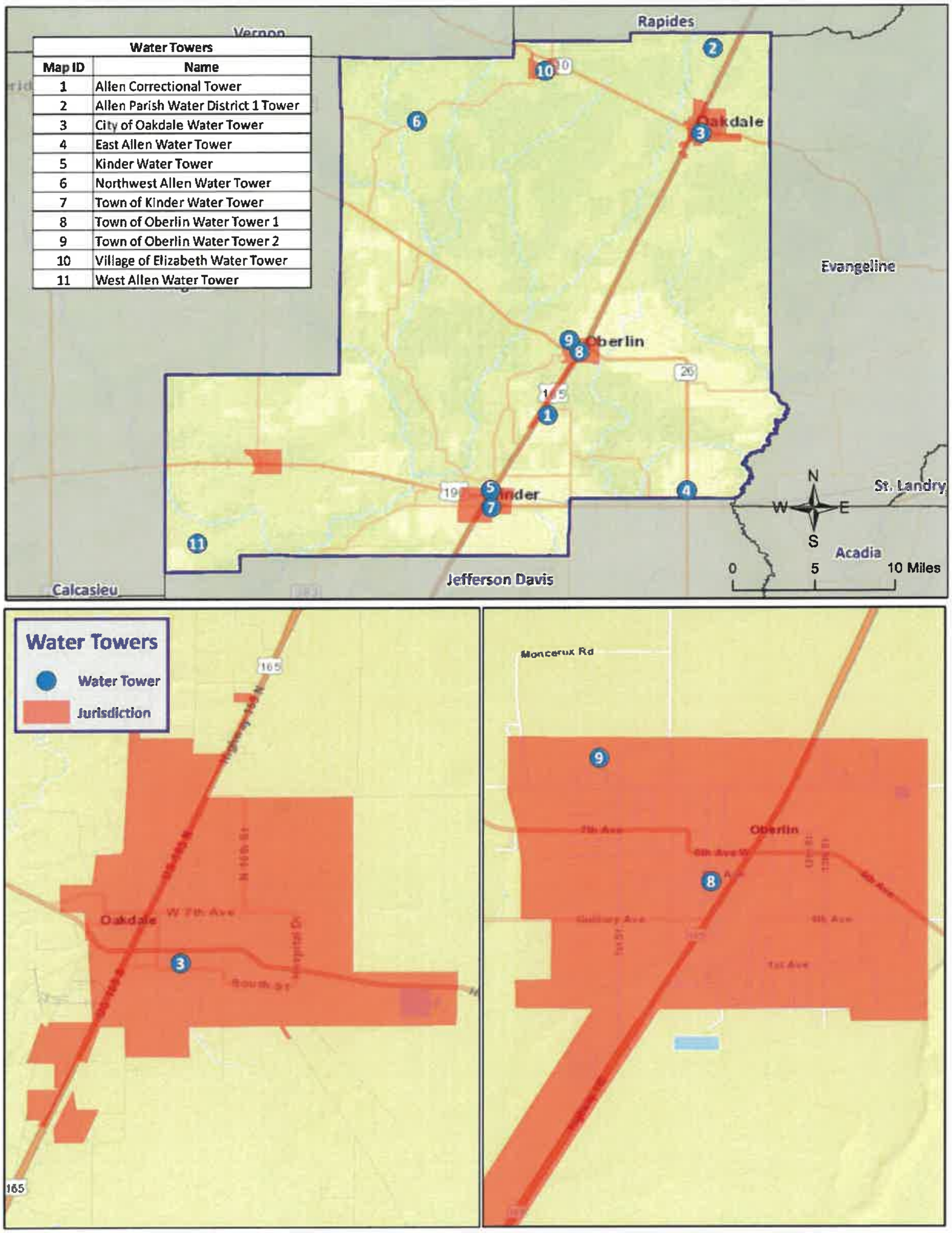


Figure 2-8: Water Towers in the Parish

Socially Vulnerable Populations

The following tables illustrate at risk populations in Allen Parish, and their respective jurisdictions, compared to the United States as a whole. As seen in the tables below, Allen Parish and their jurisdictions demonstrate an above average percentage differences than that of the U.S. when dealing with at risk communities.

Based on the parish and their incorporated jurisdictions, reliability of the information presented becomes a factor. To combat misinformation and skewed values when dealing with socially vulnerable populations, the U.S. Census Bureau along with Headwater Economics, has denoted values by color and given them a reliability denotation. Any values in **black** are denoted as "high reliability". This means that error in data based off of the sampling size for that specific population is relatively small and should not be cause for concern. Any values in **orange** are denoted as "medium reliability". This means that values could be skewed based off of the sampling size being inaccurately examined. Populations and values in orange should be interpreted with caution. Any values in **red** are denoted as "low reliability". This means that population values and data taken from the census are very unreliable as the sample size included for this data incorporation were very small or insufficient. An emphasis has been placed on values in red in that anyone using them for studies, local plans and regulatory measures, or projects, should consult the respective community for a more comprehensive evaluation of said population(s). *Neighborhoods at Risk* also cites a data limitation to any community with less than 1,000 people residing in it. (US Census Beau 2021, Headwater Economics)

Additionally, there are some limitations to the data that is provided below. Families in poverty are based upon the amount families within the identifiable area. Rental units, mobile homes, and households with no car are based upon the amount of housing units within the identifiable area. People who do not speak English well is based upon the population of the identifiable area who are five years of age or older. People without a high school degree are based upon the population of the identifiable area who are 25 years of age or older. All other indicators used to identify neighborhoods at risk are based upon the identifiable area's total population. For reference to populations with specific limitations, the table below illustrates the population sample size used to evaluate their respective areas, not the total number of people a specific indicator applies to.

Table 2-10: Limiting Factors of Socially Vulnerable Populations in Allen Parish

Limiting Factors in Neighborhoods at Risk – Population Sample Size (2021)							
Indicators 2021	Allen Parish	Town of Elizabeth	Town of Kinder	City of Oakdale	Town of Oberlin	Village of Reeves	United States
Families in poverty	5,362	142	552	1,422	357	50	80,755,759
Rental units, mobile homes, households with no car	7,687	180	793	2,048	502	67	124,010,992
People who do not speak English well	21,699	465	1,693	6,827	1,392	169	310,302,360
People without a high school degree	16,245	259	1,155	5,664	858	100	225,152,317
Total Population	23,085	494	1,866	7,092	1,524	169	329,725,481

Table 2-11: Socially Vulnerable Populations – Allen Parish

Neighborhoods at Risk – Allen Parish				
Indicators 2021	Allen Parish Population	Allen Parish Percentage	U.S. Percentage	Percentage Difference (Allen vs U.S.)
People under 5 years	1,386	6.0%	5.9%	2%
People over 65 years	3,272	14.2%	16.0%	-12%
People of color (including Hispanic)	6,822	29.6%	40.6%	-31%
People who do not speak English well	648	3.0%	4.1%	-31%
People without a high school degree	3,285	20.2%	11.1%	58%
Families in poverty	893	16.7%	8.9%	61%
Housing units that are rentals	1,855	24.1%	35.4%	-38%
Housing units that are mobile homes	1,529	19.9%	5.2%	117%
Households with no cars	618	8.0%	8.3%	-4%
People with disabilities	3,867	20.4%	12.6%	47%
People without health insurance	1,364	7.2%	8.5%	-17%
Population of Allen Parish: 23,085				

Table 2-12: Socially Vulnerable Populations – Town of Elizabeth

Neighborhoods at Risk – Town of Elizabeth				
Indicators 2021	Elizabeth Population	Elizabeth Percentage	U.S. Percentage	Percentage Difference (Elizabeth vs U.S.)
People under 5 years	29	5.9%	5.9%	0%
People over 65 years	32	6.5%	16.0%	-84%
People of color (including Hispanic)	50	10.1%	40.6%	-120%
People who do not speak English well	-	0.0%	4.1%	-200%
People without a high school degree	82	31.7%	11.1%	96%
Families in poverty	58	40.8%	8.9%	128%
Housing units that are rentals	45	25.0%	35.4%	-34%
Housing units that are mobile homes	30	16.7%	5.2%	105%
Households with no cars	4	2.2%	8.3%	-116%
People with disabilities	51	10.3%	12.6%	-20%
People without health insurance	29	5.9%	8.5%	-36%
Population of Elizabeth: 494				

Table 2-13: Socially Vulnerable Populations – Town of Kinder

Neighborhoods at Risk – Town of Kinder				
Indicators 2021	Kinder Population	Kinder Percentage	U.S. Percentage	Percentage Difference (Kinder vs U.S.)
People under 5 years	173	9.3%	5.9%	45%
People over 65 years	273	14.6%	16.0%	-9%
People of color (including Hispanic)	449	26.7%	40.6%	-41%
People who do not speak English well	1	0.1%	4.1%	-190%
People without a high school degree	215	18.6%	11.1%	51%
Families in poverty	180	32.6%	8.9%	114%
Housing units that are rentals	327	41.2%	35.4%	15%
Housing units that are mobile homes	118	14.9%	5.2%	97%
Households with no cars	31	3.9%	8.3%	-72%
People with disabilities	250	14.0%	12.6%	11%
People without health insurance	128	7.1%	8.5%	-18%
Population of Kinder: 1,866				

Table 2-14: Socially Vulnerable Populations – City of Oakdale

Neighborhoods at Risk – City of Oakdale				
Indicators 2021	Oakdale Population	Oakdale Percentage	U.S. Percentage	Percentage Difference (Oakdale vs U.S.)
People under 5 years	265	3.7%	5.9%	-46%
People over 65 years	1,374	19.4%	16.0%	19%
People of color (including Hispanic)	3,357	47.3%	40.6%	15%
People who do not speak English well	532	7.8%	4.1%	62%
People without a high school degree	1,413	24.9%	11.1%	77%
Families in poverty	265	18.6%	8.9%	71%
Housing units that are rentals	674	32.9%	35.4%	-7%
Housing units that are mobile homes	187	9.1%	5.2%	55%
Households with no cars	232	11.3%	8.3%	31%
People with disabilities	1,362	28.7%	12.6%	78%
People without health insurance	291	6.1%	8.5%	-33%
Population of Oakdale: 7,092				

Table 2-15: Socially Vulnerable Populations – Town of Oberlin

Neighborhoods at Risk – Town of Oberlin				
Indicators 2021	**Oberlin Population**	**Oberlin Percentage**	**U.S. Percentage**	**Percentage Difference (Oberlin vs U.S.)**
People under 5 years	132	8.7%	5.9%	38%
People over 65 years	219	14.4%	16.0%	-11%
People of color (including Hispanic)	669	43.9%	40.6%	8%
People who do not speak English well	-	0.0%	4.1%	-200%
People without a high school degree	140	16.3%	11.1%	38%
Families in poverty	75	21.0%	8.9%	81%
Housing units that are rentals	184	36.7%	35.4%	4%
Housing units that are mobile homes	78	15.5%	5.2%	100%
Households with no cars	38	7.6%	8.3%	-9%
People with disabilities	187	13.2%	12.6%	5%
People without health insurance	62	4.4%	8.5%	-64%
Population of Oberlin: 1,524				

Table 2-16: Socially Vulnerable Populations – Village of Reeves

Neighborhoods at Risk – Village of Reeves				
Indicators 2021	**Reeves Population**	**Reeves Percentage**	**U.S. Percentage**	**Percentage Difference (Reeves vs U.S.)**
People under 5 years	11	6.5%	5.9%	10%
People over 65 years	24	14.2%	16.0%	-12%
People of color (including Hispanic)	-	0.0%	40.6%	-200%
People who do not speak English well	-	0.0%	4.1%	-200%
People without a high school degree	10	10.0%	11.1%	-10%
Families in poverty	12	24.0%	8.9%	92%
Housing units that are rentals	23	34.3%	35.4%	-3%
Housing units that are mobile homes	24	35.8%	5.2%	149%
Households with no cars	1	1.5%	8.3%	-139%
People with disabilities	34	20.1%	12.6%	46%
People without health insurance	26	15.4%	8.5%	58%
Population of Reeves: 169				

Population and Development Trends

The future population and number of buildings can be estimated using U.S. Census Bureau housing and population data. The following tables show population and housing unit estimates from 2000 to 2020:

Table 2-17: Population Growth Rate for the Parish.

Total Population	Allen Parish	Unincorporated Area	Elizabeth	Kinder	Oakdale	Oberlin	Reeves
1-Apr-00	25,401	12,152	567	2,444	8,158	1,862	218
1-Apr-10	25,732	12,956	531	2,473	7,772	1,768	232
1-Apr-20	22,750	11,848	417	2,170	6,692	1,402	---
Population Growth between 2000 – 2010	1.3%	6.6%	-6.3%	1.2%	-4.7%	-5.0%	6.4%
Average Annual Growth Rate between 2000 – 2010	0.1%	0.7%	-0.6%	0.1%	-0.5%	-0.5%	0.6%
Population Growth between 2010 – 2020	-11.6%	-8.6%	-21.5%	-12.3%	-13.9%	-20.7%	---
Average Annual Growth Rate between 2010 – 2020	-1.16%	-0.86%	-2.15%	-1.23%	-1.39%	-2.07%	---

Table 2-18: Housing Growth Rate for the Parish.

Total Population	Allen Parish	Unincorporated Area	Elizabeth	Kinder	Oakdale	Oberlin	Reeves
1-Apr-00	9,157	4,609	206	950	2,512	789	91
1-Apr-10	9,733	5,064	216	1,137	2,428	792	96
1-Apr-20	9,484	5,345	180	1,119	2,048	725	---
Housing Growth between 2000 – 2010	6.3%	9.9%	4.9%	19.7%	-3.3%	0.4%	5.5%
Average Annual Growth Rate between 2000 – 2010	0.6%	1.0%	0.5%	2.0%	-0.3%	0.0%	0.5%
Housing Growth between 2010 – 2020	-2.6%	5.5%	-16.7%	-1.6%	-15.7%	-8.5%	---
Average Annual Growth Rate between 2010 – 2020	-0.3%	0.6%	-1.7%	-0.2%	-1.6%	-0.8%	---

Land Use

The Parish Land Use table is provided below. Residential, commercial, and industrial areas account for only 5% of the parish's land use. Agricultural land is the largest category at 190,183 acres, accounting for 39% of parish land. At 172,216 acres, forested land accounts for 35% of parish lands, while 99,463 acres of wetland areas account for 20% of parish lands. The parish also consists of 1,999 acres of water areas, accounting for less than 1% of all parish lands.

Table 2-19: Parish Land Use.
(Source: USGS Land Use Map)

Land Use	Acres	Percentage
Agricultural Land, Cropland, and Pasture	190,183	39%
Wetlands	99,463	20%
Forest Land (Not including forested wetlands)	172,216	35%
Urban/Development	26,404	5%
Water	1,999	< 1%

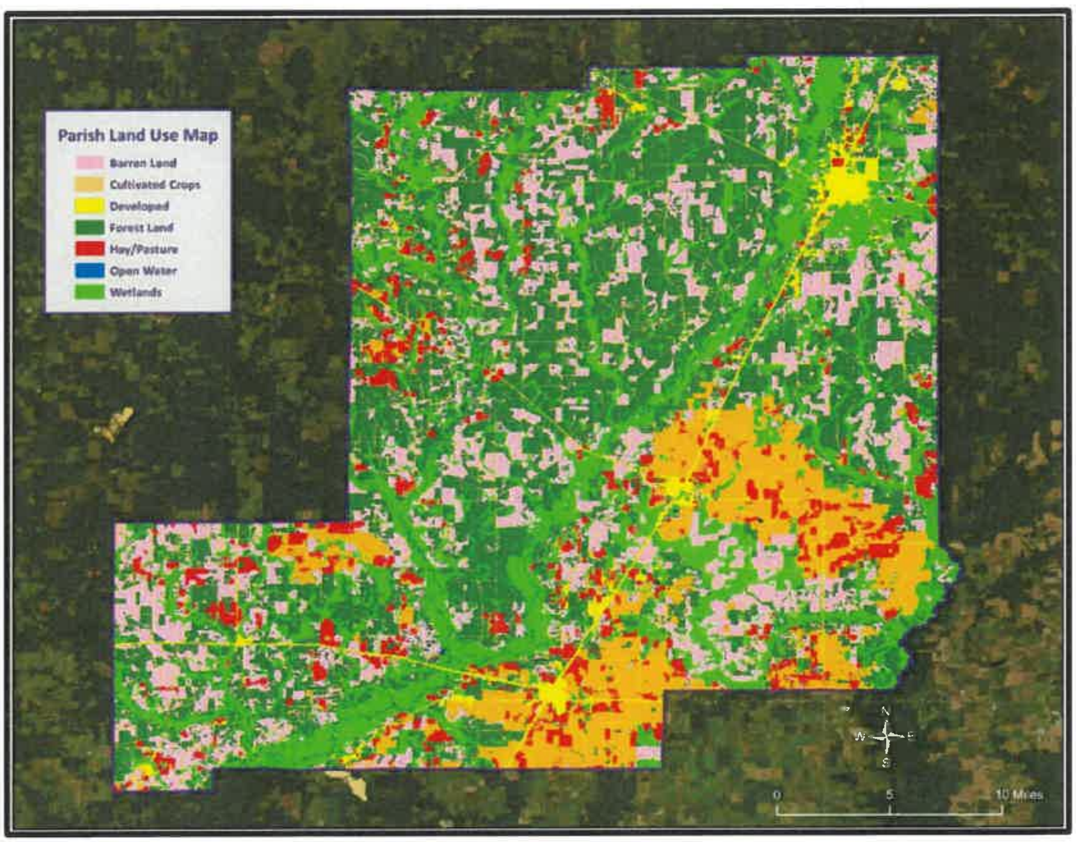


Figure 2-9: Parish Land Use Map.
(Source: USGS Land Use Map)

Future Hazard Impacts

Hazard impacts for flood and tropical cyclones were estimated for the years 2025 and 2030. Yearly population and housing growth rates were applied to parish inventory assets for composite flood and tropical cyclones. Based on a review of available information, it is assumed that population and housing units will decrease within the parish from the present until 2030. A summary of estimated future impacts is shown in the table below. Dollar values are expressed in future costs and assume an annual rate of inflation of 1.02%

Table 2-20: Estimated Future Impacts, 2020 - 2030.
(Source: Hazus, US Census Bureau)

Hazard / Impact	Total in Parish (2020)	Hazard Area (2020)	Hazard Area (2025)	Hazard Area (2030)
Flood Damage				
Structures	9,508	1,747	1,769	1,787
Value of Structures	$3,277,427,628	$602,038,244	$641,494,172	$674,912,734
# of People	22,580	4,148	3,996	3,878
Tropical Cyclone Damage				
Structures	9,508	9,508	9,630	9,729
Value of Structures	$3,277,427,628	$3,277,427,628	$3,492,221,202	$3,674,148,049
# of People	22,580	22,580	21,751	21,110

Since the previous plan update in 2018, the population and housing development in the unincorporated areas of Allen Parish and their jurisdictions have decreased. Allen Parish has been vigilant in offsetting any new development around the parish with appropriate mitigative actions. Initiatives such as active floodplain management have regulated the development of flood prone areas to continue supporting and encouraging safer communities within Allen Parish. The development that has occurred since 2018 has not in any knowing way altered the parish's vulnerability to natural hazards. Allen Parish will continue to monitor populations and development trends and ensure that any new planning project is within the limitations of this hazard mitigation plan and for the best interest of the public, especially socially vulnerable populations.

Population increase and development can have various impacts on natural disasters and extreme weather events. Let's explore how each of these factors can influence thunderstorms and tornadoes, wildfires, and winter weather.

Drought:

a) **Population Increase:** As the population grows, the demand for water resources also increases, leading to higher water consumption. This can exacerbate drought conditions, especially in regions already experiencing water scarcity.
b) **Development:** Land development can alter natural landscapes, leading to reduced water retention and increased runoff. This alteration of the natural hydrological cycle can worsen drought conditions by reducing groundwater recharge and surface water availability.

Extreme Heat:

a) **Population Increase:** With a growing population, there may be an increased demand for water resources, which could impact water supply for both households and agriculture during extreme heating events.
b) **Development:** Rapid development in urban areas could increase the urban heat index which would require more planning and development strategies to mitigate.

Thunderstorms and Tornadoes:

a) **Population Increase:** A higher population density in tornado-prone regions increases the potential for casualties and property damage during severe thunderstorms and tornado events.
b) **Development:** Urbanization can lead to the creation of heat islands, altering local atmospheric conditions and potentially influencing thunderstorm development. Additionally, more infrastructure can obstruct natural wind patterns, potentially enhancing localized wind damage during tornadoes.

Wildfires:

a) **Population Increase:** As more people move into wildland-urban interface areas (where human development meets natural vegetation), the risk of wildfires and their impacts on communities increase. Human activities can also inadvertently trigger wildfires.
b) **Development:** Construction in fire-prone areas may lead to an accumulation of combustible materials, such as buildings, which can serve as fuel sources during wildfire events.

Winter Weather:

a) **Population Increase:** Higher populations in regions with cold climates can lead to increased demand for energy resources, such as electricity and heating. This higher demand can strain energy infrastructure during severe winter weather events, leading to power outages and potential hazards.
b) **Development:** Urbanization and changes in land use can disrupt local microclimates, leading to altered patterns of snow accumulation and melt. Additionally, increased impervious surfaces in urban areas can lead to more rapid runoff during snowmelt, potentially causing flooding.

In conclusion, population increase and development can exacerbate the impacts of natural disasters and extreme weather events. Proper urban planning, infrastructure maintenance, and responsible land-use decisions are essential to mitigate these risks and build resilient communities.

Hazard Profile, Risk Assessment, and Vulnerability Analysis

Drought

Profile

A drought is a deficiency in water availability over an extended period of time, caused by precipitation totals and soil water storages that do not satisfy the environmental demand for water, either by evaporation or transpiration through plant leaves. It is important to note that the lack of precipitation alone does not constitute drought; the season during which the precipitation is lacking has a major impact on whether drought occurs. For example, a week of no precipitation in July, when the solar energy to evaporate water and vegetation's need for water to carry on photosynthesis are both high, may trigger a drought, while a week of no precipitation in January may not initiate a drought.

Drought is a unique and insidious hazard. Unlike other natural hazards, no specific threshold of "dryness" exists for declaring a drought. In addition, the definition of drought depends on stakeholder needs. For instance, the onset (and demise) of agricultural drought is quick, as crops need water every few days; once they get rainfall, they improve. But hydrologic drought sets in (and is alleviated) only over longer time periods. A few dry days will not drain a reservoir, but a few rain showers cannot replenish it either. Moreover, different geographical regions define drought differently based on the deviation from local, normal precipitation. Drought can occur anywhere, triggered by changes in the local-to-regional-scale atmospheric circulation over an area, or by broader-scale circulation variations such as the expansion of semi-permanent oceanic high-pressure systems or the stalling of an upper-level atmospheric ridge in place over a region. The severity of a drought depends upon the degree and duration of moisture deficiency, as well as the size of the affected area. Periods of drought also tend to be associated with other hazards, such as wildfires and/or heat waves. Lastly, drought is a slow onset occurrence, causing less direct—but tremendous indirect—damage. Depletion of aquifers, crop loss, and livestock and wildlife mortality rates are examples of direct impacts. Since the groundwater found in aquifers is the source of about 38% of all county and city water supplied to households (and comprises 97% of the water for all rural populations that are not already supplied by cities and counties), droughts can potentially have direct, disastrous effects on human populations. The indirect consequences of drought, such as unemployment, reduced tax revenues, increased food prices, reduced outdoor recreation opportunities, higher energy costs as water levels in reservoirs decrease and consumption increases, and water rationing, are not often fully known. This complex web of impacts causes drought to affect people and economies well beyond the area physically experiencing the drought.

This hazard is often measured using the Palmer Drought Severity Index (PDSI, also known operationally as the Palmer Drought Index). The PDSI, first developed by Wayne Palmer in a 1965 paper for the U.S. Weather Bureau, measures drought through recent precipitation and temperature data with regard to a basic supply-and-demand model of soil moisture. It is most effective in long-term calculations. Three other indices used to measure drought are the Palmer Hydrologic Drought Index (PHDI), the Crop Moisture Index (CMI), which is derived from the PDSI, and the Keetch-Byram Drought Index (KBDI), created by John Keetch and George Byram in 1968 for the U.S. Forest Service. The KBDI is used mainly for predicting the likelihood of wildfire outbreaks. As a compromise, PDSI is used most often for droughts since it is a medium-response drought indicator. The objective of the PDSI is to provide measurements of moisture conditions that are standardized so that comparisons using the index can be made between locations and between months. The tables on the next page display the range and Palmer classifications of the PDSI index, and the United States Drought Monitor Intensity scale.

Table 2-21: Palmer Drought Severity Index Classification and Range.

Range	Palmer Classification
4.0 or more	Extremely Wet
3.0 to 3.99	Very Wet
2.0 to 2.99	Moderately Wet
1.0 to 1.99	Slightly Wet
0.5 to 0.99	Incipient Wet Spell
0.49 to -0.49	Near Normal
-0.5 to -0.99	Incipient Dry Spell
-1.0 to -1.99	Mild Drought
-2.0 to -2.99	Moderate Drought
-3.0 to -3.99	Severe Drought
-4.0 or less	Extreme Drought

Table 2-22: U.S. Drought Monitor Drought Intensity Scale.
(Source: National Drought Mitigation Center)

Range/Category	Description	PDSI Equivalent
D0	Abnormally Dry	-1.0 to -1.99
D1	Moderate Drought	-2.0 to -2.99
D2	Severe Drought	-3.0 to -3.99
D3	Extreme Drought	-4.0 to -4.99
D4	Exceptional Drought	-5.0 or less

The following figure displays the drought conditions in the state of Louisiana. Data compiled by the National Drought Mitigation Center indicates exceptional drought conditions exist in the parish at the time this plan went to publication.

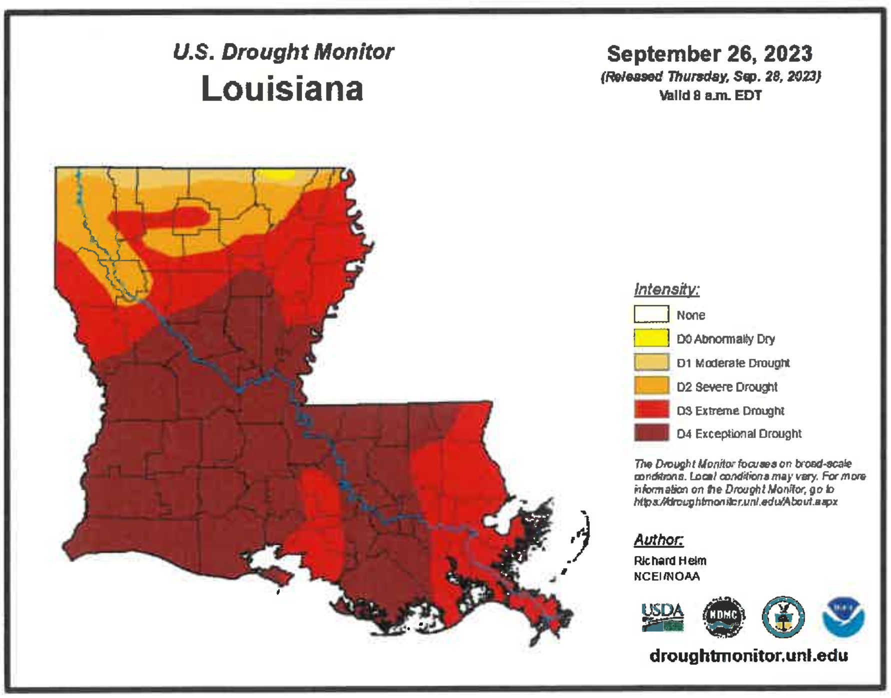


Figure 2-10: United States Drought Monitor for the State of Louisiana and its Parishes.
(Source: The National Drought Mitigation Center)

Risk Assessment

Geographic Extent

Drought typically impacts a region and not one specific parish or jurisdiction. While the entire planning area can experience drought, the major impact of a drought occurrence in the parish is on the agricultural community. However, droughts do have the potential to reduce the stability of soil leading to shifting structures and damage to foundations. The worst-case drought scenario for the parish and the jurisdictions of the parish would be a exceptional drought (D4).

Previous Occurrences

The parish experienced three drought occurrences between the years 1996 and 2022. Since the last update in 2016, there have been no drought occurrences within the boundaries of the parish.

Probability

The annual return rate (frequency) for periods of drought in the parish is 0.11 (11% annual probability) or approximately 1 drought occurrence every 9 years.

Climate Change Impacts

Climate change is expected to increase the number and intensity of droughts in the state of Louisiana. Drought can be caused by both a reduction in precipitation, as well as by heat that results in increased evaporation. Changes in temperature and types of precipitation in the state of Louisiana will affect drought characteristics. An increase in rain and a decrease in winter weather events with increased temperatures will cause peak streamflow to occur earlier in the year. This change in the hydrologic cycle will have significant impacts on natural systems in Louisiana including the intensity, duration, and frequency of droughts.

Vulnerability Analysis

The NRI includes data on the expected annual losses to individual natural hazards, historical losses, and overall risk at the county and Census tract level. The following table provides an overview of each category at the county level for drought.

Table 2-23: National Risk Index (NRI) Summarization of Drought Occurrences for the Parish.
(Source: National Risk Index)

Expected Annual Losses	Overall Risk Rating
Very Low	Very Low

Estimated Impact and Potential Loss

The parish and the jurisdictions of the parish are vulnerable to drought by means of soil desiccation (drying out), which causes foundation damage to structures as well as buckling of roads. However, the main impact of a drought occurrence is on the agricultural community. The table on the next page presents an analysis of agricultural exposure that is susceptible to drought by major crop type for the parish.

Table 2-24: Agricultural Exposure by Crop Type for Droughts in the Parish.
(Source: LSU Ag Center 2020 Parish Totals)

Agricultural Exposure by Type for Drought			
Cotton	Forestry	Hay	Soybeans
$3,199,572	$6,444,982	$6,851,702	$6,315,153

Vulnerable Population

As mentioned previously, the main impact of drought is on the agricultural community and certain infrastructure. There is no direct impact on the populace of the parish. There have been no reported deaths or injuries as a result of drought within the parish and the jurisdictions of the parish.

Vulnerability Score

Table 2-25: Drought Vulnerability Score for the Parish.

Drought Vulnerability Score						
	Probability	Impact	Spatial Extent	Warning Time	Duration	Risk Factor
Risk Level	3	2	4	2	3	2.8

Excessive Heat

Profile

There is no operational definition for defining heat or a heat wave. Heat waves are the consequence of the same weather pattern as drought, and therefore both hazards often occur concurrently. A heat wave is an extended period of oppressive and above normal temperatures over a given period of time. The World Meteorological Organization recommends the declaration of a heat wave when the daily maximum temperature exceeds the average maximum temperatures by 9 °F and lasts for a period of at least five days.

However, temperature alone is insufficient to describe the stress placed on humans (as well as flora and fauna) in hot weather. It is crucial to consider the effect of relative humidity since it is essential to the body's ability to perspire and cool. Once air temperature reaches 95 °F, perspiration becomes a very significant biophysical mechanism to ensure heat loss. Perspiration is ineffective as a cooling mechanism if the water cannot evaporate (i.e., sweating in high relative humidity is reduced as compared to during dry conditions). To communicate this relationship between temperature and humidity, the National Weather Service (NWS) developed the Heat Index (HI), which provides a warning system based on a combination of air temperature and relative humidity. The HI is presented in the following tables. The NWS devised the index for shady, light wind conditions, and thus advises that the HI value can be increased by as much as 15 °F if a person is in direct sunlight with strong, hot winds present.

Most heat disorders (e.g., sunburn, heat cramps, heat exhaustion, and heat stroke) occur because the victim has been overexposed to heat, or has over-exercised in relation to their age and physical condition. Other circumstances that can induce heat-related illnesses include stagnant atmospheric conditions and poor air quality. Seniors and children are most at risk from adverse heat effects. Extreme heat can also damage roads, bridges, pipelines, utilities, and railroads. High temperatures can be partially responsible for deflection of rails and related railroad accidents.

According to NOAA, extreme heat is the leading weather-related cause of death in the United States. And while heat-related deaths in Louisiana are not common, due in part to the consistency and predictability of high seasonal temperatures, they do occur and are still very intense and dangerous. Such deaths happen in a variety of circumstances, often in ways that are not easily categorized due to their unexpectedness. For instance, although exposure to heat is higher at the beach than usual, NOAA does not track heat-related deaths there because such deaths happen infrequently.

Table 2-26: Summary of Heat Index Risk Levels with Protective Measures.
(Source: National Weather Service)

Heat Index	Risk Level	Protective Measures
Less than 91°F	Lower (Caution)	Basic heat safety and planning.
91°F to 103°F	Moderate	Implement precautions and heighten awareness.
103°F to 115°F	High	Additional precautions to protect workers
Greater than 115°F	Very High to Extreme	Triggers even more aggressive protective measures.

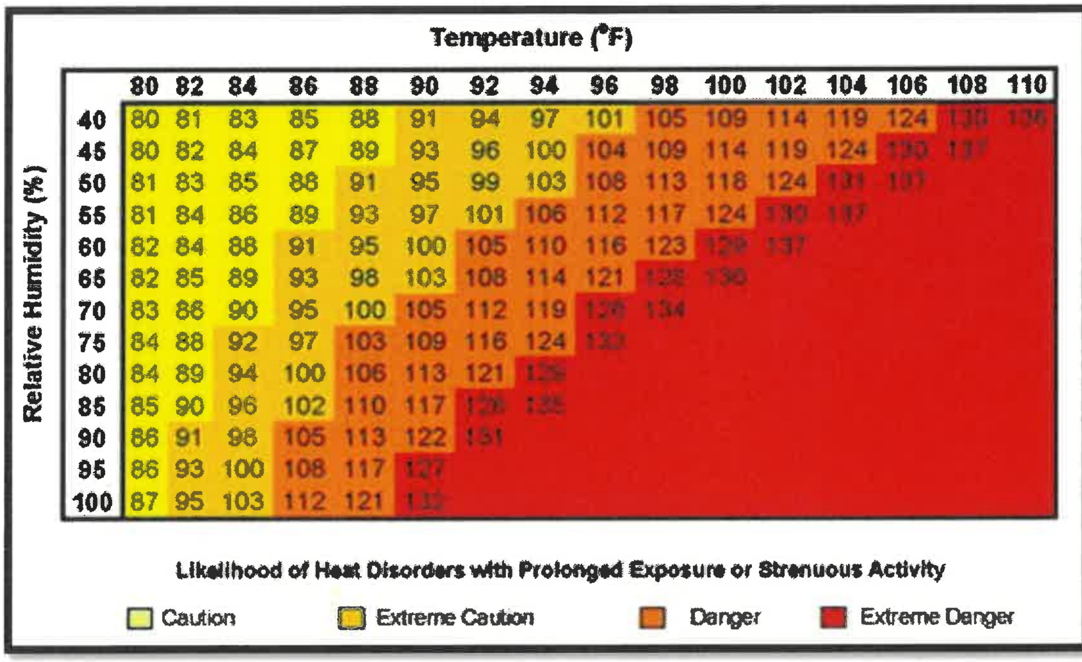


Figure 2-11: Heat Index Advisor based on Air Temperature (°F) and Relative Humidity. (Source: National Weather Service)

Risk Assessment

Geographic Extent

Extreme heat typically impacts a region and not one specific parish or jurisdiction. Because extreme heat is a climatological based hazard, it has the same probability of occurring in the parish as all of the adjacent parishes. The entire planning area of the parish is equally at risk for extreme heat. Based on historical data, the worst-case scenario for the parish involving extreme heat would be a high-risk level on the HI scale with temperatures ranging from 103°F to 115°F.

Previous Occurrences

The parish experienced no significant extreme heat occurrences between the years 1996 and 2022 per the NCEI Storm Events Database.

Probability

The annual return rate (frequency) for extreme heat occurrences in the parish is less than 0.01 (< 1% annual probability) or approximately 1 extreme heat event every 27 years.

Climate Change Impacts

Climate change has caused a rise in extreme heat events within Allen Parish and its jurisdictions, especially in urban areas that experience higher temperatures due to the urban heat island effect. Cities in Louisiana are experiencing, at a minimum, two more weeks of extreme heat (days over 95° F) than compared to 50 years ago. With the rise in extreme heat events, there will be several environmental and economic implications within the state of Louisiana including the disruption of the natural system such as agriculture, forestry, fishing, mining, manufacturing, transportation, and utilities.

Climate change is driving a relentless escalation in extreme heat events, reshaping the very fabric of our environment. Rising greenhouse gas emissions are enhancing the greenhouse effect, trapping heat within the atmosphere. Consequently, extreme heat occurrences have become more frequent, intense, and prolonged. Heatwaves, once sporadic, have transformed into enduring episodes, subjecting regions to temperatures that push the boundaries of historical records. Urban areas, already prone to heat island effects due to concrete and asphalt, are rendered even more stifling. These elevated temperatures pose an array of challenges to ecosystems, agriculture, infrastructure, and human health. Vulnerable populations bear the brunt, as their reduced capacity to adapt heightens the risks of heat-related illnesses, mortality, and displacement. In addition, elevated heat negatively impacts economies, straining energy demand, reducing worker productivity, and exacerbating health care costs.

Vulnerability Analysis

The NRI includes data on the expected annual losses to individual natural hazards, historical losses, and overall risk at the county and Census tract level. The following table provides an overview of each category at the county level for extreme heat.

Table 2-27: National Risk Index (NRI) Summarization of Excessive Heat Occurrences for the Parish. (Source: National Risk Index)

Expected Annual Losses	Overall Risk Rating
Relatively Low	Relatively Low

Estimated Impact and Potential Loss

Since 1996, there have been nine significant extreme heat events that have resulted in property damages according to NCEI Storm Events Database. The total property damages associated with those events have totaled approximately $5,000. To estimate the potential losses of an extreme heat event on an annual basis, the total damages recorded for these events was divided by the total number of years of available data in the NCEI Storm Events Database (1996 - 2022). This provides an annual estimated potential loss of $185 and $556 per event. The following table provides an estimate of potential property losses for the parish:

Table 2-28: Estimated Annual Losses in the Parish and its Jurisdictions Resulting from Excessive Heat.

Estimated Annual Potential Losses from Excessive Heat					
Unincorporated Allen Parish (52.1%)	Elizabeth (1.8%)	Kinder (9.5%)	Oakdale (29.4%)	Oberlin (6.2%)	Reeves (1.0%)
$104	$4	$19	$59	$12	$2

Vulnerable Population

There have been no reported fatalities or injuries due to excessive heat in the parish. However, excessive heat poses a dire threat to vulnerable populations, magnifying existing disparities and triggering a cascade of health, social, and economic challenges. The elderly, children, low-income individuals, and those with underlying health conditions are particularly susceptible. Their compromised physiological resilience makes them more prone to heat-related illnesses, including life-threatening conditions like heat stroke. Mortality rates surge, disproportionately affecting the elderly, as soaring temperatures strain their already fragile health. Economic strain intensifies for low-income communities, unable to afford proper cooling measures, leading to discomfort and potential productivity losses. Inadequate housing exacerbates the issue, as substandard dwellings lack insulation and ventilation, turning homes into heat traps. Moreover, social isolation heightens vulnerability, as limited social connections hinder access to aid and cooler environments. The lack of resources, clean water, and medical care amplifies risks.

Environmental injustices come to the fore, as marginalized neighborhoods, trapped in urban heat islands, experience even higher temperatures due to scant greenery. This extreme heat can induce migration and displacement, straining resources and instigating social tensions. Utility disruptions during heatwaves further compromise their well-being, and overburdened healthcare systems struggle to cope with the influx of heat-related cases.

Vulnerability Score

Table 2-29: Excessive Heat Vulnerability Score for the Parish.

Excessive Heat Vulnerability Score						
	Probability	Impact	Spatial Extent	Warning Time	Duration	Risk Factor
Risk Level	1	3	4	1	2	**2.25**

Flooding

Profile

A flood is the overflow of water onto land that is usually not inundated. The National Flood Insurance Program defines a flood as:

> A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from overflow of inland or tidal waves, unusual and rapid accumulation or runoff of surface waters from any source, mudflow, or collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above.

Factors influencing the type and severity of flooding include natural variables such as precipitation, topography, vegetation, soil texture, and seasonality, as well as anthropogenic factors such as urbanization (extent of impervious surfaces), land use (agricultural and forestry tend to remove native vegetation and accelerate soil erosion), and the presence of flood-control structures such as levees and dams.

Extreme precipitation, produced from mid-latitude cyclones, thunderstorms, or hurricanes, is often the major initiating condition for flooding. During the cooler months, slow-moving frontal weather systems produce heavy rainfalls, while the summer and autumn seasons produce major precipitation in isolated thunderstorm occurrences (often on warm afternoons) that may lead to localized flooding. During these warmer seasons, floods are overwhelmingly of the flash flood variety, as opposed to the slower-developing river floods caused by heavy stream flow during the cooler months. Six specific types of flooding are of main concern: riverine, flash, ponding, backwater, urban, and coastal.

- **Riverine flooding** occurs along a river or smaller stream. It is the result of runoff from heavy rainfall or intensive snow or ice melt. The speed with which riverine flood levels rise and fall depends not only on the amount of rainfall, but even more on the capacity of the river itself, as well as the shape and land cover of its drainage basin. The smaller the river, the faster that water levels rise and fall. For example, the Mississippi River levels rise and fall slowly due to its large capacity. Generally, elongated and intensely developed drainage basins will reach faster peak discharges and faster falls than circular-shaped and forested basins of the same area.
- **Flash flooding** occurs when locally intense precipitation inundates an area in a short amount of time, resulting in local stream flow and drainage capacity being overwhelmed.
- **Ponding** occurs when concave areas (e.g., parking lots, roads, and clay-lined natural low areas) collect water and are unable to drain.
- **Backwater flooding** occurs when water slowly rises from a normally unexpected direction where protection has not been provided.
- **Urban flooding** is similar to flash flooding but is specific to urbanized areas. It takes place when storm water drainage systems cannot keep pace with heavy precipitation, and water accumulates on the surface. Most urban flooding is caused by slow-moving thunderstorms or torrential rainfall.
- **Coastal flooding** can appear similar to any of the other flood types, depending on its cause. It occurs when normally dry coastal land is flooded by seawater, but may be caused by direct inundation (wen the sea level exceeds the elevation of the land), overtopping of a natural or artificial barrier, or the breaching of a natural or artificial barrier (i.e., when the barrier is broken down by the sea water). Coastal flooding is typically caused by storm surge, tsunamis, or gradual sea level rise.

Based on stream gauge levels and precipitation forecasts, the NWS posts flood statements, watches, and warnings. The NWS issues the following weather statements with regard to flooding:

- Flood Categories
  - Minor Flooding: Minimal or no property damage, but possibly some public threat.
  - Moderate Flooding: Some inundation of structures and roads near streams. Some evacuations of people and/or transfer of property to higher elevations.
  - Major Flooding: Extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations.
  - Record Flooding: Flooding which equals or exceeds the highest stage or discharge at a given site during the period of record keeping.
- Flood Warning
  - Issued along larger streams when there is a serious threat to life or property.
- Flood Watch
  - Issued when current and developing hydrometeorological conditions are such that there is a threat of flooding, but the occurrence is neither certain nor imminent.

Floods are measured mainly by probability of occurrence. A 10-year flood occurrence, for example, is an occurrence of small magnitude (in terms of stream flow or precipitation) but with a relatively high annual probability of recurrence (10%). A 100-year flood occurrence is larger in magnitude, but it has a smaller chance of recurrence (1%). A 500-year flood is significantly larger than both a 100-year occurrence and a 10-year occurrence, but it has a lower probability than both to occur in any given year (0.2%). It is important to understand that an X-year flood occurrence does not mean an occurrence of that magnitude occurs only once in X years. Instead, it means that on average, we can expect a flood occurrence of that magnitude to occur once every X years. Given that such statistical probability terms are inherently difficult for the general population to understand, the Association of State Floodplain Managers (ASFPM) promotes the use of more tangible expressions of flood probability. As such, the ASFPM also expresses the 100-year flood occurrence as having a 25% chance of occurring over the life of a 30-year mortgage.

The 100-year flood occurrence is of particular significance since it is the regulatory standard that determines the obligation (or lack thereof) to purchase flood insurance. Flood insurance premiums are set depending on the flood zone, as modeled by National Flood Insurance Program (NFIP) Rate Maps. The NFIP and FEMA suggest insurance rates based on Special Flood Hazard Areas (SFHAs), as diagrammed in the figure on the next page.

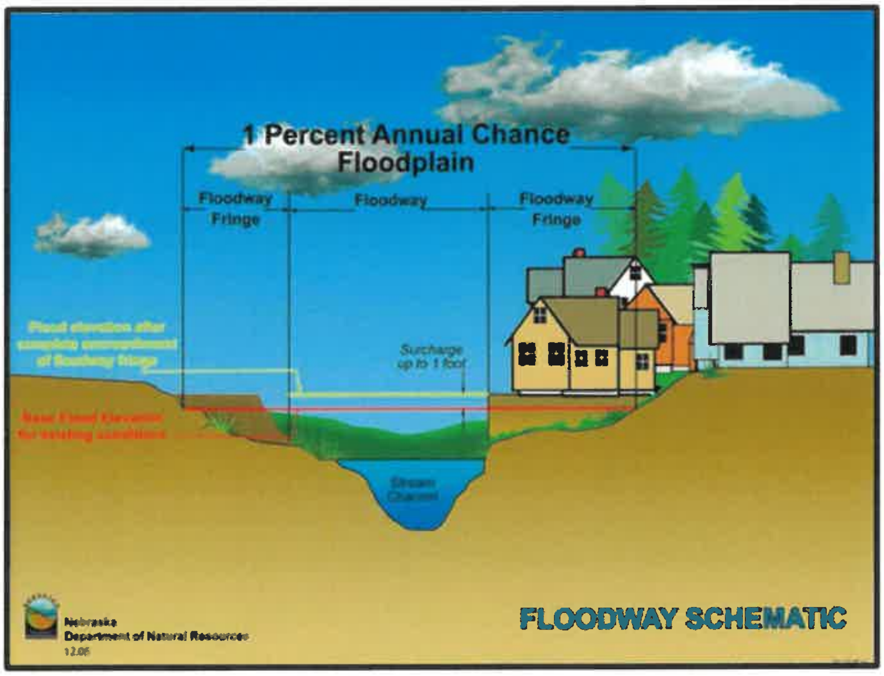


Figure 2-12: Schematic of 100-Year Floodplain.
The Special Flood Hazard Area (SFHA) extends to the end of the floodway fringe.
(Source: Nebraska Department of Natural Resources)

A SFHA is the land area covered by the floodwaters of the base flood (red line in the above figure), where the NFIP's floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies. Flood zones for the parish are shown in the following figures.

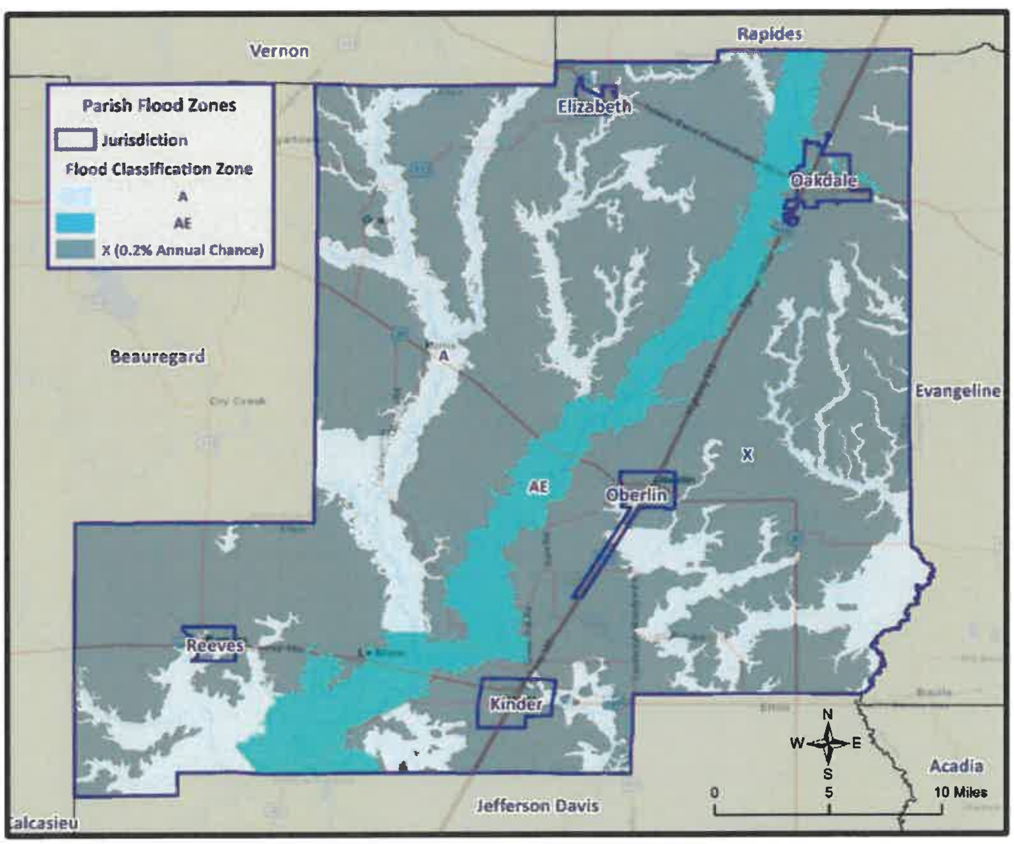


Figure 2-13: Parish Areas within the Flood Zones.

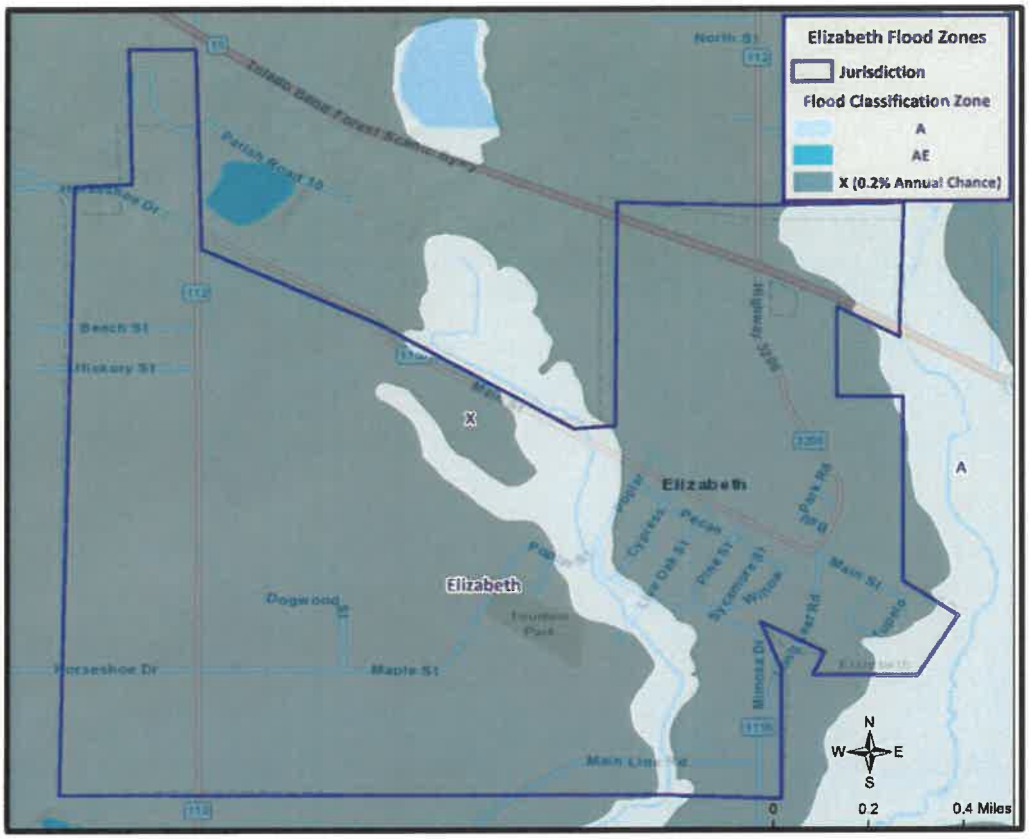


Figure 2-14: Elizabeth Areas within the Flood Zones.

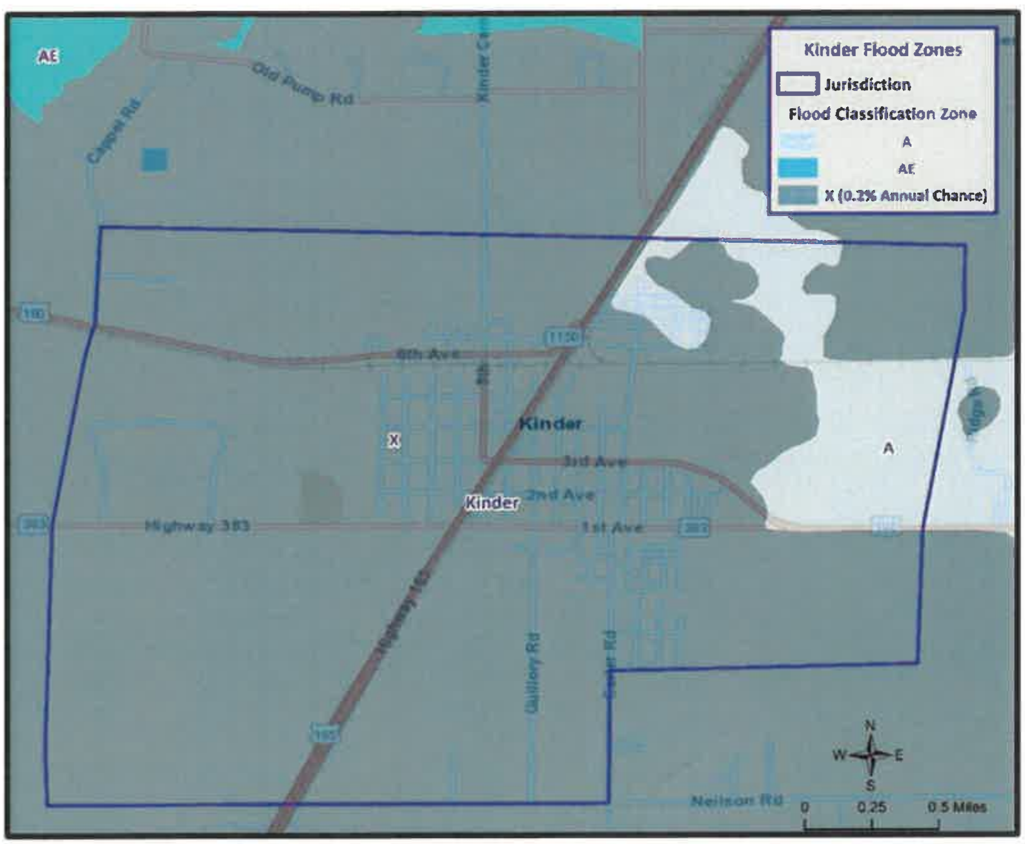


Figure 2-15: Kinder Areas within the Flood Zones.

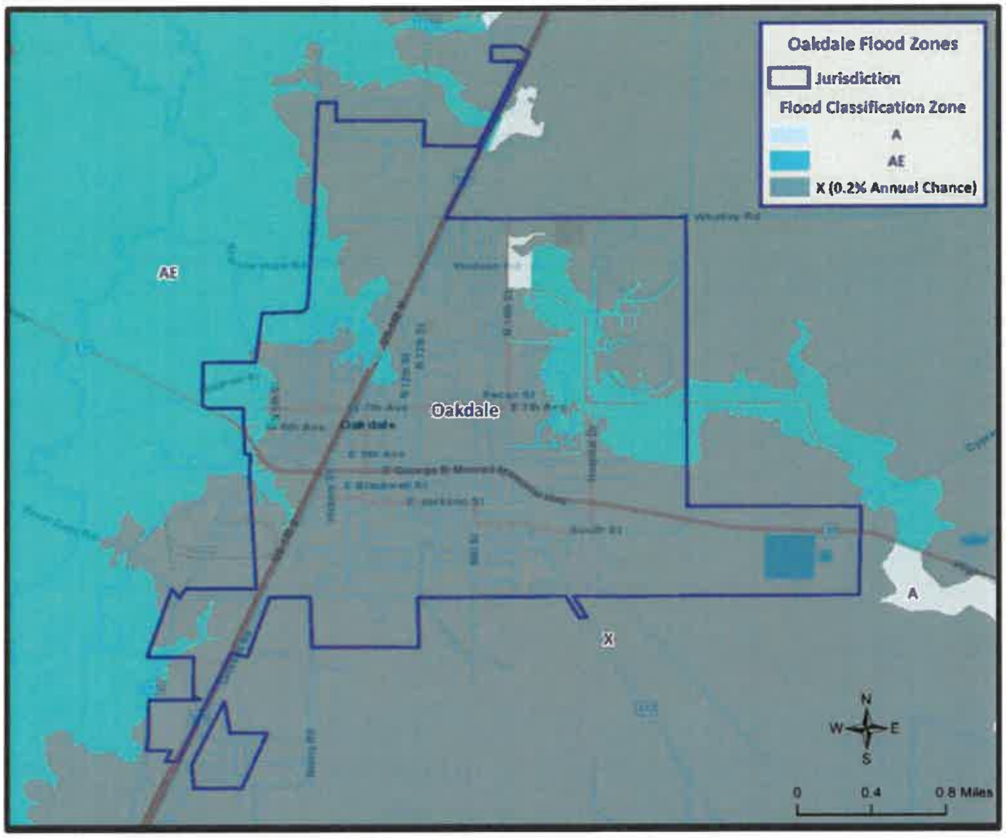


Figure 2-16: Oakdale Areas within the Flood Zones.

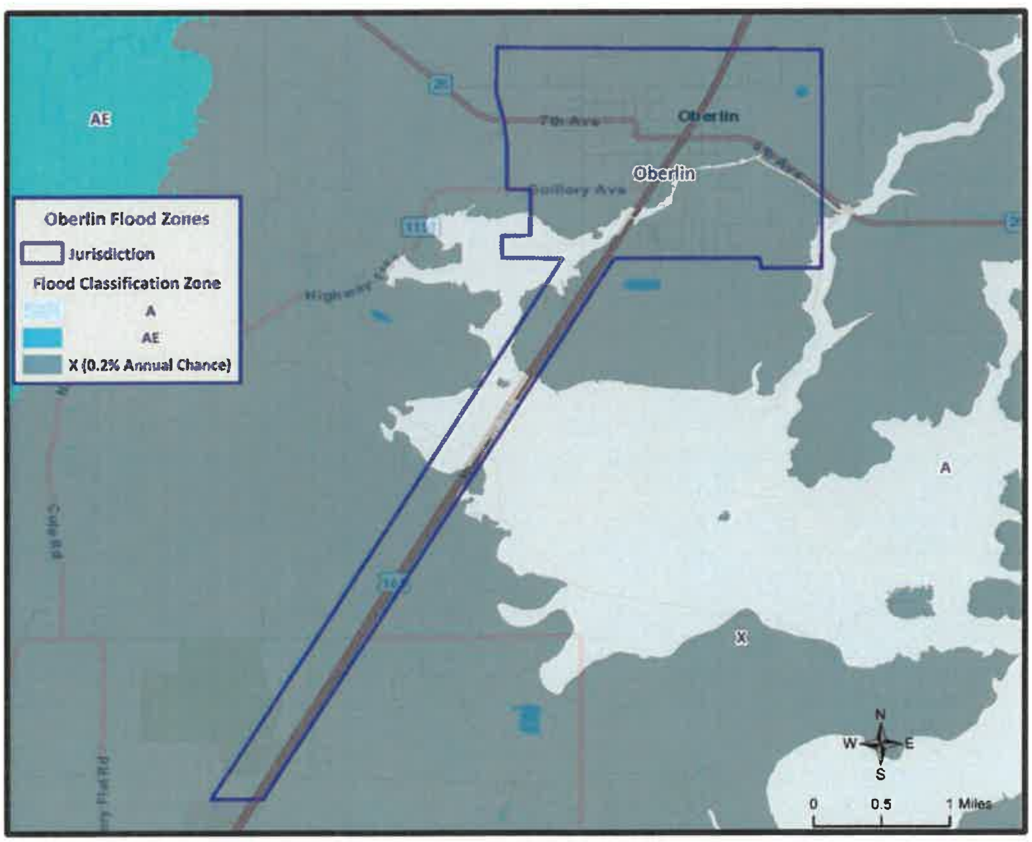


Figure 2-17: Oberlin Areas within the Flood Zones.

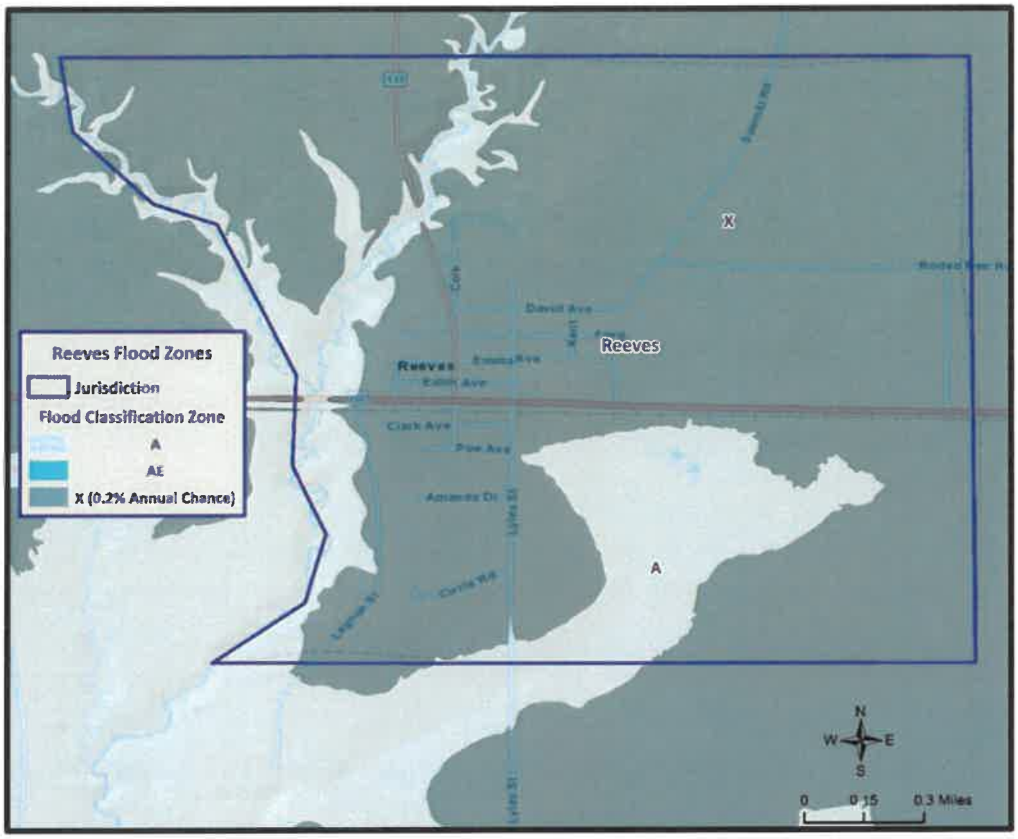


Figure 2-18: Reeves Areas within the Flood Zones.

Property Damage

The depth and velocity of flood waters are the major variables in determining property damage. Flood velocity is important because the faster water moves, the more pressure it puts on a structure and the more it will erode stream banks and scour the earth around a building's foundation. In some situations, deep and fast-moving waters can push a building off its foundation. Structural damage can also be caused by the weight of standing water (hydrostatic pressure).

Another threat to property from a flood is called "soaking". When soaked, many materials change their composition or shape. Wet wood will swell, and if dried too quickly, will crack, split, or warp. Plywood can come apart and gypsum wallboard can deteriorate if it is bumped before it has time to completely dry. The longer these materials are saturated, the more moisture, sediment, and pollutants they absorb.

Soaking can also cause extensive damage to household goods. Wooden furniture may become warped, making it unusable, while other furnishings such as books, carpeting, mattresses, and upholstery usually are not salvageable. Electrical appliances and gasoline engines will flood, making them worthless until they are professionally dried and cleaned.

Many buildings that have succumbed to flood waters may look sound and unharmed after a flood, but water has the potential to cause severe property damage. Any structure that experiences a flood should be stripped, cleaned, and allowed to dry before being reconstructed. This can be an extremely expensive and time-consuming effort.

Repetitive Loss Properties

Repetitive loss structures are structures covered by a contract for flood insurance made available under the NFIP that:

a. Have incurred flood-related damage on two occasions, in which the cost of the repair, on average, equaled or exceeded 25 percent of the market value of the structure at the time of each such flood event; and
b. At the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage.

Severe repetitive loss (SRL) is defined by the Flood Insurance Reform Act of 2004 and updated in the Biggert-Waters Flood Insurance Reform Act of 2012. For a property to be designated SRL, the following criteria must be met:

a. It is covered under a contract for flood insurance made available under the NFIP; and
b. It has incurred flood related damage –
   1) For which four or more separate claims payments have been made under flood insurance coverage with the amount of each claim exceeding $5,000 and with the cumulative amount of such claim's payments exceeding $20,000; or
   2) For which at least two separate claims payments have been made under such coverage, with the cumulative amount of such claims exceeding the market value of the insured structure.

Figures regarding repetitive loss structures for the parish are provided in the table below:

Table 2-30: Repetitive Loss Structures for the Parish.

Jurisdiction	Number of Structures	Residential	Commercial	Government	Total Claims	Total Claims Paid	Average Claim Paid
Unincorporated Allen Parish	13	13	0	0	47	$717,264	$15,261
Elizabeth	0	0	0	0	0	$0	$0
Kinder	2	2	0	0	7	$165,220	$23,603
Oakdale	24	22	2	0	89	$1,783,080	$20,035
Oberlin	0	0	0	0	0	$0	$0
Reeves	6	6	0	0	14	$248,055	$17,718
TOTAL	**45**	**43**	**2**	**0**	**157**	**$2,913,619**	**$18,558**

All 45 repetitive loss structures were geocoded in order to provide an overview of where the repetitive loss structures are located throughout the parish. The figures on the next page show the approximate locations of the structures and where the highest concentration of repetitive loss structures is located. Through the repetitive loss maps, it is clear the primary concentration of repetitive loss structures is focused in and around the incorporated area of Oakdale.

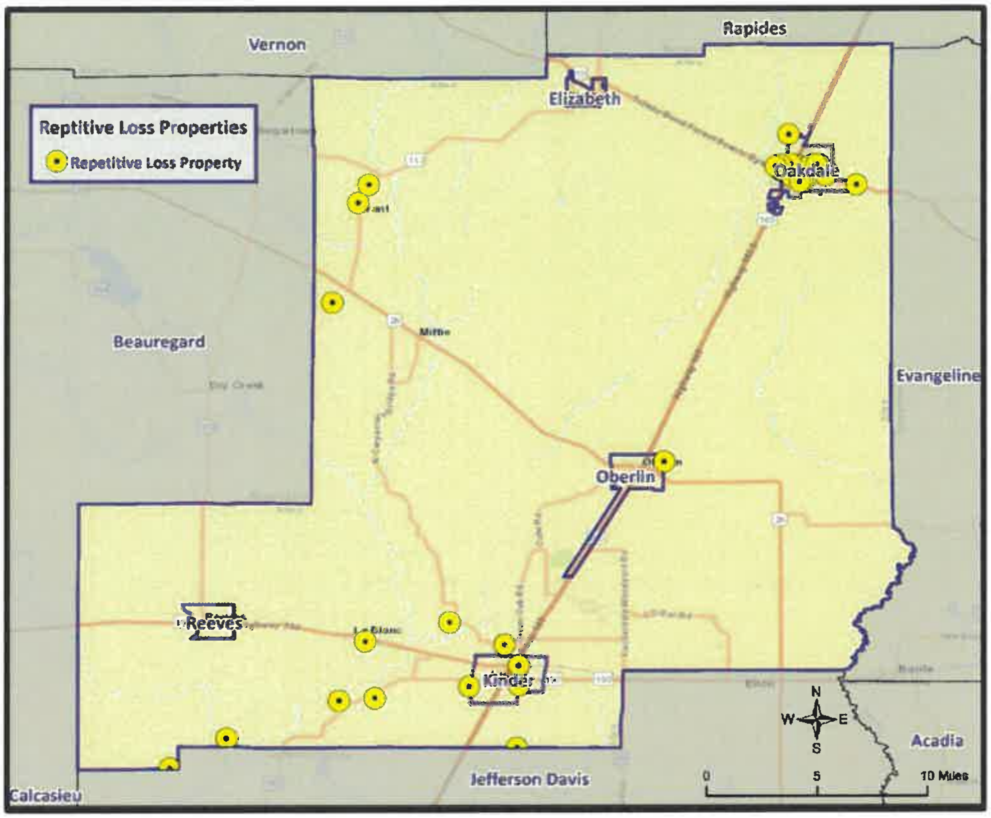


Figure 2-19: Repetitive Loss Properties in the Parish.

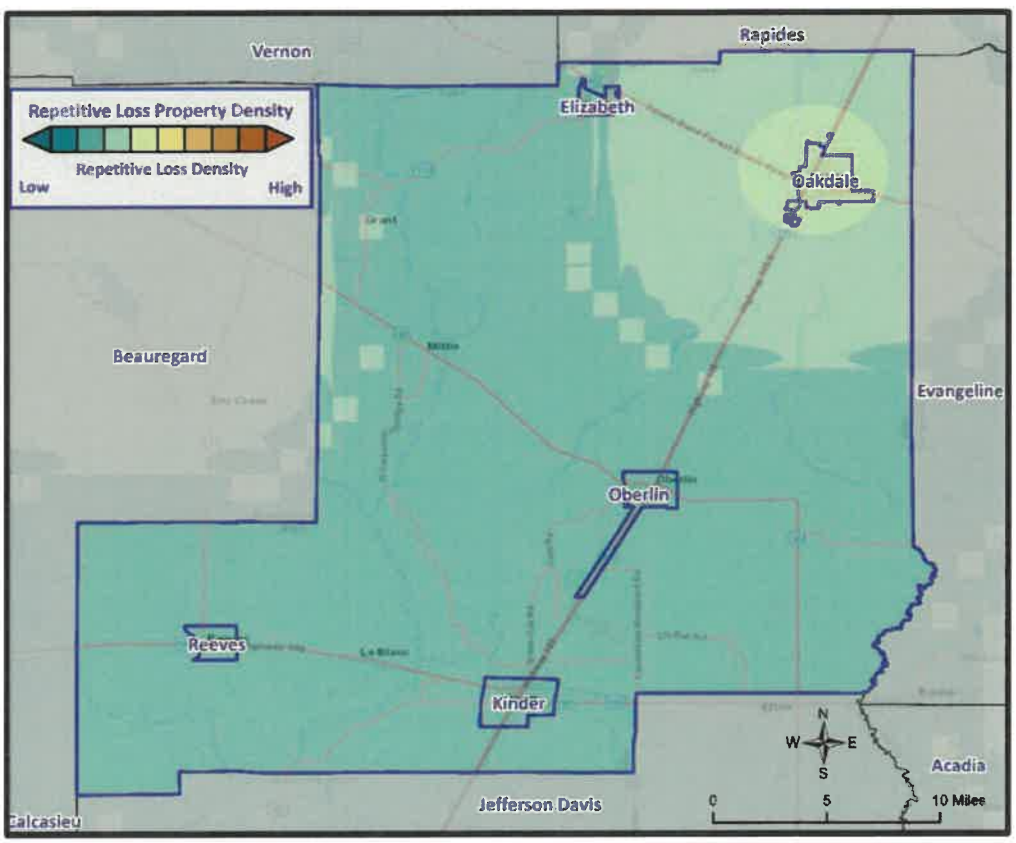


Figure 2-20: Repetitive Loss Property Densities in the Parish.

National Flood Insurance Program

Flood insurance statistics indicate that the Parish has 354 flood insurance policies with the NFIP, with total annual premiums of $242,937. The parish and the jurisdictions of Elizabeth, Kinder, Oakdale, Oberlin, and Reeves are all participants in the NFIP. The parish and all of its jurisdictions will continue to adopt and enforce floodplain management requirements, including regulating new construction Special Flood Hazard Areas, making substantial improvement and/or damage determinations, or determining the necessary permits required of owners to bring a substantially improved/damaged structure back into compliance. The parish will continue to monitor activities including local requests for new map updates. Flood insurance statistics and additional NFIP participation details for the parish and its jurisdictions is provided in the tables to follow.

Table 2-31: Summary of NFIP Policies for the Parish.

Location	No. of Insured Structures	Total Insurance Coverage Value	Annual Premiums Paid	No. of Insurance Claims Filed Since 1978	Total Loss Payments
Unincorporated Allen Parish	193	$36,283,100	$118,053	105	$1,370,305
Elizabeth	3	$228,000	$2,142	0	$0
Kinder	36	$9,388,000	$20,741	37	$656,193
Oakdale	95	$18,193,300	$83,390	230	$4,471,488
Oberlin	26	$8,755,000	$18,044	26	$638,807
Reeves	1	$350,000	$567	0	$0
Total	**354**	**$73,197,400**	**$242,937**	**398**	**$7,136,793**

Table 2-32: Summary of Community Flood Maps for the Parish.

CID	Community Name	Initial FHBM Identified	Initial FIRM Identified	Adopted Date	Current Effective Map Date	Date Joined the NFIP	Tribal
220009#	Allen Parish	6/7/1977	1/3/1990	3/17/2011	3/17/2011	1/3/1990	No
220324#	Elizabeth	7/25/1975	2/1/1987	3/17/2011	3/17/2011	2/1/1987	No
220010#	Kinder	4/5/1974	11/1/1985	3/17/2011	3/17/2011	11/1/1985	No
220011#	Oakdale	11/28/1973	8/5/1985	3/17/2011	3/17/2011	8/5/1985	No
220012#	Oberlin	6/21/1974	10/12/1982	3/17/2011	3/17/2011	10/12/1982	No
220307#	Reeves	8/15/1975	3/17/2011	3/17/2011	3/17/2011	3/17/2011	No

According to the Community Rating System (CRS) list of eligible communities, neither Allen Parish nor its jurisdictions participate in the CRS program.

Threat to People

Just as with property damage, depth and velocity are major factors in determining the threat posed to people by flooding. It takes very little depth or velocity for flood waters to become dangerous. A car will float in less than two feet of moving water, and can be swept downstream into deeper waters, trapping passengers within the vehicle. Victims of floods have often put themselves in perilous situations by entering flood waters that they believe to be safe, or by ignoring travel advisories.

Major health concerns are also associated with floods. Flood waters can transport materials such as dirt, oil, animal waste, and chemicals (e.g., farm, lawn, and industrial) that may cause illnesses of various degrees when coming in contact with humans. Flood water can also infiltrate sewer lines and inundate wastewater treatment plants, causing sewage to back up and creating a breeding ground for dangerous bacteria. This infiltration may also cause water supplies to become contaminated and undrinkable.

Elevations in the Parish

The digital elevation model (DEM) for the parish is instructive in visualizing where the low-lying and high-risk areas are for the parish. Elevations in the parish range from near sea level to over 180 feet (NAVD88). The highest elevations in the parish are over 180 feet (NAVD88), located in the northern portions of the parish. The incorporated areas range in elevation from 46 feet (NAVD88) to 144 feet (NAVD88), Kinder averaging 46 feet (NAVD88), Reeves averaging 56 feet (NAVD88), Oberlin averaging 69 feet (NAVD88), Oakdale averaging 112 feet (NAVD88), and Elizabeth averaging 144 feet (NAVD88).

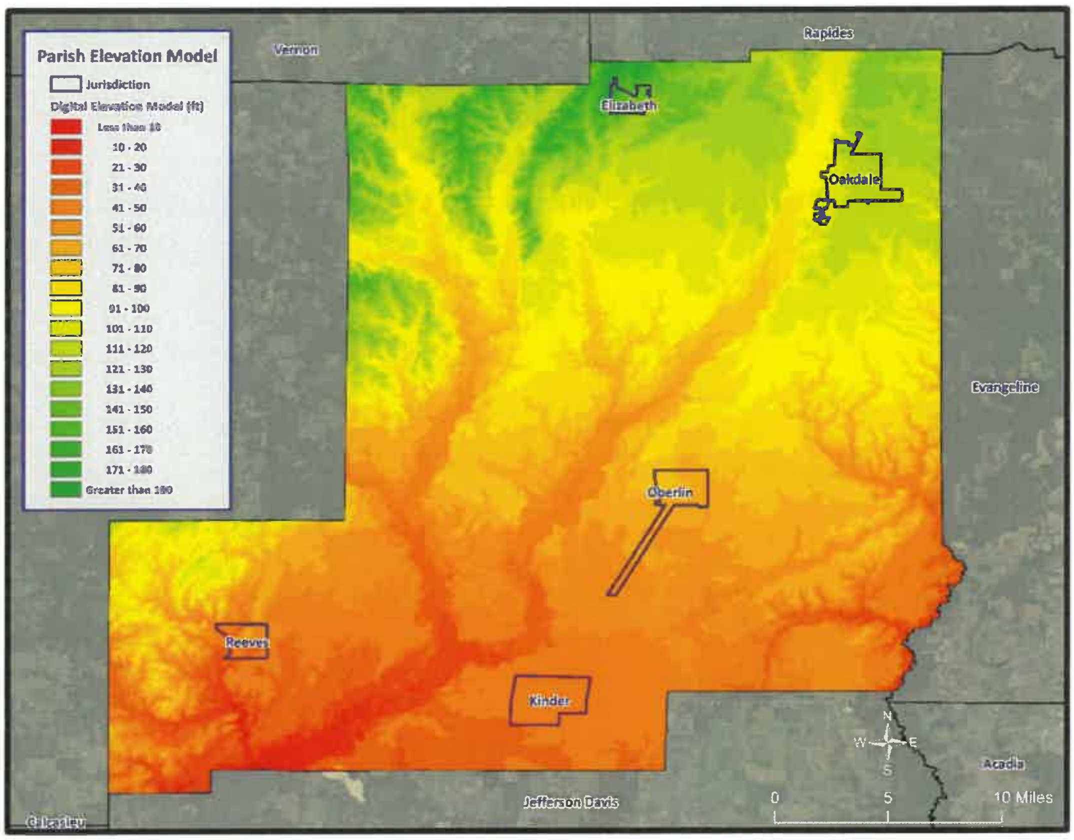


Figure 2-21: Elevation throughout the Parish.

Risk Assessment

Geographic Extent

The parish has experienced significant flooding in its history and can expect more in the future. Floods have been a cause of past disaster declarations and will likely be the cause of many future hazard events that require assistance.

The worst-case scenarios are based on several different types of flooding events. Storm water excesses and riverine flooding primarily affect the low-lying areas of the parish, and flood depths of up to six feet can be expected in the unincorporated areas of the parish and in the incorporated areas of Oakdale and

Kinder. The incorporated areas of Elizabeth, Oberlin, and Reeves can expect flood depths of one to three feet.

Previous Occurrences

The parish experienced 16 flooding occurrences between the years 1996 and 2022. Since the last update in 2018, there have been four flood occurrences within the boundaries of the parish.

Table 2-33: Historical Flooding Events in the Parish since the 2018 Update.

Date	Area	Type of Flood	Property Damage	Fatalities	Injuries
4/30/2017	KINDER	Flash Flood	$250,000	0	0
6/6/2019	KINDER	Flash Flood	$0	0	0
7/14/2019	PAWNEE	Flash Flood	$500,000	0	0
7/30/2019	ELIZABETH	Flash Flood	$0	0	0

Probability

The annual return rate (frequency) for periods of flooding in the parish is 0.59 (59% annual probability) or approximately 1 flood event every 1 to 2 years. The table below shows the probability and return frequency for each jurisdiction in the parish.

Table 2-34: Annual Flood Probabilities for Each Jurisdiction in the Parish.

Jurisdiction	Annual Probability	Return Frequency
Unincorporated Allen Parish	7%	1 event every 13 to 14 years
Elizabeth	4%	1 event every 27 years
Kinder	19%	1 event every 5 to 6 years
Oakdale	22%	1 event every 4 to 5 years
Oberlin	< 1%	1 event approximately every 27 years
Reeves	< 1%	1 event approximately every 27 years

Climate Change Impacts

Atmospheric moisture, precipitation, and atmospheric circulation can be affected by climate change, since radiative forcing alters heating which affects evaporation and sensible heating at the Earth's surface. This process alters the amount, frequency, intensity, duration, and type of precipitation which is part of the hydrological cycle. The Intergovernmental Panel on Climate Change reports that over 105-year period (1901 – 2005) precipitation has increased 5 to 10%. Additionally, water resource managers observed the following:

- Historical hydrological patterns can no longer be solely relied upon to forecast the water future.
- Precipitation and runoff patterns are changing, increasing the uncertainty for water supply quality, flood management, and ecosystem functions.
- Extreme climatic events will become more frequent, necessitating improvement in flood protection and emergency response.

Climate change poses significant threats to both infrastructure and vulnerable populations in the context of flooding. Rising global temperatures have led to the intensification of extreme weather events, such as heavy rainfall and storms, which increase the frequency and severity of floods. Infrastructure, such as roads, bridges, and buildings, designed to withstand historical weather patterns, is now facing greater stress and damage due to the increased volume and intensity of floodwaters.

One of the most pressing impacts of climate change on infrastructure is the increased risk of damage and disruption to critical lifeline systems, such as water supply networks, energy grids, and transportation systems. Floods can compromise the integrity of these systems, leading to widespread power outages, disrupted water access, and road closures, hindering emergency response and recovery efforts. As floods become more frequent and severe, the cost of repairing and reinforcing infrastructure becomes a significant burden on governments and communities.

Furthermore, climate change disproportionately affects vulnerable populations, including low-income communities, the elderly, and those with limited mobility or access to resources. These communities often reside in flood-prone areas with inadequate infrastructure and limited capacity to adapt to changing conditions. Floods can exacerbate existing social inequalities, displacing vulnerable populations and exposing them to health risks, property loss, and economic hardship. Lack of access to timely information and limited evacuation resources can further endanger their lives during extreme flooding events.

Additionally, climate change can disrupt local economies in flood-affected regions. Agricultural lands can be damaged, leading to reduced crop yields and affecting livelihoods. Businesses, particularly those without insurance or financial resilience, may face bankruptcy due to flood-related losses. The overall economic impacts ripple beyond immediate flood-affected regions, affecting supply chains and markets globally.

Addressing the impacts of climate change on infrastructure and vulnerable populations requires a comprehensive approach. Building more resilient infrastructure, incorporating climate adaptation measures, and enforcing zoning regulations to prevent development in flood-prone areas are essential steps. Additionally, governments must prioritize support and resources for vulnerable communities, providing them with better access to early warning systems, evacuation plans, and social safety nets to cope with flood-related challenges. Long-term climate change mitigation efforts are also necessary to reduce the severity and frequency of floods, ultimately safeguarding both infrastructure and vulnerable populations from the detrimental effects of flooding.

Vulnerability Analysis

The NRI includes data on the expected annual losses to individual natural hazards, historical losses, and overall risk at the county and Census tract level. The following table provides an overview of each category at the county level for flooding.

Table 2-35: National Risk Index (NRI) Summarization of Riverine Flood Occurrences for the Parish. (Source: National Risk Index)

Expected Annual Losses	Overall Risk Rating
Relatively Low	Relatively Low

Estimated Impact and Potential Loss

Using the Hazus Flood Model, the 100-year flood scenario was analyzed to determine losses from this scenario. The following table shows the total economic losses that would result from a 100-year flood occurrence.

Table 2-36: Estimated Losses in Allen Parish from a 100-Year Flood Event.
(Source: Hazus)

Jurisdiction	Estimated Loss
Unincorporated Allen Parish	$27,445,000
Elizabeth	$8,000
Kinder	$156,000
Oakdale	$97,000
Oberlin	$8,876,000
Reeves	$219,000
Total	**$36,801,000**

The Hazus Flood Model also provides a breakdown by jurisdiction for seven primary categories (Hazus occupancy) throughout the parish. The losses for each jurisdiction by sector are listed in the following tables:

Table 2-37: Estimated 100-year Flood Losses for the Parish by Sector.
(Source: Hazus)

Unincorporated Allen Parish	Estimated Total Losses from 100-Year Flood Event
Agricultural	$50,000
Commercial	$1,423,000
Government	$528,000
Industrial	$355,000
Religious / Non-Profit	$2,325,000
Residential	$22,764,000
Schools	$0
Total	**$27,445,000**

Table 2-38: Estimated 100-year Flood Losses for Elizabeth by Sector.
(Source: Hazus)

Elizabeth	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$0
Government	$0
Industrial	$0
Religious / Non-Profit	$0
Residential	$8,000
Schools	$0
Total	**$8,000**

Table 2-39: Estimated 100-year Flood Losses for Kinder by Sector.
(Source: Hazus)

Kinder	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$4,000
Government	$0
Industrial	$0
Religious / Non-Profit	$0
Residential	$152,000
Schools	$0
Total	**$156,000**

Table 2-40: Estimated 100-year Flood Losses for Oakdale by Sector.
(Source: Hazus)

Oakdale	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$0
Government	$0
Industrial	$0
Religious / Non-Profit	$0
Residential	$97,000
Schools	$0
Total	**$97,000**

Table 2-41: Estimated 100-year Flood Losses for Oberlin by Sector.
(Source: Hazus)

Oberlin	Estimated Total Losses from 100-Year Flood Event
Agricultural	$99,000
Commercial	$1,388,000
Government	$17,000
Industrial	$37,000
Religious / Non-Profit	$8,000
Residential	$7,327,000
Schools	$0
Total	**$8,876,000**

Table 2-42: Estimated 100-year Flood Losses for Reeves by Sector.
(Source: Hazus)

Reeves	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$0
Government	$0
Industrial	$0
Religious / Non-Profit	$6,000
Residential	$50,000
Schools	$163,000
Total	**$219,000**

Vulnerable Population

The total population within the parish that is susceptible to a flood hazard is shown in the table below:

Table 2-43: Vulnerable Populations Susceptible to a 100-year Flood Event.
(Source: Hazus)

Number of People Exposed to Flood Hazards			
Location	# in Community	# in Hazard Area	% in Hazard Area
Unincorporated Allen Parish	11,848	3,101	26.2%
Elizabeth	417	4	1.0%
Kinder	2,170	225	10.4%
Oakdale	6,692	18	0.3%
Oberlin	1,402	817	58.3%
Reeves	221	14	6.3%
Total	**22,750**	**4,179**	**18.4%**

The Hazus Flood model was also extrapolated to provide an overview of the vulnerable populations throughout the jurisdictions in the following tables:

Table 2-44: Vulnerable Populations Susceptible to a 100-year Flood Event in the Parish.
(Source: Hazus)

Unincorporated Allen Parish		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	3,101	26.2%
Persons Under 5 Years	201	6.5%
Persons Under 18 Years	509	16.4%
Persons 65 Years and Over	401	12.9%
White	2,219	71.6%
Minority	882	28.5%

Table 2-45: Vulnerable Populations Susceptible to a 100-year Flood Event in Elizabeth. (Source: Hazus)

Elizabeth		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	4	1.0%
Persons Under 5 Years	0	10.3%
Persons Under 18 Years	1	24.6%
Persons 65 Years and Over	0	10.3%
White	4	97.2%
Minority	0	2.8%

Table 2-46: Vulnerable Populations Susceptible to a 100-year Flood Event in Kinder. (Source: Hazus)

Kinder		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	225	10.4%
Persons Under 5 Years	21	9.5%
Persons Under 18 Years	40	17.6%
Persons 65 Years and Over	39	17.2%
White	159	70.6%
Minority	66	29.4%

Table 2-47: Vulnerable Populations Susceptible to a 100-year Flood Event in Oakdale. (Source: Hazus)

Oakdale		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	18	0.3%
Persons Under 5 Years	1	5.2%
Persons Under 18 Years	2	12.8%
Persons 65 Years and Over	2	11.0%
White	11	62.4%
Minority	7	37.6%

Table 2-48: Vulnerable Populations Susceptible to a 100-year Flood Event in Oberlin. (Source: Hazus)

Oberlin		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	817	58.3%
Persons Under 5 Years	50	6.1%
Persons Under 18 Years	149	18.2%
Persons 65 Years and Over	146	17.9%
White	445	54.5%
Minority	372	45.5%

Table 2-49: Vulnerable Populations Susceptible to a 100-year Flood Event in Reeves. (Source: Hazus)

Reeves		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	14	6.3%
Persons Under 5 Years	1	6.5%
Persons Under 18 Years	4	26.3%
Persons 65 Years and Over	1	8.2%
White	13	94.4%
Minority	1	5.6%

Vulnerability Score

Table 2-50: Flood Vulnerability Score for the Parish.

Flood Vulnerability Score						
	Probability	Impact	Spatial Extent	Warning Time	Duration	Risk Factor
Risk Level	3	4	3	4	3	3.4

Thunderstorms (Hail, Lightning, & Thunderstorm Wind)

Overview

The term "thunderstorm" is usually used as a catch-all term for several kinds of storms. Here "thunderstorm" is defined to include any precipitation occurrence in which thunder is heard or lightning is seen. Thunderstorms are often accompanied by heavy rain and strong winds, and occasionally, depending on conditions, by hail or snow. Thunderstorms form when humid air masses are heated, which causes them to become convectively unstable. Consequently, the air masses rise. Upon rising, the air masses' water vapor condenses into liquid water and/or deposits directly into ice when they rise sufficiently to cool to the dew-point temperature.

Thunderstorms are classified into four main types (single-cell, multi-cell, squall line, and supercell) depending on the degree of atmospheric instability, the change in wind speed with height (called wind shear), and the degree to which the storm's internal dynamics are coordinated with those of adjacent storms. There is no such interaction for single-cell thunderstorms, but there is significant interaction with clusters of adjacent thunderstorms in multi-cell thunderstorms, and with a linear "chain" of adjacent storms in squall line thunderstorms. Though supercell storms have no significant interactions with other storms, they have very well-organized and self-sustaining internal dynamics, which allows them to be the longest-lived and most severe of all thunderstorms.

The life of a thunderstorm proceeds through three stages: the developing (or cumulus) stage, the mature stage, and the dissipation stage. During the developing stage, the unstable air mass is lifted as an updraft into the atmosphere. This sudden lift rapidly cools the moisture in the air mass, releasing latent heat as condensation and/or deposition occurs, which warms the surrounding environment, thus making it less dense than the surrounding air. This process intensifies the updraft and creates a localized lateral rush of air from all directions into the area beneath the thunderstorm to feed continued updrafts. At the mature stage, the rising air is accompanied by downdrafts caused by the shear of falling rain (if melted completely), or hail, freezing rain, sleet, or snow (if not melted completely). The dissipation stage is characterized by the dominating presence of the downdraft as the hot surface that gave the updrafts their buoyancy is cooled by precipitation. During the dissipation stage, the moisture in the air mass largely empties out.

The Storm Prediction Center, in conjunction with the National Weather Service (NWS), has the ability to issue advisory messages based on forecasts and observations. The following are the advisory messages that may be issued, along with definitions of each:

- ***Severe Thunderstorm Watch***: Issued to alert people to the possibility of a severe thunderstorm developing in the area. Expected time frame for these storms is three to six hours.
- ***Severe Thunderstorm Warning***: Issued when severe thunderstorms are imminent. This warning is highly localized and covers parts of one to several counties (parishes).

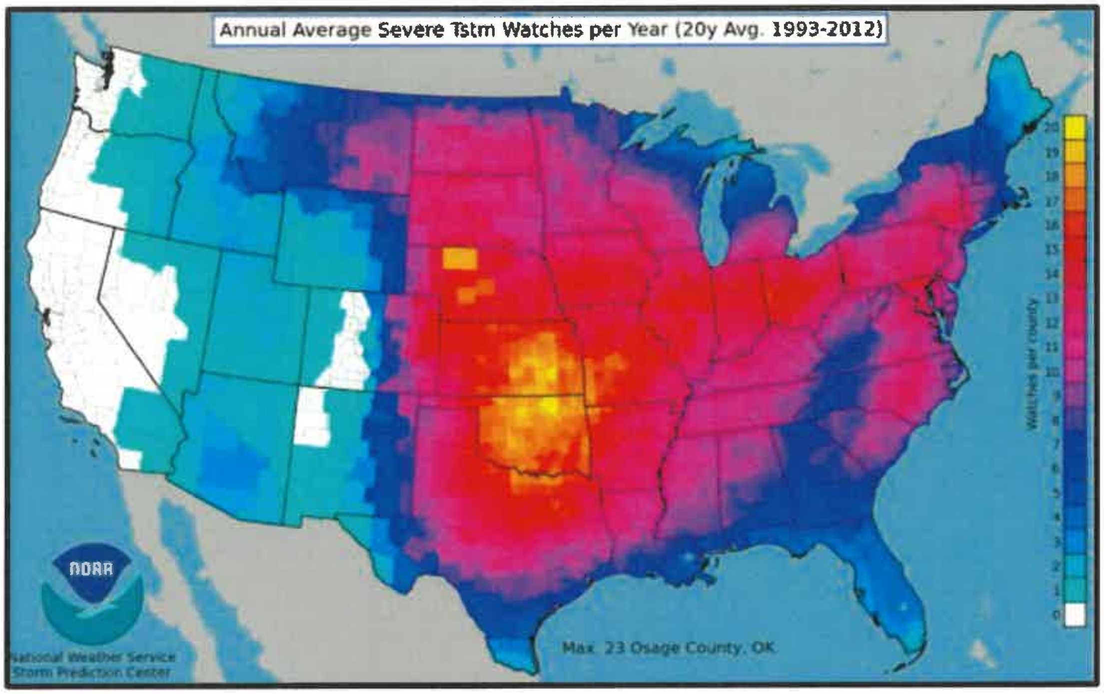


Figure 2-22: County-Level Severe Thunderstorm Watches Issued Per Year on Average.

A variety of hazards might be produced by thunderstorms, including lightning, hail, tornadoes or waterspouts, flash flooding, and high-speed winds called downbursts. Nevertheless, given the criteria, the National Oceanic and Atmospheric Administration (NOAA) characterize a thunderstorm as severe when it produces one or more of the following:

- Hail of one inch in diameter or larger
- Wind gusts to 58 mph or greater
- One or more tornadoes

Tornadoes and flooding hazards have been profiled individually within this report; therefore, for the purpose of thunderstorms, the sub-hazards of hail, high winds, and lightning will be profiled.

Thunderstorms occur throughout the United States at all times of the year, although the types and severity of these storms vary greatly depending on a wide variety of atmospheric conditions. Severe thunderstorms occur more frequently during the late spring and early summer and late summer and early fall when extreme variations exist between ground surface temperatures and upper atmospheric temperatures.

Climate Change Impacts

The impact of climate change on thunderstorms is not well understood at this time. However, thunderstorms are complex, dynamic systems fueled by heat and moisture which can be measured with CAPE (convective available potential energy). It is predicted that CAPE will increase across the Eastern United States by the second half of the 21st century, meaning there is more energy to fuel severe thunderstorms. In this same time frame, there would be a small decrease in vertical wind shear, which helps produce long-lived severe storms. However, the increase in energy outweighs the decreasing shear to produce a net increase in environmental favorability for severe thunderstorms by the end of the century. Some climate models maintained by the Goddard Institute for Space Studies indicate that the number of severe thunderstorms will not change much, but the severe storms that do occur would have stronger winds and more intense precipitation.

Climate change is influencing the frequency and severity of thunderstorms, resulting in significant impacts on infrastructure and vulnerable populations. As global temperatures rise, the atmosphere becomes more energized, leading to an increase in the intensity of thunderstorm activity. Thunderstorms bring heavy rainfall, strong winds, hail, and lightning, all of which can cause substantial damage to various types of infrastructure.

One of the most significant impacts of thunderstorms on infrastructure is the damage to power and communication lines. Strong winds and lightning strikes can lead to power outages, disrupting essential services and communication networks. This can have severe consequences for communities that rely on electricity for medical equipment, communication, and daily living. Additionally, damage to power infrastructure can result in economic losses due to business interruptions and increased repair costs.

Furthermore, heavy rainfall associated with thunderstorms can lead to flash flooding, overwhelming stormwater drainage systems and causing road and bridge damage. This not only disrupts transportation networks but also poses a safety hazard for motorists and pedestrians. Flooded roads can isolate communities and hinder emergency response efforts, leaving vulnerable populations at higher risk during and after thunderstorm events.

Vulnerable populations, such as low-income communities and the elderly, often lack access to resources and live in areas with inadequate infrastructure. They are disproportionately affected by the impacts of thunderstorms. For instance, substandard housing in flood-prone regions can suffer severe damage during storms, displacing already marginalized individuals and families. The elderly and people with limited mobility may face difficulties evacuating during severe weather events, putting their lives at risk.

Moreover, thunderstorms can lead to an increase in lightning-related accidents and wildfires. Lightning strikes can cause fires that spread rapidly, threatening communities and posing additional risks to vulnerable populations living in areas prone to wildfires. These events not only endanger lives but also strain emergency response resources and increase the financial burden on affected communities.

To address the impacts of climate change on infrastructure and vulnerable populations concerning thunderstorms, several measures are crucial. Investment in resilient infrastructure, such as strengthening power grids and stormwater drainage systems, can help mitigate damage and improve response capabilities. Additionally, raising awareness and providing resources to vulnerable communities can enhance preparedness and evacuation plans. Climate change mitigation efforts to reduce greenhouse gas emissions are also essential in curbing the intensification of thunderstorms, ultimately safeguarding both infrastructure and vulnerable populations from the adverse effects of these severe weather events.

Hail Profile

Hailstorms are severe thunderstorms in which balls or chunks of ice fall along with rain. Hailstorm densities and reports vary spatially across Louisiana. Hail initially develops in the upper atmosphere as ice crystals that are bounced about by high-velocity updraft winds. The ice crystals grow through deposition of water vapor onto their surface. They then fall partially to a level in the cloud where the temperature exceeds the freezing point, melt partially, and then get caught in another updraft whereupon re-freezing and deposition grows another concentric layer of ice. After several trips up and down the cloud, they develop enough weight to fall. The size of hailstones varies depending on the severity and size of the thunderstorm. Higher surface temperatures generally mean stronger updrafts, which allow more massive hailstones to be supported by updrafts, leaving them suspended longer. This longer suspension time results in larger hailstone sizes. The tables below display the TORRO Hailstorm Intensity Scale, along with a spectrum of hailstone diameters and their everyday equivalents.

Table 2-51: TORRO Hailstorm Intensity Scale.

Intensity Category		Hail Diameter (mm)	Probable Kinetic Energy	Typical Damage Impacts
H0	Hard Hail	5	0 - 20	No damage
H1	Potentially Damaging	5 - 15	>20	Slight general damage to plant, crops
H2	Significant	10 - 20	>100	Significant damage to fruit, crops, vegetation
H3	Severe	20 - 30	>300	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	25 - 40	>500	Widespread glass damage, vehicle body work
H5	Destructive	30 - 50	>800	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	40 - 60		Bodywork of grounded aircraft dented; brick walls pitted
H7	Destructive	50 - 75		Severe roof damage, risk of serious injuries
H8	Destructive	60 - 90		Severe damage to aircraft bodywork
H9	Super Hailstorms	75 - 100		Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	>100		Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

Table 2-52: Spectrum of Hailstone Diameters and their Everyday Description. (Source: National Weather Service)

Spectrum of Hailstone Diameters	
Hail Diameter Size	**Description**
1/4”	Pea
1/2”	Plain M&M
3/4”	Penny
7/8”	Nickle
1” (severe)	Quarter
1 1/4”	Half Dollar
1 1/2”	Ping Pong Ball / Walnut
1 3/4”	Golf Ball
2”	Hen Egg / Lime
2 1/2"	Tennis Ball
2 3/4"	Baseball
3”	Teacup / Large Apple
4”	Softball
4 1/2"	Grapefruit
4 3/4” – 5”	Computer CD-DVD

Hailstorms can cause widespread damage to homes and other structures, automobiles, and crops. While the damage to individual structures or vehicles is often minor, the cumulative cost to communities, especially across large metropolitan areas, can be quite significant. Hailstorms can also be devastating to crops. Thus, the severity of hailstorms depends on the size of the hailstones, the length of time the storm lasts, and where it occurs.

Hail rarely causes loss of life, although large hailstones can cause bodily injury.

Lightning Profile

Lightning is defined by the National Weather Service as any and all of the various forms of visible electrical discharge caused by thunderstorms. Thunderstorms and lightning are usually (but not always) accompanied by rain. Cloud-to-ground lightning can kill or injure people by direct or indirect means. Objects can be struck directly, which may result in an explosion, burn, or total destruction. Damage may also be indirect which occurs when the current passes through or near an object.

Intra-cloud lightning is the most common type of discharge. This occurs between oppositely charged centers within the same cloud. Usually it transpires inside the cloud and looks from the outside of the cloud like a diffuse brightening that flickers. However, the flash may exit the boundary of the cloud, and a bright channel, similar to a cloud-to-ground flash, can be visible for many miles.

Cloud-to-ground lightning is the most damaging and dangerous type of lightning, though it is also less common. Most flashes originate near the lower-negative charged center and deliver negative charge to the earth. However, a large minority of flashes carry a positive charge to earth. These positive flashes often occur during the dissipating stage of a thunderstorm. Positive flashes are also more common as a percentage of total ground strikes during the winter months. This type of lightning is particularly dangerous for several reasons. It frequently strikes away from the rain core, either ahead or behind the thunderstorm. It can strike five to ten miles from the storm in areas that most people do not consider a threat. Positive lightning also has a longer duration, so fires are more easily ignited. When positive lightning strikes, it usually carries a high peak electrical current, which can potentially result in greater damage.

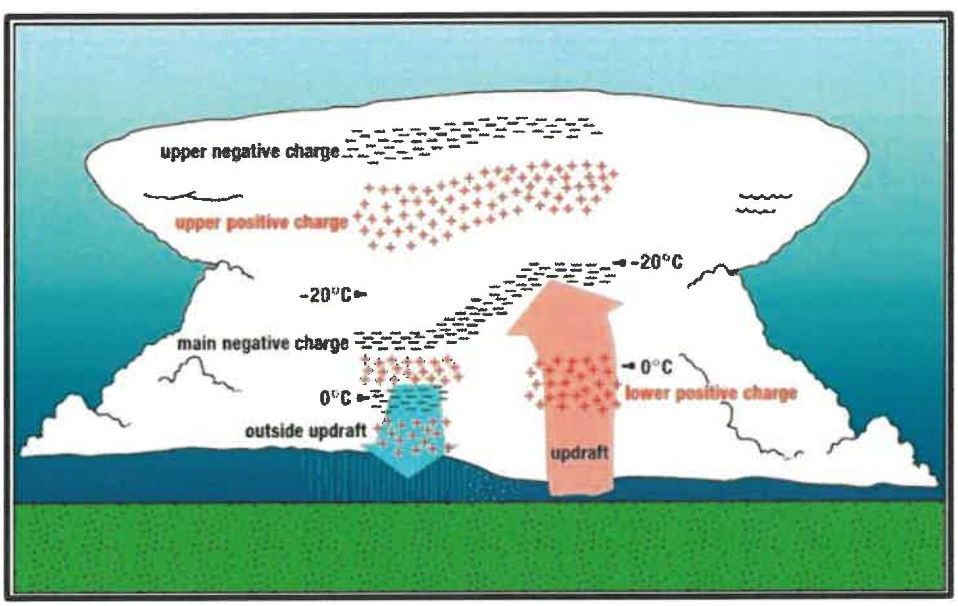


Figure 2-23: Charge Distribution in a Typical Storm Cloud.
(Source: The National Severe Storms Laboratory)

Lightning continues to be one of the top three storm-related killers in the United States per FEMA, but if not fatal it also has the ability to cause negative long-term health effects to the individual that is struck. The following table outlines the lightning activity level and intensity scale:

Table 2-53: Lightning Activity Level (LAL) Grids.

LAL	Cloud and Storm Development	Lightning Strikes/ 15 Min
1	No thunderstorms.	-
2	Cumulus clouds are common but only a few reaches the towering cumulus stage. A single thunderstorm must be confirmed in the observation area. The clouds produce mainly virga, but light rain will occasionally reach the ground. Lightning is very infrequent.	1-8
3	Towering cumulus covers less than two-tenths of the sky. Thunderstorms are few, but two to three must occur within the observation. Light to moderate rain will reach the ground, and lightning is infrequent.	9-15
4	Towering cumulus covers two to three-tenths of the sky. Thunderstorms are scattered and more than three must occur within the observation area. Moderate rain is common, and lightning is frequent.	16-25
5	Towering cumulus and thunderstorms are numerous. They cover more than three-tenths and occasionally obscure the sky. Rain is moderate to heavy and lightning is frequent.	>25
6	Similar to LAL 3 except thunderstorms are dry	

Thunderstorm Wind Profile

In general, high winds occur in a number of different ways, with and without thunderstorms. Similar to hailstorms (and often associated with the same storm), high wind damage densities and reports resulting from severe thunderstorms vary spatially across Louisiana. The only high winds of present concern from the following table are thunderstorm winds and downbursts. Straight-line winds are common but are a relatively insignificant hazard (on land) compared to other high winds. Downslope winds are common, but relatively insignificant in Louisiana. Nor'easters are cyclonic low-pressure systems that have a minimal impact if any on Louisiana while hurricane winds have a significant impact on the state due to its location.

Table 2-54: High Winds Categorized by Source.
(Source: Making Critical Facilities Safe from High Wind, FEMA)

High Wind Type	Description
Straight-Line Winds	Wind blowing in straight line; usually associated with intense low-pressure area
Downslope Winds	Wind blowing down the slope of a mountain; associated with temperature and pressure gradients
Thunderstorm Winds	Wind blowing due to thunderstorms, and thus associated with temperature and pressure gradients
Downbursts	Sudden wind blowing down due to downdraft in a thunderstorm; spreads out horizontally at the ground, possible forming horizontal vortex rings around the downdraft.
Northeaster (Nor'easter) Winds	Wind blowing due to cyclonic storm off the east coast of North America; associated with temperature and pressure gradients between the Atlantic Ocean and land

High Wind Type	Description
Hurricane Winds	Wind blowing in spirals, converging with increasing speed toward eye; associated with temperature and pressure gradients between the Atlantic Ocean, Gulf of Mexico, and land
Tornado Winds	Violently rotating column of air from base of thunderstorm to the ground with rapidly decreasing winds at greater distances from center; associated with extreme temperature gradient

Major damage directly caused by thunderstorm winds is relatively rare, while minor damage is common and pervasive, and most noticeable when it contributes to power outages. These power outages can have major negative impacts such as increased tendency for traffic accidents, increased vulnerability to fire, food spoilage, and other losses that might be sustained by a loss of power. The following table presents the Beaufort Wind Scale, first developed in 1805 by Sir Francis Beaufort, which aids in determining relative force and wind speed based on the appearance of wind effects:

Table 2-55: Beaufort Wind Scale.
(Source: NOAA's SPC)

Beaufort Wind Scale			
Force	**Wind (MPH)**	**WMO Classification**	**Appearance of Wind Effects on Land**
			Calm, smoke rises vertically
1	1-3	Light Air	Smoke drift indicates wind direction, still wind vanes
2	4-7	Light Breeze	Wind felt on face, leaves rustle, vanes begin to move
3	8-12	Gentle Breeze	Leaves and small twigs constantly moving, light flags extended
4	13-17	Moderate Breeze	Dust, leaves, and loose paper lifted; small tree branches move
5	18-24	Fresh Breeze	Small trees in leaf begin to sway
6	25-30	Strong Breeze	Larger tree branches moving, whistling in wires
7	31-38	Near Gale	Whole trees moving, resistance felt walking against wind
8	39-46	Gale	Twigs breaking off trees, generally impedes progress
9	47-54	Strong Gale	Slight structural damage occurs, slate blows off roofs
10	55-63	Storm	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	54-73	Violent Storm	N/A
12	74+	Hurricane	N/A

Hail Risk Assessment

Geographic Extent

Because hailstorms are a climatological based occurrence that can occur anywhere, the entire planning area is at risk from hailstorms. The worst-case scenario for hailstorms is hail up to 1.75 inches in diameter.

Previous Occurrences

The parish experienced 62 hail occurrences between the years 1996 and 2023. Since the last update in 2018, there have been nine hail occurrences within the boundaries of the parish.

Table 2-56: Historical Hail Occurrences in the Parish since the 2018 Update.

Date	Magnitude (inches)	Property Damage	Fatalities	Injuries
1/20/2017	1	$0	0	0
4/29/2017	1	$0	0	0
4/29/2017	1	$0	0	0
4/29/2017	1.5	$0	0	0
5/3/2017	1	$0	0	0
5/3/2017	1.75	$0	0	0
5/3/2017	1.75	$0	0	0
5/3/2017	1.75	$0	0	0
5/8/2020	1	$0	0	0

Probability

The annual return rate (frequency) for hail occurrences in the parish is 2.52 (100% annual probability) or approximately 2 to 3 hail occurrences every year. The following figures display the density of hailstorm events and an overview of hailstorm size based on location.

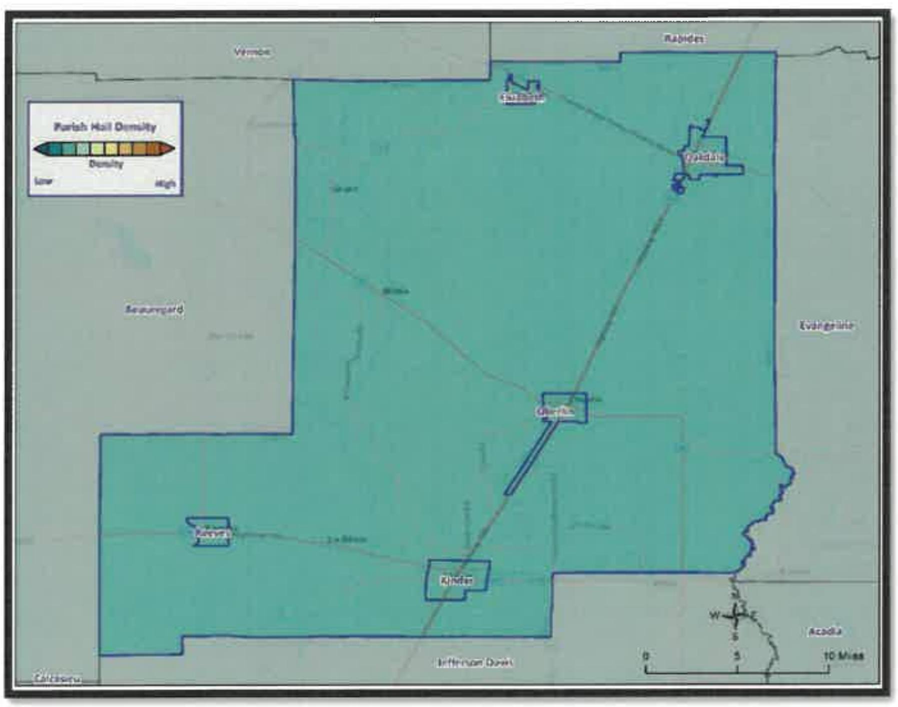


Figure 2-24: Density of Hailstorms by Diameter from 1950-2022.

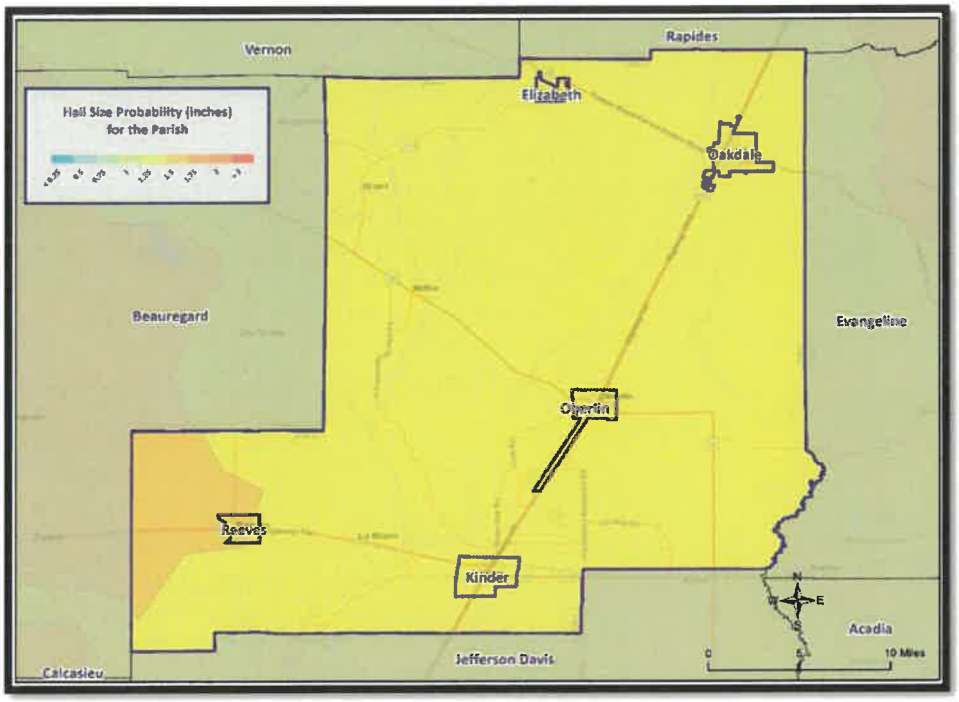


Figure 2-25: Hail Size Probability in Inches for Allen Parish.

Lightning Risk Assessment

Geographic Extent

Because lightning strikes are a climatological based occurrence that can occur anywhere, the entire planning area is at risk from lightning strikes. The worst-case scenario for lightning incidents is a lightning activity level of 4 which is approximately 16 to 25 lightning strikes every 15 minutes.

Previous Occurrences

The parish experienced no significant lightning occurrences between the years 1996 and 2022.

Probability

The annual return rate (frequency) for lightning occurrences in the parish is less than 0.01 (< 1% annual probability) or approximately 1 lightning occurrence approximately every 27 years.

Thunderstorm Wind Risk Assessment

Geographic Extent

Because thunderstorm winds are a climatological-based occurrence that can occur anywhere, the entire planning area is at risk from thunderstorm wind. The worst-case scenario for thunderstorm wind occurrences is hail wind speeds of approximately 83 mph.

Previous Occurrences

The parish experienced 98 thunderstorm wind occurrences between the years 1996 and 2022. Since the last update in 2018, there have been 37 thunderstorm wind occurrences within the boundaries of the parish.

Table 2-57: Historical Thunderstorm Wind Occurrences in the Parish since the 2018 Update.

Date	Magnitude (mph)	Property Damage	Crop Damage	Fatalities	Injuries
1/2/2017	50	$20,000	$0	0	0
1/2/2017	50	$10,000	$0	0	0
1/2/2017	50	$15,000	$0	0	0
1/20/2017	50	$0	$0	0	0
2/20/2017	50	$3,000	$0	0	0
4/30/2017	83	$15,000	$0	0	0
5/3/2017	50	$1,000	$0	0	0
4/3/2018	50	$2,000	$0	0	0
4/14/2018	50	$4,000	$0	0	0
10/7/2019	50	$2,000	$0	0	0
4/9/2020	50	$20,000	$0	0	0
12/13/2020	50	$1,000	$0	0	0

Probability

The annual return rate (frequency) for thunderstorm wind occurrences in the parish is 2.3 (100% annual probability) or approximately 2 to 3 thunderstorm wind occurrences every year. The following figure displays the thunderstorm wind speed probability for the parish.

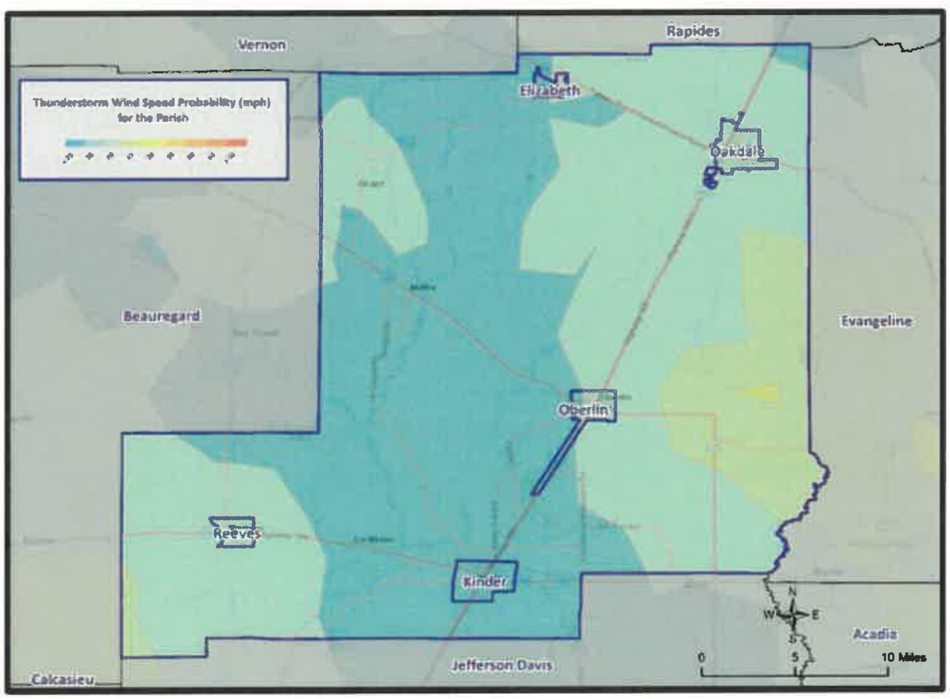


Figure 2-26: Thunderstorm High Wind Speed Probability in Miles Per Hour for Allen Parish.

Hail Vulnerability Analysis

The NRI includes data on the expected annual losses to individual natural hazards, historical losses, and overall risk at the county and Census tract level. The following table provides an overview of each category at the county level for hail.

Table 2-58: National Risk Index (NRI) Summarization of Hail Occurrences for the Parish. (Source: National Risk Index)

Expected Annual Losses	Overall Risk Rating
Very Low	Very Low

Estimated Impact and Potential Loss

Since 1996, there have been 62 significant hail occurrences per the NCEI Storm Events Database. The total property damage associated with these storms totaled approximately $10,000. To estimate the potential losses on an annual basis, the total damages recorded were divided by the total number of years of available data in the NCEI Storm Events Database (1996 – 2022). This provides an annual estimated potential loss of $370 and $161 per event. The table below provides an estimate of potential property losses for the Parish:

Table 2-59: Estimated Annual Property Losses in the Parish resulting from Hail Damage.

Estimated Annual Potential Losses from Hail					
Unincorporated Allen Parish (52.1%)	Elizabeth (1.8%)	Kinder (9.5%)	Oakdale (29.4%)	Oberlin (6.2%)	Reeves (1.0%)
$193	$7	$35	$109	$23	$4

Vulnerable Population

Per the NCEI Storm Events Database, there have been no reported injuries or fatalities as a result of hail.

Vulnerability Score

Table 2-60: Hail Vulnerability Score for the Parish.

Hail Vulnerability Score						
	Probability	Impact	Spatial Extent	Warning Time	Duration	Risk Factor
Risk Level	4	2	3	3	1	2.7

Lightning Vulnerability Analysis

The NRI includes data on the expected annual losses to individual natural hazards, historical losses, and overall risk at the county and Census tract level. The following table provides an overview of each category at the county level for lightning.

Table 2-61: National Risk Index (NRI) Summarization of Lightning Occurrences for the Parish. (Source: National Risk Index)

Expected Annual Losses	Overall Risk Rating
Relatively Moderate	Relatively Moderate

Estimated Impact and Potential Loss

Since 1996, there have been no significant lightning occurrences per the NCEI Storm Events Database.

Vulnerable Population

Per the NCEI Storm Events Database, there have been no reported fatalities or injuries resulting from lightning.

Vulnerability Score

Table 2-62: Lightning Vulnerability Score for the Parish.

Lightning Vulnerability Score						
	Probability	Impact	Spatial Extent	Warning Time	Duration	Risk Factor
Risk Level	3	2	2	3	1	**2.25**

Thunderstorm Wind Vulnerability Analysis

The NRI includes data on the expected annual losses to individual natural hazards, historical losses, and overall risk at the county and Census tract level. The following table provides an overview of each category at the county level for thunderstorm wind.

Table 2-63: National Risk Index (NRI) Summarization of Thunderstorm Wind Occurrences for the Parish. (Source: National Risk Index)

Expected Annual Losses	Overall Risk Rating
Relatively Low	Relatively Low

Estimated Impact and Potential Loss

Since 1996, there have been 98 significant thunderstorm wind occurrences per the NCEI Storm Events Database. The total property damage associated with these storms totaled approximately $1,460,000. To estimate the potential losses on an annual basis, the total damages recorded were divided by the total number of years of available data in the NCEI Storm Events Database (1996 – 2022). This provides an annual estimated potential loss of $54,074 and $14,898 per event. The following table provides an estimate of potential property losses for the Parish:

Table 2-64: Estimated Annual Property Losses in the Parish resulting from Thunderstorm Wind Damage.

Estimated Annual Potential Losses from High Winds					
Unincorporated Allen Parish (52.1%)	Elizabeth (1.8%)	Kinder (9.5%)	Oakdale (29.4%)	Oberlin (6.2%)	Reeves (1.0%)
$28,161	$991	$5,158	$15,906	$3,332	$525

Vulnerable Population

Per the NCEI Storm Events Database, there have been no reported injuries or fatalities as a result of thunderstorm winds.

Vulnerability Score

Table 2-65: Thunderstorm Wind Vulnerability Score for the Parish.

Thunderstorm Wind Vulnerability Score						
	Probability	Impact	Spatial Extent	Warning Time	Duration	Risk Factor
Risk Level	4	2	3	3	1	2.7

Tornadoes

Profile

Tornadoes (also called twisters or cyclones) are rapidly rotating funnels of wind extending between storm clouds and the ground. For their size, tornadoes are the most severe storms, and 70% of the world's reported tornadoes occur within the continental United States, making them one of the most significant hazards Americans face. Tornadoes and waterspouts form during severe weather occurrences, such as thunderstorms and hurricanes, when cold air overrides a layer of warm air, causing the warm air to rise rapidly. This usually results in a counterclockwise rotation in the northern hemisphere. The updraft of air in tornadoes always rotates because of wind shear (differing speeds of moving air at various heights), and it can rotate in either a clockwise or counterclockwise direction; clockwise rotations (in the northern hemisphere) will sustain the system, at least until other forces cause it to die seconds to minutes later.

Since February 1, 2007, the Enhanced Fujita (EF) Scale has been used to classify tornado intensity. The EF Scale classifies tornadoes based on their damage pattern rather than wind speed; wind speed is then derived and estimated. This contrasts with the Saffir-Simpson scale used for hurricane classification, which is based on measured wind speed. The following table shows the EF scale in comparison with the original Fujita (F) Scale, which was used prior to February 1, 2007. When discussing past tornadoes, the scale used at the time of the hazard is used. Damage and adjustment between scales can be made using the following tables.

Table 2-66: Comparison of the Enhanced Fujita (EF) Scale to the Fujita (F) Scale.

Wind speed (mph)	Enhanced Fujita Scale					
	EF0	EF1	EF2	EF3	EF4	EF5
	65-85	86-110	111-135	136-165	166-200	>200
	Fujita Scale					
	F0	F1	F2	F3	F4	F5
	<73	73-112	113-157	158-206	207-260	>261

Table 2-67: Fujita and Enhanced Fujita Tornado Damage Scale.

Scale	Typical Damage
F0/EF0	Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1/EF1	Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2/EF2	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; light-object missiles generated; cars lifted off ground.
F3/EF3	Severe damage. Roofs and some walls torn of well-constructed houses; trains overturned; most trees in Brusly uprooted; heavy cars lifted off the ground and thrown.
F4/EF4	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown, and large missiles generated.
F5/EF5	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yards); trees debarked; incredible phenomena will occur.

The National Weather Service (NWS) has the ability to issue advisory messages based on forecasts and observations. The following are the advisory messages that may be issued with definitions of each:

- ***Tornado Watch***: Issued to alert people to the possibility of a tornado developing in the area. A tornado has not been spotted but the conditions are favorable for tornadoes to occur.

- ***Tornado Warning***: Issued when a tornado has been spotted or when Doppler radar identifies a distinctive "hook-shaped" area within a thunderstorm line.

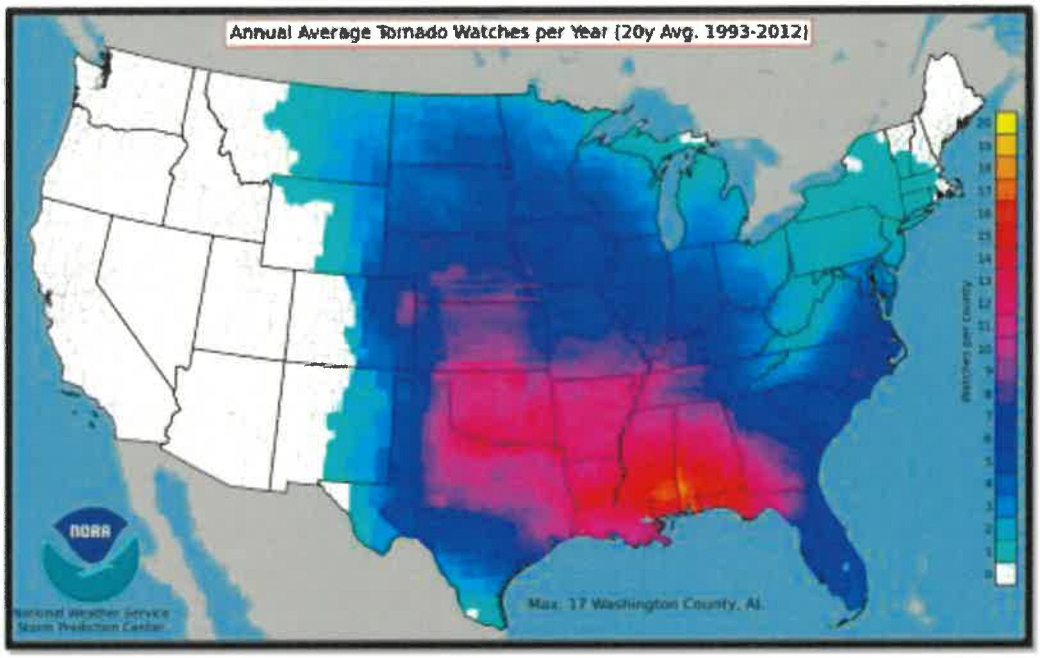


Figure 2-27: County-Level Tornado Watches Issued Per Year on Average.
(Source: NOAA SPC)

Structures within the direct path of a tornado vortex are often reduced to rubble. Structures adjacent to the tornado's path are often severely damaged by high winds flowing into the tornado vortex, known as inflow winds. It is here, adjacent to the tornado's path, that the building type and construction techniques are critical to the structure's survival. Although tornadoes strike at random, making all buildings vulnerable, mobile homes, homes with crawlspaces, and buildings with large spans are more likely to suffer damage.

The major health hazard from tornadoes is physical injury from flying debris or being in a collapsed building or mobile home. Within a building, flying debris or projectiles are generally stopped by interior walls. However, if a building has no partitions, any glass, brick, or other debris blown into the interior is life threatening. Following a tornado, damaged buildings are a potential health hazard due to instability, electrical system damage, and gas leaks. Sewage and water lines may also be damaged. Tornadoes have historically impacted all areas of Louisiana.

Peak tornado activity in Louisiana occurs during the spring, as it does in the rest of the United States. Nearly one-third of observed tornadoes in the United States occur during April. About half of those in Louisiana, including many of the strongest, occur between March and June. Fall and winter tornadoes are less frequent, but the distribution of tornadoes throughout the year is more uniform in Louisiana than in locations farther north.

Risk Assessment

Geographic Extent

Tornadoes occur sporadically throughout the parish and the occurrence of a tornado in the parish is highly unpredictable making it impossible to forecast the exact time and locations of when a tornado will touch down or the path it will take. Because of this, the entire planning area is considered equally at risk for a tornadic incident. The worst-cast scenario of a tornado occurrence is an EF3 tornado.

Previous Occurrences

The parish experienced 20 tornado occurrences between the years 1996 and 2022. Since the last update in 2018, there have been 10 tornado occurrences within the boundaries of the parish.

Table 2-68: Historical Tornado Occurrences in Allen Parish since the 2018 Update.

Date	Location	Magnitude	Property Damage	Crop Damage	Fatalities	Injuries
3/29/2017	OAKDALE	EF2	$125,000	$0	0	0
3/29/2018	KINDER	EF1	$300,000	$0	0	0
4/7/2018	OBERLIN	EF0	$10,000	$0	0	0
10/31/2018	GRANT	EF1	$7,000	$0	0	0
10/31/2018	OAKDALE	EF2	$25,000	$0	0	0
5/19/2019	ELIZABETH	EF1	$7,000	$0	0	0
5/19/2019	WARD	EF1	$50,000	$0	0	0
5/17/2020	WARD	EF1	$10,000	$0	0	0
10/25/2022	OBERLIN	EF2	$150,000	$0	0	0

Probability

The annual return rate (frequency) for tornado occurrences in the parish is 0.78 (78% annual probability) or approximately 1 tornado occurrence every 1 to 2 years. The figure below displays the tornado density for the parish.

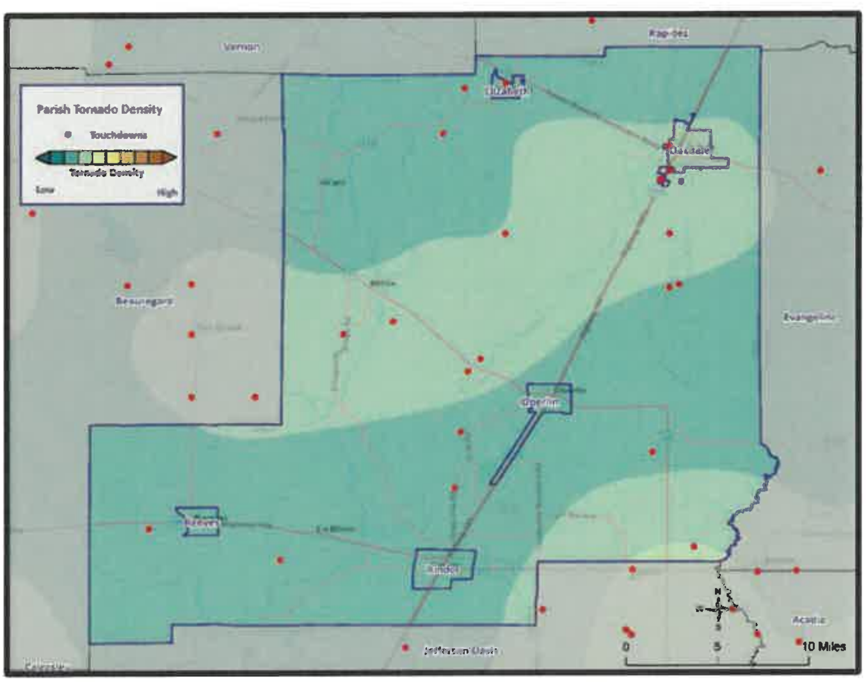


Figure 2-28: Location and Density of Tornadoes to Touchdown in the Parish (Source: NOAA/SPC Severe Weather Database

Climate Change Impacts

Similar to thunderstorms, the impacts of climate change on the occurrence and strength of tornadoes is not well understood at this time, but is an area of ongoing research. While only about 1% of thunderstorms will produce a tornado, preliminary research and climate models indicate that the environmental suitability for severe thunderstorms, and therefore tornadoes, could increase over the Eastern United States by the end of the century.

Climate change is contributing to the increasing frequency and intensity of tornadoes, leading to significant impacts on both infrastructure and vulnerable populations. As global temperatures rise, the atmosphere becomes more unstable, creating conditions favorable for the development of severe thunderstorms and tornadoes. Tornadoes are powerful and destructive, capable of causing widespread damage to various types of infrastructure.

One of the most significant impacts of tornadoes on infrastructure is the destruction of buildings and critical facilities. Tornadoes can flatten homes, schools, hospitals, and businesses, leaving communities devastated and in need of urgent assistance. The damage to infrastructure disrupts essential services, such as electricity, water supply, and communication networks, exacerbating the challenges faced by affected communities during recovery and rebuilding efforts.

Vulnerable populations are particularly at-risk during tornadoes. Low-income communities often live in substandard housing and lack access to proper storm shelters, leaving them more exposed to the destructive forces of tornadoes. Furthermore, elderly individuals and people with disabilities may struggle to seek shelter and escape the path of these fast-moving storms, increasing their vulnerability to injury or death. Tornadoes can also disproportionately affect marginalized communities due to limited access to emergency response services and resources.

Moreover, tornadoes can lead to economic hardships for vulnerable populations. Homes and properties are often uninsured or underinsured in these areas, leaving residents with significant financial burdens after tornadoes strike. As a result, vulnerable communities may face challenges in recovering and rebuilding their lives, perpetuating cycles of poverty and inequality.

To address the impacts of climate change on infrastructure and vulnerable populations concerning tornadoes, proactive measures are essential. Building tornado-resistant infrastructure and implementing better early warning systems can help minimize the damage caused by tornadoes. For vulnerable populations, providing accessible storm shelters and ensuring access to emergency resources and support are critical to saving lives and reducing the long-term impacts of tornadoes. Additionally, climate change mitigation efforts are crucial to addressing the root causes of tornado intensification, as reducing greenhouse gas emissions can help stabilize the climate and potentially mitigate the future increase in tornado frequency and severity.

Vulnerability Analysis

The NRI includes data on the expected annual losses to individual natural hazards, historical losses, and overall risk at the county and Census tract level. The table on the next page provides an overview of each category at the county level for tornadoes.

Table 2-69: National Risk Index (NRI) Summarization of Tornado Occurrences for the Parish. (Source: National Risk Index)

Expected Annual Losses	Overall Risk Rating
Relatively Low	Relatively Low

Estimated Impact and Potential Loss

Since 1996, there have been 21 significant tornado occurrences per the NCEI Storm Events Database. The total property damage associated with these storms totaled approximately $837,000. To estimate the potential losses on an annual basis, the total damages recorded were divided by the total number of years of available data in the NCEI Storm Events Database (1996 – 2022). This provides an annual estimated potential loss of $31,000 and $69,750 per event. The following table provides an estimate of potential property losses for the Parish:

Table 2-70: Estimated Annual Property Losses in the Parish resulting from Tornado Damage.

Estimated Annual Potential Losses from Tornadoes					
Unincorporated Allen Parish (52.1%)	Elizabeth (1.8%)	Kinder (9.5%)	Oakdale (29.4%)	Oberlin (6.2%)	Reeves (1.0%)
$16,145	$568	$2,957	$9,119	$1,910	$301

The following table presents an analysis of building exposure that are susceptible to tornadoes by general occupancy type for the parish along with the percentage of building stock that are mobile homes.

Table 2-71: Building Exposure by General Occupancy Type for Tornadoes in the Parish. (Source: Hazus)

Building Exposure by General Occupancy Type for Tornadoes ($1,000)							
Residential	Commercial	Industrial	Agricultural	Religion	Government	Education	Mobile Homes (%)
2,522,643	409,491	97,259	11,376	122,374	37,434	35,504	19.8%

Vulnerable Population

Per the NCEI Storm Events Database, there has been no reported fatalities or injuries as a result of tornadoes.

In accessing the overall risk to population, the most vulnerable population throughout the parish are those residing in manufacturing housing. Approximately 19.8% of all housing in the Parish consists of manufactured housing. The figure on the next page displays the manufactured home density for the parish.

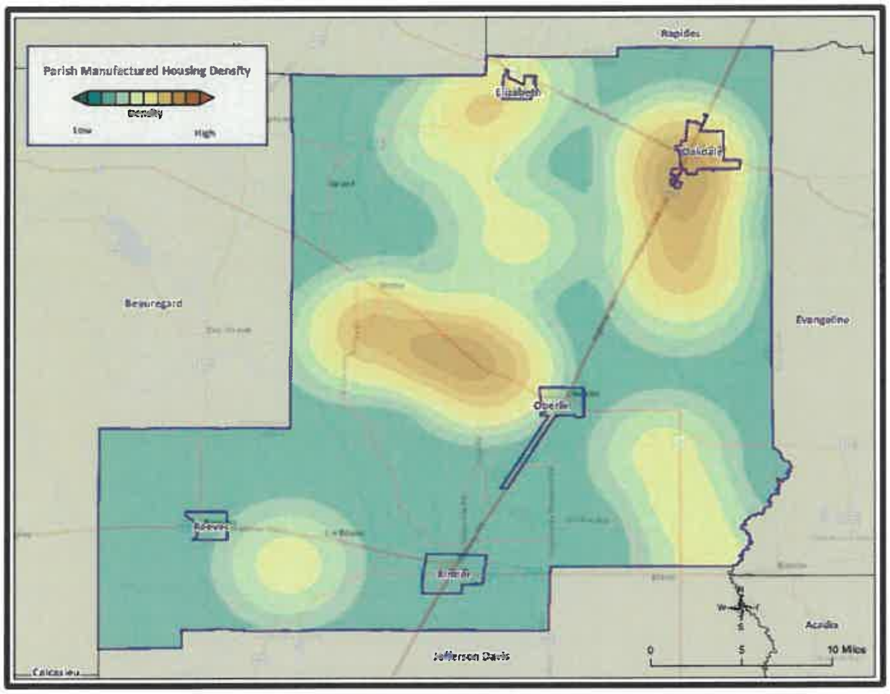


Figure 2-29: Mobile Home Density for the Parish.

Vulnerability Score

Table 2-72: Tornado Vulnerability Score for Allen Parish.

Tornado Vulnerability Score						
	Probability	Impact	Spatial Extent	Warning Time	Duration	Risk Factor
Risk Level	3	3	2	4	3	3.2

Tropical Cyclones

Profile

Hurricanes, typhoons, and cyclones, are names for powerful tropical storms in which winds rotate around a closed circulation of low-pressure. In the Atlantic and eastern Pacific basins, they are known as hurricanes, in Asia (western Pacific) they are known as typhoons, and in Australia they are called cyclones. In the Northern Hemisphere, hurricane winds rotate in a counter-clockwise direction (clockwise in the Southern Hemisphere). The key energy source for a hurricane is the release of latent heat energy from condensation.

This energy is found where there is a deep layer of warm water to fuel the system. Conditions for hurricane formation include warm waters, rotational force from the earth's spin (Coriolis Effect), and the absence of vertical wind shear (stability in the lower atmosphere). Tropical disturbances that affect North America typically originate off the west coast of Africa. If the tropical disturbance lowers in pressure and starts to rotate around a low pressure center, it may turn into a tropical depression. Barometric pressure (measured in millibars or inches) continues to fall in the center as these storm systems develop in intensity. When sustained wind speeds reach 39 mph, the system becomes a tropical storm and is given a name by the National Hurricane Center. When sustained wind speeds reach 74 mph, it becomes a hurricane. Hurricanes are much larger and powerful storms with an average diameter of 350 miles. The start of the official Atlantic hurricane season is June 1st and ends November 30th. Peak hurricane season is August and September in the Northern Hemisphere, when water temperatures and evaporation rates are greatest. Associated with these storms are damaging winds, heavy precipitation, and tornadoes. Coastal areas are also vulnerable to storm surge, wind-driven waves, and tidal flooding, which can cause more destruction than cyclone winds.

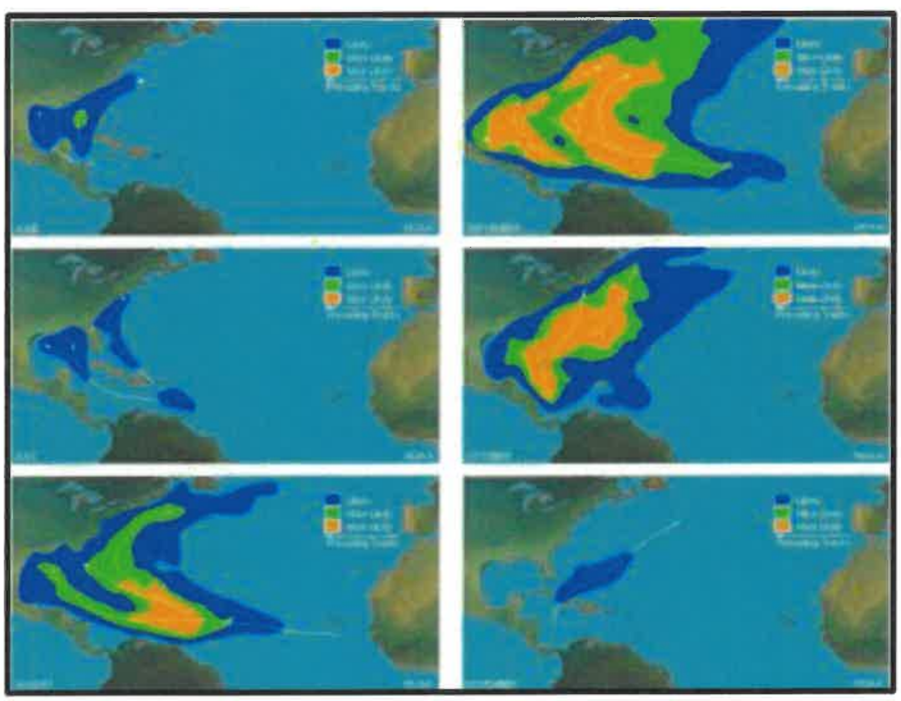


Figure 2-30: Areas of Likely Tropical Cyclone Formation and Tracking.
(Source: NOAA NHC)

Hurricane intensity is classified by the Saffir-Simpson Scale, which categorizes hurricane intensity based upon maximum sustained wind speeds on a scale of one to five, with five being the most intense. Typically, higher category hurricanes have lower pressure and greater storm surge. Categories three, four, and five are classified as "major" hurricanes, and while hurricanes within this range comprise only 20 percent of total landfalls, they account for over 70 percent of the damage incurred in the United States. Hurricane (Category 1 or higher) return periods are shown the following figure:

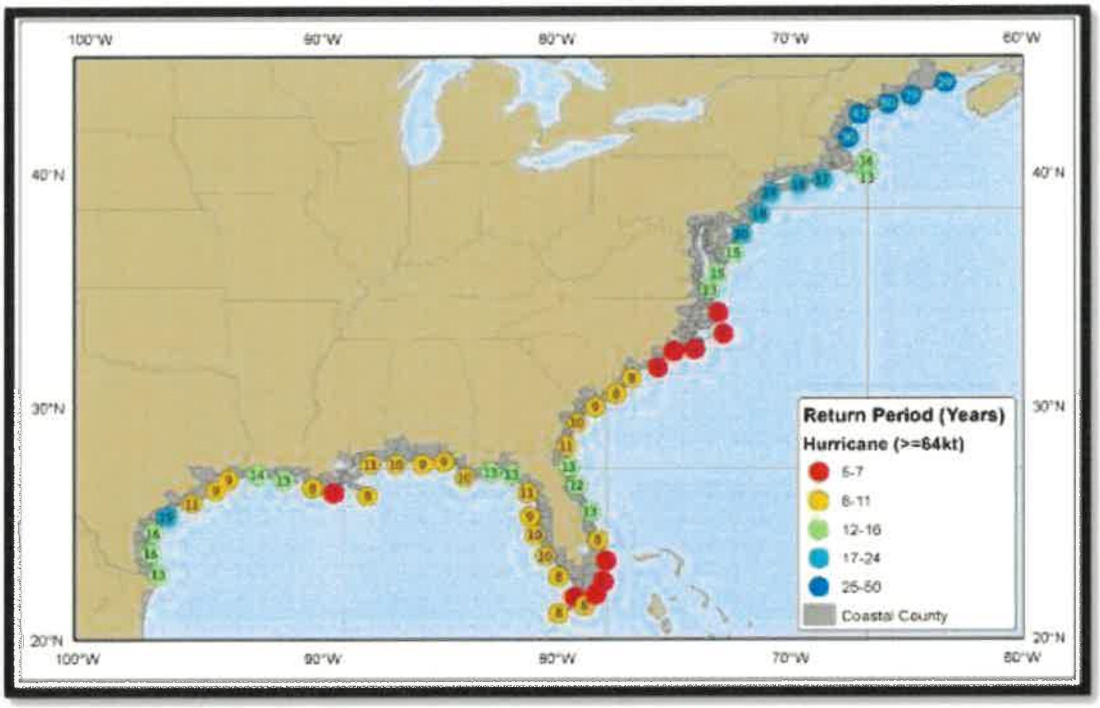


Figure 2-31: Hurricane Return Periods for the Atlantic Basin (USA).
(Source: NOAA NHC)

Table 2-73: Saffir-Simpson Hurricane Wind Scale.

Saffir-Simpson Hurricane Wind Scale			
Category	**Sustained Winds**	**Pressure**	**Types of Damage Due to Winds**
Tropical Depression	<39 mph	N/A	N/A
Tropical Cyclone	39-73 mph	N/A	N/A
1	74-95 mph	>14.2 psi	Very dangerous winds will produce some damage. Well-constructed frame homes could have damage to roof, shingles, vinyl siding, and gutters. Large branches of trees will snap, and shallow-rooted trees may be toppled, especially after the soil becomes waterlogged. Extensive damage to power lines and poles will likely result in power outages that could last several days.
2	96-110 mph	14-14.2 psi	Extremely dangerous winds will cause extensive damage. Well-constructed frame homes could sustain major roof and siding damage. Many shallow-rooted trees will be snapped or uprooted, especially after the soil becomes waterlogged, and block numerous roads. Near total power loss is expected, with outages that could last from several days to weeks.
3	111-129 mph	13.7 -14 psi	Devastating damage will occur. Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, especially after the soil becomes waterlogged, blocking numerous roads. Electricity and water may be unavailable for several days to weeks after the storm passes.
4	130-156 mph	13.3-13.7 psi	Catastrophic damage will occur. Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted, especially after the soil becomes waterlogged, and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5	157 mph or higher	<13.7 psi	Catastrophic damage will occur. A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks to months.

Storm surge is elevated water level that is pushed towards the shore by the force of strong winds that result in the piling up of water. The advancing surge combines with the normal tides, which in extreme cases can increase the normal water height over 20 feet. The storm surge arrives ahead of the storm's actual landfall and the more intense the hurricane is, the sooner the surge arrives. Water rise can be very rapid and can move far inland, posing a serious threat to those who have not yet evacuated flood-prone areas. Debris carried by the waves can also contribute to the devastation. As the storm approaches shore, the greatest storm surge will be to the north of the hurricane eye, in the right-front quadrant of the direction in which the hurricane is moving. Such a surge of high water topped by waves driven by hurricane force winds can be devastating to coastal regions, causing severe beach erosion and property damage along the immediate coast. Storm sure heights, and associated waves, are dependent upon the shape of the continental shelf (narrow or wide) and the depth of the ocean bottom (bathymetry). A narrow shelf, or one that drops steeply from the shoreline and subsequently produces deep water close to the shoreline, tends to produce a lower surge but higher and more powerful storm waves. While disassociated with the Saffir-Simpson Scale, storm surge remains the leading killer of residents along immediate coastal areas. Researchers at the Southern Regional Climate Center have indicated that hurricane strength at approximately 12-18 hours prior to landfall is a better indicator of storm surge strength (compared to wind speeds at landfall).

Many other associated hazards can occur during a hurricane, including heavy rains, flooding, high winds, and tornadoes. A general rule of thumb in coastal Louisiana is that the number of inches of rainfall to be expected from a tropical cyclone is approximately 100 divided by the forward velocity of the storm in mph; so, a fast-moving storm (20 mph) might be expected to drop five inches of rain while a slow-moving (5 mph) storm could produce totals of around 20 inches. However, no two storms are alike, and such generalizations have limited utility for planning purposes.

Hurricane Beulah, which struck Texas in 1967, spawned 115 confirmed tornadoes. In recent years, extensive coastal development has increased the storm surge resulting from these storms so much that this has become the greatest natural hazard threat to property and loss of life in the state. Storm surge is a temporary rise in sea level generally caused by reduced air pressure and strong onshore winds associated with a storm system near the coast. Although storm surge can technically occur at any time of the year in Louisiana, surges caused by hurricanes can be particularly deadly and destructive. Such storm surge events are often accompanied by large, destructive waves (exceeding ten meters in some places) that can inflict a high number of fatalities and economic losses. In 2005, Hurricane Katrina clearly demonstrated the destructive potential of this hazard, as it produced the highest modern-day storm surge levels in the State of Louisiana, reaching up to 18.7 feet near Alluvial City in St. Bernard Parish.

Property can be damaged by the various forces that accompany a tropical cyclone. High winds can directly impact structures in three ways: wind forces, flying debris, and pressure. By itself, the force of the wind can knock over trees, break tree limbs, and destroy loose items, such as television antennas and power lines. Many things can be moved by high winds. As winds increase, so does the pressure against stationary objects. Pressure against a wall rises with the square of the wind speed. For some structures, this force is enough to cause failure. The potential for damage to structures is increased when debris breaks the building "envelope" and allows the wind pressure to impact all surfaces (the building envelope includes all surfaces that make up the barrier between the indoors and the outdoors, such as the walls, foundation, doors, windows, and roof). Mobile homes and buildings in need of maintenance are most subject to wind damage. High winds mean bigger waves. Extended pounding by waves can demolish any poorly or improperly designed structures. The waves also erode sand beaches, roads, and foundations. When foundations are compromised, the building will collapse.

Nine out of ten deaths during hurricanes are caused by storm surge flooding. Falling tree limbs and flying debris caused by high winds have the ability to cause injury or death. Downed trees and damaged buildings are a potential health hazard due to instability, electrical system damage, broken pipelines, chemical releases, and gas leaks. Sewage and water lines may also be damaged. Salt water and freshwater intrusions from storm surge send animals, such as snakes, into areas occupied by humans.

Risk Assessment

Geographic Extent

Tropical cyclones typically impact multiple regions and not one specific jurisdiction or campus. Because of this, all of the planning area is susceptible to the effects of tropical cyclones. Tropical cyclones are the single biggest threat to all of South Louisiana. With any single tropical cyclone event having the potential to devastate multiple parishes at once, tropical cyclones are a significant threat to the entire parish planning area. The worst-case scenario for a tropical cyclone event in the parish is a Category 4 Hurricane.

Previous Occurrences

The parish experienced nine tropical cyclone occurrences between the years 2002 and 2022. Since the last update in 2018, there have been three tropical cyclone occurrences within the boundaries of the parish.

Table 2-74: Historical Tropical Cyclone Occurrences in the Parish since the 2018 Update.

Date	Magnitude	Name	Property Damage	Crop Damage	Fatalities	Injuries
7/13/2019	Tropical Storm	Barry	$10,000	$0	0	0
8/26/2020	Hurricane	Laura	$400,000,000	$0	1	0
10/9/2020	Tropical Storm	Delta	$100,000,000	$0	0	0

Tropical Storm Barry (2019)

Hurricane Barry initial developed from a disturbance that moved from Georgia southwest to the northeast Gulf of Mexico on July 8-9, 2019. The weak low-pressure system continued to move west-southwest and strengthen and was eventually classified as Tropical Storm Barry on the morning of July 11th, 95 miles south-southeast of the mouth of the Mississippi River. Barry continued to move slowly west then northwest and briefly reached hurricane strength on the morning of July 13th before landfall in south-central Louisiana near Intracoastal City, Louisiana in Vermillion Parish. Tropical storm force winds reached the southeast Louisiana coast by midday on Friday, July 12th and spread slowly northwest reaching the Baton Rouge area during the evening of the 12th. Tropical storm wind impacts had ended across all of southeast Louisiana by midday on July 14th. Tropical storm force winds were primarily measured in gusts across southeast Louisiana. The exception was in Terrebonne and Assumption Parishes, close to the landfall location, where sustained tropical storm force winds and frequent gusts caused more significant power line and tree damage. A few tropical storm wind gusts were recorded in the metro New Orleans area but were not very impactful. No hurricane force wind gusts were recorded in southeast Louisiana.

Mostly minor to moderate storm surge flooding occurred across coastal southeast Louisiana, including Lake Pontchartrain, and a small part of the Mississippi Coast. Terrebonne Parish had significant storm surge flooding in the lower portion of the parish with storm tides of five to eight feet, locally up to nine feet. Several local levees were overtopped on the morning of July 13th flooding roads and a few homes. The highest storm tide reading was 9.11 feet NAVD88 at a USGS tide gauge at Caillou Lake near Dulac, Louisiana.

Storm total rainfall was generally between four and eight inches with a maximum rainfall of 8.83 inches recorded northeast of Denham Springs, Louisiana in Livingston Parish. Isolated flash flooding of streets and secondary roadways occurred on July 13th in the greater Baton Rouge area, but flash flooding was not widespread or significant. The lower Mississippi River was at unusually high stages from late August with the state at the New Orleans Carrolton gauge near 16.5 feet. The combination of storm surge entering the lower Mississippi River with very high river stages prompted concern of potential overtopping of levees along the Mississippi River in lower Plaquemines Parish prompting some evacuations of the area.

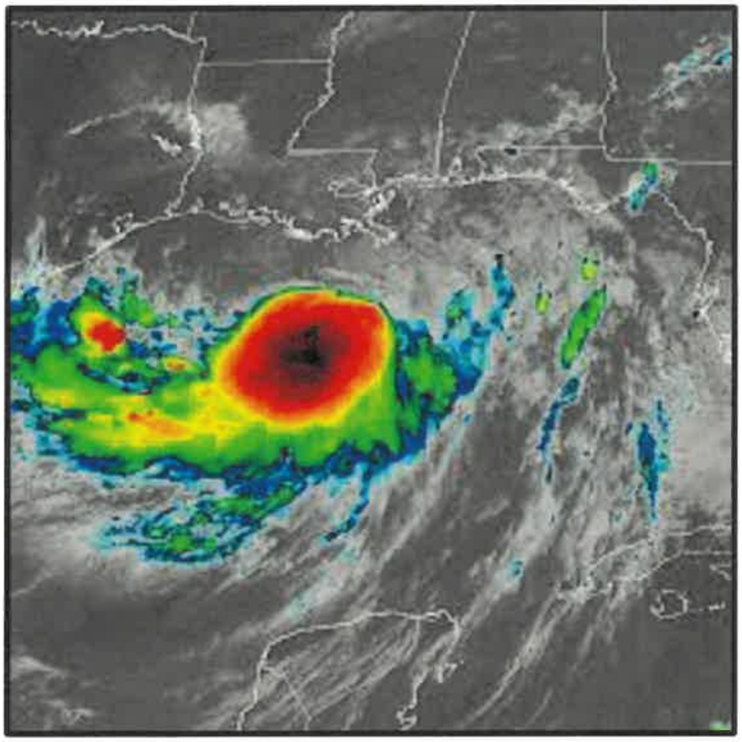


Figure 2-32: Hurricane Barry Rain Bands in the Gulf Coast Area.
(Source: NOAA)

In Allen Parish, occasional tropical storm wind gusts caused isolated power outages and downed a few trees.

Tropical Storm Laura (2020)

Laura began as a large tropical wave that emerged off the west coast of Africa on August 16th. The wave traversed the tropical Atlantic for the next several days with little additional organization. On August 19th, the system became better organized, closed off a low-level circulation, and subsequently the National Hurricane Center began issuing advisories on Tropical Depression Thirteen late that evening.

On the morning of August 21st, Tropical Depression Thirteen strengthened into Tropical Storm Laura, which was the earliest twelfth named Atlantic storm, beating the previous record of Hurricane Luis of 1995 by eight days. As Laura moved westward, little additional strengthening took place as the center moved over the northern Lesser Antilles later that evening, and south of Puerto Rico on August 22nd. Early on August 23rd, Tropical Storm Laura made landfall across Hispaniola, traversed the entire island, and made landfall across Eastern Cuba later that evening. Tropical Storm Laura continued west northwestward, traveling just south of the island with a second landfall across Western Cuba late on August 24th.

On August 25th, Laura entered the Gulf of Mexico and became a Category 1 hurricane at 10 AM CDT. Laura began to explosively intensify on August 26th, reaching category 2 by 1 AM CDT, category 3 by 7 AM CDT, and category 4 by 1 PM CDT. Laura reached a peak intensity of 150 mph (130 knots) and a minimum central pressure of 937 millibars (27.67 inches of mercury) by 8 PM CDT.

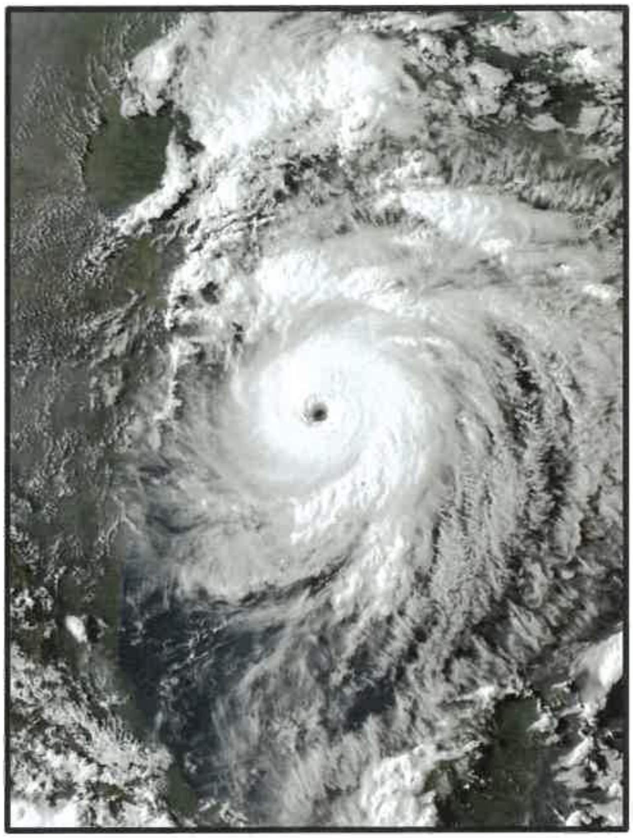


Figure 2-33: Hurricane Laura in the Gulf Coast Area. (Source: NOAA)

With little change in strength, Laura made landfall at Cameron, Louisiana around 1 AM CDT August 27th, with sustained winds of 150 mph (130 knots) and a minimum central pressure of 938 millibars (27.70 inches of mercury). Laura was the strongest hurricane to strike Southwest Louisiana since records began in 1851. Laura slowly weakened after landfall but maintained major hurricane status throughout its passage across Cameron, Calcasieu, and southern Beauregard Parishes, and category 2 status across northern Beauregard and Vernon parishes as daybreak approached on August 27th. Laura finally weakened below hurricane strength by Noon as it was crossing I-20 in North Louisiana. With this being the strongest hurricane to affect Southwest Louisiana, wind damage to buildings and trees was major to catastrophic across Cameron and Calcasieu parishes, with considerable damage across Beauregard and Vernon parishes where the core of the hurricane passed.

The National Weather Service in Lake Charles, Louisiana recorded a station record highest peak wind gust of 116 knots (133 mph) at 1:42 AM CDT before the Automated Surface Observing System (ASOS) wind equipment failed. However, the ASOS barometer sensor that was safely within the NWS building (which received very little damage) recorded a station record minimum sea level pressure of 956 millibars (28.23 inches of mercury) at 2:20 AM CDT when the eye of Hurricane Laura passed nearly overhead.

A total of 33 fatalities occurred throughout the state with four of them coming from falling trees. They included a 14-year-old girl in Vernon Parish, a 68-year-old man in Acadia Parish, a 51-year-old man in Jackson Parish, and a 64-year-old man in Allen Parish. Carbon monoxide poisoning from generators being inside homes, which is strongly discouraged, led to the deaths of twelve people in Calcasieu Parish and two people in Allen Parish. Another man died of drowning while aboard a sinking boat during the storm. Finally, one person died in Calcasieu Parish in a house fire, four people died in Calcasieu Parish, Natchitoches Parish, and Morehouse Parish during the cleanup process, and eight others died in Beauregard Parish, Grant Parish, Morehouse Parish, and Vernon Parish due to heat-related illnesses following the loss of electricity.

In Allen Parish, there was a voluntary evacuation with numerous trees and power lines downed. Homes and businesses were damaged from fallen trees or wind. All of the parish was without power immediately after the storm. A 64 year-old woman died from a fallen tree. Wind gusts ranged from 80 to 120 mph.

Tropical Storm Delta (2020)

Hurricane Delta was the record-tying fourth named storm of 2020 to strike Louisiana, as well as the record-breaking tenth named storm to strike the United States in that year. The twenty-sixty tropical cyclone, twenty-fifth named storm, ninth hurricane, and third major hurricane of the record breaking 2020 Atlantic hurricane season, Delta formed from a tropical wave which was first monitored by the National Hurricane Center on October 1. As it tracked across the western Caribbean, it rapidly intensified into a Category 4 hurricane. In fact, intensifying from tropical depression to Category strength in 40 hours is the fastest rate of intensification of any storm on record in the Atlantic Basin and accomplished by Delta. Delta quickly weakened to a category 1 hurricane after making its first landfall on the Yucatan Peninsula. It gradually recurved north towards the Louisiana coastline, fluctuating in intensity between category 2 and 3.

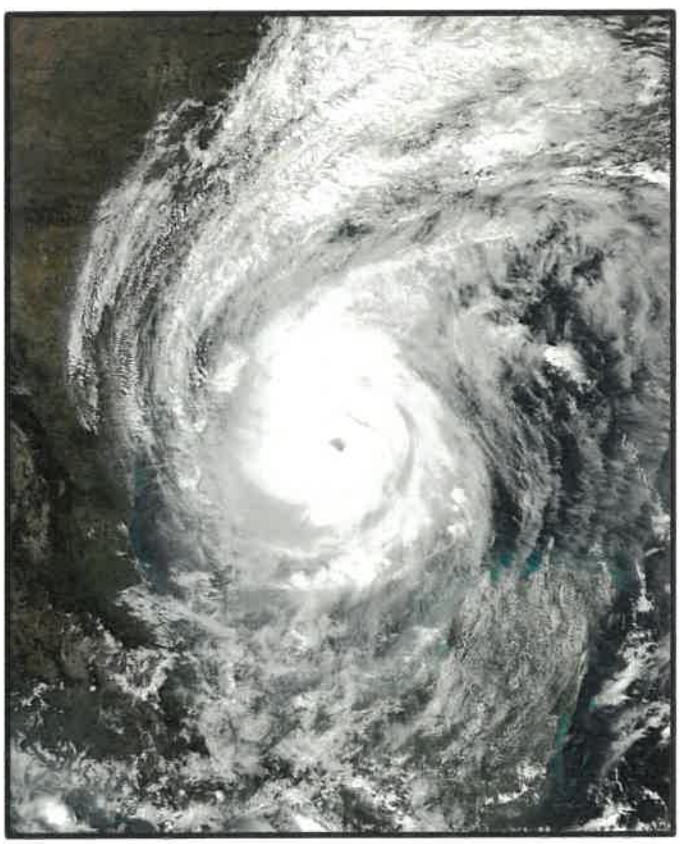


Figure 2-34: Hurricane Delta in the Gulf Coast Area.
(Source: NOAA)

Hurricane Delta made landfall around 5 pm as a category 2 storm east of Cameron, Louisiana or about 15 miles east of where category 4 Hurricane Laura made landfall just a couple of months earlier of the same year. Local impacts included 50 to 70 mph wind gusts across the area, storm surge of 2 to 3 feet above ground, and widespread tree and structural damage. There were six injuries due to Hurricane Delta. In addition, outer bands of Delta produced a significant amount of rainfall on the north side of Baton Rouge Metro. Upwards of five to 10 inches of rain fell, causing street flooding in Baton Rouge and moderate river flooding in the region. Delta caused approximately $100 million worth of damage across southeast Louisiana.

In Allen Parish, wind gusts were around 75 mph and heavy rainfall lead to numerous downed trees and power lines. Flooding occurred in numerous locations from a reported 5 to 15 inches of rainfall. Major flooding occurred along the Calcasieu River at Oberlin and Kinder with crests reaching the 7th and 6th highest peaks respectively.

Probability

The annual return rate (frequency) for tropical cyclone occurrences in the parish is 0.43 (43% annual probability) or approximately 1 tropical cyclone occurrence every 2 to 3 years.

Climate Change Impacts

Climate change has the potential to alter the prevalence and severity of extreme incidents such as tropical cyclones. Louisiana is expected to experience more days with temperatures above 95°F this century which means an increase in sea surface and ambient temperatures, alterations in the hydrological cycle, and an increase in seal level which collectively may increase the frequency of large storm incidents and impacts. Research indicates that the warming climate will increase the frequency of Category 4 and 5 hurricanes but decrease the frequency of less severe tropical cyclone incidents by the end of the century. This increase in the frequency of Category 4 and 5 hurricanes will lead to an increase in damage to the built environment and increased negative effects on the economy and ecosystem.

Climate change is amplifying the impacts of tropical cyclones on both infrastructure and vulnerable populations, making them more frequent and severe. As ocean temperatures rise due to global warming, tropical cyclones have access to greater energy, leading to stronger and more destructive storms. The intensification of cyclones poses significant risks to infrastructure located in coastal regions.

One of the primary impacts of tropical cyclones on infrastructure is the damage caused by strong winds and storm surges. Cyclones can rip apart buildings, topple power lines, and uproot trees, leading to widespread destruction of homes, businesses, and public facilities. Coastal areas are particularly vulnerable to storm surges, which can inundate low-lying regions and cause severe flooding, damaging roads, bridges, and critical lifeline infrastructure such as water and sewage systems.

Vulnerable populations face disproportionate risks during tropical cyclones, especially in low-lying coastal communities. People with limited mobility, the elderly, and low-income households often lack resources and access to evacuation options, making them more susceptible to the devastating impacts of cyclones. Displacement, property damage, and loss of livelihoods are common consequences for vulnerable populations affected by cyclones, exacerbating existing social inequalities and pushing them further into hardship.

Moreover, tropical cyclones can have long-lasting effects on the mental and physical health of vulnerable populations. The trauma caused by experiencing such extreme weather events can lead to long-term psychological distress. Lack of access to healthcare and resources after cyclones can also result in a higher risk of waterborne diseases and malnutrition for vulnerable communities.

To mitigate the impacts of climate change on infrastructure and vulnerable populations concerning tropical cyclones, several actions are crucial. Investing in more resilient infrastructure that can withstand stronger storms and higher storm surges is essential to minimize damage and ensure the continuity of critical services. Enhancing early warning systems and evacuation plans can save lives and improve the preparedness of vulnerable populations. Additionally, providing social safety nets and support to vulnerable communities can aid in their recovery and reduce the long-term impacts of cyclones on their well-being. Mitigating climate change by reducing greenhouse gas emissions is also vital to curbing the intensification of tropical cyclones and protecting both infrastructure and vulnerable populations from their devastating effects.

Vulnerability Analysis

The NRI includes data on the expected annual losses to individual natural hazards, historical losses, and overall risk at the county and Census tract level. The following table provides an overview of each category at the county level for tropical cyclones.

Table 2-75: National Risk Index (NRI) Summarization of Tropical Cyclone Occurrences for the Parish. (Source: National Risk Index)

Expected Annual Losses	Overall Risk Rating
Relatively Low	Relatively Low

Estimated Impact and Potential Loss

Using Hazus 100-Year Hurricane Model, the 100-year hurricane scenario was analyzed to determine losses from this worst-case scenario. The following table shows the total economic losses that would result from this occurrence.

Table 2-76: Total Estimated Losses for a 100-Year Hurricane Event (Source: Hazus)

Jurisdiction	Estimated Total Losses from 100-Year Hurricane Event
Unincorporated Allen Parish	$9,231,598
Elizabeth	$324,914
Kinder	$1,690,797
Oakdale	$5,214,201
Oberlin	$1,092,395
Reeves	$172,196
Total	**$17,726,102**

Total losses from a 100-year hurricane event for the parish were compared with the total value of assets to determine the ratio of potential damage to total inventory in the table on the next page.

Table 2-77: Ratio of Total Losses to Total Estimated Value of Assets for the Parish.
(Source: Hazus)

Jurisdiction	Estimated Total Losses from 100-Year Hurricane Event	Total Estimated Value of Assets	Ratio of Estimated Losses to Total Value
Unincorporated Allen Parish	$9,231,598	$1,634,393,000	0.6%
Elizabeth	$324,914	$74,736,000	0.4%
Kinder	$1,690,797	$382,823,000	0.4%
Oakdale	$5,214,201	$880,508,000	0.6%
Oberlin	$1,092,395	$237,577,000	0.5%
Reeves	$172,196	$26,044,000	0.7%

Based on the Hazus Hurricane Model, estimated total losses for the parish and the jurisdictions ranged from 0.4% to 0.7% of the total estimated value of all assets.

The Hazus Hurricane Model also provides a breakdown for seven primary sectors (Hazus occupancy) throughout the parish. The losses for the parish by sector are listed in the table below.

Table 2-78: Estimated Losses in Unincorporated Area of the Parish for a 100-Year Hurricane Event
(Source: Hazus)

Unincorporated Allen Parish	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$10,585
Commercial	$212,207
Government	$6,053
Industrial	$19,737
Religious / Non-Profit	$22,377
Residential	$8,954,625
Schools	$6,015
Total	**$9,231,598**

Table 2-79: Estimated Losses in Elizabeth for a 100-Year Hurricane Event
(Source: Hazus)

Elizabeth	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$373
Commercial	$7,469
Government	$213
Industrial	$695
Religious / Non-Profit	$788
Residential	$315,165
Schools	$212
Total	**$324,914**

Table 2-80: Estimated Losses in Kinder for a 100-Year Hurricane Event (Source: Hazus)

Kinder	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$1,939
Commercial	$38,866
Government	$1,109
Industrial	$3,615
Religious / Non-Profit	$4,098
Residential	$1,640,069
Schools	$1,102
Total	**$1,690,797**

Table 2-81: Estimated Losses in Oakdale for a 100-Year Hurricane Event (Source: Hazus)

Oakdale	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$5,979
Commercial	$119,859
Government	$3,419
Industrial	$11,148
Religious / Non-Profit	$12,639
Residential	$5,057,761
Schools	$3,397
Total	**$5,214,201**

Table 2-82: Estimated Losses in Oberlin for a 100-Year Hurricane Event (Source: Hazus)

Oberlin	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$1,253
Commercial	$25,111
Government	$716
Industrial	$2,336
Religious / Non-Profit	$2,648
Residential	$1,059,621
Schools	$712
Total	**$1,092,395**

Table 2-83: Estimated Losses in Reeves for a 100-Year Hurricane Event (Source: Hazus)

Reeves	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$197
Commercial	$3,958
Government	$113
Industrial	$368
Religious / Non-Profit	$417
Residential	$167,030
Schools	$112
Total	**$172,196**

The following figure displays the wind zones that affect the parish in relation to critical facilities throughout the parish:

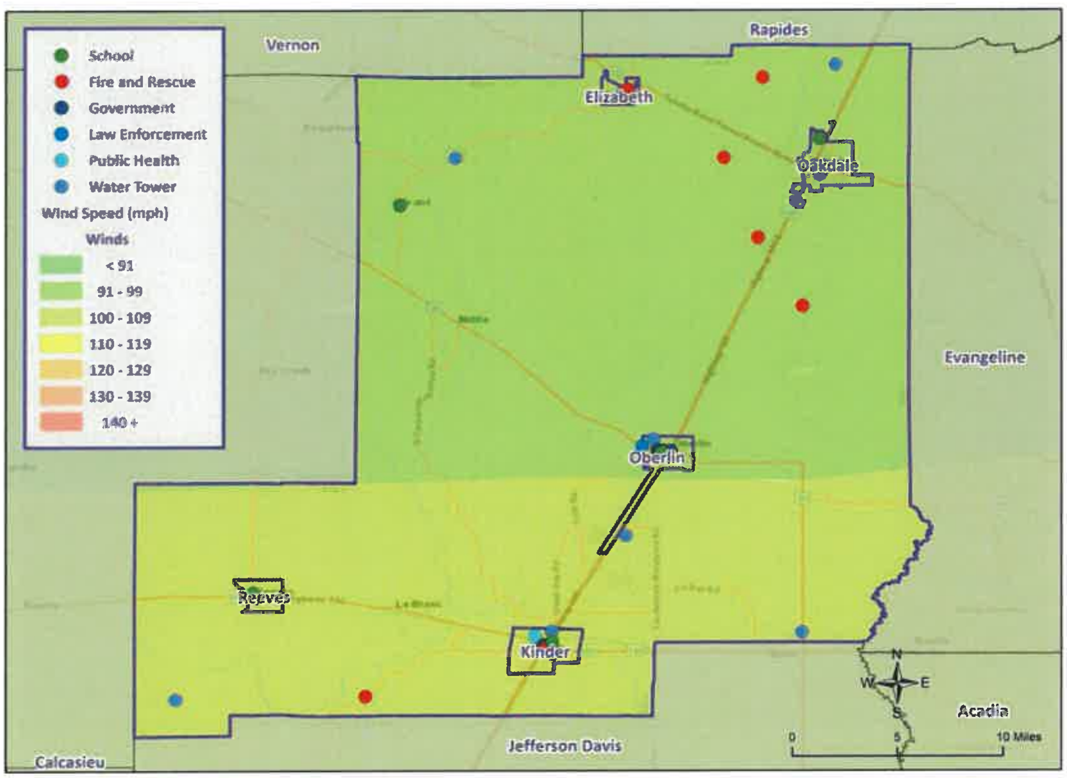


Figure 2-35: Winds Zones for the Parish in Relation to Critical Facilities

Vulnerable Population

The total population within the parish that is susceptible to a tropical cyclone hazard is shown in the table below:

Table 2-84: Number of People Susceptible to a 100-Year Hurricane Event in the Parish (Source: Hazus)

Number of People Exposed to Hurricane Hazards			
Location	**# in Community**	**# in Hazard Area**	**% in Hazard Area**
Unincorporated Allen Parish	11,848	11,848	100%
Elizabeth	417	417	100%
Kinder	2,170	2,170	100%
Oakdale	6,692	6,692	100%
Oberlin	1,402	1,402	100%
Reeves	221	221	100%
Total	**22,750**	**22,750**	**100%**

The Hazus hurricane model was also extrapolated to provide an overview of vulnerable populations throughout the parish. These populations are illustrated in the following tables:

Table 2-85: Vulnerable Populations in Unincorporated Area of the Parish for a 100-Year Hurricane Event (Source: Hazus)

Unincorporated Allen Parish		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	11,848	100.0%
Persons Under 5 Years	767	6.5%
Persons Under 18 Years	1,943	16.4%
Persons 65 Years and Over	1,531	12.9%
White	8,477	71.6%
Minority	3,371	28.5%

Table 2-86: Vulnerable Populations in Elizabeth for a 100-Year Hurricane Event (Source: Hazus)

Elizabeth		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	417	100.0%
Persons Under 5 Years	43	10.3%
Persons Under 18 Years	103	24.6%
Persons 65 Years and Over	43	10.3%
White	405	97.2%
Minority	12	2.8%

Table 2-87: Vulnerable Populations in Kinder for a 100-Year Hurricane Event (Source: Hazus)

Kinder		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	2,170	100.0%
Persons Under 5 Years	206	9.5%
Persons Under 18 Years	383	17.6%
Persons 65 Years and Over	373	17.2%
White	1,531	70.6%
Minority	639	29.4%

Table 2-88: Vulnerable Populations in Oakdale for a 100-Year Hurricane Event (Source: Hazus)

Oakdale		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	6,692	100.0%
Persons Under 5 Years	345	5.2%
Persons Under 18 Years	857	12.8%
Persons 65 Years and Over	738	11.0%
White	4,176	62.4%
Minority	2,516	37.6%

Table 2-89: Vulnerable Populations in Oberlin for a 100-Year Hurricane Event (Source: Hazus)

Oberlin		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	1,402	100.0%
Persons Under 5 Years	86	6.1%
Persons Under 18 Years	255	18.2%
Persons 65 Years and Over	250	17.9%
White	764	54.5%
Minority	638	45.5%

Table 2-90: Vulnerable Populations in Reeves for a 100-Year Hurricane Event (Source: Hazus)

Reeves		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	221	100.0%
Persons Under 5 Years	14	6.5%
Persons Under 18 Years	58	26.3%
Persons 65 Years and Over	18	8.2%
White	209	94.4%
Minority	12	5.6%

Vulnerability Score

Table 2-91: Tropical Cyclone Vulnerability Score for Allen Parish.

Tropical Cyclone Vulnerability Score						
	Probability	Impact	Spatial Extent	Warning Time	Duration	Risk Factor
Risk Level	3	4	4	1	4	3.3

Wildfires

Profile

A wildfire is combustion in a natural setting, marked by flames or intense heat. Most frequently, wildfires are ignited by lightning or unintentionally by humans. Fires set purposefully (but lawfully) are referred to as controlled fires or burns. There are three different types of wildfires: (1) Ground fires burn primarily in the thick layers of organic matter directly on the forest floor and even within the soil. Ground fires destroy root networks, peat, and compact litter. These fires spread extremely slowly and can smolder for months. (2) Surface fires burn litter (e.g., leaves, small sticks) and vegetative matter in the underbrush of a forest. (3) Crown fires spread rapidly by wind and move quickly by jumping along the tops of trees. There are two types of crown fires: (a) passive (or dependent) crown fires rely on heat transfer from surface fire, whereas (b) active (or independent) crown fires do not require any heat transfer from below. Active crown fires tend to occur with greater tree density and drier conditions. A firestorm is a mass crown fire (also called a running crown fire, area fire, or conflagration). They are large, continuous, intense fires that lead to violent convection. They are characterized by destructively violent surface in-drafts near and beyond their perimeter. Crown fires are the most damaging and most difficult to contain. The intensity of crown fires enables the fire to produce its own wind gusts. These so-called fire whirls can move embers ahead of the fire front and ignite new fires. Fire whirls are spinning vortex columns of ascending hot air and gases rising from the fire. Large fire whirls have the intensity of a small tornado.

The conditions conducive to the occurrence of wildfires are not distributed equally across the United States. Wildfires have a much greater likelihood of occurring in the western part of the country. Although less frequent than in other areas, wildfires do occur in Louisiana. Wildfire danger can vary greatly season to season, and is exacerbated by dry weather conditions. Factors that increase susceptibility to wildfires are the availability of fuel (e.g., litter and debris), topography (i.e., slope and elevation affect various factors like precipitation, fuel amount, and wind exposure), and specific meteorological conditions (e.g., low rainfall, high temperatures, low relative humidity, and winds). The potential for wildfire is often measured by the Keetch–Byram Drought Index (KBDI), which represents the net effect of evapotranspiration and precipitation in producing cumulative moisture deficiency in the soil. The KBDI aims to measure the amount of precipitation needed to return soil to its full field capacity, with KBDI values ranging from 0 (moist soil) to 800 (severe drought).

The wildland-urban interface and intermix land cover surface, developed by the SILVIS Lab at the University of Wisconsin in Madison, can be used to determine areas at risk. Wildland-urban interface is defined as the zone of transition between unoccupied land and human development. This usually includes communities or areas of human development that are within 0.5 miles of the zone. Wildland-urban intermix is defined as areas in which human development is intermixed with wildland fuels. Intermix and interface areas are at risk of wildfires.

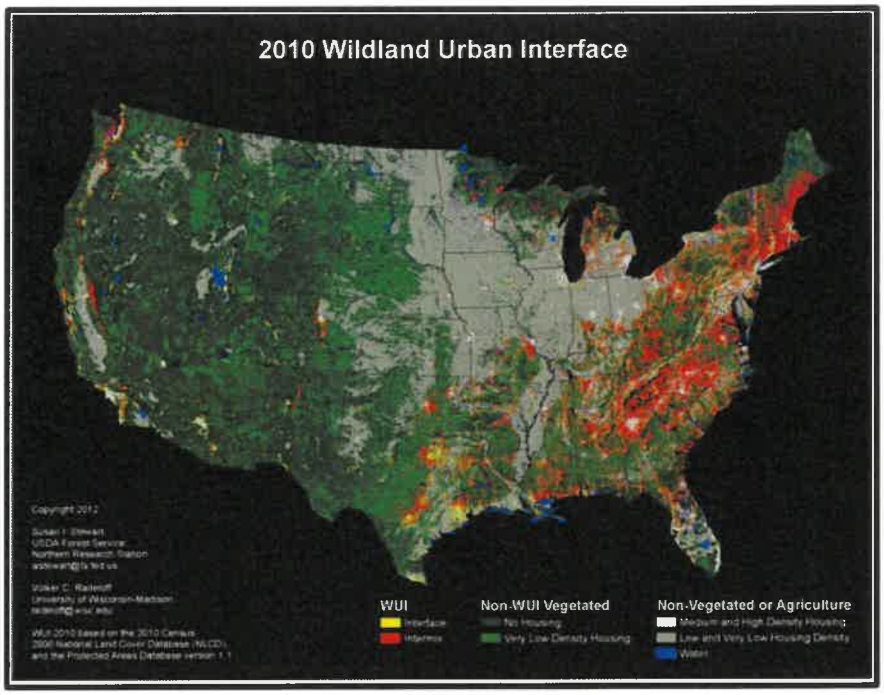


Figure 2-36: Contiguous USA Wildland Urban Interface Map.

According to the State of Louisiana Forestry Division, most forest fires in Louisiana are caused by intentional acts (arson) or carelessness and negligence committed by people, exacerbated by human confrontation with nature. The wildland–urban interface is the area in which development meets wildland vegetation, where both vegetation and the built environment provide fuel for fires. As development near wildland settings continues, more people and property are exposed to wildfire danger.

The Southern Group of State Foresters developed the Southern Wildfire Risk Assessment Portal to create awareness among the public and government sectors about the threat of wildfires in their areas. The Southern Wildfire Assessment Portal allows users to identify areas that are most prone to wildfires. The table below summarizes the intensity levels assigned to areas in the Southern Wildfire Assessment Portal.

Table 2-92: Southern Group of State Foresters Wildfire Risk Assessment Fire Intensity Scale. (Source: Southern Wildfire Assessment Portal)

Fire Intensity	
Level	**Definition**
1	Lowest Intensity: Minimal direct wildfire impacts. Location has a minimal chance of being directly impacted by a wildfire.
2	Low Intensity: Small flames usually less than two feet long; small amount of very short-range spotting possible. Fires are easy to suppress.
3	Moderate Intensity: Flames up to eight feet in length; short-range spotting is possible.
4	High Intensity: Large flames up to 30 feet in length; short-range spotting common; medium range spotting possible.
5	Highest Intensity: Very large flames up to 150 feet in length; profuse short-range spotting, frequent long-range spotting; strong fire induced winds.

Risk Assessment

Geographic Extent

Wildfires impact areas that are populated with forests and grasslands. The worst-case scenario for the unincorporated area of the parish is a level 5; Oberlin a level 4; Elizabeth, Kinder, Oakdale, and Reeves a level 3. The following figure displays the areas of wildland-urban interface and intermix in the Parish and the jurisdictions.

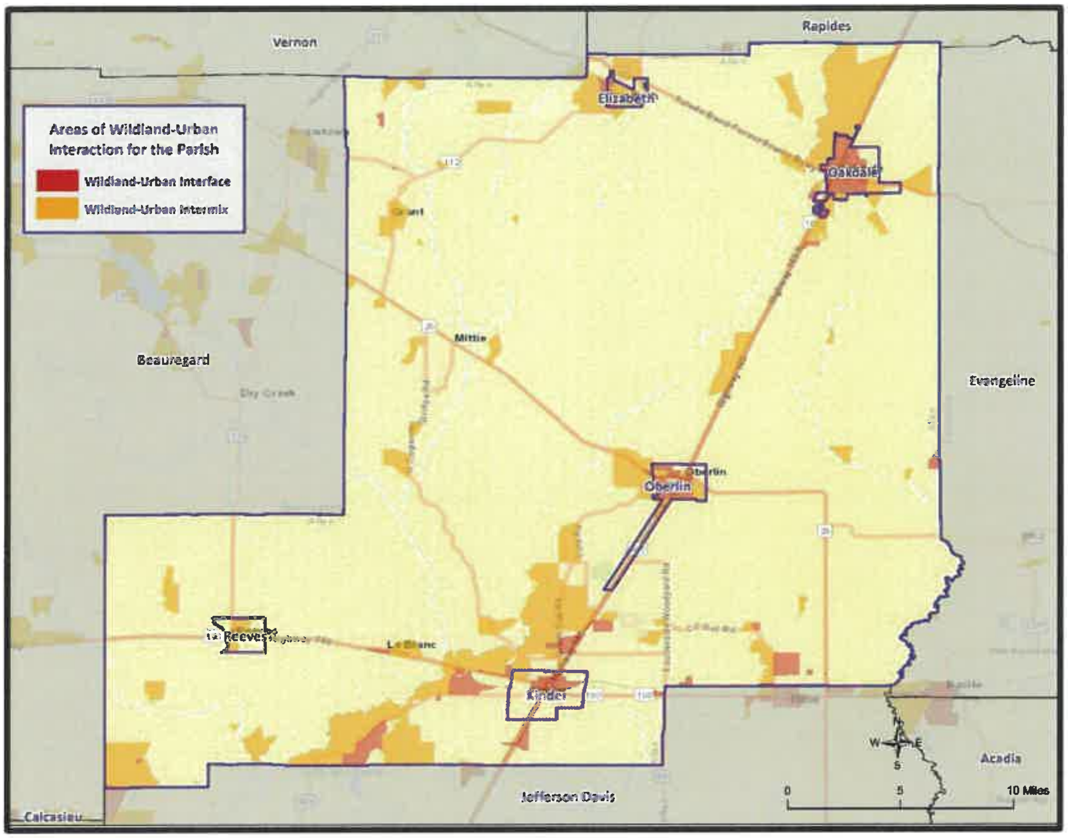


Figure 2-37: Wildland-Urban Interaction in the Parish.

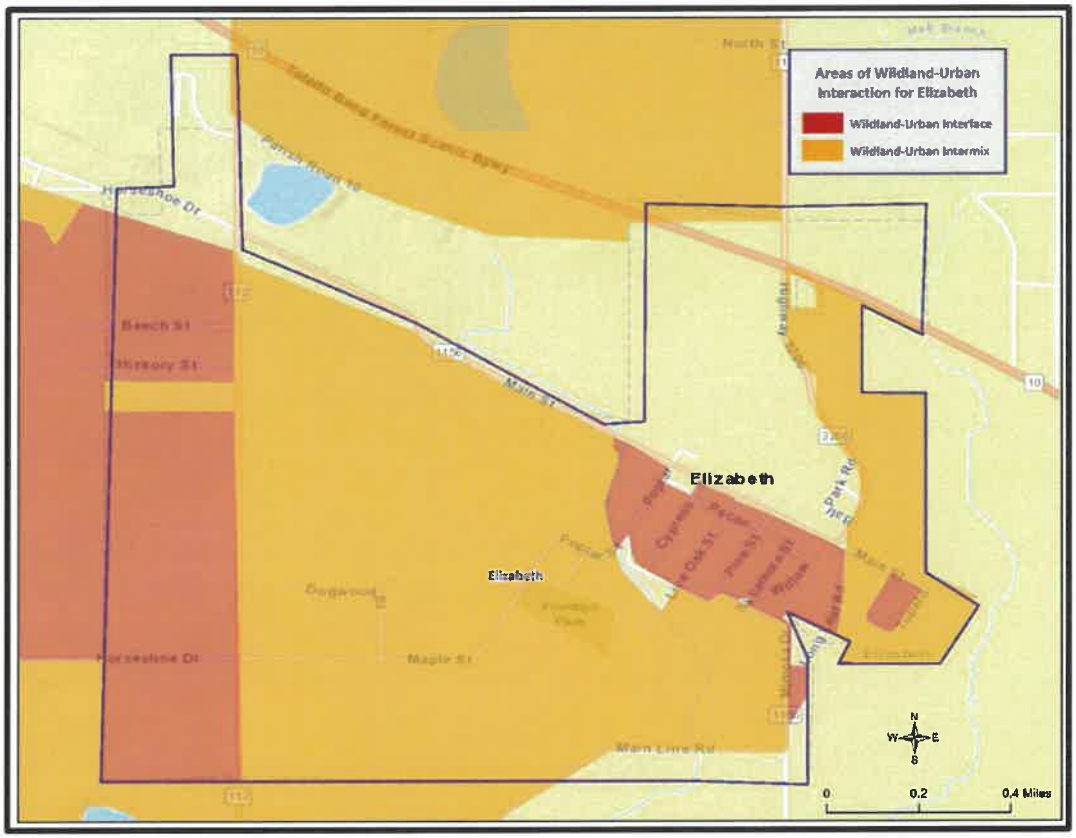


Figure 2-38: Wildland-Urban Interaction in Elizabeth.

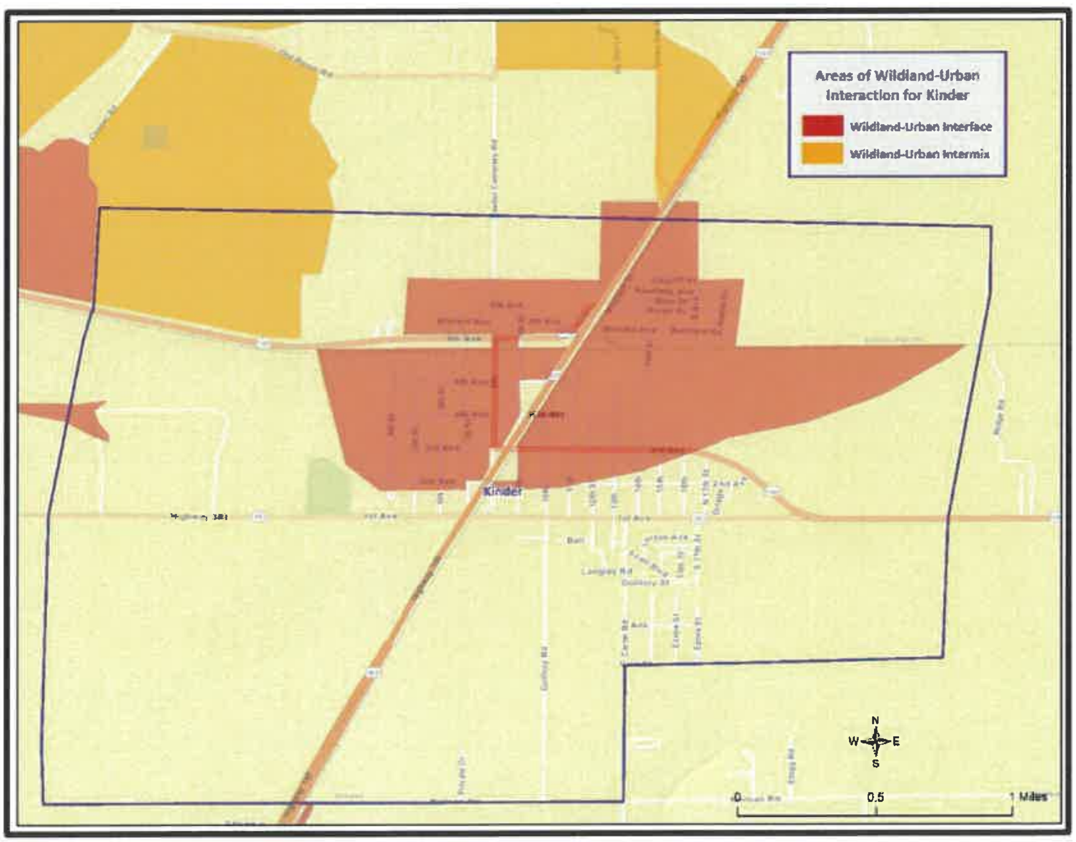


Figure 2-39: Wildland-Urban Interaction in Kinder.

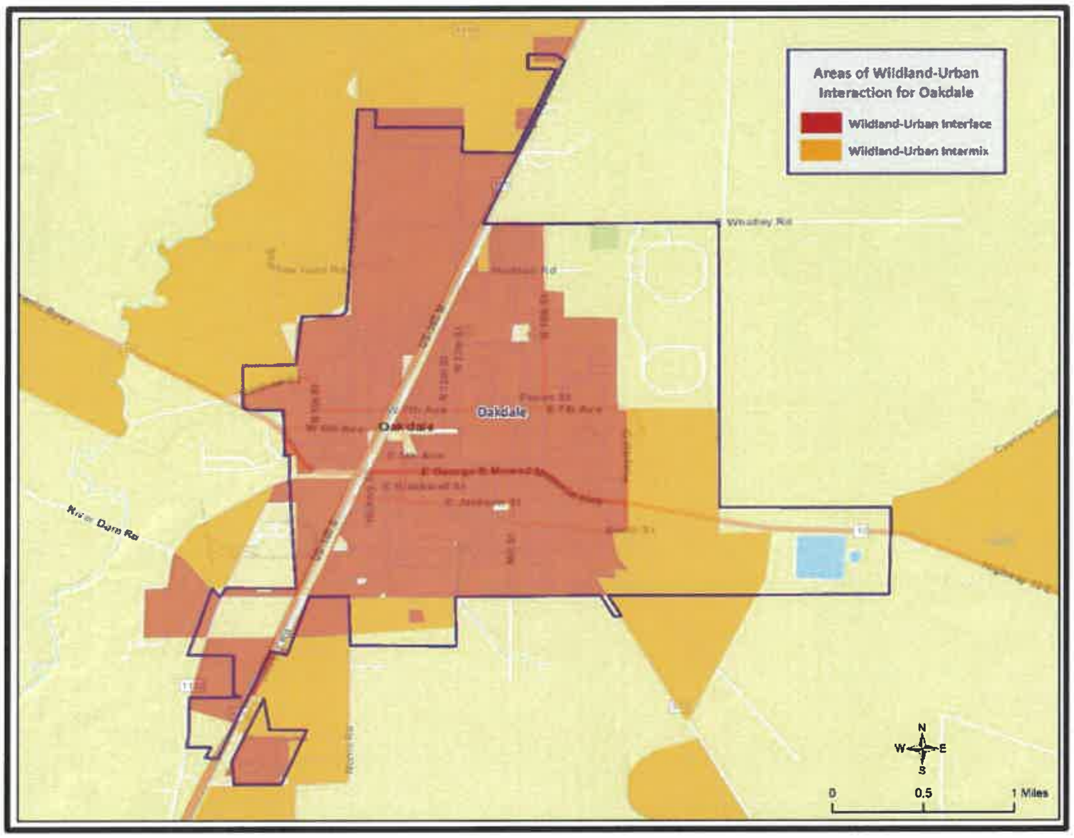


Figure 2-40: Wildland-Urban Interaction in Oakdale.

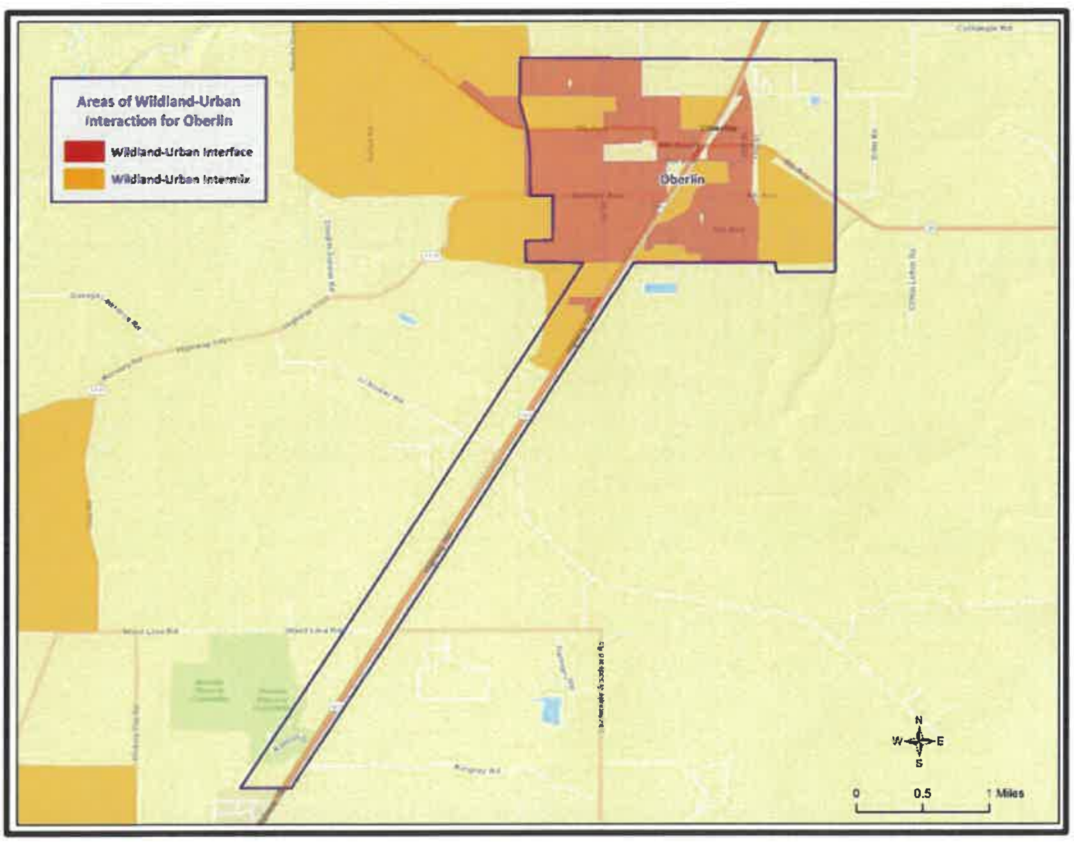


Figure 2-41: Wildland-Urban Interaction in Oberlin.

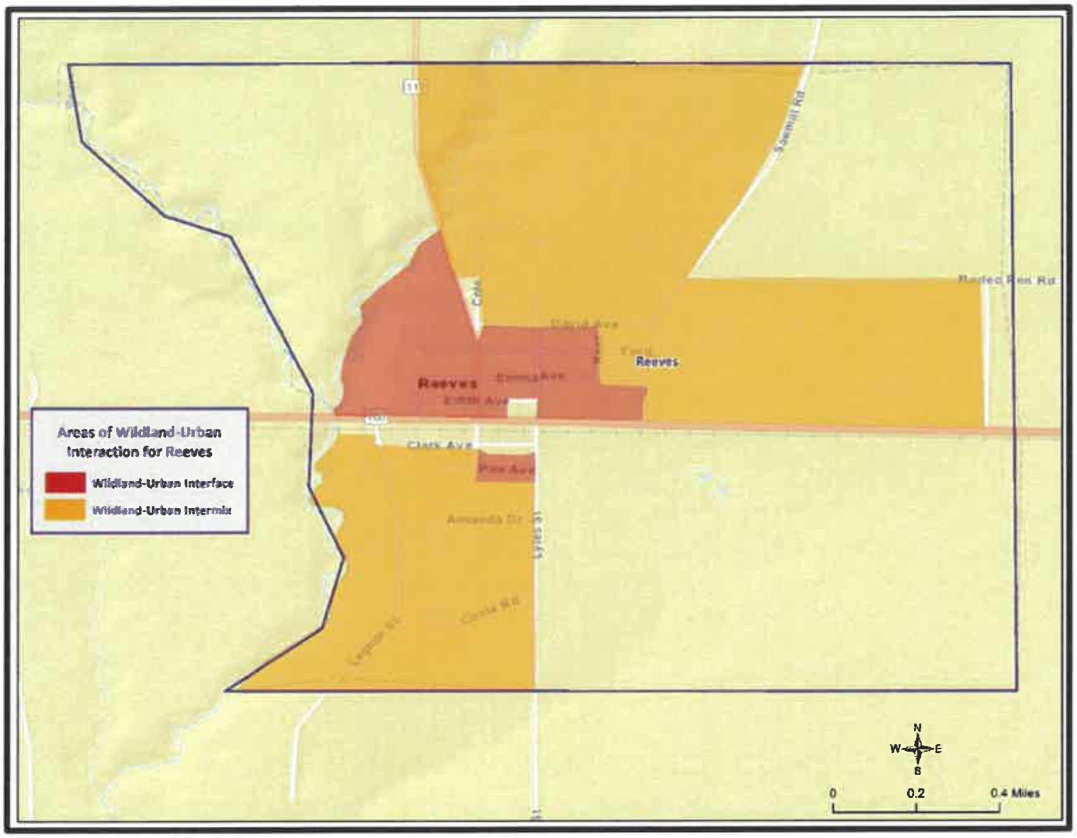


Figure 2-42: Wildland-Urban Interaction in Reeves.

Previous Occurrences

The parish has experienced no wildfire occurrences between the years 1996 and 2022 per the NCEI Storm Events Database. In 2023, the state of Louisiana has experienced an unprecedented drought event that has caused multiple wildfires throughout the state. Allen Parish has experienced some wildfire events throughout their parish in the latter half of 2023. The NCEI Storm Events database has not yet provided data for these wildfire events at the time of this plan update being drafted. Allen Parish places a large amount of emphasis on the importance of wildfire education and plans to heavily pursue mitigative measures over the next five years to combat wildfire events.

Probability

The annual return rate (frequency) for wildfire occurrences in the parish is less than 0.01 (< 1% annual probability) or approximately 1 wildfire event approximately every 27 years.

Climate Change Impacts

The increasing probability and intensity of drought caused by climate change across Louisiana indicates that the risk of wildfires will also increase. The presence of drought or prolonged dry spells will lead to an increase in dry grasses, brush, and forests that act as fuel for fires.

Climate change is playing a significant role in the increasing frequency and severity of wildfires, resulting in substantial impacts on infrastructure and vulnerable populations. Rising temperatures, prolonged droughts, and altered precipitation patterns create ideal conditions for wildfires to ignite and spread rapidly. The destruction of critical infrastructure is one of the most profound consequences of wildfires. Roads, power lines, telecommunication networks, and water supply systems are vulnerable to damage, hindering emergency response efforts and disrupting access to essential services for communities affected by wildfires.

Vulnerable populations face unique challenges during wildfires. Those living in fire-prone areas often lack the means to adequately protect their homes and properties, making them more susceptible to property loss and displacement. Low-income communities may also have limited access to resources for evacuation and recovery, further exacerbating the impacts of wildfires on their well-being. Additionally, the elderly, children, and individuals with respiratory conditions are at heightened health risks due to poor air quality caused by wildfire smoke, which can lead to respiratory problems and other health issues.

Furthermore, wildfires can have long-term social and economic impacts on vulnerable populations. Displacement and property loss can force people to leave their homes and communities, leading to disruptions in education, employment, and social connections. The loss of livelihoods, particularly for those dependent on agriculture or tourism in affected regions, can exacerbate poverty and economic inequality.

To address the impacts of climate change on infrastructure and vulnerable populations concerning wildfires, various strategies are necessary. Investing in fire-resistant infrastructure and implementing better land use planning can help reduce the risk of infrastructure damage during wildfires. Creating and improving evacuation plans and warning systems can aid in ensuring the safety of vulnerable communities. Additionally, providing support and resources for those affected by wildfires, such as temporary housing, healthcare, and financial assistance, is essential for their recovery and well-being. To mitigate future wildfires and their impacts, it is imperative to take urgent action on climate change by reducing greenhouse gas emissions and implementing sustainable land management practices to protect both infrastructure and vulnerable populations from the increasing threats of wildfires.

Vulnerability Analysis

The NRI includes data on the expected annual losses to individual natural hazards, historical losses, and overall risk at the county and Census tract level. The following table provides an overview of each category at the county level for wildfires.

Table 2-93: National Risk Index (NRI) Summarization of Wildfire Occurrences for the Parish. (Source: National Risk Index)

Expected Annual Losses	Overall Risk Rating
Relatively Low	Relatively Low

Estimated Impact and Potential Loss

Using Hazus, along with wildland-urban interaction areas, the table on the next page presents an analysis of total building exposure that is located within the wildland-urban interaction areas.

Table 2-94: Total Building Exposure by Wildland-Urban Interaction Areas.
(Source: Hazus)

Jurisdiction	Estimated Total Building Exposure
Unincorporated Allen Parish	$1,312,071,000
Elizabeth	$74,736,000
Kinder	$265,257,000
Oakdale	$870,392,000
Oberlin	$232,049,000
Reeves	$28,717,000
Total	**$2,783,222,000**

Hazus also provides a breakdown by jurisdiction for seven primary sectors (Hazus occupancy) throughout the parish. Utilizing this information with the wildland-urban interaction areas allows for identifying the total exposure by jurisdiction.

Table 2-95: Estimated Exposure for Unincorporated Area of the Parish by Sector.
(Source: Hazus)

Unincorporated Allen Parish	Estimated Total Building Exposure by Sector
Agricultural	$4,310,000
Commercial	$77,821,000
Government	$13,682,000
Industrial	$47,863,000
Religious / Non-Profit	$45,980,000
Residential	$1,114,327,000
Schools	$8,088,000
Total	**$1,312,071,000**

Table 2-96: Estimated Exposure for Elizabeth by Sector.
(Source: Hazus)

Elizabeth	Estimated Total Building Exposure by Sector
Agricultural	$894,000
Commercial	$3,174,000
Government	$530,000
Industrial	$2,133,000
Religious / Non-Profit	$2,224,000
Residential	$65,781,000
Schools	$0
Total	**$74,736,000**

Table 2-97: Estimated Exposure in Kinder Rouge by Sector.
(Source: Hazus)

Kinder	Estimated Total Building Exposure by Sector
Agricultural	$0
Commercial	$72,303,000
Government	$886,000
Industrial	$990,000
Religious / Non-Profit	$9,318,000
Residential	$178,634,000
Schools	$3,126,000
Total	**$265,257,000**

Table 2-98: Estimated Exposure for Oakdale by Sector.
(Source: Hazus)

Oakdale	Estimated Total Building Exposure by Sector
Agricultural	$142,000
Commercial	$160,721,000
Government	$8,038,000
Industrial	$26,470,000
Religious / Non-Profit	$39,124,000
Residential	$630,305,000
Schools	$5,592,000
Total	**$870,392,000**

Table 2-99: Estimated Exposure for Oberlin by Sector.
(Source: Hazus)

Oberlin	Estimated Total Building Exposure by Sector
Agricultural	$1,764,000
Commercial	$27,330,000
Government	$3,144,000
Industrial	$918,000
Religious / Non-Profit	$4,352,000
Residential	$184,477,000
Schools	$10,064,000
Total	**$232,049,000**

Table 2-100: Estimated Exposure for Reeves by Sector.
(Source: Hazus)

Reeves	Estimated Total Building Exposure by Sector
Agricultural	$0
Commercial	$990,000
Government	$266,000
Industrial	$0
Religious / Non-Profit	$2,418,000
Residential	$21,167,000
Schools	$3,876,000
Total	$28,717,000

Vulnerable Population

The total population within the parish that is located within a wildland-urban interaction area is shown in the table below:

Table 2-101: Population Located within a Wildland-Urban Interaction Areas.
(Source: 2020 U.S. Census Data)

Number of People Located in Wildland-Urban Interaction Areas			
Location	# in Community	# in Hazard Area	% in Hazard Area
Unincorporated Allen Parish	11,848	1,130	9.5%
Elizabeth	417	379	90.9%
Kinder	2,170	1,050	48.4%
Oakdale	6,692	4,470	66.8%
Oberlin	1,402	1,253	89.4%
Reeves	221	103	46.6%
Total	22,750	8,385	36.9%

The 2020 U.S. Census data was also extrapolated to provide an overview of populations located within wildland-urban interaction areas throughout the jurisdictions. The data is illustrated in the following tables:

Table 2-102: Population in Unincorporated Allen Parish Located within a Wildland-Urban Interaction Area.
(Source: 2020 Census Data)

Unincorporated Allen Parish		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	1,130	9.5%
Persons Under 5 Years	73	6.5%
Persons Under 18 Years	185	16.4%
Persons 65 Years and Over	146	12.9%
White	809	71.6%
Minority	321	28.5%

Table 2-103: Population in Elizabeth Located within a Wildland-Urban Interaction Area. (Source: 2020 Census Data)

Elizabeth		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	379	90.9%
Persons Under 5 Years	39	10.3%
Persons Under 18 Years	93	24.6%
Persons 65 Years and Over	39	10.3%
White	368	97.2%
Minority	11	2.8%

Table 2-104: Population in Kinder Located within a Wildland-Urban Interaction Area. (Source: 2020 Census Data)

Kinder		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	1,050	48.4%
Persons Under 5 Years	100	9.5%
Persons Under 18 Years	185	17.6%
Persons 65 Years and Over	181	17.2%
White	741	70.6%
Minority	309	29.4%

Table 2-105: Population in Oakdale Located within a Wildland-Urban Interaction Area. (Source: 2020 Census Data)

Oakdale		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	4,470	66.8%
Persons Under 5 Years	230	5.2%
Persons Under 18 Years	573	12.8%
Persons 65 Years and Over	493	11.0%
White	2,789	62.4%
Minority	1,681	37.6%

Table 2-106: Population in Oberlin Located within a Wildland-Urban Interaction Area. (Source: 2020 Census Data)

Oberlin		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	1,253	89.4%
Persons Under 5 Years	76	6.1%
Persons Under 18 Years	228	18.2%
Persons 65 Years and Over	224	17.9%
White	683	54.5%
Minority	570	45.5%

Table 2-107: Population in Reeves Located within a Wildland-Urban Interaction Area. (Source: 2020 Census Data)

Reeves		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	103	46.6%
Persons Under 5 Years	7	6.5%
Persons Under 18 Years	27	26.3%
Persons 65 Years and Over	8	8.2%
White	97	94.4%
Minority	6	5.6%

Vulnerability Score

Table 2-108: Wildfire Vulnerability Score for Allen Parish.

Wildfire Vulnerability Score						
	Probability	**Impact**	**Spatial Extent**	**Warning Time**	**Duration**	**Risk Factor**
Risk Level	1	3	4	1	2	2.25

Winter Weather

Profile

For Louisiana and other parts of the southeastern United States, a severe winter storm occurs when humid air from the Gulf of Mexico meets a cold air mass from the north. Once the cold air mass crosses Louisiana, and the temperature drops, precipitation may fall in the form of snow or sleet. If the ground temperature is cold enough but air temperature is above freezing, rain can freeze instantly on contact with the surface, causing massive ice storms.

The winter weather events that affect the state of Louisiana are ice storms, freezes, and snow events. Of the winter weather events listed above, ice storms are the most dangerous. Ice storms occur during a precipitation event when warm air aloft exceeds 32 °F, while the surface remains below the freezing point. Ice will form on all surfaces when precipitation originating as rain or drizzle contacts physical structures. These ice storms are usually accompanied by freezing temperatures and occasionally snow.

Winter weather can be accompanied by strong winds, creating blizzard conditions with blinding, wind driven snow, severe drifting, and dangerous wind chill. These types of conditions are very rare in Louisiana, even in north Louisiana, but ice storms are more common. The climatic line between snow and rain often stalls over north Louisiana, creating ideal conditions for ice accumulation.

In a typical winter weather event, homes and buildings are damaged by ice accumulation, either directly by the weight of the ice on the roofs or by trees and/or limbs falling on buildings. While it is not very prevalent, this type of damage can occur in Louisiana, particularly in north Louisiana. Effects of winter weather more likely to occur in Louisiana, especially southern Louisiana, include extreme temperatures which can cause waterlines to freeze and sewer lines to rupture. This is especially true with elevated or mobile homes since cold air is able to access more of the building's infrastructure. Winter weather can also have a devastating effect on agriculture, particularly on crops (like citrus) that are dependent on warm weather. Long exposures to low temperatures can kill many kinds of crops, and ice storms can weigh down branches and fruit.

Winter weather are not only a direct threat to human health through conditions like frostbite and hypothermia, but they are also an indirect threat to human health due to vehicle accidents and loss of power and heat, which can be disrupted for days. However, these impacts are rarely seen in Louisiana. As people use space heaters and fireplaces to stay warm, the risk of household fires and carbon monoxide poisoning increases.

Winter weather events occur throughout Louisiana usually during the colder calendar months of December, January, and February. Severe weather events do not occur with the same frequency across all parts of Louisiana. The northern quarter of Louisiana has historically experienced the most severe winter events between 1987 and 2012. The central, and to an even greater extent the southern parts of the state, such as Ascension Parish, have experienced the fewest severe winter events. The table on the next page shows the Sperry-Piltz Ice Accumulation Index which is utilized to predict the potential damage to overhead utility systems from freezing rain and ice storms.

Table 2-109: Sperry-Piltz Ice Accumulation Index

Ice Damage Index	Damage and Impact Descriptions
0	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
2	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
3	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
4	Prolonged and widespread utility interruptions with extensive damage to main distribution feeder lines and some high voltage transmission lines/structure. Outages lasting 5 – 10 days.
5	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.

Risk Assessment

Geographic Extent

All of the parish planning area is susceptible to the effects of winter weather. The worst-case scenario for winter weather is a 2 on the Sperry-Piltz Ice Accumulation Index.

Previous Occurrences

The parish has experienced 10 winter weather occurrences between the years 1996 and 2022 per the NCEI Storm Events Database. There have been two winter weather events since the 2018 update.

Table 2-110: Historical Winter Weather Occurrences in the Parish since the 2018 Update.

Date	Synopsis	Property Damage	Crop Damage	Fatalities	Injuries
12/8/2017	Two to 4 inches of snow fell across Allen Parish during the morning of the 8th. Schools closed for a couple days while the snow melted.	$0	$0	0	0
1/16/2018	A light dusting of snow and sleet over a thin glaze of ice occurred during the 16th. Area travel was interrupted and area schools canceled classes for the day. Accumulation was less than half an inch.	$0	$0	0	0

Probability

The annual return rate (frequency) for winter weather occurrences in the parish is 0.37 (37% annual probability) or approximately one winter weather event every 2 to 3 years.

Climate Change Impacts

Winter weather is likely to become less frequent as the winter season decreases in length over the next century due to an increase in ambient and sea surface temperatures. By the end of the century, Louisiana is expected to experience a 5°F to 10°F increase in average ambient temperatures which will drastically reduce the number of days below freezing and lower the chance of winter weather. Precipitation is expected to increase during the winter months.

Climate change is influencing winter weather patterns, leading to significant impacts on both infrastructure and vulnerable populations. While it may seem counterintuitive, global warming can cause more frequent and intense winter weather events. The warming of the Arctic and the disruption of the polar jet stream can result in polar vortex shifts, causing freezing temperatures and extreme winter conditions in regions that typically experience milder winters.

Winter weather impacts infrastructure in various ways. Freezing temperatures can damage roads, bridges, and other transportation networks, leading to increased maintenance costs and travel disruptions. Ice and snow accumulation on power lines can cause blackouts and outages, leaving communities without electricity and heating during frigid temperatures. Water supply systems can also be affected, as frozen pipes can burst, leading to water shortages and damage to properties.

Vulnerable populations are particularly at risk during severe winter weather events. Homeless individuals may struggle to find shelter and protection from the cold, leading to an increased risk of hypothermia and frostbite. Low-income households may face difficulties in affording heating costs, potentially exposing them to unsafe living conditions. The elderly and those with limited mobility may find it challenging to access essential services and resources during snowstorms, leading to isolation and health risks.

Moreover, winter weather events can have economic consequences for vulnerable populations. Closures of schools and businesses during severe weather can lead to loss of income and educational disruptions, impacting families already facing financial challenges. In regions where winter tourism is vital, extreme winter weather can affect local economies, leading to job losses and reduced economic opportunities for vulnerable communities.

To address the impacts of climate change on infrastructure and vulnerable populations concerning winter weather, various measures are essential. Investing in winter-ready infrastructure, such as weather-resistant roads and insulated power lines, can help mitigate damage and improve resilience. Implementing programs to support vulnerable populations, such as providing emergency shelters, fuel assistance, and resources for winter preparedness, can protect them during extreme winter events. Climate change mitigation efforts to reduce greenhouse gas emissions are also crucial to addressing the root causes of extreme winter weather patterns, helping to protect both infrastructure and vulnerable populations from the adverse effects of winter weather in the long run.

Vulnerability Analysis

The NRI includes data on the expected annual losses to individual natural hazards, historical losses, and overall risk at the county and Census tract level. The table on the next page provides an overview of each category at the county level for winter weather.

Table 2-111: National Risk Index (NRI) Summarization of Winter Weather Occurrences for the Parish. (Source: National Risk Index)

Expected Annual Losses	Overall Risk Rating
Very Low	Very Low

Estimated Impact and Potential Loss

Since 1996, there have been five significant winter weather occurrences per the NCEI Storm Events Database. The total property damage associated with these storms totaled approximately $5,000. To estimate the potential losses on an annual basis, the total damages recorded were divided by the total number of years of available data in the NCEI Storm Events Database (1996 – 2022). This provides an annual estimated potential loss of $185 and $500 per event. The following table provides an estimate of potential property losses for the Parish:

Table 2-112: Estimated Annual Property Losses in the Parish resulting from Winter Weather Damage.

Estimated Annual Potential Losses from Winter Weather					
Unincorporated Allen Parish (52.1%)	Elizabeth (1.8%)	Kinder (9.5%)	Oakdale (29.4%)	Oberlin (6.2%)	Reeves (1.0%)
$104	$4	$19	$59	$12	$2

Vulnerable Population

Per the NCEI Storm Events Database, there have been no reported fatalities or injuries as a result of winter weather. However, winter weather can have a significant impact the population. They can cause physical injuries and even fatalities. High winds, falling trees, and structural collapses can pose immediate risks to people's safety during a storm. These storms can displace individuals and families from their homes, either temporarily or permanently. In cases of extensive property damage, people may be forced to evacuate or seek emergency shelter. The displacement can result in temporary homelessness or the need for long-term housing solutions.

Winter weather can disrupt critical infrastructure such as transportation systems, power grids, and water supply networks. Disruption in these services could lead to health issues or the inability to access essential services that are needed to meet basic needs. This can lead to not only physical issues but psychological effects as well.

Everyone in the parish is vulnerable to the impacts of winter weather; however, they can have a disproportionate impact on vulnerable populations exacerbating existing social, economic, and health disparities. Vulnerable populations, including low-income individuals, the homeless, and those living in standardized housing, are often more susceptible to the effects of winter weather.

Vulnerability Score

Table 2-113: Winter Weather Vulnerability Score for the Parish.

Winter Weather Vulnerability Score						
	Probability	Impact	Spatial Extent	Warning Time	Duration	Risk Factor
Risk Level	3	4	4	1	2	3

3. Capability Assessment

This section summarizes the results of efforts by each jurisdiction and other agency to develop policies, programs, and activities that directly or indirectly support hazard mitigation. It also provides information on resources and gaps in the parish's infrastructure, as well as relevant changes in its law since the last plan update, in order to suggest a mitigation strategy.

Through this assessment, Allen Parish and the incorporated jurisdictions are able to identify strengths that could be used to reduce losses and reduce risk throughout the communities. It also identifies areas where mitigation actions might be used to supplement current capabilities and create a more resilient community before, during, and after a hazard event.

Policies, Plans and Programs

These capabilities are unique to the parish and jurisdictions, including planning, regulatory, administrative, technical, financial, and education and outreach resources. There are a number of mitigation-specific acts, plans, executive orders, and policies that lay out specific goals, objectives, and policy statements which already support or could support pre- and post-disaster hazard mitigation. Many of the ongoing plans and policies hold significant promise for hazard mitigation, and take an integrated and strategic look holistically at hazard mitigation in the Allen Parish planning area to propose ways to continually improve it. These tools are valuable instruments in pre- and post-disaster mitigation as they facilitate the implementation of mitigation activities through the current legal and regulatory framework. Examples of existing documents include the following:

Table 3-1: Planning and Regulatory Capabilities

Capability Assessment Worksheet

Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.

Planning and Regulatory

Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.

	Allen Parish	Elizabeth	Kinder	Oakdale	Oberlin	Reeves	Comments
Plans	Yes / No						
Comprehensive / Master Plan	No	No	Yes	No	No	No	
Capital Improvements Plan	Yes	Yes	Yes	No	No	No	
Economic Development Plan	Yes	No	No	Yes	No	No	
Local Emergency Operations Plan	Yes	Yes	Yes	Yes	Yes	Yes	
Continuity of Operations Plan	Yes	No	No	Yes	Yes	Yes	
Transportation Plan	No	No	No	Yes	No	No	
Stormwater Management Plan	No	No	No	Yes	No	No	
Community Wildfire Protection Plan	No	No	No	No	No	No	
Other plans (redevelopment, recovery, coastal zone management)	No	No	No	Yes	No	No	
Building Code, Permitting and Inspections	Yes / No						
Building Code	Yes	Yes	Yes	Yes	Yes	Yes	
Building Code Effectiveness Grading Schedule (BCEGS) Score	Unknown	No	Yes	Yes	Yes	Yes	
Fire Department ISO/PIAL rating	Yes	Yes	Yes	Yes	Yes	Yes	
Site plan review requirements	Yes	Yes	Yes	Yes	Yes	Yes	
Land Use Planning and Ordinances	Yes / No						
Zoning Ordinance	Yes	Yes	No	Yes	No	No	
Subdivision Ordinance	No	No	No	Yes	Yes	No	
Floodplain Ordinance	Yes	Yes	Yes	Yes	Yes	Yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	Yes	No	Yes	No	No	
Flood Insurance Rate Maps	Yes	Yes	Yes	Yes	Yes	Yes	
Acquisition of land for open space and public recreation uses	No	Yes	No	Yes	No	No	
Other	No	No	No	No	No	No	

All jurisdictions within the Allen Parish planning area will work to expand their capabilities by adding to these plans, as well as work to create new plans that will address a long-term recovery and resiliency framework. In instances where there are no existing plans, there will be a concerted effort to explore opportunities to create new plans that will address long-term recovery and resiliency framework as parish and local resources allow.

Building Codes, Permitting, Land Use Planning and Ordinances

Allen Parish Government provides oversight for building permits and codes, land use planning, and all parish ordinances.

As of the 2023 update, Allen Parish and the incorporated communities ensure that all adopted building codes are enforced and in compliance relating to the construction of any structure within the boundaries of the parish. Building permits are required prior to beginning any type of construction or renovation projects, installation of electrical wiring, plumbing or gas piping, moving manufactured/modular or portable buildings, and reroofing or demolitions.

The Allen Parish Police Jury is also responsible for enforcing the parish ordinances related to health and safety, property maintenance standards, and condemnation of unsafe structures.

The Allen Parish Police Jury meets regularly to consider any proposed ordinance changes, and to take final actions on proposed changes.

While local capabilities for mitigation can vary from community to community, the jurisdictions within the Allen Parish planning area as a whole have a system in place to coordinate and share these capabilities through the OHSEP and through this Parish Hazard Mitigation Plan.

Some programs and policies, such as the above described, might use complementary tools to achieve a common end, but fail to coordinate with or support each other. Thus, coordination among local mitigation policies and programs is essential to hazard mitigation.

Administration, Technical, and Financial

The jurisdictions within the Allen Parish planning area have administrative and technical capabilities in place that may be utilized in reducing hazard impacts or implementing hazard mitigation activities. Such capabilities include staff, skillset, and tools available in the community that may be accessed to implement mitigation activities and to effectively coordinate resources. The ability to access and coordinate these resources is also important. The table on the following page shows examples of resources in place.

Table 3-2: Administration and Technical Capabilities

Administration and Technical							
Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources, at the next higher level government that can provide technical assistance, indicate so in your comments.							
	Allen Parish	Elizabeth	Kinder	Oakdale	Oberlin	Reeves	Comments
Administration	Yes / No						
Planning Commission	No	Yes	Yes	Yes	Yes	No	
Mitigation Planning Committee	Yes	Yes	No	No	No	No	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	Yes	Yes	Yes	Yes	Yes	
Staff	Yes / No						
Chief Building Official	Yes	Yes	Yes	Yes	Yes	Yes	
Floodplain Administrator	Yes	Yes	Yes	Yes	Yes	Yes	
Emergency Manager	Yes	Yes	Yes	Yes	Yes	Yes	
Community Planner	No	No	No	No	No	Yes	
Civil Engineer	Yes	Yes	Yes	Yes	Yes	Yes	
GIS Coordinator	No	Yes	Yes	Yes	Yes	Yes	
Grant Writer	Yes	Yes	Yes	Yes	Yes	Yes	
Other	No	No	No	No	No	No	
Technical	Yes / No						
Warning Systems / Service (Reverse 911, outdoor warning signals)	No	No	No	Yes	No	No	
Hazard Data & Information	Yes	Yes	No	Yes	No	No	
Grant Writing	Yes	Yes	Yes	Yes	Yes	Yes	
Hazus Analysis	Yes	No	No	No	No	No	
Other	No	No	No	No	No	No	

Financial capabilities are the resources that Allen Parish and its incorporated jurisdictions have access to or are eligible to use in order to fund mitigation actions. Costs associated with implementing the actions identified by the parish may vary from little to no cost actions, such as outreach efforts, or substantial action costs such acquisition of flood prone properties.

The following financial resources are available to fund mitigation actions in the Allen Parish planning area:

Table 3-3: Financial Capabilities

Financial							
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.							
	Allen Parish	Elizabeth	Kinder	Oakdale	Oberlin	Reeves	Comments
Funding Resource	Yes / No						
Capital Improvements project funding	Yes	Yes	Yes	Yes	Yes	Yes	
Authority to levy taxes for specific purposes	Yes	Yes	Yes	Yes	Yes	Yes	
Fees for water, sewer, gas, or electric services	No	Yes	Yes	Yes	Yes	Yes	
Impact fees for new development	No	No	No	Yes	No	No	
Stormwater Utility Fee	No	No	No	No	No	No	
Community Development Block Grant (CDBG)	Yes	Yes	Yes	Yes	Yes	Yes	
Other Funding Programs	No	Yes	No	No	No	No	

Education and Outreach

A key element in hazard mitigation is promoting a safer, more disaster resilient community through education and outreach activities and/or programs. Successful outreach programs provide data and information that improves overall quality and accuracy of important information for citizens to feel better prepared and educated with mitigation activities. These programs enable the individual communities and the parish as a whole to maximize opportunities for implementation of activities through greater acceptance and consensus of the community.

The jurisdictions within the Allen Parish planning area have existing education and outreach programs to implement mitigation activities, as well as communicate risk and hazard related information to its communities. Specifically, focusing on advising repetitive loss property owners of ways they can reduce their exposure to damage by repetitive flooding remains a priority for the entire parish. The existing programs are as follows:

Table 3-4: Education and Outreach Capabilities

Education and Outreach							
Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.							
	Allen Parish	Elizabeth	Kinder	Oakdale	Oberlin	Reeves	Comments
Program / Organization	Yes / No						
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes	Yes	No	Yes	No	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	Yes	No	Yes	No	No	
Natural Disaster or safety related school program	Yes	Yes	Yes	Yes	No	No	
Storm Ready certification	Unknown	No	No	Yes	No	No	
Firewise Communities certification	Unknown	No	No	Yes	No	No	
Public/Private partnership initiatives addressing disaster-related issues	No	No	No	Oakdale Fire Department	No	No	
Other	No		No	No	No	No	

As reflected with the above existing regulatory mechanisms, programs and resources within the parish, the jurisdictions within the Allen Parish planning area remain committed to expanding and improving on the existing capabilities within the parish. Communities will work together along with Allen Parish toward increased participation in funding opportunities and available mitigation programs. Should funding become available, the hiring of additional personnel to dedicate to hazard mitigation initiatives and programs, as well as increasing ordinances within the parish, will enhance and expand overall risk reduction for the entirety of Allen Parish.

Flood Insurance and Community Rating System

Participation in the CRS strengthens local capabilities by lowering flood insurance premiums for jurisdictions that exceed NFIP minimum requirements. As noted in the CRS Eligible Communities List effective April 1, 2023, neither Allen Parish nor its jurisdictions participate in the CRS program.

The Federal Emergency Management Agency's National Flood Insurance Program (NFIP) administers the Community Rating System (CRS). Under the CRS, flood insurance premiums for properties in participating communities are reduced to reflect the flood protection activities that are being implemented. This program can have a major influence on the design and implementation of flood mitigation activities, so a brief summary is provided here.

A community receives a CRS classification based upon the credit points it receives for its activities. It can undertake any mix of activities that reduce flood losses through better mapping, regulations, public information, flood damage reduction and/or flood warning and preparedness programs.

There are ten CRS classes: Class 1 requires the most credit points and gives the largest premium reduction; Class 10 receives no premium reduction (see *Figure 3-1*). A community that does not apply for the CRS or that does not obtain the minimum number of credit points is a class 10 community.

CLASS	DISCOUNT	CLASS	DISCOUNT
1	45%	6	20%
2	40%	7	15%
3	35%	8	10%
4	30%	9	5%
5	25%	10	–

SFHA (Zones A, AE, A1–A30, V, V1–V30, AO, and AH): Discount varies depending on class.

SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1–A30, AR/AH, and AR/AO): 10% discount for Classes 1–6; 5% discount for Classes 7–9.*

Non-SFHA (Zones B, C, X, D): 10% discount for Classes 1–6; 5% discount for Classes 7–9.

Figure 3-1: CRS Discounts by Class (Source: FEMA)

As of April 2023, 318 communities in the State of Louisiana participate in the Federal Emergency Management Agency's National Flood Insurance Program (NFIP). Of these communities, 47 (or 13%) participate in the Community Rating System (CRS). Jefferson Parish leads the state with a rating of Class 5, followed by three cities with a rating of Class 6: the Cities of Gretna and Kenner in Jefferson Parish and the City of Mandeville in St. Tammany Parish. Of the top fifty Louisiana communities, in terms of total flood insurance policies held by residents, 29 participate in the CRS. The remaining 21 communities present an outreach opportunity for encouraging participation in the CRS.

The CRS provides an incentive not just to start new mitigation programs, but to keep them going. There are two requirements that "encourage" a community to implement flood mitigation activities. Once the parish has obtained a CRS rating and is a participant, the parish will receive CRS credit for this plan when it is adopted. To retain that credit, though, the parish must submit an evaluation report on progress toward implementing this plan to FEMA by October 1 of each year. That report must be made available to the media and the public. Second, the parish must annually recertify to FEMA that it is continuing to implement its CRS credited activities. Failure to maintain the same level of involvement in flood protection can result in a loss of CRS credit points and a resulting increase in flood insurance rates to residents.

In 2011[1], the National Flood Insurance Program (NFIP) completed a comprehensive review of the Community Rating System (CRS) that resulted in the release of a new CRS Coordinator's Manual. The changes to the 2013 CRS Coordinator's Manual are the result of a multi-year program evaluation that included input from a broad group of contributors to evaluate the CRS and refine the program to meet its stated goals. The changes helped to drive new achievements in the following six core flood loss reduction areas important to the NFIP: (1) reduce liabilities to the NFIP Fund; (2) improve disaster resiliency and sustainability of communities; (3) integrate a Whole Community approach to addressing emergency management; (4) promote natural and beneficial functions of floodplains; (5) increase understanding of risk, and; (6) strengthen adoption and enforcement of disaster-resistant building codes.

Since the revision of the 2013 Coordinator's Manual, FEMA released the 2017 CRS Coordinator's Manual which continued the evolution of the CRS program and its mission to reward communities that prioritize mindful floodplain regulations. As with the 2013 manual, the changes made in the 2017 manual impact each CRS community differently. Some communities see an increase in the points they receive since points for certain activities have increased (e.g., Activity 420 Open Space Preservation). Other communities receive fewer points for certain activities (e.g., Activity 320 Map Information Service). It is likely that some communities with marginal CRS Class 9 programs have to identify new CRS credits in order to remain in the CRS class. Most notably, as it relates to this hazard mitigation plan, more credit was made available for Activity 410 Floodplain Mapping.

[1] https://www.fema.gov/national-flood-insurance-program-community-rating-system

Typically, CRS communities do not request credit for all the activities they are currently implementing unless it would earn enough credit to advance the community to a higher CRS Class. A community that finds itself losing CRS credit with the 2017 manual could likely identify activities deserving credit they had not previously received. Due to the changes in both activities and CRS points, community CRS coordinators should speak with their ISO/CRS Specialist to understand how the 2017 manual will impact their community and when.

In addition to the direct financial reward for participating in the Community Rating System, there are many other reasons to participate in the CRS. As FEMA staff often say, "If you are only interested in saving premium dollars, you're in the CRS for the wrong reason."

The other benefits that are more difficult to measure in dollars include:

1. The activities credited by the CRS provide direct benefits to residents, including:
   – Enhanced public safety
   – A reduction in damage to property and public infrastructure
   – Avoidance of economic disruption and losses
   – Reduction of human suffering
   – Protection of the environment

2. A community's flood programs will be better organized and more formal. Ad hoc activities, such as responding to drainage complaints rather than an inspection program, will be conducted on a sounder, more equitable basis.

3. A community can evaluate the effectiveness of its flood program against a nationally recognized benchmark.

4. Technical assistance in designing and implementing a number of activities is available at no charge from the Insurance Services Office.

5. The public information activities will build a knowledgeable constituency interested in supporting and improving flood protection measures.

6. A community would have an added incentive to maintain its flood programs over the years. The fact that its CRS status could be affected by the elimination of a flood related activity or a weakening of the regulatory requirements for new developments would be taken into account by the governing board when considering such actions.

7. Every time residents pay their insurance premiums, they are reminded that the community is working to protect them from flood losses, even during dry years.

NFIP Worksheets

Parish NFIP worksheets can be found in *Appendix E: State Required Worksheets*.

4. Mitigation Strategy

Introduction

The Hazard Mitigation Strategy for Allen Parish and its incorporated communities have a common guiding principle and is the demonstration of the parish's commitment to reduce risks from hazards. The strategy also serves as a guide for parish and local decision makers as they commit resources to reducing the effects of hazards.

Officials from all jurisdictions within the planning area confirmed the goals, objectives, actions and projects over the period of the hazard mitigation plan update process. The mitigation actions and projects in this 2023 HMP update are a product of analysis and review of the Allen Parish Hazard Mitigation Plan Planning Committee under the coordination of the Allen Parish Office of Homeland Security and Emergency Preparedness. The committee was presented a list of projects and actions, new and from the 2018 plan, for review from December 2022 – October 2023

An online public opinion survey of Allen Parish residents was conducted between February 2023 and October 2023. The survey was designed to capture public perceptions and opinions regarding natural hazards in the Allen Parish planning area. In addition, the survey collected information regarding the methods and techniques preferred by the respondents for reducing the risks and losses associated with local hazards.

This activity was created in an effort to confirm that the goals and action items developed by the Allen Parish Hazard Mitigation Plan Planning Committee are representative of the outlook of the community at large. However, because there were no responses to the survey, this public feedback could not be incorporated into the plan. The full Allen Parish survey can be found at the following link:

https://lsu.qualtrics.com/jfe/form/SV_3UfyszMzNu7iZi6

Goals

The goals represent the guidelines that the parish and its communities want to achieve with this plan update. To help implement the strategy and adhere to the mission of the Hazard Mitigation Plan, the preceding section of the plan update was focused on identifying and quantifying the risks faced by the residents and property owners in Allen Parish from natural and manmade hazards. By articulating goals and objectives based on the previous plans, the risk assessment results, and intending to address those results, this section sets the stage for identifying, evaluating, and prioritizing feasible, cost effective, and environmentally sound actions to be promoted at the parish and municipal level – and to be undertaken by the state for its own property and assets. By doing so, Allen Parish can make progress toward reducing identified risks.

For the purposes of this plan update, goals and action items are defined as follows:

- **Goals** are general guidelines that explain what the parish wants to achieve. Goals are expressed as broad policy statements representing desired long-term results.
- **Action Items** are the specific steps (projects, policies, and programs) that advance a given goal. They are highly focused, specific, and measurable.

The current goals of the Allen Parish Hazard Mitigation Plan Update Planning Committee represent long-term commitments by the parish. After assessing these goals, the committee decided that the current remain valid.

The goals are as follows:

1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
2. Protect Parish schools, homes, and businesses from damage
3. Give special attention to repetitively flooded areas

The Mitigation Action Plan focuses on actions to be taken by Allen Parish and its communities. All of the activities in the Mitigation Action Plan will be focused on helping the parish and its communities in developing and funding projects that are not only cost effective but also meet the other DMA 2000 criteria of environmental compatibility and technical feasibility.

The Hazard Mitigation Plan Planning Committee reviewed and evaluated the potential action and project lists in which consideration was given to a variety of factors. Such factors include determining a project's eligibility for federal mitigation grants as well as its ability to be funded. This process required evaluation of each project's engineering feasibility, cost effectiveness, and environmental and cultural factors.

2023 Mitigation Actions and Update on Previous Plan Actions

The Allen Parish Hazard Mitigation Plan Planning Committee identified new actions that would reduce and/or prevent future damage within the Allen Parish planning area. In that effort, the committee focused on a comprehensive range of specific mitigation actions. These actions were identified in thorough fashion by the consultant team and the committee by way of frequent and open communications and meetings held throughout the planning process. The addition of these new actions, coupled with any ongoing and/or carried over projects from their previous update, provide Allen Parish with a solid mitigation strategy through which risk and losses will be reduced throughout the parish and its communities.

As outlined in the Local Mitigation Planning Handbook the following are eligible types of mitigation actions:

- **Local Plans and Regulations** – These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.
- **Structure and Infrastructure Projects** – These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area, and also includes projects to construct manmade structures to reduce the impact of hazards.
- **Natural System Protection –** These actions minimize the damage and losses and also preserve or restore the functions of natural systems.
- **Education and Awareness Programs –** These actions inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them.

Status updates for actions included in the previous plan can be found on the following pages. Additionally, new mitigation actions agreed upon by the parish and its jurisdictions are included.

Allen Parish Mitigation Actions

Previous Action Update

Unincorporated Allen Parish - New Mitigation Actions						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
A1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	HGMP, BRIC, Local	1-5 years	Allen Parish Police Jury/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Allen Parish Mitigation Action 1)
A2: Drainage Improvement	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.	HGMP, BRIC, FMA, Local	1-5 years	Allen Parish Police Jury/ Allen Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Allen Parish Mitigation Action 2)
A3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	HGMP, BRIC, FMA, Local	1-5 years	Allen Parish Police Jury/ Allen Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Allen Parish Mitigation Action 3)
A4: Safe Room Projects	Construction of a safe room for first responders located in Allen Parish. Other locations will be identified based on funding availability.	HGMP, BRIC, Local	1-5 years	Allen Parish Police Jury/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Allen Parish Mitigation Action 4)
A5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Drought, Excessive Heat, Flooding, Thunderstorms, Tropical Cyclones, Tornadoes, Wildfires and Winter Storm hazards as well as providing information on high-risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	HGMP, BRIC, FMA, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Drought. Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfire, Winter Weather	Not Started - Carried Over (See Allen Parish Mitigation Action 5)

A6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	HGMP, BRIC, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Allen Parish Mitigation Action 6)
A7: Lightning Mitigation	Procurement and Installation of lightning rods and surge protectors for public buildings to preserve life and property	HGMP, BRIC, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Thunderstorms	Not Started - Carried Over (See Allen Parish Mitigation Action 7)
A8: Warning Systems	Update/upgrade public warning system components throughout Allen Parish as necessary. Install audible and/or reverse 911 warning system(s)	HGMP, BRIC, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Allen Parish Mitigation Action 8)
A9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	HGMP, BRIC, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tropical Cyclones, Tornadoes, Wildfires, Winter Weather	Not Started - Carried Over (See Allen Parish Mitigation Action 9)
A10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	HGMP, BRIC, FMA, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Allen Parish Mitigation Action 10)
A11: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Wildfires	Not Started - Carried Over (See Allen Parish Mitigation Action 11)
A12: Wildfire Education and Outreach	Education of citizens about causes of wildland fires and proper safety measures	HGMP, BRIC, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Wildfires	Deleted - Duplicate of A5 Action
A13: Open Space Ordinances	Codes/ordinances for requiring open space between forests and urban or residential areas	HGMP, BRIC, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Wildfires	Deleted - (Duplicate of A12 Action)
A14: Water Conservation	Water conservation and rationing procedures	HGMP, BRIC, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Drought, Excessive Heat, Wildfires	Not Started - Carried Over (See Allen Parish Mitigation Action 12)
A15: Property Acquisition	Acquire and destroy properties in floodplain areas	HGMP, BRIC, FMA, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Flooding	Deleted - (Duplicate of A3 Action)

A16: Property Relocation	Relocate structures in floodplain areas	HGMP, BRIC, FMA, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Flooding	Deleted - (Duplicate of A3 Action)
A17: Flood-proofing and/or Elevation	Flood-proof, elevate or consider mitigation reconstruction for properties in floodplain areas	HGMP, BRIC, FMA, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Flooding, Thunderstorms, Tropical Cyclones	Deleted - (Duplicate of A3 Action)
A18: Flood Forecasting	Develop flood forecasting systems and warning systems	HGMP, BRIC, FMA, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Flooding, Thunderstorms, Tropical Cyclones	Deleted - (Duplicate of A8 Action)
A19: Bayou Drainage	Drain Bayou serving Coushatta Tribal Land	HGMP, BRIC, FMA, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Flooding	Deleted - (Duplicate of A2 Action)
A20: WarnSpot Weather Software Distribution	Distribute WarnSpot Weather Warning Software to Local Government Agencies, Schools, and Healthcare Facilities	HGMP, BRIC, FMA, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted - (Duplicate of A8 Action)
A21: Repetitive Loss Structure List	Maintain lists, at the Parish and municipal level, of structures which suffer from repetitive flood loss	HGMP, BRIC, FMA, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Flooding	Not Started - Carried Over (See Allen Parish Mitigation Action 13)
A22: Hazard Mitigation Awareness and Education Week	Initiation of an annual Hazard Mitigation Awareness and Education week targeting residents on proper safety and response to a severe storm (which may be followed by flash floods)	HGMP, BRIC, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted - (Duplicate of A5 Action)
A23: Purchase Auxiliary Generators	Purchase Auxiliary Generators for Allen Parish Hospital	HGMP, BRIC, FMA, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes , Tropical Cyclones, Winter Weather	Deleted - (Duplicate of A6 Action)
A24: Backup Power and Utilities	Backup power generation and lifeline utilities for critical care facilities	HGMP, BRIC, FMA, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes , Tropical Cyclones, Winter Weather	Deleted - (Duplicate of A6 Action)
A25: Public Alerts	Alerts and public announcements about dangerous conditions (including fires and flash floods during thunderstorms)	HGMP, BRIC, FMA, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted - (Duplicate of A8 Action)
A26: Air Siren Installation	Install Radio- or Phone-Activated Air Sirens throughout the Parish of Allen	HGMP, BRIC, FMA, Local	1-5 years	Allen Parish Police Jury/Allen Parish OHSEP	Tornadoes	Deleted - (Duplicate of A8 Action)

New Mitigation Actions

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS ALLEN PARISH	
	DESCRIPTION
ALLEN PARISH MITGATION ACTION 1	Building Retrofits
LEAD AGENCY	Allen Parish Police Jury
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	Medium
Action Description	Retrofit public buildings exterior shell to maintain use during and after storm events
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Reduces damage from high wind related events and helps assure that the public buildings can be used, occupied and operable during or after storms.
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS ALLEN PARISH	
	DESCRIPTION
ALLEN PARISH MITGATION ACTION 2	Drainage Improvements
LEAD AGENCY	Allen Parish Police Jury
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	High
Action Description	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS ALLEN PARISH	
	DESCRIPTION
ALLEN PARISH MITGATION ACTION 3	Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures
LEAD AGENCY	Allen Parish Police Jury
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	High
Action Description	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.
Type of Mitigation Action	Local Plans and Regulations, Structure and Infrastructure Projects, Natural System Protection
How Action Aligns with Risk Reduction	Eliminates flooding risk of repetitive and severe repetitive loss structures.
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS ALLEN PARISH	
	DESCRIPTION
ALLEN PARISH MITGATION ACTION 4	Safe Room Projects
LEAD AGENCY	Allen Parish Police Jury
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage
PRIORITY	Medium
Action Description	Construction of a safe room for first responders located in Allen Parish. Other locations will be identified based on funding availability.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Allows for continued operations of essential personal to actively respond during a natural hazard event
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS ALLEN PARISH	
	DESCRIPTION
ALLEN PARISH MITGATION ACTION 5	Education and Outreach
LEAD AGENCY	Allen Parish Police Jury
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	Medium
Action Description	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for flooding, thunderstorms, tornadoes, tropical cyclones, wildfires, and winter weather hazards as well as providing information on high risk areas
Type of Mitigation Action	Education and Awareness Programs
How Action Aligns with Risk Reduction	Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfire, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS ALLEN PARISH	
	DESCRIPTION
ALLEN PARISH MITGATION ACTION 6	Generators for Continuity of Operations and Government
LEAD AGENCY	Allen Parish Police Jury
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.
Type of Mitigation Action	Local Plans and Regulations, Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Installation of generators will allow public facilities to run accordingly and aid with local relief efforts
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS ALLEN PARISH	
	DESCRIPTION
ALLEN PARISH MITGATION ACTION 7	Lightning Mitigation
LEAD AGENCY	Allen Parish Police Jury
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage
PRIORITY	Medium
Action Description	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	The installation of lightning rods and surge protectors in public buildings and critical infrastructure will reduce losses due to lightning strikes and surges in electricity.
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Thunderstorms

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS ALLEN PARISH	
	DESCRIPTION
ALLEN PARISH MITGATION ACTION 8	Warning Systems
LEAD AGENCY	Allen Parish Police Jury
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Update/upgrade public warning system components throughout Allen Parish as necessary. Install audible and/or reverse 911 warning system(s).
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	An upgraded public warning system will increase the likelihood of public notification immediately prior to an event
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS ALLEN PARISH	
	DESCRIPTION
ALLEN PARISH MITGATION ACTION 9	Potable Water
LEAD AGENCY	Allen Parish Police Jury
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Creating a redundancy of potable water for critical facilities will reduce downtime and allow for the continuity of essential operations during and after an event.
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Drought, Excessive Heat, Flooding, Thunderstorms, Tropical Cyclones, Tornadoes, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS ALLEN PARISH	
	DESCRIPTION
ALLEN PARISH MITGATION ACTION 10	Promote Flood Insurance
LEAD AGENCY	Allen Parish Police Jury
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	High
Action Description	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).
Type of Mitigation Action	Education and Awareness Programs
How Action Aligns with Risk Reduction	Educating the public on flood insurance will allow public to obtain insurance at a cost that's affordable to them and will help gain relief to their home and personal items during post-flood events
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Flooding, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS ALLEN PARISH	
	DESCRIPTION
ALLEN PARISH MITGATION ACTION 11	Wildfire Ordinances
LEAD AGENCY	Allen Parish Police Jury
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage
PRIORITY	Medium
Action Description	Strengthen penalties and improve enforcement capabilities of burn ban ordinances
Type of Mitigation Action	Local Plans and Regulations, Natural Systems Protection
How Action Aligns with Risk Reduction	Penalties to those that ignore burn bans will disincentivize business owners and the public from burning in return, reducing the risk of a wildfire
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Wildfires

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS ALLEN PARISH	
	DESCRIPTION
ALLEN PARISH MITGATION ACTION 12	Water Conservation
LEAD AGENCY	Allen Parish Police Jury
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Water conservation and rationing procedures
Type of Mitigation Action	Local Plans and Regulations, Natural Systems Protection
How Action Aligns with Risk Reduction	Water conservation measures in place will ensure that the parish has plenty of stored water to serve public needs during hazard events
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Drought, Excessive Heat, Wildfires

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS ALLEN PARISH	
	DESCRIPTION
ALLEN PARISH MITGATION ACTION 13	Repetitive Loss Structure List
LEAD AGENCY	Allen Parish Police Jury
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 3. Give special attention to repetitively flooded areas
PRIORITY	Medium
Action Description	Maintain lists, at the Parish and municipal level, of structures which suffer from repetitive flood loss
Type of Mitigation Action	Local Plans and Regulations
How Action Aligns with Risk Reduction	Having a updated list of repetitive loss structures will allow the parish to prioritize flood mitigation action to certain areas and also participate in buyout programs
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS ALLEN PARISH	
	DESCRIPTION
ALLEN PARISH MITGATION ACTION 14	Construct New Emergency Operations Center (EOC)
LEAD AGENCY	Allen Parish Police Jury
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Identify a location and build a new EOC for Allen Parish
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	New EOC will allow Allen Parish to have a solidified base of operations during hazardous events and a larger space to conduct training exercises, educational events, etc.
Current Status of Action	New
Hazard Addressed	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfire, Winter Weather

Additional Supporting Information:

Town of Elizabeth Mitigation Actions

Previous Action Update

Town of Elizabeth						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
E1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	HGMP, BRIC, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Elizabeth Mitigation Action 1)
E2: Drainage Improvement	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.	HGMP, BRIC, FMA, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Elizabeth Mitigation Action 2)
E3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	HGMP, BRIC, FMA, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Elizabeth Mitigation Action 3)
E4: Safe Room Projects	Construction of a safe room for first responders located in Elizabeth. Other locations will be identified based on funding availability.	HGMP, BRIC, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Elizabeth Mitigation Action 4)

E5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Drought, Flooding, Thunderstorms, Tropical Cyclones, Tornadoes, Wildfires, and Winter Weather hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	HGMP, BRIC, FMA, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfire, Winter Weather	Not Started - Carried Over (See Elizabeth Mitigation Action 5)
E6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	HGMP, BRIC, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Elizabeth Mitigation Action 6)
E7: Lightning Mitigation	Procurement and Installation of lightning rods and surge protectors for public buildings to preserve life and property	HGMP, BRIC, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Thunderstorms	Not Started - Carried Over (See Elizabeth Mitigation Action 7)
E8: Warning Systems	Update/upgrade public warning system components throughout Elizabeth as necessary. Install audible and/or reverse 911 warning system(s)	HGMP, BRIC, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Elizabeth Mitigation Action 8)
E9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	HGMP, BRIC, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tropical Cyclones, Tornadoes, Wildfires, Winter Weather	Not Started - Carried Over (See Elizabeth Mitigation Action 9)
E10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	HGMP, BRIC, FMA, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Elizabeth Mitigation Action 10)
E11: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Wildfires	Not Started - Carried Over (See Elizabeth Mitigation Action 11)
E12: Wildfire Education and Outreach	Education of citizens about causes of wildland fires and proper safety measures	HGMP, BRIC, Local	1-5 years	Town of Elizabeth Mayor's	Wildfires	Deleted - Duplicate of E5 Action

				Office/ Allen Parish OHSEP		
E13: Open Space Ordinances	Codes/ordinances for requiring open space between forests and urban or residential areas	HGMP, BRIC, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Wildfires	Deleted - (Duplicate of E12 Action)
E14: Water Conservation	Water conservation and rationing procedures	HGMP, BRIC, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Drought, Excessive Heat, Wildfires	Not Started - Carried Over (See Elizabeth Mitigation Action 12)
E15: Property Acquisition	Acquire and destroy properties in floodplain areas	HGMP, BRIC, FMA, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of E3 Action)
E16: Property Relocation	Relocate structures in floodplain areas	HGMP, BRIC, FMA, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of E3 Action)
E17: Flood-proofing and/or Elevation	Flood-proof, elevate or consider mitigation reconstruction for properties in floodplain areas	HGMP, BRIC, FMA, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tropical Cyclones	Deleted - (Duplicate of E3 Action)
E18: Flood Forecasting	Develop flood forecasting systems and warning systems	HGMP, BRIC, FMA, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tropical Cyclones	Deleted - (Duplicate of E8 Action)
E19: Bayou Drainage	Drain Bayou serving Coushatta Tribal Land	HGMP, BRIC, FMA, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of E2 Action)
E20: WarnSpot Weather Software Distribution	Distribute WarnSpot Weather Warning Software to Local Government Agencies, Schools, and Healthcare Facilities	HGMP, BRIC, FMA, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted - (Duplicate of E8 Action)
E21: Repetitive Loss Structure List	Maintain lists, at the Parish and municipal level, of structures which suffer from repetitive flood loss	HGMP, BRIC, FMA, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Flooding	Not Started - Carried Over (See Elizabeth Mitigation Action 13)
E22: Hazard Mitigation Awareness and Education Week	Initiation of an annual Hazard Mitigation Awareness and Education week targeting residents on proper safety and response to a severe storm (which may be followed by flash floods)	HGMP, BRIC, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted - (Duplicate of E5 Action)

E23: Purchase Auxiliary Generators	Purchase Auxiliary Generators for Allen Parish Hospital	HGMP, BRIC, FMA, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes , Tropical Cyclones, Winter Weather	Deleted - (Duplicate of E6 Action)
E24: Backup Power and Utilities	Backup power generation and lifeline utilities for critical care facilities	HGMP, BRIC, FMA, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes , Tropical Cyclones, Winter Weather	Deleted - (Duplicate of E6 Action)
E25: Public Alerts	Alerts and public announcements about dangerous conditions (including fires and flash floods during thunderstorms)	HGMP, BRIC, FMA, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted - (Duplicate of E8 Action)
E26: Air Siren Installation	Install Radio- or Phone-Activated Air Sirens throughout the Parish of Allen	HGMP, BRIC, FMA, Local	1-5 years	Town of Elizabeth Mayor's Office/ Allen Parish OHSEP	Tornadoes	Deleted - (Duplicate of E8 Action)

New Mitigation Actions

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF ELIZABETH	
	DESCRIPTION
TOWN OF ELIZABETH MITGATION ACTION 1	Building Retrofits
LEAD AGENCY	Town of Elizabeth Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	Medium
Action Description	Retrofit public buildings exterior shell to maintain use during and after storm events
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Reduces damage from high wind related events and helps assure that the public buildings can be used, occupied and operable during or after storms.
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF ELIZABETH	
	DESCRIPTION
TOWN OF ELIZABETH MITGATION ACTION 2	Drainage Improvements
LEAD AGENCY	Town of Elizabeth Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	High
Action Description	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF ELIZABETH	
	DESCRIPTION
TOWN OF ELIZABETH MITGATION ACTION 3	Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures
LEAD AGENCY	Town of Elizabeth Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	High
Action Description	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.
Type of Mitigation Action	Local Plans and Regulations, Structure and Infrastructure Projects, Natural System Protection
How Action Aligns with Risk Reduction	Eliminates flooding risk of repetitive and severe repetitive loss structures.
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF ELIZABETH	
	DESCRIPTION
TOWN OF ELIZABETH MITGATION ACTION 4	Safe Room Projects
LEAD AGENCY	Town of Elizabeth Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage
PRIORITY	Medium
Action Description	Construction of a safe room for first responders located in Elizabeth. Other locations will be identified based on funding availability.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Allows for continued operations of essential personal to actively respond during a natural hazard event
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF ELIZABETH	
	DESCRIPTION
TOWN OF ELIZABETH MITGATION ACTION 5	Education and Outreach
LEAD AGENCY	Town of Elizabeth Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	Medium
Action Description	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for flooding, thunderstorms, tornadoes, tropical cyclones, wildfires, and winter weather hazards as well as providing information on high risk areas
Type of Mitigation Action	Education and Awareness Programs
How Action Aligns with Risk Reduction	Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfire, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF ELIZABETH	
	DESCRIPTION
TOWN OF ELIZABETH MITGATION ACTION 6	Generators for continuity of operations and government
LEAD AGENCY	Town of Elizabeth Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.
Type of Mitigation Action	Local Plans and Regulations, Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Installation of generators will allow public facilities to run accordingly and aid with local relief efforts
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF ELIZABETH	
	DESCRIPTION
TOWN OF ELIZABETH MITGATION ACTION 7	Lightning Mitigation
LEAD AGENCY	Town of Elizabeth Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage
PRIORITY	Medium
Action Description	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	The installation of lightning rods and surge protectors in public buildings and critical infrastructure will reduce losses due to lightning strikes and surges in electricity.
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Thunderstorms

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF ELIZABETH	
	DESCRIPTION
TOWN OF ELIZABETH MITGATION ACTION 8	Warning Systems
LEAD AGENCY	Town of Elizabeth Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Update/upgrade public warning system components throughout Elizabeth as necessary. Install audible and/or reverse 911 warning system(s).
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	An upgraded public warning system will increase the likelihood of public notification immediately prior to an event
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF ELIZABETH	
	DESCRIPTION
TOWN OF ELIZABETH MITGATION ACTION 9	Potable Water
LEAD AGENCY	Town of Elizabeth Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Creating a redundancy of potable water for critical facilities will reduce downtime and allow for the continuity of essential operations during and after an event.
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Drought, Excessive Heat, Flooding, Thunderstorms, Tropical Cyclones, Tornadoes, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF ELIZABETH	
	DESCRIPTION
TOWN OF ELIZABETH MITGATION ACTION 10	Promote Flood Insurance
LEAD AGENCY	Town of Elizabeth Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	High
Action Description	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).
Type of Mitigation Action	Education and Awareness Programs
How Action Aligns with Risk Reduction	Educating the public on flood insurance will allow public to obtain insurance at a cost that's affordable to them and will help gain relief to their home and personal items during post-flood events
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Flooding, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF ELIZABETH	
	DESCRIPTION
TOWN OF ELIZABETH MITGATION ACTION 11	Wildfire Ordinances
LEAD AGENCY	Town of Elizabeth Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage
PRIORITY	Medium
Action Description	Strengthen penalties and improve enforcement capabilities of burn ban ordinances
Type of Mitigation Action	Local Plans and Regulations, Natural Systems Protection
How Action Aligns with Risk Reduction	Penalties to those that ignore burn bans will disincentivize business owners and the public from burning in return, reducing the risk of a wildfire
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Wildfires

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF ELIZABETH	
	DESCRIPTION
TOWN OF ELIZABETH MITGATION ACTION 12	Water Conservation
LEAD AGENCY	Town of Elizabeth Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Water conservation and rationing procedures
Type of Mitigation Action	Local Plans and Regulations, Natural Systems Protection
How Action Aligns with Risk Reduction	Water conservation measures in place will ensure that the parish has plenty of stored water to serve public needs during hazard events
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Drought, Excessive Heat, Wildfires

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF ELIZABETH	
	DESCRIPTION
TOWN OF ELIZABETH MITGATION ACTION 13	Repetitive Loss Structure List
LEAD AGENCY	Town of Elizabeth Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 3. Give special attention to repetitively flooded areas
PRIORITY	Medium
Action Description	Maintain lists, at the Parish and municipal level, of structures which suffer from repetitive flood loss
Type of Mitigation Action	Local Plans and Regulations
How Action Aligns with Risk Reduction	Having a updated list of repetitive loss structures will allow the parish to prioritize flood mitigation action to certain areas and also participate in buyout programs
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding

Additional Supporting Information:

Town of Kinder Mitigation Actions

Previous Action Update

Town of Kinder						
Jurisdiction-Specific Action	Action Description	Funding Source	Target Completion Date	Responsible Party, Agency, or Department	Hazard	Status
K1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	HGMP, BRIC, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Kinder Mitigation Action 1)
K2: Drainage Improvement	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.	HGMP, BRIC, FMA, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Kinder Mitigation Action 2)
K3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	HGMP, BRIC, FMA, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Kinder Mitigation Action 3)
K4: Safe Room Projects	Construction of a safe room for first responders located in Kinder. Other locations will be identified based on funding availability.	HGMP, BRIC, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Kinder Mitigation Action 4)

K5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Drought, Excessive Heat, Flooding, Thunderstorms, Tropical Cyclones, Tornadoes, Wildfires, and Winter Weather hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	HGMP, BRIC, FMA, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms Tornadoes, Tropical Cyclones, Wildfire, Winter Weather	Not Started - Carried Over (See Kinder Mitigation Action 5)
K6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	HGMP, BRIC, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Kinder Mitigation Action 6)
K7: Lightning Mitigation	Procurement and Installation of lightning rods and surge protectors for public buildings to preserve life and property	HGMP, BRIC, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Thunderstorms	Not Started - Carried Over (See Kinder Mitigation Action 7)
K8: Warning Systems	Update/upgrade public warning system components throughout Kinder as necessary. Install audible and/or reverse 911 warning system(s)	HGMP, BRIC, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Kinder Mitigation Action 8)
K9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	HGMP, BRIC, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tropical Cyclones, Tornadoes, Wildfires, Winter Weather	Not Started - Carried Over (See Kinder Mitigation Action 9)
K10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	HGMP, BRIC, FMA, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Kinder Mitigation Action 10)
K11: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Wildfires	Not Started - Carried Over (See Kinder Mitigation Action 11)
K12: Wildfire Education and Outreach	Education of citizens about causes of wildland fires and proper safety measures	HGMP, BRIC, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Wildfires	Deleted - Duplicate of K5 Action

K13: Open Space Ordinances	Codes/ordinances for requiring open space between forests and urban or residential areas	HGMP, BRIC, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Wildfires	Deleted - (Duplicate of K12 Action)
K14: Water Conservation	Water conservation and rationing procedures	HGMP, BRIC, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Drought, Excessive Heat, Wildfires	Not Started - Carried Over (See Kinder Mitigation Action 12)
K15: Property Acquisition	Acquire and destroy properties in floodplain areas	HGMP, BRIC, FMA, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of K3 Action)
K16: Property Relocation	Relocate structures in floodplain areas	HGMP, BRIC, FMA, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of K3 Action)
K17: Flood-proofing and/or Elevation	Flood-proof, elevate or consider mitigation reconstruction for properties in floodplain areas	HGMP, BRIC, FMA, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tropical Cyclones	Deleted - (Duplicate of K3 Action)
K18: Flood Forecasting	Develop flood forecasting systems and warning systems	HGMP, BRIC, FMA, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tropical Cyclones	Deleted - (Duplicate of K8 Action)
K19: Bayou Drainage	Drain Bayou serving Coushatta Tribal Land	HGMP, BRIC, FMA, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of K2 Action)
K20: WarnSpot Weather Software Distribution	Distribute WarnSpot Weather Warning Software to Local Government Agencies, Schools, and Healthcare Facilities	HGMP, BRIC, FMA, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted - (Duplicate of K8 Action)
K21: Repetitive Loss Structure List	Maintain lists, at the Parish and municipal level, of structures which suffer from repetitive flood loss	HGMP, BRIC, FMA, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding	Not Started - Carried Over (See Kinder Mitigation Action 13)
K22: Hazard Mitigation Awareness and Education Week	Initiation of an annual Hazard Mitigation Awareness and Education week targeting residents on proper safety and response to a severe storm (which may be followed by flash floods)	HGMP, BRIC, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted - (Duplicate of K5 Action)
K23: Purchase Auxiliary Generators	Purchase Auxiliary Generators for Allen Parish Hospital	HGMP, BRIC, FMA, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes , Tropical Cyclones, Winter Weather	Deleted - (Duplicate of K6 Action)
K24: Backup Power and Utilities	Backup power generation and lifeline utilities for critical care facilities	HGMP, BRIC, FMA, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes , Tropical Cyclones, Winter Weather	Deleted - (Duplicate of K6 Action)

K25: Public Alerts	Alerts and public announcements about dangerous conditions (including fires and flash floods during thunderstorms)	HGMP, BRIC, FMA, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted - (Duplicate of K8 Action)
K26: Air Siren Installation	Install Radio- or Phone-Activated Air Sirens throughout the Parish of Allen	HGMP, BRIC, FMA, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Tornadoes	Deleted - (Duplicate of K8 Action)
K27: Flood Protection Construction	Build dams, reservoirs, levees, floodwalls	HGMP, BRIC, FMA, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of K11 Action)
K28: Flood Water Diversion Projects	Create waterways for flood water diversion	HGMP, BRIC, FMA, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of K2 Action)
K29: Install Larger Culvert	Build a Larger-Diameter Culvert from 8th Street to 4th Street	HGMP, BRIC, FMA, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - Duplicate of K2 Action
K30: Ditch Widening	Widen the Ditch from 4th Street to LA-383	HGMP, BRIC, FMA, Local	1-5 years	Town of Kinder Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - Duplicate of K2 Action

New Mitigation Actions

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF KINDER	
	DESCRIPTION
TOWN OF KINDER MITGATION ACTION 1	Building Retrofits
LEAD AGENCY	Town of Kinder Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	Medium
Action Description	Retrofit public buildings exterior shell to maintain use during and after storm events
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Reduces damage from high wind related events and helps assure that the public buildings can be used, occupied and operable during or after storms.
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF KINDER	
	DESCRIPTION
TOWN OF KINDER MITGATION ACTION 2	Drainage Improvements
LEAD AGENCY	Town of Kinder Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	High
Action Description	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF KINDER	
	DESCRIPTION
TOWN OF KINDER MITGATION ACTION 3	Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures
LEAD AGENCY	Town of Kinder Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	High
Action Description	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.
Type of Mitigation Action	Local Plans and Regulations, Structure and Infrastructure Projects, Natural System Protection
How Action Aligns with Risk Reduction	Eliminates flooding risk of repetitive and severe repetitive loss structures.
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF KINDER	
	DESCRIPTION
TOWN OF KINDER MITGATION ACTION 4	Safe Room Projects
LEAD AGENCY	Town of Kinder Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage
PRIORITY	Medium
Action Description	Construction of a safe room for first responders located in Kinder. Other locations will be identified based on funding availability.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Allows for continued operations of essential personal to actively respond during a natural hazard event
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF KINDER	
	DESCRIPTION
TOWN OF KINDER MITGATION ACTION 5	Education and Outreach
LEAD AGENCY	Town of Kinder Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	Medium
Action Description	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for flooding, thunderstorms, tornadoes, tropical cyclones, wildfires, and winter weather hazards as well as providing information on high risk areas
Type of Mitigation Action	Education and Awareness Programs
How Action Aligns with Risk Reduction	Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfire, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF KINDER	
	DESCRIPTION
TOWN OF KINDER MITGATION ACTION 6	Generators for continuity of operations and government
LEAD AGENCY	Town of Kinder Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.
Type of Mitigation Action	Local Plans and Regulations, Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Installation of generators will allow public facilities to run accordingly and aid with local relief efforts
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF KINDER	
	DESCRIPTION
TOWN OF KINDER MITGATION ACTION 7	Lightning Mitigation
LEAD AGENCY	Town of Kinder Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage
PRIORITY	Medium
Action Description	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	The installation of lightning rods and surge protectors in public buildings and critical infrastructure will reduce losses due to lightning strikes and surges in electricity.
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Thunderstorms

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF KINDER	
	DESCRIPTION
TOWN OF KINDER MITGATION ACTION 8	Warning Systems
LEAD AGENCY	Town of Kinder Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Update/upgrade public warning system components throughout Kinder as necessary. Install audible and/or reverse 911 warning system(s).
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	An upgraded public warning system will increase the likelihood of public notification immediately prior to an event
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF KINDER	
	DESCRIPTION
TOWN OF KINDER MITGATION ACTION 9	Potable Water
LEAD AGENCY	Town of Kinder Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Creating a redundancy of potable water for critical facilities will reduce downtime and allow for the continuity of essential operations during and after an event.
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Drought, Excessive Heat, Flooding, Thunderstorms, Tropical Cyclones, Tornadoes, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF KINDER	
	DESCRIPTION
TOWN OF KINDER MITGATION ACTION 10	Promote Flood Insurance
LEAD AGENCY	Town of Kinder Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	High
Action Description	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).
Type of Mitigation Action	Education and Awareness Programs
How Action Aligns with Risk Reduction	Educating the public on flood insurance will allow public to obtain insurance at a cost that's affordable to them and will help gain relief to their home and personal items during post-flood events
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Flooding, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF KINDER	
	DESCRIPTION
TOWN OF KINDER MITGATION ACTION 11	Wildfire Ordinances
LEAD AGENCY	Town of Kinder Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage
PRIORITY	Medium
Action Description	Strengthen penalties and improve enforcement capabilities of burn ban ordinances
Type of Mitigation Action	Local Plans and Regulations, Natural Systems Protection
How Action Aligns with Risk Reduction	Penalties to those that ignore burn bans will disincentivize business owners and the public from burning in return, reducing the risk of a wildfire
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Wildfires

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF KINDER	
	DESCRIPTION
TOWN OF KINDER MITGATION ACTION 12	Water Conservation
LEAD AGENCY	Town of Kinder Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Water conservation and rationing procedures
Type of Mitigation Action	Local Plans and Regulations, Natural Systems Protection
How Action Aligns with Risk Reduction	Water conservation measures in place will ensure that the parish has plenty of stored water to serve public needs during hazard events
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Drought, Excessive Heat, Wildfires

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF KINDER	
	DESCRIPTION
TOWN OF KINDER MITGATION ACTION 13	Repetitive Loss Structure List
LEAD AGENCY	Town of Kinder Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 3. Give special attention to repetitively flooded areas
PRIORITY	Medium
Action Description	Maintain lists, at the Parish and municipal level, of structures which suffer from repetitive flood loss
Type of Mitigation Action	Local Plans and Regulations
How Action Aligns with Risk Reduction	Having a updated list of repetitive loss structures will allow the parish to prioritize flood mitigation action to certain areas and also participate in buyout programs
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding

Additional Supporting Information:

City of Oakdale Mitigation Actions

Previous Action Update

City of Oakdale						
Jurisdiction-Specific Action	Action Description	Funding Source	Target Completion Date	Responsible Party, Agency, or Department	Hazard	Status
OAK1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	HGMP, BRIC, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Oakdale Mitigation Action 1)
OAK2: Drainage Improvement	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.	HGMP, BRIC, FMA, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Oakdale Mitigation Action 2)
OAK3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	HGMP, BRIC, FMA, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Oakdale Mitigation Action 3)
OAK4: Safe Room Projects	Construction of a safe room for first responders located in Oakdale. Other locations will be identified based on funding availability.	HGMP, BRIC, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Oakdale Mitigation Action 4)

OAK5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Drought, Excessive Heat, Flooding, Thunderstorms, Tropical Cyclones, Tornadoes, Wildfires, and Winter Weather hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	HGMP, BRIC, FMA, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms Tornadoes, Tropical Cyclones, Wildfire, Winter Weather	Not Started - Carried Over (See Oakdale Mitigation Action 5)
OAK6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	HGMP, BRIC, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Oakdale Mitigation Action 6)
OAK7: Lightning Mitigation	Procurement and Installation of lightning rods and surge protectors for public buildings to preserve life and property	HGMP, BRIC, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Thunderstorms	Not Started - Carried Over (See Oakdale Mitigation Action 7)
OAK8: Warning Systems	Update/upgrade public warning system components throughout Oakdale as necessary. Install audible and/or reverse 911 warning system(s)	HGMP, BRIC, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Oakdale Mitigation Action 8)
OAK9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	HGMP, BRIC, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tropical Cyclones, Tornadoes, Wildfires, Winter Weather	Not Started - Carried Over (See Oakdale Mitigation Action 9)
OAK10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	HGMP, BRIC, FMA, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Oakdale Mitigation Action 10)
OAK11: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Wildfires	Not Started - Carried Over (See Oakdale Mitigation Action 11)

OAK12: Wildfire Education and Outreach	Education of citizens about causes of wildland fires and proper safety measures	HGMP, BRIC, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Wildfires	Deleted - Duplicate of OAK5 Action
OAK13: Open Space Ordinances	Codes/ordinances for requiring open space between forests and urban or residential areas	HGMP, BRIC, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Wildfires	Deleted - (Duplicate of OAK12 Action)
OAK14: Water Conservation	Water conservation and rationing procedures	HGMP, BRIC, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Drought, Excessive Heat, Wildfires	Not Started - Carried Over (See Oakdale Mitigation Action 12)
OAK15: Property Acquisition	Acquire and destroy properties in floodplain areas	HGMP, BRIC, FMA, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of OAK3 Action)
OAK16: Property Relocation	Relocate structures in floodplain areas	HGMP, BRIC, FMA, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of OAK3 Action)
OAK17: Flood-proofing and/or Elevation	Flood-proof, elevate or consider mitigation reconstruction for properties in floodplain areas	HGMP, BRIC, FMA, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tropical Cyclones	Deleted - (Duplicate of OAK3 Action)
OAK18: Flood Forecasting	Develop flood forecasting systems and warning systems	HGMP, BRIC, FMA, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tropical Cyclones	Deleted - (Duplicate of OAK8 Action)
OAK19: Bayou Drainage	Drain Bayou serving Coushatta Tribal Land	HGMP, BRIC, FMA, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of OAK2 Action)
OAK20: WarnSpot Weather Software Distribution	Distribute WarnSpot Weather Warning Software to Local Government Agencies, Schools, and Healthcare Facilities	HGMP, BRIC, FMA, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted - (Duplicate of OAK8 Action)
OAK21: Repetitive Loss Structure List	Maintain lists, at the Parish and municipal level, of structures which suffer from repetitive flood loss	HGMP, BRIC, FMA, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding	Not Started - Carried Over (See Oakdale Mitigation Action 13)
OAK22: Hazard Mitigation Awareness and Education Week	Initiation of an annual Hazard Mitigation Awareness and Education week targeting residents on proper safety and response to a severe storm (which may be followed by flash floods)	HGMP, BRIC, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted - (Duplicate of OAK5 Action)

OAK23: Purchase Auxiliary Generators	Purchase Auxiliary Generators for Allen Parish Hospital	HGMP, BRIC, FMA, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	Deleted - (Duplicate of OAK6 Action)
OAK24: Backup Power and Utilities	Backup power generation and lifeline utilities for critical care facilities	HGMP, BRIC, FMA, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	Deleted - (Duplicate of OAK6 Action)
OAK25: Public Alerts	Alerts and public announcements about dangerous conditions (including fires and flash floods during thunderstorms)	HGMP, BRIC, FMA, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted - (Duplicate of OAK8 Action)
OAK26: Air Siren Installation	Install Radio- or Phone-Activated Air Sirens throughout the Parish of Allen	HGMP, BRIC, FMA, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Tornadoes	Deleted - (Duplicate of OAK8 Action)
OAK27: Flood Protection Construction	Build dams, reservoirs, levees, floodwalls	HGMP, BRIC, FMA, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of OAK11 Action)
OAK28: Flood Water Diversion Projects	Create waterways for flood water diversion	HGMP, BRIC, FMA, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of OAK2 Action)
OAK29: Purchase Generators	Purchase Two 250-KW Generators for Oakdale Fire Department	HGMP, BRIC, FMA, Local	1-5 years	City of Oakdale Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted - (Duplicate of OAK6 Action)

New Mitigation Actions

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF OAKDALE	
	DESCRIPTION
CITY OF OAKDALE MITGATION ACTION 1	Building Retrofits
LEAD AGENCY	City of Oakdale Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	Medium
Action Description	Retrofit public buildings exterior shell to maintain use during and after storm events
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Reduces damage from high wind related events and helps assure that the public buildings can be used, occupied and operable during or after storms.
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF OAKDALE	
	DESCRIPTION
CITY OF OAKDALE MITGATION ACTION 2	Drainage Improvements
LEAD AGENCY	City of Oakdale Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	High
Action Description	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF OAKDALE	
	DESCRIPTION
CITY OF OAKDALE MITGATION ACTION 3	Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures
LEAD AGENCY	City of Oakdale Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	High
Action Description	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.
Type of Mitigation Action	Local Plans and Regulations, Structure and Infrastructure Projects, Natural System Protection
How Action Aligns with Risk Reduction	Eliminates flooding risk of repetitive and severe repetitive loss structures.
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF OAKDALE	
	DESCRIPTION
CITY OF OAKDALE MITGATION ACTION 4	Safe Room Projects
LEAD AGENCY	City of Oakdale Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage
PRIORITY	Medium
Action Description	Construction of a safe room for first responders located in Oakdale. Other locations will be identified based on funding availability.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Allows for continued operations of essential personal to actively respond during a natural hazard event
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF OAKDALE	
	DESCRIPTION
CITY OF OAKDALE MITGATION ACTION 5	Education and Outreach
LEAD AGENCY	City of Oakdale Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	Medium
Action Description	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for flooding, thunderstorms, tornadoes, tropical cyclones, wildfires, and winter weather hazards as well as providing information on high risk areas
Type of Mitigation Action	Education and Awareness Programs
How Action Aligns with Risk Reduction	Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfire, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF OAKDALE	
	DESCRIPTION
CITY OF OAKDALE MITGATION ACTION 6	Generators for continuity of operations and government
LEAD AGENCY	City of Oakdale Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.
Type of Mitigation Action	Local Plans and Regulations, Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Installation of generators will allow public facilities to run accordingly and aid with local relief efforts
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF OAKDALE	
	DESCRIPTION
CITY OF OAKDALE MITGATION ACTION 7	Lightning Mitigation
LEAD AGENCY	City of Oakdale Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage
PRIORITY	Medium
Action Description	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	The installation of lightning rods and surge protectors in public buildings and critical infrastructure will reduce losses due to lightning strikes and surges in electricity.
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Thunderstorms

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF OAKDALE	
	DESCRIPTION
CITY OF OAKDALE MITGATION ACTION 8	Warning Systems
LEAD AGENCY	City of Oakdale Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Update/upgrade public warning system components throughout Oakdale as necessary. Install audible and/or reverse 911 warning system(s).
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	An upgraded public warning system will increase the likelihood of public notification immediately prior to an event
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF OAKDALE	
	DESCRIPTION
CITY OF OAKDALE MITGATION ACTION 9	Potable Water
LEAD AGENCY	City of Oakdale Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Creating a redundancy of potable water for critical facilities will reduce downtime and allow for the continuity of essential operations during and after an event.
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Drought, Excessive Heat, Flooding, Thunderstorms, Tropical Cyclones, Tornadoes, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF OAKDALE	
	DESCRIPTION
CITY OF OAKDALE MITGATION ACTION 10	Promote Flood Insurance
LEAD AGENCY	City of Oakdale Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	High
Action Description	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).
Type of Mitigation Action	Education and Awareness Programs
How Action Aligns with Risk Reduction	Educating the public on flood insurance will allow public to obtain insurance at a cost that's affordable to them and will help gain relief to their home and personal items during post-flood events
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Flooding, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF OAKDALE	
	DESCRIPTION
CITY OF OAKDALE MITGATION ACTION 11	Wildfire Ordinances
LEAD AGENCY	City of Oakdale Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage
PRIORITY	Medium
Action Description	Strengthen penalties and improve enforcement capabilities of burn ban ordinances
Type of Mitigation Action	Local Plans and Regulations, Natural Systems Protection
How Action Aligns with Risk Reduction	Penalties to those that ignore burn bans will disincentivize business owners and the public from burning in return, reducing the risk of a wildfire
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Wildfires

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF OAKDALE	
	DESCRIPTION
CITY OF OAKDALE MITGATION ACTION 12	Water Conservation
LEAD AGENCY	City of Oakdale Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Water conservation and rationing procedures
Type of Mitigation Action	Local Plans and Regulations, Natural Systems Protection
How Action Aligns with Risk Reduction	Water conservation measures in place will ensure that the parish has plenty of stored water to serve public needs during hazard events
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Drought, Excessive Heat, Wildfires

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF OAKDALE	
	DESCRIPTION
CITY OF OAKDALE MITGATION ACTION 13	Repetitive Loss Structure List
LEAD AGENCY	City of Oakdale Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 3. Give special attention to repetitively flooded areas
PRIORITY	Medium
Action Description	Maintain lists, at the Parish and municipal level, of structures which suffer from repetitive flood loss
Type of Mitigation Action	Local Plans and Regulations
How Action Aligns with Risk Reduction	Having a updated list of repetitive loss structures will allow the parish to prioritize flood mitigation action to certain areas and also participate in buyout programs
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding

Additional Supporting Information:

Town of Oberlin Mitigation Actions

Previous Action Update

Town of Oberlin						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
OBE1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	HGMP, BRIC, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Oberlin Mitigation Action 1)
OBE2: Drainage Improvement	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.	HGMP, BRIC, FMA, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Oberlin Mitigation Action 2)
OBE3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	HGMP, BRIC, FMA, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Oberlin Mitigation Action 3)
OBE4: Safe Room Projects	Construction of a safe room for first responders located in Oberlin. Other locations will be identified based on funding availability.	HGMP, BRIC, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Oberlin Mitigation Action 4)

OBE5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Drought, Excessive Heat, Flooding, Thunderstorms, Tropical Cyclones, Tornadoes, Wildfires, and Winter Weather hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	HGMP, BRIC, FMA, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfire, Winter Weather	Not Started - Carried Over (See Oberlin Mitigation Action 5)
OBE6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	HGMP, BRIC, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Oberlin Mitigation Action 6)
OBE7: Lightning Mitigation	Procurement and Installation of lightning rods and surge protectors for public buildings to preserve life and property	HGMP, BRIC, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Thunderstorms	Not Started - Carried Over (See Oberlin Mitigation Action 7)
OBE8: Warning Systems	Update/upgrade public warning system components throughout Oberlin as necessary. Install audible and/or reverse 911 warning system(s)	HGMP, BRIC, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Oberlin Mitigation Action 8)
OBE9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	HGMP, BRIC, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tropical Cyclones, Tornadoes, Wildfires, Winter Weather	Not Started - Carried Over (See Oberlin Mitigation Action 9)
OBE10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	HGMP, BRIC, FMA, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Oberlin Mitigation Action 10)
OBE11: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Wildfires	Not Started - Carried Over (See Oberlin Mitigation Action 11)

OBE12: Wildfire Education and Outreach	Education of citizens about causes of wildland fires and proper safety measures	HGMP, BRIC, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Wildfires	Deleted - Duplicate of OBE5 Action
OBE13: Open Space Ordinances	Codes/ordinances for requiring open space between forests and urban or residential areas	HGMP, BRIC, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Wildfires	Deleted - (Duplicate of OBE12 Action)
OBE14: Water Conservation	Water conservation and rationing procedures	HGMP, BRIC, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Drought, Excessive Heat, Wildfires	Not Started - Carried Over (See Oberlin Mitigation Action 12)
OBE15: Property Acquisition	Acquire and destroy properties in floodplain areas	HGMP, BRIC, FMA, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of OBE3 Action)
OBE16: Property Relocation	Relocate structures in floodplain areas	HGMP, BRIC, FMA, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of OBE3 Action)
OBE17: Flood-proofing and/or Elevation	Flood-proof, elevate or consider mitigation reconstruction for properties in floodplain areas	HGMP, BRIC, FMA, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tropical Cyclones	Deleted - (Duplicate of OBE3 Action)
OBE18: Flood Forecasting	Develop flood forecasting systems and warning systems	HGMP, BRIC, FMA, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tropical Cyclones	Deleted - (Duplicate of OBE8 Action)
OBE19: Bayou Drainage	Drain Bayou serving Coushatta Tribal Land	HGMP, BRIC, FMA, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of OBE2 Action)
OBE20: WarnSpot Weather Software Distribution	Distribute WarnSpot Weather Warning Software to Local Government Agencies, Schools, and Healthcare Facilities	HGMP, BRIC, FMA, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted - (Duplicate of OBE8 Action)
OBE21: Repetitive Loss Structure List	Maintain lists, at the Parish and municipal level, of structures which suffer from repetitive flood loss	HGMP, BRIC, FMA, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Flooding	Not Started - Carried Over (See Oberlin Mitigation Action 13)
OBE22: Hazard Mitigation Awareness and Education Week	Initiation of an annual Hazard Mitigation Awareness and Education week targeting residents on proper safety and response to a severe storm (which may be followed by flash floods)	HGMP, BRIC, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted - (Duplicate of OBE5 Action)

OBE23: Purchase Auxiliary Generators	Purchase Auxiliary Generators for Allen Parish Hospital	HGMP, BRIC, FMA, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes , Tropical Cyclones, Winter Weather	Deleted - (Duplicate of OBE6 Action)
OBE24: Backup Power and Utilities	Backup power generation and lifeline utilities for critical care facilities	HGMP, BRIC, FMA, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes , Tropical Cyclones, Winter Weather	Deleted - (Duplicate of OBE6 Action)
OBE25: Public Alerts	Alerts and public announcements about dangerous conditions (including fires and flash floods during thunderstorms)	HGMP, BRIC, FMA, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted - (Duplicate of OBE8 Action)
OBE26: Air Siren Installation	Install Radio- or Phone-Activated Air Sirens throughout the Parish of Allen	HGMP, BRIC, FMA, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Tornadoes	Deleted - (Duplicate of OBE8 Action)
OBE27: Flood Protection Construction	Build dams, reservoirs, levees, floodwalls	HGMP, BRIC, FMA, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of OBE11 Action)
OBE28: Flood Water Diversion Projects	Create waterways for flood water diversion	HGMP, BRIC, FMA, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of OBE2 Action)
OBE29: Elevated Water Tank Construction	Construct Elevated Water Tank in the Town of Oberlin	HGMP, BRIC, Local	1-5 years	Town of Oberlin Mayor's Office/ Allen Parish OHSEP	Wildfires	Not Started - Carried Over (See Oberlin Mitigation Action 14)

New Mitigation Actions

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OBERLIN	
	DESCRIPTION
TOWN OF OBERLIN MITGATION ACTION 1	Building Retrofits
LEAD AGENCY	Town of Oberlin Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	Medium
Action Description	Retrofit public buildings exterior shell to maintain use during and after storm events
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Reduces damage from high wind related events and helps assure that the public buildings can be used, occupied and operable during or after storms.
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OBERLIN	
	DESCRIPTION
TOWN OF OBERLIN MITGATION ACTION 2	Drainage Improvements
LEAD AGENCY	Town of Oberlin Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	High
Action Description	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OBERLIN	
	DESCRIPTION
TOWN OF OBERLIN MITIGATION ACTION 3	Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures
LEAD AGENCY	Town of Oberlin Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	High
Action Description	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.
Type of Mitigation Action	Local Plans and Regulations, Structure and Infrastructure Projects, Natural System Protection
How Action Aligns with Risk Reduction	Eliminates flooding risk of repetitive and severe repetitive loss structures.
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OBERLIN	
	DESCRIPTION
TOWN OF OBERLIN MITGATION ACTION 4	Safe Room Projects
LEAD AGENCY	Town of Oberlin Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage
PRIORITY	Medium
Action Description	Construction of a safe room for first responders located in Oberlin. Other locations will be identified based on funding availability.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Allows for continued operations of essential personal to actively respond during a natural hazard event
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OBERLIN	
	DESCRIPTION
TOWN OF OBERLIN MITGATION ACTION 5	Education and Outreach
LEAD AGENCY	Town of Oberlin Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	Medium
Action Description	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for flooding, thunderstorms, tornadoes, tropical cyclones, wildfires, and winter weather hazards as well as providing information on high risk areas
Type of Mitigation Action	Education and Awareness Programs
How Action Aligns with Risk Reduction	Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfire, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OBERLIN	
	DESCRIPTION
TOWN OF OBERLIN MITGATION ACTION 6	Generators for continuity of operations and government
LEAD AGENCY	Town of Oberlin Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.
Type of Mitigation Action	Local Plans and Regulations, Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Installation of generators will allow public facilities to run accordingly and aid with local relief efforts
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS
TOWN OF OBERLIN

	DESCRIPTION
TOWN OF OBERLIN MITGATION ACTION 7	Lightning Mitigation
LEAD AGENCY	Town of Oberlin Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage
PRIORITY	Medium
Action Description	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	The installation of lightning rods and surge protectors in public buildings and critical infrastructure will reduce losses due to lightning strikes and surges in electricity.
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Thunderstorms

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OBERLIN	
	DESCRIPTION
TOWN OF OBERLIN MITGATION ACTION 8	Warning Systems
LEAD AGENCY	Town of Oberlin Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Update/upgrade public warning system components throughout Oberlin as necessary. Install audible and/or reverse 911 warning system(s).
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	An upgraded public warning system will increase the likelihood of public notification immediately prior to an event
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OBERLIN	
	DESCRIPTION
TOWN OF OBERLIN MITGATION ACTION 9	Potable Water
LEAD AGENCY	Town of Oberlin Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Creating a redundancy of potable water for critical facilities will reduce downtime and allow for the continuity of essential operations during and after an event.
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Drought, Excessive Heat, Flooding, Thunderstorms, Tropical Cyclones, Tornadoes, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OBERLIN	
	DESCRIPTION
TOWN OF OBERLIN MITGATION ACTION 10	Promote Flood Insurance
LEAD AGENCY	Town of Oberlin Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	High
Action Description	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).
Type of Mitigation Action	Education and Awareness Programs
How Action Aligns with Risk Reduction	Educating the public on flood insurance will allow public to obtain insurance at a cost that's affordable to them and will help gain relief to their home and personal items during post-flood events
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Flooding, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OBERLIN	
	DESCRIPTION
TOWN OF OBERLIN MITGATION ACTION 11	Wildfire Ordinances
LEAD AGENCY	Town of Oberlin Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage
PRIORITY	Medium
Action Description	Strengthen penalties and improve enforcement capabilities of burn ban ordinances
Type of Mitigation Action	Local Plans and Regulations, Natural Systems Protection
How Action Aligns with Risk Reduction	Penalties to those that ignore burn bans will disincentivize business owners and the public from burning in return, reducing the risk of a wildfire
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Wildfires

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OBERLIN	
	DESCRIPTION
TOWN OF OBERLIN MITGATION ACTION 12	Water Conservation
LEAD AGENCY	Town of Oberlin Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Water conservation and rationing procedures
Type of Mitigation Action	Local Plans and Regulations, Natural Systems Protection
How Action Aligns with Risk Reduction	Water conservation measures in place will ensure that the parish has plenty of stored water to serve public needs during hazard events
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Drought, Excessive Heat, Wildfires

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OBERLIN	
	DESCRIPTION
TOWN OF OBERLIN MITGATION ACTION 13	Repetitive Loss Structure List
LEAD AGENCY	Town of Oberlin Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 3. Give special attention to repetitively flooded areas
PRIORITY	Medium
Action Description	Maintain lists, at the Parish and municipal level, of structures which suffer from repetitive flood loss
Type of Mitigation Action	Local Plans and Regulations
How Action Aligns with Risk Reduction	Having a updated list of repetitive loss structures will allow the parish to prioritize flood mitigation action to certain areas and also participate in buyout programs
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OBERLIN	
	DESCRIPTION
TOWN OF OBERLIN MITGATION ACTION 14	Elevated Water Tank Construction
LEAD AGENCY	Town of Oberlin Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 3. Give special attention to repetitively flooded areas
PRIORITY	Medium
Action Description	Construct Elevated Water Tank in the Town of Oberlin
Type of Mitigation Action	Local Plans and Regulations
How Action Aligns with Risk Reduction	Having an elevated water tank in Oberlin will allow essential personnel to utilize it during wildfire events
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Wildfires

Additional Supporting Information:

Village of Reeves Mitigation Actions

Previous Action Update

Village of Reeves						
Jurisdiction-Specific Action	Action Description	Funding Source	Target Completion Date	Responsible Party, Agency, or Department	Hazard	Status
R1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	HGMP, BRIC, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Reeves Mitigation Action 1)
R2: Drainage Improvement	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.	HGMP, BRIC, FMA, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Reeves Mitigation Action 2)
R3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	HGMP, BRIC, FMA, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Reeves Mitigation Action 3)
R4: Safe Room Projects	Construction of a safe room for first responders located in Reeves. Other locations will be identified based on funding availability.	HGMP, BRIC, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Reeves Mitigation Action 4)

R5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Drought, Excessive Heat, Flooding, Thunderstorms, Tropical Cyclones, Tornadoes, Wildfires, and Winter Weather hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	HGMP, BRIC, FMA, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfire, Winter Weather	Not Started - Carried Over (See Reeves Mitigation Action 5)
R6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	HGMP, BRIC, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Reeves Mitigation Action 6)
R7: Lightning Mitigation	Procurement and Installation of lightning rods and surge protectors for public buildings to preserve life and property	HGMP, BRIC, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Thunderstorms	Not Started - Carried Over (See Reeves Mitigation Action 7)
R8: Warning Systems	Update/upgrade public warning system components throughout Reeves as necessary. Install audible and/or reverse 911 warning system(s)	HGMP, BRIC, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Reeves Mitigation Action 8)
R9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	HGMP, BRIC, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tropical Cyclones, Tornadoes, Wildfires, Winter Weather	Not Started - Carried Over (See Reeves Mitigation Action 9)
R10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	HGMP, BRIC, FMA, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Reeves Mitigation Action 10)
R11: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Wildfires	Not Started - Carried Over (See Reeves Mitigation Action 11)

R12: Wildfire Education and Outreach	Education of citizens about causes of wildland fires and proper safety measures	HGMP, BRIC, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Wildfires	Deleted - Duplicate of R5 Action
R13: Open Space Ordinances	Codes/ordinances for requiring open space between forests and urban or residential areas	HGMP, BRIC, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Wildfires	Deleted - (Duplicate of R12 Action)
R14: Water Conservation	Water conservation and rationing procedures	HGMP, BRIC, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Drought, Excessive Heat, Wildfires	Not Started - Carried Over (See Reeves Mitigation Action 12)
R15: Property Acquisition	Acquire and destroy properties in floodplain areas	HGMP, BRIC, FMA, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of R3 Action)
R16: Property Relocation	Relocate structures in floodplain areas	HGMP, BRIC, FMA, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of R3 Action)
R17: Flood-proofing and/or Elevation	Flood-proof, elevate or consider mitigation reconstruction for properties in floodplain areas	HGMP, BRIC, FMA, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tropical Cyclones	Deleted - (Duplicate of R3 Action)
R18: Flood Forecasting	Develop flood forecasting systems and warning systems	HGMP, BRIC, FMA, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tropical Cyclones	Deleted - (Duplicate of R8 Action)
R19: Bayou Drainage	Drain Bayou serving Coushatta Tribal Land	HGMP, BRIC, FMA, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Flooding	Deleted - (Duplicate of R2 Action)
R20: WarnSpot Weather Software Distribution	Distribute WarnSpot Weather Warning Software to Local Government Agencies, Schools, and Healthcare Facilities	HGMP, BRIC, FMA, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted - (Duplicate of R8 Action)
R21: Repetitive Loss Structure List	Maintain lists, at the Parish and municipal level, of structures which suffer from repetitive flood loss	HGMP, BRIC, FMA, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Flooding	Not Started - Carried Over (See Reeves Mitigation Action 13)
R22: Hazard Mitigation Awareness and Education Week	Initiation of an annual Hazard Mitigation Awareness and Education week targeting residents on proper safety and response to a severe storm (which may be followed by flash floods)	HGMP, BRIC, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted - (Duplicate of R5 Action)

R23: Purchase Auxiliary Generators	Purchase Auxiliary Generators for Allen Parish Hospital	HGMP, BRIC, FMA, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	Deleted - (Duplicate of R6 Action)
R24: Backup Power and Utilities	Backup power generation and lifeline utilities for critical care facilities	HGMP, BRIC, FMA, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	Deleted - (Duplicate of R6 Action)
R25: Public Alerts	Alerts and public announcements about dangerous conditions (including fires and flash floods during thunderstorms)	HGMP, BRIC, FMA, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted - (Duplicate of R8 Action)
R26: Air Siren Installation	Install Radio- or Phone-Activated Air Sirens throughout the Parish of Allen	HGMP, BRIC, FMA, Local	1-5 years	Village of Reeves Mayor's Office/ Allen Parish OHSEP	Tornadoes	Deleted - (Duplicate of R8 Action)

New Mitigation Actions

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF REEVES	
	DESCRIPTION
VILLAGE OF REEVES MITGATION ACTION 1	Building Retrofits
LEAD AGENCY	Village of Reeves Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	Medium
Action Description	Retrofit public buildings exterior shell to maintain use during and after storm events
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Reduces damage from high wind related events and helps assure that the public buildings can be used, occupied and operable during or after storms.
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF REEVES	
	DESCRIPTION
VILLAGE OF REEVES MITGATION ACTION 2	Drainage Improvements
LEAD AGENCY	Village of Reeves Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	High
Action Description	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF REEVES	
	DESCRIPTION
VILLAGE OF REEVES MITGATION ACTION 3	Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures
LEAD AGENCY	Village of Reeves Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	High
Action Description	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.
Type of Mitigation Action	Local Plans and Regulations, Structure and Infrastructure Projects, Natural System Protection
How Action Aligns with Risk Reduction	Eliminates flooding risk of repetitive and severe repetitive loss structures.
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF REEVES	
	DESCRIPTION
VILLAGE OF REEVES MITGATION ACTION 4	Safe Room Projects
LEAD AGENCY	Village of Reeves Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage
PRIORITY	Medium
Action Description	Construction of a safe room for first responders located in Reeves. Other locations will be identified based on funding availability.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Allows for continued operations of essential personal to actively respond during a natural hazard event
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF REEVES	
	DESCRIPTION
VILLAGE OF REEVES MITGATION ACTION 5	Education and Outreach
LEAD AGENCY	Village of Reeves Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	Medium
Action Description	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for flooding, thunderstorms, tornadoes, tropical cyclones, wildfires, and winter weather hazards as well as providing information on high risk areas
Type of Mitigation Action	Education and Awareness Programs
How Action Aligns with Risk Reduction	Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfire, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF REEVES	
	DESCRIPTION
VILLAGE OF REEVES MITGATION ACTION 6	Generators for continuity of operations and government
LEAD AGENCY	Village of Reeves Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.
Type of Mitigation Action	Local Plans and Regulations, Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Installation of generators will allow public facilities to run accordingly and aid with local relief efforts
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF REEVES	
	DESCRIPTION
VILLAGE OF REEVES MITGATION ACTION 7	Lightning Mitigation
LEAD AGENCY	Village of Reeves Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage
PRIORITY	Medium
Action Description	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	The installation of lightning rods and surge protectors in public buildings and critical infrastructure will reduce losses due to lightning strikes and surges in electricity.
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Thunderstorms

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF REEVES	
	DESCRIPTION
VILLAGE OF REEVES MITGATION ACTION 8	Warning Systems
LEAD AGENCY	Village of Reeves Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Update/upgrade public warning system components throughout Elizabeth as necessary. Install audible and/or reverse 911 warning system(s).
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	An upgraded public warning system will increase the likelihood of public notification immediately prior to an event
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF REEVES	
	DESCRIPTION
VILLAGE OF REEVES MITGATION ACTION 9	Potable Water
LEAD AGENCY	Village of Reeves Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Creating a redundancy of potable water for critical facilities will reduce downtime and allow for the continuity of essential operations during and after an event.
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Drought, Excessive Heat, Flooding, Thunderstorms, Tropical Cyclones, Tornadoes, Wildfires, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF REEVES	
	DESCRIPTION
VILLAGE OF REEVES MITGATION ACTION 10	Promote Flood Insurance
LEAD AGENCY	Village of Reeves Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage 3. Give special attention to repetitively flooded areas
PRIORITY	High
Action Description	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).
Type of Mitigation Action	Education and Awareness Programs
How Action Aligns with Risk Reduction	Educating the public on flood insurance will allow public to obtain insurance at a cost that's affordable to them and will help gain relief to their home and personal items during post-flood events
Current Status of Action	Not Started - Carried Over from 2018 Plan
Hazard Addressed	Flooding, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF REEVES	
	DESCRIPTION
VILLAGE OF REEVES MITGATION ACTION 11	Wildfire Ordinances
LEAD AGENCY	Village of Reeves Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 2. Protect Parish schools, homes, and businesses from damage
PRIORITY	Medium
Action Description	Strengthen penalties and improve enforcement capabilities of burn ban ordinances
Type of Mitigation Action	Local Plans and Regulations, Natural Systems Protection
How Action Aligns with Risk Reduction	Penalties to those that ignore burn bans will disincentivize business owners and the public from burning in return, reducing the risk of a wildfire
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Wildfires

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF REEVES	
	DESCRIPTION
VILLAGE OF REEVES MITGATION ACTION 12	Water Conservation
LEAD AGENCY	Village of Reeves Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary
PRIORITY	Medium
Action Description	Water conservation and rationing procedures
Type of Mitigation Action	Local Plans and Regulations, Natural Systems Protection
How Action Aligns with Risk Reduction	Water conservation measures in place will ensure that the parish has plenty of stored water to serve public needs during hazard events
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Drought, Excessive Heat, Wildfires

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF REEVES	
	DESCRIPTION
VILLAGE OF REEVES MITGATION ACTION 13	Repetitive Loss Structure List
LEAD AGENCY	Village of Reeves Mayor's Office
SUPPORTING AGENCIES	Allen Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	Unknown
POSSIBLE FUNDING SOURCE(S)	HGMP, BRIC, FMA, Local
ASSOCIATED GOALS	1. Protect the lives and health of Parish residents from the dangers of natural hazards including ensuring access to public facilities and escape routes as necessary 3. Give special attention to repetitively flooded areas
PRIORITY	Medium
Action Description	Maintain lists, at the Parish and municipal level, of structures which suffer from repetitive flood loss
Type of Mitigation Action	Local Plans and Regulations
How Action Aligns with Risk Reduction	Having a updated list of repetitive loss structures will allow the parish to prioritize flood mitigation action to certain areas and also participate in buyout programs
Current Status of Action	Not Started – Carried Over from 2018 Plan
Hazard Addressed	Flooding

Additional Supporting Information:

Action Prioritization

During the prioritization process, the planning committee considered the costs and relative benefits of each new action. Costs can usually be listed in terms of dollars, although at times it involves staff time rather than the purchase of equipment or services that can be readily measured in dollars. In most cases, benefits, such as lives saved or future damage prevented, are hard to measure in dollars. Therefore, many projects were prioritized with these factors in mind. In addition, prioritization of the mitigation actions was performed based on the following economic criteria: i) whether the action can be performed with the existing parish resources; ii) whether the action requires additional funding from external sources; and iii) relative costs of the mitigation actions.

In all cases, the committee concluded that the benefits (in terms of reduced property damage, lives saved, health problems averted and/or economic harm prevented) outweighed the costs for the recommended action items.

The planning committee prioritized the possible activities that could be pursued. Planning committee members consulted appropriate agencies in order to assist with the prioritizations. The results were items that address the major hazards, are appropriate for those hazards, are cost-effective, and are affordable. The planning committee met internally for mitigation action meetings to review and approve mitigation actions for Allen Parish and the incorporated jurisdictions. On-going actions, as well as actions which will provide maximum benefit that can be undertaken by existing parish staff with or without additional external funding were given high priority. The actions with medium benefit and relatively low cost, political support, and public support but require additional funding from parish or external sources were given medium priority. The actions that require substantial funding from external sources and would result in limited benefit to the community were given low priority.

Allen Parish and the incorporated jurisdictions will implement and administer the identified actions based off the proposed timeframes and priorities for each reflected in the portions of this section where actions are summarized. The inclusion of any specific action item in this document does not commit the parish to implementation. Each action item will be subject to availability of staff and funding. Certain items may require regulatory changes or other decisions that must be implemented through standard processes. This plan is intended to offer priorities based on an examination of hazards.

Appendix A: Planning Process

Purpose

The Hazard Mitigation Plan Update process prompts local jurisdictions to keep their hazard mitigation plan current and moving toward a more resilient community. The plan update builds on the research and planning efforts of previous plans while reviewing recent trends. The planning committee followed FEMA's hazard mitigation planning process per the FEMA Local Mitigation Planning Handbook. This planning process assured public involvement and the participation of interested agencies and private organizations. Documentation of the planning process for the updated plan is addressed in this section.

The Allen Parish Hazard Mitigation Plan Update

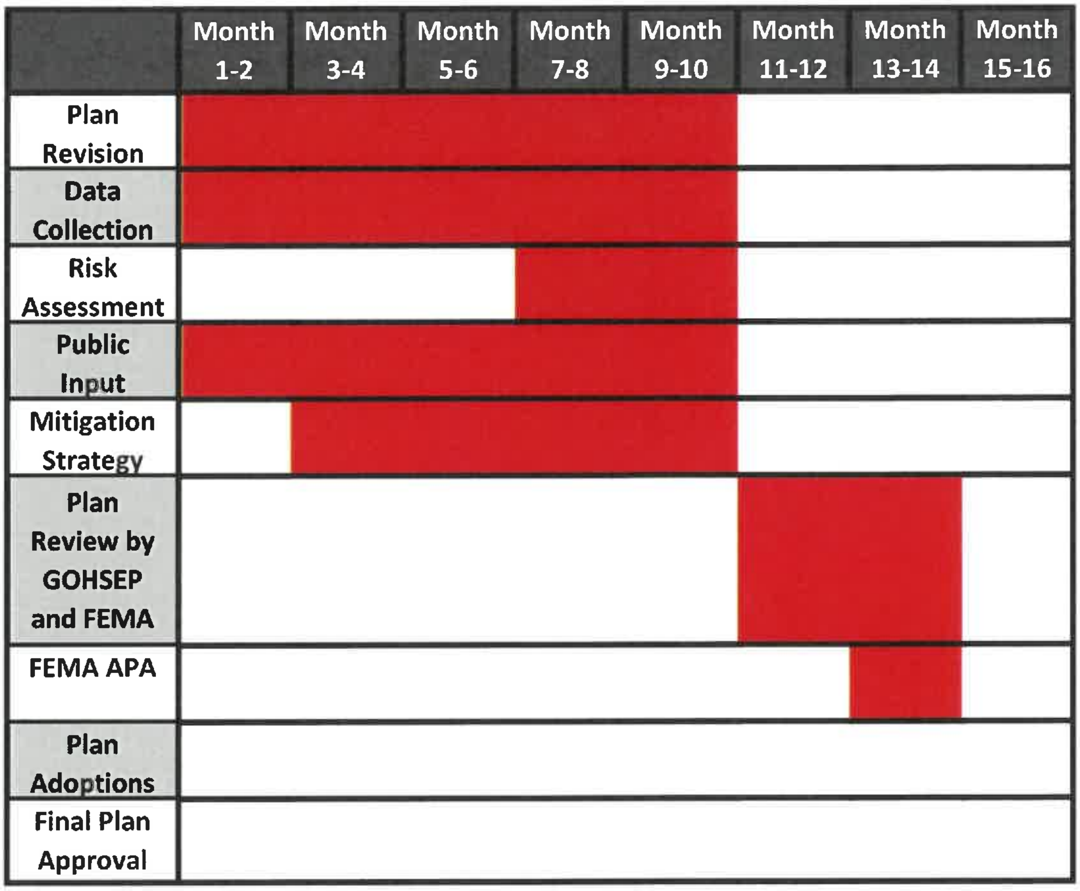
The Allen Parish Hazard Mitigation Plan Update process began in November 2022 with a series of emails, phone calls, meetings, and collaborations between the contractor (SDMI) and a diverse group of participating agencies and stakeholders. Update activities were intended to give each participating agency and stakeholder the opportunity to shape the plan to best fit their community's mitigation goals. Community stakeholders and the general public were invited to attend and contribute information to the planning process during specific time periods or meetings.

The table below details the meeting schedule and purpose for the planning process:

Date	Meeting or Outreach	Location	Public Invited	Purpose
11/30/2022	Kick Off Meeting	Phone Conference	No	Discuss with the Parish OHSEP Director expectations and requirements of the project. Discuss meeting schedules, committee make up, and next steps.
2/23/2023	Initial Planning Committee Meeting	Oberlin, LA	No	Discuss with Allen Parish Hazard Mitigation Planning Committee the process and expectations of plan participants. Discuss timeline and action items for parish and each jurisdiction.
9/27/2023	Planning Committee Risk Assessment Review	Oberlin, LA	Yes	Presentation of Risk Assessment and profiled hazards to Planning Committee.
9/27/2023	Public Meeting	Oberlin, LA	Yes	Presentation of Risk Assessment s and profiled hazards to public. Presentation also includes current mitigation project highlights within communities and public survey discussion.
2/23/2023 – 9/27/2023	Public Opinion Survey	Online	Yes	This survey asked participants about public perceptions and opinions regarding natural hazards in Allen Parish. In addition, questions covered the methods and techniques preferred for reducing the risks and losses associated with these hazards. Survey Results: https://lsu.qualtrics.com/jfe/form/SV_3UfyszMzNu7iZi6

Planning

The plan update process consisted of several phases:



Coordination

The Allen Parish Office of Homeland Security and Emergency Preparedness (OHSEP) oversaw the coordination of the 2023 Hazard Mitigation Plan Update Planning Committee during the update process. The parish OHSEP was responsible for identifying members for the committee. Representatives of relevant local and parish government departments were invited for inclusion in the planning process via email from SDMI and the Allen Parish OHSEP Director. Allen Parish and their jurisdictions identified and reached out, via email, to representatives of non-profits, local business and organization owner/managers, and private organizations that provide for the betterment and benefit of populations identified as socially vulnerable and work directly with communities that are deemed as underserved so that they could be involved in the entirety of this plan update process and participate as key stakeholders. Some Directors of organizations contacted included the Council of Aging, and the local American Red Cross chapter, but no response was received. There are no higher education institutions in Allen Parish; therefore, no members of academia could be included in the planning process on a parish level. However, SDMI is an institution under the Louisiana State University system, so this plan update received constant feedback from academia personnel on LSU's campus. Therefore, LSU was able to be included for academic participation during the plan update process.

The Parish Director was responsible for inviting the planning committee and key stakeholders to scheduled meetings and activities via phone call and/or email. SDMI assisted the Parish Director with press releases and social media statements for notification to the media and general public for public meetings and public outreach activities. SDMI was responsible for facilitating all meetings and outreach efforts during the update process.

Neighboring Community, Local and Regional Planning Process Involvement

From the outset of the planning process, the planning committee encouraged participation from a broad range of parish entities. The involvement of representatives from the city, state, and regional agencies provided diverse perspectives and mitigation ideas. Formal participation in this plan includes but is not limited to the following activities:

- Participation in Hazard Mitigation planning meetings at the local and parish level
- Sharing local data and information with jurisdictions
- Incorporation of other planning documents, studies and efforts
- Action item development and action progress from 2018 update
- Risk Assessment review
- Plan document draft review
- Formal adoption of the Hazard Mitigation Plan

The Jefferson Davis Parish OHSEP Director was invited to attend the Initial Planning and Risk Assessment Meetings for Allen Parish in an effort to coordinate mitigation efforts where possible as neighboring communities. The Jefferson Davis OHSEP Director was invited via email and phone call to participate in an effort to collaborate with neighboring communities. SDMI assisted Allen Parish with encouraging the collaboration with these neighboring communities via email by extending an invitation to the Allen Hazard Mitigation Plan Update Meetings.

As part of the coordination and planning process, the parish was provided the State Required Hazard Mitigation Plan Update Worksheet. The completed worksheets can be found in *Appendix E: State Required Worksheets*.

The 2023 Hazard Mitigation Plan Update Planning Committee consisted of representatives from the following parish, municipal or community stakeholders. Below is a detailed list of the 2023 HMPU Planning Committee:

Allen Parish Hazard Mitigation Planning Committee			
Name	**Title**	**Agency**	**Email**
Chris Oakes	Director	Allen Parish OHSEP	coakes@allenparishso.com
Jacob Dillehay	Parish Engineer	Allen Parish Police Jury	jdillehay@appj.us
Gene Paul	Mayor	City of Oakdale	oakdaledm318@gmail.com
Wayland LaFargue	Mayor	Town of Kinder	wayland.lafargue@townofkinder.com
Larry Alexander	Mayor	Town of Oberlin	mayorofoberlinla@gmail.com
Mandy Green	Mayor	Village of Elizabeth	mgreen@villageofelizabeth.com
Chris Guillory	Mayor	Village of Reeves	chris.guillory@reevesla.gov
Amy Michiels	Region 5 Coordinator	GOHSEP	Amy.Michiels2@la.gov

Program Integration

Local governments are required to describe how their mitigation planning process is integrated with other ongoing local and area planning efforts. This subsection describes Allen Parish programs and planning.

A measure of integration and coordination is achieved through the HMPU participation of planning committee members and community stakeholders who administer programs such as: floodplain management under the National Flood Insurance Program (NFIP), Community Rating System, parish planning and zoning and building code enforcement.

Since the last update in 2018, Allen Parish has used the hazard mitigation plan as a reference point to various projects and mitigation strategies that take place throughout the planning area. Along with the mitigation actions outlined for each parish, Allen Parish also uses vulnerability statistics and integration strategies to help guide their mitigation practices. These strategies and practices can be found at the end of each profiled hazard in the risk assessment. Furthermore, the parish holds annual meetings to discuss any changes that have occurred within the parish that could alter the vulnerability of Allen Parish and how to combat any issues that have arisen.

Allen Parish will continue to integrate the requirements of this Hazard Mitigation Plan into other local planning mechanisms that are to be identified through future meetings of the parish, and through the five-year review process described in *Appendix B: Plan Maintenance*. The primary means for integrating mitigation strategies into other local planning mechanisms will be through the revision, update and implementation of any individual municipal plans that require specific planning and administrative tasks (e.g. risk assessment, plan amendments, ordinance revisions, capital improvement projects, etc.).

The members of the Allen Parish Hazard Mitigation Planning Committee will remain charged with ensuring that the goals and strategies of new and updated local planning documents for their communities or agencies are consistent with the goals and actions of the Hazard Mitigation Plan and will not contribute to increased hazard vulnerability in the parish. Existing plans, studies, and technical information were incorporated in the planning process. Examples include flood data from FEMA and the U. S. Geological Survey. Much of this data was incorporated into the Risk Assessment component of the plan relative to plotting historical events and the magnitude of damages that occurred. The parish's 2018 Hazard Mitigation Plan was also used in the planning process. Other existing data and plans used in the planning process include those listed below.

- Parish Emergency Operations Plan
- Stormwater Management Plan
- Flood Insurance Rate Maps
- State of Louisiana Hazard Mitigation Plan

Further information on the plans can be found in Section 3: *Capability Assessment*

Meeting Documentation and Public Outreach Activities

The following pages contain documentation of the meetings and public outreach activities conducted during this hazard mitigation plan update.

Meeting #1: Hazard Mitigation Plan Update Kick-Off

Date: November 30, 2022

Location: Conference Call

Purpose: Discuss with the Parish OHSEP Director expectations and requirements of the project. Discuss meeting schedules, committee make up, and next steps.

Public Invitation: No

Meeting Invitees:

Allen Parish Hazard Mitigation Planning Committee		
Name	**Title**	**Agency**
Chris Oakes	Assistant Director	Allen Parish OHSEP
Chris Rippetoe	Program Manager	LSU-SDMI
Ashleigh Dozier	Emergency Management Analyst	LSU-SDMI
Jonathan McLemore	Regional Coordinator	GOHSEP

Meeting #2: Hazard Mitigation Plan Update Initial Planning Committee Meeting

Date: February 23, 2023

Location: Oberlin, LA

Purpose: Discuss the expectations and requirements of the hazard mitigation plan update process and establish an initial project timeline with the Parish's Hazard Mitigation Plan Planning Committee. Assign each individual tasks related to the parish data collection for the plan update.

Public Invitation: No

Meeting Invitees:

Allen Parish Hazard Mitigation Planning Committee		
Name	**Title**	**Agency**
Chris Oakes	Director	Allen Parish OHSEP
Jacob Dillehay	Parish Engineer	Allen Parish Police Jury
Gene Paul	Mayor	City of Oakdale
Wayland LaFargue	Mayor	Town of Kinder
Larry Alexander	Mayor	Town of Oberlin
Mandy Green	Mayor	Village of Elizabeth
Chris Guillory	Mayor	Village of Reeves
Amy Michiels	Region 5 Coordinator	GOHSEP

Meeting #3: Hazard Mitigation Plan Update Planning Committee Risk Assessment Review

Date: September 27, 2023

Location: Oberlin, LA

Purpose: Presentation of Risk Assessment hazards and maps to Planning Committee.

Public Invitation: No

Meeting Invitees:

Allen Parish Hazard Mitigation Planning Committee		
Name	Title	Agency
Chris Oakes	Director	Allen Parish OHSEP
Jacob Dillehay	Parish Engineer	Allen Parish Police Jury
Gene Paul	Mayor	City of Oakdale
Wayland LaFargue	Mayor	Town of Kinder
Larry Alexander	Mayor	Town of Oberlin
Mandy Green	Mayor	Village of Elizabeth
Chris Guillory	Mayor	Village of Reeves
Amy Michiels	Region 5 Coordinator	GOHSEP

Meeting #4: Hazard Mitigation Plan Update Public Meeting

Date: September 27, 2023

Location: Oberlin, LA

Purpose: The Public Meeting allowed the public and community stakeholders to participate and provide input into the hazard mitigation planning process. Presentation also included highlights of current mitigation projects, as well as public survey discussion. The public meeting notice on the next page was presented to stakeholders as well as the general public, including those in underserved communities and those populations deemed as socially vulnerable. This notice was distributed via email as well as posted on the front door of the courthouse, published in the local newspaper, and posted via social media. This public meeting was also open to many different representatives from private, local community-based organizations and businesses, and non-profits that provide for the betterment of socially vulnerable populations and those areas that have been deemed as underserved. The parish and jurisdictions involved in the plan update were in charge of identifying these specific organizations so that they may be invited to participate at this public meeting and in the plan update process as a whole. This effort was carried out by Allen Parish, their jurisdictions, and with assistance from SDMI.

Public Invitation: Yes

Meeting Invitees:

Allen Parish Hazard Mitigation Planning Committee		
Name	Title	Agency
Chris Oakes	Director	Allen Parish OHSEP
Jacob Dillehay	Parish Engineer	Allen Parish Police Jury
Gene Paul	Mayor	City of Oakdale
Wayland LaFargue	Mayor	Town of Kinder
Larry Alexander	Mayor	Town of Oberlin
Mandy Green	Mayor	Village of Elizabeth
Chris Guillory	Mayor	Village of Reeves
Amy Michiels	Region 5 Coordinator	GOHSEP

Meeting Announcement:

ALLEN PARISH OFFICE OF HOMELAND SECURITY & EMERGENCY PREPAREDNESS

PUBLIC MEETING ANNOUNCEMENT

Allen Parish and its partners are seeking community input for the 2023 Allen Parish Multi-Jurisdictional Hazard Mitigation Plan update!

Allen Parish OHSEP, in partnership with The Louisiana Governor's Office of Homeland Security and Emergency Preparedness and the Stephenson Disaster Management Institute at LSU, is leading the process to update the plan. The Allen Parish Hazard Mitigation Multi-Jurisdictional Plan describes the naturally occurring risks to the region and outlines strategies to reduce these risks to save lives, reduce property damage, and lessen the impact of future disasters.

Are you passionate about building a more resilient future for your parish? Do you have questions about the natural hazards your community is at risk to? Please join us on Wednesday, September 27th, for a public meeting at 10:00 AM to learn more about the plan and share your input on the risks and vulnerabilities that most impact you and your community.

Meeting Location:
Allen Parish Sheriff's Office
7340 LA Hwy 26
Oberlin, LA 70655

Residents of Allen Parish are asked to participate in a survey about public perceptions and opinions regarding natural hazards in the parish. The survey results will be used in the development of the plan. This short web-based survey can be found at the following link:

https://lsu.qualtrics.com/jfe/form/SV_3UfyszMzNu7iZi6

The Parish appreciates your input.

If you have questions, please contact the Allen Parish OHSEP Office

Outreach Activity #1: Public Opinion Survey

Date: Ongoing throughout planning process
Location: Web survey
Public Invitation: Yes

As referenced in the *Mitigation Strategy* section of this document, an online public opinion survey of Allen Parish residents was conducted between February and October 2023 The survey was designed to capture public perceptions and opinions regarding natural hazards in Allen Parish. In addition, the survey collected information regarding the methods and techniques preferred by the respondents for reducing the risks and losses associated with local hazards. As of October 5, 2023, there have been zero responses to the Allen Parish Hazard Mitigation Survey so therefore, no public input could be included in this plan update. The link to the full survey can be found here: https://lsu.qualtrics.com/jfe/form/SV_3UfyszMzNu7iZi6

Outreach Activity #2: Public Meeting Activity - Incident Questionnaire

Date: September 27, 2023
Location: Public Meeting
Public Invitation: Yes

An incident/issue questionnaire was provided at the public meeting in an effort to collect additional information from residents of Allen Parish regarding hazard events and their localized impacts. While the information collected via the questionnaire was to be integrated into this planning document, there was no public turnout for the meeting, and subsequently no results could be collected. A copy of the incident questionnaire can be found on the next page.

Outreach Activity #3: 2023 Allen Parish Hazard Mitigation Plan Public Review

Date: Ongoing
Location: SDMI Hazard Mitigation Website
Public Initiation: Yes

After an initial review by the Allen Parish Planning Committee was completed, the 2023 Allen Parish Hazard Mitigation Plan was made available for public review and comment. The plan was hosted on SDMI's Hazard Mitigation website: https://hmplans.sdmi.lsu.edu/Home/Parish/allen

ALLEN PARISH PUBLIC MEETING

PUBLIC ACTIVITY: INCIDENT/ ISSUE QUESTIONNAIRE

1. HAZARD TYPE(S):

A. FLOODING
B. THUNDERSTORMS
C. TORNADOES
D. TROPICAL CYCLONES
E. WILDFIRES
F. WINTER WEATHER

F. OTHER:

2. DESCRIBE INCIDENT OR ISSUE:

3. LOCATION:

A. CITY:

B. ADDRESS OR AREA:

C. LOCALIZED OR DISPERSED:

4. INTENSITY

A. DEPTH (FLOODING) OR SIZE (HAIL ETC.):

B. WIND STRENGTH:

5. RE-OCCURING OR ONE-TIME

A. IF RE-OCCURRING, HOW OFTEN?

6. WHAT TYPE OF INTERRUPTIONS DOES/ DID THE INCIDENT OR ISSUE CAUSE? (BUSINESS CLOSURE, DAMAGE, EVACUATION, ETC.)

7. HOW LONG WAS THE INTERRUPTION (HOURS, DAYS, WEEKS, ETC.)?

8. HOW COULD THIS PROBLEM OR IMPACT BE PREVENTED, FIXED OR ALLEVIATED?

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Appendix B: Plan Maintenance

Purpose

The section of the Code of Federal Regulations (CFR) pertaining to Local Mitigation Plans lists five required components for each plan: a description of the planning process; risk assessments; mitigation strategies; a method and system for plan maintenance; and documentation of plan adoption. This section details the method and system for plan maintenance, following the CFR's guidelines that the Plan Update must include (1) "a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle," (2) "a process by which local governments incorporated the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans", and (3) "discussion on how the community will continue public participation in the plan maintenance process."

Implementing, Monitoring, Evaluating, and Updating the Plan

The Allen Parish Hazard Mitigation Planning Committee will be responsible for implementing, monitoring, evaluating, and documenting the plan's progress throughout the year. Part of the plan maintenance process should include a system by which local governing bodies incorporate the HMP into the parish's other applicable plans. This process provides for continued public participation through the diverse resources of the parish to help in achieving the goals and objectives of the plan. Public participation will be achieved through availability of copies of HMP in parish public buildings and the SDMI HM website. This section describes the whole update process which includes the following:

- Responsible parties
- Methods to be used
- Evaluation criteria to be applied
- Scheduling for monitoring and evaluating the plan

Responsible Parties

Allen Parish has developed a method to ensure that a regular review and update of this Hazard Mitigation Plan occurs. This will be the responsibility of the planning committee, which consists of representatives from governmental organizations, local businesses, and private citizens, who will be involved in the process of monitoring, evaluating and updating the plan. All committee members in this plan will remain active in the planning committee.

Although the people filling the positions may change from year to year, the parish and its stakeholders will have representatives on the planning committee. The future planning committee will continue to be comprised of the same job functions as currently evident in the planning committee. However, the decision of specific job duties will be left to the Parish OHSEP Director to be assigned as deemed appropriate.

Methods for Monitoring and Evaluating the Plan and Plan Evaluation Criteria

Allen Parish has developed a method to ensure monitoring, evaluating, and updating of the HMP occurs during the five-year cycle of the plan. Implementation will be accomplished through constant and transparent efforts to network and highlight the multi-objective, win-win benefits of each project proposed in the *Mitigation Strategy* section. These efforts include the routine actions of monitoring agendas, attending meetings, and promoting a safe and resilient community. The planning committee will seek to become a permanent body and will be responsible for monitoring, evaluating, and updating of the plan. The planning committee meeting will be held annually in order to monitor, evaluate, and update the plan. The Allen Parish OHSEP Director will be responsible for conducting the annual planning committee meetings.

The lead person of the agency responsible for the implementation of a specific mitigation action will submit a progress report to the Director at least thirty days prior to the planning committee meeting. The progress report will provide project status monitoring to include the following: whether the project has started; if not started, reason for not starting; if started, status of the project; if the project is completed, whether it has eliminated the problem; and any changes recommended to improve the implementation of the project etc. In addition, the progress report will provide status monitoring on the plan evaluation, changes to the hazard profile, changes to the risk assessment, and public input on the Hazard Mitigation Plan updates and reviews.

Progress on the mitigation action items and projects will be reviewed during the annual planning committee meeting. The criteria that would be utilized in the project review will include the following:

1) Whether the action was implemented and reasons, if the action was not implemented

2) What were the results of the implemented action

3) Were the outcomes as expected, and reasons if the outcomes were not as expected

4) Did the results achieve the stated goals and objectives

5) Was the action cost-effective

6) What were the losses avoided after completion of the project

7) In case of a structural project, did it change the hazard profile

In addition to monitoring and evaluating the progress of the mitigation plan actions and projects, the mitigation plan is required to be maintained and monitored annually, and fully updated every five years. The annual maintenance, monitoring and evaluation of the plan will be conducted in the annual planning committee meeting. The planning committee will review each goal to determine their relevance to changing situations in the parish, as well as changes to state or federal policy, and to ensure that they are addressing current and expected conditions. The planning committee will evaluate if any change in hazard profile and risk in the parish occurred during the past year. In addition, the evaluation will include the following criteria in respect of plan implementation:

1) Any local staffing changes that would warrant inviting different members to the planning committee

2) Any new organizations that would be valuable in the planning process or project implementation need to be included in the planning committee

3) Any new or existing procedures that can be done more efficiently

4) Any additional ways to gain more diverse and widespread cooperation

5) Any different or additional funding sources available for mitigation planning and implementation

The HMP will be updated every five years to remain eligible for continued HMGP funding. The planning committee will be responsible for updating the HMP. The OHSEP Director will be the lead person for the HMP update. The HMP update process will commence at least one year prior to the expiration of the plan. The HMP will be updated after a major disaster if an annual evaluation of the plan indicates a substantial change in hazard profile and risk assessment in the parish.

Additionally, the public will be canvassed to solicit public input to continue Allen Parish's dedication to involving the public directly in review and updates of the Hazard Mitigation Plan. Meetings will be scheduled as needed by the plan administrator to provide a forum for which the public can express their concerns, opinions, and/or ideas about the plan. The plan administrator will be responsible for using parish resources to publicize the annual public meetings and maintain public involvement through the newspapers, radio, and public access television channels. Copies of the plan will be catalogued and kept at all appropriate agencies in the city government, as well as at the SDMI website.

The review by the planning committee and input from the public will determine whether a plan update is needed prior to the required five-year update.

Annual reports on the progress of actions, plan maintenance, monitoring, evaluation, incorporation into existing planning programs, and continued public involvement will be documented at each annual meeting of the committee and kept by the Parish OHSEP Director. The planning committee will work together as a team, with each member sharing responsibility for completing the monitoring, evaluation and updates. It is the responsibility of the Parish OHSEP Director for contacting committee members, organizing the meeting and providing public noticing for the meeting to solicit public input.

2023 Plan Version Plan Method and Schedule Evaluation

For the current plan update, the previously approved plan's method and schedule were evaluated to determine if the elements and processes involved in the required 2023 update. Based on this analysis, the method and schedule were deemed to be acceptable, and nothing was changed for this update.

Incorporation into Existing Planning Programs

It is and has been the responsibility of the Allen Parish Hazard Mitigation Plan Planning Committee and participating jurisdictions to determine additional implementation procedures when appropriate. This may include integrating the requirements of the Allen Parish Hazard Mitigation Plan into each jurisdiction's planning documents, processes, or mechanisms as follows:

- Ordinances, Resolutions, Regulations
- Floodplain Ordinances
- Master Plans
- Capital Improvement Plans
- Economic Development Plans
- Emergency Operations Plans
- Continuity of Operations Plans
- Transportation Plan
- Stormwater Management Plan

Opportunities to integrate the requirements of this plan into other local planning mechanisms will continue to be identified through future meetings of the Allen Parish Hazard Mitigation Planning Committee and through the five-year review process described herein. The primary means for integrating mitigation strategies into other local planning mechanisms will be through the revision, update and implementation of each jurisdiction's individual plans that require specific planning and administrative tasks (e.g. risk assessment, plan amendments, ordinance revisions, capital improvement projects, etc.).

During the planning process for new and updated local planning documents at the parish and jurisdiction level, such as a risk assessment, comprehensive plan, capital improvements plan, or emergency operations plan, the jurisdictions will provide a copy of the Parish Hazard Mitigation Plan to the appropriate parties and recommend that all goals and strategies of new and updated local planning documents are consistent with and support the goals of the Parish Hazard Mitigation Plan and will not contribute to increased hazards.

Although it is recognized that there are many possible benefits to integrating components of this plan into other parish and jurisdiction planning mechanisms, the development and maintenance of this stand-alone Hazard Mitigation Plan is deemed by the planning committee to be the most effective and appropriate method to ensure implementation of Parish and local hazard mitigation actions.

On behalf of the Unincorporated areas of Allen Parish, Town of Elizabeth, Town of Kinder, City of Oakdale, Town of Oberlin, and the Village of Reeves have the authority to incorporate the contents of the Hazard Mitigation Plan into the parish's existing regulatory mechanisms. Agreements are currently in place with jurisdictions to allow for the parish incorporation mechanisms to take place.

The following parish and local plans incorporate requirements of this HMP Update as follows through planning committee member and jurisdiction representation throughout the planning process as described above:

Allen Parish

Capital Improvements Plan	Updated as needed	Allen Parish Police Jury	✓
Continuity of Operations Plan	Updated as needed	Allen Parish OHSEP	✓
Local Emergency Operations Plan	Updated as needed	Allen Parish OHSEP	✓
Economic Development Plan	Updated as needed	Allen Parish Police Jury	✓

Town of Elizabeth

Capital Improvements Plan	Updated as needed	Town of Elizabeth Mayor's Office	✓
Local Emergency Operations Plan	Updated as needed	Town of Elizabeth Mayor's Office	✓

Town of Kinder

Capital Improvements Plan	Updated as needed	Town of Kinder Mayor's Office	✓
Local Emergency Operations Plan	Updated as needed	Town of Kinder Mayor's Office	✓
Comprehensive Master Plan	Updated as needed	Town of Kinder Mayor's Office	✓

City of Oakdale

Economic Development Plan	Updated as needed	City of Oakdale Mayor's Office	✓
Local Emergency Operations Plan	Updated as needed	City of Oakdale Mayor's Office	
Continuity of Operations Plan	Updated as needed	City of Oakdale Mayor's Office	
Transportation Plan	Updated as needed	City of Oakdale Mayor's Office	
Stormwater Management Plan	Updated as needed	City of Oakdale Mayor's Office	

Town of Oberlin

Local Emergency Operations Plan	Updated as needed	Town of Oberlin Mayor's Office	✓
Continuity of Operations Plan	Updated as needed	Town of Oberlin Mayor's Office	✓

Village of Reeves

Local Emergency Operations Plan	Updated as needed	Town of Oberlin Mayor's Office	✓
Continuity of Operations Plan	Updated as needed	Town of Oberlin Mayor's Office	✓

Continued Public Participation

Public participation is an integral component of the mitigation planning process and will continue to be essential as this plan evolves over time. Significant changes or amendments to the plan require a public hearing prior to any adoption procedures. Other efforts to involve the public in the maintenance, evaluation, and revision process will be made as necessary. These efforts may include:

- Advertising meetings of the Mitigation Committee in the local newspaper, public bulletin boards, and/or city and county office buildings
- Designating willing and voluntary citizens and private sector representatives as official members of the Mitigation Committee
- Utilizing local media to update the public of any maintenance and/or periodic review activities taking place
- Utilizing city and Parish web sites to advertise any maintenance and/or periodic review activities taking place
- Keeping copies of the plan in appropriate public locations.

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Appendix C: Critical Facilities

Critical Facilities within the Allen Parish Planning Area

Allen Parish Planning Area Critical Facilities							
Type	Name	Drought	Excessive Heat	Flooding	Thunderstorms	Tornadoes	Tropica Cyclone
Civil Government	Allen Parish Courthouse	X	X		X	X	X
	Allen Parish Police Jury Office	X	X		X	X	X
	Elizabeth Town Hall	X	X	X	X	X	X
	Kinder Town Hall	X	X		X	X	X
	Oakdale City Hall	X	X		X	X	X
	Oberlin Town Hall	X	X		X	X	X
	Reeves Village Hall	X	X		X	X	X
Fire & SAR	Allen Parish Fire District #6 - Station 1	X	X		X	X	X
	Allen Parish Fire District 6 - Station 3	X	X		X	X	X
	Allen Parish Fire Protection District #4 - Kinder FD	X	X		X	X	X
	Beaver Cypress Fire Station	X	X		X	X	X
	Elizabeth Volunteer Fire Department	X	X		X	X	X
	Indian Village Fire Station	X	X	X	X	X	X
	Oakdale Fire Department	X	X		X	X	X
	Plainview Fire Department	X	X		X	X	X
	Plainview Volunteer Fire Department - Station #4	X	X	X	X	X	X
Law Enforcement	Allen Parish Sheriff's Office - Admin Building	X	X		X	X	X
	Alen Parish Sheriff's Office and Correctional Center	X	X		X	X	X
	Elizabeth Police Station	X	X		X	X	X
	Kinder Police Department	X	X		X	X	X

	Oakdale Police Station	X	X		X	X	X
	Oberlin Police Station	X	X		X	X	X
	Reeves Police Station	X	X		X	X	X
Public Health	Oakdale Health Unit	X	X		X	X	X
	Alen Parish Community Health Center	X	X		X	X	X
Education	Oberlin Elementary	X	X		X	X	X
	Elizabeth High	X	X		X	X	X
	Oakdale High	X	X		X	X	X
	Kinder Elementary	X	X		X	X	X
	Reeves High	X	X		X	X	X
	Kinder High	X	X		X	X	X
	Oberlin High	X	X		X	X	X
	Kinder Middle	X	X		X	X	X
	Oakdale Elementary	X	X		X	X	X
	Fairview High	X	X		X	X	X
	Oakdale Middle	X	X		X	X	X
Water Towers	West Allen Water Tower	X	X		X	X	X
	Town of Kinder Water Tower	X	X		X	X	X
	Kinder Water Tower	X	X		X	X	X
	Allen Correctional Tower	X	X		X	X	X
	East Allen Water Tower	X	X		X	X	X
	Town of Oberlin Water Tower 1	X	X		X	X	X
	Town of Oberlin Water Tower 2	X	X		X	X	X
	Northwest Allen Water Tower	X	X		X	X	X
	City of Oakdale Water Tower	X	X		X	X	X
	Village of Elizabeth Water Tower	X	X		X	X	X
	Allen Parish Water District 1 Tower	X	X		X	X	X

Appendix D: Plan Adoption

Unincorporated Allen Parish

ALLEN PARISH POLICE JURY

LOUISIANA

RESOLUTION NO. 6609

A RESOLUTION OF THE ALLEN PARISH POLICE JURY

2024 PARISH-WIDE HAZARD MITIGATION PLAN

WHEREAS the ALLEN PARISH POLICE JURY recognizes the threat that natural hazards pose to people and property within ALLEN PARISH; and

WHEREAS the ALLEN PARISH POLICE JURY has prepared a multi-hazard mitigation plan, hereby known as 2024 PARISH-WIDE HAZARD MITIGATION PLAN in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS 2024 PARISH-WIDE HAZARD MITIGATION PLAN identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in ALLEN PARISH from the impacts of future hazards and disasters; and

WHEREAS adoption by the ALLEN PARISH POLICE JURY demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the 2024 PARISH-WIDE HAZARD MITIGATION PLAN

NOW THEREFORE, BE IT RESOLVED BY THE ALLEN PARISH POLICE JURY, LOUISIANA, THAT:

Section 1. In accordance with the Code of Ordinance, Parish of Allen, Louisiana, THE ALLEN PARISH POLICE JURY adopts the 2024 PARISH-WIDE HAZARD MITIGATION PLAN.

ADOPTED by a vote of 7 in favor and 0 against, and 0 abstaining, and 1 absent, this 5th day of January, 2024.

By: Tony Hebert

Tony Hebert, President

ATTEST:

By: Colleen Sonnier

Colleen Sonnier, Secretary-Treasurer

APPROVED AS TO FORM:

By: Jacob Dillehay

Jacob Dillehay, Administrator-Engineer

Town of Elizabeth

VILLAGE OF ELIZABETH

LOUISIANA

RESOLUTION NO. 110-2024

A RESOLUTION OF THE VILLAGE OF ELIZABETH

2023 Allen Parish Multi-Jurisdiction Hazard Mitigation Plan

WHEREAS the VILLAGE OF ELIZABETH Board of Aldermen recognizes the threat that natural hazards pose to people and property within VILLAGE OF ELIZABETH; and

WHEREAS the VILLAGE OF ELIZABETH has prepared a multi-hazard mitigation plan, hereby known as 2023 Allen Parish Multi-Jurisdiction Hazard Mitigation Plan in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS, 2023 Allen Parish Multi-Jurisdiction Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in VILLAGE OF ELIZABETH from the impacts of future hazards and disasters; and

WHEREAS adoption by the VILLAGE OF ELIZABETH BOARD OF ALDERMEN demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the 2023 Allen Parish Multi-Jurisdiction Hazard Mitigation Plan .

NOW THEREFORE, BE IT RESOLVED BY THE VILLAGE OF ELIZABETH, LOUISIANA, THAT:

Section 1. In accordance with PRESENTATION OF THE RESOLUTION 110-2024 in regular meeting on February 12, 2024 and, THE VILLAGE OF ELIZABETH BOARD OF ALDERMEN adopts the 2023 Allen Parish Multi-Jurisdiction Hazard Mitigation Plan .

ADOPTED by a vote of 3 in favor and 0 against, and 0 abstaining, this 12TH day of February, 2024.

By: ______________________

Mandy L Green, Mayor

ATTEST:

By: ______________________

Denise Lee, LCMClerk

APPROVED AS TO FORM:

By: ______________________

Mandy L Green, Mayor

Town of Kinder

RESOLUTION No. 2024-04

BY

TOWN OF KINDER, LOUISIANA

WHEREAS, the Town of Kinder recognizes the threat that natural hazards pose to people and property within Allen Parish; and

WHEREAS, Allen Parish has prepared a multi-hazard mitigation plan, hereby known as the Allen Parish Multi-Jurisdiction Hazard Mitigation Plan in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS, the Allen Parish Multi-Jurisdiction Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Allen Parish from the impacts of future hazards and disasters; and

WHEREAS, adoption by the Town of Kinder demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the Allen Parish Multi-Jurisdiction Hazard Mitigation Plan.

NOW THEREFORE, BE IT RESOLVED by the Mayor and Town Council of the Town of Kinder, Louisiana that:

Section 1. In accordance with the Lawrason Act, The Town of Kinder adopts the Allen Parish Multi-Jurisdiction Hazard Mitigation Plan.

ADOPTED by a vote of 5 in favor and 0 against, and 0 abstaining, this 26th day of February, 2024.

Wayland LaFargue, Mayor

Traci B. Fontenot, Town Clerk

CERTIFICATE

I, Traci B. Fontenot, Town Clerk of the Town of Kinder, Louisiana, do hereby certify that the above and foregoing constitutes a true and correct copy of a Resolution passed and adopted by the Mayor and Town Council of the Town of Kinder, Allen Parish, Louisiana, on the 26th day of February, 2024.

Traci B. Fontenot, Town Clerk

City of Oakdale

CITY OF OAKDALE

LOUISIANA

RESOLUTION NO. 1520

A RESOLUTION OF THE CITY OF OAKDALE

ALLEN PARISH MITIGATION PLAN

WHEREAS THE CITY OF OAKDALE recognizes the threat that natural hazards pose to people and property within THE CITY OF OAKDALE; and

WHEREAS the CITY OF OAKDALE has prepared a multi-hazard mitigation plan, hereby known as THE ALLEN PARISH MITIGATION PLAN OF 01/11/2024 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS THE ALLEN PARISH MITIGATION PLAN identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in THE CITY OF OAKDALE from the impacts of future hazards and disasters; and

WHEREAS adoption by THE CITY CITY OF OAKDALE demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the ALLEN PARISH MITIGATION PLAN.

NOW THEREFORE, BE IT RESOLVED BY THE CITY OF OAKDALE, LOUISIANA, THAT:

Section 1. In accordance with OAKDALE CITY COUNCIL OF THE CITY OF OAKDALE adopts THE ALLEN PARISH MITIGATION PLAN.

ADOPTED by a vote of 5 in favor and 0 against, and ______ abstaining, this 7th day of March, 2024.

By: Paul Abrusley

Paul Abrusley, City Clerk

ATTEST:

By: Paul Abrusley

Paul Abrusley, City Clerk

APPROVED AS TO FORM:

By: ______________________

Mayor Gene Paul

Town of Oberlin

Town of Oberlin

LOUISIANA

RESOLUTION NO. 2024-05

A RESOLUTION OF THE Town of Oberlin

Allen Parish Louisiana Multi-Jurisdiction Hazard Mitigation Plan 04/08/2024

WHEREAS the Town of Oberlin recognizes the threat that natural hazards pose to people and property within The Town of Oberlin; and

WHEREAS the Town of Oberlin has prepared a multi-hazard mitigation plan, hereby known as Allen Parish Louisiana Multi-Jurisdiction Hazard Mitigation Plan in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS Allen Parish Louisiana Multi-Jurisdiction Hazard Mitigation Plan 04/08/2024 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Town of Oberlin from the impacts of future hazards and disasters; and

WHEREAS adoption by the Town of Oberlin demonstrates their commitment to hazard mitigation and achieving the goals outlined in the Allen Parish Louisiana Multi-Jurisdiction Hazard Mitigation Plan 04/08/2024.

NOW THEREFORE, BE IT RESOLVED BY THE Town of Oberlin, LOUISIANA, THAT:

Section 1. In accordance with The Lawrason Act, THE Town of Oberlin adopts the Allen Parish Louisiana Multi-Jurisdiction Hazard Mitigation Plan 04/08/2024.

ADOPTED by a vote of 5 in favor and 0 against, and 0 abstaining, this 8th day of April 2024.

By: Lg W. Alk

MAYOR, Larry W. Alexander

ATTEST:

By: Browdie Reese

TOWN CLERK, Browdie Reese

APPROVED AS TO FORM:

By: Lg W. Alk

MAYOR, Larry W. Alexander

Village of Reeves

Resolution

A Resolution of the Village of Reeves Board of Aldermen
made at the regular public meeting held on February 12, 2024

Motion may by: Alderman Ducharme
Seconded by: Alderman Jeffcoats

THE ALLEN PARISH HAZARD MITIGATION PLAN

WHEREAS the Board of Aldermen of the village of Reeves, Louisiana recognizes the threat that natural hazards pose to people and property within the village of Reeves and

WHEREAS the village of Reeves has prepared a multi-hazard mitigation plan, hereby known as The Allen Parish Hazard Mitigation Plan in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS The Allen Parish Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the village of Reeves from the impacts of future hazards and disasters; and

WHEREAS adoption by the Board of Aldermen of the village of Reeves, Louisiana demonstrates their commitment to the hazard mitigation and achieving the goals outlined in The Allen Parish Hazard Mitigation Plan.

NOW THEREFORE, BE IT RESOLVED BY THE VILLAGE OF REEVES LOUISIANA, THAT:

This resolution having been submitted to a vote, the vote thereon as follows:

Alderman Ducharme	✓ yea	____ nay
Alderman Estay	✓ yea	____ nay
Alderman Jeffcoats	✓ yea	____ nay

Approved by the Mayor on February 12, 2024.

Christopher Guillory, Mayor

Attested to by:

Nicole Moreau, Village Clerk

02/12/2024
Date

Appendix E: State Required Worksheets

During the planning process (Appendix A: Planning Process), the Hazard Mitigation Plan Update Planning Committee w
plan update process worksheets to be filled out. The worksheets were presented at the Initial Planning Meeting by SI
the update of the Hazard Mitigation Plan, but also as a state requirement for the update. The plan update workshee
information such as planning team members, community capabilities, community infrastructure, vulnerable populati
The following pages contain documentation of the state required worksheets.

Mitigation Planning Team

Allen Parish Hazard Mitigation Planning Committee			
Name	**Title**	**Agency**	**En**
Chris Oakes	Director	Allen Parish OHSEP	coakes@aller
Jacob Dillehay	Parish Engineer	Allen Parish Police Jury	jdillehay
Gene Paul	Mayor	City of Oakdale	oakdaledm31
Wayland LaFargue	Mayor	Town of Kinder	wayland.lafargue@
Larry Alexander	Mayor	Town of Oberlin	mayorofoberli
Mandy Green	Mayor	Village of Elizabeth	mgreen@village
Chris Guillory	Mayor	Village of Reeves	chris.guillory(
Amy Michiels	Region 5 Coordinator	GOHSEP	Amy.Michi

Capability Assessment

Unincorporated Allen Parish

Capability Assessment Worksheet - Unincorporated Allen Parish		
Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to implem activities. Please complete the tables and questions in the worksheet as completely as possible.		
Planning and Regulatory		
Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.		
Plans	**Yes/No**	**Co**
Comprehensive / Master Plan	No	
Capital Improvements Plan	Yes	
Economic Development Plan	Yes	
Local Emergency Operations Plan	Yes	
Continuity of Operations Plan	Yes	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections	**Yes/No**	**Co**
Building Code	Yes	
Building Code Effectiveness Grading Schedule (BCEGS) Score	Unknown	
Fire Department ISO/PIAL rating	Yes	
Site plan review requirements	Yes	
Land Use Planning and Ordinances	**Yes/No**	**Co**
Zoning Ordinance	Yes	
Subdivision Ordinance	No	
Floodplain Ordinance	Yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	
Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	No	
Other	No	

Administration and Technical		
Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staf public resources at the next higher level government that can provide technical assistance, indicate so in your comm		
Administration	**Yes/No**	**Co**
Planning Commission	No	
Mitigation Planning Committee	Yes	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	
Staff	**Yes/No**	**Co**
Chief Building Official	Yes	
Floodplain Administrator	Yes	
Emergency Manager	Yes	
Community Planner	No	
Civil Engineer	Yes	
GIS Coordinator	No	
Grant Writer	Yes	
Other	No	
Technical	**Yes/No**	**Co**
Warning Systems / Service (Reverse 911, outdoor warning signals)	No	
Hazard Data & Information	Yes	
Grant Writing	Yes	
Hazus Analysis	Yes	
Other	No	

Financial		
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitiga		
Funding Resource	**Yes/No**	**Co**
Capital Improvements project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	Yes	
Other Funding Programs	No	

Education and Outreach		
Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and comı information.		
Program / Organization	**Yes/No**	**Co**
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	
Natural Disaster or safety related school program	Yes	
Storm Ready certification	Unknown	
Firewise Communities certification	Unknown	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other	No	

Town of Elizabeth

Capability Assessment Worksheet - Elizabeth		
Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to ir mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.		
Planning and Regulatory		
Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.		
Plans	**Yes/No**	**Comme**
Comprehensive / Master Plan	No	
Capital Improvements Plan	Yes	
Economic Development Plan	No	
Local Emergency Operations Plan	Yes	
Continuity of Operations Plan	No	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections	**Yes/No**	**Comme**
Building Code	Yes	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire Department ISO/PIAL rating	Yes	
Site plan review requirements	Yes	
Land Use Planning and Ordinances	**Yes/No**	**Comme**
Zoning Ordinance	Yes	
Subdivision Ordinance	No	
Floodplain Ordinance	Yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	Yes	
Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	Yes	
Other	No	

Administration and Technical		
Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without loca there are public resources at the next higher level government that can provide technical assistance, indicate so in your c		
Administration	**Yes/No**	**Comme**
Planning Commission	Yes	
Mitigation Planning Committee	Yes	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	
Staff	**Yes/No**	**Comme**
Chief Building Official	Yes	Mayor
Floodplain Administrator	Yes	Relies on Parish
Emergency Manager	Yes	Mayor
Community Planner	No	
Civil Engineer	Yes	Glenn Tunner
GIS Coordinator	Yes	Parish
Grant Writer	Yes	Thomas Mcgee
Other	No	
Technical	**Yes/No**	**Comme**
Warning Systems / Service (Reverse 911, outdoor warning signals)	No	
Hazard Data & Information	Yes	
Grant Writing	Yes	
Hazus Analysis	No	
Other	No	

Financial		
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitiga		
Funding Resource	**Yes/No**	**Comme**
Capital Improvements project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric services	Yes	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	Yes	
Other Funding Programs	Yes	

Education and Outreach		
Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities a hazard-related information.		
Program / Organization	**Yes/No**	**Comme**
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	
Natural Disaster or safety related school program	Yes	
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other		

Town of Kinder

Capability Assessment Worksheet - Kinder		
Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to ir mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.		
Planning and Regulatory		
Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.		
Plans	**Yes/No**	**Comn**
Comprehensive / Master Plan	Yes	
Capital Improvements Plan	Yes	
Economic Development Plan	No	
Local Emergency Operations Plan	Yes	
Continuity of Operations Plan	No	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections	**Yes/No**	**Comn**
Building Code	Yes	
Building Code Effectiveness Grading Schedule (BCEGS) Score	Yes	
Fire Department ISO/PIAL rating	Yes	
Site plan review requirements	Yes	
Land Use Planning and Ordinances	**Yes/No**	**Comn**
Zoning Ordinance	No	
Subdivision Ordinance	No	
Floodplain Ordinance	Yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	
Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	No	
Other	No	

Administration and Technical		
Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local st are public resources at the next higher level government that can provide technical assistance, indicate so in your com		
Administration	**Yes/No**	**Comn**
Planning Commission	Yes	
Mitigation Planning Committee	No	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	
Staff	**Yes/No**	**Comn**
Chief Building Official	Yes	
Floodplain Administrator	Yes	
Emergency Manager	Yes	
Community Planner	No	
Civil Engineer	Yes	
GIS Coordinator	Yes	
Grant Writer	Yes	
Other	No	
Technical	**Yes/No**	**Comn**
Warning Systems / Service (Reverse 911, outdoor warning signals)	No	
Hazard Data & Information	No	
Grant Writing	Yes	
Hazus Analysis	No	
Other	No	

Financial		
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitiga		
Funding Resource	**Yes/No**	**Comm**
Capital Improvements project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric services	Yes	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	Yes	
Other Funding Programs	No	

Education and Outreach		
Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and c related information.		
Program / Organization	**Yes/No**	**Comm**
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	No	
Natural Disaster or safety related school program	Yes	
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other	No	

City of Oakdale

Capability Assessment Worksheet - Oakdale		
Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to ir mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.		
Planning and Regulatory		
Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.		
Plans	**Yes/No**	**Co**
Comprehensive / Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	Yes	
Local Emergency Operations Plan	Yes	
Continuity of Operations Plan	Yes	
Transportation Plan	Yes	
Stormwater Management Plan	Yes	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	Yes	
Building Code, Permitting and Inspections	**Yes/No**	**Co**
Building Code	Yes	
Building Code Effectiveness Grading Schedule (BCEGS) Score	Yes	
Fire Department ISO/PIAL rating	Yes	
Site plan review requirements	Yes	
Land Use Planning and Ordinances	**Yes/No**	**Co**
Zoning Ordinance	Yes	
Subdivision Ordinance	Yes	
Floodplain Ordinance	Yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	Yes	
Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	Yes	
Other	No	

Administration and Technical		
Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local st are public resources at the next higher level government that can provide technical assistance, indicate so in your com		
Administration	**Yes/No**	**Co**
Planning Commission	Yes	
Mitigation Planning Committee	No	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	
Staff	**Yes/No**	**Co**
Chief Building Official	Yes	
Floodplain Administrator	Yes	
Emergency Manager	Yes	
Community Planner	No	
Civil Engineer	Yes	
GIS Coordinator	Yes	
Grant Writer	Yes	
Other	No	
Technical	**Yes/No**	**Co**
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	
Hazard Data & Information	Yes	
Grant Writing	Yes	
Hazus Analysis	No	
Other	No	

Financial		
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitiga		
Funding Resource	Yes/No	Co
Capital Improvements project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric services	Yes	
Impact fees for new development	Yes	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	Yes	
Other Funding Programs	No	

Education and Outreach		
Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and c related information.		
Program / Organization	Yes/No	Co
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	
Natural Disaster or safety related school program	Yes	
Storm Ready certification	Yes	
Firewise Communities certification	Yes	
Public/Private partnership initiatives addressing disaster-related issues	Oakdale Fire Department	
Other	No	

Town of Oberlin

Capability Assessment Worksheet - Oberlin		
Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to ir mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.		
Planning and Regulatory		
Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.		
Plans	**Yes/No**	**Comme**
Comprehensive / Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	Yes	
Continuity of Operations Plan	Yes	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections	**Yes/No**	**Comme**
Building Code	Yes	
Building Code Effectiveness Grading Schedule (BCEGS) Score	Yes	
Fire Department ISO/PIAL rating	Yes	
Site plan review requirements	Yes	
Land Use Planning and Ordinances	**Yes/No**	**Comme**
Zoning Ordinance	No	
Subdivision Ordinance	Yes	
Floodplain Ordinance	Yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	
Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	No	
Other	No	

Administration and Technical		
Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without loca there are public resources at the next higher level government that can provide technical assistance, indicate so in your c		
Administration	**Yes/No**	**Comme**
Planning Commission	Yes	
Mitigation Planning Committee	No	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	
Staff	**Yes/No**	**Comme**
Chief Building Official	Yes	
Floodplain Administrator	Yes	
Emergency Manager	Yes	
Community Planner	No	
Civil Engineer	Yes	
GIS Coordinator	Yes	
Grant Writer	Yes	
Other	No	
Technical	**Yes/No**	**Comme**
Warning Systems / Service (Reverse 911, outdoor warning signals)	No	
Hazard Data & Information	No	
Grant Writing	Yes	
Hazus Analysis	No	
Other	No	

Financial		
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitiga		
Funding Resource	**Yes/No**	**Comme**
Capital Improvements project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric services	Yes	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	Yes	
Other Funding Programs	No	

Education and Outreach		
Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities a hazard-related information.		
Program / Organization	**Yes/No**	**Comme**
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	No	
Natural Disaster or safety related school program	No	
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other	No	

Village of Reeves

Capability Assessment Worksheet - Reeves		
Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to ir mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.		
Planning and Regulatory		
Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.		
Plans	**Yes/No**	**Comm**
Comprehensive / Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	Yes	
Continuity of Operations Plan	Yes	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections	**Yes/No**	**Comm**
Building Code	Yes	
Building Code Effectiveness Grading Schedule (BCEGS) Score	Yes	
Fire Department ISO/PIAL rating	Yes	
Site plan review requirements	Yes	
Land Use Planning and Ordinances	**Yes/No**	**Comm**
Zoning Ordinance	No	
Subdivision Ordinance	No	
Floodplain Ordinance	Yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	
Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	No	
Other	No	

Administration and Technical		
Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without loca there are public resources at the next higher level government that can provide technical assistance, indicate so in your c		
Administration	**Yes/No**	**Comm**
Planning Commission	No	
Mitigation Planning Committee	No	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	
Staff	**Yes/No**	**Comm**
Chief Building Official	Yes	
Floodplain Administrator	Yes	
Emergency Manager	Yes	
Community Planner	Yes	
Civil Engineer	Yes	
GIS Coordinator	Yes	
Grant Writer	Yes	
Other	No	
Technical	**Yes/No**	**Comm**
Warning Systems / Service (Reverse 911, outdoor warning signals)	No	
Hazard Data & Information	No	
Grant Writing	Yes	
Hazus Analysis	No	
Other	No	

Financial		
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitiga		
Funding Resource	**Yes/No**	**Comm**
Capital Improvements project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric services	Yes	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	Yes	
Other Funding Programs	No	

Education and Outreach		
Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and c related information.		
Program / Organization	**Yes/No**	**Comm**
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	No	
Natural Disaster or safety related school program	No	
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other	No	

Building Inventory

Allen Parish and Jurisdiction Owned Building Information						
Unincorporated Allen Parish						
Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Assess Valu
LSU Ag Center	Education	616 Court Street	Oberlin	30°37'14.75"N	92°46'22.70"W	$470,66
Allen Parish Court House	Civil Government	400 West 6th Street	Oberlin	30°37'13.43"N	92°46'5.24"W	$4,706,6
DA'S Office	Civil Government	400 West 6th Street	Oberlin	30°37'12.28"N	92°46'5.09"W	$400,66
Registrar of Voters	Civil Government	105 North 5th Street	Oberlin	30°37'14.44"N	92°46'6.27"W	$88,25
Allen Parish Civic Center	Parks and Recreation	609 Tiger Lane	Oberlin	30°37'5.84"N	92°46'17.59"W	$823,67
Jail Behind Courthouse	Law Enforcement	417 Court Street	Oberlin	30°37'13.46"N	92°46'6.14"W	$294,16
Allen Parish Action Agency	Civil Government	505 West 7th Ave	Oberlin	30°37'19.12"N	92°46'9.84"W	$117,66
Allen Parish Fair Exhibit Bldg. 1	Parks and Recreation	209 South 4th Street	Oberlin	30°37'4.99"N	92°46'11.75"W	$76,48
Allen Parish Fair Exhibit Bldg. 2	Parks and Recreation	209 South 4th Street	Oberlin	30°37'4.99"N	92°46'11.75"W	$35,30
Allen Parish Fair Livestock Bldg. 1	Parks and Recreation	209 South 4th Street	Oberlin	30°37'4.99"N	92°46'11.75"W	$58,83
Allen Parish Fair Livestock Bldg. 2	Parks and Recreation	209 South 4th Street	Oberlin	30°37'4.99"N	92°46'11.75"W	$23,53
Allen Parish Fair Restrooms	Parks and Recreation	209 South 4th Street	Oberlin	30°37'4.99"N	92°46'11.75"W	$11,76
Homeland Security Bldg.	Civil Government	106 South 4th Street	Oberlin	30°37'15.14"N	92°46'8.66"W	$47,06
Airport Pilot Lounge	Airport	278 Airport Rd.	Oakdale	30°45'4.15"N	92°41'28.57"W	$117,66
Airport House	Airport	234 Airport Rd.	Oakdale	30°45'4.15"N	92°41'28.57"W	$115,38
Health Unit Oakdale	Public Health	145 Hospital Dr.	Oakdale	30°49'1.65"N	92°38'41.64"W	$929,80
Allen Parish Police Jury Office	Civil Government	602 Court Street	Oakdale	30°37'15.18"N	92°46'20.10"W	$1,153,6
Voting Precinct	Civil Government	205 West MLK Dr.	Oberlin	30°36'33.30"N	92°45'50.47"W	$58,83
Voting Precinct	Civil Government	1215 North Blacktop	Oakdale	30°49'56.46"N	92°39'30.44"W	$14,12
Voting Precinct	Civil Government	102 West Erwin Street	Oakdale	30°49'10.80"N	92°39'46.12"W	$5,883
Ward 1 Barn	Civil Government	1217 Cottongin Rd.	Oberlin	30°37'30.81"N	92°44'38.65"W	$21,18
Ward 2 Barn	Civil Government	203 South 10th Street	Kinder	30°28'50.50"N	92°50'49.43"W	$21,18
Ward 3 Barn	Civil Government	108 South Lyles St.	Reeves	30°31'6.93"N	93° 2'44.00"W	$29,41
Ward 4 Barn	Civil Government	110 Carol Hill Rd	Elizabeth	30°47'18.37"N	92°52'15.12"W	$29,41
Ward 5 Barn	Civil Government	518 Hwy 1152	Oakdale	30°48'3.05"N	92°40'40.07"W	$35,30

Town of Elizabeth						
Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Asses Valu
Town Hall	Town Hall	230 Poplar St	Elizabeth	30°51'53.73"N	92°47'43.75"W	$902,6
Community Center	Elizabeth Community Center	210 Main St	Elizabeth	30°52'5.82"N	92°47'32.62"W	$528,5
Fire Department	Elizabeth Fire Department	206 Main St	Elizabeth	30°52'5.82"N	92°47'32.62"W	$250,2
Elizabeth Family Health Clinic	Elizabeth Health Clinic	504 West Main Steet	Elizabeth	30.87226274	-92.80043563	$463,7
Sewer Building	Sewer Plant Utility	215 Bay City Road	Elizabeth	30.85898407	-92.79151188	$27,30
Water Shed	Water System Utility	231 Poplar Street	Elizabeth	30.86588258	-92.79615527	$72,00
Pavillion / Restrooms	RV Park	12742 HWY 112	Eizabeth	30.87974461	-92.80822063	$17,00
Maintenance Shop	Maintenace Shop	233 Poplar Street	Elizabeth	30.86588258	-92.79615527	$183,3

Town of Kinder						
Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Asses Valu
Town Hall	Town Hall	807 3rd Ave	Kinder	30°29'12.34"N	92°51'1.68"W	$1,500,
Kinder Police Station	Kinder Police Station	807 3rd Ave	Kinder	30°29'7.60"N	92°50'59.65"W	$1,000,
Kinder fire station	Kinder fire station	808 2nd Ave	Kinder	30°29'2.90"N	92°50'56.79"W	$750,0
kinder community center	kinder community center	333 8th St.	Kinder	30°29'10.35"N	92°50'59.32"W	$1,000,

City of Oakdale						
Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Asses Valu
Oakdale City Hall	Municipality Building	333 East 6th Ave	Oakdale	30.81534936	-92.65982085	
Oakdale Police Department	Police Department / Emergency Services	152 South 10th St	Oakdale	30.8165035	-92.66186532	
Oakdale Fire Department	Fire Department/ Emergency Services	115 South 10th St	Oakdale	30.81619911	-92.66244811	
Public Works Department	Municipality Building for Maintenance for the City	428 River Road	Oakdale	30.82135193	-92.67062963	
Sewage Treatment Plant	Sanitation Wastewater Sewage Facility for City	1724 La-10	Oakdale	30.82970446	-92.69801895	
7th Ave Community Center	City Facility for Events/ Meetings	709 East 7th Ave	Oakdale	30.81699364	-92.65454096	
Ballard Road Community Center	City Facility for Events/ Meetings	821 Hwy 372	Oakdale	30.80448595	-92.64837477	
Mowad Civic Center	City Facility for Events/ Meetings	213 South 10th St	Oakdale	30.81327201	-92.66262621	

Town of Oberlin						
Name of Building	**Purpose of Building**	**Address**	**City**	**Latitude**	**Longitude**	**Asses Valu**
Oberlin Town Hall	Oberlin Town Hall	103 6th Ave	Oberlin	30°37'12.75"N	92°45'47.32"W	$750,0
Oberlin Police Station	Oberlin Police Station	103 6th Ave	Oberlin	30°37'12.75"N	92°45'47.32"W	$250,0
Oberlin City Barn	Oberlin City Barn	5ht Ave	Oberlin	30°37'5.45"N	92°45'55.32"W	$250,0

Village of Reeves						
Name of Building	**Purpose of Building**	**Address**	**City**	**Latitude**	**Longitude**	**Asses Valu**
Reeves Town Hall	Town Hall	18370 US-190	Reeves	30°31'11.04"N	93° 2'57.24"W	$200,0
Reeves Police Station	Reeves Police Station	Hwy 190	Reeves	30°31'11.00"N	93° 2'46.22"W	

Vulnerable Populations

Allen Parish			
All Hospitals (Private or Public)	**Street**	**City**	**Zip Code**
Allen Parish Hospital	108 6th Ave	Kinder	70648
Oakdale Community Hospital (Private)	130 North Hospital Drive	Oakdale	71463
Nursing Homes (Private or Public)	**Street**	**City**	**Zip Code**
Kinder Retirement and Rehab Center	13938 US 165	Kinder	70648
Allen Oaks Nursing Home	909 East 6th Avenue	Oakdale	71463
St. Frances Nursing Home	417 Industrial Dr.	Oberlin	70655
Mobile Home Parks	**Street**	**City**	**Zip Code**
Oaklin Springs Mobile Home Park	8308 Hwy 26	Oberlin	70655
Grandview Mobile Home Park	115 Highland Dr.	Kinder	70648
LeBlanc Mobile Home Park	15375 Hwy 190	LeBlanc	70651
Ashworth, Sherman, Mary Winn Ashworth & Sherron Ashworth	**Zone A2** - Faith Loop (Sunny Acres MH Park) Parcel 0450000050B	Elizabeth	70638

National Flood Insurance Program (NFIP)

National Flood Insurance Program (NFIP)					
	Allen Parish	Town of Elizabeth	Town of Kinder	City of Oakdale	Town of
Insurance Summary					
How many NFIP polices are in the community? What is the total premium and coverage?	# of Policies: 198; Total Premiums: $108,540; Total Coverage: $37,499,000	# of Policies: 3; Total Premiums: $2002; Total Coverage: $231,000	# of Policies: 37; Total Premiums: $21,824; Total Coverage: $9,761,000	# of Policies: 80; Total Premiums: $59,309; Total Coverage: $18,886,000	# of Poli Total Pre $12,74 Cove $6,23
How many claims have been paid in the community? What is the total amount of paid claims? How many of the claims were for substantial damage?	# of paid claims: 155; Total amount of paid claims: $1,851,659; Substantial Damage: 40	# of paid claims: 0; Total amount of paid claims: $0; Substantial Damage: 0	# of paid claims: 49; Total amount of paid claims: $717,397; Substantial Damage: 8	# of paid claims: 267; Total amount of paid claims: $4,817,408; Substantial Damage: 30	# of paid c Total amou claims: $ Substantia
How many structures are exposed to flood risk with in the community?					
Describe any areas of flood risk with limited NFIP policy coverage.					
Staff Resources					
Is the Community FPA or NFIP Coordinator certified?					
Is flood plain management an auxiliary function?					
Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability)					
What are the barriers to running an effective NFIP program in the community, if any?					
Compliance History					
Is the community in good standing with the NFIP?	Yes	Yes	Yes	Yes	Ye
Are there any outstanding compliance issues(i.e., current violations)?	No	No	No	No	N
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact(CAC)?	CAV: 12/03/2003; CAC: 03/06/2013	CAV: 09/20/2007; CAC: 10/23/2012	CAV: 01/10/2011; CAC: 10/15/2012	CAV: 02/08/2008; CAC: 05/09/2016	CAV: 04/. CAC: 01/
Is a CAV or CAC scheduled or needed? If so when?					

Regulation					
When did the community enter the NFIP?	E = 09/04/1978; R = 01/03/1990	E = 03/19/1985; R = 02/01/1987	E = 09/08/1975; R = 11/01/1985	E = 05/01/1975; R = 08/05/1985	E = 09/28/ 10/12
Are the FIRMs digital or paper?	**Digital**	**Digital**	**Digital**	**Digital**	**Dig**
When did the communities adopt the FIRMs?	3/17/2011	3/17/2011	3/17/2011	3/17/2011	3/17/
Do floodplain development regulations meet or exceed FEMA or State minimum requirements? If so, in what ways?	**Meets**	**Meets**	**Meets**	**Meets**	**Me**
Community Rating System (CRS)					
Does the community participate in CRS?	No	No	No	No	N
What is the community's CRS Class Ranking?	**N/A**	**N/A**	**N/A**	**N/A**	**N/**
Does the plan include CRS planning requirements?					

Attachment J 3

2021 Coushatta Tribe

Of Louisiana Tribal Hazard

Mitigation Plan

MAY 4, 2021

COUSHATTA TRIBE OF LOUISIANA

TRIBAL HAZARD MITIGATION PLAN UPDATE
PUBLIC REVIEW DRAFT MAY 2021

Prepared by

BRIDGEVIEW CONSULTING

BEVERLY O'DEA
BRIDGEVIEW CONSULTING, LLC
915 N. Laurel Lane
Tacoma, WA 98406
(253) 380-5736

Coushatta Tribe of Louisiana 2021 Hazard Mitigation Plan Update

Prepared for
Coushatta Tribe of Louisiana
Coushatta Tribal Fire Department
P.O. Box 818
Elton, LA 70532

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EXECUTIVE SUMMARY

The Disaster Mitigation Act (DMA; Public Law 106-390) encourages tribes, states, and local authorities to work together on pre-disaster planning to promote sustainability as a strategy for disaster resistance. "Sustainable hazard mitigation" includes the sound management of natural resources, local economic and social resiliency, and the recognition that hazards and mitigation must be understood in the largest possible social and economic context. The enhanced planning network called for by the DMA helps local government's articulate accurate needs for mitigation, resulting in faster allocation of funding and more cost-effective risk reduction projects.

Embracing this initiative as a foundation for proactive planning in addition to FEMA's "whole community approach," the Coushatta Tribe of Louisiana (the Tribe) has developed this Coushatta Tribe of Louisiana 2021 Hazard Mitigation Plan Update in an effort to reduce loss of life and property resulting from disasters.

In recognition of tribal sovereignty and the government-to-government relationship that currently exists between FEMA and Indian Tribal governments, FEMA amended 44 CFR 201 to consolidate and clarify the hazard mitigation planning requirements for Indian Tribal governments. These requirements established protocol for Tribal Hazard Mitigation Plans, which are separate from State and Local Mitigation Plans. It is under those requirements which this Tribal Hazard Mitigation Plan was developed.

For consistency, 44 CFR 201.2 defines *Indian Tribal Government* as any Federally recognized governing body of an Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of Interior acknowledges to exist as an Indian Tribe under the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. 479a. This does not include Alaska Native corporations when the ownership is vested in private individuals.

While it is impossible to predict exactly when and where disasters will occur, or the extent to which they will impact the Tribe, with careful planning and collaboration among the various Tribal departments, members, and communities, and the surrounding public jurisdictions, agencies, private non-profit organizations, stakeholders, and local citizens, it is possible to minimize losses that can occur from disasters. This has been and will continue to be the driving force behind this plan development.

For planning purposes, *Hazard Mitigation* is defined as *a way to reduce or alleviate the loss of life, personal injury, and property damage that can result from a disaster through long- term strategies.* It involves strategies such as planning, policy changes, programs, projects, and other activities that can mitigate the impacts of hazards on the Coushatta Tribe. The responsibility for hazard mitigation lies with many, including private property owners; business and industry; and Tribal, local, state, and federal governments.

There remains a strong desire on the part of the Tribe for this plan to be a user-friendly document that is understandable to the layperson and not overly technical. Many of the Tribe's mitigation efforts involve working with private property owners, so it is important for everyone to understand what "risk" is and how mitigation can reduce its impacts upon the Tribal lands and its members.

FEMA's Threat Hazard Identification and Risk Assessment

This plan also expands upon the 2016 data to further support the integration of planning efforts to include all five of FEMA's mission elements of *prepare, protect, respond, recover, and mitigate* as they relate to the natural hazards of concern and developed strategies. The core capabilities established in the National Preparedness Goal are referenced in many national preparedness efforts, including the National Planning Framework. The Goal groups the capabilities across the relevant five mission areas. For purposes of this 2021 update, the identified strategies contained in Chapter 12 in many instances also identify gaps, and are associated with FEMA's mission areas, as well as a linkage to the Community Rating System. Likewise, the Capabilities contained in Chapter 13 can also be utilized to identify strengths in those mission areas, which also correlate to FEMA's 32 Core Capabilities, including those associated with risks to the hazards of concern, particularly as they relate to critical infrastructure and applicable protective measures.

In addition to the DMA, the U.S. Department of Homeland Security (DHS) grant program guidance has long recommended that jurisdictions conduct some form of risk assessment in conjunction with a capability and gap analyses to both inform and support the development of investment justifications and their overall grant applications and homeland security strategies. That recommendation was formalized into a mandate with the promulgation of the FY12 State Homeland Security Grant Program Guidance. With that, the risk assessment for the natural hazards of concern assists in supporting the THIRA process should the Tribe elect to pursue Department of Homeland Security funding.

As such, in this edition, where applicable, a programmatic overview was included, with strategies developed that are outside of the normal mitigation-type structural projects, but also inclusive of the development of strategies which will assist in identification of mechanisms to help remedy potential gaps as they relate to the 32 core capabilities. In that regard, an added element to this 2021 edition is a consequence analysis for the hazards of concern, which information is contained within the one-page hazard Snapshots which were also utilized for public outreach efforts. (The Snapshots are published separately and not included within the body of this document.)

Development of the Coushatta Tribe Hazard Mitigation Plan was completed in coordination with the Tribe's Planning Committee Members identified in Chapter 2, with the effort led by Chief Leland Thompson, Coushatta Tribal Fire, Kimberly Captain, Executive Assistant with the Office of the Tribal Chairman, and the Tribe's consultant, Bridgeview Consulting, LLC. Lead authorship and project management of this plan was provided by Beverly O'Dea of Bridgeview Consulting, LLC. GIS and Hazus support and analysis was also performed by Bridgeview Consulting, LLC.

PLAN UPDATE

Federal regulations require hazard mitigation plans to include a plan for monitoring, evaluating, and updating the hazard mitigation plan. An update provides an opportunity to reevaluate recommendations, monitor the impacts of actions that have been accomplished, and determine if there is a need to change the focus of mitigation strategies. DMA compliance requires that plans be updated every five years. A tribe or jurisdiction covered by a plan that has expired is not able to pursue funding under the Robert T. Stafford Act for which a current hazard mitigation plan is a prerequisite.

In addition, based on FEMA's guidance, a Hazard Mitigation Plan is also a requirement to enable a Tribal entity to pursue a Presidential Disaster Declaration direct from FEMA. This plan, on completion, approval from FEMA, and adoption by the Tribe, will meet that requirement for the Coushatta Tribe, enabling the Tribe the opportunity to pursue both a declaration and grant funding direct with FEMA.

The intent of this plan is to provide basic information concerning the hazards and potential risk to the Coushatta Tribe. This includes not only the reservation boundary, but all lands, trust or fee, which the Coushatta may now, or during the lifecycle of this plan, acquire. This includes the areas of Allen, Jefferson-Davies, and Calcasieu Parishes, all located within the State of Louisiana. The plan's risk assessment remains focused on the area within Allen Parish as this is where the primary structures of Tribal government and Tribal enterprises exist.

Initial Response to the DMA for the Coushatta Tribe

The inevitability of natural hazards and the growing population and activities within the planning region created a continued need to further develop information, concepts, strategies, and a coordination of resources to increase public awareness of the hazards of concern and the risk associated with those hazards. In an effort to reduce the impact of the hazards and assist the public in protecting life, property and the economy, the Coushatta Tribe of Louisiana determined that it was in the best interests of its citizenry to establish a hazard mitigation plan. While initial plans included the Coushatta Tribe as a stakeholder and planning partner in the Allen Parish Hazard Mitigation Plans (2006 and 2011), in 2016 the Coushatta Tribe of Louisiana developed its first stand-alone hazard mitigation plan, which was approved by FEMA in July 2016. As time has progressed, new technologies, information, and increased awareness brought about information to further enhance the validity of the previous plan, providing the opportunity to further increase the resilience of the planning region. This 2021 update to the Coushatta Tribe Hazard Mitigation Plan further supports the Tribe's desire to continue enhancing resilience within the planning region.

The 2021 Coushatta Tribe of Louisiana Update—What has changed?

This 2021 update has been developed in accordance with requirements of the DMA, including criteria addressing the planning process, risk assessment, mitigation strategy, plan maintenance, and the adoption process. This update should be considered a comprehensive review with best available science and most relevant data incorporated.

Where changes of significance are made or updated analysis conflicts with 2016 information, those items are noted within the body of the text. The planning timeframe associated with this plan incorporates events occurring through December 31, 2020. It should be noted, however, that due to the short timeframe associated with the hazard impacting the Tribe, and the development of this update, in some instances, limited data was available. Future planning efforts should include a review of those incidents occurring within six months from the initiation of the 2021 update to ensure more relevant or accurate data was not created after completion of this update.

Additional changes incorporated in the 2021 plan include:

- The plan structure has been modified somewhat to allow for continued ease of review and locating relevant data.
- As a result of COVID-19 response and restrictions in place, and its impact on the Tribe and Tribal Members – including Planning Team Members, the intended timeline associated with this update was significantly shortened due to lack of staff to fully support this effort at the initial intended start date for the project, with the existing plan scheduled to expire in July 2021. As such, this plan was developed on an expedited timeframe, occurring simultaneous with continued COVID response activities, and simultaneous with response, recovery and damage assessment for Hurricanes Barry, Laura and Delta, and the February 2021 severe weather event (Ice Storm Violet), all of which significantly impacted the Coushatta Tribe.
- Due to COVID restrictions, the public outreach component relied more heavily on the use of web-based tools, the Tribe's Newsletter, and social media to ensure continued public involvement and information exchange. This includes for the purpose of presenting risk, and for review of the draft plan. The Tribe did make greater use of already existing meetings to push information forward to tribal members and appropriate stakeholders as those were available, although limited in nature. Such information is contained within Chapter 2 – Planning Process.
- Hazards of concern were reviewed and confirmed, with no new hazards included for this update. Where new data exists for those hazards which have impacted the Tribe since the 2016 plan was completed, profiles were updated and modified accordingly. In some instances, while no new risk data for the hazard existed, hazard profiles were updated to reflect changes in development or the inclusion of new structures.
- Hazus-MH was again utilized for this update, as well as GIS analysis. In addition, an update of all Tribal facilities was again completed as part of this process, and that data was utilized during the risk assessment phase to determine vulnerability and impact. Those structures impacted by previous disaster events and destroyed were removed, and new buildings/structures built since completion of the last plan have been included.
- The risk assessment was again prepared to better support future grant applications by providing risk and vulnerability information that will directly support the measurement of "cost-effectiveness" required under FEMA mitigation grant programs.
- Hazards were again ranked based on probability and impact. The actual ranking of the hazards did change for the 2021 update based on recent impacts from the profiled hazards. Both the previous and new rankings are indicated within the findings contained in Chapter 11.

- Datasets utilized are again defined within each profile or within the Methodology portion of the planning process.
- Readers can accurately assume that this update includes new maps, charts, and graphs, unless otherwise indicated by date, or are historic cultural maps, which have not been modified.
- Best available science, including applicable new studies and products were used in conducting the risk assessment.
- All applicable Census and Census-related data has been updated with the most current data available as indicated. In some instances, based on information which was provided, older data was the only source available, and thus, may render different values. In such instances, reference is made. Where available, specific Coushatta Tribal data was utilized, and is considered the most accurate.
- The 2019 Louisiana State Hazard Mitigation Plan was also utilized as a data source. As a tribal plan is developed more in line with a state-level plan than a local jurisdiction plan, the Tribe felt the State's plan would provide valuable information in assisting it in completing its update. The Allen Parish plan was utilized where appropriate, but after requests to the Parish and FEMA, it is unclear if a more recent plan existed than the one provided. As such, while referenced where appropriate, as the plan provided is dated (2011), its use was limited in nature. As such, data sets developed for the 2019 State HMP were, in some instances, utilized as Best Available Science, and are cited appropriately
- Goals and objectives were reviewed and updated appropriately to align with the Tribe with very limited (grammatical) changes.
- Strategies from the 2016 edition were updated, and new strategies identified. The same method of prioritizing the strategies was used, including benefit cost analysis (see Chapter 12).
- The Coushatta's plan maintenance strategy developed for use with the 2016 plan was reviewed and confirmed to be an effective method of plan maintenance for the 2021 edition. While the Tribe did not utilize the reporting tool template contained in the plan, it did conduct a review of the hazards of concern, as well as utilizing the Strategy/Action Item table contained in Chapter 12 for identification of potential projects under the Stafford Act (and other) funding streams.
- Reference to the former PDM grant opportunities were updated with the new BRIC program.

PLAN DEVELOPMENT METHODOLOGY

Update of the Coushatta Tribe Hazard Mitigation Plan included five phases:

- **Phase 1 - Organize resources**—–Under this phase, a planning team was assembled to oversee the development of the plan update. The team consisted of Tribal staff and Tribal members, as well as other stakeholders in the planning area, and the technical consultant who provided technical support to the planning team. The planning process and planning team were formally recognized by the Tribal Council, with the Tribal Chairman, David Sickey, serving as a member of the Planning Team. Full coordination with other tribal, parish, state, and federal agencies involved in hazard mitigation occurred from the onset of this plan's development through its completion. A multi-media public involvement strategy centered on a hazard preparedness questionnaire was also implemented under this phase. Also occurring under this phase was a comprehensive review of the exiting plan as well as the State of Louisiana's 2019 Hazard Mitigation Plan and a comprehensive review of existing programs within the operational area that may support or enhance hazard mitigation actions. A key function of the planning team was to identify the goals and objectives for this plan, as well as a robust series of potential mitigation strategies, the implementation of which would increase the resilience of the Tribe and its members.

- **Phase 2 - Assess risk**—Risk assessment is the process of measuring the potential loss of life, personal injury, economic injury, and property damage resulting from natural hazards. This process focuses on the following parameters:
  - Identification and updating hazard profiles
  - Identification of Cultural resources
  - The impact of hazards on physical, cultural, social, and economic assets
  - Vulnerability identification
  - Estimates of the cost of damage or costs that can be avoided through mitigation.

  Phase 2 occurred simultaneously with Phase 1, with the two efforts using information generated by one another to create the best possible risk assessment. The risk assessment for this hazard mitigation plan meets the requirements outlined in Chapter 44 of the Code of Federal Regulations (44 CFR).

  In all cases, data capture attempts were focused first on the Reservation and surrounding lands of the Coushatta Tribe (referred to as the Tribal Planning Area), with review of existing plans and studies to determine areas of impact. Limited data was available at such a level as much of the existing information for a detailed analysis remained at the parish level, which was in many cases the only information available.

  As with the 2016 plan, there was an increased level of accuracy with respect to the actual Tribal facilities exposed and vulnerable to the hazards of concern, as identification of tribal assets was a primary focus of this planning effort at the onset. Considerable time and effort were involved to ensure an accurate, detailed list of all tribal facilities. In some instances, while datasets used to determine the area of impact may have been at the parish level, the loss valuations were focused to the greatest extent possible only on the Tribal structures.

  Limited data was available with respect to previous extent and location of damages occurring previous to the 2016 edition of the HMP. However, for the 2021 update, this area, too, was enhanced, particularly with respect to the last several disaster events occurring since the 2016 plan was completed. For this update, the use of damage assessment data created for declaration and recovery aspects were utilized for Hurricanes Barry, Laura, and Delta. The Tribe continues to identify previous disaster impact as a deficiency, and has again renewed within its strategies an effort to maintain a more robust data capture process for future events (as well as historic events when information becomes available), which will allow this portion of the planning process to be expanded in future updates.

- **Phase 3 - Involve the public**— Specific to Tribal plans, 44 CFR 201.7 states that Tribal governments may define who they feel constitute "public" within the planning realm, as many Tribal members have difficulty or apprehension about how to honor traditional beliefs and cultural attributes while still fully participating in the mitigation planning process. For many Tribes, the term *natural hazards* contradict cultural beliefs of the Elements which are living beings: wind, rain, earth, and sky all live and breathe, providing for the needs of the Tribal Members. Because of this, it was necessary for the Tribe to meld both western and traditional cultures into a method that met the needs of both worlds.

  Under this phase, a public involvement strategy was developed by the planning team that maximized the capabilities of the Tribe during a time of the COVID-19 Pandemic, while also maintaining their cultural beliefs and responsibilities. The strategy included individuals whose input was needed to complete this plan to its fullest capacity.

  The public outreach efforts included Tribal Council meetings; review by tribal members and tribal staff of the risk assessment; distribution of the draft plan to planning team members and tribal citizens; utilization of a hazard mitigation survey; a Tribal website dedicated to the plan; social media sites (including Facebook); large email distribution lists (~3,000) and news media and newsletter releases throughout various stages in the process.

  The Tribe did elect to restrict dissemination of data to Tribal Staff and Tribal Members, selected consultants, and stakeholders, and does intend to maintain this as a non-public document due to the information contained therein.

- **Phase 4 - Assemble the plan** — Under this phase, the Planning Team assembled key information from Phases 1, 2, and 3 into a document to meet the DMA requirements. Under 44 CFR 201.7, a Tribal Hazards Mitigation Plan must include the following:
  - A description of the Planning process
  - Risk assessment
  - Mitigation strategy
  - Goals
  - Review of alternatives
  - Prioritized "action plan"
  - Plan Maintenance section
  - Documentation of adoption

- **Phase 5—Plan Adoption/Implementation/Maintenance**
  The Tribe has elected to review and adopt the plan prior to submission to FEMA due to the very short timeframe involved with respect to the expiration of the plan, and the potential impact on recovery funds which may become unavailable while no plan is in place. A copy of the Resolution was provided with the plan submission, which makes allowance for modifications without the need for readoption. A copy of the Resolution is attached in Appendix B.

  Prior to submission to FEMA, the plan went through an extensive review process by the Tribal Council, at which point all elements of the plan were presented, discussed, reviewed, modified (as necessary), approved, and adopted prior to submission to FEMA.

  This document further includes a plan implementation and maintenance section that details the formal process for ensuring that the plan remains an active and relevant document. The plan maintenance process includes a schedule for monitoring and evaluating the plan's progress annually and producing a plan revision every 5 years. This process seeks to keep a planning team that meets the criteria of the original planning team intact to perform this annual review. This phase includes strategies for continued public involvement and incorporation of the recommendations of this plan into other planning mechanisms of the Tribe, such as the comprehensive plan, capital improvement plan, building code, and development design guidelines.

Implementation and Assurances

Full implementation of the recommendations of this plan will require time and resources. This plan reflects an adaptive management approach in that specific recommendations and plan review protocols are provided to evaluate changes in vulnerability and action plan prioritization after the plan is adopted. The true measure of the plan's success will be its ability to adapt to the ever-changing climate of hazard mitigation. Funding resources are always evolving, as are programmatic changes based on new mandates.

The Coushatta Tribe has a long-standing tradition of proactive response to issues that may impact its members. The Tribe as a whole is forward thinking and strives whenever possible to improve the lives of its members, and the residents living on or near the Reservation and within the Tribal Planning Area. This tradition is further reflected in the development of this plan, as it is not an easy task to accomplish. The Tribal Council will assume responsibility for adopting the recommendations of this plan and committing Tribal resources toward its implementation. The framework established by this plan will help identify a strategy that maximizes the potential for implementation based on available and potential resources. It commits the Tribe to pursue initiatives when the benefits of a project exceed its costs. Most important, the Tribe developed this plan with community input. These techniques will set the stage for successful implementation of the recommendations in this plan.

Grant Compliance

As established within 44 CFR 13.11(c), the Tribal Government will continue to comply with all applicable federal statutes and regulations in effect, including those periods during which the Tribe receives grant funding to ensure grant contract compliance, and scheduled project closeouts as identified and required within each specific grant, including retention of data and information, appropriate accounting practices, and timely filing of required reports and information. In compliance with 44 CFR 13.11(d), the Tribe, whenever necessary, will reflect new or revised federal statutes or regulations, or any material changes in Tribal policy or operation. It is understood that the Tribe will submit those amendments for review and approval in coordination with FEMA Region VI.

Mitigation Goals and Objectives

The planning team reviewed the goals and objectives developed for the 2016 mitigation plan during its February 1, 2021 kick-off meeting. It was felt that only minor changes were needed, grammatical in nature, for the 2021 update.

Mitigation Initiatives

For the purposes of this document, mitigation initiatives are defined as activities designed to reduce or eliminate losses resulting from natural hazards. The mitigation initiatives are the key element of the hazard mitigation plan. It is through the implementation of these initiatives that the planning partners can strive to become disaster-resistant through sustainable hazard mitigation.

Although one of the driving influences for preparing this plan was grant funding eligibility, its purpose is more than just access to federal funding. It was important to the planning team to look at initiatives that will work through all phases of emergency management. Some of the initiatives outlined in this plan are not grant eligible—grant eligibility was not the focus of the selection. Rather, the focus was the initiatives' effectiveness in achieving the goals of the plan and whether they are within the Tribe's capabilities. This also includes the integration of other planning mechanisms, specifically the Threat Hazard Identification and Risk Assessment (THIRA), and providing data the Tribe can utilize from this process to support future THIRA updates.

CHAPTER 1.
INTRODUCTION TO HAZZARD MITIGATION PLANNING

Hazard mitigation is defined as the use of long- and short-term strategies to reduce or alleviate the loss of life, personal injury, and property damage that can result from a disaster. It involves strategies such as planning, policy changes, programs, projects, and other activities that can mitigate the impacts of hazards. The responsibility for hazard mitigation lies with many, including private property owners; business and industry; and local, state, and federal government.

1.1 AUTHORITY

The federal Disaster Mitigation Act (DMA) emphasizes the importance of planning for disasters before they occur by requiring tribes, states, and local governments to develop hazard mitigation plans as a condition for federal grant assistance. The DMA (Public Law 106-390; approved by Congress October 10, 2000), amended the Stafford Disaster Relief and Emergency Assistance Act by repealing its previous mitigation planning provisions and replacing them with a new set of requirements that emphasize the need to closely coordinate mitigation planning and implementation.

The purpose of this Tribal Hazard Mitigation Plan (THMP) is to guide current and future efforts to effectively and efficiently mitigate natural hazards on the Coushatta Reservation and other areas of tribal interest, collectively referred to as the Tribal Planning Area. The plan will also guide mitigation and response to natural hazards that are generated off the Reservation or that cross the Reservation boundaries, in coordination with other agencies and jurisdictions as appropriate. This Coushatta Tribal Hazard Mitigation Plan (CTHMP) establishes goals, lists objectives necessary to achieve the goals, and identifies policies, tools, and actions that will help meet the objectives. These short- and long-term actions will reduce the potential for injury and losses to the Coushatta Tribe and its members due to natural hazards.

This plan is intended to help create a disaster-resistant community by reducing the threat of natural hazards to life, property, emergency response capabilities, economic stability, and infrastructure, while encouraging the protection and restoration of natural and cultural resources.

Hazard Mitigation Plan Requirements for Indian Tribal Governments

Requirements for Indian Tribal governments were consolidated and clarified when the U.S. Federal Emergency Management Agency (FEMA) amended Title 44 of the Code of Federal Regulations (44 CFR; Section 201) on October 31, 2007 (72 Fed. Reg. 61720) and again on September 16, 2009 (74 Fed. Reg. 47471). These amendments were made in recognition of the status of tribal sovereignty and the government-to-government relationship between FEMA and Indian Tribal governments. They established a protocol for Tribal hazard mitigation plans to be separate from state and local mitigation plans. Final mitigation planning guidelines became effective March 2010. Tribal hazard mitigation plan requirements differ from local hazard mitigation plan requirements and are more like the requirements for a state-level type plan. This hazard mitigation plan for the Coushatta Tribe of Louisiana was developed under those guidelines. The federal statutes define *Indian Tribal Government* as "any Federally recognized governing body of an Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of Interior acknowledges to exist as an Indian Tribe under the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. 479(a)" (44 CFR 201.2).

Underlying Principles of the DMA

Hazard mitigation is a way to reduce or alleviate loss of life, personal injury, and property damage that can result from a disaster through long- and short-term strategies. It involves planning, policy changes, programs, projects, and other activities that can mitigate the impacts of hazards. The responsibility for hazard mitigation lies with many, including private property owners; business and industry; and tribal, state, local, and federal government. The DMA encourages tribes, states, and local authorities to work together on pre-disaster planning, and it promotes sustainability for disaster resistance. "Sustainable hazard mitigation" includes the sound management of cultural and natural resources, local economic and social resiliency, and the recognition that hazards and mitigation must be understood in the largest possible social and economic context. The enhanced planning network called for by the DMA helps tribes and governments articulate accurate needs for mitigation, resulting in faster allocation of funding and more cost-effective risk reduction projects.

1.2 Acknowledgements

Many groups and individuals have contributed to development of the Coushatta Tribe Hazard Mitigation Plan. The effort was led by the Coushatta Tribal Fire Department, which includes the Office of Emergency Management. Additional assistance was provided by the Office of the Tribal Chairman, Housing, Risk, the Tribal Historic Preservation Office, Casino Resort, Grants, Facilities, Maintenance, Environmental, Police, and Health/Wellness, which all provided support for various aspects of plan development, including providing data to identify critical facilities and infrastructure, existing planning mechanisms in place, and various other information. The Coushatta Casino Resort also provided an abundance of information, which was incorporated into this planning document. The planning team met on a regular basis to guide the project, identify the hazards most threatening to the Reservation, develop and prioritize mitigation projects, review draft deliverables, and attend public meetings.

Tribal Members' participation was exceptionally good during the plan's development, with Tribal Members providing invaluable information with respect to concerns, strategy ideas, and hazard information. Survey responses, where appropriate, where incorporated into the plan. This became particularly significant within the risk assessment process, when respondents provided specific impact data which has been incorporated into this update.

Specific oral histories were captured from several elders during the first edition of this plan in 2015. Those Elders recounted incidents involving the various hazards of concern, and their impact on themselves and

the tribal community. That information and input was incorporated as appropriate throughout the document and assisted in determining the hazards and scenarios utilized in the risk assessment.

1.3 COVID-19

Beginning late 2019, the COVID-19 Pandemic was raging throughout our Country. The Coushatta Tribe, like many other Tribal entities, were and continue to be significantly impacted by the wrath of the virus. With all of government effectively shut down at one point, operations were significantly impacted, with the initial start date for the project delayed by months due to the focus on response and testing for COVID, the recovery of those with the virus, and the distribution and administration of the vaccine. These factors also influenced the ability to facilitate a normal planning process for the development of the 2021 update to the Coushatta Tribe's Hazard Mitigation Plan. Where public meetings and gatherings were previously used to assist in the plan's development, this effort required a more web-based approach, with notices and information posted in those limited areas where the public had access. Meetings were held via conference calls to ensure limited exposure and reduce the potential for the spread of the virus, but the planning team, through a concerted effort, was able to effectively capture all relevant data necessary to complete the plan as quickly as possible.

1.4 Purpose of Planning

Under 44 CFR, hazard mitigation plans must present a schedule for monitoring, evaluating, and updating the plan. This provides an opportunity to reevaluate recommendations, monitor the impacts of actions that have been accomplished, and determine if there is a need to change the focus of mitigation strategies. A tribe or jurisdiction covered by a plan that has expired is not able to pursue elements of federal funding for which a current hazard mitigation plan is a prerequisite.

DMA compliance is only one of multiple objectives driving this planning effort. Elements and strategies in this plan were selected not only because they meet a program requirement, but also because they best meet the needs of the Tribe.

This hazard mitigation plan identifies resources, information, and strategies for reducing risk not only from natural hazards, but also in some instances from man-made and technological hazards. The plan will also help guide and coordinate mitigation activities. The plan was developed to meet the following objectives:

- Meet or exceed program requirements specified under the DMA.
- Enable the Tribe to continue using federal grant funding to reduce risk through mitigation.
- Meet the needs of the Tribe as well as federal requirements.
- Coordinate existing plans and programs so that high-priority initiatives and projects to mitigate possible disaster impacts are funded and implemented.
- Create a linkage between the hazard mitigation plan and other established plans of the Coushatta Tribe so that they can work together in achieving successful mitigation.

- Provide data and information for use in the update of the Tribe's Threat Hazard Identification and Risk Assessment (THIRA), including a new element of identifying the relationship to FEMA's 32 Core Capabilities, rather than the Target Capabilities previously utilized in the 2016 THIRA.

1.5 Who Will Benefit from this Plan?

All Tribal Members, local citizens, and businesses of the Coushatta Tribe are the ultimate beneficiaries of this hazard mitigation plan. The plan reduces risk for those who live, work, and visit the Reservation and the Tribal Planning Area. It provides a viable planning framework for all foreseeable natural hazards. Participation in development of the plan by key stakeholders helped ensure that outcomes will be mutually beneficial. The plan's goals and recommendations can lay groundwork for the development and implementation of local mitigation activities and partnerships.

The Coushatta Tribal Hazard Mitigation Plan covers all the people, property, infrastructure, and natural environment within the primary boundary of the Coushatta Reservation (including Allen, Jefferson-Davis, and Calcasieu Parishes), and any outlying properties owned by the Coushatta Tribe. Furthermore, the plan covers any other sacred, ancestral, or historic sites and areas of the Tribe's interest anywhere in Louisiana. This planning document in no way limits or influences the Coushatta Tribe's sovereignty as a Tribal Nation.

1.6 Billion Dollar Disasters

Over the course of time, disasters have become more and more common place. With the anticipated impacts from climate change, this is only expected to increase the numbers of events occurring throughout the world. We need only look at the increased number of events occurring within the United States over the last year to see the increased trend in not only disaster incidents occurring, but also the increased ferocity (NOAA, 2021). Figure 1-1 illustrates the time periods, number, and impact from past events.

TIME PERIOD	BILLION-DOLLAR DISASTERS	EVENTS/YEAR	COST	PERCENT OF TOTAL COST	COST/YEAR	DEATHS	DEATHS/YEAR
1980s (1980-1989)	29	2.9	$178.1B	9.5%	$17.8B	2,870	287
1990s (1990-1999)	53	5.3	$274.0B	14.6%	$27.4B	3,045	305
2000s (2000-2009)	62	6.2	$519.0B	27.7%	$51.9B	3,091	309
2010s (2010-2019)	119	11.9	$810.5B	43.2%	$81.1B	5,217	522
Last 5 Years (2016-2020)	81	16.2	$606.9B	32.3%	$121.4B	3,969	794
Last 3 Years (2018-2020)	50	16.7	$234.3B	12.5%	$78.1B	553	184
Last Year (2020)	22	22.0	$95.0B	5.1%	$95.0B	262	262
All Years (1980-2020)	**285**	**7.0**	**$1,876.6B**	**100.0%**	**$45.8B**	**14,485**	**353**

The distribution of damage from U.S. Billion-dollar disaster events from 1980 to 2020 is dominated by tropical cyclone losses. Tropical cyclones have caused the most damage ($997.3 billion, CPI-adjusted) and also have the highest average event cost ($19.2 billion per event, CPI-adjusted). Drought ($258.9 billion, CPI-adjusted), severe storms ($286.3 billion, CPI-adjusted) and inland flooding ($151.0 billion, CPI-adjusted) have also caused considerable damage based on the list of billion-dollar events.

Severe storms have caused the highest number of billion-dollar disaster events (128), while the average event cost is the lowest ($2.2 billion, CPI-adjusted). Tropical cyclones and flooding represent the second and third most frequent event types (52 and 33), respectively. Tropical cyclones are responsible for the highest number of deaths (6,593), followed by drought/heatwave events (3,910) and severe storms (1,762).

Figure 1-1 NOAA Billion-Dollar Weather and Climate Disasters: Summary Stats

NOAA's National Centers for Environmental Information (NCEI) released the final 2020 update to its Billion-dollar disaster report (**www.ncdc.noaa.gov/billions**), officially confirming what communities across the nation experienced first-hand: 2020 was a historic year of extremes.

There were 22 separate billion-dollar weather and climate disasters across the United States, shattering the previous annual record of 16 events, which occurred in 2017 and 2011. The billion-dollar events of 2020 included a record seven (7) disasters linked to tropical cyclones, 13 to severe storms, one (1) to drought, and one (1) to wildfires. The 22 events cost the nation a combined $95 billion in damages. Figure 1-2 illustrates the various events. Figure 1-3 illustrates the disaster type, number of events, frequency, and resulting deaths (among other data) for the period 1980-2020.[1]

Adding the 2020 events to the record that began in 1980, the U.S. has sustained 285 weather and climate disasters where the overall damage costs reached or exceeded $1 billion. (All cost estimates are adjusted based on the Consumer Price Index as of December 2020). The cumulative cost for these 285 events exceeds $1.875 trillion.

Of the events occurring, three were declared events impacting the Coushatta Tribe.

[1] NOAA Billion Dollar Events. Accessed 23 Feb. 2021. Available online at: Billion-Dollar Weather and Climate Disasters: Summary Stats | National Centers for Environmental Information (NCEI) (noaa.gov)

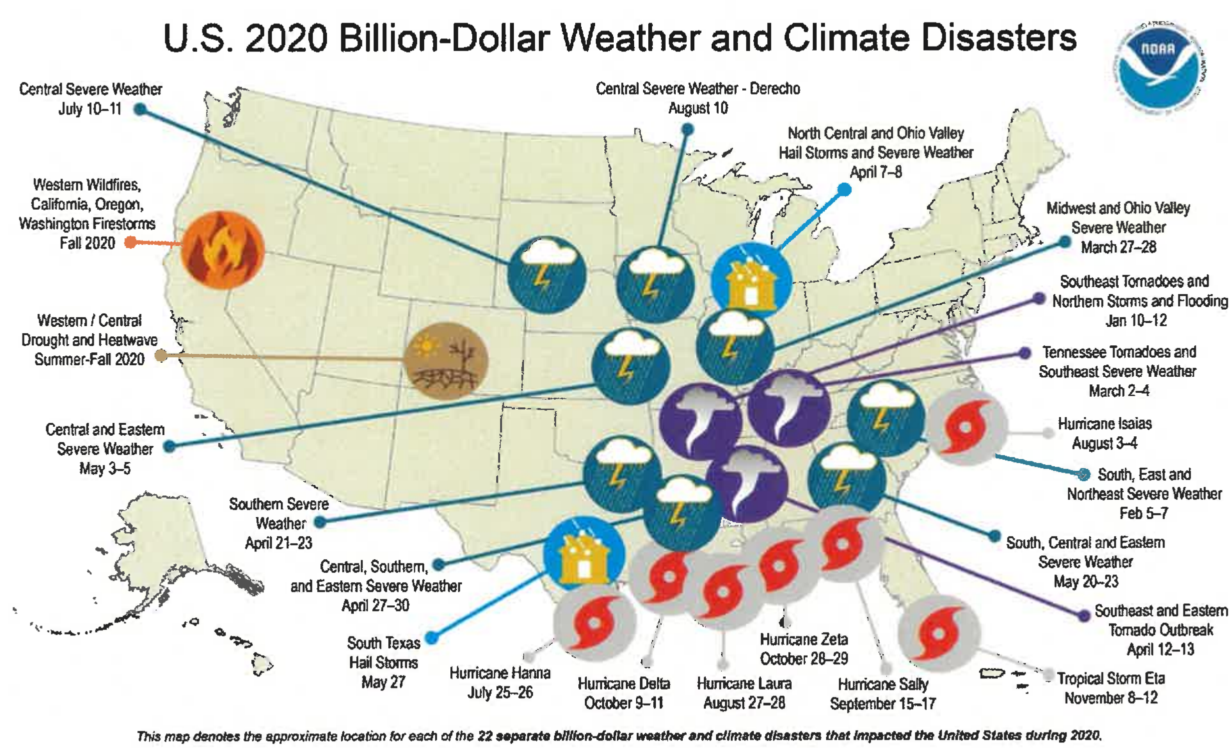

Figure 1-2 NOAA 2020 Billion-Dollar Disasters

Billion-dollar events to affect the United States from 1980 to 2020 (CPI-Adjusted)

DISASTER TYPE	EVENTS	EVENTS/YEAR	PERCENT FREQUENCY	TOTAL COSTS	PERCENT OF TOTAL COSTS	COST/EVENT	COST/YEAR	DEATHS	DEATHS/YEAR
Drought	28	0.7	9.8%	$258.9B CI	13.8%	$9.2B	$6.3B	3,910†	95†
Flooding	33	0.8	11.6%	$151.0B CI	8.0%	$4.6B	$3.7B	617	15
Freeze	9	0.2	3.2%	$30.7B CI	1.6%	$3.4B	$0.7B	162	4
Severe Storm	128	3.1	44.9%	$286.3B CI	15.3%	$2.2B	$7.0B	1,762	43
Tropical Cyclone	52	1.3	18.2%	$997.3B CI	53.1%	$19.2B	$24.3B	6,593	161
Wildfire	18	0.4	6.3%	$102.3B CI	5.5%	$5.7B	$2.5B	393	10
Winter Storm	17	0.4	6.0%	$50.1B CI	2.7%	$2.9B	$1.2B	1,048	26
All Disasters	285	7.0	100.0	$1,876.6B CI	100.0%	$6.6B	$45.8B	14,485	353

†Deaths associated with drought are the result of heat waves. (Not all droughts are accompanied by extreme heat waves.)
Flooding events (river basin or urban flooding from excessive rainfall) are separate from inland flood damage caused by tropical cyclone events.
The confidence interval (CI) probabilities (75%, 90% and 95%) represent the uncertainty associated with the disaster cost estimates. Monte Carlo simulations were used to produce upper and lower bounds at these confidence levels (Smith and Matthews, 2015).

Figure 1-3 1980-2020 Billion-Dollar Events by Disaster (Hazard) Type

1.7 Plan Adoption

44 CFR 201.7(c)(5) requires documentation that a hazard mitigation plan has been formally adopted by the governing body of the jurisdiction requesting federal approval of the plan. Due to the time constraints associated with the expiration of the plan, the Tribe elected to adopt the plan prior to submission to FEMA for review, with the provision in the adopting resolution to allow for changes as required without the necessity for re-adoption.

As indicated, the Tribe completed an extensive review during a Council Meet on May ____, 2021 during which time an in-depth review of the entire plan occurred, including the strategy portion of the plan, with Council formally adopting the plan and approving it for submission to FEMA.

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CHAPTER 2.
PLAN UPDATE APPROACH

2.1 Planning Resource Organization

This chapter describes the activities carried out as required by 44 CFR 201.7(c)(1). To update the Coushatta Tribe Hazard Mitigation Plan, the Tribe followed a similar process to that of the original plan development, which included the following:

- Secure grant funding
- Establish a planning team
- Coordinate with individual and agency stakeholders
- Review existing plans and studies
- Engage the public.

The process further included the following actions:

- Review and prioritize disaster events that are most probable and destructive.
- Update and identify new critical facilities acquired since completion of the 2016 plan.
- Review and update areas within the Reservation that are most vulnerable.
- Review and confirm goals and objectives for reducing the effects of a disaster event.
- Review and identify new projects to be implemented for each goal.
- Review and identify procedures for monitoring progress, including grant progress, and updating the hazard mitigation plan.
- Review the draft hazard mitigation plan.
- Adopt the updated hazard mitigation plan.

2.2 Secure Grant Funding

This planning effort was supplemented by a Pre-Disaster Mitigation Grant from FEMA, now referred to as a BRIC Grant. The Coushatta Tribe of Louisiana was the applicant agent for the grant. The grant covered 75 percent of the cost for development of this plan; the Tribe is matching the remaining 25 percent of the cost through in-kind contributions, including salaries, expenses, printing, and public outreach costs, etc.

2.3 Formation of the Planning Team

The Coushatta Tribe of Louisiana, through an open solicitation, hired Bridgeview Consulting, LLC to assist with development and implementation of the plan. The Bridgeview Consulting project manager, Beverly O'Dea, assumed the role of the lead planner, reporting directly to the Coushatta Tribe Project Manager, Leland Thompson.

A planning team was formed to lead the planning effort, including members from several department within Tribal government. Many of these members were also part of the 2016 plan development. A sample of responsibilities of the planning team included:

- ✓ Participation in meetings and conference calls to discuss plan development;
- ✓ Update of the critical facilities list;
- ✓ Data enhancement for analysis in the risk assessment;
- ✓ Providing damage assessment data;
- ✓ Review draft risk assessment;
- ✓ Public outreach;
- ✓ Develop and provide input and feedback on mitigation strategies;
- ✓ Provide information on capability assessment;
- ✓ Review draft plan;
- ✓ General support for plan development; and
- ✓ Plan presentation for adoption.

The majority of the members of the planning team live or work on the Coushatta Reservation, or within the Tribal Planning Area. The make-up of the planning team proved to be integral in the success of this planning effort. This helped to add a historical perspective to this committee that proved to be valuable in identifying direction for the plan development process. Table 2-1 identifies the planning team member, their position, and a sampling of tasks each performed in providing assistance to complete the plan.

TABLE 2-1.
PLANNING TEAM MEMBERSHIP

Name	Position	Planning Tasks Completed
Chief Leland Thompson	Coushatta Tribal Police	Project Manager; meeting attendance; provided data regarding previous impact from hazards of concern; assist with development of the critical facilities list; assimilated data for previous strategies; reviewed/developed 2021 strategies; reviewed drafts and documents; public outreach; presentation to Tribal Council
Kimberly Captain	Executive Assistant / Project Coordinator Office of the Tribal Chairman	Coordinated meetings; assisted with distribution of public outreach data; assisted with the development of the critical facilities list; provided overall assistance for data capture and update of relevant information; provided information with respect to tribal capabilities, historic background, and disaster impact, etc. Assisted with grant in-kind match tracking.
David Sickey	Tribal Chairman	Assisted with grant processing through Council; established planning team involvement LOE; assisted with public outreach, including presentation of information and update to Tribal Council; assisted with data capture and historic information; facilitated plan adoption.

**TABLE 2-1.
PLANNING TEAM MEMBERSHIP**

Name	Position	Planning Tasks Completed
Dr. Zehava Zevit	Legal Council	Meeting attendance; provided general background information; assisted with the capture of damage assessment data for various disaster events; coordinated with other tribal departments and personnel to capture or provide necessary information; conducted public outreach via council meetings to provide background and status update; risk profile reviews; draft plan review; presentation of Adoption Resolution at Tribal Council Meeting.
Joyce Smith	Risk Manager Coushatta Casino Resort	Attended planning team meetings; provided facilitate and other data for risk assessment; provided damage assessment data for inclusion in the hazard profiles; provided input on strategy development; assisted with public outreach during meeting attendance; reviewed risk assessment and draft plan.
Raynella Fontenot	Director, Dept. of Cultural, Historical and Natural Resources	Meeting attendance; provided information on the cultural, historical, and natural resources for the Tribe; conducted risk assessment review; completed draft plan review.
Bridget Robinson	Director, Dept. of Elder Services	Provided information on the Census data for the Tribe, including enrollment numbers and information on tribal members with AFN.
Paula Manuel	Director, Dept. of Health	Meeting attendance; conducted review of risk data and review of final draft plan.
Jill Gradney	Director, Dept. of Housing	Provided information on housing data for inclusion in the critical facilities list; reviewed hazard profiles; reviewed final draft of plan.
Jerreth Robinson	Director, Dept. of Maintenance	Provided structure data for inclusion in the CIKR list; provided information on previous impact for inclusion in the hazard profiles; reviewed risk assessment and final draft plan.
Ryan Langley	Interim Director, Dept. of Social Services	Meeting attendance; conducted review of the risk assessment and draft plan review.
Rusty Curtis	Facilities Director	Provided historic information on hazard impact; confirmed hazards of concerned; provided information on strategy development; reviewed draft plan.
Dr. Linda Langley	Tribal Historic Preservation Officer	Provided historic information on hazard impact; reviewed/edited goals and objectives; reviewed hazard profiles; provided data and information on the cultural aspect of tribal assets; developed strategies; reviewed risk assessment/ranking; conducted draft plan review.
Beverly O'Dea,	Bridgeview Consulting, LLC	Project Manager and Lead Planner
David O'Dea,	Bridgeview Consulting LLC	Senior Strategic Analyst, Research, Q&A
Cathy Walker	Bridgeview Consulting, LLC	Senior GIS Analyst

Once the risk assessment portion of the plan was completed, maps and data were presented both via existing tribal council meetings, as well as via various social media sources, email distribution lists, on the Tribe's website, and available for review and comment at the Farmer's Market. Risk data was presented in hopes of gathering additional impact data from previous occurrences, which data was then incorporated into the hazard profiles. More emphasis was placed on the Tribe's 2021 survey, which was distributed utilizing various sources, including the Tribe's newsletters, which were also utilized to disseminate information.

Once the draft plan was completed, the public (tribal members and all tribal employees ~3,700) were invited to provide comments on the hazard mitigation plan. The draft plan was posted on the project website and stakeholders were notified through various announcements and e-mail messages of its availability beginning May 4, 2021. The Tribe utilized a similar process of notification of plan availability as they do when holding tribal elections. A Newsletter article was developed discussing the availability of the plan, which was sent to all registered tribal members, including ~ 117 tribal elders to ensure those who do not have access to computers were aware of the plan's completion, and that a hard copy was available for review on request.

In addition, Chief Leland Thompson, Coushatta Tribal Fire, made a presentation to the Tribal Council covering all elements of the plan, which included a question / answer session. Email notifications were also distributed to all 28 Department Directors on two separate occasions, inviting them and their staff (~2,700 employees) to review the plan. The plan's availability was also posted on various social media outlets (Facebook and Twitter), with links provided to download or review the entire plan.

The review period remained open for in excess of the required 14-day review period. Once the review period closed, final comments were addressed, and the plan was ratified and adopted by Tribal Council prior to the plan being submitted to FEMA for review.

The Tribe will continue to accept comments and recommendations for future plan data and enhancements. Future comments on the plan should be addressed to:

Leland Thompson, Fire Chief
Coushatta Tribal Fire Department
LThompson@CoushattaTribeLA.org
Office: 337-584-1582

2.4 Coordination With Agencies and Other Stakeholders

Hazard mitigation planning enhances collaboration and support among diverse parties whose interests can be affected by hazard losses. 44 CFR requires that opportunities for involvement in the planning process be provided to neighboring communities, local, and regional agencies involved in hazard mitigation, agencies with authority to regulate development, businesses, academia, and other private and nonprofit interests (Section 201(7)(c)(1)(ii)).

Unique to Tribal plans is the identification of "public," which would dictate the level of involvement by local communities and stakeholders, given the context of items discussed during meetings. Throughout this effort, the planning team identified stakeholders who were invited to participate in this effort by providing data and information utilized in various aspects throughout the plan. Due to the information contained in the plan, the Tribe elected to limit access of the data to primarily Tribal members, employees, and staff. The Tribe does intend to keep the plan a non-public document due to the information contained herein.

Agency Involvement

Various agencies were solicited for relevant data and information as identified in Table 2-2. Some also received meeting announcements (as determined by the Tribe's description of "Public"). Many of these agencies supported the effort by providing feedback on issues.

TABLE 2-2.
STAKEHOLDERS AND AREAS OF PARTICIPATION

Stakeholder	Name	Data and Information Provided
FEMA Region VI	Shanene Thomas	FEMA POC; Plan Review
US Department of Interior, BIA		Boundary Data
US Department of Interior, BLM		Wildfire Information
Louisiana State University		GIS Hazard Data
Allen Parish	Jacob Dillehay, P.E.	City Administrator; 2011 plan most recent available. Developed mitigation strategies for roadway (and other) flooding issues; worked on project application through LWI.
Louisiana State Fire Marshall	Katie Battaglia	WUI boundary; wildfire history reports.

Pre-Adoption Review— Limited outside agencies were provided an opportunity to review and comment on this plan, which occurred primarily through the hazard mitigation plan's website. In some instances, planning team members distributed e-mails containing information concerning draft review, as well as a link to download the plan if desired.

Newsletters—In addition to the above, the Tribe distributes a regular newsletter, which announced plan development and milestones. The newsletter also directed Tribal members to the website (which contained the draft risk assessment and draft plan), and the on-line survey. The newsletter is distributed approximately monthly due to COVID to provide continued dissemination of information and data. The planning team also utilized the newsletter to distribute information on the planning process.

Email-Distribution - Existing email distribution lists were also utilized. It is estimated that there are in excess of 2,700 individuals listed on established email lists, including employees and staff, department heads, and other relevant personnel at both the Tribe and Casino Resort.

Press Release – The Tribe also distributed a press release in January which announced the planning effort, and provided the address to the website and survey, asking citizens to complete the document.

2.5 Review of Plans and Studies

44 CFR, Section 201.7(c)(1)(iii)) states that hazard mitigation planning must include review and incorporation as appropriate of existing plans, studies, reports, and technical information. Laws and ordinances in effect in the planning area that can affect hazard mitigation initiatives are reviewed in Chapter 13. The list of references at the end of this volume presents sources used to capture information necessary to complete this planning effort. Plans, studies, and reports used for this process include, but are not limited to:

- Coushatta Tribe Elderly Response Plan (2014, updated 2015)
- Coushatta Tribe Emergency Operations Plan (2014)
- Coushatta Tribe Health Department's Emergency Operations Plan
- Coushatta Tribe Home Health Policy and Procedures Plan
- Allen Parish All Hazards Emergency Operations Plan (reviewed 2021)
- Louisiana Coastal Hazard Mitigation Guidebook
- FEMA Flood Insurance Study (2011)
- FEMA Annual Flood Report (2014)
- Allen Parish 2011 Hazard Mitigation Plan (Most recent available for this 2021 update)
- Tribal Land Use Documentation (Feasibility Studies)
- Indian Tribal Housing Program
- Tribal Environmental/Natural Resource Program
- Louisiana State Hazard Mitigation Plan (2008, 2014, 2019)
- Louisiana Coastal and Estuarine Land Conservation Program Plan (reviewed Feb. 2021)
- NOAA Reports – Tropical Storm/Hurricane Barry, Delta, Laura (reviewed Feb. 2021)
- Damage Assessment documentation for Coushatta Tribe (Hurricanes Barry, Laura, and Delta)
- Various papers and studies concerning the impacts of climate change and coastal erosion, and their impacts.

Data obtained from the plan and regulation review was incorporated into various sections of the hazard mitigation plan. The risk assessments beginning in Chapter 5 refer to plans and ordinances that affect the management of each hazard. Chapter 13 describes how mitigation can be implemented through existing programs. An assessment of all regulatory, technical, and financial capabilities to implement hazard mitigation initiatives is also presented in Chapter 13. Many of these relevant plans, studies and regulations are cited in the capability assessment.

2.6 PUBLIC INVOLVEMENT

Broad public participation in the planning process helps ensure that diverse points of view about the planning area's needs are considered and addressed. The public must have opportunities to comment on disaster mitigation plans during the drafting stages and prior to plan approval (44 CFR Section 201.7(b), 201.7(c)(1)(i) and 201.7(c)(1)(ii)).

2.6.1 Public Defined

44 CFR 201.7 (c)(1) requires that the Tribe define its determination of "Public". For this planning effort, "public" is defined as tribal members, tribal employees, contractors, and some members of surrounding jurisdictions as the Tribe felt appropriate. While surrounding jurisdictions and governmental agencies had some involvement in the planning effort, the planning team was limited to Tribal members, staff, and consultants primarily because of the intensive data-gathering process, discussion on tribal economic issues, and to preserve information concerning the Tribe's cultural resources. Once the risk assessment was underway, the process was expanded and included displays at various locations, including the Casino and various hotels, which have a transient population of approximately 8,700-10,000 per day (depending on time of year), as well as total staff of over 2,700, both tribal and non-tribal members, all of which live within the planning area or surrounding communities.

2.7 PLAN DEVELOPMENT MILESTONES

2.7.1 Public Outreach Strategy

Due to COVID, physical, in-person meetings were not possible to the same degree as they were for the 2016 plan. As such, the planning team developed a comprehensive public involvement strategy using websites, email distribution lists, newsletters, media sources, and utilized existing meetings to gain input on the process. The following identifies the types of effort undertook during this 2021 update.

- The Tribe updated their website, which hosted a mitigation section on which notices and survey links were posted.
- During meetings attended by Tribal planning team members, attendees were directed to the website or Facebook page to gain better insight of the Tribe's endeavors, and to solicit input.
- The planning team also identified stakeholders to target throughout the public involvement strategy.
- Attempts were made to reach as many planning area tribal members and citizens as possible using multiple formats. This is of significant importance because not all tribal members have computers, or access to computers – so alternate methods of seeking input were very important. As such, notices and announcements were posted at common areas of travel (e.g., grocery/convenience

stores, gas stations, casino, etc.), as well as press releases distributed to local media outlets for distribution.

- Provided newsletter articles approximately monthly via US Postal mail to all tribal members.
- Utilize existing email distribution lists, which included ~2,700 staff, employees, citizens, and tribal members, both on and off the Reservation.
- Use of a questionnaire to determine general perceptions of risk and support for hazard mitigation, and to solicit direction on mitigation strategies and actions.
  - This outreach was not limited to tribal members, but to all citizens living on or near the Reservation, or working at the various tribal business enterprises, which includes non-tribal members. The questionnaire was available to anyone wishing to respond via the website. While hard copies were available at public areas, no hard copies were received.
  - The Tribe also posted a solicitation in the Tribal Newsletter, seeking response and input.
- Employees, both Tribal and non-tribal, were sent notice of the mitigation planning process via email and asked to participate in the planning process.
- Flyers, announcements, and posters announcing the planning process and soliciting input were distributed at several locations throughout the Reservation.
- The Tribal Casino Resort also sought input from guests and employees concerning the mitigation plan and risk its assessment, as well as seeking review of the draft plan.
- Interviews were also conducted with individuals and specialists from outside organizations. Those interviews identified common concerns related to natural and manmade hazards, and key long- and short-term activities to reduce risk. Interviews included representatives from public safety personnel, planning department personnel, natural resources personnel, cultural resource personnel, other Tribal government, agencies, and entities from surrounding jurisdictions.

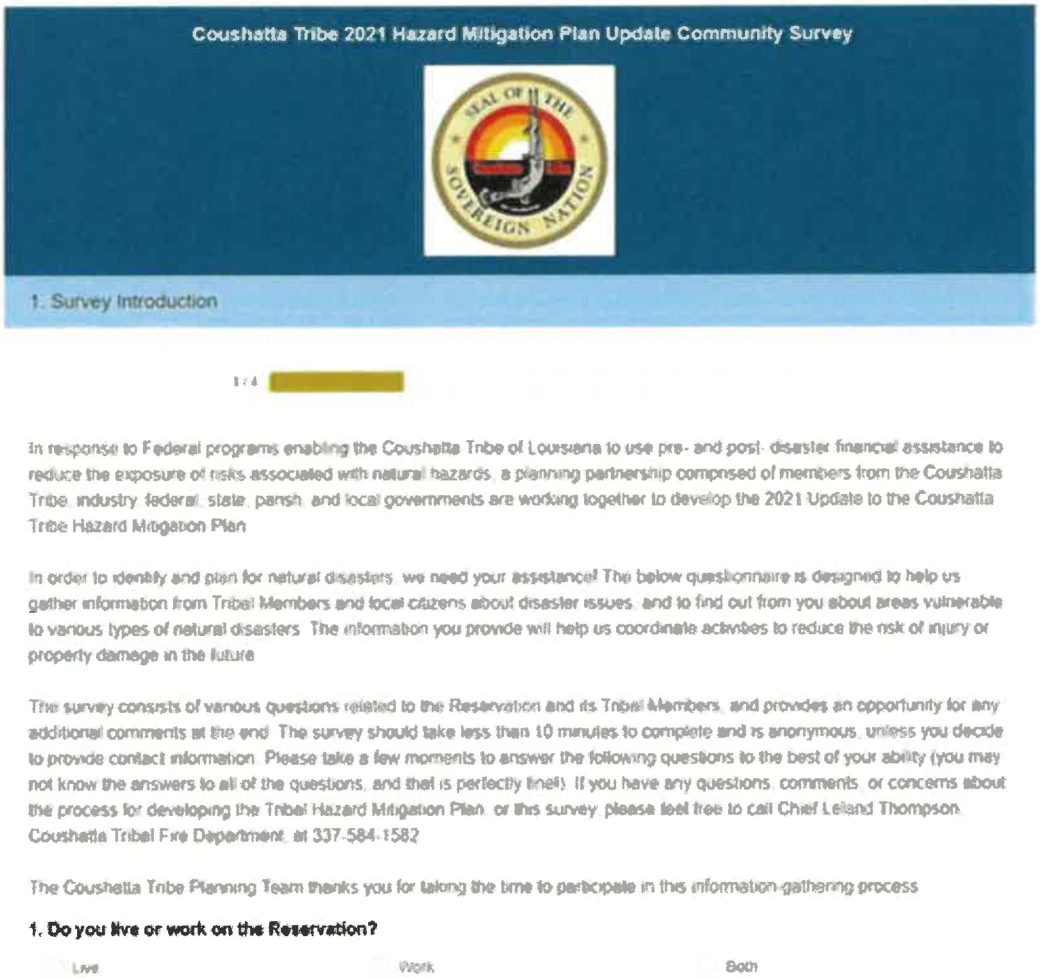
2.7.2 Hazard Questionnaire

A hazard mitigation plan questionnaire developed by the planning team was used to gage household preparedness for natural hazards and the level of knowledge of tools and techniques for reducing risk and loss from natural hazards. This questionnaire was designed to help identify areas vulnerable to one or more natural hazards. The answers to its questions helped guide the planning partners in selecting goals, objectives, and mitigation strategies. While some hard copies were disseminated throughout the planning area, no hard copy responses were received. Rather, the web-based version which was made available on the hazard mitigation plan website became the most utilized tool. Notice of the survey was widely distributed to employees, citizens, and all enrolled tribal members. The questionnaire and a summary of its findings are available from the Office of the Tribal Chairman. Figure 2-1 shows a sample from the web-based questionnaire. Specific points of interest from the survey results include:

- ~92 percent of respondents who replied to the survey did not live on the Reservation due in large part to the limited number of housing units available; however, the Tribe maintains a large population base within 2-5 miles of the Reservation boundary. The survey was specifically distributed to all enrolled tribal members (961), and all tribal employees (over 2,700), with the majority of respondents to the survey employed by the tribe, which includes non-tribal members.

- 96 percent of respondents have experienced a Hurricane or Tropical Storm over the last 20 years (four hurricane events occurred in the last year); 87 percent have experienced a severe weather event; 56 percent have experienced a flood event, and 33 percent have experienced a tornado.
  - This information correlates to our risk assessment, as Hurricane, Severe Weather events, and Flood are the greatest hazards of concern in ranked order as identified by the planning team, and also have the greatest frequency of occurrence.
- 26 percent of respondents have been impacted by 5 or more disaster events; 32 percent have been impacted 4-5 times, and 40 percent 1-3 times in their lifetime. 93 percent of those have occurred while they have lived or worked on the Reservation. Of those, 39 percent indicate the disaster impacted their ability to work, while 21 percent indicate the disaster impacted their ability to use their residence. 40 percent indicate impact to both.
- Over 88 percent of the respondents indicate that they are aware of the hazards which have the potential to impact both their residences and homes.
  - This reflects positively on the level and type of public outreach activities conducted by the Tribe with respect to educating the public of the hazards of concern.
- Respondents were most concerned about the impacts from Hurricane/Tropical storm, followed by Severe Weather, and Floods. This again coincides with risk ranking completed by the planning team as the hazards of greatest concern.
- 58 percent of residents identify their home as being near an area that is frequently flooded, which also supports the planning team's identification of isolation occurring in the residential areas during flood events due to water over roadways, blocking ingress and egress.
- 54 percent of respondents indicated some level of self-preparedness, which is higher than in 2016, when 49 percent indicated they were somewhat prepared. Only 7 percent indicated they are not prepared at all, which is considerably lower than the 22 percent indicating no level of preparedness during the 2016 plan development.
  - The 2016 plan suggested that with the high number of individuals who were not at all prepared for a disaster event, additional outreach efforts on the part of the Tribe would be beneficial to help individuals identify potential preparedness activities. This was particularly true in light of the (then) new risk assessment results, which were the first specific to the Tribe. The tribe did develop a strategy which was included in the 2016 action matrix to expand public outreach to illustrate the findings. With this increase level in preparedness and decreased level of those indicating being wholly unprepared, the effectiveness of those outreach efforts is apparent, and shows a proactive and successful result for the Tribe's efforts.

- Approximately 26.4 percent of respondents have obtained natural hazard insurance which specifically cover flood, hurricane, and/or wildfire. This number remains relatively unchanged from the 2016 edition of the plan, and would again be an area for educational outreach, as many homeowners are unaware of the limitations with respect to insurance policies, and the necessity for certain hazard-specific insurance to ensure accurate coverage.
- When queried about the most effective manner to distribute hazard and disaster information, 34 percent indicated the Tribal Newsletter was effective, while over 79 percent indicated the internet was an effective tool to utilize.
  - These were two sources utilized by the planning team to distribute information about this planning process, the results of the risk assessment, and for distribution of the draft plan when comments were solicited. This illustrates an appropriate combination of choices for the public outreach strategy for this 2021 update. Other top contenders included word of mouth (55 percent), which was also utilized for distribution of hazard information by Chief Leland Thompson when he conducted the various public safety conference calls which invited all tribal members (who elected to join the calls), and also included department heads and tribal staff.



Coushatta Tribe 2021 Hazard Mitigation Plan Update Community Survey

1. Survey Introduction

1 / 4

In response to Federal programs enabling the Coushatta Tribe of Louisiana to use pre- and post- disaster financial assistance to reduce the exposure of risks associated with natural hazards, a planning partnership comprised of members from the Coushatta Tribe, industry, federal, state, parish, and local governments are working together to develop the 2021 Update to the Coushatta Tribe Hazard Mitigation Plan.

In order to identify and plan for natural disasters, we need your assistance! The below questionnaire is designed to help us gather information from Tribal Members and local citizens about disaster issues, and to find out from you about areas vulnerable to various types of natural disasters. The information you provide will help us coordinate activities to reduce the risk of injury or property damage in the future.

The survey consists of various questions related to the Reservation and its Tribal Members, and provides an opportunity for any additional comments at the end. The survey should take less than 10 minutes to complete and is anonymous, unless you decide to provide contact information. Please take a few moments to answer the following questions to the best of your ability (you may not know the answers to all of the questions, and that is perfectly fine!). If you have any questions, comments, or concerns about the process for developing the Tribal Hazard Mitigation Plan, or this survey, please feel free to call Chief Leland Thompson, Coushatta Tribal Fire Department, at 337-584-1582.

The Coushatta Tribe Planning Team thanks you for taking the time to participate in this information-gathering process.

1. Do you live or work on the Reservation?

Live Work Both

Figure 2-1 Coushatta Tribe 2021 Survey Sample

2.7.3 Internet

At the beginning of the plan development process, a website was created to keep the public up to date on plan development milestones and to solicit input. The Tribe's website address was publicized in all press releases, mailings, questionnaires, and meetings (www.CoushattaTribe.org). Information on the plan development process, the planning team, the questionnaire, and phased drafts of the plan was made available to the public on the site throughout the process. Hazard maps were also published on this site. The Tribe intends to keep a website active after the plan's completion to keep the public informed about successful mitigation projects and future plan updates.

The Tribe also utilized a Facebook page (Coushatta Tribe of Louisiana | Facebook), which it may use in the future for updates of events on the Reservation. Once the initial draft plan was completed, notification of its availability was distributed via various sources, indicating its availability via a file-transfer site, which allowed for the plan downloading for review, as well as being available on the Tribe's webpage.

2.7.4 News Releases and Announcements

A news release was developed to draw attention to the Tribe's update process and the survey. The news release was distributed to various media outlets within the Allen Parish area, as well as sent out to an established email list maintained by the Tribe. The release provided information on the Tribe's Hazard Mitigation Planning Website, as well as the on-line Hazard Mitigation Survey. Figure 2-3 is one example of the News Release. On completion of the draft plan, request was made for public review, with notice published in an effort to draw in as many comments as possible. Notification for review was also distributed using internal Tribal email lists, which included over 2,700 individuals who live both on and off the reservation, as well as to all enrolled tribal members. Adoption of the plan was completed during a regularly scheduled Council meeting, which is open to the public in conjunction with COVID restrictions.

2.7.5 Public Meetings

As a result of the COVID restrictions, no separate in-person meetings were held. Rather, all meetings were virtual in nature, or via conference call. Notice of said meetings and events for review and comment were posted and distributed via Facebook, news releases, Tribal Newsletter, email distribution lists, and the Tribe's HMP Website. Highlights of the specific public outreach efforts conducted are detailed in Table 2-3.

Three major outreach efforts were conducted: the first at the onset of the project to solicit involvement as a planning team member; once the initial risk assessment was completed to seek input and information, and again at the completion of the initial draft plan, seeking comments.

Figure 2-2 May 1st Farmer's Market

For the risk assessment review, maps and loss data were made available for the various hazards to which the planning area is vulnerable, allowing citizens to see information related to their specific property and places of employment, helping to illustrate the Tribe's risk to the public. New to this planning effort, short one page Hazard Snapshots were developed, which provided a recap of data and the hazard ranking assigned by the planning team members to each hazard. These snapshots were posted on the Tribe's website, along with other hazard data such as the hazard maps, and risk ranking matrix. Risk packets were also available as handouts at the Farmer's Market (multiple events), as well as being posted at the informational booth at the market. These snapshots will also be used for future public outreach efforts as well. Each person reviewing the hazard profiles and snapshots was asked to provide written comments to planning team members, with a comment box established at the Farmer's Market, and an email address provided for the Tribe's Project Manager, Chief Leland Thompson.

Once the final draft plan was completed, the Tribe again announced its availability on its website, Facebook account, in its newsletter, and via email distribution. The plan's availability was also discussed during the May council meeting prior to adoption. It is estimated that in excess of 3,700 individuals were notified of the plan's availability. Comments were solicited, with Chief Leland Thompson's email address provided.

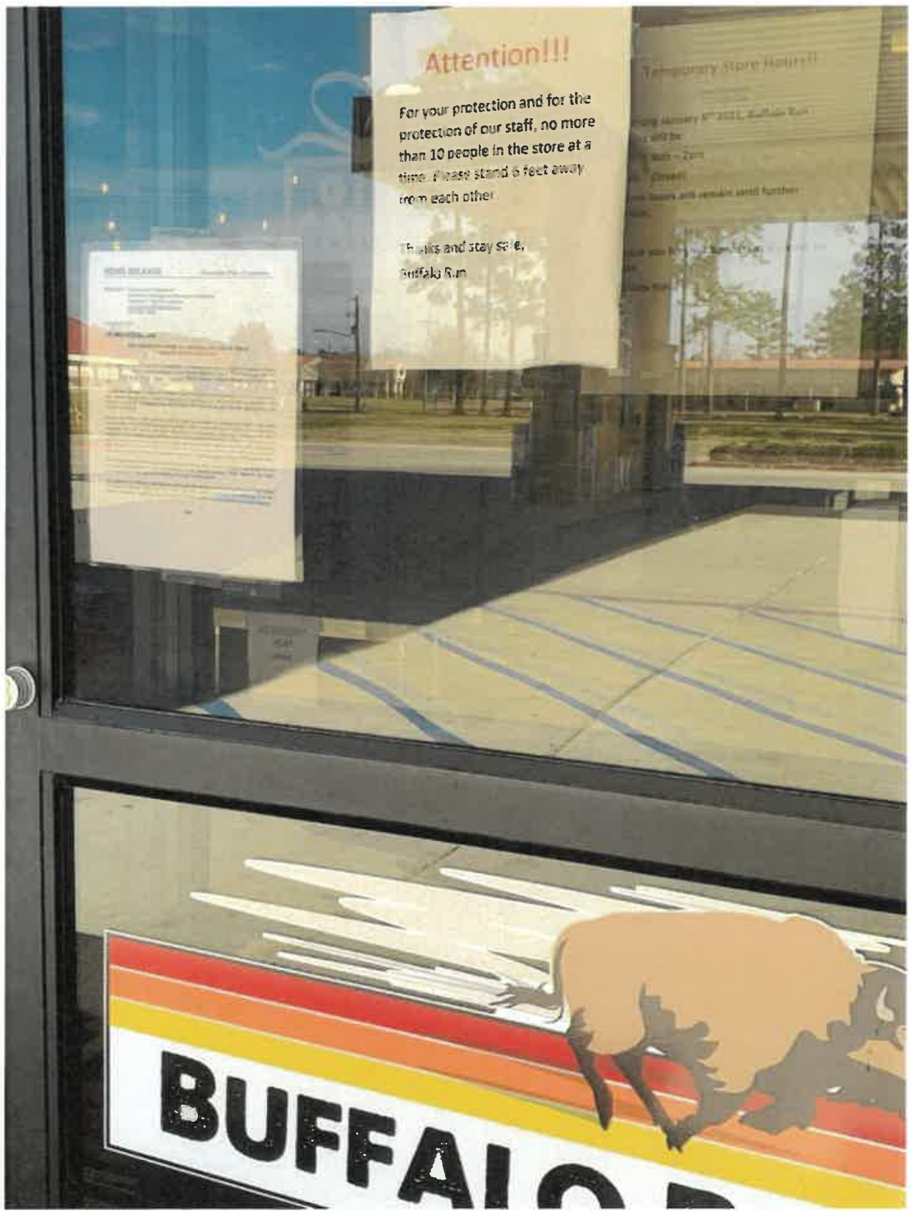


Figure 2-3 Press Release Announcing Project Initiation Posted at Buffalo Run Convenience Store

2.8 Plan Development Milestones

Important milestones in the development of the Coushatta Tribe's 2021 Hazard Mitigation Plan include Planning Meetings and Public Outreach events, as well as administrative actions and information as identified in Table 2-3. This list is not all-inclusive of all events as they occurred, but rather demonstrative of the various efforts of the planning team.

TABLE 2-3.
PLANNING MEETINGS, PUBLIC OUTREACH EVENTS, AND PLAN MILESTONES

Date	Event Participants	Description	Attendance/ Participation
2020			
March	Tribal Council/Grants Administrator	• Complete Grant application for funding for plan development.	
Nov	Grants Administration/ Emergency Management Director/ Tribal Council	• Initiate Consultant procurement through RFQ.	
Dec	Grants Administration/ Emergency Management Director	• Select Consultant; initiate contract development	
2021			
Jan	Tribal Council	• Execute Contract with Bridgeview Consulting, LLC	
Jan 27	Newsletter	• Tribal Newsletter included article announcing kick-off of planning process, advising of survey, asking for participation by tribal members, and providing contact information.	~985
Jan 28	Public Outreach - Tribal Membership and Parish-wide	• Press release issued announcing the up-coming project. • Distribution included the local print media - *Kinder Courier, Jennings Daily News, and Lake Charles American Press.* • Tribal Newsletter distribution included an invitation to tribal members, employees, and staff to become involved in plan development. • Copies of the press release posted at various locations throughout the Reservation, e.g., Convenience Store, Fuel Station.	NA

**TABLE 2-3.
PLANNING MEETINGS, PUBLIC OUTREACH EVENTS, AND PLAN MILESTONES**

Date	Event Participants	Description	Attendance/ Participation
Feb 1	Project Kick-Off Meeting Planning Team	• Discussed planning process • Identified public involvement strategy • Reviewed workplan and timeline • Reviewed old plan • Discussed and reviewed critical facilities list • Confirmed hazards of concern • Reviewed goals and objectives • Discussed strategy development • Identified hazard impact since 2016 plan's completion.	
Feb 4	Public Outreach	• Survey Launched. Distribution and announcement of survey link via webpage, Facebook, email distribution.	
Feb	Website Deployed	• The Hazard Mitigation Planning Website was activated; Survey tool went live; email notification was distributed to all email lists for the Tribe, which included citizens, Casino personnel, and Tribal Employees, etc. Notice included information concerning the website, the mitigation planning effort, solicitation for involvement, and the Survey link. Newsletter article included information on the process and available involvement. Newsletter distributed to all enrolled members nationwide.	~3,700
Feb	Tribal Council Chair and Planning Team	• Presentation to Tribal Council on status of project and changes from the previous process; • Gave brief update on old and new plan elements; • Invited Council and those in attendance to take the survey; • Directed individuals to the Tribe's mitigation planning website.	~17
March	Planning Meeting (x2)	• Discussed impact of hazards on tribe for use in risk assessment; • Damage assessment information provided for input into hazard profiles; • Identified previous occurrences; discussed mitigation strategies; and • 2nd distribution of survey link and QR code to tribal email distribution lists.	

TABLE 2-3.
PLANNING MEETINGS, PUBLIC OUTREACH EVENTS, AND PLAN MILESTONES

Date	Event Participants	Description	Attendance/ Participation
March/ April	Planning Team	• Planning team members were provided the risk assessment results for review and comment (2-week review period). Hazard ranking was confirmed; • Strategy development continued based on hazard impact (both previous impact and as identified within the risk assessment); • Review prioritization methodology for strategies; and • Capabilities assessment was reviewed and updated as appropriate, with new information added.	
April 1	Public Outreach	• Volume 12 of the Tribal Newsletter distributed April 1st provided information on the risk assessment and its availability on the Tribe's website, soliciting comments and review from Tribal members.	
April 19	Public Outreach –Safety Task Force meeting	• Project Manager Chief Leland Thompson discussed the overall HMP planning process and the request for continued public involvement. Survey link information was again supplied. Chief Thompson advised of the completion of the risk assessment and provided information on the results to the Safety Task Force, which includes tribal representatives, employees, and tribal residents.	

TABLE 2-3.
PLANNING MEETINGS, PUBLIC OUTREACH EVENTS, AND PLAN MILESTONES

Date	Event Participants	Description	Attendance/ Participation
April	Public Outreach Reservation and Allen Parish	• During the Farmer's Market (4/24 and 5/1) open to all tribal members and local citizens within Allen Parish. The Tribe sponsored a table with display of the hazard information. Due to COVID, presentations were not made to avoid gatherings, but materials were presented made available for review. • New for this update, Hazard Snapshots were developed, and maps were erected and available for community members to review and take as handouts. • The link to the survey was also distributed, with requests for citizens to take the survey. • Attendees were provided comment forms and were also provided the opportunity ask questions of planning team members. • A comment collection box was also established where citizens could provide comments on the risk assessment data, as well as ask questions. • Notice of the availability of the risk assessment was distributed via Facebook and posted on the Tribe's website. Contact information was provided for comments and to capture additional information.	N/A
April	Planning Team	• Strategy development process continued based on risk assessment by planning team. One-on-one outreach to discuss additional strategy ideas and concepts. • 2016 project status update was completed; reviewed existing strategies developed for 2021 plan; • Planning team members provided additional input for new/updated strategies for the 2021 plan. • Final call for strategies 4/27/2021	
April	Internal Draft Plan Review	• During the week of April 26th, planning team members were provided with a copy of the draft plan to review and comment.	
Various	Casino and Tribal Planning Meetings	• Recaps and updates were provided throughout the process to casino employees, state, federal and parish planning partners, and stakeholders.	N/A
May 1, 2021	Public Outreach	• Risk Assessment data was available for public review and comment at the May 1st Farmer's Market.	

TABLE 2-3.
PLANNING MEETINGS, PUBLIC OUTREACH EVENTS, AND PLAN MILESTONES

Date	Event Participants	Description	Attendance/ Participation
May 3, 2021	Public Outreach - Coushatta Reservation	• Announcement of HMP Draft Plan availability for review distributed via email, direct mailings, employee notifications (~2,700), Facebook and Website. April Newsletter advised of plan's availability for review beginning the 1st week of May. A copy of the plan was also available at the May 8th Farmer's Market.	
June 2021	Tribal Council	• Final Draft version of plan submitted for review and approval/adoption prior to FEMA submission to expedite review process due to expiration of existing plan.	
June 2021	FEMA	• Plan submitted for Review to FEMA Region VI.	
July 2021	FEMA	• Plan approval	

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CHAPTER 3.
TRIBAL PROFILE

3.1 Tribal History

Throughout historical contacts with the U.S. Government and State of Louisiana, Tribal Members have fought to protect and maintain access to Ancestral Lands. The Coushatta Tribe of Louisiana is one of three federally recognized tribes of the Koasati people, located in Allen and Jefferson Davis Parishes. A small number share a reservation near Livingston, Texas with the members of the Alabama-Coushatta Tribe.

The Coushatta were traditionally agriculturalists, growing a variety of maize, beans, and squash, and supplementing their diet by hunting game and fish. They are known for their skill at long-leaf pine needle basketry. Nearly all the Spanish expeditions (including the 1539-1543 Hernando DeSoto Expedition) into the interior of Spanish Florida recorded encountering the original town of the tribe (Hudson, 1997).

The Coushatta people have called the piney woods of Southwest Louisiana home for more than a century after the Spanish explorer Hernando DeSoto encountered a Coushatta community on a Tennessee River island in 1540, the Coushatta Tribe relocated, beginning a long series of moves aimed at avoiding European encroachment. By the 1700s, the Coushatta Tribe had resettled near the convergence of the Coosa and Tallapoosa Rivers in Alabama and had become part of the powerful Creek Confederacy. Despite this association, the Coushatta maintained their own culture and language, and, throughout the eighteenth century, tribal leaders played an increasingly important role in Creek politics.

In 1797, the influential Coushatta chief Stilapihkachatta, or "Red Shoes," led a group of 400 followers to Spanish Louisiana and, in the spring of 1804, another group of 450 Coushatta Tribal Members joined them in the territory. Over the next several decades, the Coushatta Members moved their villages from place to place, crossing the Red, Sabine, and Trinity Rivers, in an effort to remain in neutral areas between French, Spanish, American, and Mexican territories. In the 1880s, a group of approximately 300 Coushatta Members settled at Bayou Blue north of Elton, Louisiana, where they would remain. As the 20th century dawned, Coushatta leaders turned their attention to ensuring the well-being of their people and they began to engage the United States government in this effort. Years of lobbying paid off in 1935, as the federal government extended tuition funding to Coushatta children and, in 1945, offered community members contract medical care. Then, in 1953, the relationship between the Coushatta and the federal government soured, when, despite earlier treaties with the tribe, the Bureau of Indian Affairs terminated all services to the community without congressional approval or community consent.

Efforts to regain federal recognition began in 1965, as community members organized Coushatta Indians of Allen Parish, Inc. and established a local trading post to sell Coushatta pine needle baskets. In 1970, Coushatta leaders began petitioning the Indian Health Service to again provide medical care for tribe members. These efforts were successful in 1972, which was the same year the Louisiana Legislature granted the Coushatta Tribe official recognition. Finally, in June of 1973, the Coushatta Tribe of Louisiana, under Tribal Chairman Ernest Sickey, once again received federal recognition from the Secretary of Interior.

After regaining federal recognition in 1973, they began investing in a variety of enterprises in order to provide revenue for their tribal government and jobs for community members. Chief among these enterprises is the Coushatta Casino Resort, which opened in 1995 and has grown into the second largest private employer in the state of Louisiana. The Tribe also operates a variety of smaller business enterprises, as well as health, educational, social, and cultural programs that have economic and social impact on the tribal and surrounding communities.

More recently, the Coushatta Tribe has launched a major effort to take advantage of its status as a sovereign nation by reaching out to foreign governments to bring about cultural exchange and business development. The goal is to expand the Tribe's investment and business development portfolio beyond the gaming industry.

3.2 Tribal Governance

The Tribe is governed by a five-member, democratically elected Tribal Council that includes a Chairman, Vice-Chairman, Secretary-Treasurer and two At-Large Council Members. Council Members serve four-year terms as prescribed by the Tribal Election Ordinance, which was adopted in 1985.

3.3 Tribal Departments and Programs

The Tribe currently has 27 departments, with various types of environmental, health, public safety, and other social service programs. A few examples include the following:

Health

The Tribe began providing health care services in 1975. The primary health care provider for the Coushatta Tribe of Louisiana is through the United Indian Health Services, Inc., which provides medical, dental, pharmaceutical, and behavioral health services to the Tribal Members. There is currently one main health clinic on the Reservation, as well as a second clinic near the Casino. The nearest hospital is located in Allen Parish. The Tribe's health clinic provides health care for tribal members and non-tribal individuals. With the impact of COVID-19, Tribal Health has become of even greater importance to Tribal membership to ensure the health and safety of its members.

Heritage

The original language of the Coushatta Tribe (Koasati in Tribal language) is part of the Apalachee-Alabama-Koasati branch of the Muskogean family of Native American languages. The use of the Coushatta language dramatically decreased when non-Indians settled in the area, and when Tribal Members were forced to move to other reservations or areas. Today, the knowledge that remains of the Coushatta language, although limited, is shared and taught to the Tribe's youth. While currently in oral form only, efforts are underway to develop a written script of the language.

Through collaborative efforts, the Tribe seeks to develop corpus that is as comprehensive as possible and contributes as much as possible to understanding the complexities of the Coushatta Tribe's language. Through these sustained efforts, the language of the Reservation will evolve into one which will help ensure the continued growth and knowledge of the language.

Housing
The Coushatta Tribe of Louisiana's Housing Department's mission is to provide safe, sanitary, and affordable housing to low- and medium-income eligible Native American families on or near the Reservation. This is accomplished through pursuit of funding and resources to meet the housing needs by providing financial expertise and advocacy for tribal members. While the majority of the housing is on the Reservation, there are also some areas off the immediate Reservation boundaries which provide housing.

The Tribe (through BIA) maintains ownership of the land, with the homeowners constructing residences which are individually owned. The Tribe also owns residences and manages its own housing program beginning in October 2013.

Residential Land Assignment establishes the procedures for assignment of parcels of trust lands to individual members in an effort to preserve and regulate tribal resources, and to encourage development and inhabitation of assigned lots by tribal members.

Social Services Programs
The Coushatta Tribe Social Services Department administers a broad variety of services, including: General Assistance, Indian Child and Elder Welfare Program, Domestic Violence Intervention Services, Legal Services, Sexual Assault Services Social Work, and Emergency Assistance, among others.

Education and Heritage Departments
The Education and Heritage (Cultural) Departments ensure that tribal members are provided with the highest quality of educational opportunities possible, in a fair and equitable manner. Programs include: Summer Youth Program, After School Program, Cultural Education, Language Preservation, and Educational and Cultural Services.

Environmental
The Coushatta Tribe's Environmental Department's purpose is to protect and enhance the human and environmental health of the Tribal community through natural resource management, education, research, advocacy, and consensus building. Services include: Environmental Permits, Water Quality Monitoring, GIS, Noxious Weed Control, Wetlands Management, Forest Practices/Management Program, Recreational Trail System, Crawfish Monitoring, Food Handlers Examinations, Hunting/Fishing License, and a Renewable Energy Program.

Coushatta Casino Resort

Louisiana's premier casino resort underwent expansion since completion of the 2016 plan, with a new conference center and waterslide park. The casino features over 100,000 square foot gaming floor, and over 900 luxurious hotel rooms, a luxury RV resort, six restaurants, live entertainment and more.

Opened in 1995, Coushatta Casino Resort today employs 2,700 people and remains an integral part of the area's economy with an *average* of 8,700 patrons per day. During disaster events, the Casino Resort has also served as a shelter for both Tribal and non-tribal members, receiving formal FEMA recognition during response activities for Hurricane Rita, when it sheltered several thousand people. Since completion of the 2016 plan, the Coushatta Casino Resort has on several occasions again served in the capacity as both a shelter for impacted citizens and first responders and has also served as a staging area for response equipment.

Public Safety Capabilities (Fire, Police, Emergency Management)

The Coushatta Tribal Fire Department, Coushatta Police Department and the Emergency Management personnel under the Coushatta Tribal Fire Department administer public safety and emergency management on the Reservation. The Tribal Health Department also assists when public health issues are involved, such as with COVID-19.

The Coushatta Tribal Fire Department and Emergency Management personnel assist with hazards planning, grant writing, disaster relief training, NIMS training, and compliance tracking. The Department has taken proactive steps to enhance the Reservation's capabilities with respect to emergency response and recovery efforts for both pre-and post-disaster efforts. Currently, the Tribe's Casino is designated as the Reservation's Shelter, as are a number of hotels, providing protection and shelter for Tribal members and visitors to the Reservation when needed. These are fully operational facilities, with kitchen and bathroom facilities, and have a number of back-up generators if needed.

- ✓ The Casino Resort previously served as a state evacuation shelter in response to Hurricane Rita, sheltering several thousand Louisiana residents over the course of several weeks.
- ✓ During Hurricane Ike, various tribal departments provided emergency management assistance and supplies to Coushatta Tribal Members in the area of the Alabama-Coushatta Reservation.
- ✓ During the Joplin, Missouri tornado disaster, the Coushatta Tribe contacted the Red Cross, and deployed an assistance recovery team which included several tribal youths, personnel from the Education, Social Services, and Fire Departments, and Ranch and Multipurpose Complex personnel.

In addition, the Casino maintains provisions for emergency use for guests and employees of the Casino facility, as well as Tribal members, greatly enhancing the capacity of the Tribe to take care of not only its own members, but also those individuals using those facilities.

The development of this Hazards Mitigation Plan helps determine where priorities should be placed with respect to response and recovery efforts and is a clear demonstration of the Tribe's intent to enhance its emergency management capabilities.

The purpose of the Coushatta Tribal Fire Department's Emergency Management personnel is to provide:

- A leadership role in facilitating and coordinating a regional approach to emergency planning and response on the Reservation (and surrounding communities);
- Guidance and coordination in the planning, mitigation, response and recovery efforts of the Reservation before, during, and after an emergency or disaster;
- Acquire, allocate and coordinate the appropriate resources in response to emergencies of disasters.

Coushatta Tribal Police Department patrol the areas on the Reservation. The department is comprised of both full time and reserve officers.

3.4 Membership

The Coushatta Tribe is a Federally recognized Native American Tribe located in the Southwestern portion of Louisiana State, initially recognized as a Nation in 1973. The 2010 American Community Survey identified 864 enrolled Coushatta Tribal Members.[2] During the 2015 plan development, membership was at 945 enrolled members. As of 2021, the Coushatta Tribe has 961 enrolled members identified in their scrolls.

3.5 Population

Knowledge of the composition of the population and how it has changed and may change in the future is needed for making informed planning decisions. Information about population is a critical part of planning because it directly relates to land needs such as housing, industry, stores, public facilities and services, and transportation, but also identifies vulnerable populations based on socioeconomic factors.

As of 2021, enrolled members identified by the Coushatta Tribe estimates 961 enrolled members, representing an approximate 1.69 percent increase in membership since completion of the last plan, illustrated in Table 3-1 . Current population living on the reservation is 75, down from 110 during the 2016 plan. The average number of persons per household on the Coushatta Reservation is 2. According to the U.S. Census Bureau, Allen Parish average per household is 2.69 per household (2021 data), while the average household size for the state is 2.60. For risk assessment purposes, the figure of two (2) individuals per household was utilized.

[2] 2010 American Community Survey American Indian and Alaska Native. Accessed 13 Apr 2015. Available at: http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_10_AIAN_B01003&prodType=table

TABLE 3-1.
COUSHATTA TRIBAL MEMBERSHIP

	2010 Population Based on U.S. Census Data	2015 Actual Based on Coushatta Tribal Data	2020 Actual Based on Coushatta Tribal Data	Percent Change 2015-2020 Actual Based on Coushatta Tribal Data
Total Enrolled Membership	864	945	961	1.69
Members living on or within 20 miles of Reservation		381	~381	0
Under 5 years of age	174	86	13	-84.88
65 years of age and over	39	52	50	-3.84
Note: Population for Coushatta Tribe was not available at the US Census level for the 2021 update. It is anticipated that this data may again be available after 2020 census data becomes available.				

3.5.1 Population Trends

Population changes are useful socio-economic indicators. A growing population generally indicates a growing economy, while a decreasing population signifies economic decline. The Tribe has historically sustained some level of increase in population based on information they maintain. It is hoped that the Tribe will begin to see an increase in population, particularly as the economic viability of the Tribe continues to grow, providing for more employment opportunities not only on the Reservation, but at Tribal enterprises as a whole.

Review of the U.S. Census Data and the Louisiana State Population Projections illustrate that population in Allen Parish have decreased since 2010 from 25,702 down to 25,627 in 2019 (-0.5 percent), with the lowest population occurring in 2018, at 25,567. Looking at long-range projections, the State's 2019 HMP identifies population in the county dropping from its intended high of 25,764 (2010 data) down to 25,604 in 2019 based on state-calculated estimations. This information may be somewhat skewed, however, based on challenges by a number of parishes (impact from population migration due to hurricanes), and revisions to the 2007 Population Estimates by the U.S. Census Bureau.

Information specific to the Coushatta Reservation was not completed within the U.S. Census analysis, nor within the state-level analysis. As such, for planning purposes, the Tribe's data is considered to be the most accurate and used for projections within this 2021 HMP update. Where data gaps are identified, in some instances, other sources are utilized and referenced.

3.5.2 Social Vulnerability

Some populations are at greater risk from hazard events because of decreased resources or physical abilities. Elderly people, for example, may be more likely to require additional assistance. Research has shown that people living near or below the poverty line, the elderly (especially older single men), the disabled, women, children, ethnic minorities, and renters all experience, to some degree, more severe effects from disasters than the general population. These vulnerable populations may vary from the general population in risk perception, living conditions, access to information before, during and after a hazard event, capabilities during an event, and access to resources for post-disaster recovery. Indicators of vulnerability—such as disability, age, poverty, and minority race and ethnicity—often overlap spatially and often in the geographically most vulnerable locations. Spatial analysis to locate areas where there are higher concentrations of vulnerable community members have assisted the Tribe in extending focused public outreach and education to these most vulnerable citizens on the Reservation. The Tribe does maintain addresses of individuals with access and functional needs and have developed an Elder Response Plan should the need to evacuate the Reservation occur.

3.5.3 Age Distribution

Elderly

As a group, the elderly are more apt to lack the physical and economic resources necessary for response to hazard events and are more likely to suffer health-related consequences making recovery slower. They are more likely to be vision, hearing, and/or mobility impaired, and more likely to experience mental impairment or dementia. Additionally, the elderly are more likely to live in assisted-living type facilities where emergency preparedness occurs at the discretion of facility operators. These facilities are typically identified as “critical facilities” by emergency managers because they require extra notice to implement evacuation. At present, the Coushatta Reservation has no assisted-living facilities within the Reservation boundary; however, there are residential structures in which elders reside with caregivers, many of which are family members.

Elderly residents living in their own homes may have more difficulty evacuating their homes and could be stranded in dangerous situations. Many times, financial constraints also are prohibitive with respect to purchasing homeowners’ or renters’ insurance. The elderly population group is also more likely to need special medical attention, which may not be readily available during natural disasters due to isolation caused by the event. Specific planning attention for the elderly is an important consideration given the current aging of the American population.

Within the Reservation, there are areas which commonly become isolated as a result of floodwaters encroaching over roadways, impacting emergency response vehicles’ ability to respond and provide assistance, as well as prohibiting residents to evacuate. Roadway enhancements both on the Reservation and Parish roads leading to the Reservation boundary have been identified as a strategy within the plan in hopes of working with Allen Parish to enhance those areas.

Young

Children under 5 are particularly vulnerable to disaster events because of their young age and dependence on others for basic necessities. Very young children may additionally be vulnerable to injury or sickness; this vulnerability can be worsened during a natural disaster because they may not understand the measures that need to be taken to protect themselves from hazards.

Table 3-1 (above) identifies the population by age group.

3.5.4 Race, Ethnicity, and Language

Research shows that minorities are less likely to be involved in pre-disaster planning and experience higher mortality rates during a disaster event. Post-disaster recovery can be ineffective and is often characterized by cultural insensitivity. Since higher proportions of ethnic minorities live below the poverty line than the majority white population, poverty can compound vulnerability.

According to the 2019 U.S. Census Bureau's Quick Facts, the racial composition of Allen Parish is predominantly white, at about 72.4 percent, compared to 62.8 percent at the state level. The largest minority population is Black or African American, with 22.7 percent in Allen Parish, compared to 32.8 percent statewide. American Indian or Alaska Native population is 2.3 percent within Allen Parish (lower than the 2013 Census data at 2.5 percent), and only 0.8 percent statewide, which is an increase from the 0.6 percent within the 2013 Census data utilized for the 2016 plan.

Approximately 85 percent of the population speak only English, with approximately 9.9 percent speaking "other" languages (English as a second language). Predominant language on the Coushatta Reservation is English.

3.5.5 Disabled Populations

People with disabilities are more likely than the general population to have difficulty responding to a hazard event. As disabled populations are increasingly integrated into society, they are more likely to require assistance during the 72 hours after a hazard event, the period generally reserved for self-help. There is no "typical" disabled person, which can complicate disaster-planning processes that attempt to incorporate them. Disability is likely to be compounded with other vulnerabilities, such as age, economic disadvantage, and ethnicity, all of which mean that housing is more likely to be substandard.

According to U.S. Census Bureau 2015-2019 American Community Survey (ACS) data, 13.6 percent of the parish's population has a disability, down from the 2010-2015 rate of 17.9 percent. The 2010 Census does not provide data on individuals with disabilities specific to the Coushatta Reservation. However, the Tribe does maintain information for evacuation planning purposes of individuals with access and functional needs. Currently, there is one individual living on the Reservation and ~10 individuals within a short distance (<5 miles) of the Reservation who have access and functional needs requirements.

3.5.6 Income

In the United States, individual households are expected to use private resources to prepare for, respond to and recover from disasters to some extent. This means that households living in poverty are automatically disadvantaged when confronting hazards. Additionally, the disadvantaged typically occupy more poorly built and inadequately maintained housing. Mobile or modular homes, for example, are more susceptible to damage in tornadoes, hurricanes/tropical cyclones, earthquakes (although rare on the Reservation, they have occurred), and floods than other types of housing. This includes often times living in older houses and apartment complexes, which are more likely to be built to lower building standards than currently exist; specific building types are much more susceptible to damage during various weather events.

Furthermore, residents below the poverty level are less likely to have insurance to compensate for losses incurred from natural disasters. This means that residents below the poverty level have a great deal to lose during an event and are the least prepared to deal with potential losses. Personal household economics also significantly impact an individual's decision on evacuation. Individuals who cannot afford gas for their cars will likely decide not to evacuate.

Household Income:
Average median household income for Allen Parish in 2013 was $40,876. Average median household income for Allen Parish in 2019 was $46,446. Tribal income is not independently identified. This Parish income level remains lower than the statewide average during the same time periods, which was $44,164 in 2013 and 49,469 in 2019.

Poverty Rate:
Based on 2013 Census data, the percentage of residents living in poverty in Allen Parish was 15.3 percent. In 2019, the poverty level in Allen Parish was 21.6 percent. This represents an increase in poverty level of 6.3 percent. Statewide average of persons in poverty in 2019 was 19, which is 2.6 percent lower than in Allen Parish.

Employment:
Employment throughout Allen Parish is mainly concentrated in agriculture, forestry, fishing and hunting, tribal government, and tourism. For both the Coushatta Tribe and Allen Parish, the Coushatta Casino Resort is the major employer. The Coushatta Casino Resort supports a large sector of the local economy, as does the golf course, hotels, water park, and RV Park, employing approximately 2,700 individuals annually, in addition to seasonal workers.

Unemployment Rates:
Unemployment rates within Allen Parish was at 8 percent in November 2020, which is lower than the statewide average of 8.1 percent. This percentage is considerably higher than the period of 2016-2019 undoubtedly due in part to the COVID-19 Pandemic. Rates during the 2016-2019 ranged from ~5.75 down to >5.5 percent in 2017, 2018, and 2019.

3.5.7 Housing Stock

According to *A Social Vulnerability Index for Disaster Management* (Journal of Homeland Security and Emergency Management, 2011), housing quality is an important factor in assessing disaster vulnerability. It is closely tied to personal wealth: poor people often live in more poorly constructed homes that are especially vulnerable to strong storms or earthquakes. Mobile homes are not designed to withstand severe weather or flooding and typically do not have basements. They are frequently found outside of metropolitan areas and, therefore, may not be readily accessible by interstate highways or public transportation. Also, because mobile homes are often clustered in communities, their overall vulnerability is increased. While the Coushatta Tribe does have several mobile homes on the Reservation (FEMA trailers left over from emergency housing after Hurricane Rita), they are used as office buildings for various departments until permanent structures can be built, and not used as residential structures. As indicated, the Tribe currently has 52 residential structures, including single – and multi-family residences.

3.6 Planning Area Geography

The Coushatta Tribe of Louisiana owns a total of ~7,120 acres of land within Allen, Jefferson Davies, and Calcasieu Parishes, including both fee and trust lands. The primary land mass falls within Allen Parish (approximately 10 square miles in southeast Louisiana) and includes tribal government/administration, housing, and enterprises.

Situated within the Gulf Coastal Plain, vertical relief is very subtle. The area is largely composed of forested regions, with low elevations. Hills in the State of Louisiana are scattered mostly north and west from the Reservation. The highest elevation on the Coushatta Reservation is 55.4 feet; the lowest elevation is 33.8 feet.

The Calcasieu River, Bundick, Six Mile, Ten Mile, Beaver and Whiskey Chitto Creeks and the Blue Bayou are the primary waterbodies within Allen Parish. Of those, none traverse directly through the Reservation. The Tribe does have a number of lakes and streams which support the crawfish industry and rice fields (rotating crops), as well as manmade waterbodies on the golf course and at the Casino Resort.

The parishes surrounding the Reservation are Vernon Parish to the northwest, Rapides Parish to the northeast, Evangeline Parish to the east, Jefferson Davis Parish to the south, and Beauregard Parish to the west. Figure 3-1 illustrates the current Reservation boundary and additional land mass owned by the Tribe within Allen Parish.

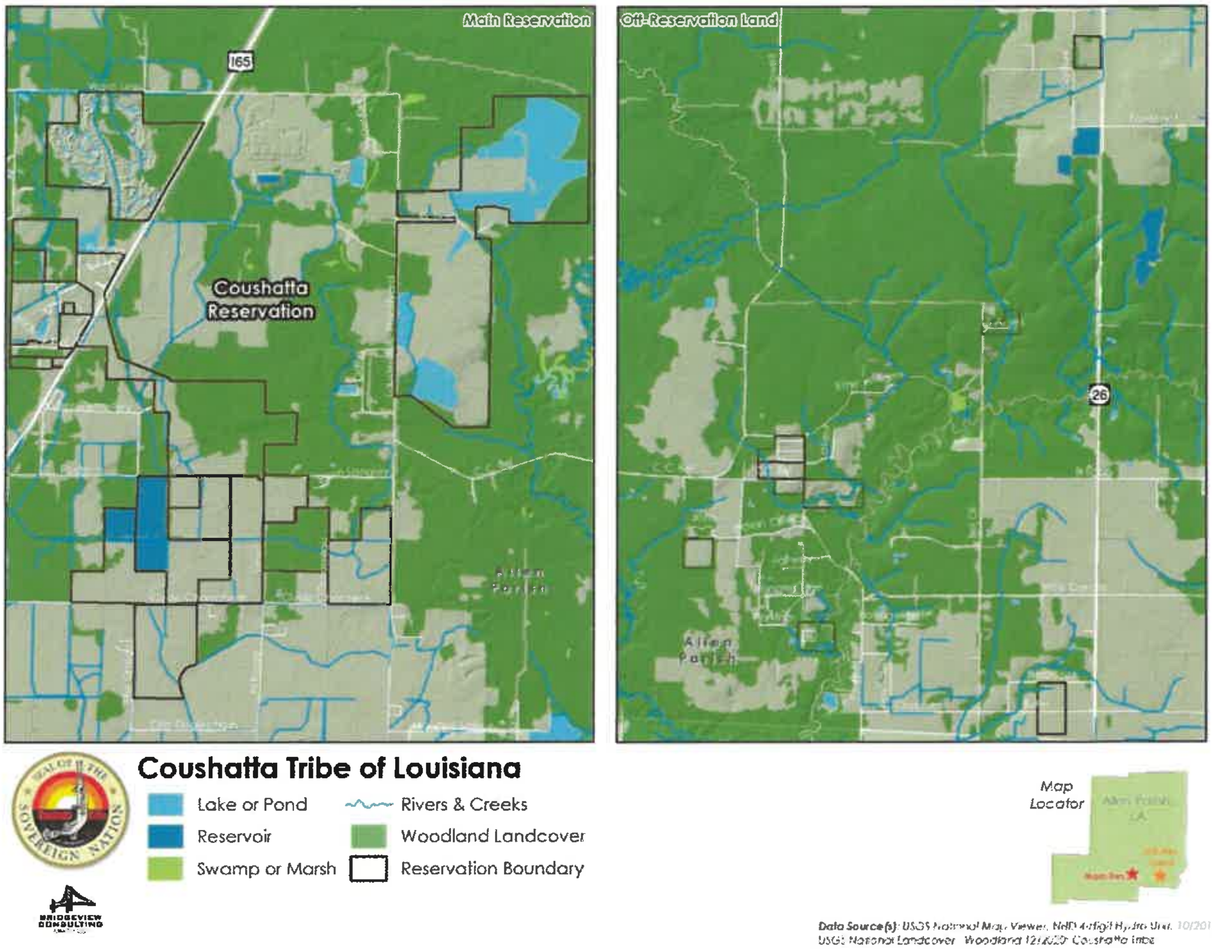

Figure 3-1 Coushatta Tribe of Louisiana Reservation Boundary

3.6.1 Climate

The Coushatta Reservation is in an area of moderate temperatures and considerable precipitation. Precipitation in the planning area is of greater frequency and annual magnitude than other parts of the state. In most years, rainfall is experienced each month of the year. Most of this is associated with storm fronts that move through the area. The average annual rainfall within the planning area is approximately 60-65 inches annually.

The warm and humid climate is attributed to its proximity to the Gulf of Mexico, and low elevations. During springtime months, temperatures warm faster over Louisiana than states further inland. This creates surface fronts that spawn frequent rain and severe thunderstorms, which can include high winds, hail, lightning, and tornadoes. During the springtime months, soils tend to be saturated, usually carrying maximum streamflow. Rainfall totals can, have often do, exceed 10 inches over a short period of days, causing roadways to flood.

Figure 3-2 Clyde Chachere Road

Residents of the Reservation know that roadways such as Clyde Chachere Road, even with its relatively steep drainage ditch, will close during these events - impacting evacuation of the Reservation (Figure 3-2). This roadway (among others) has been identified as a potential project during the lifecycle of the 2021 HMP update.

Figure 3-3 and Figure 3-4 illustrate annual precipitation and temperature levels within the planning region. Based on PRISM data, some of the highest months of rainfall include October 2006, 17.94 inches (same month as a severe storm/flooding Disaster Declaration #1668); October 2009, 14.62 inches; January 2013, 13.05 inches; July 2017, 17 inches; July 2019, 17.29 inches; and October 2020, 15.71 inches.

Average annual mean temperatures throughout the year as identified by PRISM Climate Group (2021) range from 64-68 degrees. During summertime months, the Gulf provides warm moist air which results in a relatively consistent climate, with daily maximum temperatures ranging generally from 85 to 95 degrees.

Summertime frontal systems are infrequent, but the steady flow of unstable moist Gulf air does promote frequent showers and thundershowers; however, severe weather events tend to be less frequent, and less violent in the summer months than during the springtime months. During the summertime months, tornado activity is normally diminished over the southern half of Louisiana. More significantly, the summertime marks the start of the Atlantic tropical cyclone season – hurricanes and tropical storms customarily beginning June 1 to November 30, sharply peaking from late August and September.

Drought during the summer months also becomes a factor, especially when subsiding air from a weak high pressure and associated upper-level ridges locked in place over the central United States can inhibit the development of convection showers for weeks. October 2005 had one of the lowest rainfalls of record, only 0.11 inches of rainfall was recorded, as did May – August 1998. Since completion of the last HMP in 2016, the Tribe has not experienced a similar drought situation.

The autumn months customarily are periods of moderating temperatures, but tropical cyclone activity also reaches its peak during this time. The duration of such events tends to only last for a few days. During such times when tropical storms are frequent, daytime humidity tends to be lower than other times of the year as weak frontal activities seldom occur which would produce rainfall. Thus, autumn is the driest season of the year for Louisiana.

Winters are characterized by a strong thermal gradient across the state. Cold Canadian air can reach into the planning area, and the area customarily experiences at least one hard freeze for winter season. Such freezing events seldom last longer than a week. While most precipitation arrives in the form of rain, modest accumulations of snow do occur, as do ice storms and freezing rains. Winter temperatures customarily range from 40 degrees to 60 degrees, with 50 degrees being the average. One of the coldest days which occurred since completion of the 2016 plan occurred in January 2018, when temperatures fell to 32 degrees.[3]

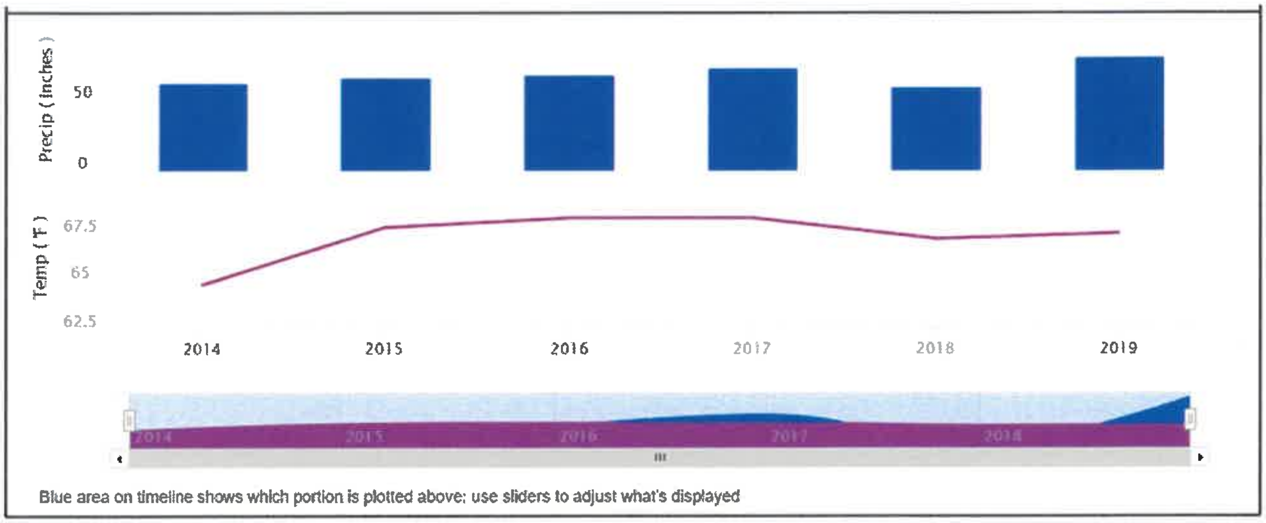

Figure 3-3 Monthly Precipitation Values January 2014-December 31, 2019
Source: PRISM (http://www.prism.oregonstate.edu/explorer/)

[3] This data is not inclusive of the 2021 Ice Storm (Violet), which occurred during the update process, but after the December 31, 2020 cutoff period established for planning purposes. While the storm is referenced in the Severe Weather profile, it has not been fully integrated into the plan due to data limitations, and the established cutoff date. The event and data will be integrated into the next plan update.

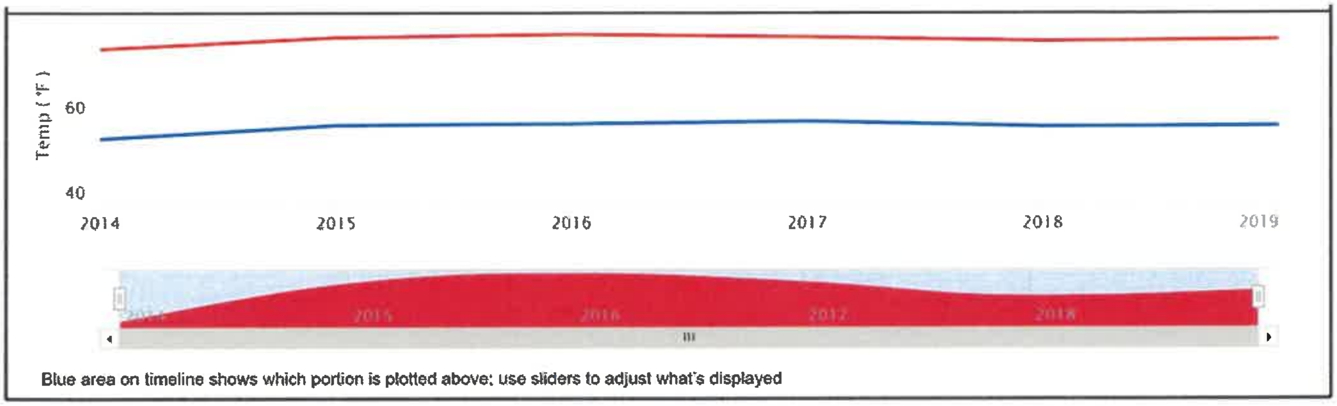

Figure 3-4 Average Annual Minimum and Maximum Temperatures
Source: PRISM (2021) Available online at: PRISM Climate Group, Oregon State U

3.6.2 Impact from Climate Change

Climate change is of significant concern to the Tribe with respect to its impact on increased storm activities, which have the potential to increase the flow of water through the various tributaries within its waterways and storm drainage systems. This increased flow can also increase sedimentation, causing additional flooding issues. Due to the state's low elevation, even small amounts of rain have a significant impact. Undoubtedly, climate change will also influence temperatures, causing an increase over the next century. Within each hazard profile, the potential impacts of climate change are further discussed.

3.7 Natural Resources

The Coushatta Reservation is home to many natural resources, including fish, wildlife, forests, wetland areas, freshwater swamps, bayous, and lakes, all of which maintain cultural significance to its members. The Coushatta Tribe utilize the various natural resources for a wide variety of purposes, including agricultural irrigation, recreation, seafood production and wildlife habitat, among others. This includes native vegetation utilized for basket making and for medicinal purposes. The natural resources also provide a great portion of the Tribe's economy, including individual households, and maintains extensive cultural significance for the Tribal members. The preservation of natural resources is of the utmost importance to the members of the Coushatta Tribe, and their daily activities and manner in which they live support preservation and protection at all levels.

Louisiana State has 12 major watersheds or river basins composed of several hundred smaller sub-watersheds. Some of these watersheds accumulate waters from 30 states and two Canadian provinces passing through Louisiana out to the Gulf of Mexico. This includes the Mississippi River, which is the world's second largest drainage basin in the United States. The Coushatta Reservation maintains landmass in several watersheds, the two primary being the Calcasieu and the Mermentau.[4]

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[4]https://www.lsuagcenter.com/en/communications/publications/agmag/Archive/2004/Spring/Watershed+specialists+work+to+improve+Louisiana+water+quality.htm

While many waterbodies across the State of Louisiana whole have sustained negative impacts caused by the activities of man, such as point and non-point sources of pollutants and increased sedimentation, the Tribe has been very proactive over the years in protecting its various waterbodies and has implemented many restoration projects to return the areas to their once pristine conditions, including water quality standards by reducing sources of pollutants from entering its waterbodies.

Though sediment load is a natural part of any watershed, the amount of sediment is what matters. Sediment occurs naturally from activities such as storms, surface erosion, and channel bank erosion. Mankind has increased the amount of sediment which results from these natural events due, in part, to road construction. Roads, by nature, increase surface erosion, cause water diversion problems, and place dirt in natural water courses. Only changes in land management practices can lead to reduced sediment and an improved ecosystem. The Coushatta feel that road construction should be subject to more rigid environmental impact standards and should be approached from an environmental point of view.

3.8 Major Past Hazard Events

Major hazard events are often identified by federal disaster declarations, which are issued for hazard events that cause more damage than state and local governments can handle without assistance. FEMA categorizes disaster declarations as one of three types (FEMA, 2012a):

- **Presidential major disaster declaration**—Major disasters are hurricanes, earthquakes, floods, tornados, or major fires that the President determines warrant supplemental federal aid. The event must be clearly more than state or local governments can handle alone. Funding comes from the President's Disaster Relief Fund, managed by FEMA and disaster aid programs of other participating federal agencies. A presidential major disaster declaration puts into motion long-term federal recovery programs, some of which are matched by state programs, to help disaster victims, businesses, and public entities.
- **Emergency declaration**—An emergency declaration is limited in scope and without the long-term recovery programs of a presidential disaster declaration. Generally, federal assistance and funding are provided to meet a specific emergency need or to help prevent a major disaster from occurring.
- **Fire management assistance declaration** (44 CFR 204.21)—FEMA approves declarations for fire management assistance when a fire constitutes a major disaster, based on the following:
    - Threat to lives and improved property, including critical facilities and watershed areas
    - Availability of state and local firefighting resources
    - High fire danger conditions, as indicated by nationally accepted indices such as the National Fire Danger Ratings System
    - Potential major economic impact.

Since 1973, 19 federal disaster declarations have affected Allen Parish, as listed in Table 3-2. Review of these events helps identify targets for risk reduction and ways to increase a community's capability to avoid large-scale events in the future. Still, many natural hazard events do not trigger federal disaster declaration protocol but have significant impacts on their communities. These events are also important to consider in establishing recurrence intervals for hazards of concern. Weather events can also quickly equate to billion-dollar losses, and our Nation has experienced many such losses during the period of 1980-2020. According to NOAA, Louisiana has experienced 77-billion-dollar weather related events during the same period of time (see Figures 3-5 and 3-6).[5]

TABLE 3-2.
DISASTER DECLARATIONS FOR HAZARD EVENTS IN ALLEN PARISH

Disaster Information			
Federal Disaster #	**Disaster Type**	**Incident Date**	**Declaration Date**
604	Flood	9/25/1979	9/25/1979
675	Flood	1/11/1983	1/11/1983
829	Flood	5/20/1989	5/27/1998
835	Flood	7/17/1989	7/21/1989
956	Hurricane Andrew	8/26/1992	8/30/1992
1437	Hurricane Lili	10/3/2002	10/16/2002
1603	Hurricane Katrina	8/29/2005	11/1/2005
1607	Hurricane Rita	9/24/2005	11/1/2005
1668	Severe Storm(s), Flooding	11/2/2006	11/8/2006
1786	Hurricane Gustav	9/2/2008	9/11/2008
1792	Hurricane Ike	9/13/2008	11/7/2008
4080	Hurricane Isaac	8/29/2012	9/10/2012
Incidents Since 2016 Plan Completion			
4263	Severe Storms and Flooding	3/8/2016	3/13/2016
4345	Tropical Storm Harvey	8/28/2017	10/16/2017
4458	Hurricane Barry	7/10/2019	8/27/2019
4484	COVID-19 Pandemic	8/20/20	3/24/2020
4559	Hurricane Laura	8/22/20	8/26/20
4570	Hurricane Delta	10/6/2020	10/16/2020
4577	Hurricane Zita	10/26/20	1/12/21

[5] NOAA National Centers for Environmental Information. Weather and Climate Disasters Summary Stats. Accessed 23 Feb 2021. Available online at: [Billion-Dollar Weather and Climate Disasters: Summary Stats | National Centers for Environmental Information (NCEI) (noaa.gov)]

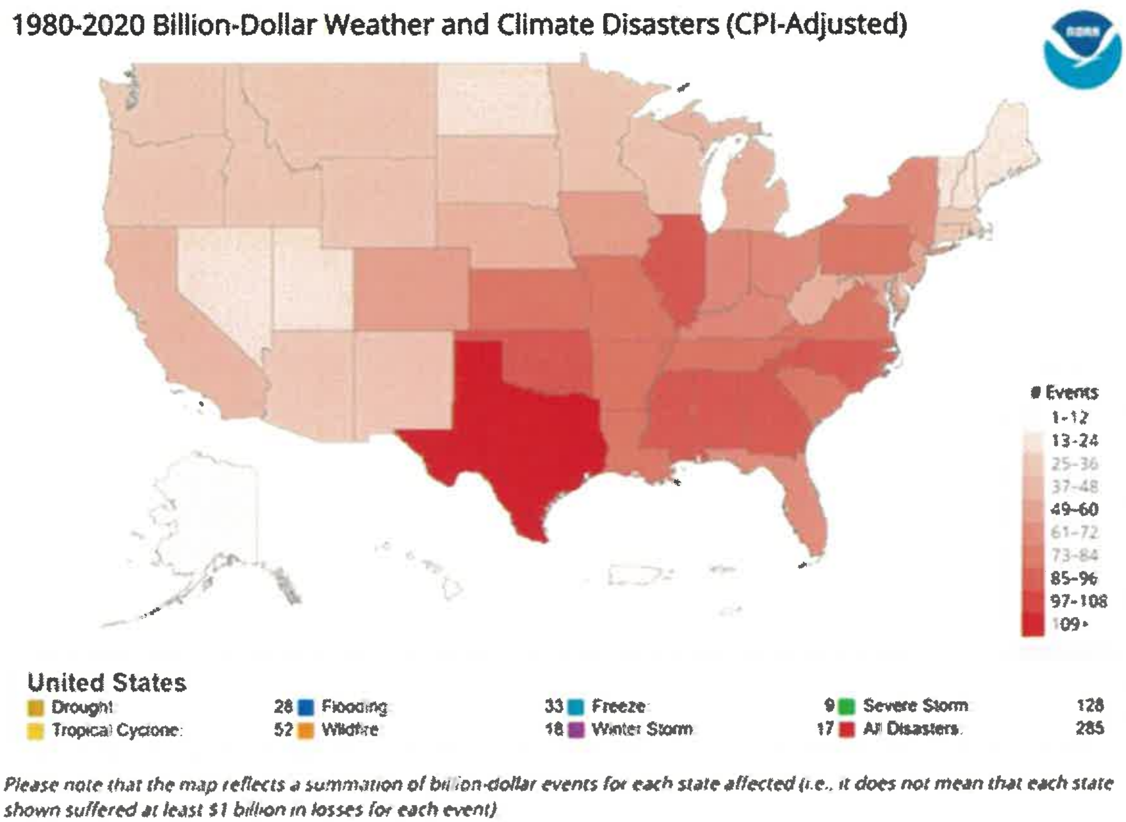

Figure 3-5 Billion Dollar Disasters Nationwide

Billion-dollar events to affect Louisiana from 1980 to 2020 (CPI-Adjusted)

DISASTER TYPE	EVENTS	EVENTS/YEAR	PERCENT FREQUENCY	TOTAL COSTS	PERCENT OF TOTAL COSTS
Drought	12	0.3	15.6%	$2.0B-$5.0B	2.1%
Flooding	9	0.2	11.7%	$10.0B-$20.0B	8.4%
Freeze	1	0.0	1.3%	$100M-$250M	0.1%
Severe Storm	26	0.6	33.8%	$5.0B-$10.0B	4.1%
Tropical Cyclone	22	0.5	28.6%	$100.0B-$200.0B	84.7%
Wildfire	--	--	--	--	--
Winter Storm	7	0.2	9.1%	$1.0B-$2.0B	0.6%
All Disasters	77	1.9	100.0	$200.0B-$200.0B	100.0%

[1] Deaths associated with drought are the result of heat waves. (Not all droughts are accompanied by extreme heat waves.)
Flooding events (river basin or urban flooding from excessive rainfall) are separate from inland flood damage caused by tropical cyclone events.
The confidence interval (CI) probabilities (75%, 90% and 95%) represent the uncertainty associated with the disaster cost estimates. Monte Carlo simulations were used to produce upper and lower bounds at these confidence levels (Smith and Matthews, 2015).

Figure 3-6 Louisiana Billion Dollar Weather Events

3.9 Critical Facilities and Infrastructure

Critical facilities and infrastructure are those that are essential to the health and welfare of the population. These become especially important after a hazard event. Critical facilities typically include police and fire stations, schools, and emergency operations centers. Critical infrastructure can include the roads and bridges that provide ingress and egress and allow emergency vehicles access to those in need, and the utilities that provide water, electricity, and communication services to the community. Also included are "Tier II" facilities and railroads, which hold or carry significant amounts of hazardous materials with a potential to impact public health and welfare in a hazard event.

3.9.1 Critical Facilities Defined for the 2021 Update

For purposes of this planning effort, the Planning Team reviewed the 2016 definition of critical facilities and, during the 2021 kick-off meeting, elected to utilize the same definition as follows:

> A critical facility is vital to the Tribe's ability to provide essential services and protect life and property. Loss of a critical facility would result in a severe economic or catastrophic impact. Under the Coushatta Tribe's hazard mitigation plan definition, critical facilities will be expanded to include the following:

- Police stations, fire stations, vehicle and equipment storage facilities, communication centers and towers, and emergency operations centers needed for disaster response before, during, and after hazard events.
- Public and private utilities and infrastructure vital to maintaining or restoring normal services to areas damaged by hazard events. These include, but are not limited to:
  - Public and private water supply infrastructure, water and wastewater treatment facilities and infrastructure, irrigation and retention ponds, potable water pumping, flow regulation, distribution and storage facilities and infrastructure.
  - Public and private power generation (electrical and non-electrical), regulation and distribution facilities and infrastructure.
  - Data and server communication facilities.
  - Structures that manage or limit the impacts of natural hazards such as regional flood conveyance systems, potable water trunk main interconnect systems and redundant pipes and reservoirs.
  - Major road systems including bridges.
- Hospitals, nursing homes, and care facilities, including facilities that provide critical medical services.
- Structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic, and/or water-reactive materials (e.g., hazmat facilities).
- Structure, facility, location, or item which has cultural significance to the People of the Coushatta Tribe.

- Homes (single family or multi-residential) of Tribal members, or residences currently on the Reservation, constructed or purchased with Tribal and/or BIA funds.
- Public gathering places also used as evacuation centers during large-scale disasters.
- Tribal facilities central to governance and quality of life along with response and recovery actions taken as a result of a hazard event.
- Tribal business centers which provide employment and income. This includes casinos, hotels, restaurants, stores, or other businesses, whether located on or off the Reservation.

The Tribe owns limited structures (approximately 250) both on the Reservation and off. In some instances, old FEMA trailers are utilized as office space due to the lack of structures. There are also limited residential structures on the Reservation. As population growth of tribal members living on the Reservation is of utmost importance to the Tribe, those residential structures are vital to the Tribe and its ability to continue to grow. As such, due to the potential social and economic impact that the loss of one facility or structure could have on the Reservation, the Tribe has determined that the majority of all structures owned by the Tribe (with the exception of sheds, various out-buildings, and a few trailers) are considered critical for this planning purpose. However, there are specific structures which would have a greater impact should something occur to those facilities either because of the function they serve to the Tribe, or because of the number of citizens who may be visiting the facilities, increasing the Tribe's response requirements to any potential disaster event. Those facilities include:

- Tribal Fire and Police Stations
- Casino Resort and Hotels (used as shelter for Tribal Members and high population risk facilities)
- Health/Medical and Wellness Centers
- Education Center
- Heritage Center (cultural)
- Youth Center
- Tribal Administrative Offices
- Gas Stations (high-risk facility, but also maintains a limited commodity during periods of isolation from disaster events/incidents)

Some of these structures do have permanent generators to help ensure continued functionality during times of disaster. Those structures include: the Coushatta Health Department, IT Department, Council Building, the Coushatta Department of Public Safety, and the Radio Building, which houses the Fire Department's communications system. Other structures, such as the Wellness Center, Multipurpose Complex, and Administration Building are connected to a large portable generator. The Casino Resort's main structure also has a permanent emergency generator. The Tribe has again identified acquisition of permanent generators as a potential mitigation strategy for this 2021 update, and specifically for inclusion during any type of remodel projects occurring on those structures.

All critical facilities identified and updated in this 2021 HMP (157 structures) were incorporated into this planning process; however, due to the sensitivity of this information, a detailed list of facilities is not provided. The list is on file with the Tribe. Table 3-3 provides a summary of the general types of critical facilities and infrastructure. Figure 3-7 illustrates the general location of those facilities. All critical facilities and infrastructure were analyzed in either Hazus (except golf course and four wells) or GIS processes to help rank risk and identify mitigation actions. The risk assessment for each hazard qualitatively discusses critical facilities with regard to that hazard.

TABLE 3-3.
CRITICAL FACILITIES

Critical Facility Types	Count	Property Value	Content Value	Total
Commercial	44	$39,655,559	$4,737,298	$44,392,857
Communications	2	$140,379	$6,000	$146,379
Cultural	1	$120,272	$28,200	$148,472
Government	12	$3,419,436	$625,978	$4,045,414
Hazmat	3	$4,156,030	$324,000	$4,480,030
Industrial	13	$4,277,052	$1,034,442	$5,311,494
Medical & Health Services	4	$3,623,829	$796,850	$4,420,679
Other Infrastructure	15	$2,162,772	$1,292,348	$3,455,120
Other Residential	45	$186,667,894	$78,567,804	$265,235,698
Protective Services	5	$1,956,888	$1,411,833	$3,368,721
Schools	5	$549,169	$60,560	$609,729
Wastewater	3	$6,807,614	$29,460	$6,837,074
Water Supply	5	$1,057,393	$40,000	$1,097,393
Total	**157**	**$254,594,287**	**$88,954,773**	**$343,549,060**

Note: Structure values and content were determined utilizing existing 2020 insurance replacement value data as this was determined to be the most valid data.

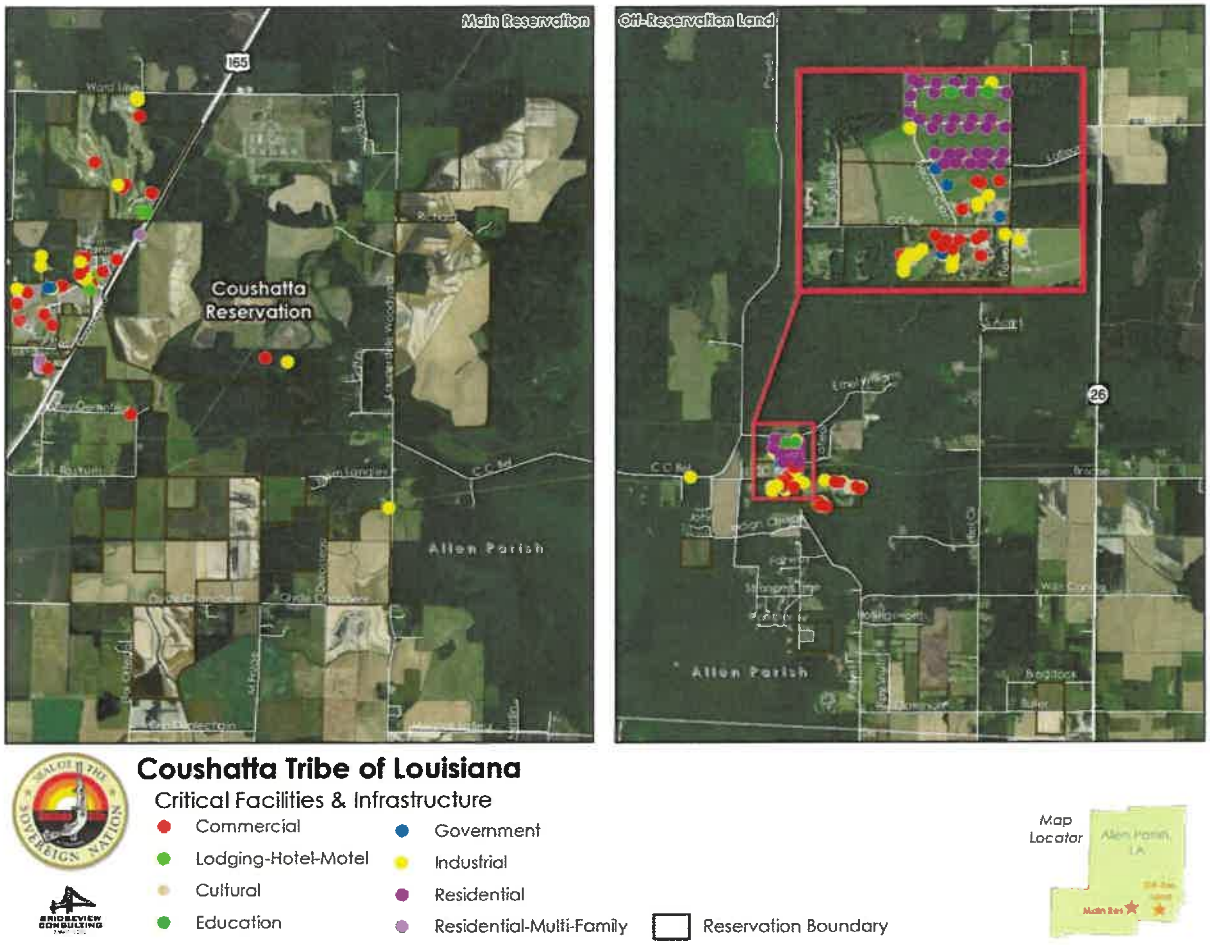

Figure 3-7 Tribal Planning Area with Critical Facilities

3.9.2 Structure Data Limitation

While the Tribe attempted to capture as much facility data as possible for each structure, in some instances, limited data was available as no (or very limited) historical information exists. Most of the Tribe's historical data was destroyed as a result of the bombing of the Alfred P. Murrah Federal Building in the Oklahoma City.

The planning team utilized this planning process to identify all new structures built (or significantly remodeled) since completion of the 2016 plan, as well as, to some extent, an update of the critical facilities data previously captured during the 2016 HMP process. However, occurring concurrent with this update, the Tribe was in the response phase to COVID19, as well as recovery efforts (including damage assessment) for three disaster events - Hurricanes Barry, Laura, and Delta. As such, the Tribe acknowledges that this data is not 100% accurate but remains the best available data.

The Tribe again has recognized this data deficiency and has maintained the strategy developed in 2016 to continue updating this data over the five-year life cycle of the plan for use in future updates. It is anticipated that approximately 85-90 percent of the structure data has been captured and validated, but all data will continue to be vetted and improved over the five-year life cycle of this plan.

3.10 INFRASTRUCTURE

Transportation planning studies are currently underway on the Reservation. The Tribe is not part of the Scenic By-Ways Program. In defining or identifying those areas which require new or improved roadways, some of the characteristics of developable parcels taken into consideration are:

- Percent of coverage of critical areas;
- Improvements to existing roadways versus re-development;
- Type of area in which the road is to be constructed, e.g., areas considered to be more for economic development versus residential development as areas supporting economic growth would customarily require roadways carrying higher capacity than a residential roadway; and
- Improvement value.

Roadways

The transportation system on and around the Reservation include U.S. Highway 165, US Highway 190, Louisiana Highway 10, and Louisiana Highway 26. The Reservation has a series of roadways which connect to the various major arterials, including approximately 128 miles of roadway for which the Tribe maintains ownership and responsibility.

At a state-level, the Louisiana Department of Transportation and Development (DOTD) is in charge of maintaining public transportation, roadways, bridges, dams (Dam Safety Program), canals, select levees, floodplain management, port facilities, commercial vehicles, and aviation in the state of Louisiana. Agency operations are run through nine district offices across the state. Local parishes maintain roadways under their ownership within their specific jurisdictions.

As a result of inadequate culverts and drainage areas owned and operated by Allen Parish, the roadways providing ingress and egress to the Reservation have the potential for flooding, causing isolation due to roadway impasse. High traffic volumes have significantly impacted the ability of tribal members, tourists and evacuees fleeing other parts of the state to evacuate timely during a significant event, such as during Hurricanes Rita, Katrina, Gustav, and Ike. As one of the initiatives within this planning document, the Tribe has identified roadways on which this occurs, and for which it intends to seek grant funding in coordination with Allen Parish to improve the roadways in an environmentally sound manner to allow for use by all citizens living in the area, while specifically maintaining to the highest degree possible the environmental protection of the areas adjacent to the roadways so as to not disturb the delicate balance between man and nature.

Rail

One rail line passes near the Coushatta Reservation and tribal structures. That line is considered to be critical infrastructure as it is a main rail line which carries goods across all of the United States.

Water and Wastewater

Water is provided by different sources depending on location. In some areas of the planning area, water is provided from Allen Parish Water District #4. Some areas utilize the Tribe's water distribution system, which includes a water tower storing 30,000 gallons of water. The Tribe also maintains irrigation wells, utilized for agricultural purposes. The Tribe also has two wastewater treatment plants located in Elton and Kinder, which maintain storage of wastewater for the Casino Resort and enterprises in the immediate vicinity thereto, as well as some of the residential structures.

3.11 Cultural and Sacred Sites

Several cultural and sacred sites exist throughout the Reservation. Most are not identified to maintain the integrity of the locations and artifacts but were included within the risk assessment to determine vulnerability. As was the case when the Tribe erected the cell tower, or prior to Camp Coushatta Road construction being commenced, the Tribe conducts cultural resource surveys and inventories to ensure sacred sites are not destroyed, and artifacts are not buried within the areas of construction.[6] The Tribe has taken great strides to protect its heritage, with some artifacts currently stored at the Smithsonian. Many of the Tribal structures identified in the risk assessment also contain culturally significant items, which are on display. These include items such as historic baskets, photographs, and books (among other items). These items are irreplaceable, and therefore invaluable. Those items are not specifically identified within the risk assessment but are vulnerable to impacts from most of the hazards of concern. The Tribe has identified as a strategy the potential for developing a saferoom or other structure for use to store these items when advanced notice of a weather event allows time for their relocation.

3.12 Cultural Heritage

While it may be difficult to see since many traditions have been blended with modern life, the Tribal culture is alive and well on the Coushatta Reservation. In promoting the multicultural understanding, children are still told family stories from long ago; Coushatta language is still taught, gathering of the people such as the annual Pow-Wow and other dances and ceremonies are still held. Many still hold true to traditional spiritual beliefs and practices, sometimes blending them with Christian traditions.

Known for their extensive knowledge of native plants, including medicinal plants, the members of the Coushatta Tribe carry on ancient art forms practiced for generations, including utilizing cane and coiled, longleaf pine straw basket weaving, woodworking craft, including bows and wooden toys; tanning of hides; sewing of traditional clothing; teaching of historic dances and songs, and beading, among others. The Tribe also received a grant from the National Science Foundation's Endangered Languages to document and preserve Koasati language. In addition, the tribal members utilizes native plants available on the Reservation for traditional medicines.

[6] http://www.crt.state.la.us/dataprojects/archaeology/bibcard/index.asp

3.13 Economic Base

The planning area's economy is strongly based in the agricultural, retail trade, recreation, accommodation, and food services industries. Common industries also demonstrate a large percentage of the population working in the health care and social assistance industries, followed closely by educational services, arts, entertainment, and recreation. As indicated, the Coushatta Tribe, including the Casino Resort, Golf Course, water park, hotels, chalets, and RV Park is the single largest employer within Allen Parish, and one of the largest within Louisiana State.

Figure 3-8 Coushatta Tribe Casino


Figure 3-9 Coushatta Resort Grand Hotel

3.14 Tribal Economic Outlook

At present, the Tribe's economy is expanding, but it is somewhat stifled by the lack of necessary infrastructure and land mass which will support economic growth and development. The Tribal Government employs 198 full- and part-time individuals (tribal and non-tribal), as well as seasonal employees. In addition, the Coushatta Casino Resort employs in excess of 2,700 personnel (tribal and non-tribal). Combined, the Tribe is one of the largest employers within Allen Parish and the State of Louisiana.

The Coushatta Casino Resort (Figure 3-8) includes several hotels and restaurants – the Coushatta Grand Hotel (Figure 3-9), Koasati Pines Lodge North & South, Red Shoes RV Resort (which includes 108 full utility sites and 120 chalets) (Figure 3-10), Big Sky Steakhouse, Gumbeaux's Oyster and Sports Bar, Seven Clans Buffet, Terrace Cafe, Cafe Grande, Corner Bar & Deli, PJ's Coffee of New Orleans, Bar 7, and Eagles Nest Bar & Grill.


Figure 3-10 Coushatta Resort RV Park

The Tribe also owns the Koasati Pine Golf Course, an 18-hole, championship golf course which encompasses in excess of 450 acres, including a pro shop, restaurant, and facilities to host catered events (Figure 3-11).

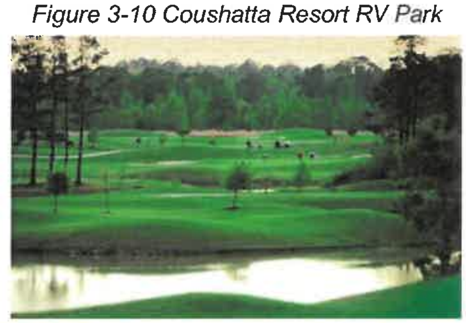
Figure 3-11 Koasati Pines Golf Course

Since completion of the 2016 plan, the Tribe has also developed a new Dream Pool, which is a waterpark situated within the Resort's complex (Figure 3-12), as well as a new gas station, the Buffalo Run, which was completed since the 2016 plan. In addition, enterprise also includes crawfish farms and the Coushatta Convenience Store. The Tribe is also heavily invested in several agricultural efforts, including a significant hydroponic growing operation for various vegetables, crawfish ponds, rice fields, a cattle ranch, and a herd of approximately 10 buffalo.


Figure 3-12 Coushatta Dream Pool

3.15 LAND USE

The Coushatta Tribe owns in excess of 7,120 acres of non-contiguous land (inclusive of both fee and trust lands), the majority falling within Allen Parish, and more limited acreage in Jefferson Davis and Calcasieu parishes. Population Density (total population per square mile) for Allen Parish is 34 persons per acre, with 12 housing units per square mile. As a sovereign nation, the Coushatta are not bound to the same limits, and currently has not determined its future population density within the Reservation boundaries.

The Tribe currently does implement land use regulations and guidelines similar to those which are currently in place through the State and Allen Parish. New construction, including that funded with Federal funds, are built to appropriate building code standards. It is anticipated that within the lifecycle of this plan, the Tribe will again review the potential development of some additional land use regulations and guidelines, including a decision concerning enrollment in the NFIP, as it presently is not an enrolled member. The application of regulatory guidelines which restrict or limit building in high-hazard areas, or which require a minimum amount of mitigation efforts, will greatly enhance the Tribe's resiliency with respect to new development, or significantly remodeled structures.

The Tribe does have specific areas identified for various types of land-use designations for development on areas of the Reservation. As that land use development occurs, this mitigation plan will be utilized to help identify potential areas of risk to ensure construction in those areas are limited or developed in such a way as to reduce the impact of the hazards on the Tribal members and visitors to the planning area.

At present, Tribal land is used primarily for tribal housing, economic development, and agricultural use. There are several commercial locations on the Reservation, including the Casino Resort, various hotel, the convenience store, gas station, golf course, and medical and health facilities, among others.

3.15.1 Agriculture[7]

Agriculture is one of the largest land use trends within Allen Parish, with 20 percent of land in farms, 49 percent of which is cropland and 32 percent pastureland. Top crop per acre is rice. The Coushatta Tribe has a number of agricultural areas, including hydroponic greenhouses, rice fields, Crawfish ponds, and cattle and buffalo ranches. The Tribe practices no-till land use, with cover crop rotation.

Within the parish, the average size of farms is 226 acres, with the average market value of agricultural products sold per farm of $47,054. This is a 15 percent reduction since 2012. This value closely mirrors the value and income generated from the Coushatta Tribe's greenhouse operation, which provides food to Tribal members, and is sold at the local farmer's markets.

[7] 2017 Census of Agriculture, Allen Parish Profile. Accessed Feb 12, 2021. Available at: cp22003.pdf (usda.gov). [Ag data updated in 5 year intervals.]

Based on local data, the average value of crops sold per acre for harvested cropland is $197.45. The value of nursery, greenhouse, floriculture, and sod as a percentage of the total market value of agricultural products sold: 2.41 percent, with the value of livestock (primarily cattle and buffalo on the Reservation), poultry, and their products as a percentage of the total market value of agricultural products sold averaging 38.99 percent. The average number of cattle and calves per 100 acres of all land in farms within Allen Parish is 12.24. The Coushatta Tribe currently has several herds of cattle on the Reservation's farms, as well as buffalo.

3.15.2 Critical Areas

Critical areas are environmentally sensitive natural resources that have been designated for protection and management. The Tribe has several areas which they have designated as critical areas for management based on environmental and cultural sensitivity, including the various wetlands where they raise crawfish and rice. Critical areas also include areas such as the Coastal Zone Boundaries, and the watershed boundaries identified in Figure 3-13, which include all watersheds throughout the state of Louisiana.[8] Figure 3-14 demonstrates the identified critical areas statewide, as well as the various soil type, while Figure 3-15 illustrates the land cover data statewide.[9]

Protection and management of these areas is important to the preservation of ecological functions of our natural environment, as well as the protection of the public health, safety, and welfare of the community. The critical areas are of significant importance to the Coushatta Tribe, as the Tribe embraces extensive protection of their lands.

In March and August 2016, Louisiana experienced two historic rain events that produced trillions of gallons of rainwater that flooded more than 145,000 homes, causing an estimated $10 billion in damages, and resulted in recovery efforts which has extended for years.

As a result of the flood, the State identified deficiencies in its floodplain management approach, and risk-reduction efforts at all levels of government. Recognizing the need for watershed management as a model, the state developed the Louisiana Watershed Initiative (LWI) to integrate physical, biological, ecological, socioeconomic and policy concerns with a thorough understanding of an area's hydrologic processes. As a result of LWI, the state initiated a state-level flood risk management effort through a watershed approach, with the goal at the local level to build support for an improved, long-term, state and watershed region management framework that effectively address mounting flood risks statewide.

The ultimate goal of the program is to enhance a regions' abilities to participate in collective watershed decision-making that raises development standards and mitigates unforeseen negative impacts of

[8] Louisiana Watershed Boundary and Coastal Zone Boundary Map. Accessed 16 Feb 2021. Available online at: http://dnr.louisiana.gov/assets/OCM/CoastalZoneBoundary/CZB_Study_Report_October_2010_Final.pdf
[9] Ibid.

potential flood control interventions on neighboring regions. In August 2019, the Council on Watershed Management agreed to use eight watershed regions as a starting point to coordinate efforts among parishes and distribute project funds (see Figure 3-16). The Coushatta Tribe falls into two of those regions.

As a result of the LWI, a multi-year grant program was established with the intent of the grant recipients utilizing the funds to help reduce risk at the local level, which ultimately will help reduce flooding, and the cost of recovery from those flooding events at a larger scale. The Coushatta Tribe applied for and received three different project awards through the initiative.

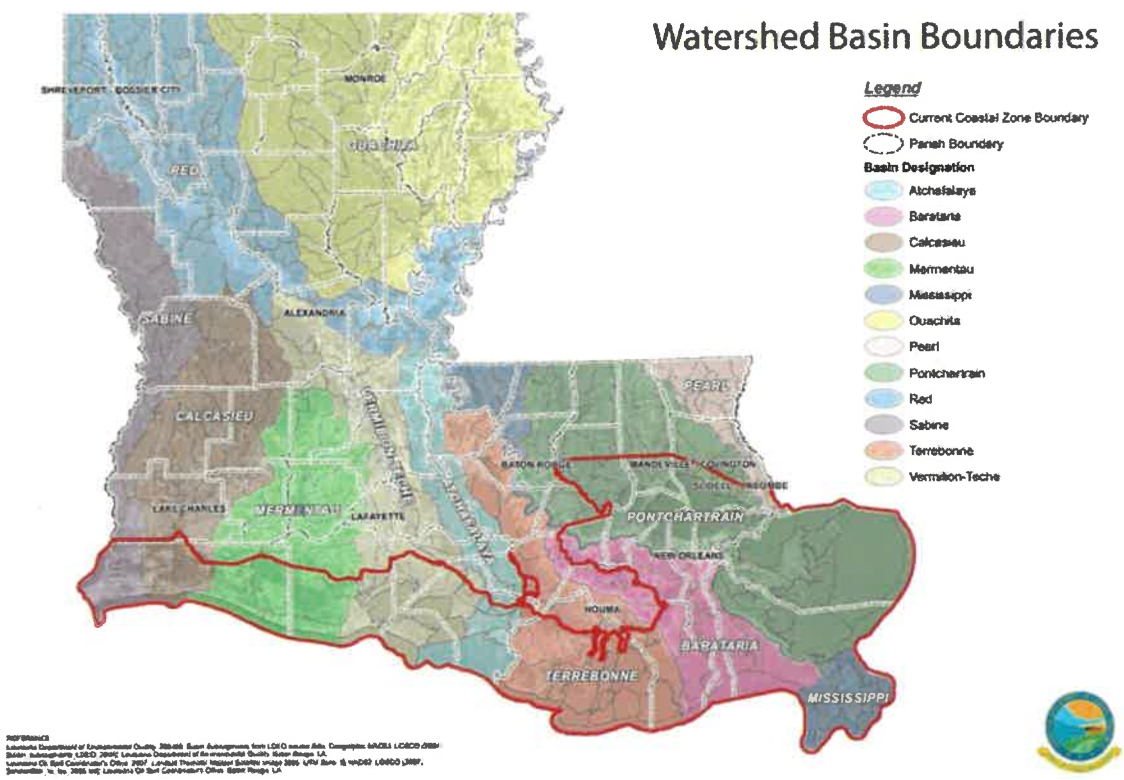

Figure 3-13 Louisiana Watershed Basin Boundaries and Coastal Zone Boundary

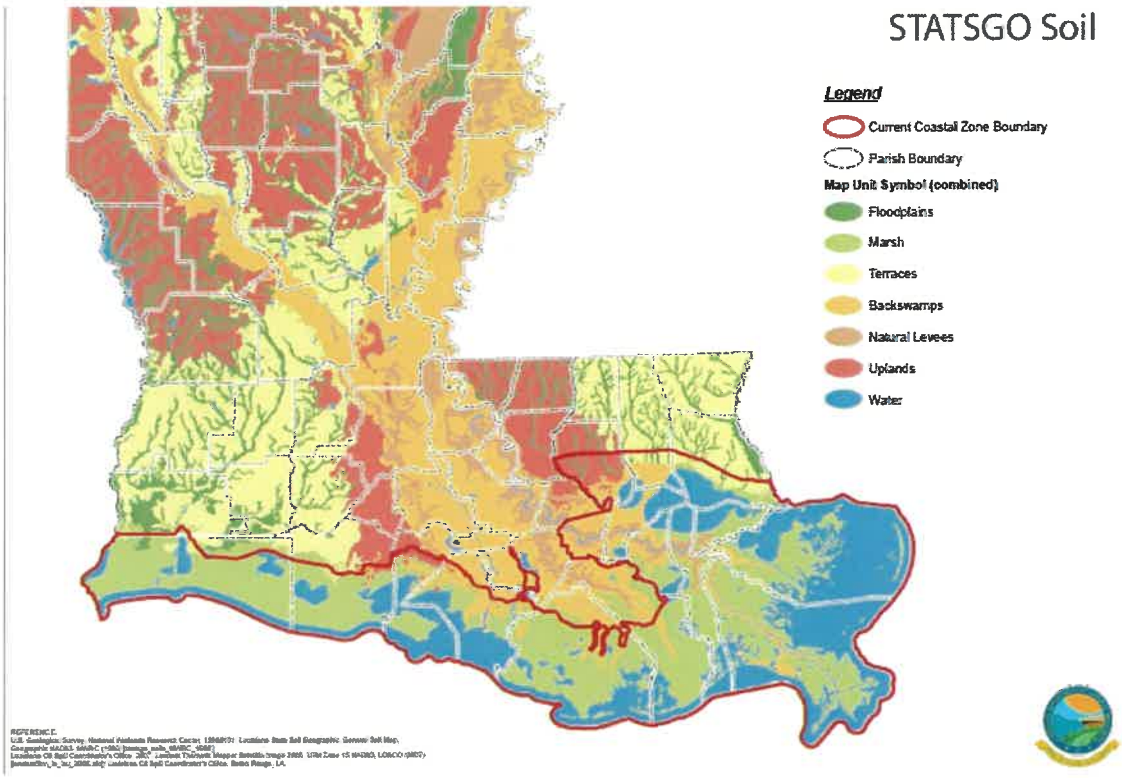

Figure 3-14 State of Louisiana Soil and Critical Areas' Geography

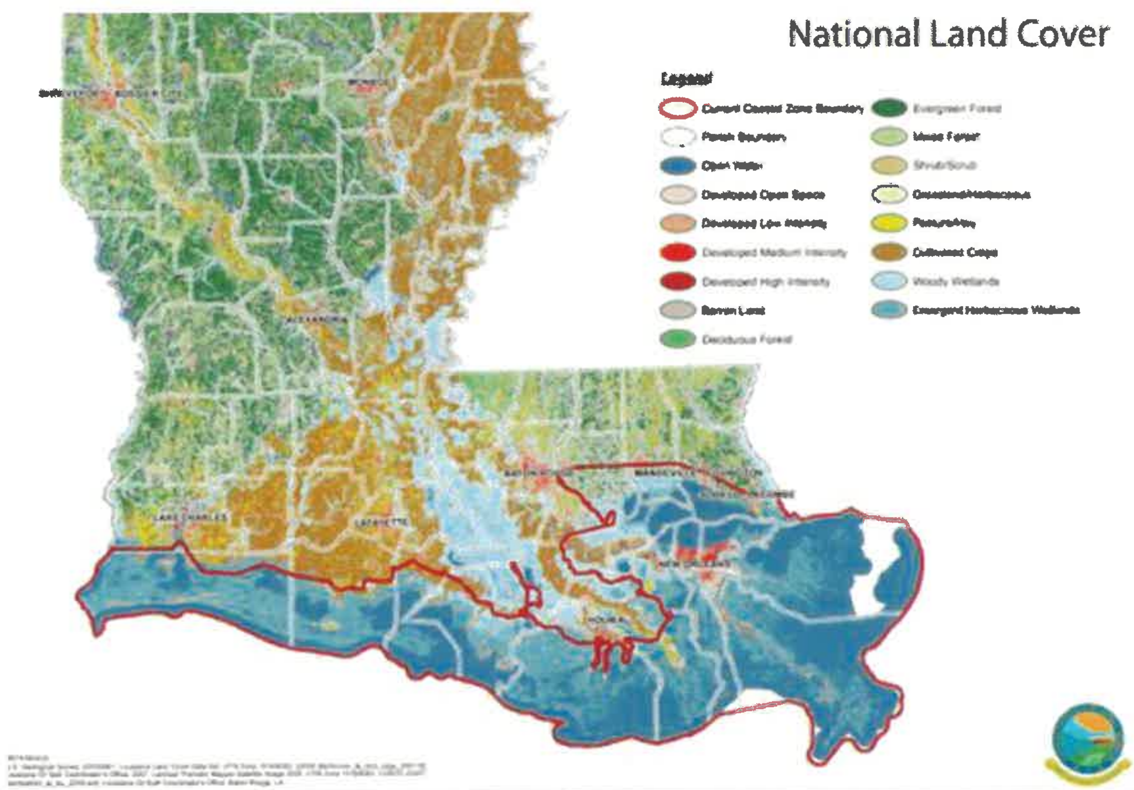

Figure 3-15 Land Cover Data

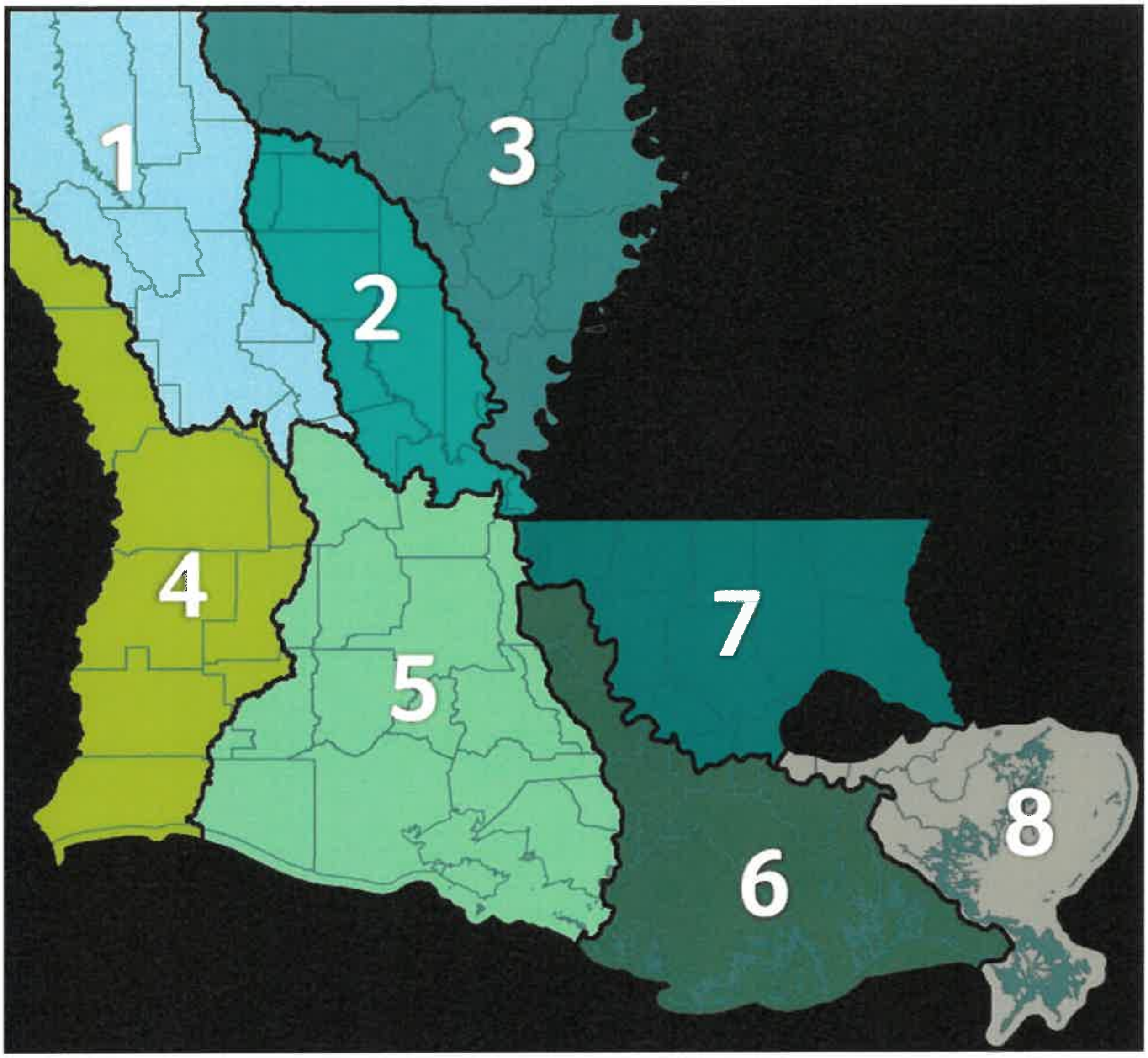

Figure 3-16 Louisiana Watershed Regions

3.16 Changes in Development

44 CFR Section 201.7(d)(3) requires that plan updates be revised to reflect changes in development that occurred within the planning area during the past performance period of the plan. The plan must describe changes in development that have occurred in hazard prone areas and increased or decreased the vulnerability since the last plan was approved. If no changes in development impacted the overall vulnerability, plan updates may validate the information in the previously approved plan. The intent of this requirement is to ensure that the mitigation strategy continues to address the risk and vulnerabilities to existing and potential new development and takes into consideration possible future conditions that can impact the vulnerability of the community.

It should be assumed that by this planning process, new development directly interfaced with hazards and hazard areas assessed by this plan as the process included the new lands and structures acquired or constructed by the Tribe since completion of the last plan. This would include increased structure count, identification of structures currently in development and updated hazard information (e.g., updated NFIP Flood maps, hurricane scenarios, etc.) where available. As such, results from the risk assessment itself includes changes in development since completion of the last plan and are considered when determining the Calculated Priority Risk Index (CPRI) scoring, which is further discussed in Chapter 4. Such trends are further reviewed during the risk ranking process contained in Chapter 11, which considers impact to people, property, the environment, and economy and the vulnerabilities thereto. Each hazard profile also identifies future development trends and identify potential impact in a qualitative manner.

During this 2021 HMP update, planning team members discussed the significance of land use development as it has occurred since the last plan update, and whether that has increased or decreased the Tribe's level of vulnerability since the last plan's completion. While development itself has increased vulnerability based on the increased population at risk (not only by population count, but by population in the more vulnerable categories), development trends themselves have not increased risk, with the exception of additional structures in place.[10] In some cases, planning team members felt the opposite is true, such as with the development of the Convention Center, which was built to the highest required standards, and has increased capacity for sheltering at the various Resort areas, thus presumably reducing impact to the health and safety of the population at risk.

The one exception identified by the planning team with respect to land use development and its negative impact continues to be the Allen Parish roadways. Since completion of the 2016 HMP, no work has been done by Allen Parish to enhance the roadways in the area, albeit as of this update, the Parish and the Tribe are working to seek out and obtain grant funds to address the issue. The Tribe has again identified these roadways within this plan as continued potential mitigation projects.

While the Tribe has acquired additional lands, the issue of flooding along the roadways leading onto the Reservation and the areas in which the Tribe's business are located has impacted its growth potential. Until such time as roadways can be enhanced to allow for increased traffic capacity while also reducing the impact from hazards (flood events block ingress and egress in the area of the Casino and on the Reservation), the ability for the Tribe to expand is impacted.

Further, changes to building construction practices have instituted requirements to help limit physical vulnerability. Structures built within various hazard zones (e.g., wind or flood zones, among others) are subject to design and construction standards that help reduce of impact. Such is also the case with any significant remodeling projects, which would further help reduce the level of impact. Over the course of

[10] While population on the Reservation has remained consistent with respect to the 2016 HMP, the expansion of the Casino Resort and other enterprises has increased potential population at risk. While those numbers are not identified in exact figures with respect to the establishments, such increase was considered as a whole throughout the risk assessment process by the planning team members.

time, with the continued implementation of the International Building Codes, the standards have increased, and thus, presumably reduced the physical vulnerability to some degree.

Structures significantly impacted by the 2020 series of hurricanes which sustained damages of 50 percent or greater, will also be enhanced to include the most current codes in place, to ensure continued resilience of the structure, and the safety of citizens.

3.16.1 Residential Development

Residential land use on the Reservation generally consists of single- and multi-family dwellings, including manufactured housing, childcare facilities, senior housing, and some assisted housing. There is one childcare facility on the Reservation, which is included in the risk analysis. According to Tribal data, there are an estimated 44 single-family residential homes in the planning area, and four multi-family duplex units, for a total of 52 residential housing units. All of those structures are owned by the Tribe and considered within the risk assessment as they are considered critical assets.

The year of construction is significant in determining the potential impact from various hazards due to construction standards in place at the time. The majority of the housing structures on the Reservation were built between 1992 and 1999. While built to existing codes at the time, many of these structures are built to lower building code standards than currently exist, making them more susceptible to damage from disaster events, especially as they relate to hurricane and tornado force winds. Since completion of the 2016 HMP, no new residential structures have been built.

3.16.2 Non-Residential Development

At present, there is limited new construction occurring on the Reservation. The cause for this, in part, is due to the economic trend in the area, as well as the very limited infrastructure within much of the Reservation to support large amounts of growth. As indicated, population counts within Allen Parish have decreased as a whole since completion of the previous plan, while the Tribe has maintained the same level when viewing tribal residents that live within five miles of the Reservation boundary. Review of the State's HMP (2019, p. 144) further identifies long-range population projections for Allen Parish dropping to 25,604 by the year 2043 (25-year projection from when the State data was developed).

The Tribe is diligently pursuing every avenue possible to obtain new and modify existing infrastructure to allow for expansion of the Tribe, but the general lack of building space in areas with required infrastructure is hampering this effort. Such is also influenced by the continued runoff of roadways, or overtopping of culverts which flood adjacent lands, making construction for any purpose problematic, if not impossible, without the implementation of significant mitigation efforts. In some instances, the Tribe is using mobile homes as department offices until structures can be built. While the size of the

Reservation has increased since the original mitigation plan was completed in 2008, given the hazards to which the Reservation is susceptible, the acquired land will allow for only limited future expansion.[11]

At the time of the 2016 HMP, two structures and one roadway were being considered.

- ✓ The first was a new convenience store and gas station on the Reservation (Buffalo Run). That structure was completed in 2016-2017. Development of that structure has not increased vulnerability in the tribal planning area.

- ✓ The other structure under development at the time of the 2016 plan was the Heritage Building, which is a remodel of greater than 50% reconstruction of an existing structure (included in the risk assessment). The Tribe continues to seek grant funding to complete that structure, but as of the 2021 update, no work has been completed.

- ✓ The Tribe was also considering a new roadway in the area of Camp Coushatta. As of this 2021 update, that roadway has not yet been developed, but remains a potential for the Tribe.

Review of Allen Parish Census data indicates a total of 38 building permits were issued during 2019, 35 in 2018, 44 in 2017, and 40 in 2016. Average cost of new residential structures has fallen from a high in 2016 of $191,100 to a low of $125,800 in 2019.

The Coushatta Tribe has had minimal increase in new structures since completion of the 2016 plan. For those new structures built, as indicated, the Tribe does adhere to permitting requirements on non-trust lands and adheres to building code regulations for all construction, whether on or off the Reservation. New construction on the Reservation includes:

- ✓ A police shooting range (non-enclosed structure);
- ✓ Enhancement of the pool area to create the new Dream Pool (water park);
- ✓ Expansion of the Casino Resort's to include a new Convention Center, which can hold ~250 individuals;
- ✓ Completion of the Buffalo Run Convenience store (mentioned above), and the removal of the old convenience store which was lost due to a structure fire; and
- ✓ The repurposing of several structures for other governmental use (primarily mobile trailers).

Additional changes in development occurring since completion of the 2016 plan includes the demolition of The Coushatta Inn Hotel as a result of mold developing after the structure was flooded by Hurricane Barry. FEMA's Public Assistance process remains in review for recovery of that structure by the Tribe. At present, the Tribe is not in a position to rebuild the hotel until reimbursed by FEMA.

[11] The Coushatta Tribe was a planning partner in the 2008 Allen Parish Plan; however, that plan was never adopted by the Tribe.

Planned future development over the life cycle of this plan include:

- ✓ Completion of the Heritage structure (pending grant funding);
- ✓ Camp Coushatta roadway; and
- ✓ Potential roadway enhancements to those existing roadways which block ingress and egress to the Reservation if a coordinated effort with Allen Parish, state and federal departments of transportation can be achieved.

All areas identified for new construction have been included within the risk assessment portion of this planning effort to determine vulnerability and exposure.

3.16.3 Structure Type and Age

Total structure count owned by the Tribe is currently unclear due to lack of available data but is estimated to be over 250 structures located primarily in Allen and Jefferson Davies Parishes, with some located in other areas throughout Louisiana. This structure count includes structures such as: storage sheds, trailers/mobile homes (old FEMA trailers used as departmental administration buildings not permanently affixed to a foundation), barns, lean-to's, Casino chalets at campground, ballpark structures, golf course structures, etc.

A total of 157 structures were included within the risk assessment for the 2021 update, which include all residential, cultural, commercial, industrial, economic and government structures as identified within the critical facilities definition. The structures remaining were of less critical nature and will require significant research to capture necessary data (e.g., year build, type of construction, etc.). The Tribe anticipates a continued review and update with additional data during the life cycle of this plan.

Residential land use generally consists of singe family dwellings. According to Tribal data, there are currently 52 housing units (primarily Elder housing), and a few multi-family apartment complexes off the reservation in the Tribal Planning Area, including small apartments available for employee use.

Of the 157 structures:

- ✓ Nine are manufactured, with the majority of being used as tribal facility buildings;
- ✓ 30 structures are steel;
- ✓ 22 are brick, masonry, or concrete; and
- ✓ The remaining structures are wood;

The year of construction is significant in determining the potential impact from various hazards due to construction standards in place at the time. Structures built pre-1972 historically have maintained lower building standards than current codes in place. New construction is built to higher standards.

While structure data is still severely limited due to the loss of data in the Oklahoma City Bombing, it appears that the Education Building is the oldest structure on the Reservation, built in 1976, three years after the Tribe was established. Specific areas were developed in groups, for instance: Camp Coushatta

Road structures were built primarily in 2001, while the ballpark structures on CC Bel Road were built in 1995. The actual Casino Resort was originally built in 1995, with several remodels and updates since that time, the most recent being in the new Convention Center and Dream Pool. Pinewood Village housing, and the support infrastructure of the sewer structures were built in 1992, with the majority of the remaining housing units being built between 1992 and 1999, with 1999 having the largest number of new residences built.

3.17 Laws and Ordinances

The planning team performed an inventory and analysis of existing authorities and capabilities called a "capability assessment." A capability assessment creates an inventory of a Tribe's mission, programs, and policies, and evaluates its capacity to carry them out. The capability assessment identifies legal and regulatory capability of the Tribe, while also summarizing the administrative and technical capabilities and its fiscal capabilities. This information is contained within Chapter 13.

Also for consideration is the fact that the Tribe must also fulfill any federal regulations associated with funding that the Tribe may receive, such as those administered by HUD, BIA, or IHS. This places a significant burden upon the Tribe as it is doubly impacted in its efforts when developing land use authority and other regulatory statutes. In addition, the EPA recognizes that Indian Tribes face serious human health and environmental problems and are working with the Indian Tribes to protect the health and environment of waters in Indian Country.

Some pertinent laws are described below. It should be noted that as a sovereign nation, the Tribe is not required to adhere to any local or state planning regulations; however, in an effort to be a good steward and neighbor, the Tribe does strive to plan in conjunction with state and local requirements.

3.17.1 Tribal and State-Level Planning Initiatives

The Coushatta Tribe of Louisiana must comply with all Federal regulations established, which many times are much more stringent than those regulations which state or local jurisdictions must address. These place a much heavier burden on the Tribe as they continue to grow and develop tribal lands. As a sovereign nation, the Tribe is not subject to state or local requirements; however, in the spirit of being a good neighbor and in partnership with the surrounding jurisdictions, the Tribe does consider its local communities in all of its planning initiatives and does complete several of its planning documents in conjunction with local plans. A listing of some of these initiatives is contained within many of the hazard profiles (Chapters 5-10), as well as a more robust review contained within Chapter 13 – Capabilities Assessment.

3.17.2 Louisiana State Hazard Mitigation Plan

The Louisiana State Hazard Mitigation Plan approved by FEMA on March 27, 2019 provides guidance for hazard mitigation throughout Louisiana. The plan identifies hazard mitigation goals, objectives, actions, and initiatives for state government to reduce injury and damage from natural hazards. The State has not met the federal requirements for an enhanced state plan (44 CFR parts 201.4 and 201.5), which, if gained, would allow the state to seek significantly higher funding from the Hazard Mitigation Grant Program following presidential declared disasters (20 percent of federal disaster expenditures versus 15 percent with a standard plan).

3.17.3 Other Planning Initiatives

Coastal Zone Management Program[12]

Louisiana State is one of 35 states and territories eligible to establish a Coastal Zone Management Program, which was established in conjunction with the federal Coastal Zone Management Act. The state has had an approved program since 1980, having developed the Coastal and Estuarine Land Conservation Program Plan, which was modified in 2012. The plan applies to those coastal parishes within Louisiana which contain areas subject to high and moderate levels of coastal influence. Additional data on the Coastal Zone Management Program is available from the State of Louisiana Department of Natural Resources at: http://www.dnr.louisiana.gov/index.cfm?md=pagebuilder&tmp=home&pid=928

Louisiana State Uniform Construction Code Council

The Louisiana State Construction Code Council adopted the 2015 editions of national model codes for use on all residential and commercial construction projects. The 2015 IBC went into effect as the Louisiana model code on January 1, 2020. The Tribe currently utilizes those building codes established by the State and Allen Parish during construction of any structures on the Reservation. In addition, depending on the funding stream, the Tribe also adheres to any federally mandated building codes.

Emergency Operations Planning

At the state level, Emergency Operations Planning establishes parameters to ensure that preparations of the tribe, state, and local jurisdictions will be adequate to deal with disasters; to ensure the administration of state and federal programs providing disaster relief to individuals; to ensure adequate support for search and rescue operations; to protect the public peace, health, and safety; and to preserve the lives and property of the people.[13] It achieves the following:

- Provides for emergency management by the state and authorizes the creation of local organizations for emergency management in political subdivisions of the state.
- Confers emergency powers upon the governor and upon the executive heads of political subdivisions of the state.

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[12] State of Louisiana Coastal and Estuarine Land Conservation Program Plan (2011). http://dnr.louisiana.gov/assets/OCM/Interagency/CELCP_State_Plan_ver15.pdf

[13] GOHSEP Emergency Operations Plan.

- Provides for the rendering of mutual aid among political subdivisions of the state and with other states and for cooperation with the federal government with respect to the carrying out of emergency management functions.
- Provides programs, with intergovernmental cooperation, to educate and train the public to be prepared for emergencies.

It is policy under this law that emergency management functions of the state and its political subdivisions be coordinated to the maximum extent with comparable functions of the federal government and agencies of other states and localities, and of private agencies of every type, to the end that the most effective preparation and use may be made of manpower, resources, and facilities for dealing with disasters. The evacuation routes illustrated in Figure 3-17 demonstrates one of these statewide efforts.[14] The Coushatta Tribe has adopted the National Incident Management System (NIMS), the Incident Command Structure (ICS), and utilizes Comprehensive Planning Guide 101 for emergency management planning purposes, further ensuring consistency with state and local jurisdictions throughout Louisiana, as well as other states and tribes.

[14] Louisiana Emergency Evacuation Guide Accessed 16 Feb. 2021. Available at: https://www.brla.gov/DocumentCenter/View/1901/Louisiana-Emergency-Evacuation-Map-PDF?bidId=

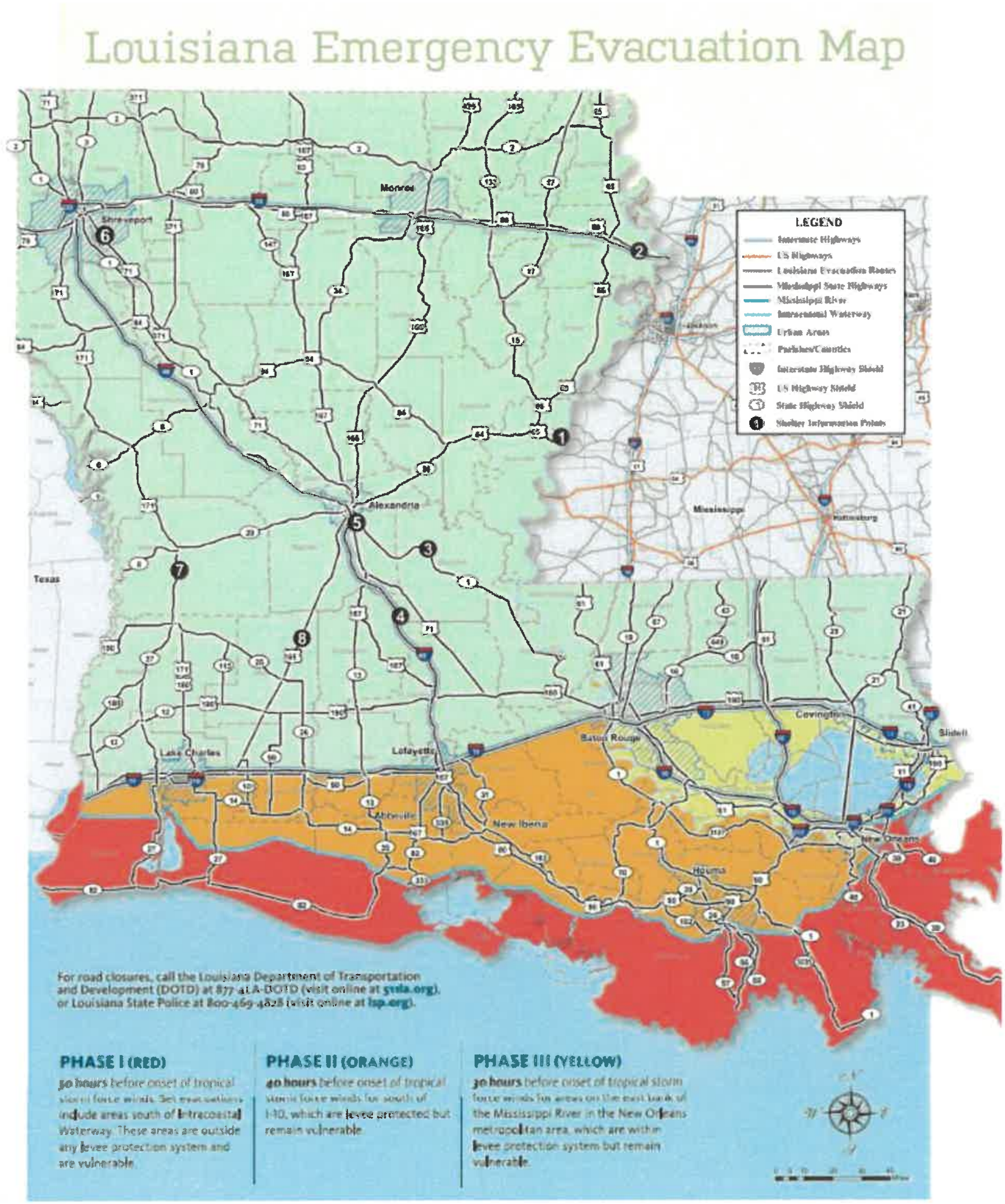

Figure 3-17 Louisiana Emergency Evacuation Guide Map

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CHAPTER 4.
HAZARD IDENTIFICATION AND
RISK ASSESSMENT METHODOLOGY

4.1 Overview

The risk assessment for this hazard mitigation plan evaluates the risk of natural hazards prevalent in Allen Parish and the Coushatta Reservation, and meets requirements of the DMA (44 CFR Section 201.7(c)(2)). The methodology used to complete the risk assessment is described in the following sections.

The DMA requires measuring potential losses to critical facilities and property resulting from natural hazards. A hazard is an act or phenomenon that has the potential to produce harm or other undesirable consequences to a person or thing. Natural hazards can exist with or without the presence of people and land development. However, hazards can be exacerbated by societal behavior and practices. Natural disasters are inevitable, but the impacts of natural hazards can, at a minimum, be mitigated or, in some instances, prevented entirely.

The goal of the risk assessment is to determine which hazards present the greatest risk and what areas are the most vulnerable to hazards. The Coushatta Tribe is exposed to many natural and other hazards. The risk assessment and vulnerability analysis helps identify where mitigation measures could reduce loss of life or damage to property in the planning region. Each hazard-specific risk assessment provides risk-based information to assist the Tribe in determining priorities for implementing mitigation measures.

4.2 Risk Assessment Approach

The risk assessment approach used for this plan entailed using geographic information system (GIS), Hazus hazard-modeling software, and hazard-impact data to develop vulnerability models for people, structures and critical facilities, and evaluating those vulnerabilities in relation to hazard profiles that model where hazards exist. This approach is dependent on the detail and accuracy of the data used. In all instances, this assessment used Best Available Science and data to ensure the highest level of accuracy possible.

This risk assessment is broken down into three phases, as follows:

> The first phase, hazard identification, involves the identification of the geographic extent of a hazard, its intensity, and its probability of occurrence (discussed below). This level of assessment typically involves producing a map. The outputs from this phase can be used for land use planning, management, and development of regulatory authority; public awareness and education; identifying areas which require further study; and identifying properties or structures appropriate for mitigation efforts, such as acquisition or relocation.
>
> The second phase, the vulnerability assessment, combines the information from the hazard identification with an inventory of the existing (or planned) property and population exposed to the hazard. It then attempts to predict how different types of property and population groups will be impacted or affected by the hazard of concern. This step assists in justifying changes to

building codes or regulatory authority, property acquisition programs, such as those available through various granting opportunities; developing or modifying policies concerning critical or essential facilities, and public awareness and education.

Where specific quantitative assessments could not be completed, vulnerability was measured in general, qualitative term, summarizing the potential impact based on past occurrences, spatial extent, and subjective damage and casualty potential.

The third phase, the risk analysis, involves estimating the damage, injuries, and costs likely to be incurred in the geographic area of concern over a period of time. Risk has two measurable components:

1. The magnitude of the harm that may result, defined through the vulnerability assessment; and
2. The likelihood or probability of harm occurring.

Utilizing those three phases of assessment, information was developed which identifies the hazards that affect the planning area, the likely location of natural hazard impact, the severity of the impact, previous occurrences, and the probability of future hazard events. That data, once complete, is utilized to complete the Risk Ranking process described in Chapter 11, which applies all of the data capture to the Calculated Priority Risk Index (CPRI).

The final step in the process was to assign a significance level determined by review of the results of vulnerability based on the CPRI schedule, assigning a final ordinal scale based on the following classifications:

- Extremely Low—The occurrence and potential cost of damage to life and property is very minimal to nonexistent.
- Low—Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal. The potential exists for the hazard to occur within 25-50 years.
- Medium—Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster. The potential exists for the hazard to occur within 10-25 years.
- High—Widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category may have occurred in the past and have a high likelihood of occurring again within 5-10 years.
- Extremely High—Very widespread with catastrophic impact. Probability of occurrence is every 1 – 5 years.

4.2.1 Common Terminology

The following is provided as the foundation for the standardized risk terminology utilized in this effort:

- Hazard: Natural, human caused or technological source or cause of harm or damage, demonstrated as actual (deterministic/historical events) or potential (probabilistic) events. Natural hazards can exist with or without the presence of people and land development. However, hazards can be exacerbated by societal behavior and practice, such as building in a floodplain. Natural disasters are inevitable, but the impacts of natural hazards can, at a minimum, be mitigated or in some instances, prevented entirely.
- Risk: The potential for an unwanted outcome resulting from a hazard event, as determined by its likelihood and associated consequences. For this plan, when possible, risk includes potential future losses based on probability, severity and vulnerability, expressed in dollar losses. In some instances, dollar losses are based on actual demonstrated impact, such as through the use of the Hazus model. In other cases, losses are demonstrated through exposure analysis due to the inability to determine the extent to which a structure is impacted.
- Extent and Location: The area of potential or demonstrated impact within the area in which the analysis is being conducted. In some instances, the area of impact is within a geographically defined area, such as a floodplain. In other instances, such as for severe weather, there is no established geographic boundary associated with the hazard, as it can impact the entire area.
- Severity/Magnitude: The extent or magnitude on which a hazard is ranked, demonstrated in various means.
- Vulnerability: The degree of damage, e.g., building damage or the number of people injured.
- Probability of Occurrence and Return Intervals: These terms are used as a synonym for likelihood, or the estimation of the potential of an incident to occur.

4.3 Building Inventory

A User Defined Facility approach was used to model exposure and vulnerability to the critical infrastructure identified during this process. GIS building data utilizing detailed structure information for tribal facilities was loaded into the GIS and Hazus model. Building information was developed using best available Tribal data, including building address points, aerial imagery, and Tribal staff resources. Building and content replacement values were estimated using values from various sources, including valuation by Tribal staff, and the use of 2020 insurance data.

4.4 Probability of Occurrence and Return Intervals

Natural hazard events with relatively long return periods, such as a 100- or 500-year flood are often thought to be very unlikely. In reality, the probability that such events occur over the next 30 or 50 years is relatively high. In fact, insurance industries estimate that there is a 26 percent likelihood that a homeowner whose property is located within a 100-year floodplain (discussed further in the Flood profile) will experience flood damage during the term of their 30-year mortgage based on historic analysis.

Natural hazard events with very long return periods, such as 100 or 500 or 1,000 years, have significant probabilities of occurring during the lifetime of a building:

- Hazard events with return periods of 100 years have probabilities of occurring in the next 30 or 50 years of about 26 percent and about 40 percent, respectively.
- Hazard events with return periods of 500 years have about a 6 percent and about a 10 percent chance of occurring over the next 30 or 50 years, respectively.
- Hazard events with return periods of 1,000 years have about a 3 percent chance and about a 5 percent chance of occurring over the next 30 or 50 years, respectively.

For life safety considerations, even natural hazard events with return periods of more than 1,000 years are often deemed significant if the consequences of the event happening are very severe (extremely high damage and/or substantial loss of life). For example, the wind design requirements for new construction are based on the wind speed experienced to a certain level to ensure structures can withstand the wind force. Providing life safety to this level of wind is deemed necessary for wind speed design of new buildings to minimize life safety risk. Of course, a hazard event with a relatively long return period may occur tomorrow, next year, or within a few years. Return periods of 100 years, 500 years, or 1,000 years mean that such events have a 1 percent, a 0.2 percent, or a 0.1 percent chance of occurring in any given year. Figure 4-1 defines in percentage form the probabilistic return interval by a given year and the associated probability of occurrence for such an event at 1-, 10-, 30-, and 50-year periods.

Figure 4-1 Probabilistic Return Intervals

Return period (years)	Probability of Occuring in Various Time Periods			
	1 Year	10 Years	30 Years	50 Years
5	20.00%	89.26%	99.88%	100.00%
10	10.00%	65.13%	95.76%	99.48%
25	4.00%	33.52%	70.61%	87.01%
50	2.00%	18.29%	45.45%	63.58%
100	1.00%	9.56%	26.03%	39.50%
200	0.50%	4.89%	13.96%	22.17%
250	0.40%	3.93%	11.33%	18.16%
500	0.20%	1.98%	5.83%	9.53%
1,000	0.10%	1.00%	2.96%	4.88%
2,500	0.04%	0.40%	1.19%	1.98%
5,000	0.02%	0.20%	0.60%	1.00%
10,000	0.01%	0.10%	0.30%	0.50%

4.5 Hazard Identification and Profiles

For this plan, the planning team considered the full range of natural hazards that could impact the planning area and then listed hazards that present the greatest concern. The process incorporated review of state and local hazard planning documents, as well as information on the frequency, magnitude, and costs associated with hazards that have impacted or could impact the planning area. Historic recount and data from Tribal Members captured during oral interviews regarding natural hazards and the perceived vulnerability of the planning area's assets to them was also used. Based on the review, the planning team confirmed the following natural hazards that this plan addresses as the hazards of concern:

- Drought
- Flood
- Severe Weather (inclusive of Thunderstorms, Lightning, Hail, Wind, Winter Weather – Snow and Ice, and Excessive Temperatures)
- Tornado
- Tropical Storm/Hurricane
- Wildfire

Hazardous materials locations and their potential impact on the planning area are identified in conjunction with the other hazards of concern.

The hazard profiles in Chapters 5 to 10 describe the risks associated with identified hazards of concern. Each chapter describes the hazard, the planning area's vulnerabilities, and, when possible, probable event scenarios. The following steps were used to define the risk of each hazard:

- ✓ General overview and description of hazard;
- ✓ Identification of previous occurrences;
- ✓ Geographic areas most affected by the hazard;
- ✓ Event frequency estimates;
- ✓ Severity estimates;
- ✓ Warning time likely to be available for response;
- ✓ Risk and vulnerability assessment, which includes identification of impact on people, property, economy, and the environment.

4.6 HAZUS AND GIS APPLICATIONS

In 1997, FEMA developed the standardized Hazards U.S., or Hazus, model to estimate losses caused by earthquakes and identify areas facing the highest risk and loss potential. Hazus was later expanded into a multi-hazard methodology, with new models for estimating potential losses from hurricanes and floods.

Hazus is a GIS-based software program used to support risk assessments, mitigation planning, and emergency planning and response. It provides a wide range of inventory data, such as demographics, building stock, critical facility, transportation and utility lifeline, and multiple models to estimate potential losses from natural disasters. The program maps and displays hazard data and the results of damage and economic loss estimates for buildings and infrastructure. Its advantages include the following:

- Provides a consistent methodology for assessing risk across geographic and political entities.
- Provides a way to save data so that it can readily be updated as population, inventory, and other factors change and as mitigation-planning efforts evolve.

- Facilitates the review of mitigation plans because it helps to ensure that FEMA methodologies are incorporated.
- Supports grant applications by calculating benefits using FEMA definitions and terminology.
- Produces hazard data and loss estimates that can be used in communication with local stakeholders.
- Is administered by the local government and can be used to manage and update a hazard mitigation plan throughout its implementation.

Hazus provides default data for inventory, vulnerability, and hazards; this default data can be supplemented with local data to provide a more refined analysis. The model can carry out three levels of analysis, depending on the format and level of detail of information about the planning area:

- **Level 1**—All of the information needed to produce an estimate of losses is included in the software's default data. This data is derived from national databases and describes in general terms the characteristic parameters of the planning area.
- **Level 2**—More accurate estimates of losses require more detailed information about the planning area. To produce Level 2 estimates of losses, detailed information is required about local geology, hydrology, hydraulics and building inventory, as well as data about utilities and critical facilities. This information is needed in a GIS format.
- **Level 3**—This level of analysis generates the most accurate estimate of losses. It requires detailed engineering and geotechnical information to customize it for the planning area.

Based on modifications of the data contained within the Hazus program, a modified Level 2 analysis was conducted for the 2021 update. Further details are presented in the hazard profiles.

Drought, Severe Weather, and Wildfire

For drought, severe weather and wildfire, historical data is not adequate to model future losses as no specific damage functions have been developed. However, GIS is able to map hazard areas and calculate exposure if geographic information is available with respect to the location of the hazard and inventory data. Areas and inventory susceptible to some of the hazards of concern were mapped and exposure was evaluated. For other hazards, a qualitative analysis was conducted using the best available data and professional judgment. Locally relevant information was gathered from a variety of sources. Frequency and severity indicators include past events and the expert opinions of scientists, tribal staff, emergency management personnel and others. The primary data source was Tribal staff, including various GIS data sets, augmented with parish, state, and federal datasets. Additional data sources for specific hazards were as follows:

Drought—The risk assessment methodologies used for this plan focus on damage to structures. Because drought does not impact structures, the risk assessment for drought was more limited and qualitative than the assessment for the other hazards of concern. The impact from drought also references agricultural loss and the associated negative impact of climate change on water levels, and sedimentation issues resulting from drought situations where such data is available.

Severe Weather—Severe weather data was downloaded from various sources, including the Natural Resources Conservation Service and the National Climatic Data Center, PRISM, Tornado Project, and other sources as referenced. A lack of data separating severe weather damage from flooding and windstorm damage prevented a detailed analysis for exposure and vulnerability, as well as the fact that there are no generally accepted damage functions for the hazard. For planning purposes, it is assumed that the entire planning area is exposed to some extent to severe weather. Certain areas are more exposed due to geographic location and local weather patterns, as well as the response capabilities of local first responders.

Wildfire— There is currently no validated damage function available to support wildfire mitigation planning because no such damage functions have been generated. Instead, dollar loss estimates were developed by calculating the value of exposed structures identified utilizing the various LANDFIRE Fire Regime (1-5) datasets. Information on wildfire analysis was captured from various sources, including Wildfire Protection data, US Forest Service data, LAND FIRE data, and Wildland Urban Interface Zone data, among other sources as available for the tribal planning area.

4.7 LIMITATIONS

With many hazards, the potential to impact the cultural heritage of the tribal members is not measurable, as they may not relate to a specific structure, but rather are specific natural resources on which tribal members rely, such as the longleaf pine and rivercane utilized for making traditional Coushatta baskets, as well as other traditional medicinal plants. Vegetation studies for these resources do not exist on which to determine potential impact, nor would such areas be readily identified within this plan in order to protect their location. Beyond the loss of such natural resources, this further equates to a negative economic impact to individual tribal members due to the loss of "cottage industry" jobs on which many tribal families rely as self-generated income from making and selling baskets. Such losses cannot be quantified but exist for all hazards which have the potential to impact the environment.

Loss estimates, exposure assessments, and hazard-specific vulnerability evaluations rely on the best available data and methodologies. Uncertainties are inherent in any loss estimation methodology and arise in part from incomplete scientific knowledge concerning natural hazards and their effects on the built environment. Uncertainties also result from the following:

- Approximations and simplifications necessary to conduct a study
- Incomplete or outdated inventory, demographic, or economic parameter data
- The unique nature, geographic extent, and severity of each hazard
- Mitigation measures already employed
- The amount of advance notice residents have to prepare for a specific hazard event.

These factors can affect loss estimates by a factor of two or more. Therefore, potential exposure and loss estimates are approximate. *The findings of the risk assessment do not predict precise results and should be used only to understand relative risk, and not for life-safety measures, including evacuation planning.* Over the long term, the Coushatta Tribe will collect additional data to assist in estimating potential losses associated with other hazards.

Some assumptions were made by the planning team in an effort to capture as much data as necessary to supplant any significant gaps, including the lack in the Tribe's building specific data, which was previously destroyed due to no fault of their own. One example of this is the valuation for structures. Allen Parish does not include valuation for tribal structures, and the Tribe's data is somewhat limited. For structures for which data was not provided, the missing information was determined using averages of similar types of structures, determining square footage, and applying a multiplier. This process, to a degree, is identified in the Hazus User's Guide as a viable option.

Some hazards, such as hurricane, are pre-loaded with scientifically determined scenarios which are used during the modeling process. In some instances, this does not allow for manipulation of the data as with other hazards, such as flood. In some cases, greater reliance existed on the use of the Hazus default data, which is known to be less accurate, most often causing higher loss values. Therefore, while loss estimates are provided, they should be viewed with this flaw in mind, with data used for consideration in planning purposes for emergency management and land use development/management. A much more in-depth scientific analysis is necessary to rely on this type of data with a high degree of accuracy. Readers should view this document as a baseline or starting point, and information should be further studied and analyzed by scientists and other subject matter experts in specific hazard fields.

4.8 Calculated Priority Risk Index Scoring Criteria

For the 2021 update, the Planning Team utilized a Calculated Priority Risk Index Score for each hazard of concern, addressing impact primarily at the reservation level. In some cases, this includes areas off the reservation, but vulnerabilities are focused on tribal-owned structures. Vulnerabilities are described in terms of critical facilities, structures, population, economic values, and functionality of government which can be affected by the hazard event as identified in the below tables. Hazard impact areas describe the geographic extent a hazard can impact the tribe and are uniquely defined on a hazard-by-hazard basis. Mapping of the hazards, where spatial differences exist, allows for hazard analysis by geographic location. Some hazards can have varying levels of risk based on location. Other hazards cover larger geographic areas and affect the area uniformly. Therefore, a system must be established which addresses all elements (people, property, economy, continuity of government) in order to rate each hazard consistently. The use of the Calculated Priority Risk Index allows such application, based on established criteria of application to determine the risk factor. For identification purposes, the six criteria on which the CPRI is based are probability, magnitude, geographic extent and location, warning time/speed of onset, and duration of the event. Those elements are further defined as follows:

Probability

Probability of a hazard event occurring in the future was assessed based on hazard frequency over a 100-year period (where available). Hazard frequency was based on the number of times the hazard event occurred divided by the period of record. If the hazard lacked a definitive historical record, the probability was assessed qualitatively based on regional history and other contributing factors. Probability of occurrence was assigned a 40% weighting factor, and was broken down as follows:

Rating	Likelihood	Frequency of Occurrence
1	Unlikely	Less than 1% probability in the next 100 years.
2	Possible	Between 1% and 10% probability in the next year, or at least one chance in the next 100 years.
3	Likely	Between 10% and 100% probability in next year, or at least one chance in the next 10 years.
4	Highly Likely	Greater than 1 event per year (frequency greater than 1).

Magnitude

The magnitude of potential hazard events was evaluated for each hazard. Magnitude is a measure of the strength of a hazard event and is usually determined using technical measures specific to the hazard. Magnitude was calculated for each hazard where property damage data was available and was assigned a 25% weighting factor. Magnitude calculation was determined using the following: *Property Damage / Number of Incidents) / $ of Building Stock Exposure = Magnitude.* In some cases, the Hazus model provided specific people/dollar impact data. For other hazards, a GIS exposure analysis was conducted. Magnitude was broken down as follows:

Rating	Magnitude	Percentage of People and Property Affected
1	Negligible	Less than 5% Very minor impact to people, property, economy, and continuity of government at 90%.
2	Limited	6% to 24% Injuries or illnesses minor in nature, with only slight property damage and minimal loss associated with economic impact; continuity of government only slightly impacted, with 80% functionality.
3	Critical	25% to 49% Injuries result in some permanent disability; 25-49% of population impacted; moderate property damage; moderate impact to economy, with loss of revenue and facility impact; government at 50% operational capacity with service disruption more than one week, but less than a month.
4	Catastrophic	More than 50% Injuries and illness resulting in permanent disability and death to more than 50% of the population; severe property damage greater than 50%; economy significantly impacted as a result of loss of buildings, content, inventory; government significantly impacted; limited services provided, with disruption anticipated to last beyond one month.

Extent and Location

The measure of the percentage of the people and property within the planning area impacted by the event, and the extent (degree) to which they are impacted. Extent and location were assigned a weighting factor of 20%, and broken down as follows:

Rating	Magnitude	Percentage of People and Property Affected
1	Negligible	Less than 10% Few if any injuries or illness. Minor quality of life lost with little or no property damage. Brief interruption of essential facilities and services for less than four hours.
2	Limited	10% to 24% Minor injuries and illness. Minor, short term property damage that does not threaten structural stability. Shutdown of essential facilities and services for 4 to 24 hours.
3	Critical	25% to 49% Serious injury and illness. Major or long-term property damage, that threatens structural stability. Shutdown of essential facilities and services for 24 to 72 hours.
4	Catastrophic	More than 50% Multiple deaths Property destroyed or damaged beyond repair Complete shutdown of essential facilities and services for 3 days or more.

Warning Time/Speed of Onset

The rate at which a hazard occurs, or the time provided in advance of a situation occurring (e.g., notice of a cold front approaching or a potential hurricane, etc.) provides the time necessary to prepare for such an event. Sudden-impact hazards with no advanced warning are of greater concern. Warning Time/Speed of onset was assigned a 10% weighting factor, and broken down as follows:

Rating	Probable amount of warning time
1	More than 24 hours warning time.
2	12-24 hours warning time.
3	5-12 hours warning time.
4	Minimal or no warning time.

Duration

The time span associated with an event was also considered, the concept being the longer an event occurs, the greater the threat or potential for injuries and damages. Duration was assigned a weighting factor of 5%, and was broken down as follows:

Rating	Duration of Event
1	6-24 hours
2	More than 24 hours
3	Less than 1 week
4	More than 1 week

Chapter 11 summarizes the analysis conducted by way of completion of the Calculated Priority Risk Index (CPRI) for hazard ranking.

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CHAPTER 5.
DROUGHT

Droughts originate from a deficiency of precipitation resulting from an unusual weather pattern. If the weather pattern lasts a short time (a few weeks or a couple months), the drought is considered short-term. If the weather pattern becomes entrenched and the precipitation deficits last for several months or years, the drought is considered to be long-term. It is possible for a region to experience a long-term circulation pattern that produces drought, and to have short-term changes in this long-term pattern that result in short-term wet spells. Likewise, it is possible for a long-term wet circulation pattern to be interrupted by short-term weather spells that result in short-term drought.

5.1 General Background

Drought is a prolonged period of dryness severe enough to reduce soil moisture, water, and snow levels below the minimum necessary for sustaining plant, animal, and economic systems. Droughts are a natural part of the climate cycle.

Droughts have the potential to have direct severe effects on the human population, although the mortality rate with respect to individuals is customarily very low. Hydrological droughts include deficiencies in surface and subsurface water supplies. Depletion of aquifers, crop loss, loss of livestock and increased wildlife mortality rates are examples of direct impacts from a drought event. Socioeconomic or indirect consequences of drought include impact on health, well-being, and quality of life issues, which can include increased unemployment, lost tax revenue, increased cost for food, reduction in recreation opportunities, and increased cost of energy, among others.

5.2 Hazard Profile

5.2.1 Extent and Location

Drought can have a widespread impact on the environment and the economy, depending upon its severity, although it typically does not result in loss of life, as do other natural disasters. The National Drought Mitigation Center uses three categories to describe likely drought impacts:

- Agricultural—Drought threatens crops that rely on natural precipitation, while also increasing the potential for infestation.
- Water supply—Drought threatens supplies of water for irrigated crops, for communities, and for fish and other species of wildlife.
- Fire hazard—Drought increases the threat of wildfires from dry conditions in forest and rangelands.

Unlike most disasters, droughts normally occur slowly, but last a long time. The severity of a drought depends on the degree and duration of moisture deficiency, as well as the size of the affected area.

On average, the nationwide annual impacts of drought are estimated to be $9.6 billion in damages and losses. In the United States, impact occurs primarily in the agriculture (crops and livestock), recreation and tourism, forestry, and energy sectors. Social and environmental impacts are also significant, although it is difficult to put a precise cost on these impacts.[15]

More than 80 percent of drought-induced economic damages and losses suffered by developing nations from 2005-2015 were related to livestock, crops, and fisheries, equating to an economic toll of ~$29 billion. Droughts in developing nations create water and food insecurities, exacerbating problems with famine and civil unrest. In many instances, it leads to mass migration, and displacement of entire populations.

Drought affects groundwater sources, but generally not as quickly as surface water supplies, such as streams, although groundwater supplies generally take longer to recover. Reduced precipitation during a drought means that groundwater supplies are not replenished at a normal rate. Much of the flow in streams comes from groundwater, especially during the summer when there is less precipitation and after snowmelt ends. Reduced groundwater levels mean that even less water will enter streams when steam flows are lowest. This can lead to problems such as reduced pumping capacity or wells going dry. Shallow wells are more susceptible than deep wells.

Drought most often occurs in the summer, as subsiding air from weak high pressure and associated upper-level ridges locked in place over the central United States can inhibit the development of convection showers for weeks. The Reservation lacks rivers, streams, large lakes, and reservoirs, which means that wells and aquifers that supply these water sources are impacted when rainfall does not replenish groundwater. Drought conditions within the planning area increases pressure on local aquifers and water purveyors. This has the potential to cause restrictions on economic growth and development on the Reservation, as well as increased fire danger.

Based on review of the Palmer Drought Severity Index (PDSI, discussed below), the Coushatta Tribe, as well as the majority of the entire state, has experienced increasing drought conditions since 1958, although not what would be considered a severe drought.

Several factors contribute to the level of risk associated with a drought condition, including, but not limited to the unknown potential impacts from climate change; the relatively high areas of densely wooded terrain within and surrounding the Reservation as it relates to forest health and the increased wildfire danger associated with drought, and the agricultural industry influencing the economy on the

[15] NRDC (2018). Accessed 16 Feb 2021. Available online at: https://www.nrdc.org/stories/drought-everything-you-need-know?gclid=EAIaIQobChMIx_fRv6_v7gIVrRitBh0GfQDCEAAYASAAEgLRNvD_BwE

Reservation, among others. As a result, while scoring would place Drought at low concern to the Tribe, in this situation, the Planning Team elected to rate this at medium concern due to impact from climate change and surrounding forested areas, which would influence the Tribe's forest health.

5.2.2 Previous Occurrences

In the past 25 years, SHELDUS datasets show no injuries, fatalities, or property damage associated with drought. While the 1977 Great Western Drought did result in a disaster declaration, Louisiana did not experience the same levels of impact as many other states west of the Mississippi. Allen Parish nor the Coushatta Reservation have ever been declared for a drought situation. Review of NCDC data reveals that three years reported drought incidents[16]:

- 1996, which reported no crop damage;
- 1998, which reported $1.600 million in crop damage, and
- 2000, which reported $1.300 million in crop damage.

Review of existing and available data also identifies the following incidents of drought situations occurring.

- The longest duration of drought in Louisiana lasted 107 weeks beginning on April 20, 2010 and ended May 1, 2012. The most intense period of that drought occurred the week of June 21, 2011, when ~65 percent of Louisiana land was impacted.
- The southwest and central Louisianans were in a severe drought during the month of February 2000, as less than one inch of rain fell across the region. This was one of the five driest Februarys on record. The Lake Charles area recorded its driest January-February period on record, with 2.31 inches of rain for the two months (NOAA, 2015).
- The drought of 2000 was devastating to the agricultural community of southwest and central Louisiana. Around 170 million dollars' worth of crop losses occurred between January 1 and December 31, 2000. The hardest hit parishes were Vermilion with 35.8 million dollars loss, Avoyelles with 28.9 million dollars, and St. Landry with 26.8 million dollars. The primary crops lost were rice and sugarcane. Drought losses were compiled by the LSU Agricultural Center. While the Coushatta Tribe does have a fairly high agricultural industry, including cattle ranches, farms, rice and crawfish fields, and greenhouses in which they raise both food for tribal members, and for income through sales, specific dollar losses were not captured in association with the 2000 event.
- Drought conditions were in full force by mid-May 1998 across southwest and central Louisiana. Most places saw less than half an inch of rain, dating back to the last half of April. The major weather stations with long climatic histories, such as Lake Charles, Lafayette, and Alexandria recorded less than 0.10 inches of rain for the month of May. Many places saw absolutely no rain

[16] NOAA. NCDC. (2021). Accessed 25 Feb. 2020. Data available at: https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28Z%29+Drought&beginDate_mm=01&beginDate_dd=01&beginDate_yyyy=1950&endDate_mm=12&endDate_dd=31&endDate_yyyy=2020&county=ALLEN%3A3&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=22%2CLOUISIANA

the entire month. The most significant impact in May was the drying up of shallow wells, with many farmers resorting to deeper wells for irrigation purposes. Some crops were beginning to see the effects of the drought, but any significant loses will be attributed to the month of June. By mid-June, most farmers had lost the entire season's crop, which consists primarily of corn, soybean, and rice. Even the cattle were affected due to the lack of grass for grazing. Most areas only saw 2 to 3 inches of rain the entire month of July.

- Only between four and five inches of rain fell in the entire month of August 1998 across this region, which was actually the most in a month since April 1998. Total dollar figure losses by southwest and central Louisiana farmers were nearly $138,000,000. The hardest hit parishes were Avoyelles and St. Landry Parishes, where over $55,000,000 was lost. According to the Agricultural Center at Louisiana State University, by product, the worst loss was soybeans, with an estimated $40,000,000 lost, followed by sugarcane at $25,000,000, and corn grain at $24,000,000 (NOAA, 2015)[17].
- In addition, occurring simultaneous with the May 1998 drought, although not directly attributed to it, was the smoke and haze from Mexican and Central American forest fires. Many places had visibilities of three (3) miles or less for over a week (May 12-20th), and people with respiratory ailments, as well as the elderly and young, were confined to their homes during this period.

5.2.3 Severity

The severity of a drought depends on the degree of moisture deficiency, the duration, and the size and location of the affected area. The longer the duration of the drought and the larger the area impacted, the more severe the potential impacts. However, there is no specific or standard threshold that exists on which to base a determination for declaring a drought – there is no measurement of "dryness" which can be applied uniformly. Different geographical regions also define drought differently based on normal precipitation, and the deviation from that norm. Droughts also impact individuals and economic sectors differently, meaning that an urbanized area with no or limited agricultural industry, or industries not as heavily reliant on water fair far differently than areas high in agriculture, or which rely on water sources for industries such as tourism, the fishing industry, or the timber industry.

Droughts are not usually associated with direct impacts on people or property, but they can have significant impacts on agriculture, wildlife, and fishing, which can impact people indirectly. When measuring the severity of droughts, analysts typically look at economic impacts. There is also an increased danger of forest and wildland fires. Millions of board feet of timber have been lost. Increased loss of forests and trees causes serious damage to aquatic life, irrigation, and power development by heavy silting of streams, reservoirs, and rivers.

The National Oceanic and Atmospheric Administration (NOAA) has developed several indices to measure drought impacts and severity to map their extent and locations.

[17] http://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=5665238

The US Drought Monitor map provides nationwide (as well as regional) data. The U.S. Drought Monitor is a map released every Thursday, showing parts of the U.S. that are in drought. The map uses five classifications to identify the level of a drought situation: abnormally dry (D0), showing areas that may be going into or are coming out of drought, and four levels of drought: moderate (D1), severe (D2), extreme (D3) and exceptional (D4). Figure 5-1 and Figure 5-2 illustrate the nationwide drought data, as well as the drought data for the State of Louisiana.

The *Crop Moisture Index (CMI)* and the *Palmer Drought Severity Index (PDSI)* and are indices of the relative dryness or wetness effecting water sensitive economies. Input to the calculations include the weekly precipitation total and average temperature, division constants (water capacity of the soil, etc.) and previous history of the indices.

- The CMI gives the short-term or current status of purely agricultural drought or moisture surplus and can change rapidly from week to week. The CMI can be used to measure the status of dryness or wetness affecting warm season crops and field activities. Figure 5-3 shows this index for February 2021.[18]

- The PDSI is an important climatological tool for evaluating the scope, severity, and frequency of prolonged periods of abnormally dry or wet weather. It can be used to help delineate disaster areas and indicate the availability of irrigation water supplies, reservoir levels, range conditions, amount of stock water, and potential intensity of forest fires. Figure 5-4 shows this index for February 2021.[19]

What follow are a series of maps indicating conditions as it relates to Drought as of the time of the profile update in 2021. These maps change very frequently and are intended to demonstrate information available to viewers. Additional information and current monthly data are available from the NOAA website: http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/palmer.html

[18] http://oc3m.worldwindsinc.com/drought/zndx_latest.gif

[19] http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/palmer.gif

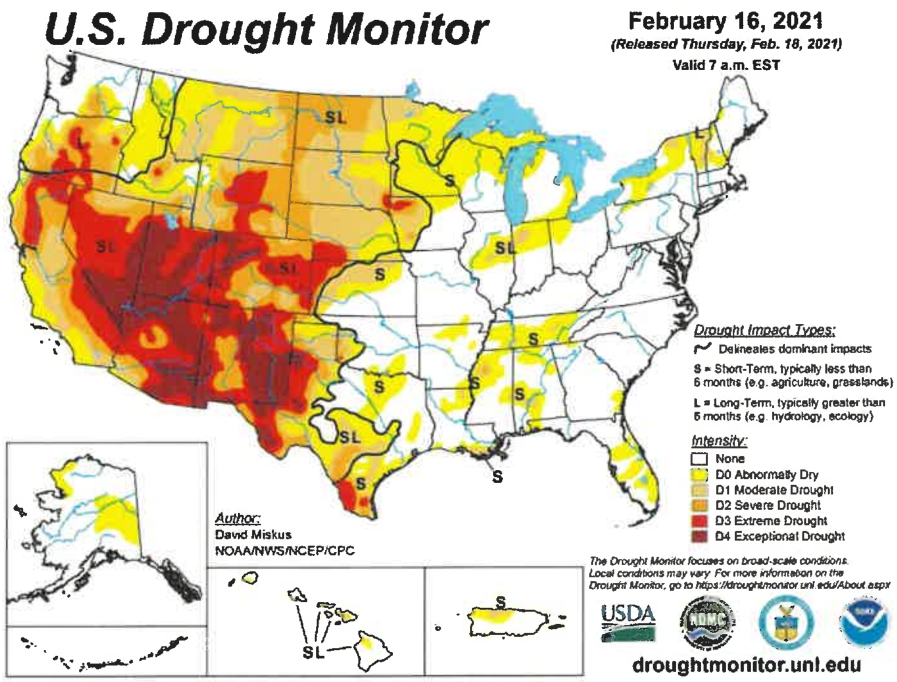

Figure 5-1 US Drought Monitor (February 16, 2021)[20]

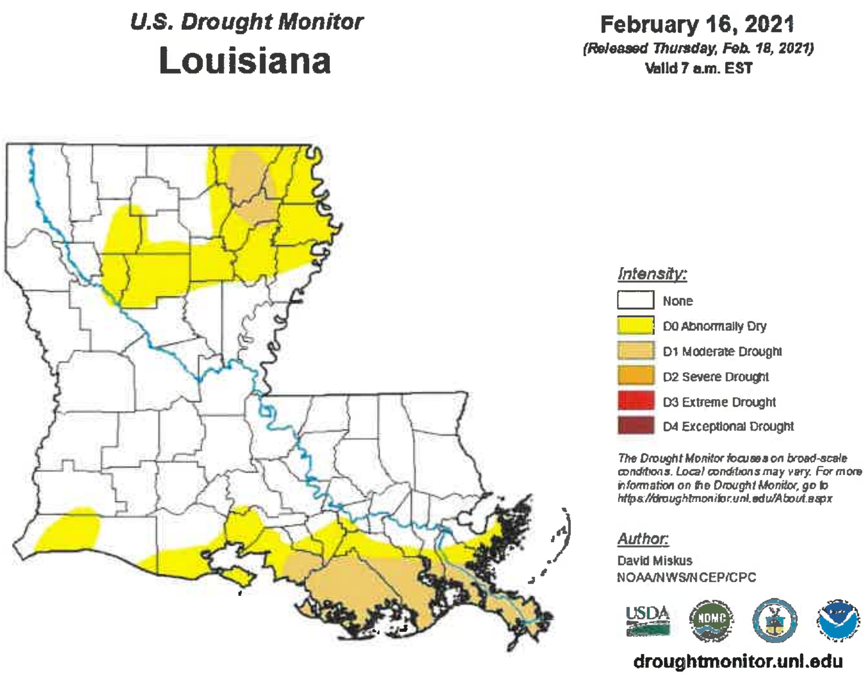

Figure 5-2 State of Louisiana Snapshot from the US Drought Monitor (February 16, 2021)

[20] Regularly updated at: https://droughtmonitor.unl.edu/data/png/20210216/20210216_usdm.png

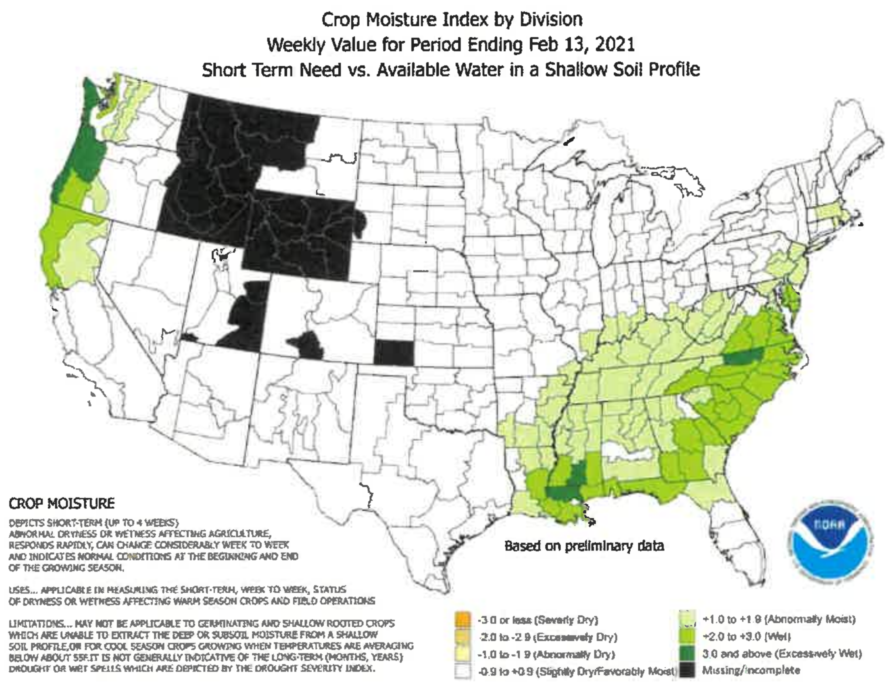

Figure 5-3 Palmer Crop Moisture Index (February 13, 2021)

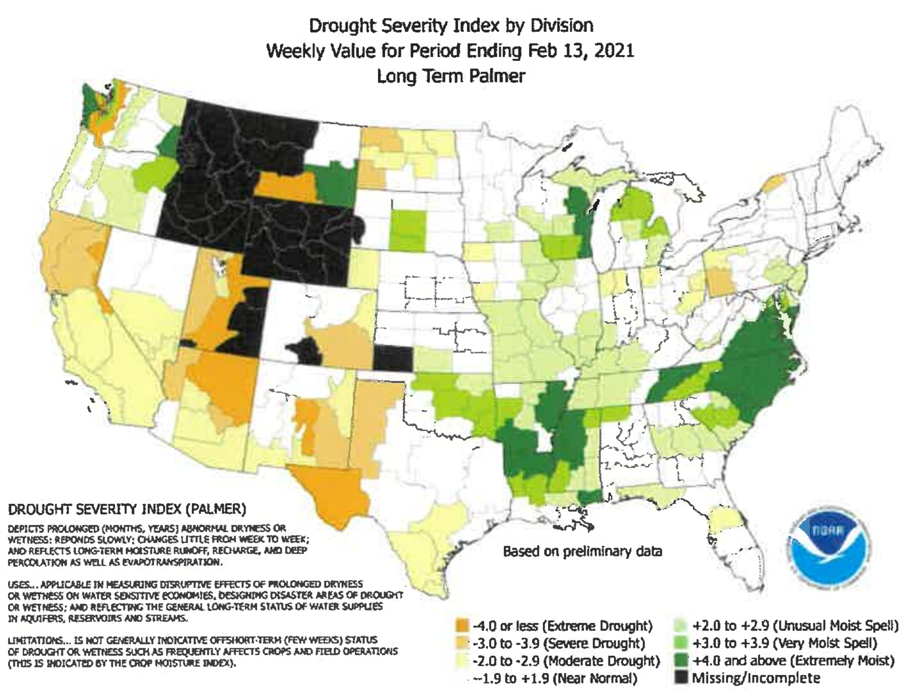

Figure 5-4 Palmer Drought Index (February 13, 2021)

5.2.4 Frequency

Studies conducted over the past century have shown that meteorological drought is never the result of a single cause. It is the result of many causes, often synergistic in nature; these include global weather patterns that produce persistent, upper-level high-pressure producing warm, dry air resulting in less precipitation. As subsiding air from weak high pressure and associated upper-level ridges lock in place over the central United States, they can inhibit the development of convective showers for prolonged periods, increasing the frequency of short-term drought situations.

In some regions, empirical relationships have been demonstrated between precipitation and El Niño events, but few such relationships have been demonstrated above 30º north latitude. A great deal of research has been conducted in recent years on the role of interacting systems in explaining regional and even global patterns of climatic variability. These patterns tend to recur periodically with enough frequency and with similar characteristics over a sufficient length of time that they offer opportunities to improve the ability for long-range climate prediction, yet many meteorologists and scientists feel that data is still limited with respect to reliable forecasts of drought and are not attainable for temperate regions of the world more than a season in advance.

While there are many variables that exist in determining the frequency with which a drought will occur, the Louisiana State Hazard Mitigation Plan identifies the likelihood of some level of drought occurring approximately every four years. The severity of the drought, however, would be determined based on long-term weather patterns which cannot yet be determined. Review of the State's HMP identifies a potential future weekly probability of a drought occurring to be between 21 and 31 percent (LA, HMP, 2019, p. 34).

5.3 Vulnerability Assessment

5.3.1 Overview

Drought produces a complex web of impacts that spans many sectors of the economy and reaches well beyond the area experiencing physical drought. This complexity exists because water is integral to the ability to produce goods and provide services. Drought can affect a wide range of economic, environmental, and social activities. The vulnerability of an activity associated with the effects of drought usually depends on its water demand, how the demand is met, and what water supplies are available to meet the demand.

All people, property, and environments in the planning area could be exposed to some degree to the impacts of moderate to extreme drought. Areas densely wooded, the various farms and agricultural areas, and parks throughout the Reservation, including those which host campers, increase the exposure to forest fires. Additional exposure comes in the form of economic impact should a prolonged drought occur that would impact fishing, recreation, agriculture, cattle rearing and harvesting—many of which are sources of income in the planning area. Prolonged drought would also decrease capacity within the watersheds.

5.3.2 Warning Time

A drought is not a sudden-onset hazard. Droughts are climatic patterns that occur over long periods, customarily providing for some advance notice of a potential drought occurring. Droughts result from many causes, including global weather patterns that produce persistent, upper-level high-pressure systems resulting in less precipitation. In many instances, annual situations of low water levels can be identified months in advance (e.g., snowpack at lower levels are identified during winter months; the customary rain season does not occur, etc.), allowing for advanced planning for water conservation. However, customarily only general warnings can take place well in advance of a drought due to the numerous variables that scientists have not pieced together well enough to make accurate and precise predictions. Predicting drought depends on the ability to forecast precipitation and temperature. Weather anomalies may last from several months to several decades. How long they last depend on interactions between the atmosphere and the oceans, soil moisture and land surface processes, topography, internal dynamics, and the accumulated influence of weather systems on the global scale. Meteorologists do not believe that reliable forecasts are attainable at this time a season or more in advance for temperate regions.

5.3.3 Impact on Life, Health and Safety

Within the state of Louisiana, the groundwater found in aquifers is the source of approximately 38 percent of all parish and city water supplied to households, while also comprising 97 percent of the water for all rural populations that are not supplied by cities and counties. The Reservation's water supply is provided by Southwest Allen Parish Water District 4.

History has demonstrated that wildfires are often associated with drought. A prolonged lack of precipitation dries out vegetation, which becomes increasingly susceptible to ignition as the duration of the drought extends. Likewise, soil moisture declines, impacting forest health, increasing a fire's spread. These factors increase the risk to the health and safety of the residents within the entire planning area.

Also of significant importance to the Coushatta is the potential negative impacts from a drought situation the cultural and natural resources of the Tribe. The availability of longleaf pine and rivercane for making traditional Coushatta baskets, as well as availability of traditional medicinal plants can be significantly impacted by a drought situation.

Smoke and particles embedded within the smoke are of significant concern for the elderly and very young, especially those with breathing problems. Few residents have air filtration systems which would help reduce the level of impact to some degree. With droughts, there is also a history of increased temperatures. Review of climate change data illustrates that the number of days above 90 will increase significantly over the course of time. Both elderly and young are very susceptible to heat. For those with limited income, cooling systems may not be available, or if they are, the increased cost associated with utilization of a cooling system may not be feasible. Power supply may also limit usage of cooling or air purification systems, again impacting the potential health and safety of area residents and guests to the reservation or enterprise systems.

5.3.4 Impact on Property

No structures will be directly affected by drought conditions, though some may become vulnerable to wildfires, which are more likely following years of drought. Sprinkler systems and the availability of water to fight fires may also be depleted. Droughts can also have significant impacts on landscapes, which could cause a financial burden to property owners.

5.3.5 Impact on Critical Facilities and Infrastructure

Critical facilities will continue to be operational during a drought unless impacted by fire. Critical facility elements such as landscaping may not be maintained due to limited resources, but the risk to the planning area's critical facilities inventory will be largely aesthetic. For example, when water conservation measures are in place, landscaped areas will not be watered and may die. These aesthetic impacts are not considered significant, with the exception of the Tribe's Koasati Pines Golf Course, which is a major enterprise.

5.3.6 Impact on Economy

Economic impact from a drought is associated with different aspects, including potential loss of agricultural production, and the impacts to the tourism industry, such as the water park, golf course, (potential water restrictions), etc. The State's 2019 HMP identifies average annual losses based on property and crop for Allen Parish to be $430,953. Further distinction to the Coushatta Tribe is not referenced in the State's HMP.

The Tribe relies fairly heavily on the agricultural market for economic sustainability. While the market value for crops has not been determined to the exact amount, the economic value is estimated to be approximately $40,000 - $50,000 based on income generated from sales of produce, as well as providing sustenance to Tribal members, which is not tracked and makes it difficult to determine the exact economic value.

In addition, the Tribe also has cattle and buffalo which would be impacted by drought conditions due to potential limited grazing and the increased cost of feeding. The rice and crawfish industry would also be impacted due to the loss of flooded fields needed for growing.

Additional economic impact stems from the potential loss of critical infrastructure due to fire damage and impacts on industries that depend on water for their business, such as fishing industries, the crawfish farm, rice fields, water-based recreational activities, and public facilities.

Problems of domestic and municipal water supplies have historically been corrected by building another reservoir, a larger pipeline, new well, or some other facility. The majority of the water supply for the Reservation comes from Allen Parish Water District #4, with the exception of a few irrigation reservoirs, which also provides income to the Tribe. Given potential political issues, a drought situation, if prolonged, could restrict building within specific areas due to lack of supporting infrastructure, thereby impacting the tax base within Allen Parish, and ultimately, the economy of the region by limiting growth, including on the Reservation. With population within Allen Parish declining, funding may not be available to enhance the public water systems, such as Allen Parish Water District #4.

The lack of electric generating capacity associated with drought conditions as a result of reduced precipitation levels can cause an increase in electric prices. Louisiana currently has only one hydroelectric plant in Vidalia; there are no power generating facilities near or on the Reservation. The potential of blackouts or brownouts is also a potential for economic impact, as not all enterprise systems maintain a generator to continue operations.

5.3.7 Impact on Environment

Environmental losses from drought are associated with aquatic life, plants, animals, wildlife habitat, air and water quality, forest fires, landscape quality, biodiversity, and soil erosion. Some effects are short-term, and conditions quickly return to normal after the drought. Other effects linger or even become permanent. Wildlife habitat, for example, may be degraded through the loss of wetlands, lakes, and vegetation, but many species will eventually recover from this effect. Degraded landscape quality, including soil erosion, may lead to a more permanent loss of biological productivity. Public awareness and concern for environmental quality has led to greater attention to these effects. Drought conditions within the planning area could increase the demand for water supplies. Water shortages would have an adverse impact on the environment, relied upon by the Tribe, causing social and political conflicts. If such conditions persisted for several years, the economy of Coushatta Tribe could experience setbacks, especially in water-dependent industries.

5.4 Future Development Trends

The Coushatta Reservation owns a relatively small amount of land available for development purposes, particularly when considering the impact from Allen Parish roadways, and the inability for ingress and egress during other hazardous incidents (e.g., flooding causes impassable roadways owned by Allen Parish which lead to the Reservation and Tribal lands). While the Tribe does maintain its own water source for a portion of tribally owned structures via the water tower and treatment plant, such is not available to all areas, and dependency on Allen Parish to continue to provide a source of water may limit expansion by the Tribe.

The U.S. Department of Agriculture has indicated agricultural as one of the largest land use trends within Allen Parish. The Coushatta Tribe has a number of agricultural areas, including hydroponic greenhouses, rice fields, Crawfish ponds, and cattle and buffalo ranches. The Tribe practices no-till land use, with cover crop rotation.

While previous plan editions have illustrated a reduction in the amount of farmlands within Allen Parish during the time period of 2002 to 2007 (13%), the 2017 Census of Agriculture shows a relatively stable state, with only a 2% reduction during the period of 2012-2017. Population within Allen Parish has also gone down since completion of the 2016 plan. The rezoning of land from agricultural to residential would have the propensity to increase water demands within the planning region as a whole, thereby impacting the Coushatta Reservation. However, limited building permits have been issued over the last several years, so it this is not an anticipated trend.

As a municipality, Allen Parish should have comprehensive plans in place which include policies directing land use, dealing with issues of water supply, and the protection of water resources; however, the Tribe has not been included in those planning efforts. The Tribe has identified this issue within the strategy portion of this plan and will continue to work with the parish during the life cycle of the plan to ensure information exchange to allow for appropriate consideration.

5.5 Climate Change Impacts

Research conducted has shown that global mean surface temperatures have increased, with most global climate change models predicting a rise of 2.5 degrees to 6 degrees Celsius. As temperatures increase, there will be less water stored. Accordingly, there will be increased competition between power generators, fishing and other recreational businesses, environmentalists, and farmers dependent on irrigation. The long-term effects of climate change on regional water resources can include the following stresses:

- Growing populations
- Increased competition for available water
- Poor water quality
- Environmental claims
- Uncertain reserved water rights
- Groundwater overdraft
- Aging urban water infrastructure
- Impact on shrimp and crawfish habitat and water quality impacting spawning
- Distribution shifts in areas where once subtropical fish species were found, subtropical and tropical species may exist.

With a warmer climate, droughts could become more frequent, more severe, and longer lasting. Water resource managers should start addressing current stresses on water supplies and build flexibility and robustness into any system. Flexibility helps to ensure a quick response to changing conditions, and robustness helps people prepare for and survive the worst conditions. With this approach to planning, water system managers will be better able to adapt to the impacts of climate change.

Impact from climate change on drought also has the potential to negatively impact the cultural aspect of the Tribe with respect to the availability of longleaf pine and rivercane for basket making, as well as impacting the availability of medicinal plants.

5.6 Issues

An extreme drought could impact the region with little warning. Combinations of low precipitation and unusually high temperatures could occur over several consecutive years, especially in response to climate change. Intensified by such conditions, extreme wildfires could break out throughout the area, increasing the need for water. Surrounding communities, also in drought conditions, could increase their demand for water, causing social and political conflicts.

Low water tables could increase issues of life, safety, and health, while also impacting the economy both for loss of potential agricultural income, but also with respect to decreased ability to construct new housing due to lack of ability to provide water. If such conditions persisted for several years, the economy of the region as a whole could experience setbacks, especially in water dependent industries. For the Coushatta Tribe, such setbacks would severely hamper the Tribe's growth with respect to increased population of its Tribal Members' ability to live on the Reservation.

The planning team has identified the following drought-related issues:

- The need for alternative water sources should a prolonged drought occur
- Use of groundwater recharge to stabilize the groundwater supply
- The probability of increased drought frequencies and durations due to climate change
- The promotion of active water conservation even during non-drought periods
- The potential impact on businesses in the area
- The potential impact on the livelihood of those employed in industries that could be impacted by drought, such as agriculture, fishing, forestry, and tourism, in addition to the Tribe's economic vitality with respect to industries it owns in those areas.

5.7 Impact and Results

Based on review and analysis of the data, the Planning Team has determined that the probability for impact from Drought throughout the area is likely. The area has previously experienced drought conditions, although no new droughts were experienced by the Tribe since completion of the 2016 plan.

With the increase in temperatures as a result of climate change, drought situations will likely only intensify. The lack of precipitation will lead to dryer soils. Litter beneath forest stands will dry more quickly, increasing ignitability and speed of spread. With higher temperatures, there also comes an increase in vulnerability of the population due to excessive heat, with days above 90 degrees anticipated to increase as a result of climate change. This could also potentially impact power supplies due to both generation as well as increased usage for cooling, requiring brownouts or causing blackouts in the area.

Elderly and young are both very vulnerable to extended durations of heat and can succumb to the impacts quickly. Utilizing a cooling system would increase the cost of utilities; something which individuals with limited income cannot absorb. The Tribe has developed a strategy for potential alternative power supplies to reduce its dependence on local sources, since there have been times when power has been disrupted for more than two weeks due to weather systems going through the area.

Current water supplies are provided by the Tribe in portions of the planning area, as well as by Allen Parish Water District #4. Limited sources of wells also exist. Should a severe, long-term drought occur, it will be vital that elected officials and governmental agencies work cooperatively to help ensure efforts are made to protect both public and private water supplies, aid agriculture and local industry, and safeguard fish and stream flows.

Based on the potential impact, the Planning Team determined the CPRI score to be 2.15, with overall vulnerability determined to be a low level.

CHAPTER 6.
FLOOD

Floods are one of the most common natural hazards in the United States. They can develop slowly over a period of days or develop quickly, with disastrous effects that can be local (impacting a neighborhood or community) or regional (affecting entire river basins, coastlines and multiple counties or states) (FEMA, 2010). Most communities in the U.S. have experienced some kind of flooding, after spring rains, heavy thunderstorms, coastal storms, or winter snow thaws. Floods are one of the most frequent and costly natural hazards in terms of human hardship and economic loss, particularly to communities that lie within flood-prone areas or floodplains of a major water source.

In review of this hazard profile, readers should note that this profile reflects flood events only as typed by FEMA. Information and data contained in this section does not include hurricanes / tropical storms or severe weather events, which may include floods occurring as a result of the initial hazard. Those hazards are profiled separately within this document based on FEMA hazard-typing.

6.1 General Background

Flooding is a temporary condition of partial or complete inundation on normally dry land from the following:

- Local drainage or high groundwater levels due to storms of varying types, or the failure of dams, levees, or other water retention structures;
- Ground failures;
- Riverine flooding, including overflow from a river channel, flash floods, alluvial fan floods, dam-break floods, fluctuating lake levels, and ice jam floods;
- Coastal flooding and/or erosion;
- Unusual and rapid accumulation of rain from runoff of surface waters from any source, including snow or ice;
- Mudflows (or mudslides);
- Collapse or subsidence of land along the shore of a river, lake, or similar body of water that result in a flood, caused by erosion, waves, or currents of water exceeding anticipated levels;
- Sea level rise; or
- Climate Change

6.1.1 Flooding Types

Many floods fall into one of three categories: riverine, coastal, or shallow (FEMA, 2005). Other types of floods include alluvial fan floods, dam failure floods, surface water runoff, ponding, and floods associated with local drainage or high groundwater.

Flooding caused by dam failure is not addressed within this document, as the Tribe currently has no dams within its Reservation Boundary, nor does Allen Parish have any dams of significant proportion to be of impact. While coastal and storm surge can have a secondary impact based on transportation-related or commodity flow issues, there is no direct coastal or storm surge impact. Therefore, neither are addressed within this flood profile. The primary cause of flooding on the Reservation and in the area of tribal structures is associated with surface water runoff, lack of stormwater management on parish roadways, and excessive ponding resulting from high-intensity rain events.

Urban Flooding/Surface Runoff

If the rainfall intensity exceeds the evaporation rate and infiltration capacity of the soil, surface runoff occurs. It also occurs when rainfall falls on impervious surfaces, such as roadways and other paved areas – areas common within urban environments. Water flows across the surface as either confined or unconfined flow. Unconfined flow moves in broad sheets of water often causing sheet erosion. It can also pick up and adsorb or carry contaminants from the surface. Water that flows along the surface may become trapped in depressions. Here water may either evaporate back into the air, infiltrate into the ground, or spill out of the depression as it fills. If local drainage conditions are inadequate to accommodate rainfall through a combination of evaporation, infiltration into the ground, and surface runoff, accumulation of water in certain areas may cause localized flooding problems. Alternately, the sheet flow may reach a natural or constructed water conveyance system such as a swale, channel, or conduit. Water is conveyed to larger drainage systems such as creeks, streams, and rivers. During winter and spring, accumulation of snow may increase water runoff generated by both precipitation and snowmelt.

Flooding problems resulting from runoff of surface water generally increase as areas become more urbanized. Greater population density generally increases the amount of impervious area, e.g., pavement and buildings. This reduction in the amount of natural ground that can absorb rainfall results in an increase in the amount of surface runoff generated. Uncontrolled, this runoff may be channeled to areas that cause flooding of structures and roadways. This may be especially true where the predevelopment land surface had a gently sloping surface with no defined channels. Such areas are subject to shallow sheet flooding during storms, but urbanization and other development speeds the accumulation of floodwater. When surface water runoff introduced into streams and rivers exceeds the capacity of the natural or constructed channels to accommodate the flow, water overflows the stream banks, spilling out into adjacent low-lying areas. Riverine flooding occurs as a consequence.

Ponding

Ponding occurs in areas such as parking lots, natural low-lying areas (especially clay-lined areas), and roadways where concave areas in the built environment are unable to drain and collect water.

Riverine

Riverine floods are the most common flood type. They occur along a channel and include overbank and flash flooding. Channels are defined ground features that carry water through and out of a watershed.

They may be called rivers, creeks, streams, or ditches. When a channel receives too much water, the excess water flows over its banks and inundates low-lying areas (FEMA, 2005).

Flash Floods

A flash flood is a rapid, extreme flow of high water into a normally dry area, or a rapid water level rise in a stream or creek above a predetermined flood level, beginning within six hours of the causative event (e.g., intense rainfall, dam failure, ice jam). The time may vary in different areas. Ongoing flooding can intensify to flash flooding in cases where intense rainfall results in a rapid surge of rising floodwaters (NWS, 2009). Channel velocities of 9 feet per second, typically realized in flash floods, can move a 90-pound rock. Water moving at 10 miles per hour exerts the same pressure on a structure as wind gusts at 270 miles per hour. Sudden destruction of structures and washout of access roads may result in loss of life. A high percentage of flood-related deaths result from motorists underestimating the depth and velocity of flood waters and attempting to cross swollen streams. Excessive precipitation produced during thunderstorms or hurricanes within the planning region occurs at any time of the year; however, the summer and autumn seasons produce higher precipitation levels in isolated areas where thunderstorm events occur (especially on warm days) that may lead to localized, flash flood events.

Coastal Flooding

Coastal flooding is the flooding of normally dry, low-lying coastal land, primarily caused by severe weather events along the coast, estuaries, and adjoining rivers. These flood events are some of the more frequent, costly, and deadly hazards that can impact coastal communities. Factors causing coastal flooding include:

- Storm surges, which are rises in water level above the regular astronomical tide caused by a severe storm's wind, waves, and low atmospheric pressure. Storm surges are extremely dangerous, because they are capable of flooding large coastal areas, sometimes producing 20-30-foot-deep waves during hurricanes and tropical storms.
- Large waves, whether driven by local winds or swell from distant storms, raise average coastal water levels and individual waves roll up over land.
- High tide levels are caused by normal variations in the astronomical tide cycle.
- Other larger scale regional and ocean scale variations are caused by seasonal heating and cooling and ocean dynamics.

Coastal floods are extremely dangerous, and the combination of tides, storm surge, and waves can cause severe damage. Coastal flooding is different from river flooding, which is generally caused by severe precipitation. Depending on the storm event, in the upper reaches of some tidal rivers, flooding from storm surge may be followed by river flooding from rain in the upland watershed. This increases the flood severity.

Dam Failure

Dams are water storage, control or diversion barriers that impound water upstream in reservoirs. Dams are a vital part of the infrastructure for our nation as a whole, providing water, flood protection devices, hydroelectric power, irrigation, navigation, and recreation, and vary in structure type, materials, size, and purpose. Dam failure can include a partial breach or collapse, or a total failure of the structure, resulting in severe loss of life, injuries, economic impacts, and environmental damages. Flooding associated with dams can also be attributed to the spilling (controlled release by dam owner) of the water behind the dam during times of high flow and weather events. Many dams are constructed upstream from densely populated areas, especially in areas experiencing rapid population growth. Dam failures are often associated with a rapid onset of impact, thereby resulting in high casualties due to the reduced warning time and population density. While Allen Parish has three dams categorized as "Significant" based on National Dam Safety Program standards with respect to storage capacity and area (among others), none of the dams have inundation zones which would impact the Coushatta Reservation or tribal structures. Therefore, this hazard is addressed no further.

6.1.2 Measuring Floods and Floodplains

A floodplain is the area adjacent to a river, creek or lake that becomes inundated during a flood (see Figure 6-1). Floodplains may be broad, as when a river crosses an extensive flat landscape, or narrow, as when a river is confined in a canyon. Connections between a river and its floodplain are most apparent during and after major flood events. These areas form a complex physical and biological system that not only supports a variety of natural resources but also provides natural flood and erosion control. When a river is separated from its floodplain with levees and other flood control facilities, natural, built-in benefits can be lost, altered, or significantly reduced.

In the case of riverine or flash flooding, once a river reaches flood stage, the flood extent or severity categories used by the NWS include minor flooding, moderate flooding, and major flooding. Each category has a definition based on property damage and public threat (NWS, 2011):

- Minor Flooding—Minimal or no property damage, but possibly some public threat or inconvenience.
- Moderate Flooding—Some inundation of structures and roads near streams. Some evacuations of people and/or transfer of property to higher elevations are necessary.
- Major Flooding—Extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations

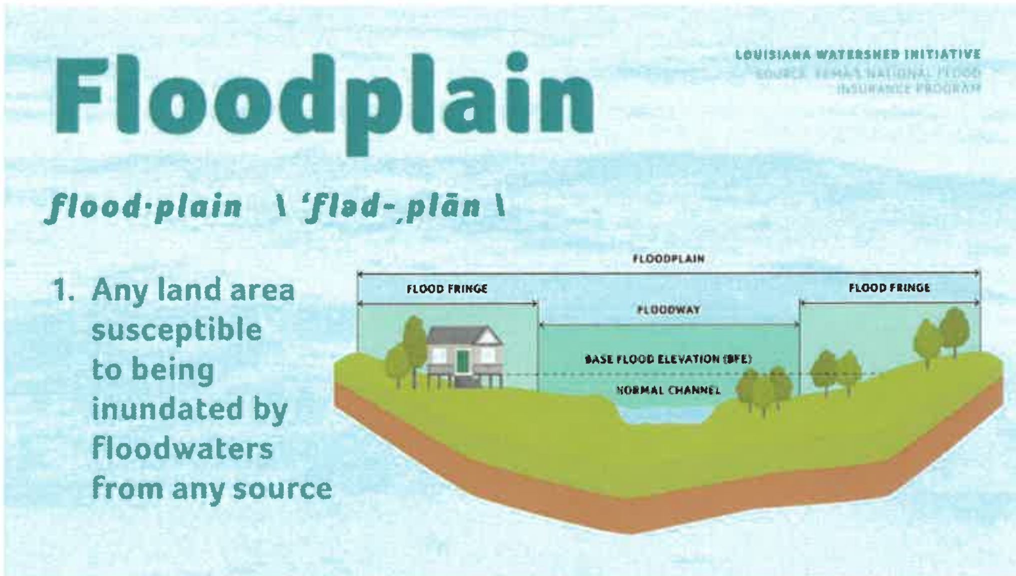

Figure 6-1 NFIP Flood Hazard Area Referred to as Floodplain

6.1.3 Flood Insurance Rate Maps

According to FEMA, flood hazard areas are defined as areas that are shown to be inundated by a flood of a given magnitude on a map. These areas are determined using statistical analyses of records of river flow, storm tides, and rainfall; information obtained through consultation with the community; floodplain topographic surveys; and hydrologic and hydraulic analyses.

Flood hazard areas are delineated on FEMA's Flood Insurance Rate Maps (FIRM), which are official maps of a community on which the Federal Insurance and Mitigation Administration has indicated both the special flood hazard areas and the risk premium zones applicable to the community. These maps identify the special flood hazard areas; the location of a specific property in relation to the special flood hazard area; the base (100-year) flood elevation at a specific site; the magnitude of a flood hazard in a specific area; and undeveloped coastal barriers where flood insurance is not available. The maps also locate regulatory floodways and floodplain boundaries—the 100-year and 500-year floodplain boundaries (FEMA, 2003; FEMA, 2005; FEMA, 2008). The FIRM effectiveness date for the unincorporated areas of Allen Parish was January 3, 1990. Most current flood maps were issued March 17, 2011.

The frequency and severity of flooding are measured using a discharge probability, which is a statistical tool used to define the probability that a certain river discharge (flow) level will be equaled or exceeded within a given year. Flood studies use historical records to determine the probability of occurrence for the different discharge levels.

The extent of flooding associated with a 1-percent annual probability of occurrence (the base flood or 100-year flood) is used as the regulatory boundary by many agencies. Also referred to as the *special flood hazard area*, this boundary is a convenient tool for assessing vulnerability and risk in flood-prone communities. Many communities have maps that show the extent and likely depth of flooding for the base flood. Corresponding water-surface elevations describe the elevation of water that will result from a given discharge level, which is one of the most important factors used in estimating flood damage.

A structure located within a 1-percent (100-year) floodplain has a 26 percent chance of suffering flood damage during the term of a 30-year mortgage. The 100-year flood is a regulatory standard used by federal agencies and most states to administer floodplain management programs. The 1-percent (100-year) annual chance flood is used by the NFIP as the basis for insurance requirements nationwide. FIRMs also depict 500-year flood designations, which is a boundary of the flood that has a 0.2-percent chance of being equaled or exceeded in any given year (FEMA, 2003; FEMA, 2005). It is important to recognize, however, that flood events and flood risk are not limited to the NFIP delineated flood hazard areas.

Table 6-1 explains the various zones illustrated on NFIP maps. Figure 6-2 illustrates the existing A-Zone or 100-year floodplain for the Coushatta Reservation, based on FEMA's existing digital flood insurance rate maps (DFIRMs). No 500-year flood map was identified in the DFIRM by FEMA.

TABLE 6-1.
FLOOD INSURANCE RATE MAP ZONES

Moderate to Low-Risk Areas: Areas of moderate or minimal hazard are studied based upon the principal source of flood in the area. However, buildings in these zones could be flooded by severe, concentrated rainfall coupled with inadequate local drainage systems. Local stormwater drainage systems are not normally considered in a community's flood insurance study. The failure of a local drainage system can create areas of high flood risk within these zones. Flood insurance is available in participating communities but is not required by regulation in these zones. Nearly 25-percent of all flood claims filed are for structures located within these zones.	
Zone	**Description**
B and X (shaded)	Area of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floodplain area with a 0.2% (or 1 in 500 chance) annual chance of flooding. B Zones are also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than one (1) square mile.
C and X (unshaded)	Area of minimal flood hazard usually depicted on FIRMs as above the 500-year flood level. Zone C may have ponding and local drainage problems that do not warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood.
High Risk Areas: Special Flood Hazard Areas represent the area subject to inundation by 1-percent-annual chance flood. Structures located within the SFHA have a 26-percent chance of flooding during the life of a standard 30-year mortgage. Federal floodplain management regulations and mandatory flood insurance purchase requirements apply to participating communities in these zones.	
Zone	**Description**
A	Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas, no depths or base flood elevations are shown within these zones.

TABLE 6-1. FLOOD INSURANCE RATE MAP ZONES	
AE	The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones
A1-30 (old map format)	These are known as numbered A Zones (e.g., A7 or A14). This is the base floodplain where the FIRM shows a BFE (old format). Older maps still utilize this numbered system, but newer FEMA products no longer use the "numbered" A Zones. (Zone AE is used on new and revised maps in place of Zones A1–A30.)
AH	Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
AO	River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
AR	Areas with a temporarily increased flood risk due to the building or restoration of a flood control system (such as a levee or a dam). Mandatory flood insurance purchase requirements will apply, but rates will not exceed the rates for unnumbered A zones if the structure is built or restored in compliance with Zone AR floodplain management regulations.
A99	Areas with a 1% annual chance of flooding that will be protected by a Federal flood control system where construction has reached specified legal requirements. No depths or base flood elevations are shown within these zones.
High Risk - Coastal High Hazard Areas (CHHA): These represent the area subject to inundation by 1-percent-annual chance flood, extending from offshore to the inland limit of a primary front al dune along an open coast and any other area subject to high velocity wave action from storms or seismic sources. Structures located within the CHHA have a 26-percent chance of flooding during the life of a standard 30-year mortgage. Federal floodplain management regulations and mandatory purchase requirements apply in the following zones.	
Zone	**Description**
V	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. No base flood elevations are shown within these zones.
VE, V1-30	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
Undetermined Risk Areas	
Zone	**Description**
D	Areas with possible but undetermined flood hazard. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk.

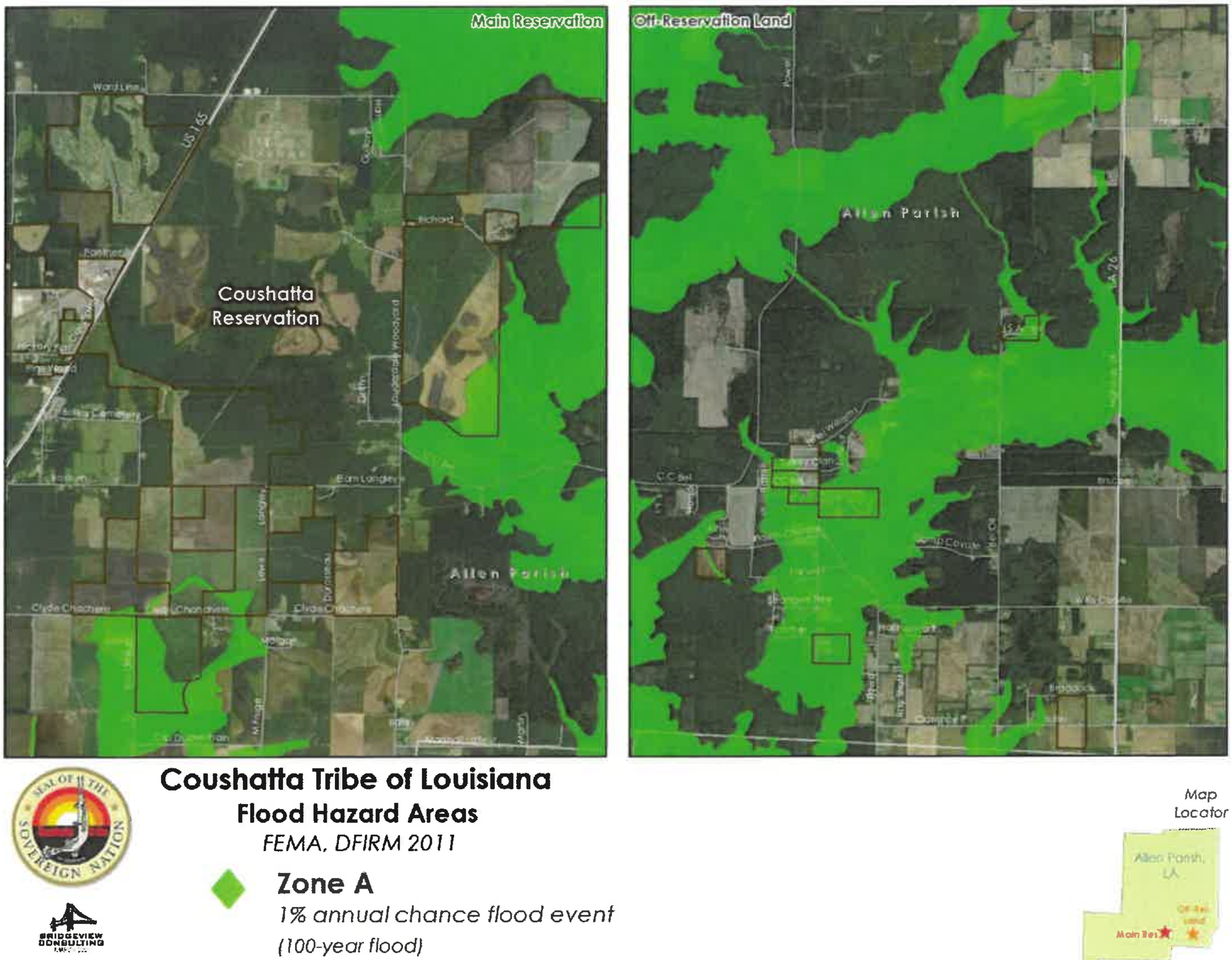

Figure 6-2 100-year FEMA Flood Boundary

6.1.4 National Flood Insurance Program (NFIP)

The NFIP is a federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for state and community floodplain management regulations that reduce future flood damage. The U.S. Congress established the NFIP with the passage of the National Flood Insurance Act of 1968 (FEMA's 2002 *National Flood Insurance Program (NFIP): Program Description*). There are three components to the NFIP: flood insurance, floodplain management, and flood hazard mapping. Nearly 20,000 communities across the U.S. and its territories participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in these communities. Community participation in the NFIP is voluntary.

For most participating communities, FEMA has prepared a detailed Flood Insurance Study. The study presents water surface elevations for floods of various magnitudes, including the 1-percent annual chance flood and the 0.2-percent annual chance flood (the 500-year flood). Base flood elevations and the boundaries of the 100- and 500-year floodplains are shown on Flood Insurance Rate Maps (FIRMs), which are the primary tool for identifying the extent and location of the flood hazard. FIRMs are the most detailed and consistent data source available, and for many communities they represent the minimum area of oversight under their floodplain management program.

FEMA most recently updated the Allen Parish FIRMS on March 17, 2011. Those maps serve as the base for this analysis, although areas of the Tribe were not specifically analyzed separate from the remaining parish. No 500-year boundary is identified. As of this 2021 update, those maps remain the most current.

All NFIP participants must regulate development in floodplain areas in accordance with NFIP criteria. Before issuing a permit to build in a floodplain, participating jurisdictions must ensure that three criteria are met:

- New buildings and those undergoing substantial improvements must, at a minimum, be elevated to protect against damage by the 100-year flood.
- New floodplain development must not aggravate existing flood problems or increase damage to other properties.
- New floodplain development must exercise a reasonable and prudent effort to reduce its adverse impacts on threatened salmonid species.

The Coushatta Tribe currently does not participate in the NFIP; however, they continue to examine the potential of becoming enrolled during the life cycle of this plan.[21] Currently, the Tribe utilizes the regulatory authority of Allen Parish when new construction occurs, as well as the regulatory authority associated with all funding which the Tribe utilizes. This includes NFIP guidelines, as well as other, more stringent requirements.

NFIP Status and Severe Loss/Repetitive Loss Properties

While Allen Parish is a member in the NFIP and does incorporate regulatory authority within its land use planning, as indicated, the Coushatta Tribe is not currently enrolled in the NFIP and has no policies in place individual to the Tribe.

Repetitive Flood Claims

Residential or non-residential (commercial) properties that have received one or more NFIP insurance payments are identified as repetitive flood properties under the NFIP. Such properties are eligible for funding to help mitigate the impacts of flooding through various FEMA programs, subject to meeting

[21] FEMA NFIP Enrollment and CRS Communities. Accessed 31 March 2021. Available online at: https://www.fema.gov/cis/LA.html

certain criteria and based on the State's Hazard Mitigation Plan maintaining a Repetitive Loss Strategy. Louisiana State's 2019 Hazard Mitigation Plan does contain such a strategy. Specifically, the Repetitive Loss Strategy must identify the specific actions the State has taken to reduce the number of repetitive loss properties, which must include severe repetitive loss properties, and specify how the State intends to reduce the number of such repetitive loss properties. In addition, the hazard mitigation plan must describe the State's strategy to ensure that local jurisdictions with severe repetitive loss properties take actions to reduce the number of these properties, including the development of local hazard mitigation plans. Potential funding to reduce or eliminate repetitive flood claim properties from long-term risk of flood damage is available for insured structures under the NFIP for those structures which meet the criteria of having had one or more claim payments for flood damages.

No specific flood claim data is available for the Coushatta Tribe with respect to losses paid or claims filed as they are not a member of the NFIP. However, Allen Parish and its towns have filed in excess of 393 NFIP claims, for which total payments rendered exceeded $2.8 million dollars (2015 figures). Review of the LA State HMP identifies a total of 228 Repetitive Flood Claims within Allen Parish, but it is unclear as to the timeframe associated with those claims as no reference is made (LA HMP, 2019, p. 343). Data does not distinguish between Allen Parish and the Coushatta Tribal structures. From review of the data, the majority of flood risk has occurred in Flood Zone A, with most losses (75 percent) falling below a $20,000 payout. Table 6-2 identifies Allen Parish repetitive flood data with no identification to claims specific to the Coushatta Tribe.

TABLE 6-2.
ALLEN PARISH REPETITIVE FLOOD PROPERTIES
(THROUGH 2018)

IMPACT	COUNT
RL Properties	43
Inexpensive ($0-20K)	108
Medium (20k-$100k)	36
Severe ($100k & Up)	0
Flood Zone A	22
Flood Zone X (B, C)	9
Flood Zone V	0
Flood Zoned	0
EMG*	10
TOTAL	
Note: EMG is before initial FIRM Identified	

Severe Repetitive Loss Program

The severe repetitive loss program is authorized by Section 1361A of the National Flood Insurance Act (42 U.S.C. 4102a), with the goal of reducing flood damages to residential properties that have experienced *severe* repetitive losses under flood insurance coverage and that will result in the greatest savings to the NFIP in the shortest period of time. A severe repetitive loss property is a residential property that is covered under an NFIP flood insurance policy and:

a) That has at least four NFIP claim payments (including building and contents) over $5,000 each and the cumulative amount of such claims payments exceeds $20,000; or
b) For which at least two separate claims' payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any 10-year period and must be greater than 10 days apart.

6.1.5 Repetitive Flood Claim and Severe Repetitive Loss Impact

Review of existing data is somewhat limited with respect to historical flood impact on the Tribe. This has been identified as a deficiency by the Tribe, and a strategy for collection of damage data has been identified as a strategy within this plan. As can be determined, during the time period of July 2015 through December 2020, the Coushatta Tribe does not have any Severe Repetitive Loss or Repetitive Flood Claim properties which meet FEMA's NFIP definitions.

The Community Rating System

The Community Rating System (CRS) is a voluntary program within the NFIP that encourages floodplain management activities that exceed the minimum NFIP requirements. Flood insurance premiums are discounted to reflect the reduced flood risk resulting from community actions.

As of this 2021 update, the Coushatta Tribe is not CRS community. At present, the Tribe does not feel the level of effort to become a CRS community is warranted, nor within the capacity of the present staffing levels to facilitate such an endeavor.

6.2 Hazard Profile

6.2.1 Extent and Location

The primary area of Coushatta Tribe is located in southwestern Louisiana, bordered by Vernon, Rapides, Evangeline, Beauregard, and Jefferson Davis Parishes. The tribal planning area is approximately 10 square miles, or ~7,100 acres. Its land mass is not contiguous. Total population count of people living on the Reservation is ~75, but the transient population increases daily to up to 8,700 due to the Casino Resort and the other tourist related businesses and activities, plus ~2,700 employees. The Tribe receives approximately 60-65 inches of rain annually, compared to approximately 58 inches statewide average. While snow is not rare to the Coushatta Reservation, it normally does not accumulate or remain on the ground for extended periods of time. Snow melt has not been a precipitating factor for floods on the Reservation.

Potential flooding on the Reservation is fairly widespread when reviewing the 100- and 500-year events modeled within Hazus for this assessment and identified in Figure 6-2 and Figure 6-3. Historically, the majority of flooding has occurred primarily along the western portion of the Reservation, along the roadways and drainage areas of the Casino Resort, and the low-lying roadways in the area of the cattle farm. This is due, in large part, to the lack of retention capabilities along the culverts constructed by the Parish. However, a larger area of the Reservation is exposed to the flood hazard.

The largest flood of record in the planning region associated peak discharge occurred in 1953 within the Town of Kinder, and near Oberlin along the Calcasieu River, with 182,000 cfs and 72,800 cfs respectively, both events identified by FEMA's 2011 NFIP study as being a "greater than 100-year" event (FEMA, NFIP, 2011). At the time that event occurred, the Tribe was not yet established, and therefore, no records of impact to the Reservation area are available. Other floods of record (1982 and 1984) did not impact the Tribe. The most recent flood-related disaster declaration occurred in 2016 (DR-4263). The majority of impact from that event again involved the roadways providing ingress and egress to the tribal planning area.

Principal Flooding Sources

Principal flooding sources on the Reservation are typically caused by storms and rapid accumulation of runoff surface water, or through storms coming off of the coast and stalling over the planning area, which increases the impact of flood events.

Review of historical disaster data indicates that since 1979, six of the declared events were for flood or severe weather events which included flooding. There were also a number of flash flood incidents within the planning region; however, none rose to the level of a disaster declaration.

Flooding from rainfall and runoff ponding has occurred in limited areas on the Reservation in the past during most significant rainstorms, although also not to the level of a disaster declaration. Springtime months increase severe thunderstorms in the planning area. When such storms stall, rainfall totals can exceed 10 inches within a period of a few days. Due to low evaporation rates, streamflow, and water levels in areas of impact become saturated, increasing the potential for high water, especially in low-lying and poorly drained areas. During the warmer seasons, floods become more of a flashflood variety, as opposed to the slower-developing events. Based on oral histories obtained by planning team members during the outreach portion of this plan's development, the most significant flooding events occurred as a result of Hurricanes Andrew and Lili, although specific dollar loss data is not available as it relates specifically to the Tribe.

6.2.2 Previous Occurrences

Major floods in the planning area have resulted from intense rainstorms occurring May – January, although significant rain events have occurred every month of the year. Table 6-3 highlights historical flood events, including those rising to the level of a disaster declaration.

TABLE 6-3.
FLOOD EVENTS IMPACTING PLANNING AREA SINCE 1973

Date	Type	Deaths or Injuries	Property Damage
September 25, 1979 **DR #604**	Flooding, Severe Storm	None	Unknown for Reservation.
Description: Incident period September 25, 1979. (No additional data available from FEMA, NCDC, NOAA or any other generalized search.)			
January 11, 1983 **DR #675**	Flooding, Severe Storm	None	Unknown for Reservation.
Description: Incident period January 11, 1983. (No additional data available from FEMA, NCDC, NOAA or any other generalized search.)			
May 20, 1989 **DR #829**	Flooding, Severe Storm	None	Unknown for Reservation
Description: Incident period May 4, 1989 - May 27, 1989.			
July 17, 1989 **DR #835**	Flooding resulting from Tropical Storm Allison.	None	Unknown for Reservation
Description: Incident period June 25, 1989 - July 21, 1989. Heavy thunderstorms developed across the state which became concentrated with time; three meteorological phenomena led to the formation of Allison, causing it to loop cyclonically as it passed through Louisiana (see Tropical Storm/Hurricane Profile for more data).			
June 7, 1997	Flooding	None	Unknown for Reservation
Description: Between three and five inches of rain fell across northern Allen Parish, resulting in several creeks flooding roads for a short time.			
January 1, 1998	Flash Flooding	None	Unknown for Reservation
Description: Slow moving thunderstorms dumped around six inches of rain across southeastern Allen Parish. The hardest hit area was just north of Elton, where Powell Road went under water.			
January 12, 1998	Flash Flood	None	Unknown for Reservation
Description: Slow-moving thunderstorms produced between six and eight inches across northern Allen Parish in the early morning hours. In Oakdale, over 30 streets were flooded, and 30 homes were damaged from flood waters. Most of the flood problems occurred on the east side of town.			
October 26, 2006	Heavy Rain	None	Unknown for Reservation

TABLE 6-3. FLOOD EVENTS IMPACTING PLANNING AREA SINCE 1973			
Date	Type	Deaths or Injuries	Property Damage
Description: Incident period October 26-28, 2006. Widespread showers and thunderstorms across southwest Louisiana resulted in widespread flooding late on October 26th and continued through the 27th and 28th. Upward of 14 inches of rain fell in less than 24 hours across Allen Parish. The heaviest hit area was Kinder. Many roads were closed due to high water, and over 120 homes were damaged by flood waters.			
November 2, 2006 (Disaster 1668)	Flooding and Severe Storm	None	*Statewide 1,753 IA applications approved; >$20M in PA funds provided statewide
Description: Incident Period October 16, 2006 – November 8, 2006. Heavy rains, severe storms.			
May 3, 2009	Heavy rain, hail, flash floods	None	Unknown for Reservation.
Description: A long line of severe thunderstorms (derecho), developed over central Texas before moving rapidly eastward into Louisiana. Additional strong to severe thunderstorms developed in the wake of the initial derecho across the region, with several reports of damaging winds, large hail, and flash flooding.			
August 30, 2014	Heavy rain, hail, flash floods	None	Unknown for Reservation.
Description: Heavy rain stretched from south of Lake Charles to near Oakdale with the heaviest falling in the Kinder area. Flooding in Kinder closed multiple streets around the town during the morning into the early afternoon.			
March 8, 2016 **DR#4263**	Severe Storms and Flooding	None	Unknown for Reservation.
Description: Very heavy rainfall developed during the afternoon of Tuesday, March 8, 2016, and continued off and on through Saturday March 12 as a result of a slow-moving southward dip in the jet stream. Rainfall amounts of over 20 inches were recorded in a few locations before the rain ended. Many locations have experienced extreme flash flooding, water inundated roadways, and several schools were closed in areas of the state. The Governor requested an expedited emergency declaration due to the impact.			
*= Statewide Amount Unknown = Information is not available for Reservation.			

6.2.3 Severity

The principal factors affecting flood damage are flood depth and velocity. The deeper and faster flood flows become, the more damage they can cause. Shallow flooding with high velocities can cause as much damage as deep flooding with slow velocity. This is especially true when a channel migrates over a broad floodplain, redirecting high velocity flows, and transporting debris and sediment. Flood severity is often evaluated by examining peak discharges. However, the severity of a flood depends not only on the amount of water that accumulates in a period of time, but also on the land's ability to manage this water. One element is the size of rivers and streams in an area; but an equally important factor is the land's absorbency. When it rains, soil acts as a sponge. When the land is saturated or frozen, infiltration into the ground slows and any more water that accumulates must flow as runoff (Harris, 2001). Review of impact from previous events occurring demonstrate that a number of flood events have caused damages, although the exact dollar loss amounts are unknown. These include events rising to the level of a Tribal Emergency, with impact primarily resulting in the form of restricted ingress and egress, which has a significant economic loss to the tribe. In addition, the Casino and its hotels have historically been used as shelters. When flood events occur, it does impact commodity flow by restricting roadway access for supplies needed to enable the use of the various shelters.

6.2.4 Frequency

The Coushatta Tribe experiences flooding on an annual basis; however, in some cases they exist more of a nuisance flooding event rather than a large-scale event. Large floods that can cause property damage or rise to the level of a disaster declaration have not occurred on a significant regular basis in the tribal planning area, with the last declared flood events occurring in 2016, 2006, 1989 (2 events), 1983 and 1979. For purposes of this profile, Hurricane or Tropical Storm events which result in floods are not considered within this profile; only disaster events identified as a "Flood Incident Type" by FEMA records are utilized.

Frequency for this calculation was based on the period covering 1979 to 2020, and the number of events averaged based on years and the number of floods. It should be noted that this does not reflect the recurrence interval, as that calculation is specific on varying factors, including levels of precipitation and discharge rates, etc. Based on an averaging calculation, flood events (non-flash flood) in the planning area occur approximately every seven (6.833) years (1979-2020/6).

With respect to flash flooding, review of NCDC data indicates that a total of 13 flash flood events have been reported within Allen Parish during the time period 1950-2020. No deaths or injuries have been reported during that time period as a result of flash floods. Four of those incidents occurred in Kinder, resulting in reported personal property losses totaling $270,000 (inclusive of all four events occurring 1998, 2014, 2017 and 2019). The most significant property damage occurred in Pawnee on July 14, 2019, resulting in $500,000 worth of property damage. No crop damage was reported. Applying the same formula for averaging events, NCDC data illustrates 13 events reported in the planning area occur approximately every five (5.4) years (1950-2020/13).

6.3 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed or vulnerable in the identified hazard area. For the flood hazard, areas identified as hazard areas include the 1 percent and 0.2 percent (100- and 500-year) floodplains. The following text evaluates and estimates the potential impact of flooding on the Coushatta Reservation, and in the tribal planning area. It is also important to recognize the potential impact to areas of the surrounding parish as well, as during previous weather-related events, the Tribal hotels have served as shelters for many of the residents living within the parish, as well as guests who were visiting the area.

6.3.1 Overview

All types of flooding can cause widespread damage throughout rural and urban areas, including but not limited to: water-related damage to the interior and exterior of buildings; destruction of electrical and other expensive and difficult-to-replace equipment; injury and loss of life; proliferation of disease vectors; disruption of utilities, including water, sewer, electricity, communications networks and facilities; loss of agricultural crops and livestock; placement of stress on emergency response and healthcare facilities and personnel; loss of productivity; and displacement of persons from homes and places of employment.

Methodology

The 1 percent and 0.2 percent (100- and 500-year) annual chance flood events were examined to evaluate the Coushatta's risk and vulnerability to the flood hazard. As indicated, the Allen Parish FIRMs were completed March 17, 2011, and used in this analysis. A modified Level 1/Level 2 (for updated critical facilities and user defined facilities) was completed. Hazus protocol was used to assess exposure to flooding in the planning area. This type of analysis has a level of accuracy acceptable for planning purposes. Figure 6-2 (above) illustrates the 100-year floodplain impacting the tribal planning area. Figure 6-3 illustrates the 500-year flood boundaries used for this exposure assessment. As indicated, FEMA maps do not identify a 500-year boundary. As such, the map representing the 500-year floodplain was developed utilizing FEMA's Hazus program, which has a high degree of variables. Due to the variables, outputs from the 500-year floodplain should be used for planning purposes only, and not for life-safety measures.

Warning Time

Due to the sequential pattern of meteorological conditions needed to cause serious flooding, it is unusual for a flood to occur without some warning. Warning times for floods can be between 24 and 48 hours; for hurricane events, the warning is customarily much longer. Flash flooding can be less predictable, but potential hazard areas can be warned in advance of potential flash flooding danger based on predicted precipitation levels.

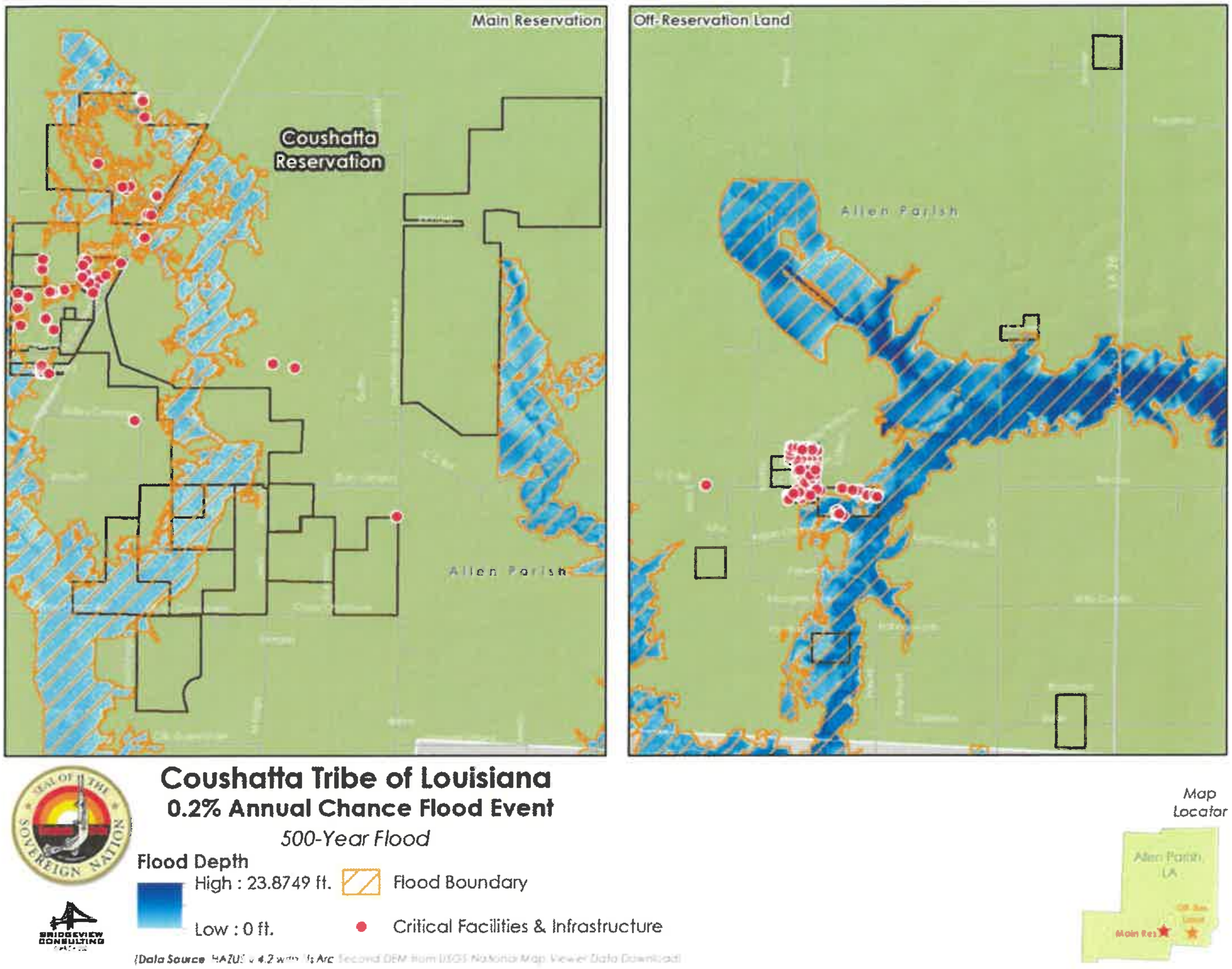

Figure 6-3 500-Year Flood Event Area of Impact

6.3.2 Impact on Life, Health and Safety

The impact of flooding on life, health and safety is dependent upon several factors including the severity of the event and whether or not adequate warning time is provided to residents. Exposure represents the population living in or near floodplain areas that could be impacted should a flood event occur. Additionally, exposure should not be limited to only those who reside in a defined hazard zone, but everyone who may be affected by the effects of a hazard event (e.g., people are at risk while traveling in flooded areas, or their access to emergency services is compromised during an event). The degree of that impact will vary and is not measurable.

Of significant concern within the planning area is the number of tourists who can be impacted during periods of flooding. Tourism is a very large economy within the planning area, with many tourists traveling through the area to visit the Casino – the largest in the State. When averaged annually (during non- COVID restrictions), the number of tourists traveling through the Casino Resort can range from 8,700 to over 10,000 per day. In addition, tourism is further increased as a result of other recreational activities (water park, campgrounds, golf resort), especially during summer months. Also of concern is the fact that the major arterial traveling through the planning area serves as an evacuation route for the State of Louisiana, and surrounding parishes. The Tribe also has approximately 2,700 employees which must be considered. Thus, during times of potential disaster, the number of individuals traveling through the area can increase exponentially.

To estimate the population exposed to the 1 percent and 0.2 percent annual chance (100- and 500-year) flood events, the maps created to illustrate the floodplain boundaries were intersected with residential structures (based off of Coushatta Tribal data) whose centers intersect the floodplain. Total population was estimated by multiplying the number of residential structures by the average household size of 2 persons per household. These figures do not include a population count to include the hotels, RV slots, and Resort chalets, as those numbers would vary depending on daily rentals. Table 6-4 and Table 6-5 lists the estimated population located within the respective flood areas, utilizing FEMA's flood map for the 100-year event, and the Hazus analysis for the 500-year.

TABLE 6-4.
POPULATIONS EXPOSED IN 100-YEAR (1%) FLOOD HAZARD AREA

Facility Name	Occupancy Class (Residential)	Population (based on 2 residents per household)
Pinewood Village Apt. #8	RES3D	2
Pinewood Village Apt. #7	RES3D	2
Koasati Pines Lodge North	RES4	Varies depending on rental occupancy
Koasati Pines Lodge South	RES4	Varies depending on rental occupancy
Koasati Pines Lodge South Apartments (Temporary Residential Apartments for Employees)	RES3D	Varies depending on occupancy >5

TABLE 6-5.
POPULATIONS EXPOSED IN 500-YEAR (0.2%) FLOOD HAZARD AREA

Facility Name	Occupancy Class (Residential)	Population (based on 2 residents per household)
Pinewood Village Apt. #8	RES3D	2
Pinewood Village Apt. #7	RES3D	2

TABLE 6-5. POPULATIONS EXPOSED IN 500-YEAR (0.2%) FLOOD HAZARD AREA		
Facility Name	**Occupancy Class (Residential)**	**Population (based on 2 residents per household)**
Koasati Pines Lodge North	RES4	Varies depending on rental occupancy
Koasati Pines Lodge South	RES4	Varies depending on rental occupancy

Of the population exposed to flood events, the most vulnerable include the economically disadvantaged and the population over the age of 65. Economically disadvantaged populations are more vulnerable because they are likely to evaluate their risk and make decisions to evacuate based on the net economic impact on their family. The population over the age of 65 is also more vulnerable because they are more likely to seek or need medical attention which may not be available due to isolation during a flood event, and they may have more difficulty evacuating. Issues of flooding off include roadways owned by the parish, which sometimes block ingress and egress,

The Tribe has previously served as an evacuation area for Allen Parish, as well as other surrounding parishes, and will, undoubtedly, serve in a similar capacity again in the future when needed. Based on the analysis conducted for the 2014 Louisiana State Hazard Mitigation Plan, the analysis identifies almost 1,800 individuals in need of short-term shelter (based on 2000 population - no updated information was contained in the State's 2019 update). This increased number of shelter needs is something which the Tribe must take into consideration when developing its response capabilities and emergency response functions.

Additionally, flooding has the potential to impact the cultural aspect for many tribal members with respect to the availability of longleaf pine and rivercane for making of traditional Coushatta baskets, something which many tribal families rely on for self-generated income from making and selling the baskets. In addition, flooding in areas where culturally significant medicinal plants are grown can impact their availability for significantly long periods.

The number of injuries and casualties resulting from flooding is generally limited based on advance weather forecasting, blockades, and warnings. Therefore, injuries and deaths generally are not anticipated if proper warning and precautions are in place; however, isolation can easily occur, thereby increasing the level of responsibility for the Tribe. Ongoing mitigation efforts should help to avoid the most likely cause of impacts and potential injuries, and the Tribe has identified several flood-related strategies which will enhance its resilience to impact from flooding events.

There are no reported claims of fatalities or injuries as a result of a flood event on the Coushatta Reservation or at any of its facilities and structures.

6.3.3 Impact on Property

After considering the population exposed to the flood hazard, value of building stock exposed to, and damaged by, the 100- and 500-year annual chance flood events were evaluated. To provide a general estimate of number of properties and structural/content replacement value, the developed flood boundaries and a Coushatta Tribe parcel GIS shape file containing assessed values (provided by the Coushatta Tribe) were used. For structures for which no valuation was available, assumptions were made based on average square footage for similar structure type/occupancy code. Parcel centroids that intersected the 1 and 0.2 percent flood zones were totaled to approximate the number of properties and assessed values (total, building and land) located in the flood zone. Table 6-6 summarizes the number of structures in the 100- and 500-year flood boundaries. Table 6-7 summarizes the estimated value of exposed structures in the 100- and 500-year flood boundaries.

TABLE 6-6.
STRUCTURES IN FLOODPLAINS

	Number of Structures in Floodplain								
	Other*	Commercial	Industrial	Medical	Hotels & Multi-Family Structures	Government	Education	Hazmat	Total
100-year	11	19	4	1	2	4	2	1	**44**
500-year	4	4	1	0	4	3	2	0	**18**

TABLE 6-7.
VALUE OF STRUCTURES IN FLOODPLAINS

	Value Exposed		Total Losses
	Structure	Contents	
100-year	$12,145,654	$1,878,129	**$14,023,783**
500-year	$5,730,248	$1,326,726	**$7,056,974**

*Other represents structures such as maintenance shops; various storage facilities (e.g., golf cart storage facility, heat/air storage bldg.) and large canopy structure for outdoor events.

6.3.4 Impact on Critical Facilities and Infrastructure

In addition to considering general building stock at risk, the risk of flood to critical facilities and utilities was evaluated. Table 6-8 and Table 6-9 list critical facilities and infrastructure located in the 100- year flood hazard area.

TABLE 6-8. CRITICAL FACILITIES IN THE 100-YEAR FLOODPLAIN							
Jurisdiction	Medical and Health Services	Government Function	Protective	Hazardous Materials	Schools	Other	**Total**
Coushatta Reservation*	1	4	0	2	1	5	**13**
*Based on FEMA NFIP maps and potential exposure of structures							

TABLE 6-9. CRITICAL INFRASTRUCTURE IN THE 100-YEAR FLOODPLAIN							
Jurisdiction	Transportation (Roadway Miles)	Water Supply	Wastewater	Power	Communications	Other	**Total**
Coushatta	~40	0	1	0	1	0	**2**

In cases where short-term functionality is impacted by a hazard, other facilities of neighboring municipalities may need to increase support response functions during a disaster event. Mitigation planning should consider means to reduce impact on critical facilities and ensure sufficient emergency and school services remain when a significant event occurs.

Also for consideration with respect to Critical Infrastructure are roadways historically flooded, which include the following. These roadways have been identified as potential mitigation strategies within the 2016 plan and carried forward into the 2021 action plan.

- Bel Oil Road
- Willis Courville Road
- Clarence Buller Road
- Ray Shuff Road
- C.C. Bel Road
- Strangers Tree Road
- Panther Road
- Lauderdale Woodyard Road
- Clyde Chachere Road

6.3.5 Impact on Economy

Impact on the economy related to a flood event on the Coushatta Tribe would include loss of property and associated revenues resulting from loss of businesses, the values of which cannot be determined. Depending on the duration between onset of the event and recovery, businesses within the area, including those non-tribal businesses which support tribal efforts, may not be able to sustain the economic loss of their business being disrupted for an extended period of time. Historical data has demonstrated that those businesses impacted by a disaster are less likely to reopen after an event. Potential loss of gross revenues from all businesses owned by the Tribe would be extremely high, considering the potential loss to agriculture, livestock, rice fields, crawfish farms, hotel revenue, and revenue generated from the Casino, among other streams. Economic loss within Allen Parish would also have an economic impact on the Coushatta Tribe, as many residents within Allen Parish frequent the Tribe for entertainment purposes as well.

In addition, the potential damage to the transportation infrastructure as a result of a major flooding event would further impact the economy of both the Tribe and Allen Parish (and ultimately the State) with respect to the transporting of agricultural goods, and the decrease in tourism.

From a cultural perspective, also for consideration is the impact of a flood with respect to the destruction of native plants utilized for basket making – a cottage industry on which many tribal families rely upon for self-generated income.

6.3.6 Impact on Environment

Flooding is a natural event, and floodplains provide many natural and beneficial functions. Nonetheless, with human development factored in, flooding can impact the environment in negative ways.

Because many floodplains border water bodies, floodplains have historically been popular sites to establish settlements. Human activities tend to concentrate in floodplains for a number of reasons: water is readily available; land is fertile and suitable for farming; transportation by water is easily accessible; and land is flatter and easier to develop. But human activity in floodplains frequently interferes with the natural function of floodplains. It can affect the distribution and timing of drainage, thereby increasing flood problems. Human development can create local flooding problems by altering or confining drainage channels. This increases flood potential in two ways: it reduces the stream's capacity to contain flows, and it increases flow rates or velocities downstream during all stages of a flood event. Pollution from roads, such as oil, and hazardous materials can wash into rivers and streams. During floods, these can settle onto normally dry soils, polluting them for agricultural uses. Human development such as bridge abutments and levees, and logjams from timber harvesting can increase stream bank erosion, causing rivers and streams to migrate into non-natural courses.

Floodplains can support ecosystems that are rich in quantity and diversity of plant and animal species. A floodplain can contain 100 or even 1000 times as many species as a river. Wetting of the floodplain soil releases an immediate surge of nutrients: those left over from the last flood, and those that result from the rapid decomposition of organic matter that has accumulated since then. Microscopic organisms thrive and larger species enter a rapid breeding cycle. Opportunistic feeders (particularly birds) move in to take advantage. The production of nutrients peaks and falls away quickly; however, the surge of new growth endures for some time. This makes floodplains particularly valuable for agriculture. Species growing in floodplains are markedly different from those that grow outside floodplains. For instance, riparian trees

(trees that grow in floodplains) tend to be very tolerant of root disturbance and very quick growing compared to non-riparian trees.

For the Coushatta Tribe, much of the development and economic growth on the Reservation is based on natural resources, which are environmentally vulnerable to a flooding hazard. Rice field, crawfish farms, agricultural fields, and the timber-rich ecosystems could potentially be destroyed. Also of significant concern is the impact on the cultural areas of the Reservation, including those resources on which the Tribe has been dependent for centuries to continue much of its heritage.

6.4 Future Development Trends

The Coushatta Tribe currently utilizes the Allen Parish building and land use codes to a large extent, while concurrently adhering to federal regulations when funding requires such. The Tribe is not currently enrolled in the NFIP. While development may occur in areas which have been previously flooded, the Tribe regulates such that the risk will be reduced through building standards and performance measures. The Tribe has no building structures currently under development with the exception of a remodel of the Heritage Building; however, should that change during the life cycle of this plan, such projects will be evaluated based on areas frequently flooded, with appropriate actions taken to ensure reduced impact.

Based on analysis performed utilizing the 2011 FEMA-adopted flood maps, 509.79 acres of the Coushatta Reservation are within the 100-year floodplain. As indicated, any new construction or any new development by the Tribe will continue to meet base flood elevations (BFE), and wetlands that will be filled in to meet BFE will be offset elsewhere in the development area through construction of retention ponds and other projects to create a net-zero topographic change. The Tribe recognizes that to do otherwise will impact previously built areas in other parts of the Reservation.

At the time of this 2021 update, Allen Parish and the Coushatta Tribe are in the process of (potentially) obtaining grants under the LWI to repair and enhance several roadways identified in Section 6.3.4 which are frequently flooded. Those roadways serve as primary routes on and off the reservation and connect frequently flooded areas to major thoroughfares owned by the State, which are the primary evacuation roadways. Reconstruction of those roadways includes retention ponds, a levee, culverts increased in size to capture more floodwaters and runoff, a new elevated bridge, and roadways designed to be two (2) (or more) feet above base flood elevation. Once completed, these roadways will help decrease impact of flood (or other hazard events causing increased precipitation). Also under the LWI program, the Tribe is reviewing a potential mitigation project for protection of its Wastewater Treatment Plant, which will include a barrier around the plant to protect the structure from encroaching flood waters.

6.5 Climate Change Impacts

Use of historical hydrologic data has long been the standard of practice for designing and operating water supply and flood protection projects. For example, historical data are used for flood forecasting models and to forecast snowmelt runoff for water supply. This method of forecasting assumes that the climate of the future will be similar to that of the period of historical record. However, the hydrologic record cannot be used to predict changes in frequency and severity of extreme climate events such as floods. Going forward, model calibration or statistical relation development must happen more frequently, new forecast-based tools must be developed, and a standard of practice that explicitly considers climate change must be adopted.

Climate change is already impacting water resources, and resource managers have observed the following:

- Historical hydrologic patterns can no longer be solely relied upon to forecast the water future.
- Precipitation and runoff patterns are changing, increasing the uncertainty for water supply and quality, flood management, and ecosystem functions.
- Extreme climatic events will become more frequent, necessitating improvement in flood protection, drought preparedness, severe weather events, and emergency response. The past decade alone has experienced the most days of heavy precipitation per year than any decade in the past century, as well as an increase in the number of days above 90 degrees, and some of the most severe weather events (e.g., February 2021 ice/snow/severe weather event).

Scientists project greater storm intensity, resulting in more direct runoff and flooding. Changes in watershed vegetation and soil moisture conditions will likewise change runoff and recharge patterns. As stream flows and velocities change, erosion patterns will also change, altering channel shapes and depths, possibly increasing sedimentation behind dams, and affecting habitat and water quality. With potential increases in the frequency and intensity of wildfires due to climate change, there is potential for more floods following fire, which increase sediment loads and water quality impacts.

As hydrology changes, what is currently considered a 100-year flood may strike more often, leaving many communities at greater risk. Planners will need to factor a new level of safety into the design, operation, and regulation of flood protection facilities such as dams, floodways, bypass channels and levees, as well as the design of local sewers and storm drains.

6.6 Issues

A fairly large portion of the Tribal lands has the potential to flood at irregular intervals, generally in response to a succession of intense rainstorms and hurricanes. Storm patterns of warm, moist air are normal events, usually occurring between May and January, which can cause moderate flooding in areas of the Reservation. Spring in particular is a peak season for severe thunderstorms, which can stall while passing overhead. As soils tend to be saturated during this time due to the low evaporation rates, spring typically becomes a period of higher streamflow, increasing the potential for high water with low-lying, poorly drained areas more prone to flooding.

A worst-case scenario for a flood event would be a series of storms that result in high accumulations of runoff surface water within a relatively short time period. This could overwhelm response capabilities on the Reservation and within Allen Parish (the Tribe often provides emergency assistance to surrounding communities). Major roads could be blocked, preventing critical access for residents and critical functions in portions of the planning region. Such has occurred with a fair amount of regularity. This has required helicopter response in some cases for medical-related issues.

Areas with high in-channel flows (including draining areas) could scour channels, possibly washing out roads (or bridges within Allen Parish) creating more isolation problems, and further exacerbating erosion along the roadways. In the case of multi-basin flooding, repairs could not be made quickly enough to restore critical facilities and infrastructure. Also at issue is the fact that as the Tribe continues to grow, areas where flooding previously did not occur, or where impact was minimal, may experience a higher level of flooding. While human activities influence the impact of flooding events, human activities can also interface effectively with a floodplain as long as steps are taken to mitigate the activities' adverse impacts on floodplain functions. With the completion of this plan and assimilation of all data, the Tribe will be in a better position to consider flooding events and areas of impact as it begins construction of new structures. The Tribe also anticipates working with Allen Parish in this regard, as new development in areas off the Reservation may also influence areas on the Reservation, so a coordinated planning effort will help ensure reduced flood risk.

The following flood-related issues are relevant to the planning area:

- The risk associated with the flood hazard overlaps the risk associated with other hazards such as tropical storms, hurricanes, and thunderstorms. This provides an opportunity to seek mitigation goals with multiple objectives to reduce the risk of multiple hazards.
- Potential climate change may impact flood conditions throughout the Reservation and Allen Parish.
- More information is needed on flood risk with respect to structure type, year built, elevation, etc., to support the concept of risk-based analysis of capital projects.
- Updated NFIP flood-maps would be of benefit.
- There needs to be a sustained effort to gather historical damage data, such as high-water marks on structures and damage reports, to measure the cost-effectiveness of future mitigation projects.
- Ongoing flood hazard mitigation will require funding from multiple sources.
- There needs to be a coordinated hazard mitigation effort between the Coushatta Tribe, Allen Parish, and the State of Louisiana as it relates to flooding and flood induced issues and the potential for areas to experience isolation as a result of limited ingress and egress to certain areas of the Reservation and tribal lands. This is of serious concern as the State has identified evacuation routes which traverse the Reservation, and the Tribe's Casino Resort and hotels have previously served as shelters, which have been significantly impacted by commodity shortages as a result of impassible roadways.
- Floodplain residents need to continue to be educated about flood preparedness and the resources available during and after floods.

- Consideration of enrollment into the NFIP and the promotion of flood insurance as a means of protecting property from the economic impacts of frequent flood events should be considered.
- Existing floodplain-compatible uses such as agricultural and open space need to be maintained.

6.7 Impact and Results

Based on review and analysis of the data, the Planning Team has determined that the probability for impact from Flood throughout the area is likely, particularly given the number of disaster declarations specifically related to Flood-typed events. When reviewing the flood hazard, the planning team members considered the following facts:

– The area experiences some level of flood annually, albeit not always to the level of a disaster declaration. This does include flash floods, which have occurred on the tribal planning area. Rainwaters in other parts of watersheds outside of the parish (or even sometimes in other states) that are impacted by weather events have the potential to impact the Reservation and planning area.

– The Tribe has had several structures impacted by flood events, including one structure, the Coushatta Inn, which had to be demolished as a result of flood waters associated with Hurricane Barry (discussed in detail within the Hurricane Profile). The Tribe's Wastewater Treatment Plant has also been impacted by high water levels.

– Structural damage varies due to flood depths and existing floodplain management regulations, but even small amounts of water flooding a structure can quickly cause mold, particularly in humid-rich areas such as Louisiana.

– Roadways in the area are very frequently inundated and impassable. This can occur when other areas of the Tribe or Reservation are not impacted.

– Issues within surrounding Allen Parish as they relate to floodwater has historically prevented the Tribe from expansion, particularly in the areas where its businesses and residential structures are located as a result of flood waters leaving roadways impassable and restricting access, including for emergency services.

– The Tribe has also had restoration projects impacted by floodwaters.

Based on the potential impact, and the issues related to life-safety insofar as response capabilities are impacted, the Planning Team determined the CPRI score to be 3.15 with overall vulnerability determined to be a high level.

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CHAPTER 7.
SEVERE WEATHER

Severe weather refers to any dangerous meteorological phenomena with the potential to cause damage, serious social disruption, or loss of human life. For purposes of this profile, severe weather includes thunderstorms and lightning, downbursts, wind, extreme heat and cold, hailstorm, ice and freezing rain, and snowstorms. Severe weather differs from extreme weather, which refers to unusual weather events at the extremes of the historical distribution.

Generally, severe weather covers wide geographic areas; localized severe weather affects more limited geographic areas. It is usually applied to local, intense, often damaging storms such as thunderstorms, hailstorms, and tornadoes, but it can also describe more widespread events such as tropical systems, blizzards, nor'easters, and *derechos*. The entire Reservation and tribal planning area are susceptible to the various severe weather events.

For purposes of this analysis, flooding associated with a severe weather incident is discussed independently in Chapter 6. During update of this plan, the February 2021 severe weather event significantly impacted the Tribe; however, due to the timelines associated with plan development and cutoff dates for inclusion of this plan, only brief mention is made of the event, which will be included in greater detail in future updates when all relevant data becomes available.

7.1 GENERAL BACKGROUND

7.1.1 Thunderstorms

A thunderstorm is a rain event that includes thunder and lightning. A thunderstorm is classified as "severe" when it contains one or more of the following:

- Hail with a diameter of three-quarter inch or greater;
- Winds gusting in excess of 50 knots (57.5 mph); or
- Tornado.

Three factors cause thunderstorms: moisture, rising unstable air (air that keeps rising once disturbed), and a lifting mechanism to provide the disturbance. The sun heats the surface of the earth, which warms the air above it. If this warm surface air is forced to rise (hills or mountains can cause rising motion, as can the interaction of warm air and cold air or wet air and dry air) it will continue to rise as long as it weighs less and stays warmer than the air around it. As the air rises, it transfers heat from the earth's surface to the upper atmosphere (the process of convection). The water vapor it contains begins to cool and it condenses into a cloud. The cloud eventually grows upward into areas where the temperature is below freezing. Some of the water vapor turns to ice and some of it turns into water droplets. Both have electrical charges. Ice particles usually have positive charges, and rain droplets usually have negative charges. When the charges build up enough, they are discharged in a bolt of lightning, which causes the sound heard as thunder. Thunderstorms have three stages (see Figure 7-1).

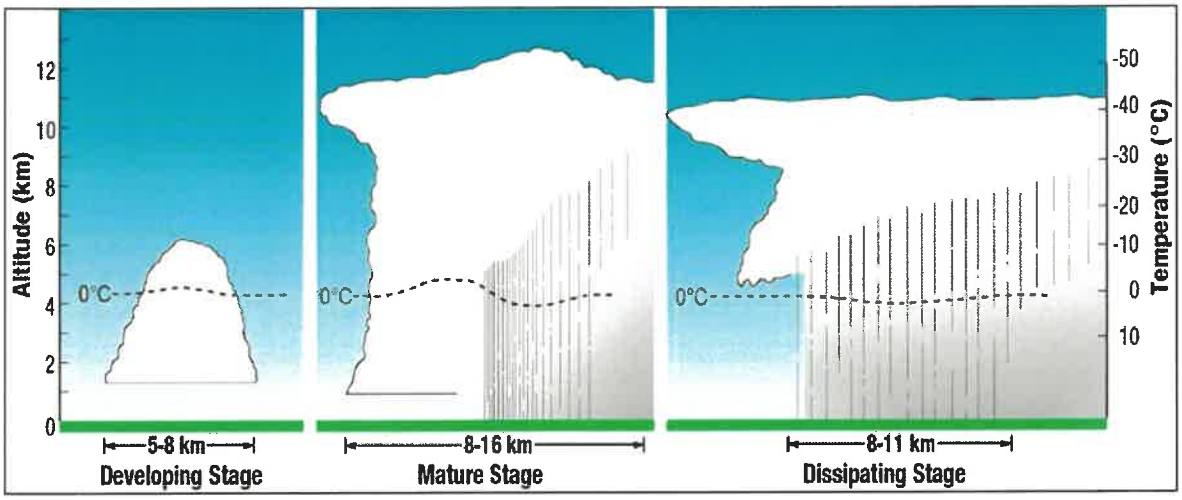

Figure 7-1 The Thunderstorm Life-Cycle

There are four types of thunderstorms depending on the degree of atmospheric instability, the change in wind speed with height (called *wind shear*), and the degree to which the storm's internal dynamics are coordinated with those of adjacent storms:

- **Single-Cell Thunderstorms**—Single-cell thunderstorms usually last 20 to 30 minutes. A true single-cell storm is rare, because the gust front of one cell often triggers the growth of another. Most single-cell storms are not usually severe, but a single-cell storm can produce a brief severe weather event. When this happens, it is called a pulse severe storm.
- **Multi-Cell Cluster Storm**—A multi-cell cluster is the most common type of thunderstorm. The multi-cell cluster consists of a group of cells, moving as one unit, with each cell in a different phase of the thunderstorm life cycle. Mature cells are usually found at the center of the cluster and dissipating cells at the downwind edge. Multi-cell cluster storms can produce moderate-size hail, flash floods, and weak tornadoes. Each cell in a multi-cell cluster lasts only about 20 minutes; the multi-cell cluster itself may persist for several hours. This type of storm is usually more intense than a single-cell storm.
- **Multi-Cell Squall Line**—A multi-cell line storm, or squall line, consists of a long line of storms with a continuous well-developed gust front at the leading edge. The line of storms can be solid, or there can be gaps and breaks in the line. Squall lines can produce hail up to golf-ball size, heavy rainfall, and weak tornadoes, but they are best known as the producers of strong downdrafts. Occasionally, a strong downburst will accelerate a portion of the squall line ahead of the rest of the line. This produces what is called a bow echo. Bow echoes can develop with isolated cells, as well as squall lines. Bow echoes are easily detected on radar but are difficult to observe visually.

- **Super-Cell Storm**—A super-cell is a highly organized thunderstorm that poses a high threat to life and property. It is similar to a single-cell storm in that it has one main updraft, but the updraft is extremely strong, reaching speeds of 150 to 175 miles per hour. Super-cells are rare. The main characteristic that sets them apart from other thunderstorms is the presence of rotation. The rotating updraft of a super-cell (called a mesocyclone when visible on radar) helps the super-cell to produce extreme weather events, such as giant hail (more than 2 inches in diameter), strong downbursts of 80 miles an hour or more, and strong to violent tornadoes.

7.1.2 Lightning

Lightning is a rapid discharge of electrical energy in the atmosphere. When the charge difference between the ground and the cloud becomes too large, a conductive channel of air develops between the cloud and the ground, and a small amount of charge (step leader) starts moving toward the ground. When it nears the ground, an upward leader of opposite charge connects with the step leader. At the instant this connection is made, a powerful discharge occurs between the cloud and the ground. We see this discharge as a bright flash of lightning.

Lightning strikes the United States about 25 million times per year. Although most lightning occurs in the summer, people can be struck at any time of the year. During the time period of 2006 through 2019, 418 people were struck and billed by lightning in the United States. According to a study completed by the National Lightening Safety Council (2020), almost two thirds of those deaths occurred while people were taking part in outdoor leisure activities. During the 14-year period, fishermen accounted for four times as many fatalities as golfers, while beach and camping activities each accounted for approximately twice as many deaths as golf. Soccer saw the greatest number of deaths (12) compared to golf (10). Work-related activities leading to the most deaths – ranching/farming topped the list with 19 deaths, with yard work (including mowing the lawn) accounting for 18 fatalities.[22]

Primary age and gender impacted is illustrated in Figure 7-2, with July being the month with the highest number of lightning fatalities from 2006 through 2019. 2016 saw the highest number of deaths in one year with 40, followed by 2010 and 2012 each having 29. According to NOAA, Louisiana tied 9th nationwide in deaths associated with lightning strike during the time period 2010-2019 (Figure 7-3).[23] In actuality, however, the total number of deaths associated with lightning strikes may not be known or go unreported as electrical current may travel through numerous other paths, including power lines,

[22] National Lightning Safety Council. (2020) A detailed Analysis of Lightning Deaths in the United States from 2006 through 2019. Accessed 22 Feb. 2020. Available at: Analysis06-19.pdf (weather.gov)

[23] Vaisala, 2019. https://www.weather.gov/media/safety/lightning/10-19Lightning_Fatality_Rate_Maps.pdf

telephone lines, and electric appliances, causing injuries or even fatalities that are not associated directly with a lightning storm.

Thunderstorms and associated lightning are a common occurrence throughout Louisiana all year, but most often occur during the summer months as a result of the intense heat radiating off of the Earth's surface. While single-cell storms are the most common type of thunderstorm to occur everywhere, Louisiana experiences such storms more frequently than other areas. Fortunately, the non-tropical severe weather that does occur is not as significant as in other parts of the country, such as Joplin, Missouri or Moore, Oklahoma.

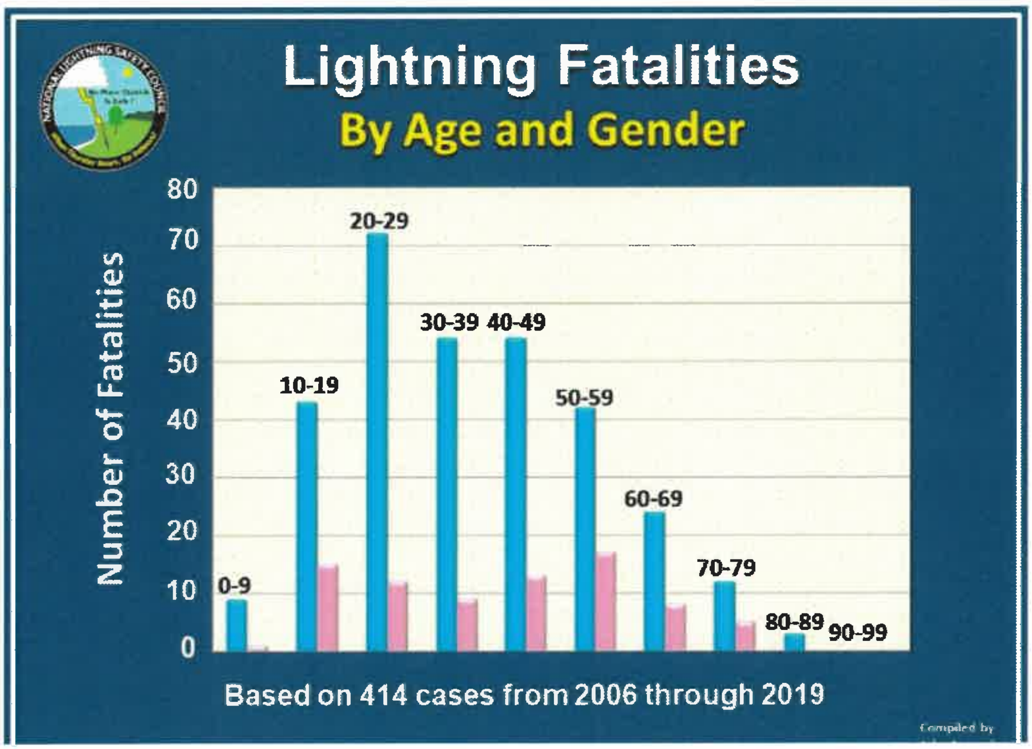

Figure 7-2 Age and Gender Distribution for Cases

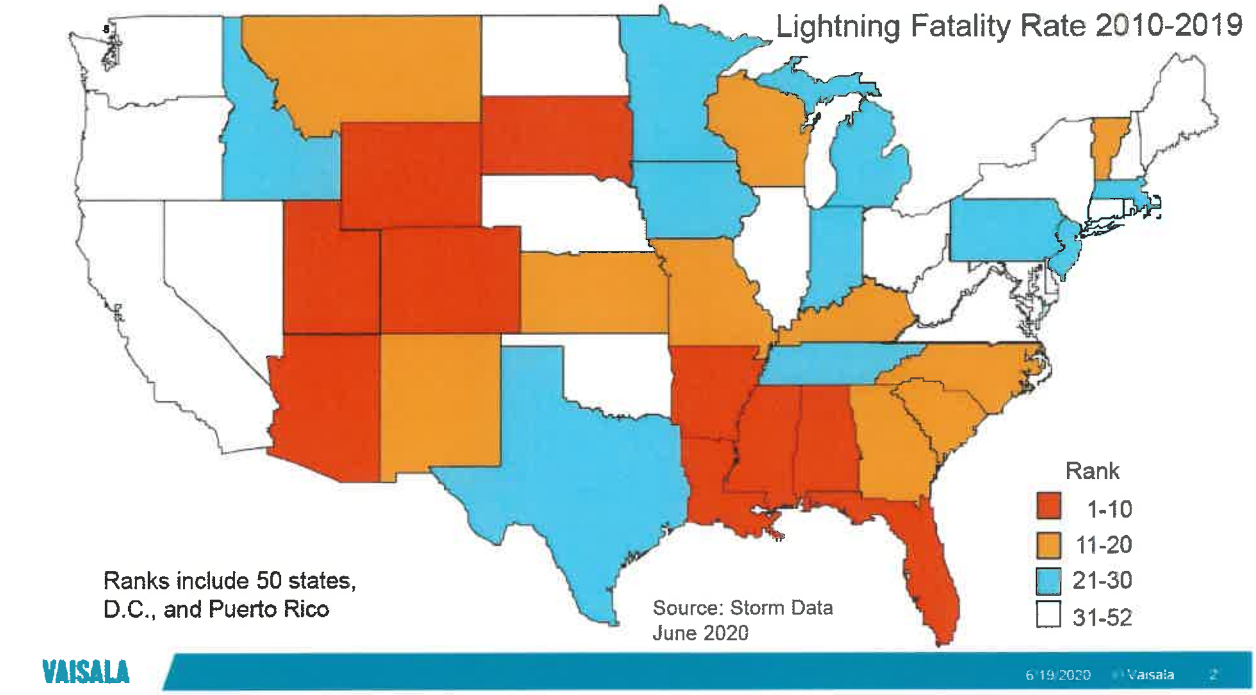

Figure 7-3 Nationwide Fatality Ranking by State

7.1.3 Damaging Winds

Damaging winds can occur in a number of different ways, associated with several different severe weather events. Damaging winds are classified as those exceeding 60 mph. Damage from such winds account for half of all severe weather reports in the lower 48 states and is more common than damage from tornadoes. Wind speeds can reach up to 100 mph and can produce a damage path extending for hundreds of miles (winds 74+ mph is considered hurricane force winds).

Straight-line winds, winds that come out of a thunderstorm, in extreme cases, can cause wind gusts exceeding 100 mph. These winds are most responsible for hailstorm and thunderstorm wind damage. One type of straight-line wind, the downburst, can cause damage equivalent to a strong tornado. High-wind velocity and wind-blown debris, along with lightning or hail, result in the damage caused by tornadoes.

FEMA identifies several types of damaging winds, some of the more common ones are as follows, although not all apply within the State of Louisiana, Allen Parish, or the Coushatta Reservation.

- **Straight-line winds** —Any thunderstorm wind that is not associated with rotation; this term is used mainly to differentiate from tornado winds. Most thunderstorms produce some straight-line winds as a result of outflow generated by the thunderstorm downdraft. Relative frequency within the planning area is high, with duration lasting a few minutes to one day.
- **Downdrafts** —A small-scale column of air that rapidly sinks toward the ground.

- **Downbursts—**A strong downdraft with horizontal dimensions larger than 2.5 miles resulting in an outward burst or damaging winds on or near the ground. Downburst winds may begin as a microburst and spread out over a wider area, sometimes producing damage similar to a strong tornado. Although usually associated with thunderstorms, downbursts can occur with showers too weak to produce thunder. Downbursts occur with medium to high frequency in the state, associated with approximately 5 percent of all thunderstorms; duration is ~15-20 minutes.
- **Microbursts**—A small, concentrated downburst that produces an outward burst of damaging winds at the surface. Microbursts are generally less than 2.5 miles across and short-lived, lasting only 5 to 10 minutes, with maximum wind speeds up to 168 mph. There are two kinds of microbursts: wet and dry. A wet microburst is accompanied by heavy precipitation at the surface. Dry microbursts, common in places like the high plains and the intermountain west, occur with little or no precipitation reaching the ground.
- **Gust front—**A gust front is the leading edge of rain-cooled air that clashes with warmer thunderstorm inflow. Gust fronts are characterized by a wind shift, temperature drop, and gusty winds out ahead of a thunderstorm. Sometimes the winds push up air above them, forming a shelf cloud or detached roll cloud.
- **Derecho**—A derecho is a widespread thunderstorm wind caused when new thunderstorms form along the leading edge of an outflow boundary (the boundary formed by horizontal spreading of thunderstorm-cooled air). The word "derecho" is of Spanish origin and means "straight ahead." Thunderstorms feed on the boundary and continue to reproduce. Derechos typically occur in summer when complexes of thunderstorms form over plains, producing heavy rain and severe wind. The damaging winds can last a long time and cover a large area.
- **Bow Echo—**A bow echo is a linear wind front bent outward in a bow shape. Damaging straight-line winds often occur near the center of a bow echo. Bow echoes can be 200 miles long, last for several hours, and produce extensive wind damage at the ground.
- **Thunderstorm Winds –** Wind blowing due to thunderstorms, and thus associated with temperature and pressure gradients. High relative frequency in Louisiana, particularly during spring and summer months, with a relative maximum duration ranging from a few minutes to several hours.
- **Hurricane Winds / Tropical Storms (discussed within the hurricane profile).** Low-to-medium relative frequency in Louisiana, with a relative maximum duration lasting several days.
- **Tornado Winds (discussed in detail in the Tornado profile).** Low-to-medium relative frequency in Louisiana, with a relative maximum duration ranging from a few minutes to a few hours.

Within the State of Louisiana, and specifically for the Coushatta Tribe, high winds of concern are those associated with straight-line winds, thunderstorm winds, and downbursts. Straight-line and thunderstorm winds are of higher concern. Figure 7-5 illustrates the 700-Year 3-Second Peak Gust Wind Speeds in

Louisiana as defined in the State's 2019 Hazard Mitigation Plan to which the state is susceptible (p. 48). Review of the data indicates that for the tribal planning area, 120 mph peak gusts have historically been associated with the 700-year return period wind speed. This corresponds to approximately a 7 percent probability of exceedance in 50 years, or a 0.14 percent chance of annually experiencing or exceeding such wind force.

The Beaufort Wind Scale (also discussed within the Tornado profile), provides a wind speed force spectrum on which impact or severity can be determined as identified in Table 7-1 (NOAA, SPC). Figure 7-5 illustrates the various wind speed zones nationwide (2017). Figure 7-6 identifies some significant wind events occurring on the Coushatta Reservation or near tribal owned structures.

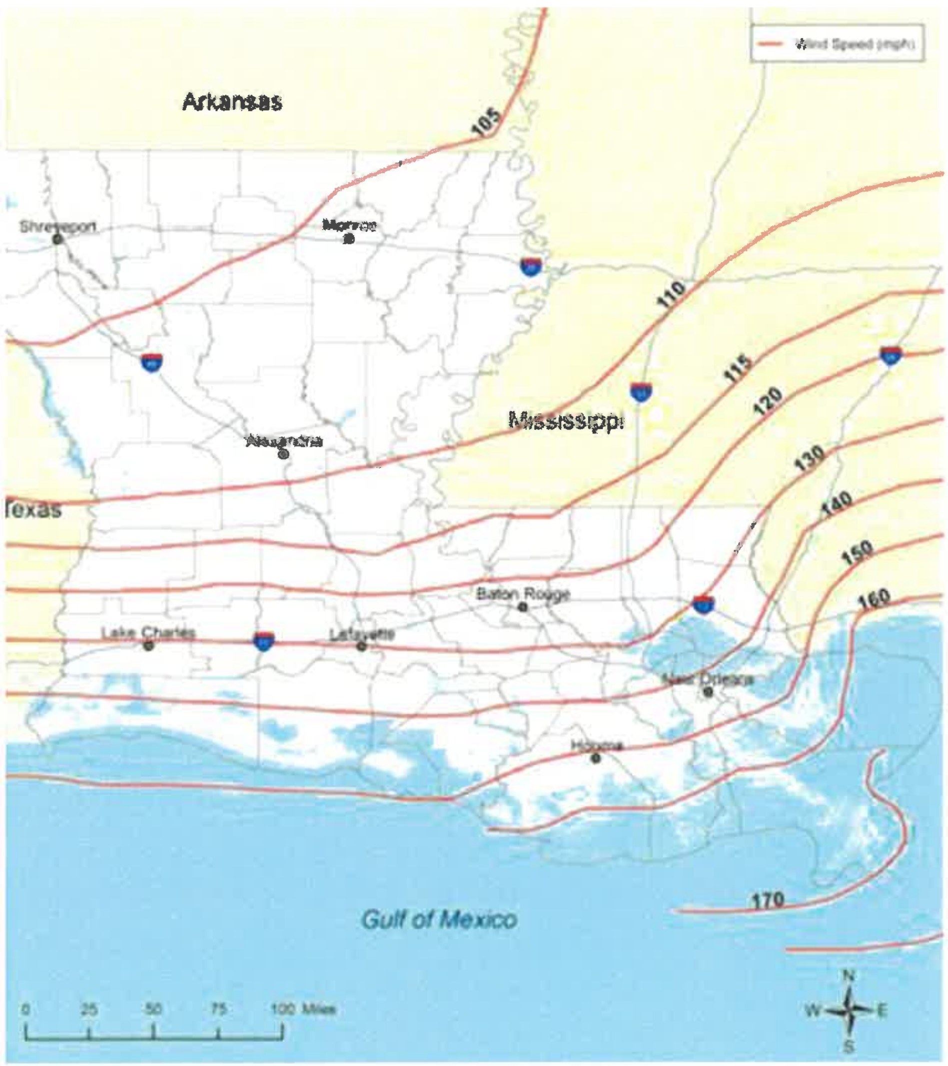

Figure 7-4 700-Year 3-Second Peak Gust Windspeeds

TABLE 7-1. BEAUFORT WIND SCALE			
Force	**Wind (MHP)**	**WMO Classification**	**Appearance of Wind Effects on Land**
1	1-3	Light Air	Smoke drift indicates wind direction, wind vanes still
2	4-7	Light Breeze	Wind felt on face, leaves rustle, vanes begin to move
3	8-12	Gentle Breeze	Leaves and small twigs constantly moving, light flags extended
4	13-17	Moderate Breeze	Dust, leaves, and loose paper lifted; small tree branches move
5	18-24	Fresh Breeze	Small trees begin to sway
6	25-30	Strong Breeze	Larger tree branches moving, whistling in wires
7	31-38	Near Gale	Whole trees moving, resistance felt walking against wind
8	39-46	Gale	Twigs breaking off trees, generally impedes progress
9	47-54	Strong Gale	Slight structural damage occurs, slate blows off roofs
10	55-63	Storm	Seldom experienced on land, trees broken or uprooted, considerable structural damage possible
11	64-73	Violent Storm	
12	74+	Hurricane	

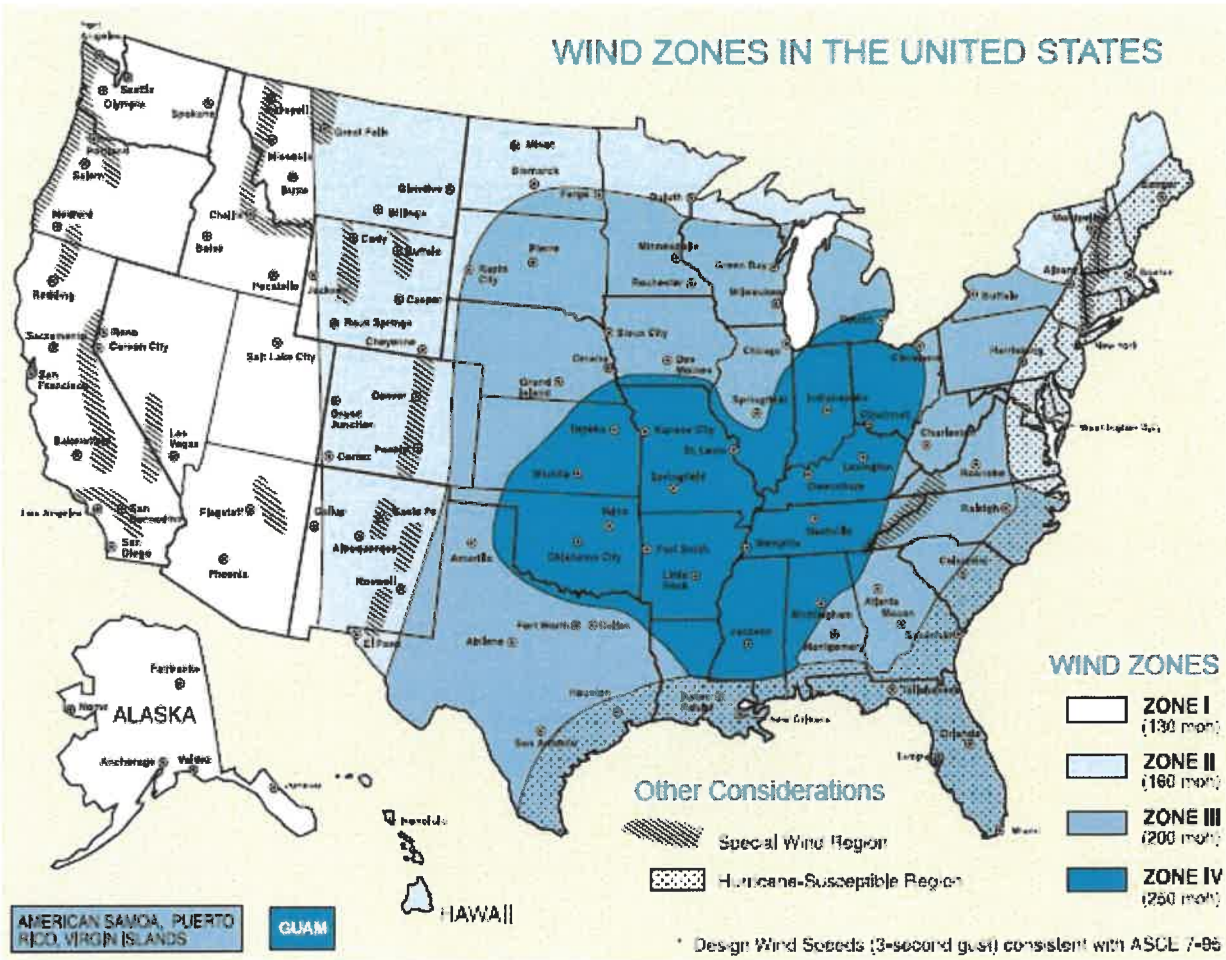

Figure 7-5 Wind Zones in the United States

Figure 7-6 Historic Wind Events

7.1.4 Hailstorms

Hail occurs when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere where they freeze into ice. Recent studies suggest that super-cooled water may accumulate on frozen particles near the back side of a storm as they are pushed forward across and above the updraft by the prevailing winds near the top of the storm. Eventually, the hailstones encounter downdraft air and fall to the ground.

Hailstones grow two ways: by wet growth or dry growth. In wet growth, a tiny piece of ice is in an area where the air temperature is below freezing, but not super cold. When the tiny piece of ice collides with a super-cooled drop, the water does not freeze on the ice immediately. Instead, liquid water spreads across tumbling hailstones and slowly freezes. Since the process is slow, air bubbles can escape, resulting in a layer of clear ice. Dry growth hailstones grow when the air temperature is well below freezing and the water droplet freezes immediately as it collides with the ice particle. The air bubbles are "frozen" in place, leaving cloudy ice. The ice crystals grow through deposition of water vapor onto their surface.

This means that the size of the hailstones varies depending on the severity and size of the thunderstorm. As they fall, they fall into a level of the cloud where the temperature exceeds the freezing point, where they partially melt, only to be caught in yet another updraft, where they re-freeze and grow another layer of ice, eventually falling after developing enough weight, but sometimes only after many trips up and down the cloud. Higher surface temperatures generally mean strong updrafts, which allow more massive hailstones to be supported by the updrafts, leaving them suspended longer. The longer time of suspension means the larger the size of the hailstone.

Hailstorms occur more frequently during the late spring and early summer, during periods of variations between ground surface temperatures and upper atmospheric temperatures. Due to the nature of the variations in weather at lower levels being different based on the geography of the land, the extent and severity of hailstorms varies greatly from area to area, as well as the duration of the event. Even a short but intense storm can cause widespread damage to homes, automobiles, and crops. The wind speed accompanying a hailstorm event will enhance the damage that is caused by hail. For example, hail being blown by a 70 mile per hour wind is capable of doing more damage than hail falling in light wind. In a severe storm situation, the hail size can often be greater than 1" combined with severe winds. This type of situation can cause severe damage from hail. A hail size of less than 1" that is blown by very strong wind can still do significant damage to crops. To farmers, any hail size is too big.

While individual damage to structures and automobiles is often minor, cumulative impact and associated costs to communities can be significant, especially in areas of high agriculture production as hailstorms are often devastating to crops. In the case of the Coushatta Tribe, a large industry base is the hydroponic farm, with greenhouse structures made of heavy plastic covering – something which is very vulnerable to hail. Thus, the severity of a hailstorm depends on the size of the actual ice crystals, the length of time the storm lasts in a given area, and where it occurs. Once hail gets over one inch, the damage to cars, windows, roofs, plastic sheeting, and structures goes up significantly. The force impact of hail goes up exponentially with hail size. For example, 1.5-inch hail will not just do twice as much damage as 0.75-inch hail, it can do many times more the damage. In addition, hail falling from a single storm will not be all the same size. There are great variations due to the existing variables in the immediate vicinity of the storm (e.g., temperature). One area may have golf-ball size hail, while less than a mile away, there may be marble size hail. Table 7-2 provides a traditional object-to-size comparison of the size of a hailstone to a relative item. Figure 7-7 identifies some previous hail events on and around the Reservation.

TABLE 7-2.
SPECTRUM OF HAILSTONE DIAMETERS

Hail Diameter Size	Description
1/4"	Pea
1/2"	Plain M&M
3/4"	Penny

TABLE 7-2.
SPECTRUM OF HAILSTONE DIAMETERS

Hail Diameter Size	Description
7/8"	Nickel
1" (Severe)	Quarter
1-1/4"	Half Dollar
1-1/2"	Ping Pong Ball or Walnut
1-3/4"	Golf Ball
2"	Tennis Ball
2-3/4"	Baseball
3"	Large Apple or Tea Cup
4"	Softball
4-1/2"	Grapefruit
4-3/4" – 5"	Computer CD-DVD

Source: National Weather Service

Figure 7-7 Historic Hail Events in and around the Coushatta Reservation

7.1.5 Extreme Temperatures

Extreme temperature includes both heat and cold events, which can have a significant impact on human health, commercial/agricultural businesses, and primary and secondary effects on infrastructure (e.g., burst pipes and power failure). What constitutes "extreme cold" or "extreme heat" can vary across different areas of the country, based on what the population is accustomed to within the region (CDC, 2014).

Extreme Cold

Extreme cold events are when temperatures drop well below normal in an area. In regions relatively unaccustomed to winter weather, near freezing temperatures are considered "extreme cold." Extreme cold can often accompany severe winter storms, with winds exacerbating the effects of cold temperatures by carrying away body heat more quickly, making it feel colder than is indicated by the actual temperature (known as wind chill). Figure 7-8 demonstrates the value of wind chill based on the ambient temperature and wind speed.

Exposure to cold temperatures, whether indoors or outside, can lead to serious or life-threatening health problems such as hypothermia, cold stress, frostbite or freezing of the exposed extremities such as fingers, toes, nose, and ear lobes. Hypothermia occurs when the core body temperature is <95ºF. If persons exposed to excessive cold are unable to generate enough heat (e.g., through shivering) to maintain a normal core body temperature of 98.6ºF, their organs (e.g., brain, heart, or kidneys) can malfunction. Extreme cold also can cause emergencies in susceptible populations, such as those without shelter, those who are stranded, or those who live in a home that is poorly insulated or without heat (such as mobile homes). Infants and the elderly are particularly at risk, but anyone can be affected.

Extremely cold temperatures often accompany a winter storm, so individuals may have to cope with power failures and icy roads. Although staying indoors as much as possible can help reduce the risk of car crashes and falls on the ice, individuals may also face indoor hazards. Many homes will be too cold—either due to a power failure or because the heating system is not adequate for the weather. The use of space heaters and fireplaces to keep warm increases the risk of household fires and carbon monoxide poisoning. Frozen and/or broken pipes are also associated with increased fire danger with respect to inoperable sprinkler systems resulting from damage sustained due to cold weather.

During cold months, carbon monoxide levels may be high in some areas because the colder weather makes it difficult for car emission control systems to operate effectively. Carbon monoxide levels are typically higher during cold weather because the cold temperatures make combustion less complete and cause inversions that trap pollutants close to the ground (USEPA, 2009).

Temperature (°F)

Wind (mph) \ Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes | 10 minutes | 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph) *Effective 11/01/01*

Figure 7-8 NWS Wind Chill Index

Extreme Heat

Temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks are defined as extreme heat (FEMA, 2006; CDC, 2006). An extended period of extreme heat of three or more consecutive days is typically called a heat wave and is often accompanied by high humidity (Ready America, Date Unknown; NWS, 2005). There is no universal definition of a heat wave because the term is relative to the usual weather in a particular area. The term heat wave is applied both to routine weather variations and to extraordinary spells of heat which may occur only once a century. A basic definition of a heat wave implies that it is an extended period of unusually high atmosphere-related heat stress, which causes temporary modifications in lifestyle and which may have adverse health consequences for the affected population.

Depending on severity, duration and location, extreme heat events can create or provoke secondary hazards including, but not limited to, dust storms, droughts, wildfires, water shortages, and power outages. This could result in a broad and far-reaching set of impacts throughout a local area or entire region. Impacts could include significant loss of life and illness; economic costs in transportation, agriculture, production, energy and infrastructure; and losses of ecosystems, wildlife habitats and water resources.

Extreme heat is the number one weather-related cause of death in the U.S. Figure 7-9 shows the number of weather fatalities based on a 10-year average and 30-year average.[24] Heat has the highest 30-year

[24] NOAA, 2014 (http://www.nws.noaa.gov/om/hazstats.shtml) (Most recently available at time of update.)

average of weather-related fatalities between 1990 and 2019 at an average of 138 deaths per year, as well as the highest 10-year average between 2010-2019 at 103 deaths per year.

Certain populations are considered vulnerable or at greater risk during extreme heat events. These populations include but are not limited to the following: the elderly age 65 and older, infants and young children under five years of age, pregnant woman, the homeless or poor, the overweight, and people with mental illnesses, disabilities, and chronic diseases.

Review of NOAA data averages during the time period 2015-2019 illustrate that of the people impacted, 60 percent (2015), 50 percent (2016), 40.18 percent (2017), and 39.82 percent (2019) were over the age of 60. Sadly, the next highest age-range was children 0-9, many left in vehicles. For several years, Nevada consistently had the most heat victims, followed by Texas, Pennsylvania, and Arizona (all various years). Past history demonstrates that the most strongly affected adults are age 50 and over, with more males impacted than females. Data also indicates that the most dangerous place to be in a permanent home, likely with little or no air conditioning. [25]

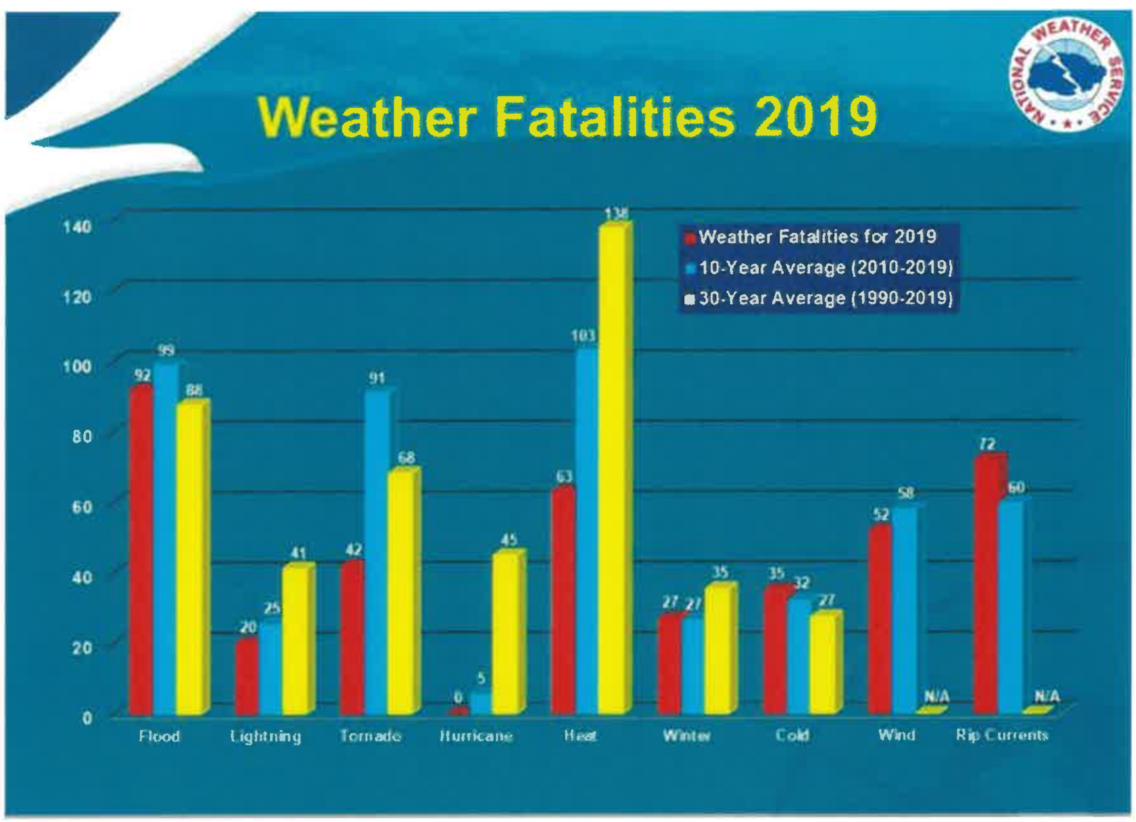

Figure 7-9 Average Number of Weather Related Fatalities in the U.S.

[25] NOAA, 2021. Accessed 23 Feb. 2021. Available online at: https://www.weather.gov/hazstat/

7.1.6 Winter Weather

For Louisiana, severe winter weather (or storm) occurs when humid air from the Gulf of Mexico meets a cold air mass from the North. As temperatures fall, precipitation falls in the form of ice, snow, or even sleet. In some cases, if the ground temperature is cold enough, but the upper air temperature is above freezing, freezing rain can occur as the precipitation makes contact with surface areas, causing massive ice storms.

Ice Storms

The National Weather Service defines an ice storm as a storm that results in the accumulation of at least 0.25 inches of ice on exposed surfaces. Ice storms occur when rain falls from a warm, moist, layer of atmosphere into a below freezing, drier layer near the ground. The rain freezes on contact with the cold ground and exposed surfaces, causing damage to trees, utility wires, and structures (see Figure 7-10).

Ice storm conditions are defined by liquid rain falling and freezing on contact with cold objects creating ice build-ups of 1/4th inch or more that can cause severe damage. An ice storm warning, now included in the criteria for a winter storm warning, is for severe icing. This is issued when 1/2 inch or more of accretion of freezing rain is expected. This may lead to dangerous walking or driving conditions and the pulling down of power lines and trees. A warning is used for winter weather conditions posing a threat to life and property.

Another form of freezing precipitation is ice pellets, which occur when snowflakes melt into raindrops as they pass through a thin layer of warmer air. The raindrops then refreeze into particles of ice when they fall into a layer of sub-freezing air near the surface of the earth.

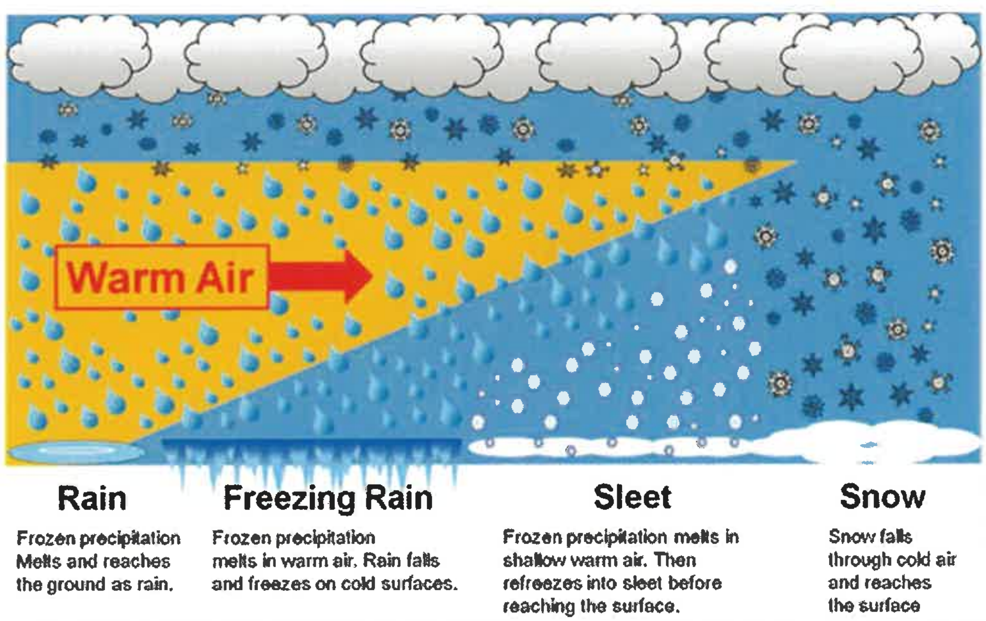

Figure 7-10 Types of Precipitation

Sleet occurs when raindrops fall into subfreezing air thick enough that the raindrops refreeze into ice before hitting the ground. Sleet is different from hail. Sleet is a wintertime phenomenon; hail falls from convective clouds (usually thunderstorms) under completely different atmospheric conditions - and often during the warm spring and summer months.

Snowstorms

Snow is frozen precipitation in the form of a six-sided ice crystal. Snow formation requires temperatures to be below freezing in all or most of the atmosphere from the surface up to cloud level. Snow can fall when surface temperatures are above freezing in a relatively shallow layer. In situations like this, the snow will not have enough time to melt before reaching the ground - though it will be quite wet with large flakes, the result of wet snowflakes sticking to one another.

Generally, ten inches of snow will melt into one inch of water. Sometimes the snow-liquid ratio may be much higher - on the order of 20:1 or 30:1. This commonly happens when snow falls into a very cold air mass, with temperatures of 20 degrees or less at ground-level.

Blowing snow is wind driven snow that reduces visibility to six miles or less causing significant drifting. Blowing snow may be snow that is falling and/or loose snow on the ground picked up by the wind.

A blizzard is a winter snowstorm with sustained or frequent wind gusts to 35 mph or more, accompanied by falling or blowing snow reducing visibility to or below ¼ mile. These conditions must be the predominant condition over a 3-hour period. Extremely cold temperatures are often associated with blizzard conditions but are not a formal part of the definition. The hazard created by the combination of snow, wind, and low visibility significantly increases, however, with temperatures below 20 degrees. A severe blizzard is categorized as having temperatures near or below 10 °F, winds exceeding 45 mph, and visibility reduced by snow to near zero.

Storm systems powerful enough to cause blizzards usually form when the jet stream dips far to the south, allowing cold air from the north to clash with warm air from the south. Blizzard conditions often develop on the northwest side of an intense storm system. The difference between the lower pressure in the storm and the higher pressure to the west creates a tight pressure gradient, resulting in strong winds and extreme conditions due to the blowing snow.

Regional Snowfall Index (RSI)

The Regional Snowfall Index (RSI) developed by NOAA's National Centers for Environmental Information (NCEI), ranks snowstorm impacts on a scale from 1 to 5, similar to the Fujita scale for tornadoes or the Saffir-Simpson scale for hurricanes. The RSI differs from other indices because it includes population and societal impacts. RSI is based on the spatial extent of the storm, the amount of snowfall, and the juxtaposition of these elements with population. Including population information ties the index to societal impacts. Currently, the index uses population based on the 2000 Census.

The RSI is a regional index with specific parameters and thresholds for the calculations (Table 7-3); a separate index is produced for each of the six NCEI climate regions the eastern two-thirds of the nation. Louisiana falls into the "South" Region for the RSI Index.

**TABLE 7-3.
REGIONAL SNOWFALL INDEX (RSI)**

Category	RSI	Value Description
1	1-3	Notable
2	3-6	Significant
3	6-10	Major
4	10-18	Crippling
5	18.0+	Extreme

[For further details on how RSI scores are calculated at the National Climatic Data Center, see Squires, et al. (2011). NOAA, http://www.ncdc.noaa.gov/snow-and-ice/rsi/].

The RSI is an important analysis tool as it demonstrates both the impact of the snowstorm itself, as well as their societal impacts in a historical perspective on a regional scale rather than a national scale. For example, in February 1973, a major snowstorm hit the Southeast affecting areas not prone to snow. The storm stretched from the Louisiana and Mississippi Gulf coasts northeastward to the Carolinas. Over 11 million people received more than 5" of snow and three quarters of a million people in Georgia and South Carolina experienced over 15" of snow. This is currently the 10th highest ranked storm for the Southeast region. This storm would not even be ranked in NESIS. This example illustrates why it is important to discriminate impacts between regions.

NCEI has analyzed and assigned RSI values to almost 600 storms going as far back as 1900. The RSI puts the regional impacts of snowstorms into a century-scale historical perspective, and at a more regional or local level. The index is useful for the media, emergency managers, the public and others who wish to compare regional impacts between different snowstorms. The RSI and Societal Impacts allows one to see the regional RSI values for particular storms, as well as the area and population of snowfall for those storms. The area and population are cumulative values above regional specific thresholds. For example, the thresholds for the Southeast are 2", 5", 10", and 15" of snowfall while the thresholds for the Northeast are 4", 10", 20", and 30" of snowfall.

Review of NCDC data indicates the highest snowfall of record to have occurred in Allen Parish occurred on February 13, 1960 when 8 inches of snow fell at the Mittie 2 station (see Figure 7-11). [26]

[26] National Climatic Data Center. NOAA. (2021). Accessed 23 Feb. 2021. Available online at: https://www.ncdc.noaa.gov/snow-and-ice/snowfall-extremes/LA/3

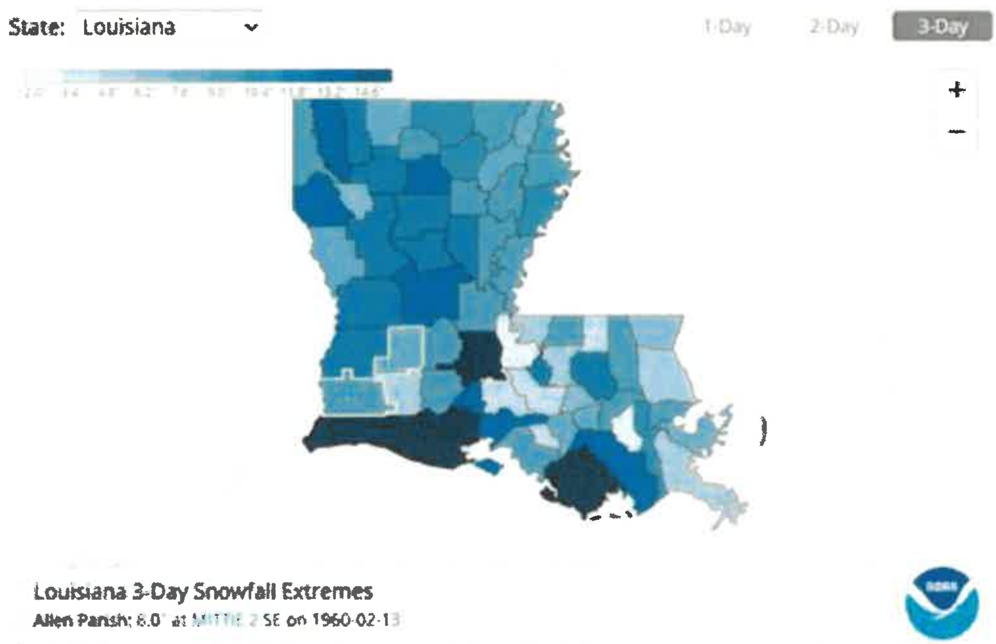

Figure 7-11 Allen Parish 3-Day Snowfall Extreme - February 13, 1960

7.2 HAZARD PROFILE

7.2.1 Extent and Location

The entire planning area is susceptible to the impacts of severe weather. Severe weather events have occurred year-round and will undoubtedly continue to do so. The impact of climate change will only crease the occurrences of severe weather events in the future.

Thunderstorm:

More than 100,000 thunderstorms occur in the United States each year, with lightning striking more than 25 million points on the ground during that same period causing numerous injuries and fatalities (NOAA, Date Unknown). Associated rain events occurring with thunderstorms can cause flooding incidents, including flash floods. Winds customarily associated with thunderstorms also have a destructive and damaging history for the Tribe.

Lightning:

Lightning can also occur with all thunderstorms, making the entire tribal planning area susceptible. Different geographic areas experience varying event frequencies or severity, but lightning can and does occur year-round. While the impact of flash events is highly localized, strong storms can also result in numerous widespread events over a broad area. In addition, the impacts of an event can be serious or widespread if lightning strikes a particularly significant location such as a power station or large public venue. In the case of lightning strikes, population and building density has a correlation with hazard vulnerability and loss. For the Coushatta Tribe, density is lower on the Reservation than in the areas of the tribal enterprises, such as the Casino Resort area where people are more closely centered to the various attractions.

Wind:

[Wind damage associated with a tropical storm or hurricane has impacted the Tribe significantly since completion of the 2016 plan; however, those events are rated within the tropical storm/hurricane profile, and not considered within the severe weather profile.]

Wind events are also customary with thunderstorms and can impact the entire tribal planning area at different levels. With power distribution being highly susceptible to windstorms, the extent of impact can range from a few minutes to days depending on damage. Loss of power can impact the health and safety of tribal members, especially those dependent on electricity for the use of medical equipment. Review of comments from 2021 survey respondents indicate power outages lasting in excess of 15 days as a result of wind damage. Review of data indicates that the Tribe has experienced minor damage to the roof on the fire station, which occurred in approximately the 2003-2004 timeframe as a result of a wind event, although it was not extensive damage. The multipurpose complex, which is approximately 22,000 square feet, has also sustained water damage from wind-driven rain during a significant storm event (exact date unknown), with the building also sustaining wind damage.

Historically, while physical wind damage to tribal structures has not been major in nature, the Tribe has sustained major impact by:

- debris accumulation from fallen trees;
- life safety issues with respect to the danger associated with downed power lines, and the falling trees and limbs;
- the loss of power increasing life safety issues related to vulnerable populations, and individuals reliant on power for medical equipment, such as for delivery of oxygen; and
- the inability to provide water supplies or wastewater management from facilities reliant on electricity without redundant systems.

There is also the economical aspect of structures without power for extended periods of time, as well as impact to administrative or governmental structures without generators, which can, and has, impacted continuity of government for a short period of time, and the ability to provide services (including medical) to tribal members.

Hail:

The impact from hail events can be catastrophic for the agricultural sector, impacting crops and animals, while also causing property damage to structures and vehicles. As is customarily, the size of the hail throughout the planning area varies greatly. The Tribe has experienced damage to crops as a result of hail events (dollar losses unknown), although the events customarily do not last long enough to cause damage to structures, with the exception of the greenhouses due to their plastic sheeting. With those exceptions, while hail does fall occasionally, the size of the hail historically has not been large, and dollar amount of losses fairly low.

Extreme Temperatures:

Extreme temperatures, whether cold or heat, impact the entire tribal planning area. In those areas such as several of the business enterprises, the benefit of generators to allow for heating or cooling during power outages helps reduce impact in those structures. However, many of the structures on the Reservation, including the majority of residential structures and structures housing government operations, do not have generators, and therefore, residents and structures are more susceptible.

Heat

Excessive heat has the potential to increase fire danger resulting from drought-type conditions, while also impacting the health of the citizens. High temperatures have lasted up to a month in duration during the summertime, increasing the risk factor. Review of data illustrates a higher risk factor for our elderly as it relates to the ability to handle increased temperatures. The Tribe does have the ability to establish cooling shelters if needed, and the hazard does also come with some advanced warning, allowing individuals to prepare to some degree. While excessive heat warnings have occurred, the Tribe has no reported loss of life due to the hazard. The Planning Team felt that Excessive Heat does have the potential to impact the tribe, both with respect to individuals at risk, as well as potential economic loss due to agricultural impact or increased fire danger impacting structures.

Cold

Excessive cold has the potential to increase public health concerns as they relate not only to the impact on the individual and their susceptibility to the cold, but also with respect to the use of alternative (and sometimes unsafe) heating conventions, which can cause carbon monoxide poisoning, while also increasing fire occurrences.

As a result of the February 2021 Ice/Snow event (which was not profiled in this update due to the lack of data, but is referenced to record impact), Excessive Cold (and Ice and Snow) are of greater concern during this update than in the previous 2016 plan, with the majority of respondents from the 2021 public outreach survey making reference to the event. This is, undoubtedly due in part to the fact that the event was occurring simultaneous with the update, and the impact on the individual citizens was perhaps more personalized.

While citizens in some instances can take precautionary measures to stay off of roadways for safety concerns due to ice and can use layering of clothes and blankets to stay warm (to some degree), power outages associated with the 2021 severe weather event lasted upwards of five to six days, and in some instances, longer. With the frigid temperatures experienced, no amount of layering was sufficient. With the accumulated layers of ice and snow on the ground, citizens could not seek refuge at a shelter due to the hazardous and often impassable road conditions, causing more isolation. With the freezing temperatures also came the inability to provide fresh water as a result of frozen main lines experienced by the service provider, and the inability to pump the water.

The significant delay in re-establishing power supplies left the majority of the entire Reservation and tribal planning area at high risk, as most of the reservation does not have redundant electrical capabilities. While the Tribe does have some portable generators, which can be transported to residences to run furnaces, with the extremely low temperatures experienced, it curtailed distribution of the generators because it took much longer to regain any level of heat before advancing to the next residence.

While some citizens also have alternative heat methods, such as fireplaces or wood/pellet stoves, for many, and in particular the elderly, the availability of wood or pellets, and the ability to gain access to those supplies was difficult, if not impossible. Icy conditions further exacerbated the situation because family members could not as easily (or safely) check on other family members, increasing the number of safety checks conducted by police and fire personnel.

In the case of a cold weather event, impact such as experienced during the 2021 event could easily have included damage to facilities resulting from the power outages and frozen pipes. Associated damages could not only result from the frozen pipes rupturing and damaging structures once they began to thaw, but also cause increased fire danger due to failed fire control devices which were inoperable due to the lack of water supply.

Winter Weather - Snow and Ice:
Figure 7-12 is representative of a normal snow event within the planning area. Severe storms, including both snow and ice, affect transportation and utilities, which impact the health and safety of individuals on the Reservation and in the tribal planning area. Access across certain parts of the Reservation and the tribal planning area are unpredictable as roads are vulnerable to damage from severe storms. Trees frequently are felled by heavy amounts of ice accumulating on branches, resulting in disruption of power service. In addition, the ice and cold temperatures associated with a winter weather event also damages the trees and foliage, many times causing their death and requiring their removal. In cases where plantings are part of a landscape theme (e.g., tropical theme), losses associated with a snow or ice event can be significant. Damage to plumbing, sewer, and waterlines is also a common occurrence during winter weather events, which also has the impact to increase fire danger due to inoperable sprinkler systems. First responders are at greater risk as they respond to calls for service, vulnerable to the same transportation dangers as citizens; however, given the nature of their responsibilities, their risk increases as they are required to travel in dangerous conditions when citizens would not.


Figure 7-12 December 2008 Snow Event

7.2.2 Previous Occurrences

Table 7-4 summarizes the more severe weather events for the Coushatta Tribe. Due to the lack of data specific to the Reservation, Allen Parish data is used to supplement this information. Data identified was recorded by the National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center (NCDC), Spatial Hazard Events and Losses Database for the United States (SHELDUS), other local area plans, and FEMA websites.

The Coushatta Tribe sustained five federally declared events (through 2020) for severe storms/weather in addition to sustaining impacts from severe events which do not rise to the level of a declaration but have significant impact on the region. For purposes of this profile, the Tornado profile should also be reviewed for additional wind and associated storm effects.

TABLE 7-4.
SEVERE WEATHER EVENTS IMPACTING PLANNING AREA SINCE 1973

Date	Type	Deaths or Injuries	Property Damage
September 1979 **DR #604**	Severe Storm & Flooding	None	Unknown
Description: Incident period September 25, 1979. (No additional data available from FEMA, NCDC, NOAA or any other generalized search.)			
January 1983 **DR #675**	Severe Storm & Flooding	None	Unknown
Description: Incident period January 11, 1983. (No additional data available from FEMA, NCDC, NOAA or any other generalized search.)			
May 1989 **DR #829**	Severe Storm & Flooding	None	Unknown
Description: Incident period May 4, 1989 - May 27, 1989.			

TABLE 7-4.
SEVERE WEATHER EVENTS IMPACTING PLANNING AREA SINCE 1973

Date	Type	Deaths or Injuries	Property Damage
February 1994	Severe Ice Storm	None	Unknown
Description: Severe ice storm developed dropping freezing rain across planning area.			
February 1996	Record Cold Temperatures	None	$50,00
Description: Record cold temperatures caused numerous water pipes to burst, including the 30,000-gallon tank that supplies water to the town of Kinder.			
January 1997	Ice Storm	2 deaths (not on Reservation or in Allen Parish	$11.9 million statewide; $100,000 Allen Parish
Description: A record ice storm hit southwest Louisiana and southeast Texas. Over 40,000 electric customers were without power for up to six days due to the number of downed trees and power lines. Numerous traffic accidents were attributed to icy roadways. One 54-year-old woman was killed in an accident in Avoyelles Parish, and one 41-year-old man was killed in an accident in Beauregard Parish. Millions of tons of debris were removed, taking over two months to clear. Hundreds of homes received minor roof damage due to trees and tree limbs falling on them.			
August 2000	Record Heat	None	Unknown
Description: A heat wave of record proportions began in late August across southwestern and central Louisiana. Record high temperatures for the month of August, and is some cases all-time, with records dating back to the late 1800s or early 1900s. In Lake Charles, the mercury soared to 107 on August 31st, beating the old all-time record high of 106 set on June 27, 1930. In Lafayette, the temperature topped out at 103, and in Alexandria it reached 109 on August 31st, breaking the all-time record high set the day before of 108, which before then was set on August 9, 1947 and August 1, 1998 with 107 degrees.			
December 2002	Severe Winds	None	$250,000
Description: Damaging winds downed trees. Several homes and vehicles were damaged as a result of the windstorm.			
November 2004	Thunderstorm	None	$250,000
Description: A severe thunderstorm blew down several trees in Kinder and ripped the roofs off of several homes and businesses, causing property damage.			
June 2006	Thunderstorm	None	Unknown
Description: An upper-level disturbance produced thunderstorms that caused damaging winds which blew down power lines across southwest Louisiana.			
November 2006 ***DR 1668***	Severe Storm & Flooding	None	*Statewide - 1,753 IA applications; >$20M in PA
Description: Incident Period October 16, 2006 – November 8, 2006. Heavy rains, severe storms.			
January 17, 2007	Freezing Rain/Winter Weather	None	Unknown
Description: There was a brief period of freezing rain across central Louisiana which caused some inconveniences. Ice accumulated on trees and signs, but not enough to cause damage.			
April 7, 2007	Winter Weather	None	Unknown
Description: A strong Canadian high-pressure system was over the region, and when a weak upper-level disturbance passed by, light sleet and snow was recorded across southwest Louisiana, with light sleet reported in Oakdale.			
December 11, 2008	Snowstorm	None Reported	None on Reservation

TABLE 7-4.
SEVERE WEATHER EVENTS IMPACTING PLANNING AREA SINCE 1973

Date	Type	Deaths or Injuries	Property Damage
Description: A cold upper-level low pressure system moved across Southeast Texas and Southwest Louisiana during the morning hours of December 11, 2008. As cold air interacted with widespread rainfall ongoing over the area, precipitation began mixing with sleet and snow, and eventually changed over to all snow in many locations. Snow lasted for several hours, with numerous reports of thundersnow - lightning and thunder occurring during a snowstorm. Snowfall totals anywhere from a trace up to 6 inches were seen across the area. This event easily set numerous snowfall records, including in the Lake Charles area, approximately 45 minutes from the Reservation (only recorded data for planning area, which experienced the earliest measurable snowfall on record for the fall/winter season). Snowfall triggered crashes on major highways and left thousands without power throughout the state. Amite saw the highest amount of snow, with approximately 8 inches falling, collapsing a building's roof from the weight of the snow. Schools, government offices, and bridges were closed through much of the State, as much of southeast Louisiana was under a winter weather advisory. Accumulating snow was reported in towns and cities across south Louisiana. The Reservation, while experiencing some snow, was not significantly impacted.[27], [28]			
March 2009	Hailstorm	None	$10,000 in Parish
Description: A hailstorm with hail measured at 4 inches in diameter, causing property damage in Reeves.			
December 2009	Winter Storm	None	Unknown
Description: A powerful and deep upper-level trough of low pressure moved quickly across while a cold Arctic air mass filtered southward through the southern United States. All of these factors combined to produce a large area of rain along the Texas coast during the morning hours, which then spread northeastward across southwest Louisiana. As temperatures gradually cooled both at the surface and aloft, the rain began to mix with and eventually change over to snow from west to east across the area. Snow fell across central Louisiana along and north of the Highway 190 corridor. Total snow accumulations across southwest Louisiana ranged from just a dusting near the coast up to 3 inches across central Louisiana. The heaviest amounts occurred in three separate mesoscale bands that stretched from southwest to northeast. This became the earliest measurable snowfall on record at both Lake Charles (0.2) and Lafayette (0.3). The previous record was set just one year prior on December 11, 2008.			
January 2010	Excessive Cold/Wind Chill	1 (non-tribal)	$250,000
Description: A deep upper-level trough moving eastward across the United States forced a bitterly cold Arctic air mass southward from Canada into the Gulf Coast states on January 7, 2010. This air mass remained in place for several days across southwest Louisiana, leading to the coldest temperatures seen across this region since February 1996. Several record low temperatures were set, along with a few record low maximum temperatures. Many locations in central Louisiana remained below freezing for over 36 hours from around midnight early on January 8th through the afternoon on Saturday January 9th. These bitterly cold temperatures led to several school closures, numerous weather-related fires, sporadic power outages, and widespread plumbing ruptures across the region. One man reportedly froze to death outdoors in Mossville in Calcasieu Parish. Water service in Kinder was shut off from 11 pm Sunday January 10th to 5:30 am Monday January 11th due to low water levels in the city water tower.			
February 11, 2010	Winter Storm, Sleet, Snow, Ice	1 (non-tribal)	$250,000

[27] http://www.wdsu.com/Rare-Snow-Blankets-South-Louisiana/11000670

[28] http://www.srh.noaa.gov/images/lch/events/121108/121108snowreports.png

TABLE 7-4.
SEVERE WEATHER EVENTS IMPACTING PLANNING AREA SINCE 1973

Date	Type	Deaths or Injuries	Property Damage
Description: An intense storm system moved across the region from February 11, 2010 through February 12, 2010, bringing widespread sleet and snow. Sleet mixed with rain occurred throughout the day on February 11th, before mixing with and changing to snow during the evening hours. A changeover to all snow occurred by midnight on February 12th, with snow continuing well into the morning hours. Although temperatures remained near or above freezing throughout the event, temperatures aloft were below freezing allowing for significant snow accumulations across central and south-central Louisiana.			
December 2010	Winter Storm, Sleet, Snow, Ice	None	Unknown
Description: An upper-level disturbance moving across the region combined with cold air at the surface to produce a mix of rain, light sleet, and light snow across central Louisiana, and a mix of rain and light sleet in south-central Louisiana. No accumulation resulted as temperatures remained above freezing.			
February 2, 2011	Ice Storm	None	$250,000
Description: An upper-level disturbance moving across southwest Louisiana combined with cold air to produce a mix of freezing rain and sleet across most of south-central Louisiana. Most of central Louisiana along and north of U.S. Highway 190 received over one quarter of an inch of ice accumulation, with some areas seeing up to one half inch of ice. This resulted in widespread power outages to tens of thousands of customers. Several major roadways closed (e.g., I-10 and 49, U.S. Highway 90).			
January 23, 2014	Freezing Rain and Snow	2 (non-tribal)	Unknown
Description: A cold air mass plunged south to the gulf coast while an upper-level disturbance moved across the region. Rain, snow, and sleet moved into the region during the late afternoon of the 23rd and gradually turned to all snow across Central Louisiana. Farther south along highway 190 and Interstate 10 sleet and freezing rain was the dominate precipitation. At the coast mostly rain and freezing rain occurred. Area bridges and overpasses iced over, and most were closed. Around 200 traffic accidents occurred during the event with 2 becoming fatal. Sleet and snow began across Allen Parish during the evening of the 23rd. Mostly snow fell across the northern portions of the parish with around 2.75 inches. Across the southern portions a mix of freezing rain, sleet, and snow fell.			
January 28, 2014	Freezing Rain and Snow	0	0
Description: Less than a week after a snow and freezing rain event across the region and only 3 days after the ice had melted, cold air crept back in while another upper-level disturbance traversed the area. Area temperatures were slightly colder during this event with precipitation falling as mostly sleet and snow; however freezing rain occurred as well. The event started with light freezing rain and sleet in the early morning across Allen Parish before changing over to snow. Under one-tenth of an inch of ice accumulated across the area with snow accumulations ranging from half an inch to just under 2 inches.			
February 2014	Thunderstorms and Freezing Rain	0	0
Description: A pair of upper-level disturbances traveled across the region while a shallow cold air mass was in place. This produced thunderstorms across South Louisiana and freezing rain in Central Louisiana Far northwest sections of Allen Parish received one-tenth of an inch of ice during the event.			
March 2014	Freezing Rain/Ice	0	0
Description: A cold air mass crept back into South and Central Louisiana during the first few days of March. An upper-level disturbance moved across the region during the morning of the 4th producing yet another round of freezing rain for the region.			
February 2015	Ice Storm	0	Unknown

TABLE 7-4.
SEVERE WEATHER EVENTS IMPACTING PLANNING AREA SINCE 1973

Date	Type	Deaths or Injuries	Property Damage
Description: Light freezing rain accumulated across Allen Parish and Central Louisiana, including the Coushatta Reservation.			
March 2016 **DR-4263**	Severe Storms and Flooding	0	Unknown
Description: Very heavy rainfall developed during the afternoon of Tuesday March 8, 2016 and continued off and on through Saturday March 12. Rainfall amounts of over 20 inches were recorded in a few locations before the rain ended. Many locations experienced extreme flash flooding.			
May 2017	Hail	0	Unknown
Description: Storm front moving northward across state causing excessive rainfall (flooding along parts of Calcasieu River), winds, straight-line winds caused downed trees and power outages. In Allen Parish the storm front produced hail near golf-ball size. The cell eventually moved into southern Rapids, producing very large hail (see Figure 7-13).			

In addition to the above, review of NCDC data for Hail events from 1972 through 2020 illustrate 72 events over a total of 54 days with events (on some occasions, hailstorms were reported for multiple areas in Allen Parish, and as such, the incidents are reported both by day and the number of incidents reported as presumably the same storm system caused the hail events). Only one incident in Reeves occurring on March 27, 2009 reported damages of ~$10,000. No injuries or deaths were reported during the 48-year reporting timeframe. That incident also reported the largest hail size, of 4 inches. The majority of the storms occurred during the March to July timeframe, with an occasional event recorded in January, February and November. Based on the data provided, it can reasonably be assumed that there is a 1.12 percent annual probability that a hailstorm will occur within Allen Parish.[29] Review of existing NCDC data reveals no reported incidents of extreme heat, or extreme cold/wind chill data being reported during the period of 1950-2020.

[29] NOAA. NCDC. Accessed various times. Available online at: https://www.ncdc.noaa.gov/stormevents/choosedates.jsp?statefips=22%2CLOUISIANA

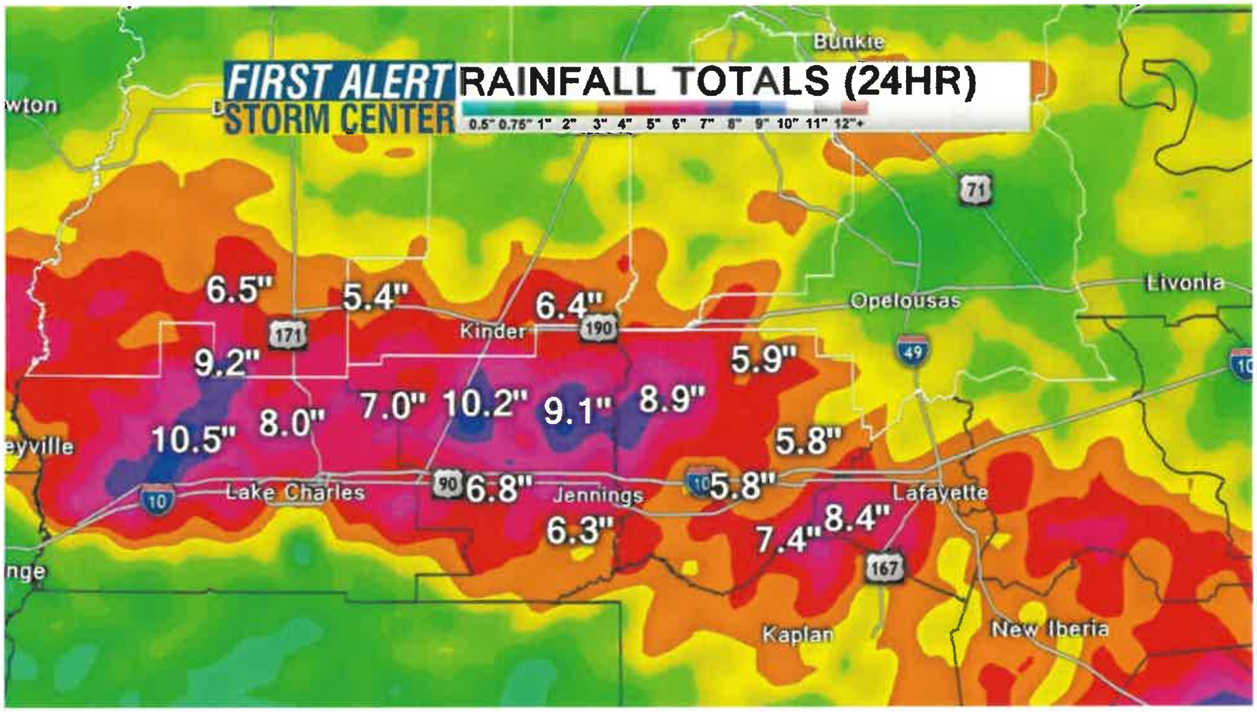

Figure 7-13 May 2017 Rain and Hail Event

7.2.3 Severity

The most common problems associated with severe storms are immobility and loss of utilities. Fatalities are uncommon but can occur. Roads may become impassable due to flooding, downed trees, ice, or snow. Power lines may be downed due to high winds or ice accumulation, and services such as water or phone may not be able to operate without power. Lightning can cause severe damage and injury. Physical damage to homes and facilities caused by wind, or by accumulation of snow or ice can also occur. Due to the limited amount of snow the planning area customarily receives, even a small accumulation of ice or snow can, and has, caused havoc on transportation systems due to terrain, the level of experience of drivers to maneuver in snow and ice conditions, and the lack of snow clearing equipment and resources within the region. Because it is a fairly uncommon occurrence, construction standards can also be of issue where snow is concern due to the actual weight of snow on structures. Generally speaking, a one-inch layer of water or ice weighs approximately five pounds per square foot. Meteorologists estimate that about 12 inches of snow is equivalent to one inch of water; however, the type of snow (dry and powdery or wet and heavy) causes significant variations in the weighting factor, and the amount of water associated with a snow event.

Thunderstorm:

Although major damage directly from thunderstorm winds is relatively rare on the Reservation, damage has occurred, most noticeably impacting power and potential damage to crops. Power outages are also associated with increased issues related to health risks for those requiring electricity for medical equipment. Power failure can also increase health issues related to loss of air-cooling systems (air conditioning units), as well as increased vulnerability for fire (loss of sprinkler and/or fire alarm systems), food spoilage (both personal and business-related), increased traffic accidents/incidents (loss of traffic signals), and loss of revenue for businesses.

Lightning:

Each year, lightning strikes across the U.S. are responsible for billions of dollars in property damage. This includes thousands of forest and brush fires, as well as damage to buildings, communications systems, power lines, and electrical systems.

According to VAISALA's 2020 Annual Lightning Report (2021), for much of spring and early summer 2020, there was an abnormally strong area of high pressure over this region. This also resulted in fewer thunderstorms. Between April and June 2020, the NLDN detected 62% fewer cloud-to-ground strokes than the same period in 2019, and 52% fewer cloud-to-ground strokes than the 2015–2019 April–June average. Figure 7-14 illustrates the density of lightning strokes per square kilometer per year nationwide. The stroke density for Allen Parish is between 32 to 64 annually.[30] In conjunction with the reduced lightning/thunderstorm events, hail for 2020 also decreased. The National Weather Service Storm Prediction Center received approximately 25% fewer severe hail reports than average in 2020. The atmospheric conditions that contributed to fewer thunderstorms between April and June resulted in less hail in the United States. As hail only occurs in thunderstorms, it makes sense that there was less hail in 2020 (VAISALA, 2021). Louisiana ranked 6th among all states in the U.S. with respect to the most lightning cloud to ground strokes, falling from second during the previous years.

[30] https://www.vaisala.com/sites/default/files/documents/WEA-MET-Annual-Lightning-Report-2020-B212260EN-A.pdf

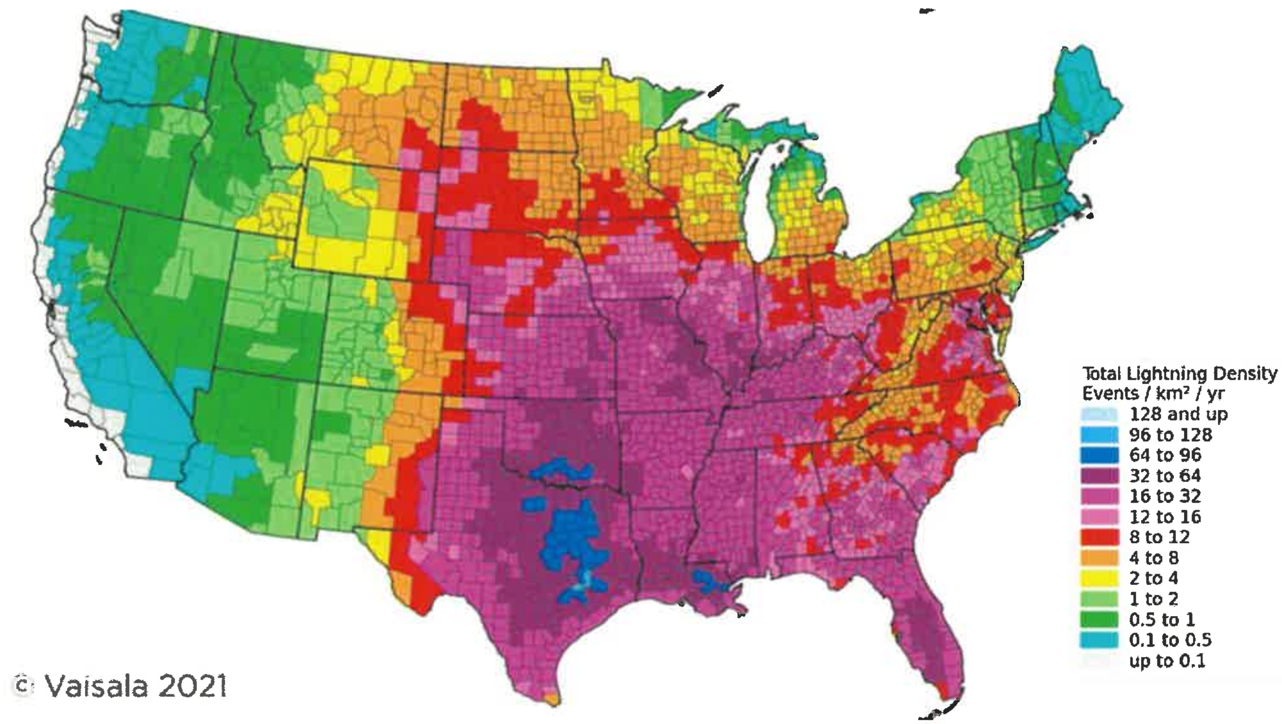

Figure 7-14 Nationwide Lightning Stroke Density

Hailstorm:

Louisiana experienced in excess of 5,000 recorded hailstorm events since 1955, with a maximum hail size recorded of 4.5 inches (State HMP, 2014). The severity of the events varies widely in terms of damages sustained. Review of existing NCDC data reveals that within Allen Parish, $10,000 in damages have been sustained since 1972, with the largest hail size recorded of 4 inches (NCDC, 2021). The Coushatta Tribe has limited reported damages sustained by hailstorms, with that damage associated with crop damage, and the sheeting on the greenhouses. Review of data indicates that the number of hailstorms experienced in 2020 decreased significantly as a result of atmospheric conditions.

Wind:

Windstorms are common in the planning area and have been known to damage utilities and produce large amounts of debris, blocking roadways. The State of Louisiana is located primarily in two distinct FEMA Wind Zones - Zones III and IV (see Figure 7-5 above) with peak winds of up to 200 mph and 250 mph, respectively. The Coushatta Reservation has properties within both Wind Zones III and IV. Figure 7-15 illustrates some of the more significant wind events and associated speeds occurring within the planning region. This does not represent all wind-damaging events, but rather just a sampling. Major damage can occur from such events, especially when the downdrafts become constricted during the dissipation phase of a thunderstorm. Constriction of a downdraft increases pressure within the storm by preventing the release of pressure outside of the storm system. Such downbursts can cause damage that is similar to that which occurs as a result of a tornado. This often leads to errors occurring when classifying the two types of events when attempting to assess damages. Review of NOAA NCDC data illustrates 137 Thunderstorm Wind events occurring during the period 1950-2020. Those incidents have caused an estimated $1.994 million dollars in property damage losses.

Figure 7-15 Historic Wind Events and Speed

Tornadoes (profiled independently) are potentially the most dangerous of local storms, but they are not common in the planning area. If a major tornado were to strike within the planning area, damage could be widespread. As a result of building stock age, fatalities could be high, with many people homeless for an extended period of time. Routine services such as telephone or power could be disrupted. As a result, businesses could be forced to close for an extended period, impacting commodities available for citizens. In heavily forested areas, debris accumulations would be high, causing additional difficulties with access along major arterials connecting the area to other parts of the state, further impacting logistical support and commodities. Additional information with respect to Tornadoes can be found in Chapter 8.

Extreme Temperatures:

The severity or magnitude of extreme cold temperatures are generally measured through the wind chill temperature index. Wind Chill Temperature is the temperature that people and animals feel when outside and it is based on the rate of heat loss from exposed skin by the effects of wind and cold. As the wind increases, the body is cooled at a faster rate causing the skin's temperature to drop (NWS, 2009).

On November 1, 2001, the NWS implemented a new wind chill temperature index. It was designed to more accurately calculate how cold air feels on human skin. Figure 7-8 (above) shows the new wind chill temperature index.[31] The Index includes a frostbite indicator, showing points where temperature, wind speed, and exposure time will produce frostbite to humans. The chart shows three shaded areas of frostbite danger. Each shaded area shows how long a person can be exposed before frostbite develops (NWS, 2009).

The severity of extreme temperatures is generally measured through the heat index shown in Figure 7-16.[32] Created by the NWS, the Heat Index is a chart which accurately measures apparent temperature of the air as it increases with the relative humidity. The Heat Index can be used to determine what effects the temperature and humidity can have on the population (NCDC, 2000). Figure 7-17 describes the adverse effects that prolonged exposure to heat and humidity can have on an individual.[33]

Winter Weather – Snow and Ice:

Snowstorms, while they do occur, are infrequent in the planning area. Because of this, the unaccustomed nature of such an event in and of itself impacts the Reservation with limited equipment for snow removal, ice to assist with snow melting, and even the experience rating for driving in snow. While snow accumulation is normally low, the risk, even with a small amount, can significantly impact the planning region.

Ice storms, especially when accompanied by high winds, can have an especially destructive impact within the planning region, with both being able to close major transportation corridors and bridges. Accumulation of ice on trees, power lines, communication towers and wiring, or other utility services can be crippling, and create additional hazards for residents, motorists, and pedestrians. In addition, for the Coushatta, must of the Resort area is structured around a tropical theme, with large palm (and other) trees and foliage planted. These plantings can tolerate only minimal snow and ice and are highly susceptible to events lasting more than a very short period before they are extensively damaged or killed. The Tribe experienced these types of impacts as a result of the February 2021 snow/ice event (2021 Ice Storm Violet).

[31] NWS, 2008

[32] NCDC, 2000, 2021

[33] NYSDEC, 2008

	Temperature (°F)															
Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Figure 7-16 Heat Index Chart

Category	Heat Index	Health Hazards
Extreme Danger	130 °F – Higher	Heat Stroke / Sunstroke is likely with continued exposure.
Danger	105 °F – 129 °F	Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.
Extreme Caution	90 °F – 105 °F	Sunstroke, muscle cramps, and/or heat exhaustions possible with prolonged exposure and/or physical activity.
Caution	80 °F – 90 °F	Fatigue possible with prolonged exposure and/or physical activity.

Figure 7-17 Adverse Effects of Prolonged Exposures to Heat on Individuals

7.2.4 Frequency

The severe weather events for the Coushatta Tribe are often related to high winds and heavy rains associated with thunderstorms, and to a lesser extent, snow, and ice. Hailstorms have occurred in excess of 5,000 times statewide since 1955, with varying degrees of impact. The University of Louisiana estimates that based on past occurrences of hailstorm events, parishes throughout the state can experience between 2 and 29 hail events annually per 1000 mi^2. However, data reviewed for the year 2020 illustrated a much lower frequency of hailstorms due to atmospheric conditions, which undoubtedly also led to the increased number of hurricanes which impacted the region.

While the state is far less likely to have heavy snow and ice accumulations than other states, some form of winter weather is expected to occur at least once each year. According to data from the National Climatic Data Center, Louisiana is in the lowest category of probable snow depth, with a 5% chance of <25 cm snow depth being equaled or exceeded in any given year (State HMP, 2014).

Given the history of previous snow events, we know that a snow event can, and most likely will, occur again. For winter weather events, the State's hazard mitigation plan identifies the future probability for such an event to occur once every four to eight years, with damaging winter storms associated with ice accumulations between one (1) and three (3) inches.

7.3 Vulnerability Assessment

7.3.1 Overview

To understand risk, a community must evaluate what assets are exposed or vulnerable in the identified hazard area. For severe weather incidents, due to the fact that the various hazard types can and regularly do occur throughout the entire planning area, all people, property, economy and the environment are exposed and vulnerable. While in some instances advanced warning may be possible, as a result of climatic and topographic differences, the same system can be much more severe in certain areas of the Reservation than others. Therefore, preparedness plays a significant contributor in the resilience of the citizens to withstand such events. The direct and indirect losses associated with these events include injury and loss of life, damage to structures and infrastructure, agricultural losses, utility failure (power outages), and stress on community resources.

Warning Time

Meteorologists can often predict the likelihood of some severe storms. In some cases, this can give several days of warning time. However, meteorologists cannot predict the exact time of onset or severity of the storm, and the rapid changes which can also occur significantly increasing the impact of a weather event. In addition, too many variables exist to precisely pinpoint every element of a storm event. While meteorologists may predict a severe hailstorm representing 1" hail, the size varies by location, so people may tend to not take the warning seriously. This increases the potential for injuries.

7.3.2 Impact on Life, Health and Safety

As indicated, the entire planning area is susceptible to severe weather events. Populations living at higher elevations, near large stands of trees or above-ground power lines may be more susceptible to wind damage and black out conditions, while populations in low-lying areas are at risk for possible flooding and erosion associated with the flooding as a result of heavy rains. Increased levels of precipitation in the form of snow also vary by area, with some areas being more susceptible to increased accumulations. Resultant secondary impacts from power outages during cold weather events, when combined with the population of elderly residents significantly impacts response capabilities and the risk factor associated with such weather incidents. Within the densely wooded areas, increased fire danger during extreme heat conditions many times associated with a drought increases the likelihood of fire, which increases fire danger.

Particularly vulnerable populations are the elderly and very young, low income, linguistically isolated populations, people with life-threatening illnesses, and residents living in areas that are isolated from major roads, which does occur during rains when Allen Parish roadways become flooded. When events occur, helicopters are required to evacuate residents. Extreme temperature variations, either heat or cold, are of significant concern for both the elderly and the young, increasing vulnerability of those populations. The year 2020 saw a significant reduction in thunderstorms, lightning and winds associated with thunderstorms as a whole across the United States. Across the U.S., the 30-year average (1990-2019) for fatalities caused by lightning is 41, with the State of Louisiana as a whole dropping from 2nd to 6th in ranking nationwide as a result of ground strikes, further reducing risk (NOAA, 2020; VAISALA, 2020). Heat experienced the highest rate of fatalities for the 30-year average nationwide, but none were reported to impact the Coushatta Tribe (NOAA, 2020).

A number of storm events have previously cut off access to the Coushatta Reservation and the various tribal properties on which its enterprises are situated for days at a time – these various storm events include both declared and non-declared incidents, as even minor incidents have the potential to impact ingress and egress. Such issues are of concern as a result of limited access for evacuation purposes by first responder if vital ALS is required, as well as for general evacuation purposes during a period where power is out, and individuals attempt to leave the area. The Tribe has also previously been required to use logging roads to gain access, although this becomes difficult as logging companies in most instances place bars across the logging roads, which are locked – further restricting access.

Severe weather events have also disrupted electricity in the planning area several times each year, often for extended periods of time, in some instances, up to five or more days. Wind debris and other severe weather events also have caused blockage of primary transportation corridors. As a result of the fairly large population of elderly, of significant concern to the Tribe when severe weather events occur is the lack of citizens' ability to maintain an adequate supply of medicines, as well as oxygen and other medically required services.

On a number of occasions, the inability of citizens to be able to travel has required response from fire departments and medic units to refill in-home oxygen tanks; however, in many instances, this depletes the areas' supply. The Coushatta Tribal Fire Department is attempting to purchase equipment necessary to address this issue. In addition, the Tribe also has several portable generators which it uses to go to the residences of the elderly to allow for heat and cooling during events, although they have not yet been able to purchase enough generators to assist all of those in need. The Tribe has also identified this as a strategy for mitigation purposes.

7.3.3 Impact on Property

For planning purposes, all of the buildings within the planning area are considered to be exposed to the severe weather hazard. Current data identifies a total of ~157 buildings in the planning area. Many of these buildings are residential and were built in the 1990s. Structures in poor condition or in particularly vulnerable locations (exposed open areas) may be at risk for the most damage. The majority of the planning area is an open area, which increases exposure levels. The frequency and degree of damage will depend on specific locations and severity of the weather pattern impacting the region. It is improbable to determine the exact number of structures susceptible to a specific weather event, and therefore emergency managers and public officials should establish a maximum threshold, or worst-case scenario, of susceptible structures.

For the purposes of this Plan, the entire general building stock and all infrastructure of the Coushatta Tribe are considered exposed to the lightning strike hazard. In general, urban and suburban areas are at greater lightning risk than more rural areas due to higher population and structure density. Taller buildings can act as lightning rods; therefore, they naturally have experienced greater vulnerability and loss during past lightning strike events. The majority of the structures on the Coushatta Reservation are one-story structures with the exception of some of the facilities associated with the Casino Resort (off the Reservation), including the Casino itself and the hotels, as well as some of the attractions. Those specific areas are also more densely populated than other areas of the Reservation, which are more rural in nature, further increasing potential impact.

Loss estimations for severe weather hazards are not based on modeling utilizing damage functions, as no such functions have been generated. Instead, loss estimates were developed representing 10 percent, 30 percent, and 50 percent of the assessed value of exposed structures. This allows emergency managers to select a range of economic impact based on an estimate of the percent of damage to the general building stock. Damage in excess of 50 percent is considered to be substantial by most building codes and typically requires total reconstruction of the structure. Table 7-5 shows loss estimates for the severe weather risk at the identified percent damages for all structures - residential and non-residential.

**TABLE 7-5.
POTENTIAL BUILDING LOSSES DUE TO SEVERE WEATHER HAZARD**

			Building and Content Values		
Total Building Count	Exposed Building Value	Exposed Content Value	10% Damage	30% Damage	50% Damage
~157	$254,594,287	$88,954,773	$34,354,906	$103,064,718	$171,774,530

7.3.4 Impact on Critical Facilities and Infrastructure

No loss estimation of critical facilities was performed due to the lack of established damage functions for the severe weather hazard. Therefore, it should be assumed that all critical facilities are vulnerable to some degree as identified in Table 7-5. As many of the severe weather events include multiple hazards, information such as that identifying facilities exposed to flooding or tornadoes (see Flood and Tornado profiles) are also likely exposed to severe weather.

Additionally, facilities on higher ground may also be exposed to wind damage or damage from falling trees, while open areas also maintain an increased level of risk. The most common problems associated with severe weather are loss of utilities. Downed power lines can cause blackouts, leaving large areas isolated. Phone, water, and sewer systems may not function. Roads may become impassable due to ice or snow or from secondary hazards such as ponding/flooding water. Also of concern in the planning area is the reliance on the major arterials for evacuation purposes which may be shut down due to severe weather events. Those major roadways serve as evacuation routes and are considered critical infrastructure within the planning region given the potential for increased population on the Reservation at any one time for which the Tribe would have to assume some level of responsibility and care.

Incapacity and loss of roads are the primary transportation failures, most of which are associated with secondary hazards. Floods that block or damage roads are caused by heavy prolonged rains. High winds can cause significant damage to trees and power lines, with obstructing debris blocking roads, incapacitating transportation, isolating population, and disrupting ingress and egress. Flashfloods associated with a thunderstorm event can also impact evacuation due to flooding of the roadways onto or off of the Reservation. Snowstorms can impact the transportation system and the availability of public safety services. Of particular concern are roads providing access to isolated areas and to the elderly. During previous events, flooding forced tribal residents to take alternate routes for ingress and egress through logging roads to gain access to the highways. However, this is also of concern as the Tribe does not own the majority of those areas, which are owned by private logging companies who many times block the roads with locked gates.

Severe windstorms, downed trees, and ice can create serious impacts on power and above-ground communication lines. Freezing of power and communication lines can cause them to break, disrupting both electricity and communication for households. Loss of electricity and phone connection would result in isolation because some residents will be unable to call for assistance. As indicated, the severe snow/ice event which occurred in February 2021 also impacted the availability of water due to frozen pipes at the distribution source within Allen Parish. The Tribe does have its Health Department on a generator; however, the issue would be for residents (and staff) to be able to travel to the Health Department to obtain any type of medical treatment.

7.3.5 Impact on Economy

Prolonged obstruction of major routes due to severe weather can disrupt the tourism industry, on which the Tribe relies heavily, as well as the impact shipment of goods and other commerce onto the Reservation and to business establishments off the Reservation. Severe windstorms, downed trees, and ice can create serious impacts on power, water, and above-ground communication lines. Freezing rain/snow on power and communication lines can cause them to break, disrupting electricity and communication, further impacting business on the Reservation and within the region. Prolonged outages would impact consumer and tax base (paid by Tribe to State for operation of Casino and by employees working at the Casino who live in surrounding communities) as a result of lost revenue, (food) spoilage, lack of production, etc. Debris removal of downed trees or impacted structures would also be a large economic impact for the Tribe. Large, prolonged storms can have negative economic impacts for an entire region. All severe weather events have the potential to also impact tourism, an industry on which much of the planning region and state is dependent both in a business capacity, and as the largest employer in Allen Parish.

7.3.6 Impact on Environment

The environment is highly exposed to severe weather events. Natural habitats such as streams and trees are exposed to the elements during a severe storm and risk major damage and destruction. Prolonged rains can saturate soils and lead to slope failure and the washout of roadways. Flooding events caused by severe weather or snowmelt can produce river channel migration or damage riparian or wetland habitat, also impacting spawning grounds and fish populations for many years. Extreme heat can raise temperatures of waterbodies, impacting oxygen levels in the water, threatening aquatic life. Extreme heat can also damage crops, and cause drought-like situations, including increased fire danger.

7.4 Future Development Trends

All future development will be affected by severe storms. The ability to withstand impacts can be directly attributed to sound land use practices and consistent enforcement of codes and regulations for new construction. The Tribe does not have its own land use regulations in place, but does rely on those established by Allen Parish, and any federal funding entity. These regulations include implementation of building code standards as well as additional land use authority. These codes are equipped to deal with the impacts of severe weather incidents by identifying construction standards which address wind speed, roof load capacity, elevation, and setback restrictions.

While public power utilities are required by law to supply safe, cost effective and equitable service to everyone in the service area requesting service, most lines in the area are above-ground, causing them to be more susceptible to high winds or other severe weather hazards. However, any form of growth management is also a constraint, which could possibly lead to increased outages or even potential shortages, as while most new development expects access to electricity, communities do not want to be in close proximity to substations. The political difficulty in sighting these substations makes it difficult for the utility to keep up with regional growth. Within Allen Parish, growth has not occurred at the same scale as the rest of the State of Louisiana.

Land use policies currently in place, when coupled with informative risk data such as that established within this mitigation plan and such other projects like FEMA's flood maps will address the severe weather hazard. With the land use tools currently in place, the Tribe will be well-equipped to deal with future growth and the associated impacts of severe weather.

7.5 Climate Change Impacts

Climate is defined not simply as average temperature and precipitation but also by the type, frequency, and intensity of weather events. Both globally and at the local scale, climate change has the potential to alter the prevalence and severity of extremes such as storms, including those which may bring lightning, wind, excessive heat, or cold temperatures. While predicting severe weather events under a changing climate is difficult at best, understanding vulnerabilities to potential changes is a critical part of estimating future climate change impacts on human health, society, and the environment (U.S. Environmental Protection Agency [EPA], 2006).

With respect to increased probability as a result of the impacts from climate change, data remains uncertain for certain types of severe weather events, such as hail, high winds, tornadoes, and tropical cyclones. Review of the State's 2019 HMP (Technical Appendix A), provides a summarization of (multiple) existing studies which ultimately led the State to believe that there will be no net change in future vulnerability as it relates to certain conditions by mid-century, including hail and various high-wind events. Although frequency of severe or intense tropical cyclones and tornadoes are expected to increase, such events until this last year were rare.

High wind events more commonly linked to thunderstorms present little evidence of change in frequency based on the State's assessment; however, the weather pattern experienced over much of the United States in 2019 and 202 did reduce the number of thunderstorm-related incidents, including a reduction in hail, lightning, and thunderstorm wind events. That, however, does not mean that other hazards included within the severe weather category will not be impacted by climate change, as research has already demonstrated an increase in the severity of events such as increased temperature rise, sea level rise, and flooding, among others.

Since the 1970s, globally there has been an increase in 'tropical cyclone destructiveness' as measured by the Power Dissipation Index. This increased tropical cyclone intensity and duration correlates with sea surface temperature and suggests that future increases of tropical sea surface temperature may lead to future increases in tropical cyclone intensity and duration.

Future improvements in modeling smaller scale climatic processes can be expected and will lead to improved understanding of how the changing climate will alter temperature, precipitation, and storms events in the planning area.

7.6 Issues

Important issues associated with a severe weather in the planning area include the following:

- Older building stock in the planning area is built to lower code standards. These structures could be highly vulnerable to severe weather events such as windstorms.
- Redundancy of power supply must be evaluated and increased planning-region wide in order to reduce the vulnerabilities in this area.
- The capacity for backup power generation is limited and should be enhanced, especially in areas of potential isolation due to impact on major thoroughfares or evacuation routes.
- Isolated population centers exist.
- Climate change may increase the frequency and magnitude of storm events.

7.7 Impact and Results

A lack of data separating severe weather damage from other hazards of concern such as flooding and windstorm damage prevent a detailed analysis for exposure and vulnerability with respect to dollar losses. For planning purposes, it is assumed that the entire planning area is exposed to a severe weather event, although certain areas may be more exposed due to geographic location and local weather patterns, as well as the response capabilities of local first responders. Further data collections that will assist understanding this hazard over time are needed to determine the separation of impact from the hazards identified. The Tribe has developed a strategy to begin capturing data with respect to impact for use in future plan updates.

When looking at each hazard, the planning team made the following conclusions.

Thunderstorms

Thunderstorms are of high concern for the Coushatta Tribe. Assessment of the Thunderstorm hazard ties this ranking with Lightning as their number four severe-weather hazard of concern, with a CPRI score of 3.1.

Lightning

The Reservation area is not a high-density area in general; however, the area of the Tribe's economic hubs exist are more densely populated, with taller structures. Historic records indicate one fire loss - a residential structure in 2013 due to a strike occurring on the Reservation. The exception to the high-density area is within the Coushatta Casino Resort area, which can attract an average of 8,700+ visitors (pre-COVID) daily within the compound, which includes multiple hotels, campgrounds, RV parking, golf course, and an outside water park, among other attractions. A strike in or near the Casino would be a high-impact event. For this reason, Lightning is also of high concern for the Coushatta Tribe. Assessment of the Lightning hazard ties in rank with Thunderstorms at number four, with a CPRI score of 3.1.

High Winds

Winds have historically been a regular occurrence in the tribal planning area. In some instances, winds are associated with thunderstorms or other hazards; however, winds can also occur independent of any other weather events.

When determining the associated risk and impact from high-wind event, the Planning Team considered the fact that severe wind events have previously caused direct structure damage and occur on a regular basis throughout the planning area. Additional factors considered include:

- debris accumulation from fallen trees;
- life safety issues with respect to the danger associated with downed power lines, and the falling trees and limbs;
- the loss of power increasing life safety issues related to vulnerable populations, and individuals reliant on power for medical equipment, such as for delivery of oxygen;
- the inability to provide water supplies or wastewater management from facilities reliant on electricity without redundant systems; and
- the economic aspect of structures without power for extended periods of time and its impact to administrative or governmental structures without generators, which can, and has, impacted continuity of government for a short period of time, and the ability to provide services (including medical) to tribal members.

As a result, wind is of high concern for the Coushatta Tribe. Assessment of the Wind hazard ranks second for the Tribe's hazards of concern, with a CPRI score of 3.35.

Hail

The Tribe has previously experienced damage to crops as a result of hail events, but no structural damage. While hail does fall occasionally, the size of the hail historically has not been large, and dollar amount of losses fairly low. As a result, Hail is of medium concern to the tribe due, in part, to the agricultural element. The hazard ranked ninth in placement of hazards of concern, with a CPRI score of 2.3.

Extreme Temperatures

Whether cold or heat, extreme temperatures impact the entire tribal planning area. As recently experienced in the February 2021 ice storm, cold weather can impact critical facilities and infrastructure by impacting the ability to provide water, as well as snap power lines. Both would impact the health and safety of tribal members. The lack of water would also impact structures if fires occurred and water supplies were unavailable either for sprinkler systems, or firefighting. While the 2021 incident is the first such event to occur, which manifested in this type of large-scale issues, with climate change, it is possible that similar incidents could occur in the future.

While excessive heat has occurred in the planning area, the Tribe does have cooling stations in place to assist individuals exposed. However, excessive heat many times increases fire danger, as well as the potential economic loss due to crop failure associated with the heat.

As a result of the impact experienced during the February 2021 event, Excessive Temperatures were of greater concern for this 2021 edition than previously, and is rated as medium, ranking sixth on the list of hazards of concern, with a 2.7 CPRI score.

Winter Weather – Snow and Ice

While snow and ice events have occurred previously, they have been historically rare, although as of this update, the Tribe is in the recovery phase of the February 2021 ice/snow event. Customarily, there is usually a fair amount of advanced warning provided for such weather events, allowing, at least to some degree, advanced preparation.

Presumably, due to the nature of the February 2021 Ice/Snow event and the associated cold temperatures, the hazards were ranked higher than previously. When considering the frequency and severity with which such events have historically occurred, and the probability for such events, it does not sustain the same level of significance as, for instance, a flood event which occurs annually, or a hurricane season such as 2020, with multiple events occurring within weeks of one another (concurrent with the COVID Pandemic). The Tribe has never received a disaster declaration for a winter-weather or snow/ice event (February 2021 event is pending).

As a result of the recent event, the Planning Team felt that both Ice and Snow are of higher concern in this edition of the plan than previously, but still, when considering the frequency and severity with which such events have historically occurred, is rated as medium, ranked eighth in order of hazards of concern, with a CPRI score of 2.5.

CHAPTER 8.
TORNADO

A tornado (also called twister or cyclone) is a violent windstorm characterized by a twisting, funnel-of-wind, extending between storm clouds and the ground. When existing over water, they are considered waterspouts. A tornado develops during severe weather events, such as a thunderstorm or hurricane, when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. The updraft of air in tornadoes always rotates because of the wind shear, or the differing of speeds of moving air at various heights. Tornadoes can rotate either clockwise or counter-clockwise in direction; however, the clockwise rotations, when in the northern hemisphere, customarily result in near-immediate demise, while counterclockwise rotations existing in the northern hemisphere sustain the weather system sometimes for seconds to minutes, until other forces cause it to die. When the lower tip of a vortex touches earth, the tornado becomes a force of destruction. The path width of a tornado is generally less than a half-mile, but the path length can vary from a few hundred yards to dozens of miles. A tornado moves at speeds from 30 to 125 mph, but can generate winds exceeding 300 mph. The average tornado moves southwest to northeast, at a forward speed of 30 miles per hour, but tornadoes can move in any direction and vary from stationary to 70 miles per hour. Tornadoes are most frequent east of the Rocky Mountains during spring and summer months, and occur most often between the hours of 3 p.m. and 9 p.m. Tornadoes may also accompany hurricanes. Tornadoes are especially dangerous because they appear transparent until they begin to pick up debris and dust. Normally short-lived storms, they are the most violent of all atmospheric phenomenon, and over a small area, are the most destructive. Damage paths can exceed one mile wide and 50 miles along.

8.1 General Background

Tornado season in Louisiana is generally during the spring, although tornadoes can occur at any time of the year and can be spawned by thunderstorms. Tornadoes tend to strike in the afternoons and evening, with over 80 percent of all tornadoes striking between noon and midnight. During the time period 1999-2018, when averaging the number of tornadoes by month, the majority of tornadoes have occurred in April, May and June. [34] Approximately half of the tornadoes in Louisiana occur between March and June (LA HMP, 2019).

[34] The Weather Channel. Belles, Johnathan. *Your Average Tornado Risk by Month*. (2020). Accessed 1 Mar 2021. Available at: Your Average Tornado Risk By Month | The Weather Channel - Articles from The Weather Channel | weather.com

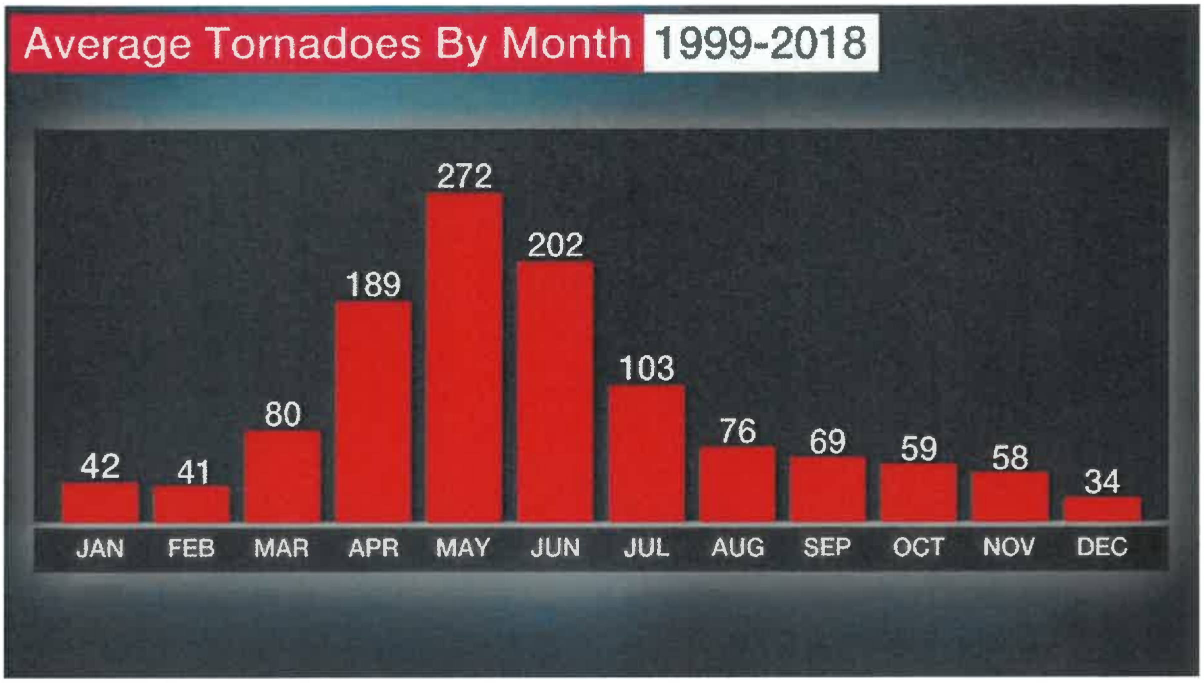

Figure 8-1 Nationwide Average Number of Tornadoes by Month 1999-2018

On average, there were in excess of approximately 1,250 tornadoes in the United States each year since completion of the last plan in 2015.[35] Approximately 75% are considered weak, classified as EF-0 to EF-1 on the Enhanced Fujita Tornado Damage Intensity Scale (discussed below). About 24% are strong (EF-2 or EF-3) and only 1% are considered violent, being classified as EF-4 or EF-5. The maximum level on the scale, EF-5, is characterized by wind speed of 200 mph or higher and severe destruction.

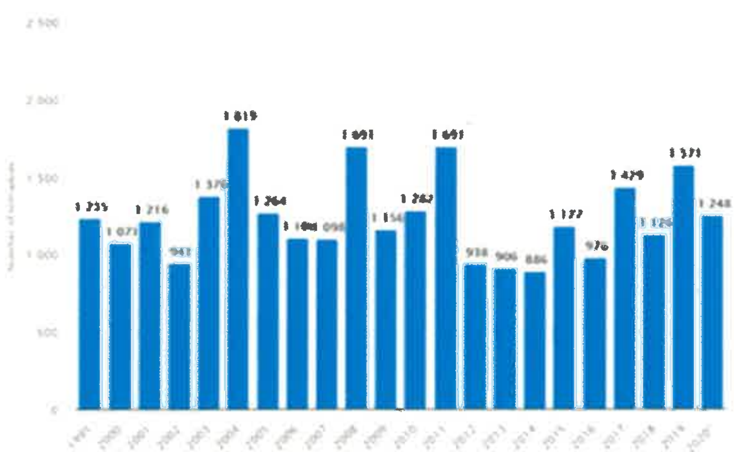

Figure 8-2 Tornadoes in the United States 1995-2020

[35] Statista. 2021. Available at: https://www.statista.com/statistics/203682/number-of-tornadoes-in-the-us-since-1995/

8.2 Hazard Profile

8.2.1 Extent and Location

Destruction caused by tornadoes depends on the size, intensity, and duration of the storm. Figure 8-3 shows the wind hazard zones throughout the United States as they currently exist, and on which building codes are typically established. Tornadoes cause the greatest damage to structures that are light, such as residential homes and mobile homes. Increased risk is also associated with the height of a tornado. The path width of a tornado averages about 200 yards and therefore can have a substantial impact on human life and property. Damage from the average tornado includes roof surfaces, mobile homes pushed off of their foundations, and automobiles pushed off of the road. More severe tornadoes can lift 300-ton objects and toss homes more than 300 feet. Tornados can happen in every state of the nation. Tornadoes can occur anywhere throughout the Reservation.

Mapped paths of some previous tornado events occurring within the planning area demonstrating proximity to the Coushatta Reservation appear in Figure 8-4 and Figure 8-5, identifying the F-Scale and path (NOAA, 2021).

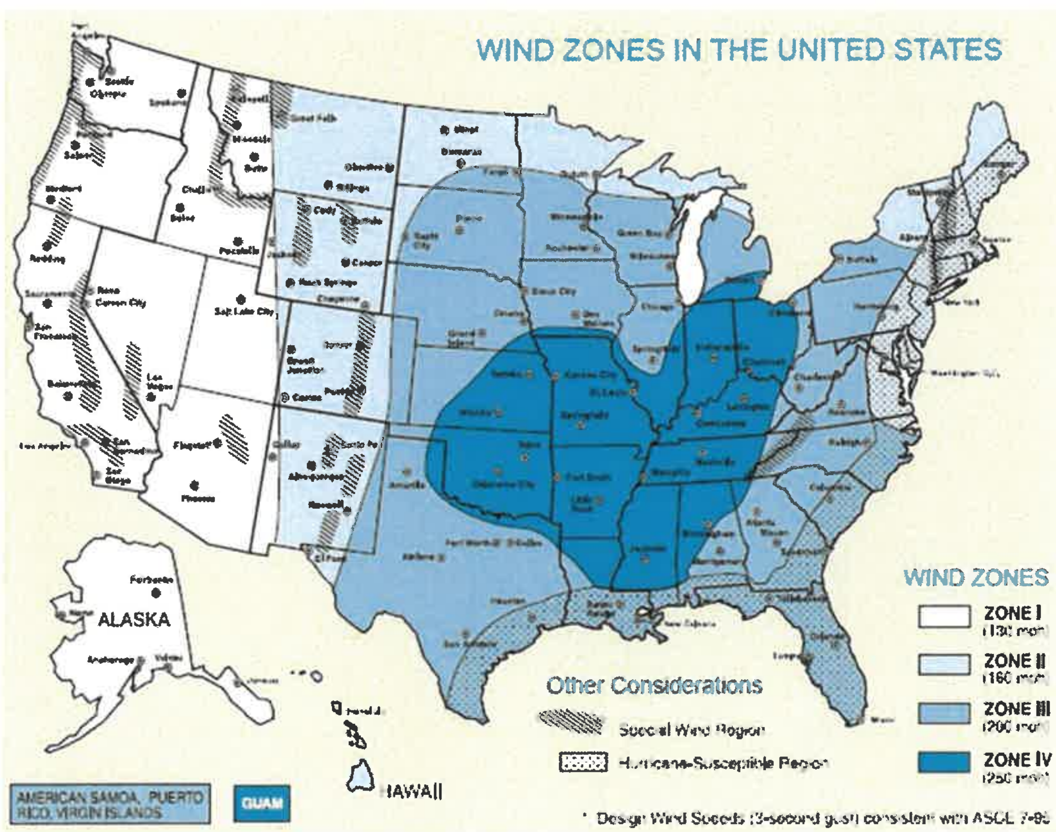

Figure 8-3 Wind Zones Map

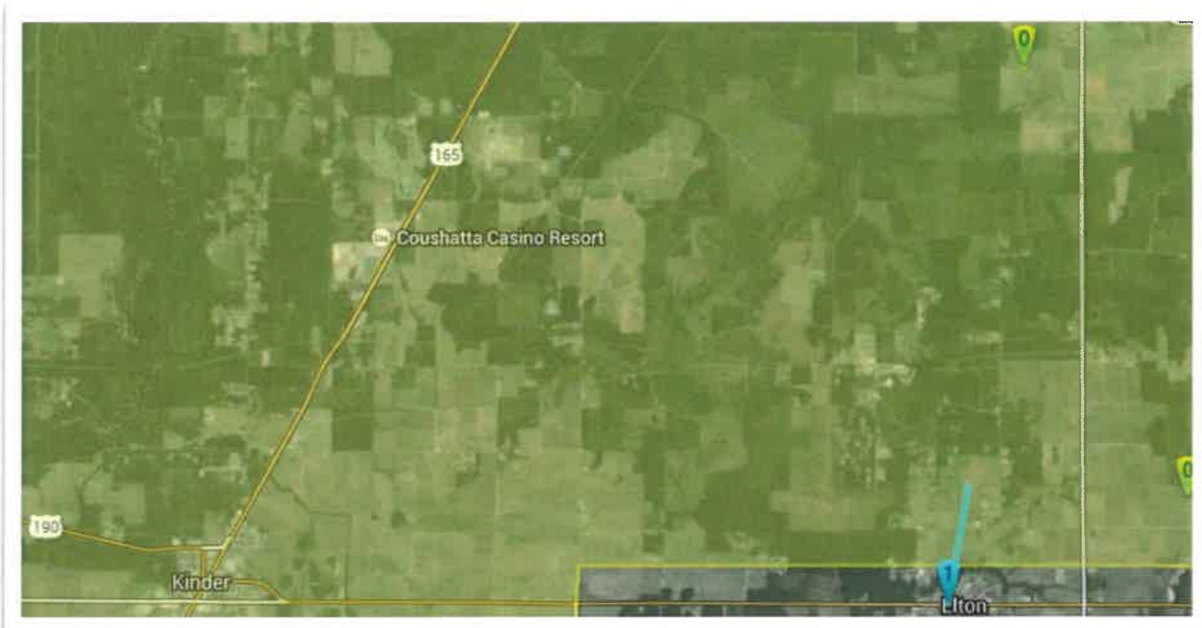

Figure 8-4 Tornado Paths in Proximity to Coushatta Casino Resort

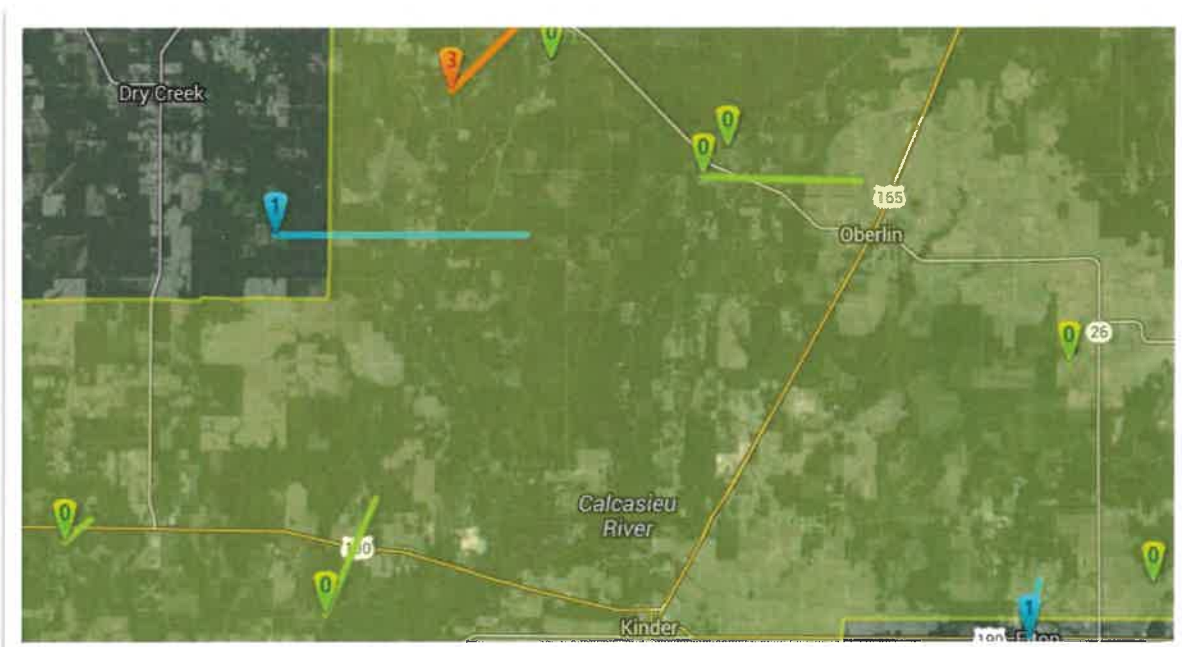

Figure 8-5 Tornado Paths in Proximity to Coushatta Reservation

8.2.2 Previous Occurrences

Data captured over the course of the last 60 years demonstrates that Louisiana ranks 8th among states in frequency of tornado occurrences.[36] Table 8-1 identifies the previous tornado events occurring within Allen Parish as identified by NOAA/NCDC, along with the impact of those events resulting in death, injuries, property, and crop damages. As a result of the March 29, 2018 event, the Tribe did sustain damages to the Red Shoes RV Park, damaging several chalets. Damages exceeded $90,000. The tornado passed directly over the Coushatta Reservation and tribal planning area as illustrated in Figure 8-6. In addition to the March 29th event, additional tornado paths which have traveled in close proximity to the Reservation are identified in the Figure 8-7. In Allen Parish, it is estimated that the predicted number of days per year of having a tornado occur within 25 miles is 0.26 and 0.50 days (State HMP, 2019).

TABLE 8-1.
PREVIOUS TORNADO EVENTS WITHIN ALLEN PARISH SINCE 1973

Date	Fujita Scale	Deaths	Injuries	Property Damage	Crop Damage
11/20/1973	F1	0	1	$25,000	0
6/16/1983	F0	0	0	$30,000	0
5/4/1991	F0	0	0	$25,000	0
5/28/1994	F1	0	0	$50,000	0
5/18/1995	F1	0	1	0	0
9/11/1998	F0	0	0	$10,000	0
9/12/1998	F0	0	0	$10,000	0
1/2/1999	F1	0	0	$50,000	0
1/29/1999	F0	0	0	$10,000	0
10/12/2006	F0	0	0	$3,000	0
9/2/2008	EF0	0	0	$30,000	0
10/22/2009 (3 incidents)	EF0	0	0	$20,000	0
2/1/2012	EF0	0	0	$20,000	0
10/31/2013	EF0	0	0	0	0
3/29/2017	EF2	0	0	$125,000	0
3/29/2018 (Direct Impact)	EF1	0	0	$300,000	0
10/31/2018 (Grant)	EF1	0	0	$7,000	0
10/31/2018 (Oakdale)	EF2	0	0	$25,000	0
4/7/2019	EF0	0	0	$10,000	0
5/19/2019 (Elizabeth)	EF1	0	0	$7,000	0
5/19/2019 (Ward)	EF1	0	0	$50,000	0
5/17/2020	EF1	0	0	$10,000	0

[36] US Tornado Index State Rank. Accessed 1 Mar 2021. Available at U.S. Tornado Index State Rank (usa.com)

Source: NCDC, 2021, Tornado History Project

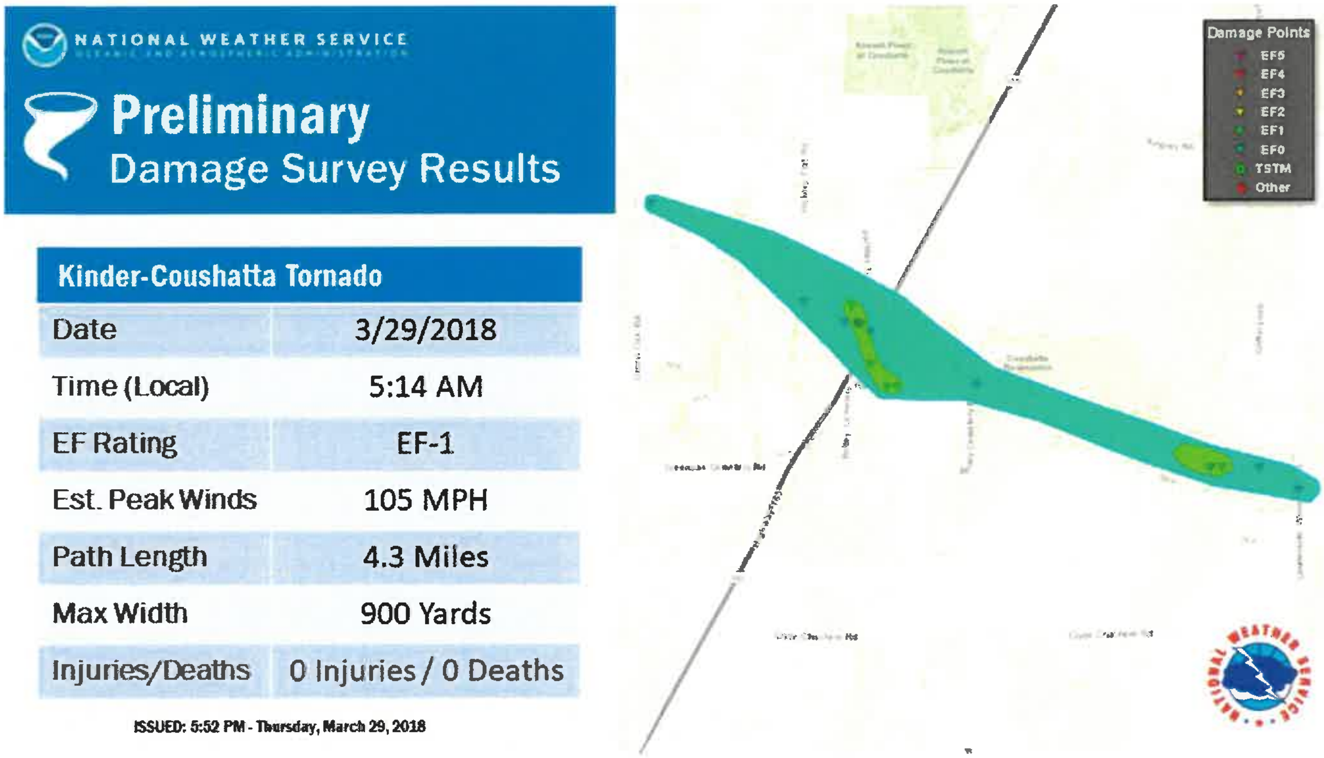

Figure 8-6 March 29, 2018 Tornado Event Impacting the Coushatta Tribe[37]

[37] NOAA. Accessed 3 March 2021. Available at: https://www.weather.gov/lch/e180329

Figure 8-7 Historic Tornado Events

8.2.3 Severity

The magnitude or severity of a tornado was originally categorized using the Fujita Scale (F-Scale) or Pearson Fujita Scale introduced in 1971, based on a relationship between the Beaufort Wind Scales (B-Scales) (measure of wind intensity) and the Mach number scale (measure of relative speed). It is used to rate the intensity of a tornado by examining the damage caused by the tornado after it has passed over a man-made structure (Tornado Project, Date Unknown). The F-Scale categorizes each tornado by intensity and area. The scale is divided into six categories, F0 (Gale) to F5 (Incredible) (Edwards, 2012). Table 8-2 explains each of the six F-Scale categories.

TABLE 8-2.
FUJITA DAMAGE SCALE

Scale	Wind Estimate (MPH)	Typical Damage
F0	< 72	Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1	73-112	Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2	113-157	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
F3	158-206	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
F4	207-260	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown, and large missiles generated.
F5	261-318	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters or 109 yards; trees debarked.

Although the F-Scale has been in use for over 30 years, there are limitations of the scale. The primary limitations are a lack of damage indicators, no account of construction quality and variability, and no definitive correlation between damage and wind speed. These limitations have led to the inconsistent rating of tornadoes and, in some cases, an overestimate of tornado wind speeds. The limitations listed above led to the development of the Enhanced Fujita Scale (EF Scale). The Texas Tech University Wind Science and Engineering (WISE) Center, along with a forum of nationally renowned meteorologists and wind engineers from across the country, developed the EF Scale (NOAA, 2008).

The EF Scale became operational on February 1, 2007. It is used to assign tornadoes a 'rating' based on estimated wind speeds and related damage. When tornado-related damage is surveyed, it is compared to a list of Damage Indicators (DIs) and Degree of Damage (DOD), which help better estimate the range of wind speeds produced by the tornado. From that, a rating is assigned, similar to that of the F-Scale, with six categories from EF0 to EF5, representing increasing degrees of damage. The EF Scale was revised from the original F-Scale to reflect better examinations of tornado damage surveys (Edwards, 2013). This new scale has to do with how most structures are designed (NOAA, 2008). Table 8-3 displays the EF Scale and each of its six categories.

**TABLE 8-3.
ENHANCED FUJITA DAMAGE SCALE**

F-Scale Number	Intensity Phrase	Wind Speed (mph)	Type of Damage Done
EF0	Light tornado	65–85	Light damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF1	Moderate tornado	86-110	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	Significant tornado	111-135	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	Severe tornado	136-165	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	Devastating tornado	166-200	Devastating damage. Well-constructed houses and whole frame houses completely leveled; cars thrown, and small missiles generated.
EF5	Incredible tornado	>200	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (109 yd); high-rise buildings have significant structural deformation; incredible phenomena will occur.

In the Fujita Scale, there was a lack of clearly defined and easily identifiable damage indicators. The EF Scale takes into account more variables than the original F-Scale did when assigning a wind speed rating to a tornado. The EF Scale incorporates 28 Damage Indicators, such as building type, structures, and trees. For each damage indicator, there are eight degrees of damages, ranging from the beginning of visible damage to complete destruction of the damage indicator. Table 8-4 lists the 28 damage indicators. Each one of these indicators has a description of the typical construction for that category of indicator. Each degree of damage in every category is given an expected estimate of wind speed, a lower bound of wind speed, and an upper bound of wind speed.

TABLE 8-4.
DAMAGE INDICATORS

Number	Damage Indicator	Abbreviation	Number	Damage Indicator	Abbreviation
1	Small barns, farm outbuildings	SBO	15	School - 1-story elementary (interior or exterior halls)	ES
2	One- or two-family residences	FR12	16	School – junior or senior high school	JHSH
3	Single-wide mobile home (MHSW)	MHSW	17	Low-rise (1-4 story) bldg.	LRB
4	Double-wide mobile home	MHDW	18	Mid-rise (5-20 story) bldg.	MRB
5	Apt, condo, townhouse (3 stories or less)	ACT	19	High-rise (over 20 stories)	HRB
6	Motel	M	20	Institutional bldg. (hospital, govt., or university)	IB
7	Masonry apt. or motel	MAM	21	Metal building system	MBS
8	Small retail bldg. (fast food)	SRB	22	Service station canopy	SSC
9	Small professional (doctor office, branch bank)	SPB	23	Warehouse (tilt-up walls or heavy timber)	WHB
10	Strip mall	SM	24	Transmission line tower	TLT
11	Large shopping mall	LSM	25	Free-standing tower	FST
12	Large, isolated ("big box") retail bldg.	LIRB	26	Free standing pole (light, flag, luminary)	FSP
13	Automobile showroom	ASR	27	Tree - hardwood	TH
14	Automotive service building	ASB	28	Tree - softwood	TS

Since the EF Scale went into effect in February 2007, previous occurrences and losses associated with historic tornado events (prior to 2007) are based on the former Fujita Scale. Events after February 2007 are based on the Enhanced Fujita Scale. Table 8-5 illustrates the comparison between the Enhanced Fujita Scale and the old Fujita Scale.

TABLE 8-5.
COMPARISON OF FUJITA SCALE TO ENHANCED FUJITA SCALE

	EFO	EF1	EF2	EF3	EF4	EF5
Winds	65-85 mph	86-110 mph	111-135 mph	136-165 mph	166-200 mph	>200 mph
(Old Fujita Scale)	<73 mph	73-112 mph	113-157 mph	158-206 mph	207-260 mph	>261 mph

8.2.4 Frequency

As indicated, the State of Louisiana ranks 8th among states in frequency of tornado occurrences. When compared to tornado frequency per every 10,000 square miles, Louisiana ranks 5th in frequency. While this results in a very high frequency per unit area, of benefit is the fact that a high percentage of Louisiana's tornadoes have been less severe than other states.

During the time period 1973-2020, a total of 24 recorded tornado events have occurred within Allen Parish (NCDC, 2021). In the most basic terms, this equates to one tornado event occurring within Allen Parish approximately every 1.96 years, or every 23.5 months. The Coushatta Tribe has had one direct hit from a tornado event in 2018.

8.3 VULNERABILITY ASSESSMENT

8.3.1 Overview

Tornados are common throughout Louisiana, although they are unpredictable and move erratically. Tornado events can pose a serious threat to people and infrastructure, especially in densely urbanized areas which provides numerous objects that can become flying debris, severely injuring people, and damaging structures. While the structures themselves may withstand the strong winds, glass windows pose a fatal threat if broken.

The high winds of a tornado often result in power outages, disruptions to transportation corridors and equipment, large debris accumulations, loss of workplace access, significant property damage, injuries and loss of life, and the need to shelter and care for individuals impacted by the events. A large amount of damage can be inflicted by trees, branches, and other objects that fall onto power lines, buildings, roads, vehicles, and, in some cases, people. Additionally, some storm events can bring heavy rainfall, causing flooding and related damages.

Tornados can be expected during the springtime, although many of the strongest to hit the state occur between March and June. Factors that impact the amount of damage caused by a tornado are its strength, the time of day, and the area of impact. Usually, these distinct funnel clouds are localized phenomena impacting a (relatively) small area. However, the high winds of tornados make them one of the most destructive natural hazards. Aside from the tremendous wind force of the tornado, flying debris carried by a tornado can endanger human lives and batter structures miles away.

The entire structural inventory of the Coushatta Tribe is at risk of being damaged or lost due to impacts of wind. Certain areas, infrastructure, and types of building are at greater risk than others due to proximity to falling hazards and manner of construction.

Determining Impact

It is difficult to estimate potential losses to specific structures because a tornado is a Reservation-wide hazard, and the variables associated with tornadoes is too great. In addition, damage functions do not exist, and therefore cannot be used to model impact. Tornado is also not a hazard intended for use with FEMA's Hazus program to provide loss estimations (only Hurricane, Flood, Tsunami, and Earthquake are recognized uses of Hazus as of 2021). As a result, this process could not analyze the wind damage function curves for various building types from within the Hazus to determine vulnerability.

For purposes of determining losses associated with this hazard, GIS data from the Coushatta Tribe was utilized to determine the exposure and vulnerability. All property on the Reservation is determined to be exposed to a tornado event, but properties in poor condition or in particularly vulnerable locations may sustain the most damage. Mobile homes are also of significant concern because of their limited weight, and the fact that they are many times not secured in such a manner as to withstand the power of the wind associated with tornadoes, and can become projectiles when forces are strong enough. While the Tribe does not utilize trailers for residences, it does utilize trailers for tribal offices. Chapter 3 identifies the types of structures on the Reservation, as well as their value by type.

As a result of structure age, it is estimated that several of the residential structures were built with limited influence of a structured building code with provisions for high wind loads (most were constructed pre-1994, followed by 1999). In addition, many structures that are located under or near overhead lines or near large trees are also more vulnerable as a result of falling lines from events several miles away.

As damage functions do not exist within Hazus, loss estimates were developed representing 10 percent, 30 percent and 50 percent of the total assessed value and content loss of exposed structures. This allows emergency managers to select a range of potential economic impact based on an estimate of the percent of damage to the general building stock. Damage in excess of 50 percent is considered to be substantial by most building codes and typically requires total reconstruction of the structure. Table 8-6 lists the loss estimates.

TABLE 8-6. LOSS ESTIMATES FOR TORNADO HAZARD	
Exposed Value (Structure and Content)	$343,549,060
Estimated Loss Potential	
10% Damage	$34,354,906
30% Damage	$103,064,718
50% Damage	$171,774,530

Warning Time

While advances in meteorology have allowed for greater advanced warning, warning times may still be short, or sometimes not possible. Many tornadoes strike with little or no warning, and residents must act quickly. Advanced planning and education of characteristic weather patterns which are precursors to tornadoes remains of paramount importance. Typical signs of a tornado event such as cloud formation, hail, etc., are often predictors of a tornado. Pre-planning, public education, and exercise and drills will provide the Reservation with information necessary for such events.
In addition, the following must also be considered:

- If a warning system exists, what is the lead time of the warning?
- What is the method of warning dissemination?
- Will the people evacuate when warned?

8.3.2 Impact on Life, Health and Safety

The entire population of the Coushatta Reservation (~75) and occupants of tribal structures, including tourists visiting the Casino or staying in the hotel and employees are at risk to the tornado hazard. Numbers of guests and employees could exceed 8,700 per day (pre-COVID). In addition, consideration should also be given to the following populations, which are more vulnerable to a tornado and wind event:

1) population located in communities without (or which have ineffective) early warning systems;
2) population with functional needs and/or over the age of 65 because they may have more difficulty evacuating or seeking shelter;
3) economically disadvantaged populations because they may have no vehicle in which to evacuate, or are likely to evaluate their risk and make decisions based on the major economic impact to their family and may not have funds to evacuate;
4) population with a language barrier unable to following warning messages;
5) population in mobile homes; and
6) population in automobiles at the time of a tornado.

The elderly and functional needs populations are considered most vulnerable because they require extra time or outside assistance to seek shelter and are more likely to seek or need medical attention which may not be available due to isolation during and/or after an event.
In addition to issues concerning advanced warning systems, post-event, when returning home and walking through debris can cause additional injuries, as can structures damaged which have not yet been determined safe for re-entry.

8.3.3 Impact on Property

Damage to buildings is dependent upon several factors including wind speed, storm duration, path of the tornado, distance from the tornado funnel, and building construction (both type and age). Because of differences in building construction, residential structures are generally more susceptible to wind damage than commercial and industrial structures. Wood and masonry buildings in general, regardless of their occupancy class, tend to experience more damage than concrete or steel buildings. High-rise buildings are also very vulnerable structures. Mobile homes are the most vulnerable to damage, even if tied down, and offer little protection to people inside.

According to Hazus' User's Guide for the wind model, direct wind-induced damage (wind pressures and windborne debris) to buildings is dependent upon the performance of components and cladding, including roof covering (shingles, tiles, membrane), roof sheathing (wood frame construction only), windows and doors and is modeled as such. Structural wall failures can occur for masonry and wood frame walls and uplift of whole roof systems due to failure at the roof/wall connections. Foundation failures (i.e., sliding, overturning, and uplift) can potentially take place for manufactured homes.

Impacts to transportation lifelines affect both short-term (e.g., evacuation activities) and long-term (e.g., day-to-day commuting) transportation needs. Utility infrastructure (power lines, gas lines, electrical systems) could suffer damage and impacts can result in the loss of power, which can impact business operations and can impact heating or cooling provision to citizens (including the young and elderly, who are particularly vulnerable to temperature-related health impacts). Post-event, there is a risk of fire, electrocution, or an explosion.

Table 8-6 (above) identifies structural loss estimates for both buildings and contents values at risk. The Tribe owns approximately 157 structures within its Reservation boundaries, covering approximately 7,120 non-contiguous acres of landmass (both Trust and Fee). Structural value alone for those structures exceeds $254 million. All structures would be vulnerable to a tornado. Structural vulnerability to wind is related to the building's construction type. Construction Codes address high winds, establishing wind-exposure categories to set design requirements for buildings. These requirements account for location, surroundings, and occupancy to ensure buildings can withstand extreme wind. Wood structures and manufactured homes are more susceptible to wind damage, while steel and concrete buildings are more resistant. Only a small percent of the Tribe's buildings are manufactured (nine total), with the majority of those being used as tribal facility buildings; 30 are steel; 22 are brick, masonry, or concrete; and the remaining structures are wood.

In addition to impact from the actual wind force itself, the associated debris that may be carried significant distances could damage structures both within and outside of the actual tornado's path. Those that would be most vulnerable are those located in the front line of the tornado's impact, and those that are structurally unsound.

8.3.4 Impact on Critical Facilities and Infrastructure

For purposes of this planning effort, all structures on the Reservation and in the tribal planning area have been identified to be critical facilities, and therefore considered at risk to the tornado hazard. In addition to tribally owned structures, however, additional infrastructure not owned by the Tribe also has the potential to impact the tribal planning area.

Roads or railroads (major nationwide railroad traverses the tribal planning area) that are blocked or damaged can prevent access and can isolate residents and emergency service providers needing to get to vulnerable populations or to make repairs. Likewise, the materials carried within the rail cars may be hazardous. This would be of particularly concern if a railcar is damaged or punctured, allowing the release of chemicals. In some instances, the chemicals, when mixed with precipitation, become even more toxic. If ignited, the smoke becomes toxic, impeding the ability for evacuation due to the wind direction carrying the smoke.

Bridges may also be damaged or blocked by tornado. Debris accumulations can cause isolation, as well as causing a significant economic impact for removal. Water and sewer systems can be damaged, flooded, backed up, or destroyed, causing further health problems. Utilities can also be destroyed or damaged during a tornado event. Table 8-7 provides an estimate of the number and types of critical facilities exposed to the tornado hazard.

TABLE 8-7.
CRITICAL FACILITIES EXPOSED TO TORNADO HAZARD

Facility Type Identified	Number Identified
Medical and Health Services	4
Government Function	12
Protective Function	6
Schools	5
Cultural	1
Hazmat	3
Residential*	45

TABLE 8-7.
CRITICAL FACILITIES EXPOSED TO TORNADO HAZARD

Facility Type Identified	Number Identified
Commercial**	44
Water	5
Wastewater	3
Communications	2
Industrial***	13
Other Critical Infrastructure****	15
Total	**157**

*Residential category includes the houses, motels, and hotels on the reservation.
**Golf course and irrigation system (counted as 1) included in Commercial counts.
***The irrigation wells (4) are included within the Industrial counts.
****Other Critical Infrastructure includes storage sheds and storage buildings.

8.3.5 Impact on Economy

High wind events and tornadoes can greatly impact the economy, including loss of business function, damage to inventory, relocation costs, wage loss and rental loss due to the repair/replacement of buildings. Recovery and clean-up costs can also be costly and impact the economy as well.

Utilities are often the backbone of the economy of the affected areas, and these are the resources that generally receive the most severe damage. Until debris can be cleared and utilities restored, communities may find themselves without fuel, food, and employment. Some structures on the Reservation or in the tribal planning area do have permanent generators, such as the Health Department, IT, Council Building, the Coushatta Department of Public Safety, and the Radio Building, which houses the Fire Department's communications system. Other structures, such as the Wellness Center, Multipurpose Complex, and Administration Building are connected to a large portable generator. The Casino Resort's main structure also has four permanent emergency generators.

The hazard zone for a tornado event is quite significant and would have a devastating impact on the Tribe's economy, as well as Allen Parish and the State of Louisiana's. Loss of tax base, destruction of tribal government facilities, destruction of businesses, loss of land-base, loss of the agricultural industry, among other items, all would be significant impacts to overcome to allow the economy to sustain itself. In addition to the Tribal impact, all of Louisiana would be impacted as a result of the loss of income as the Tribe is a major employer in the State, employing both tribal and non-tribal members.

8.3.6 Impact on Environment

Given the high agricultural industry on the Reservation, impact to the environment from a tornado could have far-reaching consequences. The vulnerability of aquatic habit and associated ecosystems would be highest in areas close to the impact area. Areas near gas stations, industrial areas, rail lines and Tier II facilities would be vulnerable due to potential contamination from hazardous materials.

Tornado winds can carry destructive debris and pollutants that can have devastating impacts on all facets of the environment. Millions of dollars spent on habitat restoration and conservation in the planning area could be wiped out by one significant tornado. There are currently no tools available to measure these impacts. However, it is conceivable that the potential financial impact of a significant tornado event on the environment could equal or exceed the impact on property.

8.4 Future Development Trends

As discussed in Chapter 3, minimal areas targeted for future growth and development have been identified across the Reservation. Any areas of growth could be potentially impacted by a tornado event because the entire Reservation is exposed and vulnerable to the wind hazard associated with a tornado. However, with building codes specifically addressing wind-load capacity for the planning area, impact from development would be limited to some degree.

8.5 Climate Change Impacts

The impacts of climate change on the frequency and severity of tornado events could be significant, although review of existing climate change data is somewhat contradicting. It is anticipated that with global warming and sea-level rise, such will influence the frequency and severity of tornado events, forcing tornadoes to travel further inland as erosion continues to reduce shorelines.

Tornadic development also occurs in association with tropical cyclones, so any changes in tropical cyclone frequency and/or intensity might be coincident with a change in tropical-cyclone-induced tornadic development. Severe weather events as a whole are expected to become more problematic in the future, even if only because of increased population. Therefore, it is reasonable to anticipate that the tornado hazard will follow a proportionate increase similar to that of tropical cyclones.

8.6 Issues

The worst-case scenario for the planning area is a local tornado event, or storm system which triggers several tornadoes. This could result in loss of life and property and cause severe economic and environmental impacts.

The planning team has identified the following issues related to the tornado hazard for the planning area:

- To measure and evaluate the probable impacts of a tornado, new hazard mapping needs to be created based on probabilistic scenarios likely to occur for the Reservation. The science and technology in this field are emerging.
- A tornado warning system is necessary on the Reservation and in the areas of tribal enterprise to provide the highest degree of warning to residents and guests. The Tribe is looking at the potential of installing an All-Hazards Alert Broadcast (AHAB) type-siren, and will be attempting to acquire funding for sirens, which will be strategically located to allow for advanced warning in areas of concern.

8.7 Impact and Results

Tornadoes are of high concern on the Tribe. The 2018 tornado event, which registered as an EF 1, caused $90,000 in damage. Within the planning area, there have been eight (8) tornadoes since completion of the last plan in 2016, illustrating a fairly significant increase than from the 1973-2016 time period, which recorded a total of 16 events over a 43-year period of time. As such, the Planning Team felt this hazard was of high concern, ranking fifth in order of hazards of concern, with a 3.05 CPRI score.

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CHAPTER 9.
TROPICAL STORMS AND HURRICANES

With a combination of soaking rain, flying debris, high winds, and tidal surges, hurricanes and tropical storms can pack a powerful punch. Besides causing extensive damage in coastal areas, hurricanes and tropical storms often bring flooding hundreds of miles inland, placing communities that normally would not be affected by the strongest hurricane winds in great danger. Just a few inches of water from a flood can cause tens of thousands of dollars in damage.

Figure 9-1 illustrates the 2020 Billion-Dollar Weather and Climate Disasters as presented by NOAA. [38] Several of these disasters impacted the Coushatta Tribe.

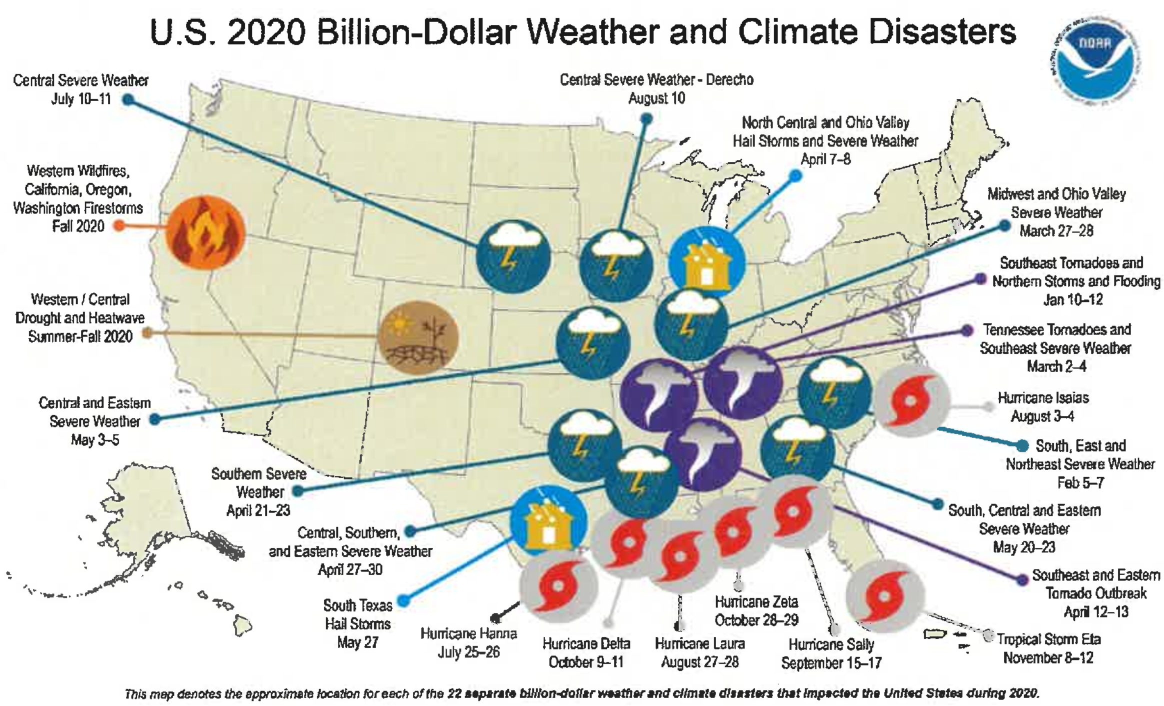


Figure 9-1 NOAA's 2020 Billion-Dollar Disasters

[38] NOAA. (2020) US Billion-Dollar Weather and Climate Disasters. Accessed 23 Feb 2021. Available online at: [2020-billion-dollar-disaster-map.png (4167×2501) (climate.gov)]()

9.1 General Background

9.1.1 Tropical Storm

A tropical storm is a tropical cyclone in which the maximum sustained surface wind speed (using the U.S. 1-minute average) ranges from 39 mph to 73 mph (NOAA). A tropical storm system is characterized by a low-pressure center and numerous thunderstorms that produce strong winds and heavy rain (winds are at a lower speed than hurricane-force winds, thus gaining its status as tropical storm versus hurricane). Tropical storms strengthen when water evaporated from the ocean is released as the saturated air rises, resulting in condensation of water vapor contained in the moist air. They are fueled by a different heat mechanism than other cyclonic windstorms. The characteristic that separates tropical cyclones from other cyclonic systems is that at any height in the atmosphere, the center of a tropical cyclone will be warmer than its surroundings; a phenomenon called “warm core” storm systems.

The term "tropical" refers both to the geographical origin of these systems, which usually form in tropical regions of the globe, and to their formation in maritime tropical air masses. The term "cyclone" refers to such storms' cyclonic nature, with counterclockwise wind flow in the Northern Hemisphere, and clockwise wind flow in the Southern Hemisphere. The opposite direction of the wind flow is a result of the Coriolis force.

Tropical storms and tropical depressions, while generally less dangerous than hurricanes, can be deadly. The winds of tropical depressions/storms are usually not the greatest threat; rather, the rains, flooding, and severe weather associated with the tropical storms are what customarily cause more significant problems. Serious power outages can also be associated with these types of events.

While tropical storms can produce extremely powerful winds and torrential rain, they are also able to produce high waves, damaging storm surge(s), and tornadoes. They develop over large bodies of warm water and lose their strength if they move over land due to increased surface friction and loss of the warm ocean as an energy source. This is why coastal regions can receive significant damage from a tropical cyclone, while inland regions are relatively safe from receiving strong winds. Heavy rains, however, can produce significant flooding inland, and storm surges can produce extensive coastal flooding up to 40 kilometers (25 mi) from the coastline. Inland flooding accounts for the majority of U.S. hurricane-related deaths, with about one-fourth involving people who drown in, or are attempting to abandon, their vehicles. Nearly 80% of children killed by tropical hurricanes drowned in freshwater floods (FEMA, 2006).

One measure of the size of a tropical cyclone is determined by measuring the distance from its center of circulation to its outermost closed isobar. If the radius is less than two degrees of latitude, or 222 kilometers (138 mi), then the cyclone is "very small" or a "midget". A radius between 3 and 6 latitude degrees or 333 to 670 kilometers (207 to 420 mi) are considered "average-sized". "Very large" tropical cyclones have a radius of greater than 8 degrees or 888 kilometers (552 mi).

9.1.2 Hurricanes

Hurricanes begin as tropical storms over the warm moist waters of the Atlantic, off the coast of West Africa, and Pacific Oceans near the equator. As the moisture evaporates, it rises until enormous amounts of heated, moist air are twisted high in the atmosphere. The winds begin to circle counterclockwise north of the equator or clockwise south of the equator. The center of the hurricane is called the eye.
Tropical cyclones (Tropical Depressions, Tropical Storms, and Hurricanes) form over the warm, moist waters of the Atlantic, Caribbean, and Gulf of Mexico.

- A Tropical Depression is declared when there is a low-pressure center in the tropics with sustained winds of 25 to 33 mph.
- A Tropical Storm (named event) is defined as having sustained winds from 34 to 73 mph.
- If sustained winds reach 74 mph or greater, it becomes a hurricane. The Saffir-Simpson Scale ranks hurricanes based on sustained wind speeds—from Category 1 (74 to 95 mph) to Category 5 (156 mph or more). Category 3, 4, and 5 hurricanes are considered "Major" hurricanes. Hurricanes are categorized based on sustained winds; wind gusts associated with hurricanes may exceed the sustained winds and cause more severe localized damages.

When water temperatures are at least 80° F, hurricanes can grow and thrive, generating enormous amounts of energy, which is released in the form of numerous thunderstorms, flooding rainfall, and very damaging winds. The damaging winds help create a dangerous storm surge (rise in the water above the normal astronomical tide), in the lower latitudes, hurricanes tend to move from east to west. However, when a storm drifts further north, the westerly flow at the mid-latitudes tends to cause the storm to curve toward the north and east. When this occurs, the storm may accelerate its forward speed.

Figure 9-2 Hurricane Katrina (2005) Making Landfall in Louisiana

The eye of a hurricane is a relatively calm center of low barometric pressure. Customarily, an eye 15 miles wide will last for 30 minutes or less at any one location. Figure 9-2 shows the eye of Hurricane Katrina as it was making landfall in Louisiana.[39] Hurricanes can range from compact storms only 50 miles across, to huge storms, as much as 500 miles wide -- Hurricane Allen in 1980 took up the entire Gulf of Mexico.

[39] http://en.wikipedia.org/wiki/List_of_Louisiana_hurricanes_(2000%E2%80%93present)

A hurricane strike occurs when a location passes within the hurricane's strike circle (Figure 9-3), a circle of 125 nautical mi diameter, centered 12.5 nautical miles to the right of the hurricane center (looking in the direction of motion). This circle depicts the typical extent of hurricane force winds, which are approximately 75 nautical miles to the right of the center and 50 nautical miles to the left.[40]

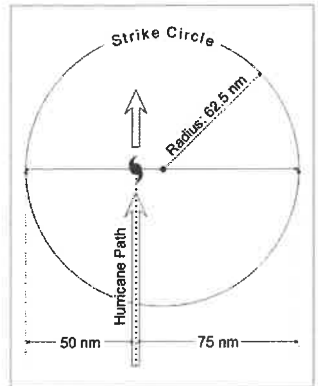


Figure 9-3 Hurricane Strike Circle

A direct hit occurs during a close approach of a tropical cyclone. For locations on the left-hand side of a tropical cyclone's track (looking in the direction of motion), a direct hit occurs when the cyclone passes to within a distance equal to the cyclone's radius of maximum wind. For locations on the right-hand side of the track, a direct hit occurs when the cyclone passes to within a distance equal to twice the radius of maximum wind.

Typically, the more intense the hurricane is, the greater the tornado threat. However, the strong damaging winds of the hurricane frequently cover the smaller tornado path, making the separation of their damaging effects very difficult. As winds increase, pressure against objects is added at a disproportionate rate. Pressure against a wall rises with the square of the wind speed, which means that a three-fold increase in wind speed gives a nine-fold increase in pressure. Thus, a 25-mph wind causes about 1.6 pounds of pressure per square foot. A 4'x 8' sheet of plywood will be pushed by a weight of 50 pounds. In 75 mph winds, that force becomes 450 pounds, and a 125-mph wind becomes 1,250 pounds. For some structures, this force is enough to cause failure. These winds will weaken after landfall due to the loss of warm-water energy, and the encountering of great friction over land.

The official hurricane season for the Gulf of Mexico runs from June 1 to November 30. However, from 1973-2021, there are no records of a land-falling hurricane in Allen Parish or the Coushatta Reservation during December through June, with the earliest, Hurricane Barry, making landfall on July 10, 2019.

9.1.3 Saffir/Simpson Hurricane Scale

The Saffir/Simpson scale categorizes or rates hurricanes from 1 (Minimal) to 5 (Catastrophic) based on their intensity. This is used to give an estimate of the potential property damage and flooding expected along the coast from a hurricane landfall. Wind speed is the determining factor in the scale, as storm surge values are highly dependent on the slope of the continental shelf and the shape of the coastline, in the landfall region. All winds are using the U.S. 1-minute average, meaning the highest wind that is sustained for 1-minute. The Saffir/Simpson Scale described in Table 9-1 gives an overview of the wind speeds and range of damage caused by different hurricane categories. An interactive demonstration on wind damage is available at http://www.nhc.noaa.gov/prepare/hazards.php#rain from NOAA.

[40] http://www.nhc.noaa.gov/aboutgloss.shtml

TABLE 9-1.
SAFFIR/SIMPSON SCALE (NOAA)

Scale No. (Category)	Winds (mph)	Storm Surge (feet)	Potential Damage
1	74 – 95	4 - 5	Minimal: Damage is done primarily to shrubbery and trees, unanchored mobile homes are damaged, some signs are damaged, and no real damage is done to structures.
2	96 – 110	6 - 8	Moderate: Some trees are toppled, some roof coverings are damaged, and major damage is done to mobile homes.
3	111 – 130	9 - 12	Extensive: Large trees are toppled, some structural damage is done to roofs, mobile homes are destroyed, and structural damage is done to small homes and utility buildings.
4	131 – 155	13 - 18	Extreme: Extensive damage is done to roofs, windows, and doors; roof systems on small buildings completely fail; and some curtain walls fail.
5	> 155	>18	Catastrophic: Roof damage is considerable and widespread, window and door damage are severe, there are extensive glass failures, and entire buildings could fail.
Additional Classifications			
Tropical Storm	39-73	0 - 3 feet	NA
Tropical Depression	< 38	0	NA

9.2 Hazard Profile

9.2.1 Extent and Location

Much of Louisiana falls within FEMA's special hurricane zone and is vulnerable to hurricanes and tropical storms, dependent on the storm's track. While the coastal areas are customarily more susceptible to damage due to the combination of both high winds and tidal surge, inland areas, especially those in floodplains, are also at risk for flooding, due to heavy rain, and wind damage. The majority of damage following hurricanes and tropical storms often results from residual wind damage and inland flooding.

Most tornadoes resulting from hurricanes occur within 24 hours after the hurricane makes landfall (except when interacting with an inland cold front, which will renew the strength of the storm). Most tornadoes also occur within 30 miles of the eye of the storm and within 150 miles of the coastline, well within the planning region. While more tornadoes occur during the morning and afternoon rather than the evening or nighttime due to the need for a tornado to have a heat source, they can occur at any time, with hurricanes developing in the Gulf of Mexico producing more tornadoes than Atlantic storms. Figure 9-4 illustrates Hurricane Strikes Categories 1-5 occurring throughout the Continental United States since 1950.[41]

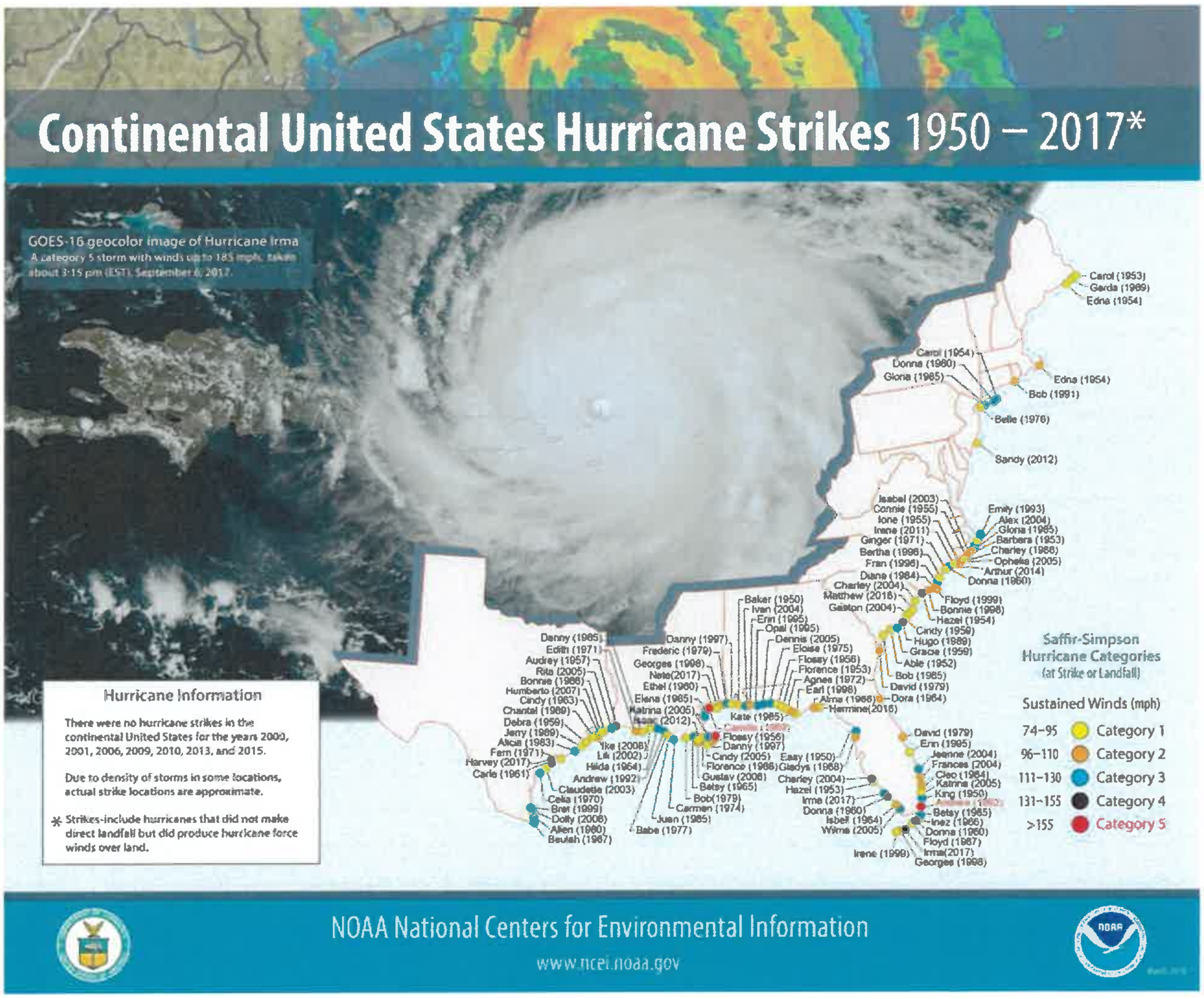


Figure 9-4 United States Major Hurricane Strikes, 1950-2017

[41] NOAA. (2021). Continental United States Hurricane Strikes 1950-2017. Accessed 3 March 2021. Available online at: https://www.nhc.noaa.gov/climo/images/conus_strikes.jpg

9.2.2 Previous Occurrences

NOAA's Historical Hurricane Tracks tool is a public interactive mapping application that displays tropical cyclone data. This interactive tool tracks tropical cyclones from 1842 to 2019 (latest date available from data source). Figure 9-5 displays tropical cyclone tracks occurring within 10 nautical miles of the Coushatta Reservation (hurricanes occurring after 2019 are not yet included in this dataset by NOAA. Since 1973, the 12 hurricanes impacting the Coushatta Reservation include: Hurricanes Delta (2020), Laura (2020), Barry (2019), Harvey (2017), Isaac (2012), Ike (2008), Gustav (2008), Rita (2005), Katrina (2005), Lili (2002), Andrew (1992), Carmen (1974), and Tropical Storm Allison (1989) (see Table 9-2).

As Figure 9-5 also illustrates, there are many more hurricanes and tropical storms that occur in the area that do not rise to the level of a disaster declaration. Science has shown that a hurricane or tropical storm does not need to make landfall to cause major damage, as the outer bands of the storm event can carry significant moisture and winds. For the Coushatta Tribe, the majority of the impact has been as a result of wind damage and resulting debris, loss of power for extended periods of time, and flooding, which has caused significant impact, particularly with the 2019 and 2020 hurricane events. That impact includes the inability to evacuate due to floodwaters over roadways leading onto and off of the Reservation.

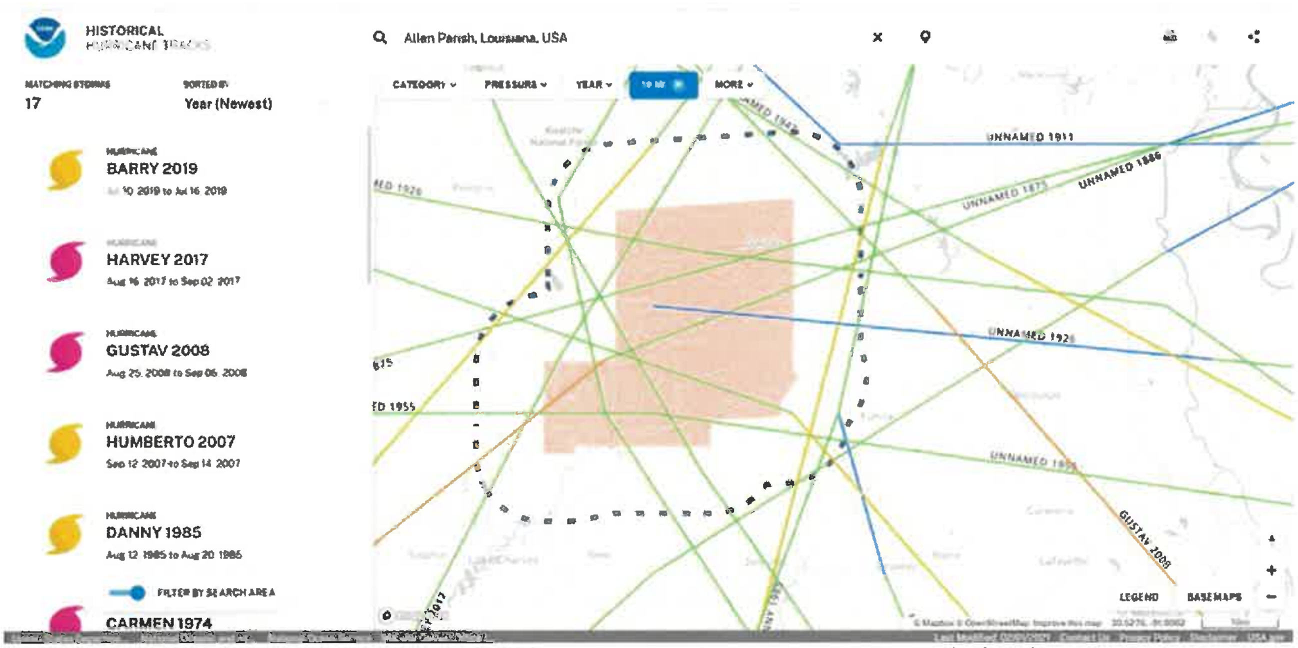
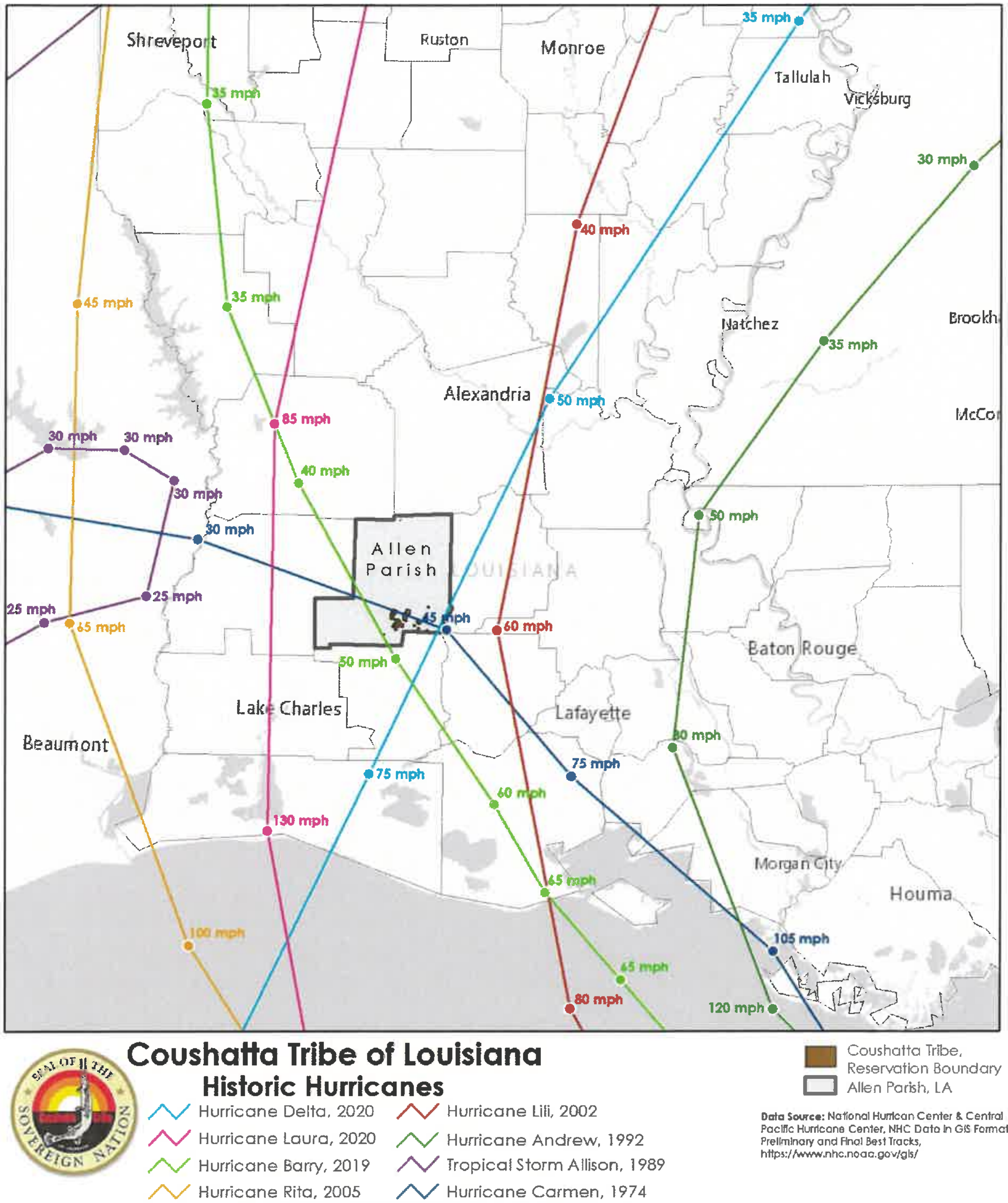


Figure 9-5 Historical Hurricane Tracks Within 10 Nautical Miles of Reservation (NOAA)

Table 9-2 summarizes historical tropical storms and hurricanes, also indicating those making landfall but which may not have reached the level of impact for a disaster declaration.



Cat.	Sustained Winds (mph)	Description	Cat.	Sustained Winds (mph)	Description
1	74 - 95	Minimal	4	131 - 155	Extreme
2	96 - 110	Moderate	5	> 155	Catastrophic
3	111 - 130	Extensive		*Saffir-Simpson Hurricane Scale*	

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Figure 9-6 Historic Hurricane Tracks

TABLE 9-2.
HISTORY OF HURRICANES AND TROPICAL STORMS

Date	Name	Category	Landfall
September 1926 *Not Declared*	Great Miami Hurricane of 1926	4	Yes
June 1957 *Not Declared*	Hurricane Audrey	4	Yes
July 1979 *Not Declared*	Tropical Storm Claudette		Yes
July 1989 ***DR#835 (as flood event)***	Tropical Storm Allison		Yes
August 1992 ***DR #956***	Hurricane Andrew	3	Yes
June 2001 *Not Declared*	Tropical Storm Alison		Yes
October 2002 ***DR#1437***	Hurricane Lili	1	
August 2004 *Not Declared*	Hurricane Ivan – Tropical Depression	5 at strongest point	Yes
August 2005 ***DR#1603***	Hurricane Katrina	3	Yes
September 2005 ***DR#1607***	Hurricane Rita	5 at strongest point	Yes
September 1, 2008 ***DR#1786***	Hurricane Gustav	2	Yes
September 13, 2008 ***DR#1792***	Hurricane Ike	4 at strongest point	Yes
August 2012 ***DR#4080***	Hurricane Isaac	1	Yes
July 2019 **DR#4458**	Hurricane Barry	1	Yes
August 2020 **DR#4559**	Hurricane Laura	4	Yes
October 2020 **DR#4570**	Hurricane Delta	2	Yes

Some of the more significant hurricane and tropical storm events to have occurred within the region include the following. This list is inclusive of events occurring in the planning area prior to the establishment of the Coushatta Tribe in 1973.

Hurricane Audrey - 1957

No reliable wind or pressure measurements are available from Audrey's core at landfall. The main impact was from 8 to 12-foot storm surges that penetrated as far inland as 25 miles over portions of low-lying southwestern Louisiana. These surges were responsible for the vast majority of the 390 deaths from Audrey. Damage in the United States was estimated at $150 million.

Tropical Storm Claudette - 1979

Tropical Storm Claudette regained tropical storm strength over the western Gulf on July 23 and made landfall the next day near the Louisiana-Texas border. Producing tropical storm conditions along portions of the Texas and Louisiana coasts, the storm will be most remembered for its rainfall. Widespread amounts in excess of 10 inches occurred over portions of southeastern Texas and southwestern Louisiana, with several local amounts in excess of 30 inches. An observer west of Alvin, Texas reported 43 inches in 24 hours, which is a United States record for 24-hour rainfall amount. The storm total at that location was 45 inches. The rains produced severe flooding that was responsible for one death and $400 million in damage. The storm also produced heavy rains over portions of Puerto Rico that were responsible for one death.

One of the most destructive United States hurricanes of record started modestly as a tropical wave that emerged from the west coast of Africa on August 14th. The wave spawned a tropical depression on August 16th, which became Tropical Storm Andrew the next day. Further development was slow, as the west-northwestward moving Andrew encountered an unfavorable upper-level trough. Indeed, the storm almost dissipated on August 20th due to vertical wind shear. By August 21st, Andrew was midway between Bermuda and Puerto Rico and turning westward into a more favorable environment. Rapid strengthening occurred, with Andrew reaching hurricane strength on the 22nd and Category 4 status on the 23rd. After briefly weakening over the Bahamas, Andrew regained Category 4 status as it blasted its way across south Florida on August 24. The hurricane continued westward into the Gulf of Mexico where it gradually turned northward. This motion brought Andrew to the central Louisiana coast on August 26th as a Category 3 hurricane. Berwick, LA reported 96 mph sustained winds with gusts to 120 mph. Andrew is responsible for 23 deaths in the United States and three more in the Bahamas. The hurricane caused $26.5 billion in damage in the United States, of which $1 billion occurred in Louisiana and the rest in south Florida. The vast majority of the damage in Florida was due to the winds.

Tropical Storm Allison – June 24 – July 7, 1989

Three meteorological phenomena led to the formation of Allison: the remains of Pacific Hurricane Cosme, the northern portion of a tropical wave, and an upper high over the Gulf of Mexico. Cosme moved northward across Mexico, steered north-northeast by a deep trough across the West/High Plains. A blocking ridge built to its northeast, slowing down its forward movement as it entered the Gulf of Mexico. Heavy thunderstorms rapidly developed across the northwest Gulf of Mexico on the 22nd and became more concentrated with time. At this time, Cosme's circulation was still inland southwest of Brownsville, and a new low developed near the convection, and it became Tropical Depression #2 by the afternoon of the 24th.

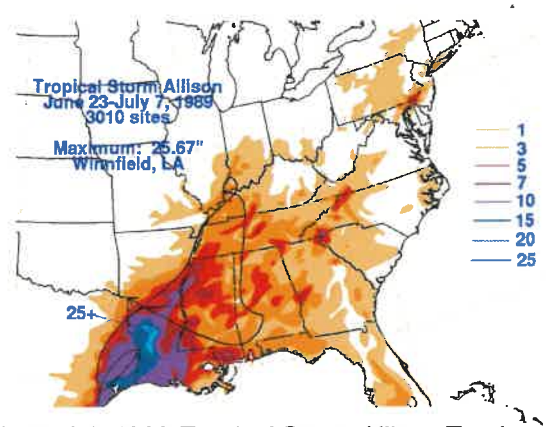

Figure 9-7 1989 Tropical Storm Allison Track

Becoming organized over the succeeding couple days, it strengthened into a tropical storm late on the 25th, as verified by ship reports and later by reconnaissance aircraft. By the morning of the 26th, the blocking ridge to its northeast eroded, and Allison accelerated northward into the Texas coast near the north end of Matagorda Bay late on the morning of the 26th. After the system which eroded the ridge moved out to the northeast, ridging redeveloped, blocking Allison's movement as it approached Houston on the 27th. Over the next 2-3 days, Allison transcribed an anti-cyclonic loop near Houston dumping prodigious rainfall as it drifted, before moving off to the northeast into Louisiana late on the 30th.

Steered by deep southwesterly flow, Allison moved northeast into western Kentucky on the 2nd before the steering flow collapsed yet again. The low looped cyclonically near the three-state junction of Kentucky, Illinois, and Indiana until the morning of the 4th when it moved back to the south into Alabama by evening. Moving back to the west, the remnants paralleled the Gulf coast before dissipating as it passed northwest Louisiana late on the 6th. Its track is in Figure 9-7, provided by the NOAA.[42]

Tropical Storm Allison - 2001

Allison's long and complex career began on June 5th as an area of disturbed weather over the northwestern Gulf of Mexico developed into a tropical storm. The cyclone moved into the Gulf of Mexico on the 10th and acquired subtropical characteristics. It then moved east-northeastward over southeastern Louisiana on the 11th, where it re-intensified into a subtropical storm. Allison brought tropical-storm-force winds and above normal tides to portions of the Texas and Louisiana coasts. However, the greatest legacy of the cyclone was the widespread heavy rains and resulting floods along the entire path of the cyclone. Houston, Texas, was the worst affected area, as the Port of Houston reported 36.99 inches and several other locations reported more than 30 inches. The storm also spawned 23 tornadoes. Allison was responsible for 41 deaths and at least $5 billion in damage in the United States, making it the deadliest and costliest U. S. tropical storm of record. Losses are estimated to be approximately $86 million statewide.

[42] http://www.wpc.ncep.noaa.gov/tropical/rain/allison1989.html

Hurricane Lili - 2002

Lili made two landfalls in western Cuba before entering the Gulf of Mexico. Increasing strength, reaching at Category 4, it weakened, and hit Louisiana as a Category 1 hurricane on October 3rd, before moving inland and dissipating on October 6, 2002. Lili caused extensive damage through the Caribbean, particularly to crops and poorly built homes. Mudslides were common on the more mountainous islands, particularly Haiti and Jamaica. In the United States, the storm cut off the production of oil within the Gulf of Mexico and caused severe damage in parts of Louisiana. Lili was also responsible for severe damage to the barrier islands and marshes in the southern portion of the state. Total damage amounted to $925 million (2002 USD), and the storm killed 15 people during its existence.

Hurricane Ivan - 2004

Ivan developed from a large tropical wave that crossed the west coast of Africa. Ultimately, Ivan moved across the east-central Gulf of Mexico, making landfall as a major hurricane with sustained winds of near 120 m.p.h. on the 16th just west of Gulf Shores, Alabama.

Ivan weakened as it moved inland, producing over 100 tornadoes and heavy rains across much of the southeastern United States, before merging with a frontal system over the Delmarva Peninsula on the 18th. While this would normally be the end of the story, the extratropical remnant low of Ivan split off from the frontal system and drifted southward in the western Atlantic for several days, crossed southern Florida, and re-entered the Gulf of Mexico on the 21st. The low re-acquired tropical characteristics, becoming a tropical storm for the second time on the 22nd in the central Gulf. Ivan weakened before it made its final landfall in southwestern Louisiana as a tropical depression on the 24th. Surge heights of 10-15 feet occurred along the Gulf coast during Ivan's first U.S. landfall. Peak rainfall amounts in the Caribbean and United States were generally 10-15 inches. The death toll from Ivan stands at 92; 39 in Grenada, 25 in the United States, 17 in Jamaica, 4 in Dominican Republic, 3 in Venezuela, 2 in the Cayman Islands, and 1 each in Tobago and Barbados. U.S. damage is estimated to be near $14.2 billion, the third largest total on record.

Hurricane Katrina - 2005

Katrina was one of the most devastating hurricanes in the history of the United States. It is the deadliest hurricane to strike the United States since the Palm Beach-Lake Okeechobee hurricane of September 1928. It produced catastrophic damage - estimated at $75 billion in the New Orleans area and along the Mississippi coast - and is the costliest U. S. hurricane on record. This horrific tropical cyclone formed from the combination of a tropical wave, an upper-level trough, and the mid-level remnants of Tropical Depression Ten. The hurricane moved southwestward across southern Florida into the eastern Gulf of Mexico on August 26th. Katrina then strengthened significantly, reaching Category 5 intensity on August 28th. Later that day, maximum sustained winds reached 175 mph with an aircraft-measured central pressure of 902 mb while centered about 195 miles southeast of the mouth of the Mississippi River. Katrina turned to the northwest and then north, with the center making landfall near Buras, Louisiana on August 29th, with maximum winds estimated at 125 mph (Category 3). Continuing northward, the hurricane made a second landfall near the Louisiana/Mississippi border with maximum winds estimated at 120 mph (Category 3). Katrina brought hurricane conditions to southeastern Louisiana, southern Mississippi, and southwestern Alabama. The Coastal Marine Automated Network station at Grand Isle, Louisiana reported 10-minute average winds of 87 mph on August 29th, with a gust to 114 mph. Higher winds likely occurred there and elsewhere, as many stations were destroyed, lost power, or lost communications during the storm. Storm surge flooding of 10 to 20 feet above normal tide levels occurred along the southeastern Louisiana coast. Katrina is responsible for approximately 1,200 reported deaths, including about 1,000 in Louisiana and 200 in Mississippi. Seven additional deaths occurred in southern Florida. Katrina caused catastrophic damage in southeastern Louisiana and southern Mississippi. Storm surge along the Mississippi coast caused total destruction of many structures, with the surge damage extending several miles inland. Similar damage occurred in portions of southeastern Louisiana southeast of New Orleans. The surge overtopped and breached levees in the New Orleans metropolitan area, resulting in the inundation of much of the city and its eastern suburbs. Wind damage from Katrina extended well inland into northern Mississippi and Alabama.

Hurricane Rita - 2005

Rita, the third Category 5 hurricane of the season, was a destructive and deadly hurricane that devastated portions of southeastern Texas and southwestern Louisiana and significantly impacted the Florida Keys. After entering the Gulf of Mexico, Rita intensified from Category 2 to Category 5 in about 24 hours. The maximum sustained winds reached 165 mph late on September 21st, and the hurricane reached a peak intensity of 180 mph early on September 22nd. Weakening began later that day and continued until landfall around 0740 UTC September 24th just east of the Texas/Louisiana border between Sabine Pass and Johnson's Bayou. At that time, maximum sustained winds were 115 mph (Category 3). Weakening continued after landfall, but Rita remained a tropical storm until reaching northwestern Louisiana late on September 24th. The cyclone then turned northeastward and merged with a frontal system two days later. Rita brought hurricane conditions to southwestern Louisiana and southeastern Texas. The hurricane caused storm-surge flooding of 10 to 15 ft. above normal tide levels along the southwestern coast of Louisiana. Rita produced rainfalls of 5 to 9 inches over large portions of Louisiana, Mississippi, and eastern Texas, with isolated amounts of 10 to 15 inches. The cyclone spawned an estimated 90 tornadoes over the southern United States. Rita was responsible for seven deaths, and it caused damage estimated at $10 billion in the United States. After the impact from Hurricane Rita, FEMA embarked on a project to determine High Water Marks within the areas of impact to determine the level of flood event. Figure 9-8 illustrates the high-water mark elevations determined for Allen Parish and the surrounding parishes (FEMA, 2006b). No specific data was available for the Coushatta Reservation.

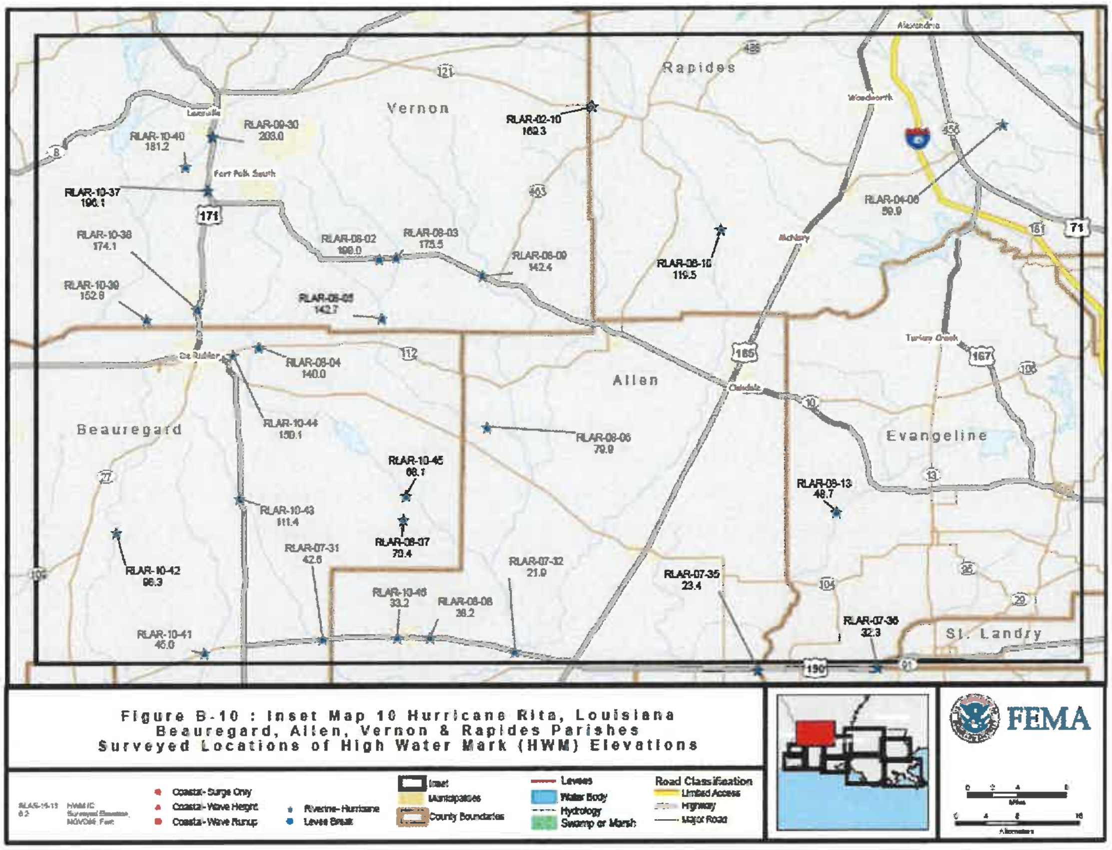

Figure 9-8 FEMA Report - High Water Marks resulting from Hurricane Rita

Hurricane Gustav – September 1, 2008

Gustav formed on the morning of August 25, 2008, about 260 miles southeast of Haiti and rapidly strengthened into a tropical storm that afternoon and into a hurricane early on August 26, 2008. Later that day it made landfall near the Haitian town of Jacmel. It inundated Jamaica and ravaged Western Cuba and then steadily moved across the Gulf of Mexico. Once into the Gulf, Gustav gradually weakened because of increased wind shear and dry air. It weakened to a Category 2 hurricane late on August 31st and remained at that intensity until landfall on the morning of September 1 near Cocodri, Louisiana. Weakening continued to a tropical storm that evening and to a tropical depression the next day as it meandered around the south-central US. The weak system became extratropical on September 4th and was absorbed by another low on September 5, 2008.

In total, an estimated 153 deaths had been attributed to Gustav in the U.S. and Caribbean. Damage in the U.S. totaled to $4.3 billion (2008 USD) with additional damage of $2.1 billion in Cuba and $210 million in damage in Jamaica.

Hurricane Ike – September 11, 2008

Ike was a long-lived and major Cape Verde hurricane that caused extensive damage and many deaths across portions of the Caribbean and along the coasts of Texas and Louisiana. It originated from a well-defined tropical wave that moved off the west coast of Africa on August 28th and then became a tropical depression on September 1 about 775 miles west of the Cape Verde Islands. The depression quickly strengthened to a tropical storm later that day. Ike became a hurricane on September 3, and Ike reached an estimated peak intensity of 145 mph (Category 4) on September 4th. Ike developed a large wind field as it moved northwestward across the Gulf of Mexico over the next 3 days, with tropical-storm-force winds extending up to 275 miles from the center and hurricane-force winds extending up to 115 miles from the center. The hurricane gradually intensified as it moved across the Gulf toward the Texas coast. Ike made landfall over the north end of Galveston Island in the early morning hours of September 13th as a Category 2 hurricane with maximum sustained winds of 110 mph. Storm surges of up to 10 feet above normal occurred as far east as south-central Louisiana. Ike left a long trail of death and destruction. It is estimated that flooding and mud slides killed 74 people in Haiti and 2 in the Dominican Republic, compounding the problems caused by Fay, Gustav, and Hanna. The Turks and Caicos Islands and the southeastern Bahamas sustained widespread damage to property. Seven deaths were reported in Cuba. Ike's storm surge devastated the Bolivar Peninsula of Texas, and surge, winds, and flooding from heavy rains caused widespread damage in other portions of southeastern Texas, western Louisiana, and Arkansas. Twenty people were killed in these areas, with 34 others still missing. Property damage from Ike as a hurricane is estimated at $19.3 billion. Additionally, as an extratropical system over the Ohio valley, Ike was directly or indirectly responsible for 28 deaths and more than $1 billion in property damage.

Hurricane Isaac - 2012

The ninth named storm and fourth hurricane of the annual hurricane season, Isaac originated from a tropical wave that moved off the western coast of Africa. An intensification of the ridge of high pressure to the cyclone's north caused it to turn westward over the Florida Keys by August 26, and Isaac entered the eastern Gulf of Mexico the following day. Gradual intensification occurred, in which the system reached its peak intensity of 80 mph (130 km/h) prior to making two landfalls, both at the same intensity, on the coast of Louisiana during the late evening hours of August 28 and early morning hours of August 29, respectively. The system gradually weakened once inland, but still produced a widespread tornado outbreak across the middle of the country before dissipating into an open low early on September 1. Hurricane Isaac caused 34 direct fatalities, with approximately $2.4 billion (2012 USD) in losses.

Figure 9-9 Hurricane Isaac at Category 1 Making Landfall Over Louisiana

Oil production in the Gulf of Mexico was down by 24% percent and gas off by 8%, as several major companies (including BP and Shell) evacuated their installations in the eastern part of the basin. Overall, at least 39 (7 percent) of 596 production platforms and eight (11 percent) of 76

Gulf oil rigs were evacuated in the Gulf on August 26.[43] By the evening of August 27, approximately 78% of the Gulf's crude oil production and 48% of its natural gas production had been closed.[44] Hurricane Isaac impacted a significant portion of Louisiana, as illustrated in Figure 9-10.

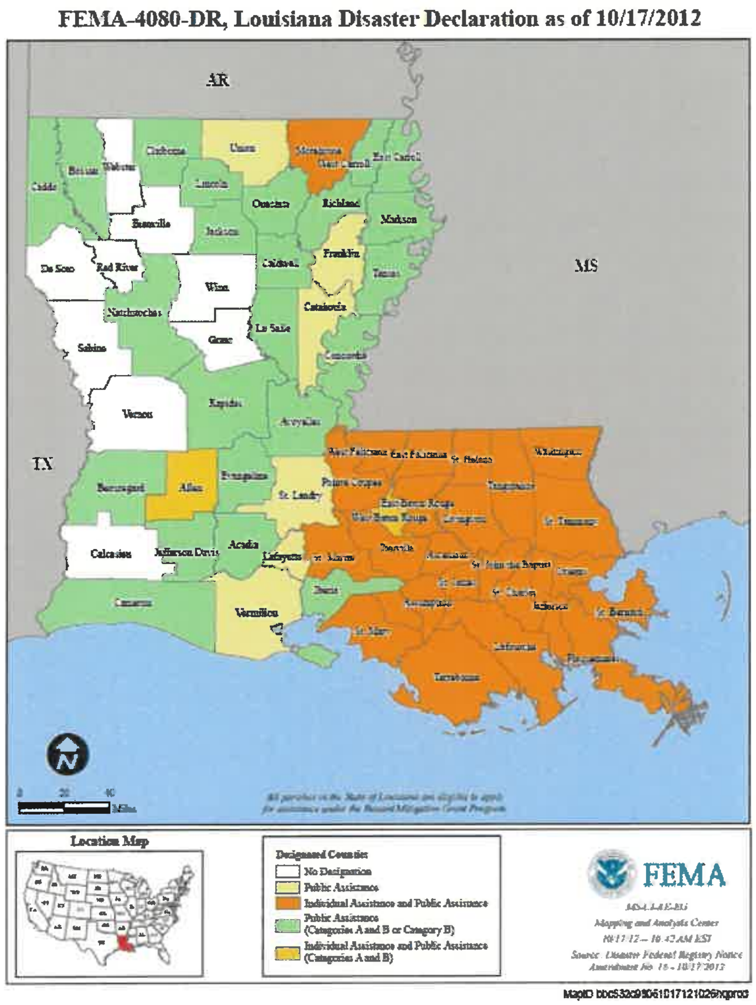

Figure 9-10 Hurricane Isaac Disaster Impact

[43] "Energy companies evacuate oil rigs, slash production, as Tropical Storm Isaac approaches Gulf. The Washington Post. Available at: http://www.washingtonpost.com/business/energy-companies-evacuate-oil-rigs-slash-production-as-tropical-storm-isaac-approaches-gulf/2012/08/26/cfff7e22-efc6-11e1-b74c-84ed55e0300b_story.html

[44] Tropical Storm Isaac: Obama declares Louisiana Emergency (BBC). Available at: http://www.bbc.co.uk/news/world-us-canada-19389087

Hurricane Barry – July 2019

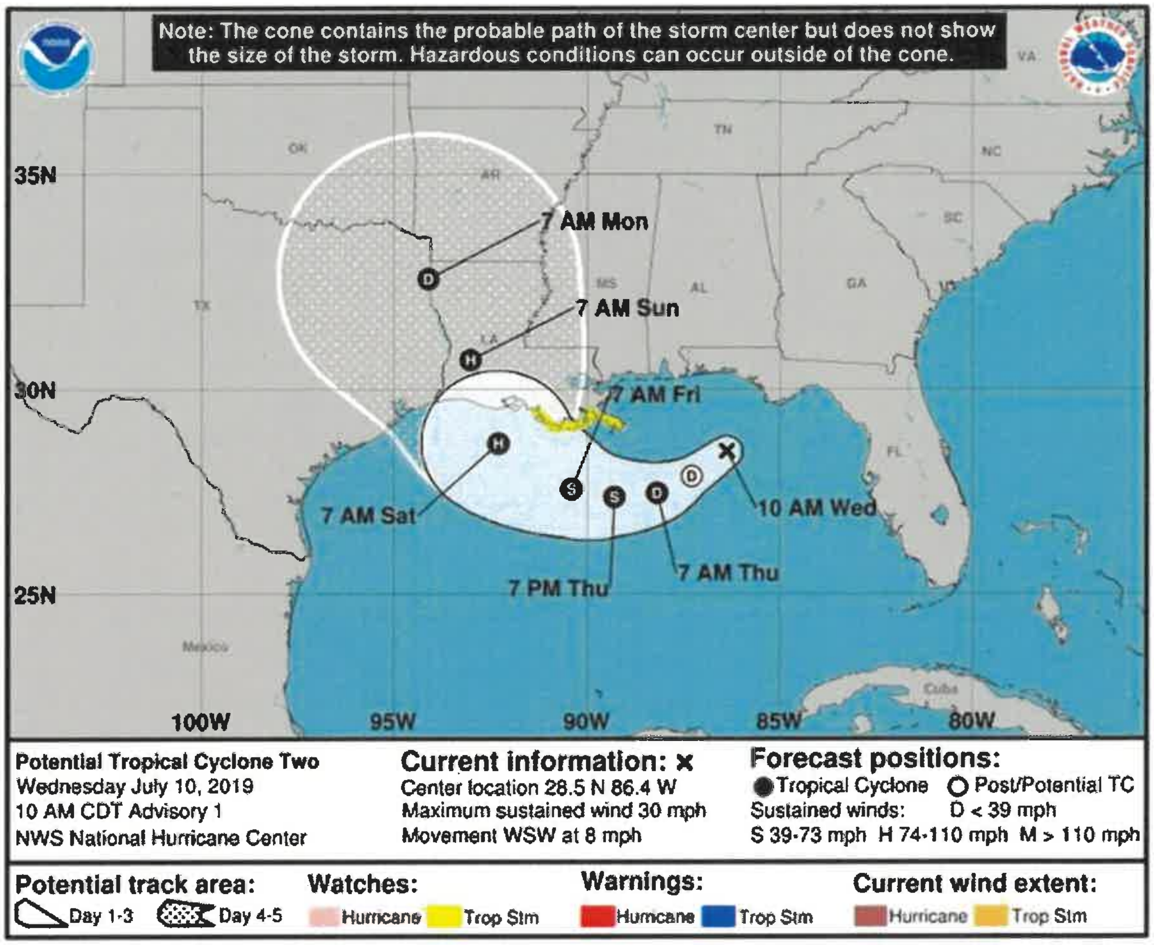

Figure 9-11 Tropical Cylone Barry before upgrade to Hurricane Barry (NOAA)

Originally Tropical Storm Barry (see Figure 9-11), Hurricane Barry was upgraded to a hurricane on July 13, 2019 based on observations of sustained winds of 71 mph with peak gusts of 85 mph recorded at the National Ocean Service Tide Station at Eugene Island, LA. Barry made landfall as a category 1 hurricane over Marsh Island and Intracoastal City, Louisiana. Barry weakened to a tropical storm by early afternoon on July 13th as it continued to track in a general northwestward direction over Southern Louisiana for the remainder of the day. Barry began moving northward over Western Louisiana on July 14th and weakened to a tropical depression by late afternoon when the center of the hurricane was near Shreveport, LA. Barry continued northward over Western Arkansas on July 15th, weakening into a post-tropical low over northern Arkansas by the afternoon (NOAA, National Hurricane Center).

Within Allen Parish, torrential rains July 14-15, 2019 produced over 20 inches of rain in parts of western Allen parish. Widespread flooding was reported across the northern half of the parish. Many homes throughout the area were impacted, including on the Coushatta Reservation. Additional impacted included power outages, which occurred on July 13-14 due to tropical storm-force wind gusts. The Tribe sustained damages to several homes and tribal enterprises, the most significant of which was wind-blown rains flooding the Coushatta Inn, which ultimately sustained damages requiring its demolition. The Inn was originally built in 2000 and represented a significant business investment for the Tribe. As of this update, the Tribe is unable to reconstruct the hotel until such time as FEMA reimbursements are received.

Figure 9-12 CC Bel Near Reservation

Additional impacts included flooding on major roadways leading to the Tribe, including Bayou Blue from Lauderdale Woodyard Road to east of the Bayou Blue Bridge crossing, CC Bel Road, CC Bel Road Bridge and Willis Courville Road (see Figure 9-12 through 9-14), with water depths spilling over the 60" culverts by approximately 3-4 feet over the roadway. In addition, floodwaters inundated the area surrounding the Wastewater Treatment Plant from 3-6 feet along its southern border (see Figures 9-15 through 9-16). The Tribe has identified these issues as mitigation projects.

Figure 9-13 CC Bel Road Bridge

Figure 9-14 Willis Courville Road

Figure 9-15 Casino Waste Water Treatment Plant

Figure 9-16 Casino Waste Water Treatment Plant

Hurricane Laura – August 2020

Figure 9-17 Hurricane Laura's Path

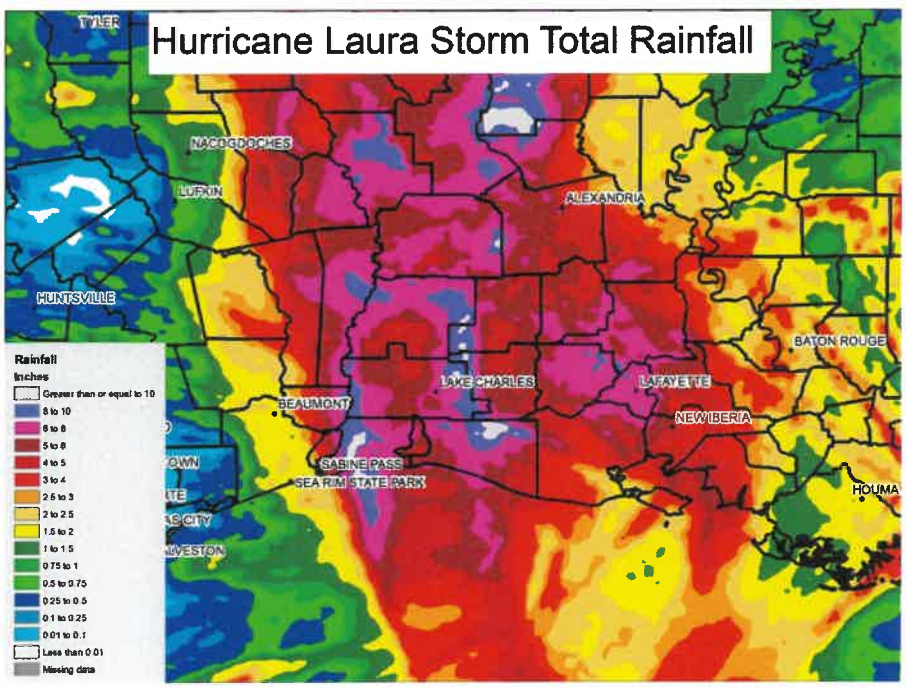

Figure 9-18 Hurricane Laural Rainfall Totals (NOAA)

On the morning of August 25, 2020, Tropical Storm Laura (the earliest 12th named Atlantic Storm of the 2020 season) entered the Gulf of Mexico and became a Category 1 hurricane, explosively intensifying and becoming a category 4 hurricane within hours (see Figure 9-17). Laura made landfall at Cameron, Louisiana on August 27th with sustained winds of 150 mph. Laura was the strongest hurricane to strike Southwest Louisiana since records began in 1851. Rainfall totals exceeded 10 inches within the planning area (see Figure 9-18). Laura slowly weakened after landfall but maintained major hurricane status throughout its passage across Cameron, Calcasieu and southern Beauregard Parishes, and category 2 status across northern Beauregard and Vernon parishes as daybreak approached on August 27th. Laura finally weakened below hurricane strength by 12:00 p.m. as it was crossing I-20 in North Louisiana. With this being the strongest hurricane to affect Southwest Louisiana, wind damage to buildings and trees was major to catastrophic across Cameron and Calcasieu Parishes, with considerable damage across Beauregard and Vernon parishes where the core of the hurricane passed.

Figure 9-19 Residential Structure Roof Collapse

Figure 9-20 Collapsed Cattle Shed

Figure 9-21 Collapsed Water Pump House

The National Weather Service in Lake Charles, Louisiana recorded a station record highest peak wind gust of 133 mph before the Automated Surface Observing System wind equipment failed. Laura caused a fire at a chemical plant in Lake Charles, which sent acrid smoke billowing into the sky and prompted the state to order people living nearby to stay inside with their windows shut. Statewide, approximately 30 deaths were reported, one was a 64-year-old woman in Allen Parish, killed by a fallen tree. Two additional deaths in Allen Parish, an 84-year-old male and an 80-year-old female, were killed by carbon monoxide poisoning attributed to the use of a generator.

In response to Hurricane Laura, the Coushatta Tribe evacuated those guests to the Tribe which could safely and timely evacuate. Remaining guests, first responders, employees, and residents of the Tribe were sheltered at the hotels. After the storm, tribal members sustaining damages to their residential structures were provided housing at the undamaged (or repaired) chalets or the hotel until such time as their residential structures were repaired.

Damages to the Coushatta Tribe resulted from both wind and rain damage, and include residential structures, debris removal for hundreds of downed trees, significant impact to the Casino Resort facilities, including the casino, hotels, pavilion, conference center, water park, golf course, medical/social service structure, RV park, governmental administrative facilities, public safety facilities, and others. While damage assessment continues as of this update, it is estimated that damages to the Coushatta Tribe exceed $20 million. Figures 9-19 through 9-21 illustrate some of the damages sustained by the Coushatta Tribe as a result of Hurricane Laura.

Hurricane Delta – October 2020

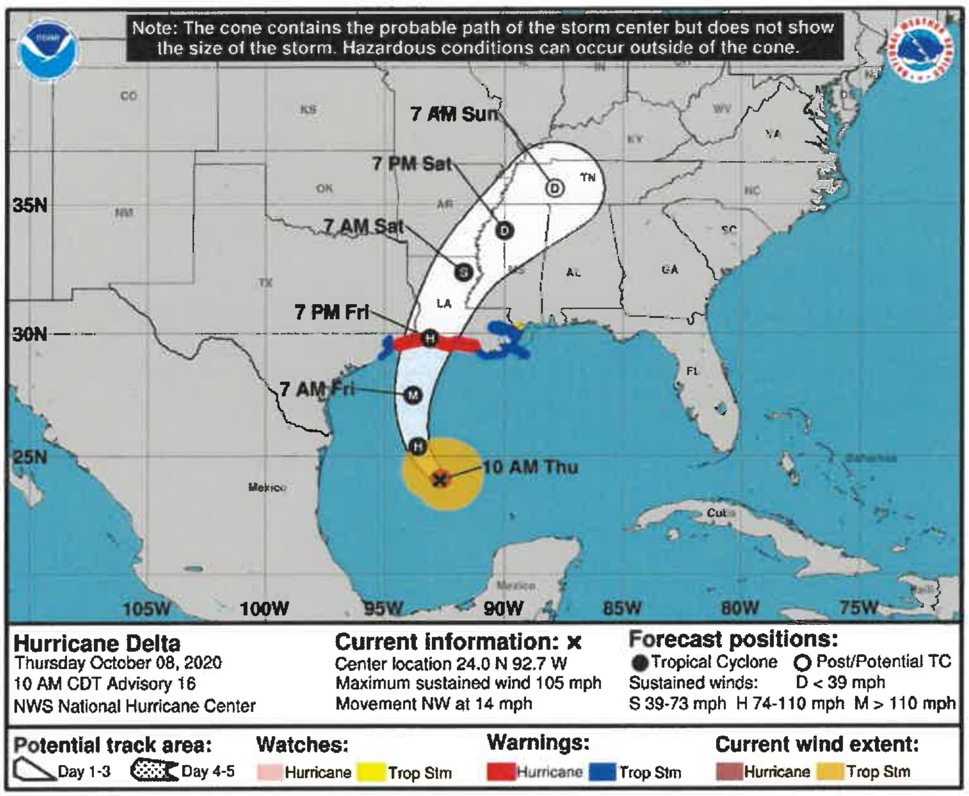

Figure 9-22 Hurricane Delta Path as of October 8, 2020 (NOAA)

Hurricane Delta, a category 2 hurricane, was the record-tying fourth named storm of 2020 to strike Louisiana, as well as the record-breaking 10th named storm to strike the United States. Delta formed from a tropical wave which was first monitored by the National Hurricane Center (NHC) on October 1st.

The hurricane made landfall in southwestern Louisiana on October 9, 2020 less than 15 miles from where Hurricane Laura made landfall less than two months prior. Impacts were felt across parts of Texas, Louisiana, Mississippi, and Arkansas as Delta accounted for an estimated $4 billion in damage. It was also responsible for storm surge in excess of 9 feet above mean sea level (MSL) in southern Louisiana, in addition to rainfall amounts greater than 17 inches across parts of southwestern Louisiana, with 12 to 15 inches the average.

In Allen Parish, evacuation orders were issued on October 8, 2020. Whisky Chitto Creek near Mittie, and the Calcasieu River near Oberlin and Kinder were at Major Flood Stage by 2:00 p.m. on October 10, 2020.

Figure 9-23 Floodwaters Infiltrating Various Tribal Facilities

For the Coushatta Tribe, evacuation orders were also given, and the casino and hotels were utilized for sheltering individuals unable to leave, first responders, and Tribal members.

Flood waters began rising on the 10th, with NOAA advising that floodwaters would not crest until mid-day on the following day (see Figure 9-23). It was not until late afternoon on the 11th that waters began receding. Roadways in areas of the Casino Resort and reservation remained unsafe and, in some areas, unpassable for several days.

Figure 9-24 Remediation Work Required in Museum Due to Flood Waters

Within the interior of the tribal structures, wind force and wind-driven rain inflicted additional damages, including to the hotel, resort, administrative offices, the Cultural Center, Museum, medical buildings, and residential structures (see Figure 9-24). Within the tribal planning area, downed or partially downed trees caused extensive debris management costs. Power outages in some areas lasted for two weeks. As of this update, damage assessment remained on-going, but damages were estimated in excess of $300,000.

While Delta was the 10th named storm of the year to make landfall in the continental United States, surpassing the previous record of nine set in 1916, the record was broken on October 28th with Hurricane Zeta and again on November 8th with Tropical Storm Eta, with the 2020 season setting the record of 12 named storms to make landfall in the United States. Delta was also a record-tying fourth named storm to make landfall in Louisiana in a single season, previously set in 2002. However, this record was broken on October 28th when Hurricane Zeta made landfall near Cocodrie in Southeastern Louisiana with the new record of five named storms (three of which were hurricanes) to make landfall across Louisiana. Fortunately, neither Zeta nor Eta impacted the Coushatta Tribe.

The 2020 Atlantic Hurricane Season concluded on November 30 with 30 named storms, 13 hurricanes, and six major hurricanes. This was the fifth consecutive season with above-average activity, and the 30 named storms set the record for most active season on record, surpassing the 2005 season (NOAA, 2020).

9.2.3 Severity

The extent of a hurricane is categorized by the Saffir-Simpson Hurricane Scale. This scale categorizes or rates hurricanes from 1 (Minimal) to 5 (Catastrophic) based on their intensity. This is used to give an estimate of the potential property damage and flooding expected along the coast from a hurricane landfall. Wind speed is the determining factor in the scale, as storm surge values are highly dependent on the slope of the continental shelf and the shape of the coastline, in the landfall region. According to the Applied Technology Council data contained on the LSUAgCenter Website, the wind speed risk for the planning area is as follows:[45]

- Risk Category 1 is 113 miles per hour;
- Risk Category II is 122 mph, and
- Risk Categories III-IV are 131 and higher.

Estimates for amounts of expected rainfall from a tropical system can be roughly determined by dividing 100 by the forward speed of the storms in miles per hour. (For example, a storm moving at 8 mph, the estimated rainfall would be 12 inches or 100 / 8 = 12 inches of rain.) Thus, rainfall is typically heavier with slower moving storms.

In addition, since the 1970s, globally there has been an increase in 'tropical cyclone destructiveness' as measured by the Power Dissipation Index. This increased tropical cyclone intensity and duration correlates with sea surface temperature. This suggests that future increases of tropical sea surface temperature may lead to future increases in tropical cyclone intensity and duration.

9.2.4 Frequency

The National Hurricane Center defines a Hurricane return periods "as the frequency at which a certain intensity of hurricane can be expected within a given distance of a given location (for the below images 50 nm or 58 statute miles). In simpler terms, a return period of 20 years for a major hurricane means that on average during the previous 100 years, a Category 3 or greater hurricane passed within 50 nm (58 miles) of that location about five times. We would then expect, on average, an additional five Category 3 or greater hurricanes within that radius over the next 100 years (NOAA, NHC).[46],[47]

Tropical storms are often categorized by return frequencies depicting the level of an event (e.g., a 100-year storm, etc.). However, several shortcomings are related to attempting to categorize storms by return frequencies.

[45] LSU AgCenter Accessed June 25, 2015 available at: http://maps.lsuagcenter.com/windspeed/

[46] http://valleywx.com/2015/04/29/will-2015-end-the-major-hurricane-drought/

[47] http://www.nhc.noaa.gov/climo/

- The historical record of storms is relatively short to accurately assess the true long-term frequency of long period events. Most records only go back approximately 100 years, which is an insufficient number to make predictions of this nature. A simple comparison of the ineffectiveness of this type of determination would be sampling 20 ocean waves and making a conclusion of the full range of wave amplitudes in that part of the ocean.
- When it comes to sea level rise and temperatures, they also change the vulnerability such that storms representing an average 100-year frequency will occur considerably more often, and the ability to quantify such information is dependent upon the accuracy of sea level rise predictions.
- A storm may have been a once-in-a-100-year-storm for flooding, but a once-in-a-10-year storm for wind or snowfall or rainfall, etc. Also, the impact of a storm can be compounded if it has multiple severe dimensions (e.g., major flooding in addition to very heavy snow and extreme winds) or if it impacts such a large area that mutual aid cannot be exercised.
- Development along vulnerable areas (e.g., floodplain) can significantly increase the impact of a storm. Thus, the same storm in 1950 might not have garnered as much attention then as it would now with the increased coastal development.

Based on past hurricane and tropical storms, the number of tropical systems impacting the planning area has increased over the course of the last ten years. According to NOAA, during the timeframe 1961-1990, the Atlantic averaged 10 named storms per year and two major hurricanes. Those numbers remained fairly consistent during the period 1971-2000 climate period. However, figures began climbing during the 1981-2010 time period, and have escalated "significantly" since that time (NOAA, 2021). An average of more than three major hurricanes have spun up each year since 1990, with 14 named storms per year. NOAA further indicates that the increase in reported events may be as a result of increased levels of technology to identify hurricanes. The new data also shows an increase in major hurricanes of category 3 intensity or greater (NOAA, 2021).

Further review of NOAA data presents additional data. The first map (Figure 9-25) depicts the return period for a hurricane of any category on the Saffir-Simpson Hurricane Wind Scale. The second map (Figure 9-26) is for a major hurricane (Category 3 and higher). [48]

The areas with the highest return periods for a hurricane of any category are coastal North Carolina, South Florida, and Southeast Louisiana, about every 5 to 7 years. Coastal New England has the lowest return period at 30 to 50 years. For major hurricanes, the return period is longer.

[48] NOAA. 2018. *What are the changes a hurricane will hit my home?* Accessed 4 March 2021. Available at: What are the chances a hurricane will hit my home? | National Oceanic and Atmospheric Administration (noaa.gov)

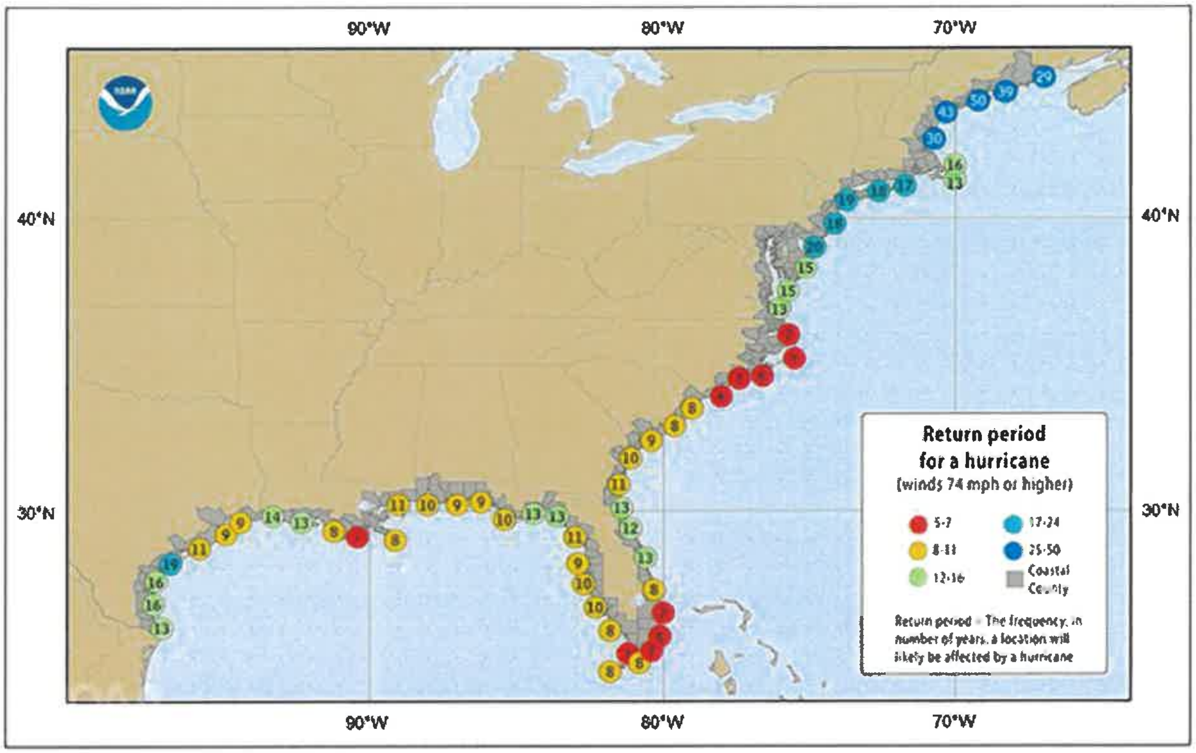

Figure 9-25 Estimated Hurricane Return Period

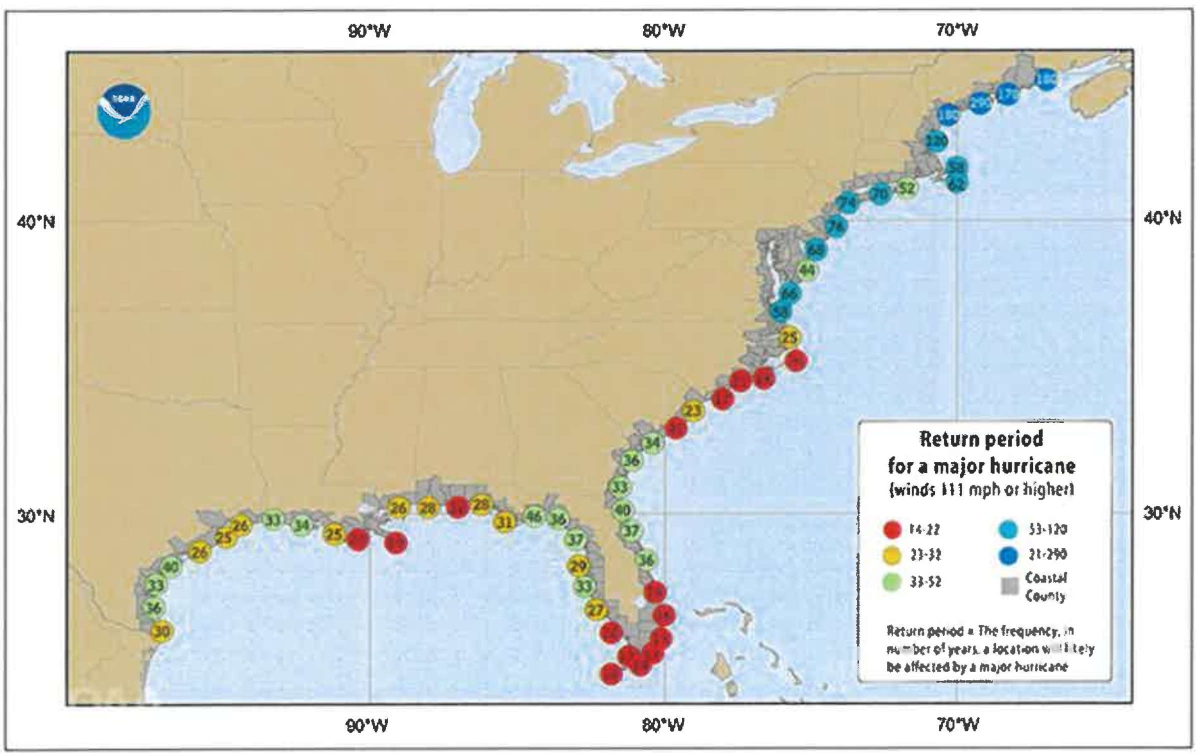

Figure 9-26 Estimated Major Hurricane Return Period

9.3 Vulnerability Assessment

9.3.1 Overview

To understand risk, the assets exposed to the hazard areas are identified. For the hurricane and tropical storm hazard, the entire Coushatta Reservation and tribal planning area are exposed due to the winds and rains associated with these events. In addition, types of building and infrastructure are at greater risk than others due to their manner of construction.

Warning Time

A Hurricane Warning is issued by the National Weather Service when sustained winds 74 mph or higher associated with a hurricane are expected in a specified area in 24 hours or less. A Hurricane Watch is announced for specific areas where hurricane conditions are possible within 36 hours. One should always prepare for a storm that is one category higher than expected because the fast forward speed of the storm means that wind gusts will be much higher, especially to the east of the track. Outer bands containing squalls with heavy showers and wind gusts to tropical storm force can occur as much as 12-14 hours in advance of the eye, which can cause flooding and may cut off exposed roadways.

As the State's evacuation routes traverse the Reservation and tribal planning area, the impact to coastal flooding and the evacuation of the statewide population base along the coastal communities increases the impact on the Coushatta Tribe as a whole, not only for tribal members and employees, but also as Tribal assets have previously been utilized as shelters and for staging areas.

With the potential impact to roadways in the tribal planning area from increased flood waters or heavy debris accumulation, the Tribe utilizes advanced warnings to determine the need to increase surplus supplies, including fuel, which may be necessary during the course of the event.

9.3.2 Impact on Life, Health and Safety

The impact of a hurricane or tropical storm on life, health, and safety is dependent upon several factors, including the severity of the event and whether or not adequate warning time was provided to residents. Hazus analysis to determine sheltering needs was not possible as the Hazus program for this component allows analysis only at the census block level, which would include all of Allen Parish. It is assumed that the entire Tribal population is exposed to this hazard. Based on the large resort area, additional consideration must also be given for the ~ 8,700 (pre-COVID) individuals who visit the hotels, golf course, and casino area daily.

Residents may be displaced or require temporary to long-term sheltering, as has been experienced during Hurricanes Barry, Laura, and Delta. In addition, downed trees, damaged buildings, and debris carried by high winds can lead to injury or loss of life. Socially vulnerable populations are most susceptible based on a number of factors including their physical and financial ability to react or respond during a hazard, and the location and construction quality of their housing.

Economically disadvantaged populations are more vulnerable because they are likely to evaluate their risk and make decisions based on the major economic impact to their family and may not have funds to evacuate. The population over the age of 65 is also more vulnerable and, physically, they may have more difficulty evacuating. The elderly are considered most vulnerable because they require extra time or outside assistance during evacuations and are more likely to seek or need medical attention which may not be available due to isolation during a storm event.

9.3.3 Impact on Property

All structures are exposed to the wind and/or rain from the hurricane/tropical storm hazard. The total replacement cost value of all ±157 tribally owned buildings in the planning region is ~ $343.5 million (structure and content values combined).

9.3.4 Impact on Critical Facilities and Infrastructure

All tribal critical facilities and infrastructure are subject to the hurricane and tropical storm hazard as a result of winds and rains. Of significant concern to the Tribe is the loss of roads providing access to the Reservation and areas in which tribal enterprises are situated as a result of associated flooding.

Wind damage can also cause significant impact, including damage or destruction of power lines, debris blocking roads, isolation of population, disruption of ingress and egress to areas on and off the reservation with respect to the daily transient population to tribal establishments, and the access and availability of public safety services, including medical and social services provided by the tribe, should roadways be impacted.

The Tribe has previously identified those 157 structures included in this update as critical facilities due to the nature of the structure, the services provided, lack of housing infrastructure and economic value of its business ventures. Therefore, the dollar losses associated with critical facilities and infrastructure losses are the same as property losses identified above. A total risk exposure would equal the full replacement value of each critical facility exposed. Critical facilities and infrastructure by Hazus type are identified in Table 9-3.

Transportation lifelines are not considered particularly vulnerable to the wind hazard; they are more vulnerable to cascading effects such as flooding, falling debris, etc. Impacts to transportation lifelines affect both short-term (e.g., evacuation activities) and long-term (e.g., day-to-day commuting) transportation needs. In terms of highway bridges, the Tribe has none within its Reservation boundary.

Not included in the loss valuations are non-structural but culturally significant items and artifacts. Several tribal structures identified as critical facilities also maintain historic tribal records, artifacts, photographs, and recordings, etc., all of which are irreplaceable. The Tribe has already once experienced the devastation of losing much of its history with the destruction of historic records maintained in the Alfred P. Murrah building, where many tribal documents and artifacts had been stored. A hurricane (or any significant weather event) has the ability to quickly destroy these invaluable items. The Tribe does feel protection of these items is paramount to maintaining and continuing its cultural heritage and has identified protection of these items via a saferoom as a potential mitigation strategy for this 2021 update to help ensure their protection.

TABLE 9-3.
CRITICAL FACILITIES EXPOSED TO TROPICAL STORM/ HURRICANE HAZARD

Facility Type Identified	Number Identified
Medical and Health Services	4
Government Function	12
Protective Function	5
Cultural	1
Schools	5
Hazmat	3
Residential*	45
Commercial**	44
Water	5
Wastewater	3
Communications	2
Industrial***	13
Other Critical Infrastructure****	15
Total	**157**

*Residential category includes the houses, motels, and hotels on the reservation.
**Golf course and irrigation system (counted as 1) included in Commercial counts.
***The irrigation wells (4) are included within the Industrial counts.
****Other Critical Infrastructure includes storage sheds and storage buildings.
Total includes 4 irrigation wells, 1 golf course, and irrigation system not modeled in HAZUS.

9.3.5 Impact on Economy

Economic impact from a hurricane or tropical storm could be widespread. Events can greatly impact the economy, including loss of business function (e.g., tourism, recreation), damage to inventory, relocation costs, wage loss and rental loss due to the repair/replacement of buildings. HAZUS-MH estimates the total economic loss associated with a particular storm scenario (direct building losses and business interruption losses) only at the aggregate level, which would include all of Allen Parish, but none of the Coushatta Tribal data, as no such data exists within Hazus which can be utilized in a user defined assessment, or at the Reservation level. Therefore, Hazus was not utilized to determine economic impact to the Tribe, but rather a qualitative assessment is made.

Historic data for the last several hurricane events discussed within Section 9.2.2 illustrate the significant impact these events have had on the Tribe. In addition, cumulative economic effects are larger than the sum of individual business sectors, as regional effects may occur due to the interactions between industries and the various economic sectors. In addition, structure loss would also impact economic factors as the Tribe owns the majority of all structures on the Reservation (including all housing except 14 privately owned). Economic impacts for the Coushatta Tribe (and Allen Parish due to the Tribe's labor force) would include the following:

- Direct building losses, which include the estimated costs to repair or replace the damage caused to buildings and structures.
- Business interruption losses include the losses associated with the inability to operate a business because of the damage sustained during the storm. While the Tribe does not charge any type of business taxes to Tribal businesses, the businesses are the sole source of income for tribal members.
- Loss of crop and agricultural production (rice fields, crawfish ponds, cattle, buffalo, and horse ranch).
- Temporary living expenses for those displaced from their home because of the event would also be considered, as would the re-building of residences as the Tribe owns the majority of all residences on the Reservation.
- Should an event occur which would close the Resort, or any part thereof, economic impact would be substantial for the Tribe, but also to the surrounding jurisdictions would be significant.
    - Lost revenue with respect to salaries paid to residents of Allen Parish and the surrounding area of the Coushatta Tribe would be significant as the Coushatta Casino Resort is the largest employer within Allen Parish, and one of the top employers within the State, with an estimated 2,700 employees working for the Tribe.
    - Revenues paid to the State of Louisiana resulting from the Casino operations would be lost.
    - As structure losses on the Reservation continue, the potential for diminished tax base to the Parish and the State will increase.

- The various resort facilities have previously served as a shelter, providing in excess of 5,000 residents of the State during previous disaster events. Surplus materials would be required for the Resort if such an event were to again occur; however, due to impact to roadways, commodity flow was significantly hampered previously.
- If the Resort again serves as a shelter, the Tribe would lose revenue with respect to rental and gaming floor income.

9.3.6 Impact on Environment

Natural habitats, wildlife, and aquatic life are all exposed and risk major impact. Severe weather events and high winds can increase the rate of erosion and redistribute sediment loads. Environmental vulnerability accompanying erosion (both wind and water) is also associated with the narrowing and lowering of the landmass, increasing potential flooding due to overtopping of the shoreline during periods of high wind or rain. Materials that erode can be carried and deposited into other sensitive areas, eventually significantly altering the ecosystem.

9.4 Future Development Trends

All future development has the potential to be affected by hurricanes and tropical storms. The ability to withstand impacts lies in sound land use practices and consistent enforcement of codes and regulations for new construction. The Tribe utilizes the 2015 International Building Code in an effort to keep its Tribal Members and visitors to the Reservation and tribal enterprises as safe as possible from the impacts of hurricanes and tropical storms. The Tribe will continue to utilize the most up-to-date building codes available in continuation of this effort.

9.5 Climate Change Impacts

Climate is defined not simply as average temperature and precipitation, but also by the type, frequency, and intensity of weather events. Both globally and at the local scale, climate change has the potential to alter the prevalence and severity of extremes such as storms, including those which may bring precipitation, high winds, and tornado events. While predicting changes of storm events under a changing climate is difficult, understanding vulnerabilities to potential changes is a critical part of estimating future climate change impacts on human health, society, and the environment (U.S. Environmental Protection Agency [EPA], 2006).

Review of historic hurricane events demonstrates that the planning area has been experiencing more frequent high-intensity events than previously occurred. More frequent and intense storm events will cause an increase in damages to the built environment and have devastating effects on the economy and environment. The Coushatta Tribe is committed to adapting to climate change as it continues to occur in an effort to help reduce associated impacts to the hazards of concern.

9.6 Issues

A worst-case event would involve prolonged high winds and significant rainfall. Such an event would have both short-term and long-term effects. Some areas of the tribal planning area would experience limited ingress and egress as a result of potential flooding due to overwash. Prolonged rain would further increase flooding, overtopping culverts with increased levels of ponded water on roads. If flooding became significant, building and road foundations could lose load-bearing strength and may collapse as the ground beneath is weakened. Hazardous materials can also be released as a result of structural integrity being compromised, causing significant damage to the environment and people. While the Tribe itself has limited hazardous materials on the Reservation and Casino Resort area (two fuel stations and limited supplies within the maintenance/facilities departments), a federally recognized major rail line passes near the Reservation and Casino, which does carry hazardous materials, thereby increasing the potential risk to the Tribe.

Important issues associated with the potential impacts from hurricanes and tropical storms in the planning area include the following:

- Climate change and the associated increase in storm events.
- Older building stock in the planning area is built to lower code standards. These structures could be highly vulnerable to the impacts of wind and increased potential for flooding.
- Roadways are susceptible to failure if the ground beneath them is eroded.
- Redundancy of power supply must be evaluated.
- The planning area has several areas which result in isolated population centers when roadways are flooded.

9.7 Impact and Results

The Coushatta Tribe is susceptible to hurricanes and tropical storms, ranging in all sizes. The planning region has been impacted by a fairly large number of Category 3, 4, and 5 hurricanes, while Category 1 and 3 storms have caused the most widespread flooding in the area. It is not necessarily the strongest category storm which causes the most damage, as smaller events which stall and bring more precipitation can bring greater damage than a faster moving event. Since completion of the 2016 plan, as identified, the Tribe has sustained significant damages as a result of hurricanes, which is also the hazard most frequently occurring.

The majority of the impact from hurricanes to the Tribe has been as a result of wind damage, wind-driven rains, debris accumulation, loss of power for extended periods of time, and flooding from the inability of water to drain quickly enough due to inadequate drainage systems, including along state highways and parish roadways. Flooding has repeatedly caused issues with respect to ingress and egress, as well as commodity flow onto the Reservation. This is particularly concerning when long-term events require the use of generators, which require additional fuel supplies. Winds have caused damage to power lines, impairing the ability of individuals to remain in their homes. While several of the tribal-owned facilities have permanent generators, not all structures do, which requires the use of portable generators – something which is limited in supply. Power outages have lasted two weeks or more as a result of severe storm events.

With the increase in hurricane events, coupled with the continued impact from climate change potentially increasing not only the number of hurricanes, but also their intensity, the Planning Team feels that the Tropical Storm/Hurricane hazard is of high concern, ranking first on the list of hazards of concern, with a 3.6 CPRI score.

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CHAPTER 10.
WILDFIRE

A wildfire is any uncontrolled fire occurring on undeveloped land that requires fire suppression. Wildfires can be ignited by many different causes, including both naturally occurring events, such as lightning strikes, or by human activity such as smoking, campfires, equipment use, and arson.

While wildfires can occur any time of the year, lightning sparks most naturally occurring wildfires in the planning region. Most fires occurring in the planning area have occurred during the August – October timeframe.

10.1 General Background

Wildland-Urban Interface Areas

The wildland urban interface (WUI) is the area where development meets wildland areas. This can mean structures built in or near natural forests, or areas next to active timber and rangelands. The federal definition of a WUI community is an area where development densities are at least three residential, business, or public building structures per acre. For less developed areas, the wildland-intermix community has development densities of at least one structure per 40 acres.

In 2001, Congress mandated the establishment of a Federal Register which identifies all urban wildland interface communities within the vicinity of Federal lands, including Indian trust and restricted lands that are at high-risk from wildfire. The list assimilated information provided from States and Tribes and is intended to identify those communities considered at risk. Review of the Federal Registry does not list Allen Parish or the Coushatta Reservation at high-risk within the vicinity of Federal lands.

When identifying areas of fire concern, in addition to the Federal Register, the Louisiana Office of the State Fire Marshal and its federal partners help determine communities at risk based on fire behavior potential, fire protection capability, and risk to social, cultural and community resources. These risk factors include areas with fire history, the type and density of vegetative fuels, extreme weather conditions, topography, number and density of structures and their distance from fuels, location of municipal watersheds, and likely loss of housing or business. The criteria for making these determinations are the same as those used in the National Fire Protection Association's *NFPA 299 Standard for Protection of Life and Property from Wildfire*.

10.1.1 Wildfire Behavior

The wildfire triangle (see Figure 10-1; DeSisto et al., 2009) is a simple graphic used in wildland firefighter training courses to illustrate how the environment affects fire behavior. Each point of the triangle represents one of three main factors that drive wildfire behavior: weather, vegetation type (which firefighters refer to as "fuels"), and topography. The sides represent the interplay between the factors. For example, drier and warmer weather combined with dense fuel loads (e.g., logging slash) and steeper slopes will cause more hazardous fire behavior than light fuels (e.g., short grass fields) on flat ground.

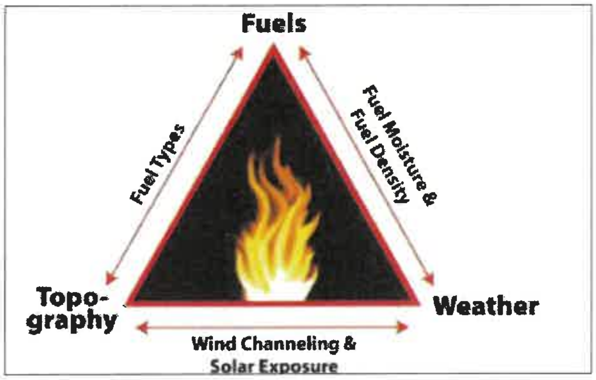

Figure 10-1 Wildfire Behavior Triangle

The following are key factors affecting wildfire behavior:

- **Fuel**—Lighter fuels such as grasses, leaves, and needles quickly expel moisture and burn rapidly, while heavier fuels such as tree branches, logs, and trunks take longer to warm and ignite. Snags and hazard trees—those that are diseased, dying, or dead—provide large quantities of fuels.
- **Weather**— Relevant weather conditions include temperature, relative humidity, wind speed and direction, cloud cover, precipitation amount and duration, and the stability of the atmosphere. Of particular importance for wildfire activity are wind and thunderstorms:
  - Strong, dry winds produce extreme fire conditions. Such winds generally reach peak velocities during the night and early morning hours.
  - The thunderstorm season typically begins in March with wet storms and turns dry with little or no precipitation reaching the ground as the season progresses.
- **Topography**—Topography includes slope, elevation, and aspect. The topography of a region influences the amount and moisture of fuel; the impact of weather conditions such as temperature and wind; potential barriers to fire spread, such as highways, streams, and lakes; and elevation and slope of landforms (fire spreads more easily uphill than downhill).
- **Time of Day**—A fire's peak burning period generally is between 1 p.m. and 6 p.m.
- **Forest Practices**—In densely forested areas, stands of mixed conifer and hardwood stands that have experienced thinning or clear-cut provide an opportunity for rapidly spreading, high-intensity fires that are sustained until a break in fuel is encountered.

Fires can be categorized by their fuel types as follows:

- **Smoldering**—Involves the slow combustion of surface fuels without generating flame, spreading slowly and steadily. Smoldering fires can linger for days or weeks after flaring has ceased, resulting in potential large quantities of fuel consumed. They heat the duff and mineral layers, affecting the roots, seeds, and plant stems in the ground. These are most common in peat bogs but are not exclusive to that vegetation.
- **Crawling**—Surface fires that consume low-lying grass, forest litter, and debris.
- **Ladder**—Fires that consume material between low-level vegetation or forest floor debris and tree canopies, such as small trees, low branches, vines, and invasive plants.
- **Crown**—Fires that consume low-level surface fuels, transition to ladder fuels, and also consume suspended materials at the canopy level. These fires can spread rapidly through the top of a forest canopy, burning entire trees, and can be extremely dangerous (sometimes referred to as a "Firestorm").

Wildfires may spread by jumping or spotting, as burning materials are carried by wind or firestorm conditions. Burning materials can also jump over roadways, rivers, or even firebreaks and start distant fires. Updraft caused by large wildfire events draw air from surrounding area, and these self-generated winds can also lead to the phenomenon known as a firestorm, with wind speed reaching that of a small tornado.

During times of increased fire danger, the Tribe works closely with the surrounding parishes to ensure coordinated efforts to help reduce the spread of wildfires, including mitigation efforts such as burn-bans.

10.1.2 Wildfire Impact

Short-term loss caused by a wildfire can include the destruction of timber, wildlife habitat, scenic vistas, and watersheds. Long-term effects include smaller timber harvests, reduced access to affected recreational areas, and destruction of cultural and economic resources and community infrastructure. Vulnerability to flooding increases due to the destruction of watersheds. The potential for significant damage to life and property exists in WUI areas, where development is adjacent to densely vegetated areas (DeSisto et al., 2009).

Forestlands in the planning area are susceptible to disturbances such as logging slash accumulation, forest debris due to weather damage, and periods of drought and high temperature. Forest debris can be especially problematic and at risk to wildfires when slash is accumulated on the forest floor because such debris may resist deterioration. When ignited, these fuels can be explosive and serve as ladder fuels carrying fire from the surface to the canopy.

10.1.3 Secondary Hazards

Wildfires can generate a range of secondary effects, which in some cases may cause more widespread and prolonged damage than the fire itself. Fires can cause direct economic losses in the reduction of harvestable timber and indirect economic losses in reduced tourism. Wildfires cause the contamination of waterbodies, reservoirs, prairies, and plains, and can destroy transmission lines, render roadways impassable, and destroy or significantly impact other critical infrastructure. Wildfires strip areas of its vegetation, exposing the lands to greater amounts of runoff and contamination. This runoff, in turn, can weaken soils. Most wildfires burn hot and for long durations that can bake soils, especially those high in clay content, thus increasing the imperviousness of the ground. This increases the runoff generated by storm events, thus increasing the chance of flooding.

10.1.4 Identifying Wildfire Risk

Risk to communities is generally determined by the number, size and types of wildfires that have historically affected an area; topography; fuel and weather; suppression capability of local and regional resources; where and what types of structures are in the WUI; and what types of pre-fire mitigation activities have been completed. Identifying areas most at risk to fire or predicting the course a fire will take requires precise science. The following data sets are most useful in assessing risk in the area:

- **Topography (slope and aspect) and Vegetation (fire fuels)**—These are two of the most important factors driving wildfire behavior.
- **Weather**—Regional and microclimate variations can strongly influence wildfire behavior. Because of unique geographic features, weather can vary from one neighborhood to another, leading to very different wildfire behavior.
- **Critical Facilities/Asset Location**—A spatial inventory of assets—including homes, roads, fire stations, and natural resources that need protection—in relation to wildfire hazard helps prioritize protection and mitigation efforts.

Figure 10-2 identifies the daily wildfire hazard as determined by the Louisiana State Fire Marshall as of March 8, 2021. Reviewers wishing additional data and information, or the daily current threat level can obtain additional information at Daily Fire Weather | Department of Agriculture and Forestry (state.la.us)

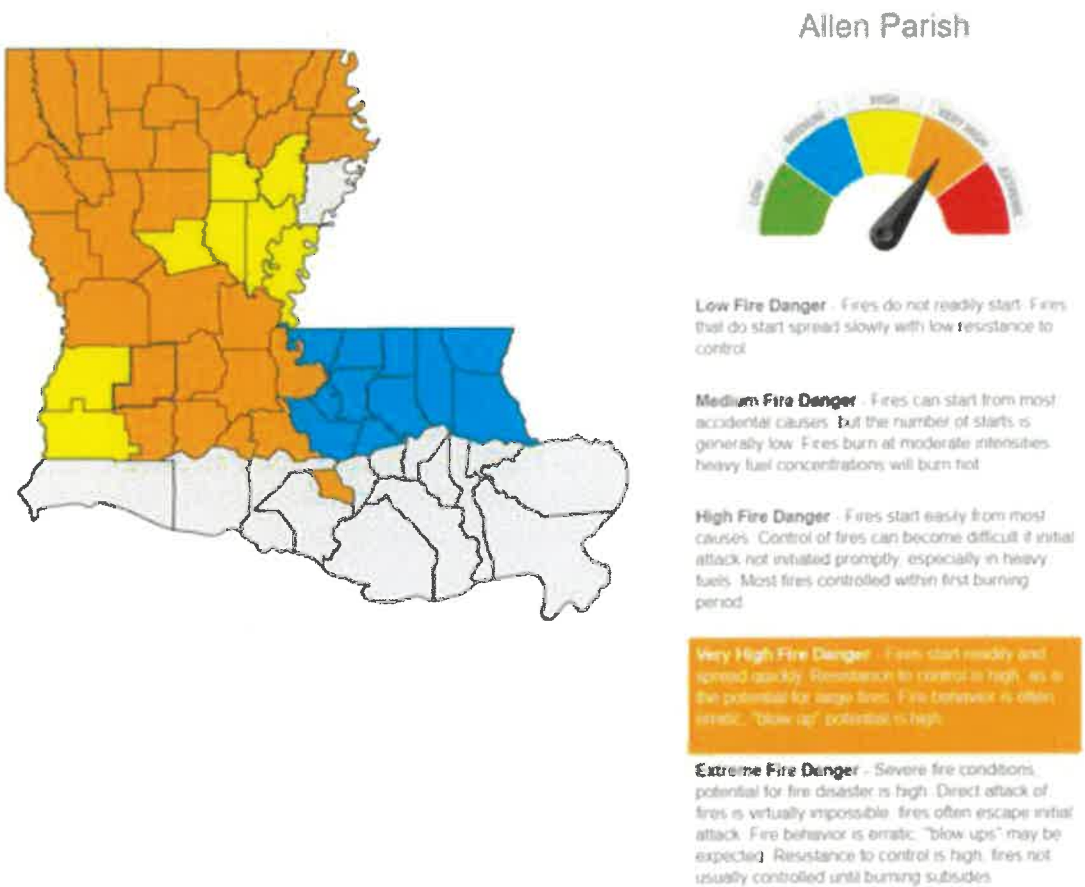

Figure 10-2 Daily Wildfire Danger for Allen Parish for March 8, 2021[49]

10.1.5 Community Wildfire Protection Plan

In response to several significant fires occurring throughout the United States from 1995 to 2000, Congress implemented the National Fire Plan—now called the National Cohesive Wildland Fire Management Strategy (Cohesive Strategy)—to seek national solutions for wildfire management. To participate, a community must identify its WUIs and then develop strategies to reduce their impact. This often includes development of a Community Wildfire Protection Plan (CWPP).

A CWPP identifies communities at risk, prioritizes hazardous fuel treatments, and recommends ways to reduce structural ignitability. The Coushatta Tribe currently does not have a Community Wildfire Protection Plan but has listed the development of such a plan as a strategy within this document. For purposes of developing this update to its Hazard Mitigation Plan and in support of future CWPP development, some components of a CWPP are referenced in this plan. Specific fire analysis was not conducted during this process, as that requires a very precise type of analysis, much beyond the scope of

[49] LA State Fire Marshall. Accessed 8 March 2021. Available online at: [Daily Fire Weather | Department of Agriculture and Forestry (state.la.us)]

work associated with this planning effort. Rather, various data sets were used to illustrate potential risk, including LANDFIRE data, US Department of Agriculture, and the US Forest Service, among others.

10.2 Hazard Profile

10.2.1 Extent and Location

The Tribe produces forest products, employing both full-time and seasonal employees harvesting these resources. These forested areas also provide many other benefits to the area, including water and air purification, wildlife habitat, recreational opportunities, scenic beauty, and areas of cultural significance. With a significant amount of grasslands and wooded areas (see vegetation types identified by LANDFIRE in Figure 10-3), the entire planning area is susceptible to wildfires, including impact to roadways which could make evacuation much more difficult, especially in light of the fact that the major thoroughfares serve as evacuation routes for the state. Of additional concern is the fact that much of the land around the Reservation and in the areas of tribal structures are densely wooded, with the majority owned by logging companies actively harvesting the lands. Most of those areas are fenced off with locked gates, blocking potential escape routes for the Tribe.

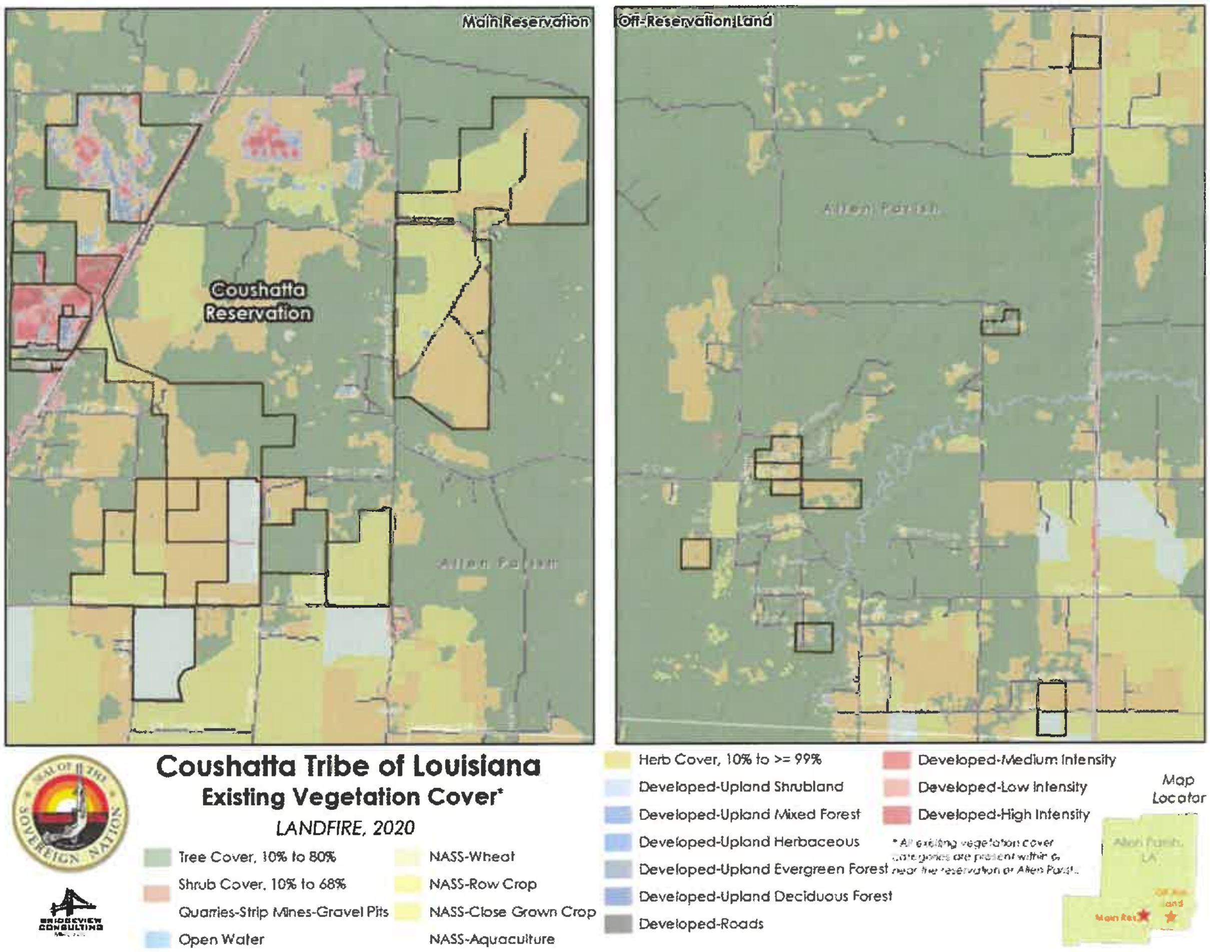

Figure 10-3 LANDFIRE Vegetation Types

10.2.2 Previous Occurrences

The Coushatta Tribe has never received a state or federal disaster declaration for a fire event. While wildfires have not been a common occurrence throughout Allen Parish or the State as a whole, they have occurred. At a national level, lightning starts over 4,000 house fires each year, which can ignite wildland fires through ember ignition and as a result of proximity to wildland areas. Lightning-caused fires cause over 10 times more acreage damage than human-caused fires, requiring great resource allocation. Within the State of Louisiana, the Forestry Division indicates that most forest fires are caused by intentional acts (arson) or carelessness and negligence committed by people (debris burns, careless smokers, etc.).

Natural fire occurrence is directly related, but not proportional to lightning incidence levels within the planning region, as lightning activity is fairly significant in the area, especially during early spring, although lightning storms have occurred year-round. Ignition from a lightning strike depends on the duration of the current and the kind of fuel the lightning hits. The spread of the fire after ignition usually depends on fuel moisture. Ignition in fuels with long and medium length needles, such as Ponderosa pine and Lodgepole pine, depend upon the fuel moisture. Ignitions in short- needled species, such as Douglas fir depend far more on the depth of the duff layer than on the moisture. The predominant type of tree on the Reservation is Loblolly Pine, which is one of the fastest growing southern pines, and one of the most commercially important pines of the Southeast. With the advent of wildfire suppression, Loblolly Pine is also the most dominant of stands in the Southeast, covering approximately 29 million acres, making up over one-half of the standing pine volume.

The Tribe does practice controlled burns, both for propagation of culturally significant grasses used for basket making, and to control wildfire incidents. The burn program is sustained within the Natural Resources Department.

Table 10-1 identifies the number of fires reported by the Coushatta Tribal Fire Department to the State Fire Marshall's office for the period 2017-2020, although 2020 is only reported through July 2020.

Moderate Resolution Imaging Spectroradiometer, or MODIS, is a key instrument aboard NASA satellites Terra and Aqua. Terra's orbit around the Earth is timed so that it passes from north to south across the equator in the morning, while Aqua passes south to north over the equator in the afternoon. Terra MODIS and Aqua MODIS are viewing the entire Earth's surface every 1 to 2 days, acquiring data in 36 spectral bands, or groups of wavelengths. These satellites, among other things, have the capacity in some instances to capture information concerning wildfires or hot spots, which can be utilized for fire-detection and notification purposes. Figure 10-4 identifies some fires detected by MODIS on tribal lands during the time period 2010-2020. Additional information on MODIS, as well as additional uses with respect to climate change and climate tracking is available at NASA's website at: MODIS Website (nasa.gov).

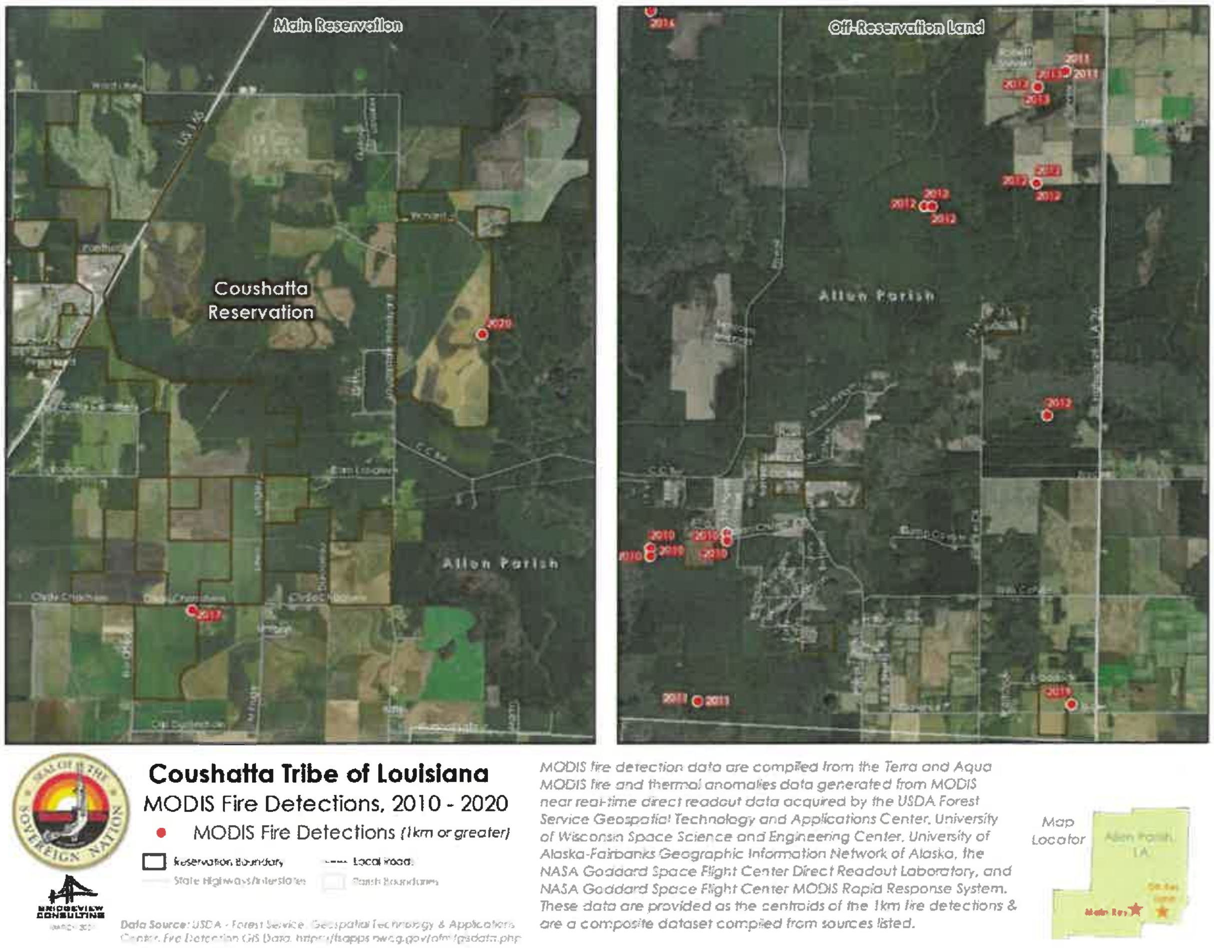

Figure 10-4 MODIS Fire Detections on Coushatta Lands 2010-2020

TABLE 10-1. COUSHATTA MONTHLY INCIDENT COUNTS														
Year		Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2020*	Count	6	8	8	3	5	0	0	0	0	0	0	0	30
	Exposures	0	0	0	0	0	0	0	0	0	0	0	0	0
	No Activity	0	0	0	0	0	0	0	0	0	0	0	0	0
	Aid Given	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	Count	13	54	46	16	16	20	22	13	8	0	0	1	209
	Exposures	1	0	0	0	0	0	0	0	0	0	0	0	1
	No Activity	0	0	0	0	0	0	0	0	0	0	0	0	0
	Aid Given	1	5	0	1	0	0	0	0	0	0	0	0	7
2018	Count	11	8	10	10	7	15	9	12	6	2	21	8	119
	Exposures	0	0	0	0	0	0	0	0	0	0	0	0	0
	No Activity	0	0	0	0	0	0	0	0	0	0	0	0	0
	Aid Given	9	6	5	1	1	1	3	4	4	1	7	5	47
2017	Count	5	6	6	6	10	10	9	9	10	4	4	5	84
	Exposures	0	0	0	0	0	0	0	0	0	0	0	0	0
	No Activity	0	0	0	0	0	0	0	0	0	0	0	0	0
	Aid Given	7	1	8	1	5	4	4	2	0	3	0	2	37
Total Fire Count		35	76	70	35	38	45	40	34	24	6	25	14	441
*Reporting period through July 31, 2020														

In addition to those identified above, the Tribal Fire Department had two incidents of record of fire occurring on the Reservation in 2010, both of which were arson. One of those arson fires was at the Coushatta Convenience Store, which was destroyed and ultimately replaced. One additional fire also occurred as a result of an arcing wire in the HVAC in the museum. That building is currently under re-construction as the Heritage building (included in this risk assessment under future development).

Review of the Louisiana Office of State Fire Marshal annual reports for 2012 through July 2015 demonstrates that no fires occurred on the Reservation in 2013, 2014, and 2015. However, during 2012, the Reservation had one fire, and provided fire aid to other districts in the state eight times.[50] During the time period 2017-2020, Tribal Fire had in excess of 440 fires, and provided aid to other districts in the state a total of 91 times.

10.2.3 Severity

Potential losses from wildfire include human life, structures and other improvements, and natural resources. Smoke and air pollution from wildfires can be a health hazard, especially for sensitive

[50] http://www.lasfm.org/lfirs_monthly-updates.htm

populations such as children, the elderly and those with respiratory and cardiovascular diseases. Wildfire may also threaten the health and safety of those fighting the fires.

Wildfire also leads to ancillary impacts. The destruction of forestlands, agricultural areas, prairies, and farmlands can have a significant impact on the Reservation for generations. The primary tree on the Reservation, the Loblolly Pine, is important for numerous wildlife species. The trees provide habitat for many animals, including white-tailed deer, wild turkey, gray squirrels, rabbit, quail, and doves. Many songbirds feed on the seeds and help propagate the trees through seed dispersal. Red crossbills depend on loblolly pine seeds for up to 50% of their diet. Other birds that frequent the trees include pine warblers, Bachman's warblers, and brown-headed nuthatches. Osprey and bald eagles often nest in tall loblolly pines. Two endangered species that also use these pines are fox squirrels, which eat the cones, and red-cockaded woodpeckers, who will sometimes nest in old growth trees. A significant wildfire could destroy the natural habitat for several species currently living on the Reservation.

Extreme fires, when they occur, are characterized by more intense heat and preheating of surrounding fuels, stronger flame runs, potential tree crowning, increased likelihood of significant spot fires, and fire-induced weather (e.g., strong winds, lightning cells). Extreme fire behavior is significantly more difficult to combat and suppress and can drastically increase the threat to homes and communities.

At the time of this update, the National Interagency Coordination Center's (NICC) Predictive Outlook (https://www.nifc.gov/nicc/predictive/outlooks/outlooks.htm) assessed a normal fire danger season for the planning area (see Figure 10-5).[51] This, however, changes almost daily, and therefore, this prediction should be used as informational only, and does not indicate long-term predictions.

[51] NIFC. Predictive Outlooks (2021). Accessed 9 March 2021. Available at https://www.nifc.gov/nicc/predictive/outlooks/outlooks.htm

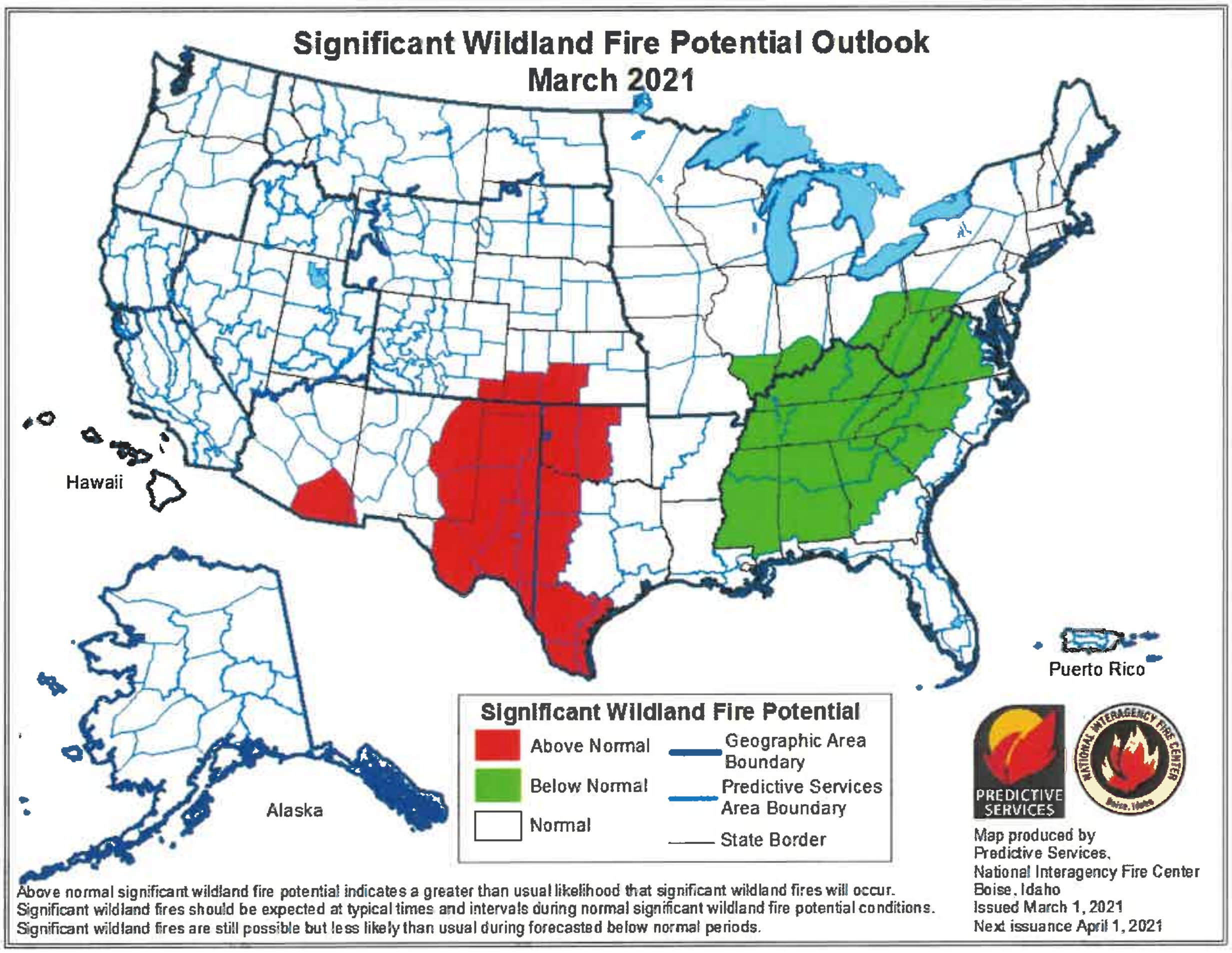

Figure 10-5 NICC Wildfire Outlook – March 2021

10.2.4 Frequency

As previously indicated, no significant wildfires raising to the level of a federal declaration have occurred on the Coushatta Reservation, or within Allen Parish, although smaller fires have occurred in the region. Fires historically burn on a regular cycle, recycling carbon and nutrients stored in the ecosystem, and strongly affecting species within the ecosystem. In addition to the naturally occurring burn cycles, the Tribe also practices controlled burns, which also assist in restoring the natural ecosystems while also controlling litter on the forest ground.

Historically, wildfire danger increases during times of drought, or dryer than normal conditions. Drought patterns are most often related to large-scale climate patterns in the Pacific and Atlantic oceans, including El Niño events.

The El Niño-Southern Oscillation is one of the main drivers of the climate system and contributes to extreme events like droughts and flooding in different parts of the world. Globally, it has a warming influence on average temperatures. The El Niño–Southern Oscillation varies on a 5- to 7-year cycle; the

Pacific Decadal Oscillation varies on a 20- to 30-year cycle; and the Atlantic Multidecadal Oscillation varies on a 65- to 80-year cycle. As these large-scale ocean climate patterns vary in relation to each other, drought conditions in the U.S. shift from region to region. El Niño years customarily bring drier conditions. When such a pattern exists, the frequency of fires many times increases. The National Weather Service and the World Meteorological Organization (WMO) annually indicate the pattern which is anticipated for the coming year. In February 2021, it was noted that "La Niña appears to have peaked in October-November as a moderate strength event. They further indicated that there is a 65% likelihood that it will persist during February-April, with a 70% chance that the tropical Pacific will return to ENSO-neutral conditions by the April-June 2021 season, according to WMO's El Niño-La Niña Update" (WMO, 2021).

Historic Fire Regime

Many ecosystems are adapted to historical patterns of fire. These patterns, called "fire regimes," include temporal attributes (e.g., frequency and seasonality), spatial attributes (e.g., size and spatial complexity), and magnitude attributes (e.g., intensity and severity), each of which have ranges of natural variability. Alterations of historical fire regimes and vegetation dynamics have occurred in many landscapes in the U.S., including the Coushatta Reservation through the combined influence of land management practices, fire exclusion, insect and disease outbreaks, climate change, and the invasion of non-native plant species. Anthropogenic influences on wildfire occurrence have been witnessed through arson, incidental ignition from industry (e.g., logging, railroad, sporting activities), and other factors. Likewise, wildfire abatement practices have reduced the spread of wildfires after ignition. While in many instances this has reduced the risk to both the ecosystem and the urban populations living in or near forestlands, such as portions of the Coushatta Reservation, in some cases, the vegetation classes have changed or departed significantly as a result of the anthropogenic influences.

The LANDFIRE Project produces maps of simulated historical fire regimes and vegetation conditions using the LANDSUM landscape succession and disturbance dynamics model. The LANDFIRE Project also produces maps of current vegetation (Figure 10-3) and measurements of current vegetation departure from simulated historical reference conditions. These maps support fire and landscape management planning outlined in the goals of the National Fire Plan, Federal Wildland Fire Management Policy, and the Healthy Forests Restoration Act.

The simulated historical mean fire return interval data layer quantifies the average number of years between fires under the presumed historical fire regime. This data is derived from simulations using LANDSUM. LANDSUM simulates fire dynamics as a function of vegetation dynamics, topography, and spatial context, in addition to variability introduced by dynamic wind direction and speed, frequency of extremely dry years, and landscape-level fire characteristics. The historical fire regime groups simulated in LANDFIRE categorize mean fire return interval and fire severities into five regimes defined in the Interagency Fire Regime Condition Class Guidebook:

- Regime I: 0–35-year frequency, low to mixed severity
- Regime II: 0–35-year frequency, replacement severity

- Regime III: 35–200-year frequency, low to mixed severity
- Regime IV: 35 -200-year frequency, replacement severity
- Regime V: 200+ year frequency, any severity

Large wildfires have historically been infrequent in Louisiana as a whole, and specifically the Coushatta Reservation within Allen Parish. While fires have occurred in the planning area, due to firefighting efforts, many have been contained with minimal impact on acreage burned.

Fire regimes on the Coushatta Reservation are shown in Figure 10-6. It should be noted that not all Fire Regimes are applicable to the planning area (no Regime IV exists).

In addition to the Fire Regimes, LANDFIRE also provides data concerning the return-period intervals through the development of a Mean Fire Return Interval (MFRI) layer. The MFRI quantifies the average period between fires under the presumed historical fire regime. MFRI is intended to describe one component of historical fire regime characteristics in the context of the broader historical time period represented by the LANDFIRE. Figure 10-7 identifies the Mean Fire Return Interval for the Coushatta Reservation, and surrounding Allen Parish areas based on LANDFIRE analysis.

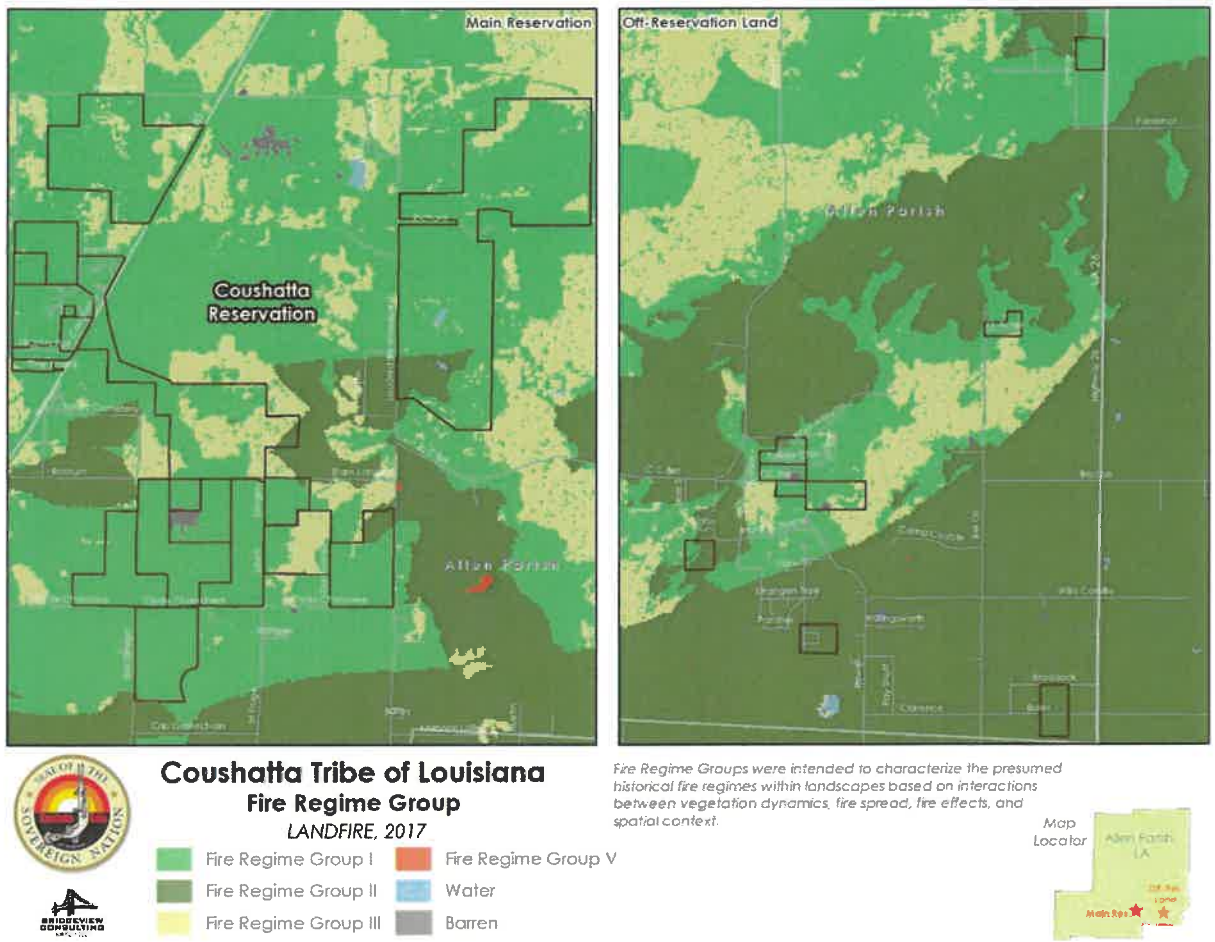

Figure 10-6 Fire Regime Groups

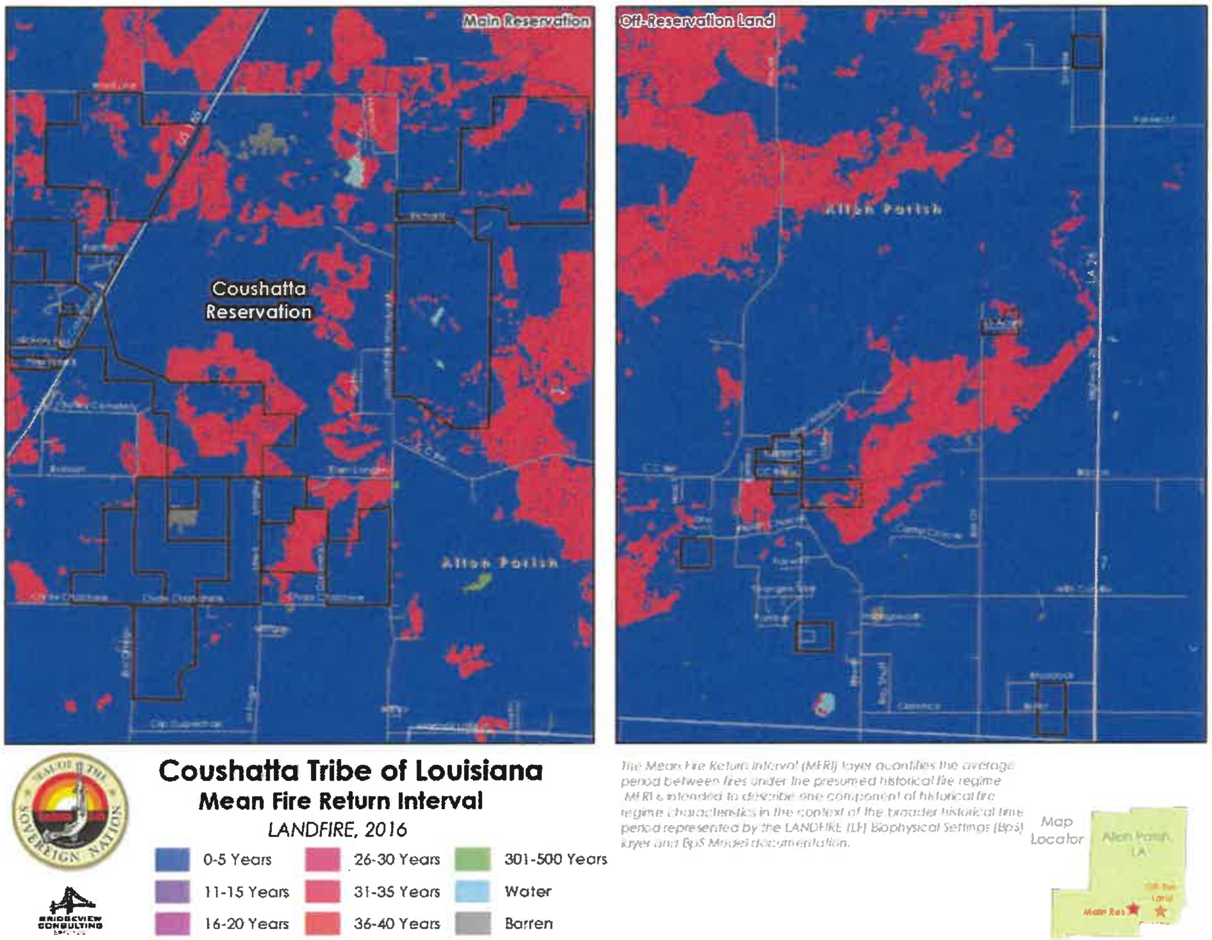

Figure 10-7 Mean Fire Return Interval

10.3 Vulnerability Assessment

10.3.1Overview

Structures, above-ground infrastructure, critical facilities, and natural environments are all vulnerable to the wildfire hazard.

Methodology

There is currently no validated damage function available to support wildfire mitigation planning because no such damage functions have been generated. Instead, dollar loss estimates were developed by calculating the assessed value of exposed structures identified utilizing the various LANDFIRE Fire Regime (1-5) datasets (Note: Not all Fire Regimes exist in the Reservation). As the entire Reservation is determined to be at risk based on primary and secondary hazards, population impact should include current Reservation population (~75) Tribal Members and ~2,700 Tribal and Casino employees), as well as potential tourists visiting the Casino Resort and traversing through the Reservation (~8,000 per day pre COVID).

Warning Time

Wildfires are often caused by humans, intentionally or accidentally. There is no way to predict when one might break out, however, there are sometimes precipitating events or incidents which should heighten awareness of a potential wildfire igniting. For example, since fireworks often cause brush fires, extra diligence is warranted around the Fourth of July when the use of fireworks is highest. Dry seasons and droughts are factors that greatly increase fire likelihood. Dry lightning may trigger wildfires. Severe weather can be predicted, so special attention can be paid during weather events that may include lightning. Reliable National Weather Service lightning warnings are available on average 24 to 48 hours prior to a significant electrical storm.

Understanding the relationship between weather, potential fire activity, and geographical features enhances the ability to prepare for the potential of wildfire events. This knowledge, when paired with emergency planning and appropriate mitigation measures, creates a safer environment.

Wildfire studies can analyze weather data to assist firefighters in understanding the relationship between weather patterns and potential fire behavior. Fire forecasting examines similarities between historical fire weather and existing weather and climate values. These studies can be used to determine that for areas such as the Coushatta Reservation, any combination of two of the following factors have the potential to create more intense and potentially destructive fire behavior, known as extreme fire behavior:

- Sustained winds
- Relative humidity less than 40 percent
- Temperature greater than 72º Fahrenheit
- Periods without precipitation greater than 14 days in duration
- 1,000-hour fuel moisture less than 17 percent.

If a fire breaks out and spreads rapidly, residents may need to evacuate within a short timeframe. A fire's peak burning period generally is between 1 p.m. and 6 p.m. In normal situations, fire alerting would commence quickly, helping to reduce the risk. However, in more remote locations of the Reservation, or in areas where cell phone services are sporadic at times, warning time and calls for assistance may be reduced. The risk factor is further increased because of inaccessibility of potential evacuation routes due to locked gates by logging companies, and the limited roadways leading on and off the Reservation.

10.3.2 Impact on Life Health & Safety

While there are no recorded fatalities from wildfire in the planning area, a statistical number of the population vulnerable to impact from fire is impossible to determine with any accuracy, due to the high number of variables that impact fire scenarios.

The population at risk must also take into consideration tourists given the Tribe's resorts and other high-tourist destinations, and its employee count. With its relatively high tourism rate, especially during summer months, there is a significant increase in the population vulnerability to fire. Given the increased in tourism during the summer months, when fire danger is at its greatest, consideration must be taken into account for fire response capacity and capabilities. Similarly, isolation as a result of restricted access can also occur, further increasing the vulnerability of populations in the area of the fire. With logging roads restricting potential escape routes, citizens need to pre-plan for potential other options of escape. Other factors for consideration in determining potential population at risk is the fact that the main thoroughfare through the Reservation is also the State's identified evacuation route, further increasing potential exposed populations. In addition, a major rail system carrying hazardous materials travels near the Reservation in close proximity to the Casino, which further increases the risk factor due to the unknown chemicals being transported.

In addition to the actual fire itself, smoke and air pollution from wildfires can be a severe health hazard, especially for sensitive populations, including children, the elderly and those with respiratory and cardiovascular diseases. The Coushatta Tribe has a fairly high population of individuals over 65, further increasing the potential impact on the fire hazard. Smoke generated by wildfire consists of visible and invisible emissions that contain particulate matter (soot, tar, water vapor, and minerals), gases (carbon monoxide, carbon dioxide, nitrogen oxides), and toxics (formaldehyde, benzene). Emissions from wildfires depend on the type of fuel, the moisture content of the fuel, the efficiency (or temperature) of combustion, and the weather. Public health impacts associated with wildfire include difficulty in breathing, odor, and reduction in visibility. Wildfire may also threaten the health and safety of those fighting the fires. First responders are exposed to the dangers from the initial incident and after-effects from smoke inhalation and heat stroke.

10.3.3 Impact on Property

Property damage from wildfires can be severe and can significantly alter entire communities. The potential exposure of the structures owned by the Coushatta Tribe should a fire occur depends on the area impacted, the fire response capabilities in place at the time of the fire, and the severity of the fire (among other factors).

Density, the type (building materials used) and the age of building stock owned by the Coushatta Tribe are also contributing factors in assessing property vulnerability to wildfire. Many of the buildings in the planning area are ~20 +/- years old, with many being constructed with wood frames and shingle roofs. The type of materials used, precautionary measures (such as eve screening, fire retardants, and landscaping) all have the potential to influence the severity of a fire, and its impact on the built environment.

As indicated, loss estimations for the wildfire hazard are not based on damage functions, but rather developed for the building stock based on exposure to each specific Fire Regimes. Details on the number and value of structures (general building stock and critical/essential facilities) exposed to LANDFIRE

Wildfire Regime areas are provided in Table 10-2 through Table 10-4. Not all regimes are present in the tribal planning area.

**TABLE 10-2.
PLANNING AREA STRUCTURES EXPOSED TO LANDFIRE FIRE REGIME 1**

Critical Facility & Infrastructure Type	Estimated Buildings Exposed	Value of Structures Exposed	Value contents Exposed	Total
Medical & Health	2	$2,748,633	$566,850	$3,315,483
Government	9	$2,085,436	$470,978	$2,556,414
Protective	4	$1,949,937	$1,386,833	$3,336,770
Hazardous Materials	3	$4,156,030	$324,000	$4,480,030
Schools	3	$444,550	$57,210	$501,760
Cultural	1	$120,272	$28,200	$148,472
Other*	10	$2,120,182	$1,251,148	$3,371,330
Commercial	41	$39,452,592	$4,720,798	$44,173,390
Industrial	10	$3,427,280	$747,602	$4,174,882
Residential**	40	$186,154,894	$78,552,804	$264,707,698
Water supply	1	$952,393	$0	$952,393
Wastewater	2	$6,805,206	$28,560	$6,833,766
Communications	2	$140,379	$6,000	$146,379
Other*	10	$2,120,182	$1,251,148	$3,371,330
Total	**138**	**$250,557,784**	**$89,392,131**	**$342,070,097**
*= Storage and Outbuildings				
**Residential = All types including single and multi-family structures, hotels, and villages				

**TABLE 10-3.
PLANNING AREA STRUCTURES EXPOSED TO LANDFIRE FIRE REGIME 2**

Critical Facility & Infrastructure Type	Estimated Buildings Exposed	Value of Structures Exposed	Value contents Exposed	Total
Medical & Health	0			
Government	0			
Protective	1	$35,000	$5,000	$40,000
Hazardous Materials	0			
Schools	2	$3,350	$3,350	$6,700
Cultural	0			
Other	0			
Commercial	0			

TABLE 10-3. PLANNING AREA STRUCTURES EXPOSED TO LANDFIRE FIRE REGIME 2				
Critical Facility & Infrastructure Type	**Estimated Buildings Exposed**	**Value of Structures Exposed**	**Value contents Exposed**	**Total**
Industrial	0			
Residential	4	$513,000	$15,000	$528,000
Water supply	1	$25,000	$10,000	$35,000
Wastewater	1	$2,408	$900	$3,308
Communications	0			
Other	0			
Total	**9**	**$578,758**	**$34,250**	**$613,008**

TABLE 10-4. PLANNING AREA STRUCTURES EXPOSED TO LANDFIRE FIRE REGIME 3				
Critical Facility & Infrastructure Type	**Estimated Buildings Exposed**	**Value of Structures Exposed**	**Value contents Exposed**	**Total**
Medical & Health	0			
Government	1	$1,000,000	$100,000	$1,100,000
Protective	0			
Hazardous Materials	0			
Schools	0			
Cultural	0			
Other	0			
Commercial	3	$202,967	$16,500	$219,467
Industrial	0			
Residential	0			
Water supply	0			
Wastewater	0			
Communications	0			
Other	0			
Total	**4**	**$1,202,967**	**$116,500**	**$1,319,467**

10.3.4 Impact on Critical Facilities and Infrastructure

Critical facilities of wood frame construction are especially vulnerable during wildfire events. In the event of wildfire, there would likely be little damage to most infrastructure. Most roads and railroads would be without damage except in the worst scenarios. Fueling stations could be significantly impacted. Power lines are also significantly at risk from wildfire because most poles are made of wood and susceptible to burning. Fires can create conditions that block or prevent access and can isolate residents and emergency service providers.

Hazardous Material Involved Fire Impact on Critical Facilities and Infrastructure

Currently there are three hazardous material containment sites in the tribal planning area, all fueling stations which collectively maintain ~ 30,000 gallons of various types of fuel combined. A railway line also passes near the Reservation and Casino Resort, which carries various types of hazardous materials on a daily basis. Fixed generators at several structures also maintain several days' supply of fuel. During a wildfire event, hazardous material storage containers could rupture due to excessive heat and act as fuel for the fire, causing rapid spreading and escalating the fire to unmanageable levels. In addition, the materials could leak into surrounding areas, saturating soils and seeping into surface waters, having a disastrous effect on the environment. All three sites are within the potential exposure site for Fire Regime 1.

10.3.5 Impact on Economy

Wildfire impact on the economy can be far reaching, ranging from damage to power services, to non-use of facilities, park, and campsites – all of which impact tourism, to loss of structures influencing tribal revenues. Secondary hazards associated with wildfire such as increased flooding potential would further impact the economy.

10.3.6 Impact on Environment

Fire is a natural and critical ecosystem process in most terrestrial ecosystems, dictating in part the types, structure, and spatial extent of native vegetation. However, wildfires can cause severe environmental impacts:

- Damaged Fisheries—Fisheries can suffer from increased water temperatures, sedimentation, and changes in water quality.
- Soil Erosion—The protective covering provided by foliage and dead organic matter is removed, leaving the soil fully exposed to erosion. As accelerated soil erosion occurs, it threatens aquatic habitats.
- Spread of Invasive Plant Species—Non-native woody plant species frequently invade burned areas. When weeds become established, they can dominate the plant cover over broad landscapes, and become difficult and costly to control.

- Disease and Insect Infestations—Unless diseased or insect-infested trees are swiftly removed, infestations and disease can spread to healthy forests and private lands. Timely active management actions are needed to remove diseased or infested trees.
- Destroyed Endangered Species Habitat—Catastrophic fires can have devastating consequences for endangered species.
- Soil Sterilization—Topsoil exposed to extreme heat can become water repellant, and soil nutrients may be lost. It can take decades or even centuries for ecosystems to recover from a fire. Some fires burn so hot that they can sterilize the soil.

10.4 Future Development Trends

The Coushatta Tribe is optimistic that increased population growth will continue to occur throughout the Tribal planning area, with current population remaining fairly consistent since completion of the 2016 HMP. However, at present Allen Parish data indicates reduced population at the parish level, which is expected to continue to decline through 2043 based on data contained within the State's 2019 HMP. The hope for the Coushatta is that more tribal members will return to the Reservation, which ultimately will increase the urbanized area. As such, the potential exists that the fire risk may increase as urbanization tends to alter the natural fire regime, and the growth will expand the urbanized areas into undeveloped wildland areas.

The Tribe feels that this expansion of the wildland-urban interface can be managed with planned land use, use of appropriate building materials, and building codes. A growing body of research suggests that "the only effective home protection treatment is treatment in, on, and around the house" (Nowicki 2001, p. 1:3). Figure 10-8 illustrates some protective measures which homeowners can practice. Review of data from the survey conducted in association with the 2021 update identifies these fire-reducing mitigation efforts of common occurrence. U.S. Forest Service research scientist, Jack Cohen has stated that "home ignitions are not likely unless flames and firebrand ignitions occur within 40 meters [131 feet] of the structure; the WUI fire loss problem primarily depends on the home and its immediate site".

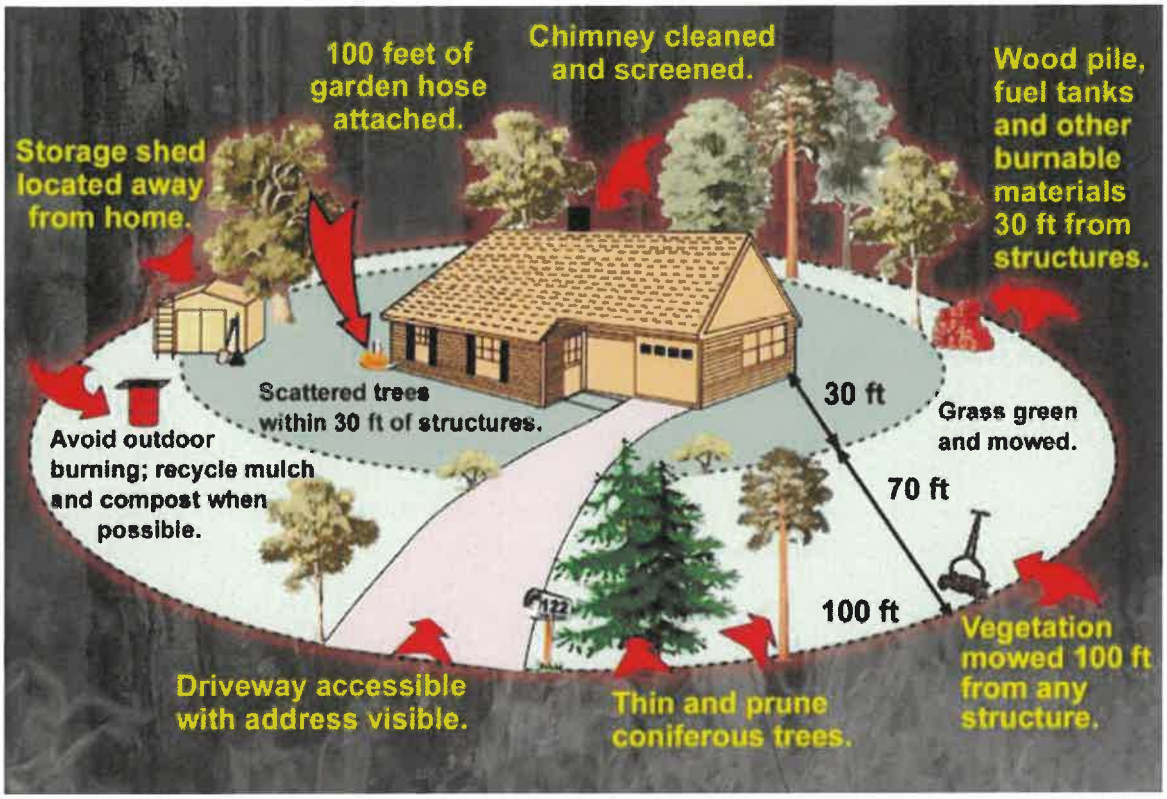

Figure 10-8 Measures to Protect Homes from Wildfire

10.5 Climate Change Impacts

Climate change could affect multiple elements of the wildfire system: fire behavior, ignition, fire management, and vegetation fuels. Hot dry spells create the highest fire risk. Increased temperatures may intensify wildfire danger by warming and drying out vegetation. When climate alters fuel loads and fuel moisture, forest susceptibility to wildfires changes. Climate change also may increase winds that spread fires. Faster fires are harder to contain, and thus are more likely to expand into residential neighborhoods. Climate scenarios project summer temperature increases between 2ºC and 5°C and precipitation decreases of up to 15 percent. Such conditions would exacerbate summer drought and further promote high-elevation wildfires, releasing stores of carbon and further contributing to the buildup of greenhouse gases. At present, review of the 2019 State HMP climate change data indicates that certain research has shown limited increase of temperatures throughout the state, much less than other areas of the Country; however, it is uncertain if that trend will continue.

Forest response to increased atmospheric carbon dioxide—the so-called "fertilization effect"— could also contribute to more tree growth and, thus, more fuel for fires, but the effects of carbon dioxide on mature forests are still largely unknown. High carbon dioxide levels should enhance tree recovery after fire and young forest regrowth, as long as sufficient nutrients and soil moisture are available, although the latter is in question for many parts of the western United States because of climate change.

10.6 Issues

The major issues for wildfire in the tribal planning area are the following:

- Public education and outreach to people living in or near the fire hazard zones should include information about and assistance with mitigation activities such as defensible space, and advance identification of evacuation routes and safe zones.
- Wildfires could increase vulnerability from a secondary natural hazard, such as flooding.
- Climate change could affect the wildfire hazard.
- Future growth into interface areas should continue to be managed.
- Vegetation management activities, such as controlled burns, should include enhancement through expansion of target areas as well as additional resources.
- Building code standards should include items such as residential sprinkler requirements and prohibitive combustible roof standards.
- Increased fire department water supply is needed throughout the Reservation, especially as population increases.
- Obtain and maintain certifications and qualifications for fire department personnel. Ensure that all firefighters are trained in basic wildfire behavior, basic fire weather, and that all fire officers and chief level officers are trained in the wildland command and strike team leader level.

A worst-case scenario would include an active fire season throughout the nation, spreading resources thin such as that which occurred during the last several seasons. In active seasons, firefighting teams become exhausted or unavailable. Should another active season occur, many federal assets could be responding to other fires that started earlier in the season or were more severe. While local fire districts would be extremely useful in the urban interface areas, they have limited wildfire capabilities or experience, and they would have a difficult time responding to the ignition zones. That, when coupled with the issue of available water to areas of the planning area, firefighting would be difficult, at best. Even though the existence and spread of the fire is known, it may not be possible to respond to it adequately, so an initially manageable fire can become out of control before resources are dispatched. Similar such events occurred during the 2015 season, which ultimately required resources from Australia to assist in managing fires because resources at the local and federal levels were exhausted. Since completion of the last plan, the Coushatta Tribal Fire Department assisted outside agencies 91 times versus the eight times during the 2010-2015 time period, representing in excess of 11 times greater response. Likewise, the number of fires on the reservation increased to over 440 during the time period 2017-2020 (July).

To further complicate the problem, heavy rains could follow, causing flooding and the releasing tons of sediment into rivers, or natural habitats, permanently changing floodplains and damaging sensitive habitat and riparian areas. Such a fire followed by rain could release millions of cubic yards of sediment into streams for years, creating new floodplains and changing existing ones. It could also further fill existing drainage systems. With the forests removed from the watershed, stream flows could easily double. Floods that could be expected every 50 years may occur every couple of years. With the streambeds unable to carry the increased discharge because of increased sediment, the floodplains and floodplain elevations would increase.

10.7 Impact and Results

With the continued growth of the Reservation, as well as the potential impacts from climate change, the Tribe does view the fire danger as ever increasing and of significant concern. With continued growth and development on the Reservation, combined with vegetation burning outside of its normal fire regimes, the potential for increased fire occurrence, both on and off the Reservation, will continue. As a result, the Tribe views Wildfire as a medium hazard of concern, ranking eighth on the list of hazards of concern, with a 2.65 CPRI score.

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CHAPTER 11.
HAZARD RANKING

In ranking the hazards, the Planning Team completed a Calculated Priority Risk Index worksheet for each hazard (Figure 11-1). The index examines four criteria for each hazard (probability, magnitude/severity, extent and location, warning time, and duration), defines a risk index for each according to four levels, then applies a weighting factor as described in Chapter 4. The result is a score that has been used to rank the hazards.

Table 11-1 presents the results of the Calculated Priority Risk Index scoring for all hazards Reservation-wide. Based on the CPRI, the hazards in ranked order as confirmed by the planning team on April 14, 2021 are identified in Table 11-3. Table 11-3 identifies the 2015 hazards as ranked for comparison

While the CPRI score for wind and flood rated the same (3.35), the planning team determined that flood hazard should be ranked higher in order of priority due to its regular impact on roadways, and the inability of tribal members or guests to the Casino Resort to traverse roadways. For Lightning and Thunder, the planning team felt the hazards were of equal concern, both rating at 3.1 on the CPRI score, and both ranked as number 4.

Figure 11-1 Calculated Priority Risk Index Categories of Rating

CPRI Category	Degree of Risk: Impact/ Level ID	Degree of Risk: Description	Degree of Risk: Impact Factor	Assigned Weighting Factor
Probability	Unlikely	• Rare with no documented history of occurrences or events. • Annual probability of less than 1% (~100 years or more).	1	40%
	Possible	• Infrequent occurrences; at least one documented or anecdotal historic event. • Annual probability that is between 1% and 10% (~10 years or more).	2	
	Likely	• Frequent occurrences with at least two or more documented historic events. • Annual probability that is between 10% and 90% (~10 years or less).	3	
	Highly Likely	• Common events with a well-documented history of occurrence. • Annual probability of occurring. (1% chance or 100% Annually).	4	
Magnitude/ Severity	Negligible	• People – Injuries and illnesses are treatable with first aid; minimal hospital impact; no deaths. Negligible impact to quality of life. • Property – Less than 5% of critical facilities and infrastructure impacted and only for a short duration (less than 24-36 hours such as for a snow event); no loss of facilities, with only very minor damage/clean-up. • Economy – Negligible economic impact. • Continuity of government operating at 90% of normal operations with only slight modifications due to diversion of normal work for short-term response activity. Disruption lasts no more than 24-36 hours. • Special Purpose Districts: No Functional Downtime.	1	25%
	Limited	• People – Injuries or illness predominantly minor in nature and do not result in permanent disability; some increased calls for service at hospitals; no deaths; 14% or less of the population impacted. Moderate impact to quality of life. • Property – Slight property damage -greater than 5% and less than 25% of critical and non-critical facilities and infrastructure. • Economy – Impact associated with loss property tax base limited; impact results primarily from lost revenue/tax base from businesses shut down during duration of event and short term cleanup; increased calls for emergency services result in increased wages. • Continuity of government impacted slightly; 80% of normal operations; most essential services being provided. Disruption lasts >36 hours, but <1 week. • Special Purpose Districts: Functional downtime 179 days or less.	2	
	Critical	• People – Injuries or illness results in some permanent disability or significant injury; hospital calls for service increased significantly; no deaths. 25% to 49% of the population impacted. • Property – Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). • Economy – Moderate impact as a result of critical and non-critical facilities and infrastructure impact; loss of revenue associated with tax base; lost income. • Continuity of government ~50% operational capacity; limited delivery of essential services. Services interrupted for more than 1 week, but <1 month. • Special Purpose Districts: Functional downtime 180-364 days.	3	
	Catastrophic	• People – Injuries or illnesses result in permanent disability and death to a significant amount of the population exposed to a hazard. >50% of the population impacted. • Property – Severe property damage >50% of critical facilities and non-critical facilities and infrastructure impacted. • Economy – Significant impact - loss of buildings /content, inventory, lost revenue, lost income. • Continuity of government significantly impacted; limited services provided (life safety and mandated measures only). Services disrupted for > than 1 month. • Special Purpose Districts: Functional Downtime 365 days or more.	4	
Geographic Extent and Location	Limited	Less than 10% of area impacted.	1	20%
	Moderate	10%-24% of area impacted.	2	
	Significant	25%-49% of area impacted.	3	
	Extensive	50% or more of area impacted.	4	
Warning Time / Speed of Onset	<6 hours	Self-explanatory.	4	10%
	6 to 12 hours	Self-explanatory.	3	
	12 to 24 hours	Self-explanatory.	2	
	> 24 hours	Self-explanatory.	1	
Duration	< 6 hours	Self-explanatory.	1	5%
	< 24 hours	Self-explanatory.	2	
	<1 week	Self-explanatory.	3	
	>1 week	Self-explanatory.	4	

TABLE 11-1.
CALCULATED PRIORITY RANKING INDEX

Hazard	Probability	Magnitude and/or Severity	Geographic Extent and Location	Warning Time	Duration	Calculated Priority Risk Index Score
Drought	2	1	4	1	4	2.15
Flood	4	3	3	3	2	3.35
*Severe Weather**						
Excessive Temperatures (Heat/Cold)	3	3	4	1	3	2.5
Hail	2	3	3	3	1	2.5
Lightning	3	3	4	3	1	3.1
Thunderstorm	3	3	4	3	1	3.1
Wind (non-Tornado force)	4	3	4	2	1	3.35
Winter Weather (Ice/Snow)	2	3	4	1	3	2.5
Tornado	2	4	4	4	1	3.05
Tropical Storm/Hurricane	4	4	4	2	2	3.6
Wildfire	3	2	2	4	1	2.65

The Calculated Priority Risk Index scoring method has a range from 0 to 4. "0" being the least hazardous and "4" being the most hazardous situation.
*Severe weather is broken down separately by each hazard component

TABLE 11-2.
HAZARD RANKING 2021

Hazard	CPRI Score	Rank
Hurricane	3.6	1
Flood	3.35	2
Wind	3.35	3
Lightning	3.1	4
Thunderstorm	3.1	4
Tornado	3.05	5
Extreme Temperatures	2.7	6
Wildfire	2.65	7
Winter Weather	2.5	8
Hail	2.3	9
Drought	2.15	10

**TABLE 11-3.
HAZARD RANKING 2015**

Hazard	CPRI Score	Rank
Thunderstorm	3.40	1
Wind	3.40	2
Flood	3.35	3
Lightning	3.20	4
Excessive Temperatures	2.95	5
Tropical Storm/Hurricane	2.95	6
Tornado	2.65	7
Hail	2.65	8
Wildfire	2.30	9
Ice	1.85	11
Drought	1.75	12
Snow	1.45	13

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CHAPTER 12.
MITIGATION STRATEGY

The development of a mitigation strategy allows the community to create a vision for preventing future disasters. This is accomplished by establishing a common set of mitigation goals and objectives, a common method to prioritize actions, and evaluation of the success of such actions. Specific mitigation goals, objectives and projects were developed for the Coushatta Tribe by the Planning Team in their attempt to establish an overall mitigation strategy by which the Tribe would enhance resiliency of the planning area.

12.1 Hazard Mitigation Goals and Objectives

During the February 1, 2021 Kick-Off meeting, the Planning Team reviewed the 2016 existing goals and objectives. The goals for the 2021 update were confirmed with no changes remaining consistent with the direction that the Coushatta Tribe can take to work toward mitigating risk from the hazards of concern, while continuing to avoid long-term vulnerabilities. These goals also closely mirror the overarching goals under which the Tribe as a whole operates. The objectives from the 2016 plan remained largely unchanged, with the exception of a few grammatical changes. The Planning Team determined that by establishing these goals and objectives, the Tribe would also be in a position to continue to support efforts along the same lines for Allen Parish, and the State of Louisiana by further enhancing resilience.

12.1.1 Goals

Goals for the 2021 mitigation strategy are as follows:

1. Protect and enhance life, property, the environment, and the economy for members of the Coushatta Tribe and surrounding communities through proactive measures.
2. Reduce community risk through increased public awareness of the hazards of concern and mitigation opportunities.
3. Leverage public and private partnering opportunities.
4. Encourage and pursue multi-objective opportunities or solutions whenever possible to help reduce the impacts from hazards through sustainable, cost-effective, and environmentally sound mitigation efforts and projects.

12.1.2 Objectives

Objectives for the 2021 mitigation strategy are presented in Table 12-1.

TABLE 12-1. 2021 HAZARD MITIGATION PLAN OBJECTIVES	
Objective Statement	**Goal Addressed**
1. Implement mitigation initiatives that will assist in protecting lives, property, and the environment by making homes, businesses, infrastructure, critical facilities, and culturally significant areas and structures more resistant / resilient to the hazards that impact the planning region, while preserving and maintaining the cultural and natural resources within the area.	1, 2, 4,
2. Use best available data, science, and technologies to improve the understanding of the location and potential impacts of hazards, and to promote disaster resilient communities by discouraging new development in hazardous areas by ensuring that development is done in such a way as to minimize risk.	2, 4
3. Consider the impacts of hazards in all planning mechanisms that address current and future land use, including culturally sensitive areas and structures.	2, 4
4. Educate residents and surrounding communities on the risk exposure to hazards and ways to increase individuals' capabilities to prepare, respond, recover, and mitigate the impacts of these events.	2, 3, 4
5. Provide/improve flood protection through various means, such as with flood control structures and drainage maintenance where appropriate and feasible.	1, 2, 4
6. Provide/improve the structural integrity of structures through higher building standards to address hazards of concern.	1, 4
7. Establish and maintain partnerships among the public sector and local business leaders within the planning region to improve and implement methods to protect life, property, the economy, and the environment.	1, 3
8. Enhance emergency management capabilities (i.e., prepare, plan, respond, recover, mitigate), including emergency warning, response, planning (including evacuation procedures), and communication systems.	1, 2, 3, 4
9. Provide/improve fire protection activities through various means, such as sprinkler systems, defensible space, spatial distribution of development, fuel treatments, and enhanced water supply systems where appropriate and feasible.	4, 5

12.2 Hazard Mitigation Alternatives

After the goals and objectives were established, the planning team developed specific action items to further increase resilience. FEMA's 2013 catalog of *Mitigation Ideas* was presented to the planning team. This document includes a broad range of alternatives to be considered for use in the planning area, in compliance with 44 CFR (Section 201.7.c.3.ii) and can be applied to both existing structures and new construction. The catalog provides a baseline of mitigation alternatives that are backed by a planning process, are consistent with the planning partners' goals and objectives, and are within the capabilities of the partners to implement. It presents alternatives that are categorized in two ways:

- By what the alternative would do:
  - Manipulate a hazard
  - Reduce exposure to a hazard

  - Reduce vulnerability to a hazard
  - Increase the ability to respond to or be prepared for a hazard

- By whom would have responsibility for implementation:

  - Individuals
  - Businesses
  - Government

Hazard mitigation initiatives recommended in this plan were selected from among the alternatives presented in the catalogs, as well as projects identified by the planning team members and interested stakeholders. Some initiatives were carried over from the previous plan and were identified as such. Some initiatives may not be feasible based on the selection criteria identified for this plan, but are included nonetheless as the planning team felt they are viable actions to be taken to reduce hazard influence in some manner.

12.3 Selected Mitigation Initiatives

For the 2021 update, particular attention was again given to new and existing buildings and infrastructure and developing appropriate mitigation strategies for their enhancement and sustainability. Table 12-2 identifies the 2021 Tribal initiatives, also identifying the lead and supporting agency for each project responsible for implementation of the initiative, potential funding sources, analysis of initiative type (defined below), and the proposed timeline. The parameters for the timeline are as follows:

- Short-Term = to be completed in 1 to 5 years
- Long-Term = to be completed in greater than 5 years
- Ongoing = currently being funded and implemented under existing programs.

12.4 Analysis of Mitigation Initiatives

The Planning Team reviewed the recommended initiatives to categorize them based on the hazard addressed and the type of initiative involved. Categorizations are as follows.

- **Planning** —Tribal Government, administrative, or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. Includes planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations, etc.

- **Protection** —Modification of buildings or structures to protect or lessen the impact from hazard. Includes things such as storm shutters, shatter resistant glass, safe rooms, or clearing property from vegetation to establish safety zones. Protection can be at the individual homeowner level, or a service provided by police, fire, emergency management, or other public safety entities. Protection also includes actions taken to inform citizens and elected officials about hazards and ways to mitigate them. Includes outreach projects, real estate disclosure, hazard information centers, and school-age and adult education, all of which bring awareness of the hazards of concern.

- **Mitigation** – Long-term, sustainable actions to reduce the impact of hazards of concerns. Includes acquisition, elevation, relocation, or structural retrofit. Also includes natural resource protection for actions that minimize hazard loss and preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management (controlled burns, etc.), and wetland restoration and preservation.
- **Response (Emergency Services)** —Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, and the protection of essential facilities.
- **Recovery** —Actions that involve the re-construction of structures in such a way so that they will help reduce the impact of a hazard, or that assist after a disaster incident to re-establish the Tribe. Recovery differs from response, which occurs during, or immediately after an incident. Recovery can include programs, such as an emergency management program, or education and public awareness programs; policies, such as new building codes; or structural projects, such as setback levees, floodwalls, retaining walls, and safe rooms.

12.5 2016 Action Plan Status

A comprehensive review of the 2016 Coushatta action plan was performed to determine which actions and initiatives were completed, which should carry over to the updated edition, and which were no longer feasible and should be removed from the plan.

On review, the planning team determined that the majority of the action items identified in the 2016 plan were still feasible, and would be carried over, with few exceptions. As such, Table 12-2 also identifies the results of this review, identified by *2021 Status* beneath each strategy, and identifies the Tribe's advancements in the specific strategy previously identified. For consistency, standardized language was supplied to identify the strategy's current status. Strategies beginning at number 39 forward are new strategies developed for the 2021 update. Those 2016 strategies which have been removed and will not be carried forward are identified in Table 12-3.

TABLE 12-2.
2021 HAZARD MITIGATION ACTION PLAN MATRIX AND STATUS OF 2016 MITIGATION INITIATIVES

Applies to New or Existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	In Previous Plan? Yes/No 2021 Status: Completed (C), Carried Forward (CF), Removed (R), No longer relevant (NLR)	FEMA Mission Area or CRS Type (Response, Recovery, Protection, Planning, Mitigation)
C-1 Analyze options and acquire resources such as small transportation vehicles (e.g., ATVs or 4-wheel drive vehicles) which can be used during evacuation or sheltering of individuals, including those with access and functional needs. Vehicle can be used to transport individuals to shelter locations from areas such as the RV park, chalets, campground, etc., during times when traffic congestion makes driving difficult. Areas of the Reservation have large drainage ditches which prohibit pedestrian passage except over footbridges. Gator-sized vehicle will allow access across pedestrian bridges during situations when vehicles cannot move due to congestion. These vehicles will also be utilized to provide alternate forms of transportation and access to areas of the Reservation landlocked during flood and wildfire events when roadways become impassable.								
Existing	F, WF	1, 2, 4, 5, 7, 8, 9	PW-Roads	High	BRIC, HMGP, LA and Allen Parish DOTs, USDOT	Long-Term	Y, CF, reworded	Response, Recovery, Protection
2021 Status No. 1: The Tribe did acquire some ATV/4-wheeled vehicles for use in evacuation of individuals with Access and Functional Needs, particularly in the area of the Casino Resort and the RV park. These were not purchased with grant funds. However, the Tribe will continue to pursue grants to enable acquisition of additional ATV vehicles to enable greater assistance during times of evacuation.								
C-2 Evaluate and enhance the current capital improvements program for Tribal roads and drainage projects to provide better flood control in known flood problem areas.								
New and Existing	F, SW, TS/H	1, 2, 3, 5, 6, 7, 8	Facilities / Maintenance, Public Works, Roads, Stormwater, Natural Resources, Environmental	High	State Ecology FCAAP, BRIC, HMGP, LA and Allen Parish DOTs	Long-Term	CF	Response, Recovery, Protection
2021 Status No. 2: This project remains on-going and is carried forward for the 2021 update. As of this 2021 update, the Tribe has a flood-study project underway in conjunction with a statewide program which will further help identify roads that require some modification to ensure sustainability of use during flood and other hazard events to allow for evacuation of Tribal Members. Roads known to be of concern include CC Bell and Powell Road, among others. Impact to these roadways many times result in Tribal Members or guests to the reservation becoming isolated, with no escape.								
C-3 Work with rail companies transporting freight on rail lines traveling near the Reservation and Casino to establish protocol requiring railways to provide information in advance of shipments concerning chemical transportation.								

TABLE 12-2.
2021 HAZARD MITIGATION ACTION PLAN MATRIX AND STATUS OF 2016 MITIGATION INITIATIVES

Applies to New or Existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	In Previous Plan? Yes/No 2021 Status: Completed (C), Carried Forward (CF), Removed (R), No longer relevant (NLR)	FEMA Mission Area or CRS Type (Response, Recovery, Protection, Planning, Mitigation)
Existing	All*	1, 2, 3, 4, 7, 8, 9	Tribal Fire, Police, Council, Emergency Management	High	BRIC, HMGP, USDOT, Rail Systems, HUD, BIA, HLS	Long-Term	Y - CF	Response, Recovery, Protection
2021 Status No. 3: No progress was made on this strategy; however, the Tribe does feel it is relevant, and will carry this project forward.								
C-4 Seek grant funding for purchase of NOAA weather radios for each Tribal facility and Tribal resident.								
Existing	F, TS/H, T, SW, WF	1, 2, 4, 7, 8, 9	Emergency Management	High	BRIC, HMGP	Long-Term	C, CF	Response, Protection
2021 Status No. 4: The Tribe has acquired some NOAA weather radios and will continue to purchase radios for residents on the Reservation, as well as in tribal offices. This effort is conducted in conjunction with public awareness efforts and is carried forward.								
C-5 Develop database of grocery stores and fueling stations who have generators in order to determine potential need for additional generators to ensure food and fuel supply during event or incident.								
New and Existing	All*	1, 2, 4, 8	Risk, Emergency Management	Low	General Fund	On-Going	Y - CF	Response, Recovery, Protection
2021 Status No. 5: The Tribe does have generators for its fueling stations but has not established a database with respect to grocery stores in the area. This effort will be joined with its public awareness campaign with respect to the hazards of concern and is carried forward.								
C-6 Work toward becoming a StormReady community. (http://www.stormready.noaa.gov/guideline_chart.htm)								
New and Existing	All*	2, 4	EM	Low	General Fund	Short-Term	Y - CF	Protection, Mitigation
2021 Status No. 6: No progress made since last plan update, but project remains viable and will be carried forward.								
C-7 Work with Tribal Health and the Allen Parish Health Unit to determine suitable points of distribution on the Reservation once risk assessment is complete.								

TABLE 12-2.
2021 HAZARD MITIGATION ACTION PLAN MATRIX AND STATUS OF 2016 MITIGATION INITIATIVES

Applies to New or Existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	In Previous Plan? Yes/No 2021 Status: Completed (C), Carried Forward (CF), Removed (R), No longer relevant (NLR)	FEMA Mission Area or CRS Type (Response, Recovery, Protection, Planning, Mitigation)
New	All*	1, 2, 4, 8	Health and Emergency Management	~~Low~~ High	General Fund, Tribal Health, and Federal Department of Health, Emergency Management	Short-Term	Y- CF	Response, Recovery, Protection, Planning
2021 Status No. 7: With the COVID-19 Pandemic, this project has become of paramount importance to Tribal Members, and members of the surrounding communities. Tribal Health has worked diligently with Allen Parish (and other Parishes in the surrounding areas) to identify Points of Distribution for the COVID vaccine, as well as testing facilities. This effort remains on-going and is carried forward with the 2021 plan update, with the intent of reviewing any After Action Reports which may identify corrective actions. Thereafter, the data will be used to assist in development of a POD Plan. The Tribe has also modified the initial estimated cost from "Low" to "High".								
C-8 Work with water purveyors to conduct a needs assessment to determine logistical requirements for equipment and parts for water distribution and wastewater processing to ensure a surplus exists to allow for continued supply and management of water in case commodity flow is impacted by a major event.								
New and Existing	All*	1, 2, 3, 4, 5, 6, 7, 8, 9	Health, Facilities, Maintenance, Water Suppliers	Medium	General Fund, DOH, EPA, Ecology	Short-Term	Y-CF	Response, Recovery, Protection, Mitigation, Planning
2021 Status No. 8: This project is of significant concern to the tribe in light of the February 2021 severe weather event, which left many tribal members without water due to freezing and rupturing of pipes, and the inability of tribal members to have adequate water supply. This project is carried forward, but the Tribe has elevated it for this 2021 update to a higher priority.								
C-9 Seek grant funding to construct an emergency operations center which can support Reservation-wide efforts. Alternatively, seek grant funds to purchase a mobile command unit, which can also serve as a backup EOC if needed.								
New	All*	1, 7, 8	Tribal Fire	High	HLS	Long-Term	Y-CF	Response, Recovery, Protection, Planning

TABLE 12-2.
2021 HAZARD MITIGATION ACTION PLAN MATRIX AND STATUS OF 2016 MITIGATION INITIATIVES

Applies to New or Existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	In Previous Plan? Yes/No 2021 Status: Completed (C), Carried Forward (CF), Removed (R), No longer relevant (NLR)	FEMA Mission Area or CRS Type (Response, Recovery, Protection, Planning, Mitigation)
2021 Status No. 9: No progress made, but the Tribe continues to see this as a relevant project, particularly in light of the number of disaster incident occurring since completion of the last plan. As such, this project is carried forward.								
C-10 Continue to design and build facilities to meet or exceed high-wind standards, including redundant essential equipment. Apply current IBC standards to all renovation or replacement of existing facilities, and/or equipment.								
New and Existing	TS/H, SW, T	1, 2, 3, 4, 6, 7, 8	Facilities, Maintenance, Planning, Casino	Medium	BRIC, HMGP	Long-Term	C, CF	Protection, Mitigation
2021 Status No. 10: The Tribe has completed limited new construction since the last plan was completed but did utilize the highest required building codes in place at the time construction occurred. The Tribe continues to see this as one of the strongest mitigation efforts available and will carry this initiative forward for the 2021 update.								
C-11 Conduct activities that support mitigation efforts to reduce the negative influence of natural hazards impacting the Reservation, such as appropriate hazard identification, warning, dissemination of relevant information and data, and public outreach.								
New	All*	All	Tribal Fire, Planning, Indian Health	Low	General Fund, HLS, Indian Health	On-Going	Y – Modified	Planning/ Mitigation, Protection
2021 Status No. 11: The tribe has completed various public outreach efforts since completion of the last plan, including safety fairs and dissemination of the risk data such as developed during this plan update. Public outreach with respect to the hazards of concern is an element of the Tribe's Plan Maintenance section, which will be carried forward during the life cycle of this 2021 plan edition.								
C-12 Seek grant funding to conduct threat hazard identification and risk assessment of identified critical infrastructure to determine potential risk.								
New and Existing	Human Caused, Techno, HazMat (Future Hazards)	1, 2, 4, 8	Fire & Police, Casino	Medium	DOJ Grants, THLS	Short-Term	C, CF	Mitigation, Prevention, Protection, Response
2021 Status No. 12: The Tribe did complete a THIRA in 2016; however, it has not been updated since that time. The Tribe hopes to pursue grant funding during the life cycle of this plan via HLS funding specifically to address FEMA's Core Capabilities.								

TABLE 12-2.
2021 HAZARD MITIGATION ACTION PLAN MATRIX AND STATUS OF 2016 MITIGATION INITIATIVES

Applies to New or Existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	In Previous Plan? Yes/No 2021 Status: Completed (C), Carried Forward (CF), Removed (R), No longer relevant (NLR)	FEMA Mission Area or CRS Type (Response, Recovery, Protection, Planning, Mitigation)
C-13 Work with local public and private entities (power and water suppliers) to review infrastructure control systems and ensure appropriate level of security and protection measures are in place. As appropriate, conduct audit of policies and procedures (possibly through COOP planning) to ensure consistency and accuracy in application of security devices in place as they relate to the Tribe and supply of those critical resources.								
New and Existing	All*	1, 2, 3, 4, 6, 7, 8	Casino, Police, Fire, IT	Medium	General Funds	Long-Term	Y-CF	Response, Recovery, Mitigation
2021 Status No. 13: No action was completed on this effort; however, while SCADA systems were not the issue with the water shortage experienced by the Tribe as a result of the February 2021 severe weather event, the Tribe will continue to work with utility and infrastructure suppliers to ensure appropriate safety measures are in place to protect these assets. This is also particularly significant due to the continually increasing number of cyber security attacks nationwide.								
C-14 Seek grant funding to support Tribe's effort to conduct building assessment to determine strength of structures, and to identify structures which need retrofitting to ensure safety of occupants. During assessment, determine which structures could be used as safehouses. (This results from loss of historical structure data caused by destruction of the Alfred P. Murrah building.)								
New and Existing	TS/H, SW, T	All	Tribal Fire, Emergency Management, Tribal Administration, Casino	High	HLS, BRIC, HMGP	Long-Term	CF, Combined with #2 from 2016 plan	Response, Recovery, Mitigation
2021 Status No. 14: As a result of the various disaster declaration for which recovery efforts are currently underway, the Tribe is conducting building assessments as reconstruction or repair of damaged facilities occurs. The Tribe will continue to seek FEMA Technical Assistance grants to further this endeavor and continues to maintain the information captured with respect to building-specific data. This will be an on-going effort during the life cycle of this 2021 update.								
C-15 Utilize data gathered during risk assessment to identify capital projects that, when modified, increase the resilience of the Tribe's structures and conveyances to damage, or that allow a more expedited process for recovery from the impact of disaster incidents.								

TABLE 12-2.
2021 HAZARD MITIGATION ACTION PLAN MATRIX AND STATUS OF 2016 MITIGATION INITIATIVES

Applies to New or Existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	In Previous Plan? Yes/No 2021 Status: Completed (C), Carried Forward (CF), Removed (R), No longer relevant (NLR)	FEMA Mission Area or CRS Type (Response, Recovery, Protection, Planning, Mitigation)
New and Existing	All*	All	Tribal Administration, All Departments, Casino	Low	General Funds, Grants	Long-Term	Y - CF	Recovery, Mitigation
2021 Status No. 15: Data from this 2021 updated risk assessment will be utilized to identify potential mitigation projects which will help increase the resilience of the Tribe. Information such as previously flooded areas or hurricane impact has assisted in demonstrating previous losses, which have helped in the ability for the Tribe to capture FEMA funding for repair or mitigation of structures and identifying areas of impact. This effort will continue during the life cycle of this update. This is also an element of the plan maintenance structure of the 2021 update.								
C-16 Consider aggregated structural projects enhancing resistance to hazards of concern, such as: wind-bracing (including for equipment, piping, and fixtures); removal of high hazard beams or structures (items which can become flying debris); access road reinforcement/redesign; or upgrades to water and wastewater facilities.								
New and Existing	F, SW, TS/H, T, WF	1, 2, 3, 5, 6, 7, 8, 9	Building & Planning, Facilities, Public Works, Emergency Management, Casino	High	General Funds, LA DOT, US DOT, BRIC, HMGP	Long-Term	Y - CF	Response, Recovery, Mitigation
2021 Status No. 16: The Tribe is currently in the process of applying for a State of Louisiana grant to help site-harden the wastewater treatment facility, as well as partnering with Allen Parish to reconstruct roadways which are frequently flooded. The roadway project is an aggregate project, specifically addressing several roadways in the area. The Tribe will continue to view projects in a similar light, working on potential areas of impact versus a single roadway or project.								
C-17 Implement a recovery system to ensure maximum FEMA reimbursement (when declared) for disaster response, repair, mitigation, and recovery, which will capture and track emergency activities, associated expenses (mileage, supplies, expendables, vendors, etc.), employee time, and dedicated resources. This information will also provide missing data for use in the risk and vulnerability assessment.								

TABLE 12-2.
2021 HAZARD MITIGATION ACTION PLAN MATRIX AND STATUS OF 2016 MITIGATION INITIATIVES

Applies to New or Existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	In Previous Plan? Yes/No 2021 Status: Completed (C), Carried Forward (CF), Removed (R), No longer relevant (NLR)	FEMA Mission Area or CRS Type (Response, Recovery, Protection, Planning, Mitigation)
New and Existing	All*	8	Tribal Council, Emergency Management, Tribal Fire and Police, Risk, Finance, Casino	Medium	EMPG, General Fund	On-Going	Y - CF	Recovery, Planning
2021 Status No. 17: Since completion of the last plan, the Tribe has gone through several damage assessment processes for disaster events. With each process, new and better ways of capturing the necessary information have been developed. Once all damage assessment procedures have been completed, the Tribe will utilize the information to establish a plan for future events, which will help expedite the process, and reduce the level of effort required since procedures and protocols will be established. The Tribe feels this is still a valid project and will carry it forward in the 2021 HMP.								
C-18 Develop and maintain a list of tribal members with access and functional needs to help ensure proper care during events and incidents.								
New and Existing	All*	1, 4, 7, 8	Health, Emergency Management, Social Services, Tribal Police and Fire	Low	HLS, General Fund, HMGP, HUD, DSHS, BIA	On-Going	Y - CF	Response, Protection
2021 Status No. 18: This project is on-going in nature as new tribal members move into the area and is carried forward. This data will help support the mitigation plan and the Tribe's THIRA by identifying the number of tribal residents with AFN.								
C-19 Utilize data from the current risk assessment as a starting point and continue to update GIS capacity and capabilities with respect to buildings/structure information, future land use development, and loss estimations for recovery and damage assessment purposes.								

TABLE 12-2. 2021 HAZARD MITIGATION ACTION PLAN MATRIX AND STATUS OF 2016 MITIGATION INITIATIVES								
Applies to New or Existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	In Previous Plan? Yes/No 2021 Status: Completed (C), Carried Forward (CF), Removed (R), No longer relevant (NLR)	FEMA Mission Area or CRS Type (Response, Recovery, Protection, Planning, Mitigation)
New and Existing	All*	1, 2, 8	Tribal Council, Natural Resources, Environmental, Facilities, Housing, Emergency Management, Police and Fire	Low	General Fund, HMGP	On-Going	Y-CF	Response, Recovery, Planning/ Mitigation, Protection
2021 Status No. 19: Due to limited staffing, the Tribe has been unable to make significant advancement in the area of GIS but does view this as a viable project and will continue to pursue the effort.								
C-20 Assess the Tribe's communications systems to determine its current vulnerability. This will include a review of the number of radios necessary to allow for adequate communications during emergency situations with field units, emergency response personnel, and emergency managers.								
New and Existing	All*	1, 2, 7, 8, 9	Emergency Management, IT, Tribal Fire and Police, Coms., Facilities	Low	General Fund	Short-Term	Y-CF	Response, Recovery, Protection
2021 Status No. 20: The Tribe continues to see this as a viable project to ensure interoperable communications between police, fire, Casino Resort personnel, and local municipal first responders.								
C-21 In accordance with OSHA requirements for all employees performing emergency response activities (post-disaster), identify and train Tribal staff and volunteers that will be utilized for these efforts. Training to be considered includes: Disaster Site Worker Training, Emergency Response Training, Damage Assessment, CERT, CPR/First Aid, and others.								

TABLE 12-2. 2021 HAZARD MITIGATION ACTION PLAN MATRIX AND STATUS OF 2016 MITIGATION INITIATIVES								
Applies to New or Existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	In Previous Plan? Yes/No 2021 Status: Completed (C), Carried Forward (CF), Removed (R), No longer relevant (NLR)	FEMA Mission Area or CRS Type (Response, Recovery, Protection, Planning, Mitigation)
New	All*	1, 4, 8	Tribal Fire, Risk Manager, Health, Police, Emergency Management	Low	General Fund, HLS	On-Going	C, CF	Response, Recovery, Protection
2021 Status No. 21: The tribe has made significant progress in this regard with respect to the capturing of damage assessment data and establishing policies and procedures. This process is currently evolving with respect to the hurricanes impacting the tribe in 2020, with the intent of continued improvement. With COVID response, the need for additional personnel with respect to mass care also became apparent. This will require continued training of employees in various areas over the life cycle of this plan.								
C-22 Work with Casino and Tribal Departments to develop an exercise related to, among other things, response activities, evacuation or sheltering of citizens.								
New	All*	1, 2, 4, 8	Fire, Police, Human Services, Casino	Medium	US DOT, THLS, HMEP, EMPG, BIA, Fire Grants, HUD, DOH	Short-Term	CF	Protection, Response
2021 Status No. 22: Real world events did require all departments and tribal enterprises to work together to ensure the safety of everyone. With COVID and hurricane response, the development of After-Action Plans will identify areas for improvement, which may require revision to emergency plans, and continued exercises of those plans. The Tribe may seek grant funding over the life cycle of this plan to help fund such exercises. The Tribe also feels that the information captured as a result of those response activities also helps identify mitigation efforts and actions, as well as help guide public awareness campaigns.								
C-23 Leverage resources and partnerships within parish and state to train and exercise together to ensure continuity during real world events.								
New	All*	4, 7, 8	Tribe and Surrounding Parishes	Medium	General Budget, Grants	On-Going	C, CF	Response, Recovery, Protection, Planning
2021 Status No. 23: This strategy is on-going in nature. The Tribe does feel that great advancements occurred since completion of the last plan in this area with both hurricane and COVID responses, and the ensuing real world response effort, and as such, does feel as though it did complete this strategy for the 2016-2021 time period, but feels is it relevant to carry forward.								

TABLE 12-2.
2021 HAZARD MITIGATION ACTION PLAN MATRIX AND STATUS OF 2016 MITIGATION INITIATIVES

Applies to New or Existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	In Previous Plan? Yes/No 2021 Status: Completed (C), Carried Forward (CF), Removed (R), No longer relevant (NLR)	FEMA Mission Area or CRS Type (Response, Recovery, Protection, Planning, Mitigation)
C-24 Develop (or update) plans to ensure response and recovery efforts using data developed during mitigation plan risk assessment. This includes working with the Tribal Council to develop appropriate committees, such as, but not limited to a continuity of operations team, which will develop a Tribal Continuity of Operations Plan, and an emergency communications team which will look at communications and interoperability issues.								
New and Existing	All*	2, 4, 7, 8	Tribal Council, Police, Fire, Coms., Emergency Management	Medium	Various depending on plan	On-Going	Y, CF	Response, Recovery, Protection, Planning
2021 Status No. 24: This strategy is on-going in nature. Within a very short period of time, the tribe has been impacted by several disaster events, and remains in the recovery (hurricanes) and response (COVID) phases. It is still attempting to assimilate all of the lessons learned from those events, as well as identify gaps which need to be addressed. Those gaps will address all phases of emergency management and will help guide an update to the THIRA with respect to the core capabilities.								
C-25 Conduct public outreach on risk-reduction techniques for communicable diseases through public education campaigns which increase awareness of healthy behaviors, including during times when shelters are established.								
New	All*	4, 8	Health, Human Services, Emergency Management	Low	General Fund	Short-Term	Y, CF	Response, Recovery
2021 Status No. 25: With COVID-19, this has been an on-going effort on the part of all health agencies, both tribal and non-tribal. The Tribe will continue this effort over the lifecycle of this 2021 update.								
C- 26 In accordance with the PETS Act, pre-identify and establish co-located shelter locations, and a shelter location for individuals with access and functional needs which can accommodate service and support animals. This should also include critter pads in areas where farm and herd animals are located.								

TABLE 12-2.
2021 HAZARD MITIGATION ACTION PLAN MATRIX AND STATUS OF 2016 MITIGATION INITIATIVES

Applies to New or Existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	In Previous Plan? Yes/No 2021 Status: Completed (C), Carried Forward (CF), Removed (R), No longer relevant (NLR)	FEMA Mission Area or CRS Type (Response, Recovery, Protection, Planning, Mitigation)
New	All*	4, 8	Health, Police, Fire, Emergency Management, Facilities, Ranch, Natural Resources, Environmental	High	General Fund, Grants	Long-Term	Y CF, but Modified and expanded to include individuals with access and functional needs.	Response, Recovery, Planning, Natural Resources
2021 Status No. 26: Since completion of the last plan, the tribe has been impacted by several significant events, which have required the opening of shelters, or increased shelter capacity. While the Tribe has constructed a new Conference Center at the Casino Resort which can be utilized for sheltering, that location is approximately 20 minutes away from the residential portion of the Reservation. As such, the Tribe feels there is a need to develop a shelter location within the residential area, including a shelter location for household pets, as well as for individuals with service and support animals which can accommodate both. The Tribe also feels that a critter pad outside of areas which experience high water tables as a result of increased precipitation, or in areas which cannot be evacuated are needed to preserve farm animals and herds.								
C- 27 Work with Allen Parish for future planning concerning water during potential hazard situations to ensure not only availability of water during an event to the Reservation, but also to ensure Tribal growth is taken into consideration for planning purposes.								
New	Drought, Wildfire	1, 3, 8, 9	Facilities, Emergency Management, Natural Resources, Environmental	High	General Fund	Long-Term	Y, CF with removal of "drought" and inclusion of "all hazards"	Response, Recover, Mitigation/ Planning, Natural Resources
2021 Status No. 27: This project remains viable, particularly in light of the 2021 severe weather event which impacted water availability on the Reservation and at tribal facilities. The project remains current for the 2021 edition, with slight modification to include "all hazards" rather than just drought.								
C-28 Work with surrounding parishes to establish a foundation for expanded service offerings for debris management assistance during disaster incidents for incidents beyond the Tribe's capabilities. This may require developing MOUs for services.								

TABLE 12-2.
2021 HAZARD MITIGATION ACTION PLAN MATRIX AND STATUS OF 2016 MITIGATION INITIATIVES

Applies to New or Existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	In Previous Plan? Yes/No 2021 Status: Completed (C), Carried Forward (CF), Removed (R), No longer relevant (NLR)	FEMA Mission Area or CRS Type (Response, Recovery, Protection, Planning, Mitigation)
New	F, SW, TS/H, T, WF	1, 2, 8	Tribal Council, Emergency Management, Police, Fire, Health	Low	General Fund, Enterprise System	Short-Term	Y, CF	Response, Recovery, Protection, Planning, Mitigation
2021 Status No. 28: This strategy remains valid. With the impact from the various hurricanes, the Tribe is in the process of developing After Action Reports which will help lead this initiative. Debris tonnage amounts will also help identify potential impact from the various disasters, and loss data. Once determined, that information will be relevant in future plan updates, and will assist with future recovery efforts.								
C- 29 Install safe rooms/storm shelters in residential and commercial buildings, including the golf course for tornados, hurricanes, or strong winds.								
New and Existing	SW, TS/H, T	1, 2, 4, 6, 7, 8	Tribal Council, Emergency Management, Fire, Facilities, Maintenance	High	Various Grant Funds	Long-Term	Y, C, CF	Protection, Response
2021 Status No. 29: The Tribe has developed a new conference center since completion of the last plan which also serves as a saferoom; however, that area is approximately 20 minutes away from the main Reservation. As such, the Tribe will continue to seek opportunities to construct additional saferooms to help ensure safety of tribal members and employees on the Reservation.								
C-30 Install radio and phone activated sirens and emergency warning systems.								
New and Existing	All*	1, 2, 4, 8	Tribal Council, Emergency Management, Fire, Police, IT, Risk Management, Health	Medium	Grant funds if available; general fund	Short-Term	Y, CF	Protection, Response
2021 Status No. 30: This project remains valid and is carried forward.								
C-31 Provide public awareness and/or emergency management training and educational outreach to citizens and communities. Include Amateur Radio Emergency Service Members to help establish a list of potential residents to assist during disaster incidents.								

TABLE 12-2.
2021 HAZARD MITIGATION ACTION PLAN MATRIX AND STATUS OF 2016 MITIGATION INITIATIVES

Applies to New or Existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	In Previous Plan? Yes/No 2021 Status: Completed (C), Carried Forward (CF), Removed (R), No longer relevant (NLR)	FEMA Mission Area or CRS Type (Response, Recovery, Protection, Planning, Mitigation)
New and Existing	All*	1, 2, 4, 7, 8	Tribal Council, Emergency Management, Fire, Police, Health, Risk Management	Low	Tribal funds, DHS training funds as available	Long-Term	Y, CF	Response, Recovery, Protection, Natural Resources, Mitigation
2021 Status No. 31: This project remains valid and is carried forward.								
C-32 Clear vegetation for fire prevention/reduction purposes, and to reduce impact to power lines during strong winds and during fires.								
New and Existing	Fire, SW, H, T	1, 2, 6, 7, 9,	Fire, Emergency Management, Natural Resources, Golf Course	Medium	Fire Grants, BRIC, HMGP, Tribal funds as available	On-going	Y, CF	Response, Recovery, Mitigation, Natural Resources,
2021 Status No. 32: This project remains valid and is carried forward. During survey responses obtained during public outreach efforts, tribal members did identify this as a mitigation effort which they themselves conduct to reduce fire danger. The Tribe will continue to promote this as a mitigation effort for fire reduction purposes, while also looking for opportunities to work with service providers to clear lines to help reduce power outages.								
C-33 – Develop/update evacuation plans to incorporate data developed during risk assessment process of HMP development. Certain areas of the Reservation do have existing plans in place, which need updating. Other areas of the Reservation have no plans in place. Data from the new risk assessment will support both evacuation planning through route development, as well as helping								
	All*	1, 2, 4, 7, 8, 9	Fire, Emergency Management, Casino, Health, Police	Low	BRIC, HMGP, HLS, HUD/BIA	Short-Term	Y, CF	Response, Protection
2021 Status No. 33: This effort has the ability to directly influence public health and safety in the tribal planning area. As such, this project remains valid, and is carried forward. With the hurricane impact and the (potential mitigation efforts in the) frequently flooded areas, the Tribe will review this initiative once impact data can be reviewed, and after the mitigation projects to the roadways is completed.								

TABLE 12-2.
2021 HAZARD MITIGATION ACTION PLAN MATRIX AND STATUS OF 2016 MITIGATION INITIATIVES

Applies to New or Existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	In Previous Plan? Yes/No 2021 Status: Completed (C), Carried Forward (CF), Removed (R), No longer relevant (NLR)	FEMA Mission Area or CRS Type (Response, Recovery, Protection, Planning, Mitigation)
C-34 Construct two pedestrian bridges allowing for foot evacuation of guests at RV and Campgrounds, Chalets and parking lots to shelter locations or safe rooms.								
New and Existing	All*	1, 2, 5, 7, 8, 9	Casino, Emergency Management, Fire, Police, Health	High	BRIC, HMGP, HLS, HUD/BIA	Short-Term	Y, C, CF	Response, Protection, Mitigation
2021 Status No. 34: The Tribe did complete some bridges to allow for foot evacuation of tribal guests to more secure locations during a weather event. The Tribe intends to maintain this strategy as additional sites may be deemed necessary over the life cycle of this plan in conjunction with the previous mitigation strategy.								
C-35 Examine drainage systems reservation-wide to determine necessity for cleaning ditches to improve flow of excess water, as well as to provide defensible space for fire control purposes. This may require an engineer qualified to address any environmental issues associated with areas of protected wetlands on the Reservation								
New and Existing	Flood, SW, TS	1, 2, 3, 5, 6, 7, 9	Facilities, Maintenance, Natural Resources,	High	BRIC, HMGP, US DOT, LA DOT, BIA	Long-Term	Y, CF	Response, Recovery, Protection, Mitigation
2021 Status No. 35: The project remains viable. The Tribe is attempting to seek grant funding to assist in completion of this project. As such, it remains a viable project for the 2021 update, and is carried forward.								
C-36 Construct a climate-controlled, secured storage facility with generator back-up power, which serves as a food bank on the Reservation. Structure will be used to stockpile water, emergency supplies and food items for use during times of shelter operations. When Casino previously served as state shelter for ~5,000 hurricane evacuees, food caches were depleted within the area (commodity flow also significantly impacted), leaving no food for purchase by tribal members. Grant funds should also be acquired to assist in stocking the bank for acquisition of water, MRE's, basic first-aid supplies, and fuel for generators, etc.								
New	All*	1, 2, 3, 7, 8,	Emergency Management, Casino, Health, Fire, Police, Tribal Council	High	BRIC, HMGP, State funds, Dept. of Health, BIA, HLS	Long-Term	Y, C, CF	Response, Recovery, Protection, Planning/ Mitigation

TABLE 12-2.
2021 HAZARD MITIGATION ACTION PLAN MATRIX AND STATUS OF 2016 MITIGATION INITIATIVES

Applies to New or Existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	In Previous Plan? Yes/No 2021 Status: Completed (C), Carried Forward (CF), Removed (R), No longer relevant (NLR)	FEMA Mission Area or CRS Type (Response, Recovery, Protection, Planning, Mitigation)
2021 Status No. 36: The Tribe did construct additional space for food-storage during remodel of the Casino Resort and Convention Center since completion of the 2016 plan. Additional areas are still necessary to ensure adequate storage capacity, particularly in light of the fact that the Tribe maintains shelters for tribal residents, employees, guests, and first responders during incidents. The location of the existing food-storage facility is also ~20 minutes away from the Reservation. If isolated, limited food would be available on the Reservation. As such, this project is determined to still be viable for the 2021 update and is carried forward.								
C-37 Seek grant funding for acquisition of properties which are contiguous to tribal lands or fall within the boundary of the identified Reservation for purposes of evacuation and/or shelter planning, as current landownership prohibits or restricts direct access in many areas.								
New	All*	All	Tribal Council, Emergency Management, Police, Fire	High	BRIC, HMGP, BIA, HLS	Long-Term	Y, CF	Response, Recovery, Protection, Mitigation, Natural Resources
2021 Status No. 37: This remains a viable project for the Tribe; however, only limited progress was made since the last plan was completed. This project is particularly relevant due to the fact that several roads in the area become impassable during precipitation events, which cause residents to be isolated without the ability to evacuate. This has also previously prohibited emergency response personnel (fire, EMT, police), from entering the area.								
C-38 Seek out grant funding to pursue development of a CWPP. Project scope and funding should also include the opportunity to complete a vegetation study on the Reservation, which data can then be utilized to support wildfire analysis with respect to forest health, the types of vegetation, and its associated impacts to wildfire danger.								
New	Wildfire	All	Tribal Council, Emergency Management, Police, Fire	High	BRIC, HMGP, BIA, HLS, EPA, DNR, SAFER Grants	Long-Term	Y, CF with slight modification.	Response, Recovery, Protection, Mitigation, Natural Resources
2021 Status No. 38: This remains a valid project for the Tribe and will be carried forward to the 2021 HMP Update.								

TABLE 12-2.
2021 HAZARD MITIGATION ACTION PLAN MATRIX AND STATUS OF 2016 MITIGATION INITIATIVES

Applies to New or Existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	In Previous Plan? Yes/No 2021 Status: Completed (C), Carried Forward (CF), Removed (R), No longer relevant (NLR)	FEMA Mission Area or CRS Type (Response, Recovery, Protection, Planning, Mitigation)
C-39 Seek grant funding for technical assistance and project funding to identify and construct an alternative power supply system for the Tribe, including both on the Reservation and also tribal owned structures off the Reservation. This is particularly relevant given the Tribe's current shelter planning, which includes several tribal structures which do not have generators.								
New and Existing	All*	All	Tribal Council, Emergency Management, Police, Fire, Risk Management	High	BRIC, HMGP, BIA, HLS, EPA	Long-Term	N	Response, Recovery, Protection, Mitigation, Natural Resources
C-40 Seek grant funding technical assistance or project funding for a flood-mitigation project around the Wastewater Treatment Plant, which is frequently flooded due to flood or hurricane events. Such project may include a floodwall to block floodwaters from impacting the plant.								
New and Existing	Flood, Severe Storm, Tropical Cyclone/ Hurricane	All	Tribal Council, Casino Resort, Emergency Management	High	BRIC, HMGP, BIA, HLS, LWI	Long-Term	N	Response, Recovery, Protection, Mitigation, Natural Resources
C-41 Seek grant funding for technical assistance and project funding to identify and construct an alternative water supply system for the Tribe to ensure water to the Reservation. This is particularly relevant given the Tribe's current shelter planning with respect to isolation occurring on the Reservation due to flooding on area roadways, blocking access and the Tribe's reliance on outside sources for critical infrastructure. The February 2021 storm impacted the Tribe's ability to gain access to water on the Reservation, including all residences and at all tribal structures situated on the Reservation.								
New and Existing	All*	All	Tribal Council, Emergency Management, Police, Fire, Risk Management	High	BRIC, HMGP, IHS, BIA, HLS, EPA	Long-Term	N	Response, Recovery, Protection, Mitigation, Natural Resources

TABLE 12-2.
2021 HAZARD MITIGATION ACTION PLAN MATRIX AND STATUS OF 2016 MITIGATION INITIATIVES

Applies to New or Existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	In Previous Plan? Yes/No 2021 Status: Completed (C), Carried Forward (CF), Removed (R), No longer relevant (NLR)	FEMA Mission Area or CRS Type (Response, Recovery, Protection, Planning, Mitigation)
C-42 Seek grant funding to develop a climate-controlled room suitable for storage of culturally significant artifacts, digital media, and related items.								
New and Existing	All*	All	Tribal Council, Heritage	High	BRIC, HMGP, NPS (Cultural), BIA, EPA	Long-Term	N	Response, Recovery, Protection, Mitigation, Natural Resources
*All includes only those hazards identified within this plan: Drought, Flood, Severe Weather (e.g., thunderstorm, lightning, winds, hail, extreme temperatures, winter weather), Tornado, Tropical Storms and Hurricanes, Wildfire. Climate change is addressed within the primary hazard of concern, and not separately.								

12.6 Benefit/Cost Review

44 CFR requires the prioritization of the initiatives or action items according to a benefit/cost analysis of the proposed projects and their associated costs (Section 201.7.c.3iii). The benefit/cost analysis conducted during this planning process is not of the detailed variety required by FEMA for project grant eligibility under the Hazard Mitigation Grant Program (HMGP) and Building Resilient Infrastructure and Communities (BRIC) grant program. Rather, parameters were established for assigning subjective ratings (high, medium, and low) to the costs and benefits of these projects. Cost ratings were defined as follows:

- **High** —Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).
- **Medium**—The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.

- **Low**—The project could be funded under the existing budget. The project is part of or can be part of an ongoing existing program.

Benefit ratings were defined as follows:

- **High—**Project will provide an immediate reduction of risk exposure for life and property.
- **Medium**—Project will have a long-term impact on the reduction of risk exposure for life and property, or project will provide an immediate reduction in the risk exposure for property.
- **Low**—Long-term benefits of the project are difficult to quantify in the short term.

Using this approach, projects with positive benefit versus cost ratios (such as high-over-high, high-over-medium, medium-over-low, etc.) are considered cost-beneficial and are prioritized accordingly. Prioritization of the projects in such a manner serves as a guide for choosing and funding projects.

12.7 Prioritization of Initiatives

The method utilized for prioritization of initiatives for the 2021 update remains the same as the 2016 plan. For this update, the planning team again utilized a qualitative benefit-cost review as described above for each identified initiative, assigning a level (high/medium/low) to ensure consistency no matter what type of initiative was identified. Table 12-3 lists the priority of each initiative. The priorities are defined as follows:

- **High Priority**—A project that meets multiple objectives (i.e., multiple hazards), has benefits that exceed cost, has funding secured or is an ongoing project and meets eligibility requirements for the HMGP or BRIC grant program. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority**—A project that meets goals and objectives, that has benefits that exceed costs, and for which funding has not been secured but that is grant eligible under HMGP, BRIC or other grant programs. Project can be completed in the short-term once funding is secured. Medium priority projects will become high priority projects once funding is secured.
- **Low Priority—**A project that will mitigate the risk of a hazard, that has benefits that do not exceed the costs or are difficult to quantify, for which funding has not been secured, that is not eligible for HMGP or BRIC grant funding, and for which the timeline for completion is long term (1 to 10 years). Low priority projects may be eligible for other sources of grant funding from other programs.

For many of the strategies identified in this action plan, the Tribe may seek financial assistance under the HMGP or BRIC programs, both of which require detailed benefit/cost analyses. These analyses will be performed on projects at the time of application using the FEMA benefit-cost model. For projects not seeking financial assistance from grant programs that require detailed analysis, the Tribe reserves the right to define "benefits" according to parameters that meet the goals and objectives of this plan.

Funding to complete any initiative will likely be acquired from a variety of sources, with the lack of funding alone preventing an initiative from being implemented. As such, the less formal approach used during this process is more appropriate because some projects may not be implemented for up to 10 years, and associated costs and benefits could change dramatically in that time.

The method of prioritization utilized also allows for the inclusion of new projects throughout the life cycle of this plan without having to numerically re-value each of the projects based on an assigned value of 1, 2, 3, etc. Further, it supports the plan maintenance strategy for review, addition, and reprioritization of initiatives on an annual basis, reducing the level of effort involved in a numeric system of ranking, and enhancing the likelihood that the annual review will occur as a reduced level of effort will be required.

TABLE 12-3.
PRIORITIZATION OF MITIGATION INITIATIVES

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant eligible?	Can Project Be Funded under Existing Programs/ Budgets?	Priority (High, Med., Low)
1	7	H	H	Y	Y	Y	H
2	7	M	H	Y	Y	N	M
3	7	H	L	Y	Y	Y	H
4	6	H	L	Y	Y	Y	H
5	4	M	L	Y	N	Y	M
6	2	M	L	Y	N	Y	M
7	4	H	L	Y	Y	Y	H
8	9	H	H	Y	Y	Y	H
9	3	H	H	Y	Y	N	H
10	7	H	M	Y	Y	Y	H
11	9	H	L	Y	Y	Y	H
12	4	H	M	Y	Y	N	M
13	7	M	M	Y	N	Y	M
14	9	H	H	Y	Y	N	H
15	9	H	L	Y	N	Y	H
16	9	H	H	Y	Y	N	M
17	1	M	M	Y	N	Y	M
18	4	M	L	Y	N	Y	H
19	9	M	L	Y	N	Y	H
20	5	L	L	Y	N	Y	L
21	3	H	L	Y	N	Y	H
22	4	M	M	Y	Y	N	M
23	3	M	M	Y	Y	Y	M
24	4	H	M	Y	Y	Y	H
25	2	H	L	Y	Y	Y	H

**TABLE 12-3.
PRIORITIZATION OF MITIGATION INITIATIVES**

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant eligible?	Can Project Be Funded under Existing Programs/ Budgets?	Priority (High, Med., Low)
26	2	H	H	Y	Y	Y	M
27	4	H	H	Y	N	Y	H
28	3	H	L	Y	Y	Y	H
29	6	H	H	Y	Y	N	H
30	4	H	M	Y	Y	N	H
31	5	H	L	Y	Y	Y	H
32	5	H	M	Y	Y	N	H
33	6	H	L	Y	Y	Y	H
34	6	H	H	Y	Y	N	M
35	7	H	M	Y	Y	N	M
36	5	H	M	Y	Y	N	M
37	9	H	M	Y	Y	Y	H
38	9	H	M	Y	Y	N	H
39	9	H	H	Y	Y	N	H
40	9	H	H	Y	Y	N	H
41	9	H	H	Y	Y	N	H
42	9	H	M	Y	Y	N	H

**TABLE 12-4.
2016 HAZARD MITIGATION STRATEGIES NOT CARRIED FORWARD/REMOVED**

Applies to New or Existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	In Previous Plan? Yes/No 2021 Status: Completed (C), Carried Forward (CF), Removed (R), No longer relevant (NLR)	FEMA Mission Area or CRS Type (Response, Recovery, Protection, Planning, Mitigation)
C-2016 #1 Determine necessity to retrofit Tribal-owned facilities to better withstand damage from a major hurricane, wind, or tornado event. Once need is determined, seek grant funding to retrofit structures.								

TABLE 12-4.
2016 HAZARD MITIGATION STRATEGIES NOT CARRIED FORWARD/REMOVED

Applies to New or Existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	In Previous Plan? Yes/No 2021 Status: Completed (C), Carried Forward (CF), Removed (R), No longer relevant (NLR)	FEMA Mission Area or CRS Type (Response, Recovery, Protection, Planning, Mitigation)
Existing	TS/H, T, SW	1, 2, 3, 4, 5, 6, 8	Facilities, Maintenance, Risk, Planning, Casino	High	General Fund, HMGP, HUD	Short-Term	R, added to #15	Protection, Planning / Mitigation
2021 Status No. 1: This strategy was removed as it was duplicative in nature.								
C-2016 #26 Work with surrounding parishes to establish a foundation for expanded service offerings for pet evacuation during disaster incidents for requirements beyond the Tribe's capabilities. This may require developing MOUs for services.								
New	All*	8	Tribal Council, Emergency Management, Police, Fire, Health	Medium	General Fund, Enterprise System	Short-Term	R, Combined with #29	Response, Recovery, Protection, Planning, Mitigation, Natural Resources
2021 Status No. 26: This strategy was removed as it was duplicative in nature.								
C-2016 #28 Replace outdated communications infrastructure to a modern unified communications system at all Tribal facilities.								
New	All*	2, 8	IT, Police, Fire	High	General Fund, available grants depending on Dept.	Short-Term	R, combined with #21	Planning, Response, Recovery
2021 Status No. 28: This strategy was removed as it was duplicative in nature.								
C-2016 #36 – Obtain small transportation vehicle, such as a gator or other small vehicle which can be used to assist during evacuation or sheltering of individuals with access and functional needs. Vehicle can be used to transport individuals to shelter locations from areas such as the RV park, chalets, campground, etc., during times when traffic congestion makes driving difficult. Areas of the Reservation have large drainage ditches which prohibit pedestrian passage except over footbridges. Gator-sized vehicle will allow access across pedestrian bridges during situations when vehicles cannot move due to congestion.								
New and Existing	All*	1, 2, 8, 9	Fire, Emergency Management Casino, Health	Low	HLS, Fire	Short-Term	R (Combined with #2)	Response, Protection
2021 Status No. 36: This strategy was removed as it was duplicative in nature.								

12.8 Additional Mitigation Initiatives

In addition to those mitigation initiatives discussed above, the Tribe has also completed additional mitigation efforts to ensure resilience and sustainability of the Tribe as discussed below.

Louisiana Watershed Initiative:

As a result of the Great Floods of 2016, in 2018, the State of Louisiana launched the Louisiana Watershed Initiative (LWI), which introduced a new watershed-based approach to reducing flood risk in Louisiana. The Coushatta Tribe applied for and received grant funding from this statewide initiative for two drainage projects – the Coushatta Casino Downstream Drainage Project and the Coushatta Casino Upstream Drainage Project. As of this 2021 update, the Tribe is in the initial phases of the drainage projects, but once completed, information from those two projects may help further develop the flood profile of this plan.

In addition, the Coushatta Tribe also received a third grant from the LWI to construct the Coushatta Casino Resort Wastewater Treatment Plant Floodwall to help reduce the impacts of flooding on the Casino's treatment plant. This is of significance to the Tribe as the Casino Resort serves not only as emergency shelters for the Tribal Members during disaster incidents, but historically the Resort has also served as a shelter for first responders to Louisiana, as well as a staging area for the State during disaster incidents. More information on the initiative is available at About - Louisiana Watershed Initiative (la.gov)

The Tribe is also looking at alternative power generation systems, including the potential for a solar system, as well as a Cogeneration power system through grants and funding from the BIA. The Tribe has engaged in communications with Allen Parish concerning these possibilities.

The Tribe is also working with the Town of Kinder and Allen Parish concerning waterways that flow from the casino south – bi-directional waterways, to determine ways to reduce flooding. Other topics of discussion have been the beaver dams in the area, which causes water to backup and flood.

12.9 Funding Opportunities

Although a number of the mitigation projects listed may not be eligible for FEMA funding (BRIC and HMGP), the Coushatta Tribe may secure alternate funding sources to implement these projects in the future through other federal programs, including potential funding through Homeland Security or the Bureau of Indian Affairs. In order to be eligible for some of those grant funds, completion of a hazard mitigation plan may be required. Table 12-5 identifies some of those grant requirements. Additional funding sources identified below are also available which support various types of mitigation efforts.

TABLE 12-5.
GRANT OPPORTUNITIES

Program	Enabling Legislation	Funding Authorization	Hazard Mitigation Plan Requirement: Grantee	Hazard Mitigation Plan Requirement: Sub-Grantee
Public Assistance, Categories A-B (e.g., debris removal, emergency protective measures)	Stafford Act	Presidential Disaster Declaration	☐	☐
Public Assistance, Categories C-G (e.g., repair of damaged infrastructure, publicly owned buildings)	Stafford Act	Presidential Disaster Declaration	☑	☐
Individual Assistance (IA)	Stafford Act	Presidential Disaster Declaration	☐	☐
Fire Management Assistance Grants	Stafford Act	Fire Management Assistance Declaration	☑	☐
Hazard Mitigation Grant Program (HMGP) Planning Grant	Stafford Act	Presidential Disaster Declaration	☑	☐
HMGP Project Grant	Stafford Act	Presidential Disaster Declaration	☑	☑
Building Resilient Infrastructure and Communities (BRIC)	Stafford Act	Annual Appropriation	☑	☐
BRIC Project Grant	Stafford Act	Annual Appropriation	☑	☑
Flood Mitigation Assistance (FMA)	National Flood Insurance Act	Annual Appropriation	☑	☑
Severe Repetitive Loss (SRL)	National Flood Insurance Act	Annual Appropriation	☑	☑
Repetitive Flood Claims (RFC)	National Flood Insurance Act	Annual Appropriation	☑	☐
Homeland Security	Dept. of Homeland Security	Annual Appropriation	☑	☐

☑ = Hazard Mitigation Plan Required
☐ = No Hazard Mitigation Plan Required

Alternate funding sources which may further support mitigation efforts of various types include, but are not limited to, the following:

- **U.S. Department of Housing and Urban Development, Community Development Block Grants (CDBG)**—The CDBG program is a flexible program that provides communities with resources to address a wide range of community development needs. CDBG money can be used to match FEMA grant money. More information: https://www.hud.gov/

- **U.S. Fish & Wildlife Service Rural Fire Assistance Grants**—Each year, the U.S. Fish & Wildlife Service provides Rural Fire Assistance grants to neighboring community fire departments to enhance local wildfire protection, purchase equipment, and train volunteer firefighters. U.S. Fish & Wildlife Service fire staff also assist directly with community projects. These efforts reduce the risk to human life and better permit U.S. Fish & Wildlife Service firefighters to interact and work with community fire organizations when fighting wildfires. The Department of the Interior receives a budget each year for the Rural Fire Assistance grant program. The maximum award per grant is $20,000. The assistance program targets rural and volunteer fire departments that routinely help fight fire on or near Department of Interior lands.
- **U.S. Department of Homeland Security**—Enhances the ability of states, local and tribal jurisdictions, and other regional authorities in the preparation, prevention, and response to terrorist attacks and other disasters, by distributing grant funds. Localities can use grants for planning, equipment, training, and exercise needs. These grants include, but are not limited to areas of critical infrastructure protection, equipment and training for first responders, and homeland security. More information: http://www.dhs.gov/
- **FEMA, Hazard Mitigation Grant Program (HMGP)**—The HMGP provides grants to states, Indian tribes, local governments, and private non-profit organizations 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.
- **FEMA, Building Resilient Infrastructure and Communities (BRIC) Program** — The BRIC program guiding principles are supporting communities through capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency. The BRIC program (previously the Pre-Disaster Mitigation Program) provides funds to states, territories, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. BRIC grants are to be awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds.
- **U.S. Bureau of Land Management (BLM), Community Assistance Program**—BLM provides funds to communities through assistance agreements to complete mitigation projects, education, and planning within the wildland urban interface.
- **U.S. Department of Agriculture Community Facilities Loans and Grants**—Provides grants (and loans) to cities, counties, states, and other public entities to improve community facilities for essential services to rural residents. Projects can include fire and rescue services. Funds have been provided to purchase fire-fighting equipment for rural areas. No match is required.

- **General Services Administration Sale of Federal Surplus Personal Property**—This program sells property no longer needed by the federal government. The program provides individuals, businesses, and organizations the opportunity to enter competitive bids for purchase of a wide variety of personal property and equipment. Normally, there are no restrictions on the property purchased.
- **FEMA Readiness, Response, and Recovery Directorate, Fire Management Assistance Grant Program**—Program provides grants to states, tribal governments and local governments for the mitigation, management and control of any fire burning on publicly (non-federal) or privately owned forest or grassland that threatens such destruction as would constitute a major disaster. The grants are made in the form of cost sharing with the federal share being 75 percent of total eligible costs. Grant approvals are made within 1 to 72 hours from time of request.
- **Hazardous Materials Emergency Preparedness Grants**—Grant funds are passed through to local emergency management offices and Hazmat teams having functional and active local emergency planning committees.

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CHAPTER 13.
CAPABILITY ASSESSMENT

13.1 MITIGATION-RELATED REGULATORY AUTHORITY

Hazard mitigation builds on a community's existing capabilities in place, including financial, regulatory, programmatic, and planning capabilities. Some of the regulatory capabilities currently available which are applicable to the Coushatta Tribe are summarized in Table 13-1 and below. These tables also identify whether the surrounding local jurisdiction and the state have regulatory authority in place to address the issue. As a sovereign nation, the Tribe is not mandated to adhere to those local or state regulations. As previously indicated, the Tribe does adhere to all Federally mandated building code regulations in place. Table 13-1 also identifies whether the surrounding community and the state have similar such regulations. There is also additional regulatory data incorporated throughout the document as appropriate, including within the hazard profiles (Chapters 5-10).

The Coushatta Tribe's administrative, technical, and financial capabilities to implement mitigation projects include planners, engineers, waste/stormwater managers, GIS personnel, public safety personnel (police and fire), and emergency managers, which are either on staff, or for which the Tribe maintains contracted services, as identified in Table 13-2. Fiscal capabilities are identified in Table 13-3.

TABLE 13-1.
MITIGATION-RELATED REGULATORY AUTHORITY

Codes, Ordinances & Requirements	Tribal Authority	Jurisdictional Authority in Place for Parish	State Mandated	Comments
Building Code	Yes	Yes	Yes	Tribe utilizes Allen Parish and State Codes.
Zonings	Yes	Yes	Yes	In accordance with Allen Parish and State Codes for off-reservation construction. Some future areas of development are identified for the Tribe but are not mapped.
Subdivisions	Yes	No	No	While subdivision regulations are under development within the land use codes, the tribe does cluster its residential structures to ensure the best land use

TABLE 13-1.
MITIGATION-RELATED REGULATORY AUTHORITY

Codes, Ordinances & Requirements	Tribal Authority	Jurisdictional Authority in Place for Parish	State Mandated	Comments
				development as it relates to infrastructure needed.
Sewer Management (Casino)	Yes	No	No	The Casino manages its own sewer treatment plant, which maintains strict regulatory authority with EPA and DOH standards. The department does maintain appropriate response plans for the facility.
Stormwater Management	Yes	Yes	Yes	Stormwater management authority relates to parish roadways and state authority on state roadways; the Tribe maintains its own stormwater management program on Tribal properties.
Public Health and Safety	Yes	Yes	Yes	The Tribe has a very robust health and wellness program funded, in part, through Indian Health Services, other health grants, and supplemented through Tribal general funds.
Environmental Protection	Yes	Yes	Yes	Various environmental programs at the Tribal, parish, and state levels in which all are cooperating partners. The Tribe conducts water sampling in accordance with EPA guidelines and self-monitors.
Federal Highway Administration Regulations	Yes	Yes	No	USDOT regulations administered for all federally funded roadways, including elevation requirements to ensure roadways are above BFE for area.
Planning Documents				
General or Comprehensive Land Use Plan	No			The Tribe anticipates development of its own land use authority in the future. As current development occurs, until such time as a comprehensive plan can be

TABLE 13-1.
MITIGATION-RELATED REGULATORY AUTHORITY

Codes, Ordinances & Requirements	Tribal Authority	Jurisdictional Authority in Place for Parish	State Mandated	Comments
				completed, the Tribe intends to use information from this plan to ensure appropriate consideration is taken with respect to development in areas of concern.
Floodplain or Basin Plan	No			
Capital Improvement Plan	No			
Forest Restoration Plan	Yes	Yes	Yes	Plan implemented (plan enforced through Tribal Criminal Statute)
Economic Development Plan (Casino)	Yes			
Response/Recovery Planning				
Emergency Operations Plan	Yes			The Tribe is currently a part of the Parish Emergency Operations Plan, but has also completed specific annex documents focused on Tribal issues. It is anticipated that the Tribe will develop its own EOP during the life cycle of this HMP.
Threat and Hazard Identification and Risk Assessment	Yes			2017 Plan completed utilizing HMP for natural hazards of concern.
Terrorism Plan	No			
Post Disaster Recovery	No	No	Yes	LA Statewide Long-Term Community Recovery Program
Continuity of Operations Plan	No			Components of a COOP have been completed but not assimilated into one document, nor encompassing of all elements of a COOP/COG
Public Health Plans	Yes			The Tribe has several health-related and incident-specific plans in place.

TABLE 13-1.
MITIGATION-RELATED REGULATORY AUTHORITY

Codes, Ordinances & Requirements	Tribal Authority	Jurisdictional Authority in Place for Parish	State Mandated	Comments
Elders Response Plan	Yes	No	No	The Tribe has developed an Elders Response Plan which identifies individuals with limited mobility, or access and functional needs which require additional assistance when evacuating or taking shelter.

TABLE 13-2
ADMINISTRATIVE AND TECHNICAL CAPABILITY

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land use development, land management practices, or understanding of natural hazards.	Yes	Natural Resources has planners on staff; planning and engineering services are also acquired through contracted services.
Engineers or professionals trained in building or infrastructure construction practices	Yes	Facilities and Natural Resources Director and staff, and through contracted services as needed.
Staff with training in benefit/cost analysis	Yes	Through contracted services.
Surveyors	Yes	Through contracted services.
Personnel skilled or trained in GIS applications	Yes	Environmental
Scientist familiar with natural hazards in local area	Yes	Natural Resources and environmental have personnel with this knowledge; others available through contracted services
Emergency Manager	Yes	Fire Chief
Grant writers	Yes	Through contracted services

TABLE 13-3. FISCAL CAPABILITY	
Financial Resources	Accessible or Eligible to Use?
1. Community Development Block Grants	Y
2. Capital Improvements Project Funding	Y
3. Authority to Levy Taxes for Specific Purposes	Y
4. User Fees for Water, Sewer, Gas, or Electric Service.	N
5. Impact Fees for Buyers or Developers of New Development/Homes (Not at present, but potentially may occur in future when land use authority fully developed)	N
6. Incur Debt through General Obligation Bonds	N
7. Incur Debt through Special Tax Bonds	N
8. Incur Debt through Private Activity Bonds	N
9. Could Withhold Public Expenditures in Hazard-Prone Areas	N
10. State-Sponsored Grant Program Eligibility	Y
11. Bureau of Indian Affairs Sponsored Grant	Y
12. Indian Health Services Grant	Y
13. U.S. Dept. of Agriculture, Rural Development Agency	Y
14. U.S. Environmental Protection Agency	Y
15. U.S. Fire Administration	Y
16. Tribal Homeland Security Grants	Y
17. U.S. Army Corps of Engineers	Y
18. Stafford Act Grants	Y
19. U.S. Department of Justice Grants	Y
20. U.S. Department of Transportation Grants (TIGER) and Others	Y
21. U.S. Housing and Urban Development (HUD) Grants	Y
22. Others	

The Tribe utilizes general funds to support its mitigation and emergency management program as a whole through staffing and resource allocations. Structures, when built, utilize Tribal funds, incorporating mitigation components to ensure resilience of reservation structures while also protecting its membership, and visitors to the Reservation. Projects which the Tribe and Casino may elect to pursue over the lifecycle of this plan may be funded through non-grant funds, specifically through the Tribe's general fund or casino funds.

13.2 Applicable Federal Regulatory Authority

Disaster Mitigation Act

The DMA is the current federal legislation addressing hazard mitigation planning. It emphasizes planning for disasters before they occur. It specifically addresses planning at the local level, requiring plans to be in place before Hazard Mitigation Grant Program funds are available to communities. This plan is designed to meet the requirements of DMA, improving the planning partners' eligibility for future hazard mitigation funds.

Endangered Species Act

The 1973 Endangered Species Act (ESA) was enacted to conserve species facing depletion or extinction and the ecosystems that support them. The act sets forth a process for determining which species are threatened and endangered and requires the conservation of the critical habitat in which those species live. The ESA provides broad protection for species of fish, wildlife, and plants that are listed as threatened or endangered. Provisions are made for listing species, as well as for recovery plans and the designation of critical habitat. The ESA outlines procedures for federal agencies to follow when taking actions that may jeopardize listed species. It is the enabling legislation for the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Criminal and civil penalties are provided for violations of the ESA and the Convention. Federal agencies must seek to conserve endangered and threatened species. The ESA defines three fundamental terms:

- **Endangered** means that a species of fish, animal or plant is "in danger of extinction throughout all or a significant portion of its range." (For salmon and other vertebrate species, this may include subspecies and distinct population segments.)
- **Threatened** means that a species "is likely to become endangered within the foreseeable future." Regulations may be less restrictive than for endangered species.
- **Critical habitat** means "specific geographical areas that are...essential for the conservation and management of a listed species, whether occupied by the species or not."

The following are critical sections of the ESA:

- **Section 4: Listing of a Species**—The National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries) is responsible for listing marine species; the U.S. Fish and Wildlife Service is responsible for listing terrestrial and freshwater aquatic species. The agencies may initiate reviews for listings, or citizens may petition for them. A listing must be made "solely on the basis of the best scientific and commercial data available." After a listing has been proposed, agencies receive comment and conduct further scientific reviews, after which they must decide if the listing is warranted. Economic impacts cannot be considered in this decision, but it may include an evaluation of the adequacy of local and state protections.
- **Section 7: Consultation**—Federal agencies must ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed or proposed species or adversely modify its critical habitat. This includes private and public actions that require a federal permit. Once a final listing is made, non-federal actions are subject to the same review, termed a "consultation." If the listing agency finds that an action will "take" a species, it must propose mitigations or "reasonable and prudent" alternatives to the action; if the proponent rejects these, the action cannot proceed.

- **Section 9: Prohibition of Take—**It is unlawful to "take" an endangered species, including killing or injuring it or modifying its habitat in a way that interferes with essential behavioral patterns, including breeding, feeding, or sheltering.
- **Section 10: Permitted Take**—Through voluntary agreements with the federal government that provide protections to an endangered species, a non-federal applicant may commit a take that would otherwise be prohibited as long as it is incidental to an otherwise lawful activity (such as developing land or building a road). These agreements often take the form of a "Habitat Conservation Plan."
- **Section 11: Citizen Lawsuits**—Civil actions initiated by any citizen can require the listing agency to enforce the ESA's prohibition of taking or to meet the requirements of the consultation process.

Coastal Zone Management Act

All states with federally approved coastal programs delineate a coastal zone consistent with the general standards act set forth in the Coastal Zone Management Act of 1972 (CZMA). According to the CZMA, the coastal zone area should encompass all important coastal resources including transitional and intertidal areas, salt marshes, beaches, coastal waters, and adjacent shorelines where activities could have the potential to impact the coastal waters. Federal land is excluded from the state coastal zone by the CZMA. The State of Louisiana has established a Coastal Zone Management Program, administered by the Louisiana Department of Natural Resource, Office of Coastal Management, Interagency Affairs and Field Service Division. All or part of 30 parishes fall within the identified Louisiana Coastal Zone Boundary, including Jefferson Davis Parish, in which the Coushatta Tribe owns land.

The Clean Water Act

The federal Clean Water Act (CWA) employs regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's surface waters so that they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water."

Evolution of CWA programs over the last decade has included a shift from a program-by-program, source-by-source, and pollutant-by-pollutant approach to more holistic watershed-based strategies. Under the watershed approach, equal emphasis is placed on protecting healthy waters and restoring impaired ones. A full array of issues are addressed, not just those subject to CWA regulatory authority. Involvement of stakeholder groups in the development and implementation of strategies for achieving and maintaining water quality and other environmental goals is a hallmark of this approach.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) provides federally backed flood insurance in exchange for communities enacting floodplain regulations. Participation and good standing under NFIP are prerequisites to grant funding eligibility under the Robert T. Stafford Act. The County and its Cities and Towns participate in the NFIP and have adopted regulations that meet the NFIP requirements. At the time of the preparation of this 2021 edition of the Hazard Mitigation Plan, the Coushatta Tribe of Louisiana is not a member of the NFIP. However, over the life cycle of this plan, the Tribe will be reviewing the potential benefits of becoming an NFIP community. It should be noted that while the Tribe is not an NFIP community, by choice, they do customarily adhere to Allen Parish building codes in an effort to maintain consistency throughout the region. While the Tribe is not required to do so, by utilizing such codes as their own, in no way are they waiving their sovereignty, nor does their use of such codes arbitrarily adopt those codes as their own. The development of land use codes and regulations by the Tribe is something which will also be addressed as they review the benefits of becoming an NFIP community. Table 13-4 identifies specific components of the NFIP, as well as the Tribe's involvement therein.

TABLE 13-4.
NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

What department is responsible for floodplain management in your community?	Not enrolled
Who is your community's floodplain administrator? (department/position)	N/A
Do you have any certified floodplain managers on staff in your community?	N/A
What is the date of adoption of your flood damage prevention ordinance?	The Tribe utilizes Allen Parish ordinances and regulations.
When was the most recent Community Assistance Visit or Community Assistance Contact?	None conducted for Reservation
To the best of your knowledge, does your community have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your community? (If no, please state why)	No
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	No
Does your community participate in the Community Rating System (CRS)? If so, is your community seeking to improve its CRS Classification? If not, is your community interested in joining the CRS program?	No.

Presidential Disaster Declarations

Presidentially declared disasters are disaster events that cause more damage than state and local governments/resources can handle without federal assistance. There is not generally a specific dollar threshold that must be met. A Presidential Major Disaster Declaration puts into motion long-term federal recovery programs, some of which are matched by state programs, and designed to help disaster victims, businesses, and public entities. A Presidential Emergency Declaration can also be declared, but assistance is limited to specific emergency needs.

Non-FEMA Disaster Declarations

Unique to Tribes is the fact that disaster declarations can also be granted by other federal agencies other than FEMA, such as the Department of Housing and Urban Design and the Bureau of Indian Affairs. In such cases, similar to a Presidentially Declared event, funds are designated to help the Tribes recover from the impact of disaster events, and customarily carry a match requirement. Those funds are limited to specific needs.

13.3 APPLICABLE STATE REGULATORY AUTHORITY

13.3.1 Building Code

The State of Louisiana, in Act 12 of the 1st Extraordinary Legislative Session, adopted the initial 2006 International Residential Code as the State Uniform Construction Code for the purposes of wind and flood mitigation, and has adopted revised versions since then. The state also has specific code requirements for High Wind Areas, (R301.2.1.1 Design Criteria). Those criteria identify the construction standards per wind region where the basic wind speeds equal or exceed 100 miles per hour (177.1 km/h). Since the 2006 enactment, regular updates have occurred on an annual basis, enhancing sustainability and safety throughout the State.

The Coushatta Tribe has elected to adhere to all State building codes in place at the time of construction and works with a local municipality to provide permitting and conduct inspections when required under Tribal and other applicable law.

13.3.2 Louisiana State Uniform Construction Code Council

As previously indicated, the Louisiana State Construction Code Council adopted the 2012 editions of national model codes for use on all residential and commercial construction projects. The Council also adopted IRC Energy Codes and has established new plumbing code requirements. The 2012 IBC went into effect as the Louisiana model code on January 1, 2014, with updates as appropriate since original adoption as identified in Title 17 of the Louisiana Administrative Code. The Tribe currently utilizes those building codes established by the State and Allen Parish during construction of any structures on the Reservation.

In addition, depending on the funding stream, the Tribe also adheres to any federally mandated building codes.

13.3.3 Louisiana State Rating Levels of Service

In Louisiana, the Property Insurance Association of Louisiana (PIAL) is one of the agencies tasked with determining standards on which insurance rates are set. PIAL, like most other states, utilizes the Insurance Service Office, Inc. (ISO) to determine levels of protection based on a prescribed level of service. Two such levels of services assessed are the Public Protection Classification Program and the Building Code Effectiveness Grading Schedule.

Public Protection Classification Program

The Public Protection Classification (PPC) program recognizes the efforts of communities to provide fire protection services for citizens and property owners. A community's investment in fire mitigation is a proven and reliable predictor of future fire losses. Insurance companies use PPC information to help establish fair premiums for fire insurance — generally offering lower premiums in communities with better protection. By offering economic benefits for communities that invest in their firefighting services, the program provides an additional incentive for improving and maintaining public fire protection.

In order to establish appropriate fire insurance premiums for residential and commercial properties, insurance companies utilize up-to-date information about the Community's fire-protection services. Through analysis of relevant data, communities are able to evaluate their public fire-protection services, and secure lower fire insurance premiums for communities with better protection. This program provides incentives and rewards in those areas with improved firefighting services. This program has gathered extensive information on more than 46,000 fire-response jurisdictions. Once all of the data is reviewed and analyzed, communities are assigned a PPC from 1 to 10. Class 1 generally represents superior property fire protection, while Class 10 indicates that the area's fire-suppression program is not as robust.

The most significant benefit of the PPC program is its effect on losses. Statistical data on insurance losses bears out the relationship between excellent fire protection — as measured by the PPC program — and low fire losses. PPC helps communities prepare to fight fires effectively. The program also provides help for fire departments and other public officials as they plan, budget for, and justify improvements.

Coushatta Tribe Public Protection Classification Rating

At present, the Coushatta Tribe's Insurance Brokers have indicated that the Tribe's Public Protection Class is a Level 1. No other information is currently available to confirm that rating, but the Tribe will continue to seek out information to verify this rating scale.

13.3.4 Building Code Effectiveness Grading Schedule

The Building Code Effectiveness Grading Schedule (BCEGS) assesses building codes and amendments adopted in a community and evaluates that community's commitment to enforce them. The concept is simple: Municipalities with well-enforced, up-to-date codes should demonstrate better loss experience, and insurance rates can reflect that. The prospect of reducing damage and ultimately lowering insurance costs provides an incentive for communities to enforce their building codes rigorously. The BCEGS program assigns each municipality a BCEGS grade of 1 (exemplary commitment to building code enforcement) to 10. Ratings apply to the ranges of BCEGS classifications (1-3, 4-7, 8-9, 10). The Tribe has requested this information, but as of this update, the information has not yet been supplied. Review of the ISO's 2019 National Building Code Assessment Report reveals no information for the State of Louisiana.

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CHAPTER 14.
PLAN MAINTENANCE STRATEGY

In accordance with 44 CFR 201.7(c)(4), a hazard mitigation plan must present a plan maintenance process that includes the following:

- A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan over its five-year life cycle
- A process by which local governments incorporate the requirements of mitigation plans into other planning mechanisms, such as comprehensive land use plans (as appropriate)
- A discussion on how the community will continue to engage public participation in mitigation planning `efforts.

This section of the plan is focused on the plan maintenance strategy and details the formal process that will ensure that the Coushatta Tribe of Louisiana's Hazard Mitigation Plan remains an active and relevant document and that they maintain their eligibility for applicable funding sources. The maintenance process identified for the Tribe includes a schedule for monitoring and evaluating the plan and producing a plan revision every five years. This chapter also describes how public participation will be integrated throughout the plan maintenance and implementation process. It also explains how the mitigation strategies outlined in this plan will be incorporated into existing planning mechanisms and programs, such as comprehensive land-use planning processes, capital improvement planning, and building code enforcement and implementation. The plan's format allows sections to be reviewed and updated when new data become available, resulting in a plan that will remain current and relevant.

The Tribal Fire Chief will maintain lead responsibility for overseeing the plan implementation and maintenance strategy. Plan implementation and evaluation will be a shared responsibility among all planning team members and agencies identified as lead agencies in the mitigation action plan.

14.1 Monitoring, Evaluating and Updating the Plan

14.1.1 Progress Report of 2016 Plan Status

The 2016 Hazard Mitigation Plan identified a maintenance strategy which included regular reviews during the life cycle of the plan. The Tribe, through its various planning team members, did conduct reviews of the plan since its 2016 adoption, including review of the hazard profiles and the 2016 strategies. The hazard profiles were also utilized in other planning efforts completed by the Tribe since completion of the plan, including in the development of its Threat Hazard Identification and Risk Assessment (THIRA).

While the plan review did not include completion of the annual Report Card as intended, the plan was effective with respect to the planning team established, and the coordination of efforts throughout the Parish, including support by the Parish for various mitigation project grant applications currently pending through the Louisiana Watershed Initiative, as well as the Tribe itself receiving funding through the LWI for mitigation strategies identified in the 2016 plan with respect to flooding in the area of the Casino Resort (discussed in Chapter 12, Section 12.8).

The Tribe also utilized information gained during the previous plan development with respect to damage assessment. Likewise, the Tribe has been successful in gaining several disaster declarations and recovery funding. Damage assessment was an identified strategy in the last plan, which was successfully implemented for more recent events.

The progress and current status of Tribal specific mitigation projects are shown Chapter 12. As evidenced by the 2021 status of those action items, several initiatives were completed over the 5-year lifecycle of covering the period 2016-2021.

14.1.2 Plan Implementation and Maintenance

The effectiveness of the hazard mitigation plan depends on its implementation and incorporation of its action items into existing plans, policies, and programs. Together, the action items in the plan provide a framework for activities that can be implemented over the next five (5) years. The Tribe has established goals and objectives and has prioritized mitigation actions that will be implemented through existing plans, policies, and programs.

44 CFR requires that hazard mitigation plans be reviewed, revised if appropriate, and resubmitted for approval in order to remain eligible for benefits under the DMA. The Coushatta Tribe intends to continue to update the hazard mitigation plan on a 5-year cycle from the date of initial plan adoption, with this 2021 update representing the first of such occurrences. This cycle may be accelerated to less than 5 years based on the following triggers:

- A presidential disaster declaration that impacts the planning area
- A hazard event that causes loss of life
- Increased development occurring on the Reservation.

It will not be the intent of future updates to develop a completely new hazard mitigation plan for the Tribe, but the update will, at a minimum, include the following elements:

- The update process will be convened through a planning team.
- The hazard risk assessment will be reviewed and, if necessary, updated using best available information and technologies.
- The action plans will be reviewed and revised to account for any initiatives completed, dropped, or changed and to account for changes in the risk assessment or new partnership policies identified under other planning mechanisms (such as the comprehensive plan).

- The draft update will be sent to appropriate Tribal departments, agencies, and organizations for comment, as appropriate.
- The public will be given an opportunity to comment on the update prior to adoption (based on the Tribe's definition of public, which will also be reviewed and updated as appropriate).
- The Tribal Council will adopt the updated plan.

The hazard mitigation plan will be reviewed annually, and a progress report prepared, which information will support future updates. These reviews may be more or less frequent, as deemed necessary, but there will be a minimum of one review per year. The minimum task of review will be the evaluation of the progress of its action plan during the 12-month performance period. This review will include the following:

- Summary of any hazard events that occurred during the performance period and the impact these events had on the planning area.
- Review of mitigation success stories.
- Review of continuing public involvement.
- Brief discussion about why targeted strategies were not completed.
- Re-evaluation of the action plan to determine if the timeline for identified projects needs to be amended (such as changing a long-term project to a short-term one because of new funding).
- Recommendations for new projects.
- Changes in or potential for new funding options (grant opportunities).
- Impact of any other planning programs or initiatives that involve hazard mitigation.

A template to guide the planning partners in preparing a progress report has been created as part of this planning process (see Appendix C). The Tribal Fire Chief will then prepare a formal annual report on the progress of the plan. This report should be used as follows:

- Posted on the Coushatta Tribe's Hazard Mitigation website page.
- Presented to the Tribal Council during a public meeting to inform them of the progress of actions implemented during the reporting period.

Use of the progress report will be at the discretion of the Tribe. Annual progress reporting is not a requirement specified under 44 CFR. However, it may enhance the Tribe's opportunities for funding. While failure to implement this component of the plan maintenance strategy will not jeopardize the Tribe's compliance under the DMA, completion of the annual review will reduce the level of effort involved in future plan updates and is highly encouraged by FEMA.

In addition to the annual review, three years after adoption of the hazard mitigation plan, the Tribe may decide to apply for a planning grant through FEMA to start the 2026 update. Upon receipt of funding, the Tribe may elect to solicit bids under applicable contracting procedures and hire a contractor to assist with the project. The proposed schedule for completion of the plan update is one year from award of a contract, to coincide with the five-year adoption date of the 2016 hazard mitigation plan update.

The Tribal Fire Chief will be responsible for the plan update. Before the end of the five-year period, the updated plan will be submitted to FEMA for approval. When concurrence is received that the updated plan complies with FEMA requirements, it will be submitted to the Tribal Council for adoption. The Tribal Fire Chief will post the updated plan on the website and provide information to advise that the updated plan is available for review.

14.2 Implementation Through Existing Programs

The Coushatta Tribe will have the opportunity to implement hazard mitigation projects through existing programs and procedures through plan revisions or amendments. The hazard mitigation plan will be incorporated into the plans, regulations, and ordinances as they are updated in the future or when new plans are developed. This plan will be of particular importance during the Tribe's initial land use development and will be utilized to assist in the decision making associated with future construction.

The comprehensive plans of the surrounding parish, cities, and towns are considered to be integral parts of this plan. Through adoption of comprehensive plans and zoning ordinances, surrounding jurisdictions have planned for the impact of natural hazards. This plan development process has provided the Tribe the opportunity to review and expand on policies contained within various planning mechanisms. The Tribe will use the hazard mitigation plan as a complementary document that works in coordination with other planning mechanisms to achieve the goal of reducing risk exposure to the citizens and guests of the Coushatta Reservation. The Tribe is committed to creating a linkage between the hazard mitigation plan and future comprehensive plans by identifying a mitigation initiative to do so and giving that initiative a high priority. Other planning processes and programs to be coordinated with the recommendations of the hazard mitigation plan include the following:

- Emergency response plans
- Capital improvement programs
- Tribal codes
- Tribal building codes
- Critical areas regulation
- Growth management
- Water resource inventory area planning
- Wildfire planning
- Community design guidelines
- Water-efficient landscape design guidelines
- Waste/Stormwater management programs
- Water system vulnerability assessments
- Master fire protection plans
- Evacuation planning
- Transportation planning

Some action items do not need to be implemented through regulation. Instead, these items can be implemented through the creation of new educational programs, continued agency, and jurisdiction coordination, and/or improved public participation. As information becomes available from other planning mechanisms that can enhance this plan, that information will be incorporated via the update process.

14.3 CONTINUED PUBLIC INVOLVEMENT

The Coushatta Tribe is dedicated to involving the public directly in review and updates of the hazard mitigation plan. The public will continue to be apprised of the plan's progress through the Coushatta Tribe's website and the annual progress reports that will be provided to the media. This site will not only house the final plan, but it will also become the one-stop shop for information regarding the plan and plan implementation. Upon initiation of future update processes, a new public involvement strategy will be initiated. This strategy will be based on the needs and capabilities of the planning partnership at the time of the update. At a minimum, this strategy will include the use of social media and local media outlets within the planning area.

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APPENDIX A
ACRONYMS AND DEFINITIONS

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ACRONYMS AND DEFINITIONS

ACRONYMS

ASHRAE—American Society of Heating, Refrigerating, and Air-Conditioning Engineers
BOR—U.S. Bureau of Reclamation
CFR—Code of Federal Regulations
cfs—cubic feet per second
CIP—Capital Improvement Plan
CRS—Community Rating System
DFIRM—Digital Flood Insurance Rate Maps
DHS—Department of Homeland Security
DMA —Disaster Mitigation Act
DSO—Dam Safety Office
EAP—Emergency Action Plan
EPA—U.S. Environmental Protection Agency
ESA—Endangered Species Act
FCAAP—Flood Control Assistance Account Program
FCMP—Flood Control Maintenance Program
FEMA—Federal Emergency Management Agency
FERC—Federal Energy Regulatory Commission
FIRM—Flood Insurance Rate Map
FIS—Flood Insurance Study
GIS—Geographic Information System
GMA—Growth Management Act
Hazus-MH—Hazards, United States-Multi Hazard
HMGP—Hazard Mitigation Grant Program
IBC—International Building Code
IRC—International Residential Code
MM—Modified Mercalli Scale
NEHRP—National Earthquake Hazards Reduction Program
NFIP—National Flood Insurance Program
NFPA—National Fire Protection Association
NFR—Natural fire rotation
NOAA—National Oceanic and Atmospheric Administration
NWS—National Weather Service
PDI—Palmer Drought Index
PGA—Peak Ground Acceleration
PHDI—Palmer Hydrological Drought Index

SCS—U.S. Department of Agriculture Soil Conservation Service
SFHA—Special Flood Hazard Area
SHELDUS—Special Hazard Events and Losses Database for the US
SPI—Standardized Precipitation Index
USGS—U.S. Geological Survey
WUI— Wildland Urban Interface

DEFINITIONS

100-Year Flood: The term "100-year flood" can be misleading. The 100-year flood does not necessarily occur once every 100 years. Rather, it is the flood that has a 1 percent chance of being equaled or exceeded in any given year. Thus, the 100-year flood could occur more than once in a relatively short period of time. The Federal Emergency Management Agency (FEMA) defines it as the 1 percent annual chance flood, which is now the standard definition used by most federal and state agencies and by the National Flood Insurance Program (NFIP).

Acre-Foot: An acre-foot is the amount of water it takes to cover 1 acre to a depth of 1 foot. This measure is used to describe the quantity of storage in a water reservoir. An acre-foot is a unit of volume. One acre foot equals 7,758 barrels; 325,829 gallons; or 43,560 cubic feet. An average household of four will use approximately 1 acre-foot of water per year.

Asset: An asset is any constructed or natural feature that has value, including, but not limited to, people; buildings; infrastructure, such as bridges, roads, sewers, and water systems; lifelines, such as electricity and communication resources; and environmental, cultural, or recreational features such as parks, wetlands, and landmarks.

Base Flood: The flood having a 1% chance of being equaled or exceeded in any given year, also known as the "100-year" or "1% chance" flood. The base flood is a statistical concept used to ensure that all properties subject to the National Flood Insurance Program (NFIP) are protected to the same degree against flooding.

Basin: A basin is the area within which all surface water—whether from rainfall, snowmelt, springs, or other sources—flows to a single water body or watercourse. The boundary of a river basin is defined by natural topography, such as hills, mountains, and ridges. Basins are also referred to as "watersheds" and "drainage basins."

Benefit: A benefit is a net project outcome and is usually defined in monetary terms. Benefits may include direct and indirect effects. For the purposes of benefit-cost analysis of proposed mitigation measures, benefits are limited to specific, measurable, risk reduction factors, including reduction in expected property losses (buildings, contents, and functions) and protection of human life.

Benefit/Cost Analysis: A benefit/cost analysis is a systematic, quantitative method of comparing projected benefits to projected costs of a project or policy. It is used as a measure of cost effectiveness.

Building: A building is defined as a structure that is walled and roofed, principally aboveground, and permanently fixed to a site. The term includes manufactured homes on permanent foundations on which the wheels and axles carry no weight.

Capability Assessment: A capability assessment provides a description and analysis of a community's current capacity to address threats associated with hazards. The assessment includes two components:

an inventory of an agency's mission, programs, and policies, and an analysis of its capacity to carry them out. A capability assessment is an integral part of the planning process in which a community's actions to reduce losses are identified, reviewed, and analyzed, and the framework for implementation is identified. The following capabilities were reviewed under this assessment:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability

Community Rating System (CRS): The CRS is a voluntary program under the NFIP that rewards participating communities (provides incentives) for exceeding the minimum requirements of the NFIP and completing activities that reduce flood hazard risk by providing flood insurance premium discounts.

Critical Area: An area defined by state or local regulations as deserving special protection because of unique natural features or its value as habitat for a wide range of species of flora and fauna. A sensitive/critical area is usually subject to more restrictive development regulations.

Critical Facility: Facilities and infrastructure that are critical to the health and welfare of the population. These become especially important after any hazard event occurs. For the purposes of this plan, critical facilities include:

- Structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic and/or water reactive materials;
- Hospitals, nursing homes, and housing likely to contain occupants who may not be sufficiently mobile to avoid death or injury during a hazard event.
- Police stations, fire stations, vehicle and equipment storage facilities, and emergency operations centers that are needed for disaster response before, during, and after hazard events, and
- Public and private utilities, facilities and infrastructure that are vital to maintaining or restoring normal services to areas damaged by hazard events.
- Government facilities.

Cubic Feet per Second (cfs): Discharge or river flow is commonly measured in cfs. One cubic foot is about 7.5 gallons of liquid.

Dam: Any artificial barrier or controlling mechanism that can or does impound 10 acre-feet or more of water.

Dam Failure: Dam failure refers to a partial or complete breach in a dam (or levee) that impacts its integrity. Dam failures occur for a number of reasons, such as flash flooding, inadequate spillway size, mechanical failure of valves or other equipment, freezing and thawing cycles, earthquakes, and intentional destruction.

Debris Avalanche: Volcanoes are prone to debris and mountain rock avalanches that can approach speeds of 100 mph.

Debris Flow: Dense mixtures of water-saturated debris that move down-valley; looking and behaving much like flowing concrete. They form when loose masses of unconsolidated material are saturated, become unstable, and move down slope. The source of water varies but includes rainfall, melting snow or ice, and glacial outburst floods.

Debris Slide: Debris slides consist of unconsolidated rock or soil that has moved rapidly down slope. They occur on slopes greater than 65 percent.

Disaster Mitigation Act of 2000 (DMA); The DMA is Public Law 106-390 and is the latest federal legislation enacted to encourage and promote proactive, pre-disaster planning as a condition of receiving financial assistance under the Robert T. Stafford Act. The DMA emphasizes planning for disasters before they occur. Under the DMA, a pre-disaster hazard mitigation program (now BRIC) and new requirements for the national post-disaster hazard mitigation grant program (HMGP) were established.

Drainage Basin: A basin is the area within which all surface water- whether from rainfall, snowmelt, springs, or other sources- flows to a single water body or watercourse. The boundary of a river basin is defined by natural topography, such as hills, mountains, and ridges. Drainage basins are also referred to as **watersheds** or **basins**.

Drought: Drought is a period of time without substantial rainfall or snowfall from one year to the next. Drought can also be defined as the cumulative impacts of several dry years or a deficiency of precipitation over an extended period of time, which in turn results in water shortages for some activity, group, or environmental function. A hydrological drought is caused by deficiencies in surface and subsurface water supplies. A socioeconomic drought impacts the health, well-being, and quality of life or starts to have an adverse impact on a region. Drought is a normal, recurrent feature of climate and occurs almost everywhere.

Earthquake: An earthquake is defined as a sudden slip on a fault, volcanic or magmatic activity, and sudden stress changes in the earth that result in ground shaking and radiated seismic energy. Earthquakes can last from a few seconds to over 5 minutes and have been known to occur as a series of tremors over a period of several days. The actual movement of the ground in an earthquake is seldom the direct cause of injury or death. Casualties may result from falling objects and debris as shocks shake, damage, or demolish buildings and other structures.

Exposure: Exposure is defined as the number and dollar value of assets considered to be at risk during the occurrence of a specific hazard.

Extent: The extent is the size of an area affected by a hazard.

Fire Behavior: Fire behavior refers to the physical characteristics of a fire and is a function of the interaction between the fuel characteristics (such as type of vegetation and structures that could burn), topography, and weather. Variables that affect fire behavior include the rate of spread, intensity, fuel consumption, and fire type (such as underbrush versus crown fire).

Fire Frequency: Fire frequency is the broad measure of the rate of fire occurrence in a particular area. An estimate of the areas most likely to burn is based on past fire history or fire rotation in the area, fuel conditions, weather, ignition sources (such as human or lightning), fire suppression response, and other factors.

Flash Flood: A flash flood occurs with little or no warning when water levels rise at an extremely fast rate

Flood Insurance Rate Map (FIRM): FIRMs are the official maps on which the Federal Emergency Management Agency (FEMA) has delineated the Special Flood Hazard Area (SFHA).

Flood Insurance Study: A report published by the Federal Insurance and Mitigation Administration for a community in conjunction with the community's Flood Insurance rate Map. The study contains such background data as the base flood discharges and water surface elevations that were used to prepare the FIRM. In most cases, a community FIRM with detailed mapping will have a corresponding flood insurance study.

Floodplain: Any land area susceptible to being inundated by flood waters from any source. A flood insurance rate map identifies most, but not necessarily all, of a community's floodplain as the Special Flood Hazard Area (SFHA).

Floodway: Floodways are areas within a floodplain that are reserved for the purpose of conveying flood discharge without increasing the base flood elevation more than 1 foot. Generally speaking, no development is allowed in floodways, as any structures located there would block the flow of floodwaters.

Floodway Fringe: Floodway fringe areas are located in the floodplain but outside of the floodway. Some development is generally allowed in these areas, with a variety of restrictions. On maps that have identified and delineated a floodway, this would be the area beyond the floodway boundary that can be subject to different regulations.

Fog: Fog refers to a cloud (or condensed water droplets) near the ground. Fog forms when air close to the ground can no longer hold all the moisture it contains. Fog occurs either when air is cooled to its dew point or the amount of moisture in the air increases. Heavy fog is particularly hazardous because it can restrict surface visibility. Severe fog incidents can close roads, cause vehicle accidents, cause airport delays, and impair the effectiveness of emergency response. Financial losses associated with transportation delays caused by fog have not been calculated in the United States but are known to be substantial.

Freeboard: Freeboard is the margin of safety added to the base flood elevation.

Frequency: For the purposes of this plan, frequency refers to how often a hazard of specific magnitude, duration, and/or extent is expected to occur on average. Statistically, a hazard with a 100-year frequency is expected to occur about once every 100 years on average and has a 1 percent chance of occurring any given year. Frequency reliability varies depending on the type of hazard considered.

Fujita Scale of Tornado Intensity: Tornado wind speeds are sometimes estimated on the basis of wind speed and damage sustained using the Fujita Scale. The scale rates the intensity or severity of tornado events using numeric values from F0 to F5 based on tornado wind speed and damage. An F0 tornado (wind speed less than 73 miles per hour (mph)) indicates minimal damage (such as broken tree limbs), and an F5 tornado (wind speeds of 261 to 318 mph) indicates severe damage.

Goal: A goal is a general guideline that explains what is to be achieved. Goals are usually broad-based, long-term, policy-type statements and represent global visions. Goals help define the benefits that a plan is trying to achieve. The success of a hazard mitigation plan is measured by the degree to which its goals have been met (that is, by the actual benefits in terms of actual hazard mitigation).

Geographic Information System (GIS): GIS is a computer software application that relates data regarding physical and other features on the earth to a database for mapping and analysis.

Hazard: A hazard is a source of potential danger or adverse condition that could harm people and/or cause property damage.

Hazard Mitigation Grant Program (HMGP): Authorized under Section 202 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, the HMGP is administered by FEMA and provides grants to states, tribes, and local governments to implement hazard mitigation actions after a major disaster declaration. The purpose of the program is to reduce the loss of life and property due to disasters and to enable mitigation activities to be implemented as a community recovers from a disaster

Hazards U.S. Multi-Hazard (Hazus-MH) Loss Estimation Program: Hazus-MH is a GIS-based program used to support the development of risk assessments as required under the DMA. The Hazus-MH software program assesses risk in a quantitative manner to estimate damages and losses associated with natural hazards. Hazus-MH is FEMA's nationally applicable, standardized methodology and software program and contains modules for estimating potential losses from earthquakes, floods, and wind hazards. Hazus-MH has also been used to assess vulnerability (exposure) for other hazards.

Hydraulics: Hydraulics is the branch of science or engineering that addresses fluids (especially water) in motion in rivers or canals, works and machinery for conducting or raising water, the use of water as a prime mover, and other fluid-related areas.

Hydrology: Hydrology is the analysis of waters of the earth. For example, a flood discharge estimate is developed by conducting a hydrologic study.

Intensity: For the purposes of this plan, intensity refers to the measure of the effects of a hazard.

Inventory: The assets identified in a study region comprise an inventory. Inventories include assets that could be lost when a disaster occurs, and community resources are at risk. Assets include people, buildings, transportation, and other valued community resources.

Landslide: Landslides can be described as the sliding movement of masses of loosened rock and soil down a hillside or slope. Fundamentally, slope failures occur when the strength of the soils forming the slope exceeds the pressure, such as weight or saturation, acting upon them.

Lightning: Lightning is an electrical discharge resulting from the buildup of positive and negative charges within a thunderstorm. When the buildup becomes strong enough, lightning appears as a "bolt," usually within or between clouds and the ground. A bolt of lightning instantaneously reaches temperatures approaching 50,000ºF. The rapid heating and cooling of air near lightning causes thunder. Lightning is a major threat during thunderstorms. In the United States, 75 to 100 Americans are struck and killed by lightning each year (see http://www.fema.gov/hazard/thunderstorms/thunder.shtm).

Liquefaction: Liquefaction is the complete failure of soils, occurring when soils lose shear strength and flow horizontally. It is most likely to occur in fine grain sands and silts, which behave like viscous fluids when liquefaction occurs. This situation is extremely hazardous to development on the soils that liquefy, and generally results in extreme property damage and threats to life and safety.

Local Government: Any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government; any Indian tribe or authorized tribal organization, or Alaska Native village or organization; and any rural community, unincorporated town or village, or other public entity.

Magnitude: Magnitude is the measure of the strength of an earthquake and is typically measured by the Richter scale. As an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value.

Mass movement: A collective term for landslides, mudflows, debris flows, sinkholes, and lahars.

Mitigation: A preventive action that can be taken in advance of an event that will reduce or eliminate the risk to life or property.

Mitigation Actions: Mitigation actions are specific actions to achieve goals and objectives that minimize the effects from a disaster and reduce the loss of life and property.

Objective: For the purposes of this plan, an objective is defined as a short-term aim that, when combined with other objectives, forms a strategy or course of action to meet a goal. Unlike goals, objectives are specific and measurable.

Peak Ground Acceleration: Peak Ground Acceleration (PGA) is a measure of the highest amplitude of ground shaking that accompanies an earthquake, based on a percentage of the force of gravity.

Preparedness: Preparedness refers to actions that strengthen the capability of government, citizens, and communities to respond to disasters.

Presidential Disaster Declaration: These declarations are typically made for events that cause more damage than state and local governments and resources can handle without federal government assistance. Generally, no specific dollar loss threshold has been established for such declarations. A Presidential Disaster Declaration puts into motion long-term federal recovery programs, some of which are matched by state programs, designed to help disaster victims, businesses, and public entities.

Probability of Occurrence: The probability of occurrence is a statistical measure or estimate of the likelihood that a hazard will occur. This probability is generally based on past hazard events in the area and a forecast of events that could occur in the future. A probability factor based on yearly values of occurrence is used to estimate probability of occurrence.

Repetitive Loss Property: Any NFIP-insured property that, since 1978 and regardless of any changes of ownership during that period, has experienced:

- Four or more paid flood losses in excess of $1000.00; or
- Two paid flood losses in excess of $1000.00 within any 10-year period since 1978 or
- Three or more paid losses that equal or exceed the current value of the insured property.

Return Period (or Mean Return Period): This term refers to the average period of time in years between occurrences of a particular hazard (equal to the inverse of the annual frequency of occurrence).

Riverine: Of or produced by a river. Riverine floodplains have readily identifiable channels. Floodway maps can only be prepared for riverine floodplains.

Risk: Risk is the estimated impact that a hazard would have on people, services, facilities, and structures in a community. Risk measures the likelihood of a hazard occurring and resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate, or low likelihood of sustaining damage above a particular threshold due to occurrence of a specific type of hazard. Risk also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.

Risk Assessment: Risk assessment is the process of measuring potential loss of life, personal injury, economic injury, and property damage resulting from hazards. This process assesses the vulnerability of people, buildings, and infrastructure to hazards and focuses on (1) hazard identification; (2) impacts of hazards on physical, social, and economic assets; (3) vulnerability identification; and (4) estimates of the cost of damage or costs that could be avoided through mitigation.

Risk Ranking: This ranking serves two purposes, first to describe the probability that a hazard will occur, and second to describe the impact a hazard will have on people, property, and the economy. Risk estimates for the City are based on the methodology that the City used to prepare the risk assessment for this plan. The following equation shows the risk ranking calculation:

Risk Ranking = Probability + Impact (people + property + economy + environment)

Robert T. Stafford Act: The Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 100-107, was signed into law on November 23, 1988. This law amended the Disaster Relief Act of 1974, Public Law 93-288. The Stafford Act is the statutory authority for most federal disaster response activities, especially as they pertain to FEMA and its programs.

Sinkhole: A collapse depression in the ground with no visible outlet. Its drainage is subterranean. It is commonly vertical-sided or funnel-shaped.

Special Flood Hazard Area: The base floodplain delineated on a Flood Insurance Rate Map. The SFHA is mapped as a Zone A in riverine situations and zone V in coastal situations. The SFHA may or may not encompass all of a community's flood problems

Stakeholder: Business leaders, civic groups, academia, non-profit organizations, major employers, managers of critical facilities, farmers, developers, special purpose districts, and others whose actions could impact hazard mitigation.

Stream Bank Erosion: Stream bank erosion is common along rivers, streams and drains where banks have been eroded, sloughed, or undercut. However, it is important to remember that a stream is a dynamic and constantly changing system. It is natural for a stream to want to meander, so not all eroding banks are "bad" and in need of repair. Generally, stream bank erosion becomes a problem where development has limited the meandering nature of streams, where streams have been channelized, or where stream bank structures (like bridges, culverts, etc.) are located in places where they can actually cause damage to downstream areas. Stabilizing these areas can help protect watercourses from continued sedimentation, damage to adjacent land uses, control unwanted meander, and improvement of habitat for fish and wildlife.

Steep Slope: Different communities and agencies define it differently, depending on what it is being applied to, but generally a steep slope is a slope in which the percent slope equals or exceeds 25%. For this study, steep slope is defined as slopes greater than 33%.

Sustainable Hazard Mitigation: This concept includes the sound management of natural resources, local economic and social resiliency, and the recognition that hazards and mitigation must be understood in the largest possible social and economic context.

Thunderstorm: A thunderstorm is a storm with lightning and thunder produced by cumulonimbus clouds. Thunderstorms usually produce gusty winds, heavy rains, and sometimes hail. Thunderstorms are usually short in duration (seldom more than 2 hours). Heavy rains associated with thunderstorms can lead to flash flooding during the wet or dry seasons.

Tornado: A tornado is a violently rotating column of air extending between and in contact with a cloud and the surface of the earth. Tornadoes are often (but not always) visible as funnel clouds. On a local scale, tornadoes are the most intense of all atmospheric circulations, and winds can reach destructive speeds of more than 300 mph. A tornado's vortex is typically a few hundred meters in diameter, and damage paths can be up to 1 mile wide and 50 miles long.

Vulnerability: Vulnerability describes how exposed or susceptible an asset is to damage. Vulnerability depends on an asset's construction, contents, and the economic value of its functions. Like indirect damages, the vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power. Flooding of an electric substation would affect not only the substation itself but businesses as well. Often, indirect effects can be much more widespread and damaging than direct effects.

Watershed: A watershed is an area that drains down gradient from areas of higher land to areas of lower land to the lowest point, a common drainage basin.

Wildfire: These terms refer to any uncontrolled fire occurring on undeveloped land that requires fire suppression. The potential for wildfire is influenced by three factors: the presence of fuel, topography, and air mass. Fuel can include living and dead vegetation on the ground, along the surface as brush and small trees, and in the air such as tree canopies. Topography includes both slope and elevation. Air mass includes temperature, relative humidity, wind speed and direction, cloud cover, precipitation amount, duration, and the stability of the atmosphere at the time of the fire. Wildfires can be ignited by lightning and, most frequently, by human activity including smoking, campfires, equipment use, and arson.

Windstorm: Windstorms are generally short-duration events involving straight-line winds or gusts exceeding 50 mph. These gusts can produce winds of sufficient strength to cause property damage. Windstorms are especially dangerous in areas with significant tree stands, exposed property, poorly constructed buildings, mobile homes (manufactured housing units), major infrastructure, and aboveground utility lines. A windstorm can topple trees and power lines; cause damage to residential, commercial, critical facilities; and leave tons of debris in its wake.

Zoning Ordinance: The zoning ordinance designates allowable land use and intensities for a local jurisdiction. Zoning ordinances consist of two components: a zoning text and a zoning map.

Coushatta Tribe Hazard Mitigation Plan 2021 Update

APPENDIX B
PLAN ADOPTION RESOLUTION

APPENDIX B
PLAN ADOPTION RESOLUTION

APPENDIX C
ANNUAL PROGRESS REPORT TEMPLATE

APPENDIX C
ANNUAL PROGRESS REPORT TEMPLATE

Coushatta Tribe
Hazard Mitigation Plan
Annual Progress Report

Reporting Period: (Insert reporting period)

Background: The Coushatta Tribe of Louisiana developed a hazard mitigation plan to reduce risk from all hazards by identifying resources, information, and strategies for risk reduction. The federal Disaster Mitigation Act requires state and local governments to develop hazard mitigation plans as a condition for federal disaster grant assistance. To prepare the plan, the participating partners organized resources, assessed risks from natural hazards within the parish, developed planning goals and objectives, reviewed mitigation alternatives, and developed an action plan to address probable impacts from natural hazards. By completing this process, these jurisdictions maintained compliance with the Disaster Mitigation Act, achieving eligibility for mitigation grant funding opportunities afforded under the Robert T. Stafford Act. The plan can be viewed on-line at:

Insert web address

Summary Overview of the Plan's Progress: The performance period for the hazard mitigation plan became effective on ____, 2021, with the final approval of the plan by FEMA. The initial performance period for this plan will be 5 years, with an anticipated update to the plan to occur before ______, 2021. As of this reporting period, the performance period for this plan is considered to be __ percent complete. The hazard mitigation plan has targeted __ hazard mitigation initiatives to be pursued during the 5-year performance period. As of the reporting period, the following overall progress can be reported:

- __ out of __ initiatives (__%) reported ongoing action toward completion.
- __ out of __ initiatives (__%) were reported as being complete.
- __ out of __ initiatives (___%) reported no action taken.

Purpose: The purpose of this report is to provide an annual update on the implementation of the action plan identified in the Coushatta Tribe hazard mitigation plan. The objective is to ensure that there is a continuing and responsive planning process that will keep the hazard mitigation plan dynamic and responsive to the needs and capabilities of the partner jurisdictions. This report discusses the following:

- Natural hazard events that have occurred within the last year
- Changes in risk exposure within the planning area of the Coushatta Reservation
- Mitigation success stories
- Review of the action plan
- Changes in capabilities that could impact plan implementation
- Recommendations for changes/enhancement.

The Tribal Hazard Mitigation Planning Team: The Tribal Hazard Mitigation Planning Team reviewed and approved this progress report at its annual meeting held on _____, 202_. It was determined through the plan's development process that a planning team would remain in service to oversee maintenance of the plan. At a minimum, the planning team will provide technical review and oversight on the development of the annual progress report. It is anticipated that there will be turnover in the membership annually, which will be documented in the progress reports. For this reporting period, the planning team membership is as indicated in Table 1.

TABLE 1
PLANNING TEAM MEMBERS

Name	Title	Jurisdiction/Agency

Natural Hazard Events within the Planning Area: During the reporting period, there were __ natural hazard events in the planning area that had a measurable impact on people or property. A summary of these events is as follows:

- ______________________________
- ______________________________

Changes in Risk Exposure in the Planning Area: *(Insert brief overview of any natural hazard event in the planning area that changed the probability of occurrence or ranking of risk for the hazards addressed in the hazard mitigation plan)*

Mitigation Success Stories: *(Insert brief overview of mitigation accomplishments during the reporting period)*

Review of the Action Plan: Table 2 reviews the action plan, reporting the status of each initiative. Reviewers of this report should refer to the hazard mitigation plan for more detailed descriptions of each initiative and the prioritization process.

Address the following in the "status" column of the following table:

- *Was any element of the initiative carried out during the reporting period?*
- *If no action was completed, why?*
- *Is the timeline for implementation for the initiative still appropriate?*
- *If the initiative was completed, does it need to be changed or removed from the action plan?*

TABLE 2 ACTION PLAN MATRIX				
Action Taken? (Yes or No)	**Time Line**	**Priority**	**Status**	**Status (X, O,✓)**
Initiative #__—______________________[description]				
Initiative #__—______________________[description]				
Initiative #__—______________________[description]				
Initiative #__—______________________[description]				
Initiative #__—______________________[description]				
Initiative #__—______________________[description]				
Initiative #__—______________________[description]				
Initiative #__—______________________[description]				
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Initiative #__—______________________[description]				
Initiative #__—______________________[description]				
Initiative #__—______________________[description]				
Initiative #__—______________________[description]				
Initiative #__—______________________[description]				

TABLE 2 ACTION PLAN MATRIX				
Action Taken? (Yes or No)	**Time Line**	**Priority**	**Status**	**Status (X, O,✓)**
Initiative #__ —______________________[description]				
Initiative #__ —______________________[description]				

Completion status legend:

✓= Project Completed

O = Action ongoing toward completion

X = No progress at this time

Changes That May Impact Implementation of the Plan: *(Insert brief overview of any significant changes in the planning area that would have a profound impact on the implementation of the plan. Specify any changes in technical, regulatory, and financial capabilities identified during the plan's development)*

Recommendations for Changes or Enhancements: Based on the review of this report by the Hazard Mitigation Plan Planning Team, the following recommendations will be noted for future updates or revisions to the plan:

- ______________________________
- ______________________________
- ______________________________
- ______________________________
- ______________________________
- ______________________________

Public review notice: The contents of this report are considered to be public knowledge and have been prepared for total public disclosure. Copies of the report have been provided to the Tribal Council and posted on the Coushatta Tribe's hazard mitigation plan website. Any questions or comments regarding the contents of this report should be directed to: Chief Leland Thompson, Coushatta Tribal Fire Department.

Attachment K

Preliminary Environmental Assessment

Better Utilizing Investments to Leverage Development

(BUILD) Transportation Discretionary Grants Program

July 2018

PRELIMINARY ENVIRONMENTAL ANALYSIS

Coushatta Emergency Evacuation Road Grant Application
for the
Better Utilizing Investments to Leverage Development
(BUILD) Transportation Discretionary Grants Program

Allen Parish, Louisiana

July 2018

Prepared by:

GEC

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APPENDICES

ENVIRONMENTAL CHECKLIST

1. General Information

☐Conceptual Layout ☐Line and Grade ☒Preliminary Plans

☐Survey ☐Plan-in-Hand ☐Advance Check Prints

2. Class of Action

☐ Environmental Impact Statement (E.I.S.) ☐ State Funded Only (EE/EF/ER)

☒ Environmental Assessment (E.A.)

☐ Categorical Exclusion (C.E.)

☐ Programmatic C.E. (as defined in FHWA letter of agreement dated 03/15/95)

3. Project Description

Please refer to the project description provided on page 1.

4. Public Involvement

☒ Views were solicited.

☐ Views were not solicited.

☒ Public Involvement events held. (List events and dates in Section 11.)

☐ A public hearing/opportunity for requesting a public hearing required. (List dates in Section 11.)

☐ A public hearing/opportunity for requesting a public hearing not required.

5. Real Estate

	NO	YES	N/A
a. Will additional **right-of-way** be required?	☐	☒	☐
Is right of way required from a **burial/cemetery** site?	☒	☐	☐
Is right-of-way required from a Wetland Reserve Program (**WRP**) property?	☒	☐	☐
Is required right-of-way prime **farmland**? (Use form AD 1006, if needed)	☐	☒	☐
b. Will any **relocation** of residences or businesses occur?	☒	☐	☐
c. Are construction or drainage **servitudes** required?	☒	☐	☐

6. Section 4(f) and Section 6(f)

	NO	YES	N/A
a. Will historic sites or publicly owned parks, recreation areas, wildlife or waterfowl refuges (**Section 4f**) be affected?	☒	☐	☐
b. Are properties acquired or improved with **L&WC** funds affected?	☒	☐	☐

7. Cultural Section 106

	NO	YES	N/A
a. Are any **known historic properties** adjacent or			

		NO	YES	N/A
	impacted by the project? (If so, list below)……	☒	☐	☐
b.	Are any known **archaeological sites** adjacent or impacted by the project? (If so, list site # below) ……	☒	☐	☐
c.	Would the project affect property owned by or held in trust for a federally recognized **tribal government**? ……	☐	☒	☐

8. Natural & Physical Environment

		NO	YES	N/A
a.	Are **wetlands** affected? ……	☐	☒	☐
b.	Are **other waters** of the U.S. affected? ……	☐	☒	☐
c.	Are **Endangered/Threatened Species**/Habitat affected? ……	☒	☐	☐
d.	Is project within 100 Year **Floodplain**? ……	☐	☒	☐
e.	Is project in **Coastal Zone** Management Area? ……	☒	☐	☐
f.	Is project in a **Coastal Barrier Resources** area? ……	☒	☐	☐
g.	Is project on a **Sole Source Aquifer**? ……	☐	☒	☐
h.	Is project impacting a **navigable waterway**? ……	☒	☐	☐
i.	Are any State or Federal **Scenic Rivers/Streams** impacted? ……	☒	☐	☐
j.	Is a **noise** analysis warranted (Type I project) ……	☒	☐	☐
k.	Is an **air** quality study warranted? ……	☒	☐	☐
l.	Is project in a **non-attainment** area? ……	☒	☐	☐
m.	Is project in an approved Transportation Plan, Transportation Improvement Program (TIP) and State Transportation Improvement Program (**STIP**)? ……	☐	☒	☐
n.	Are **construction** air, noise, & water impacts major? ……	☒	☐	☐
o.	Will the project affect or be affected by a **hazardous waste site**, leaking underground storage tank, oil/gas well, or other potentially contaminated site?	☒	☐	☐

9. Social Impacts

		NO	YES	N/A
a.	Will project change **land use** in the area? ……	☒	☐	☐
b.	Are any **churches and schools** impacted by or adjacent to the project? …… (If so, list below)	☒	☐	☐
c.	Has **Title VI** been considered? ……	☐	☒	☐
d.	Will any **specific groups** be adversely affected? (i.e., *minorities, low-income, elderly, disabled,* etc.) ……	☒	☐	☐
e.	Are any **hospitals, medical facilities, fire police** facilities impacted by or adjacent to the project? (If so, list below)……	☒	☐	☐
f.	Will **Transportation patterns** change? ……	☒	☐	☐
g.	Is **Community cohesion** affected by the project? ……	☒	☐	☐
h.	Are **short-term social/economic** impacts due to construction considered major? ……	☒	☐	☐
i.	Do conditions warrant **special construction times?** (i.e., *school in session, congestion, tourist season, harvest*) ……	☒	☐	☐
j.	Were **Context Sensitive Solutions** considered? (If so explain below)……	☒	☐	☐

k. Were **bike and pedestrian** accommodations considered? (explain below)..... ☒ ☐ ☐

l. Will the **roadway/bridge be closed?** (If yes, answer questions below).......... ☒ ☐ ☐

Will a **detour bridge** be provided? .... ☐ ☐ ☒

Will a **detour road** be provided? .... ☐ ☐ ☒

Will a **detour route** be signed? .... ☐ ☐ ☒

10. Permits (Check all permits that may be required)

☐Corps Nationwide

☒Corps Section 404/10

☐Levee

☐Other (explain below)

☐ CUP/Consistency Determination

☐USCG Bridge

☐USCG Navigational Lights

☐LA Scenic Stream

☐DEQ WQC

☒LPDES Stormwater

11. Other (Use this space to explain or expand answers to questions above.)

An environmental narrative documenting the research that led to the findings shown above is provided below.

A public meeting was held in Allen Parish on October 2, 2017.

Preparer: Laura Carnes
Title: NEPA specialist
Date: June 27, 2018

Attachments

☒ Environmental Analysis Narrative

☒ S.O.V. and Responses (Appendix A)

☐ Wetlands Finding

☐ Project Description Sheet

☐ Conceptual Stage Relocation Plan

☐ Noise Analysis

☐ Air Analysis

☐ Exhibits and/or Maps

☐ 4(f) Evaluation

☐ Form AD 1006 (Farmlands)

☐ 106 Documentation

☐ Other: Recognized Environmental Conditions Survey

1.0 INTRODUCTION

The Coushatta Tribe of Louisiana (CTLA) has contracted an environmental consultant to prepare this environmental analysis to identify potential environmental impacts arising from the construction of the Coushatta Emergency Evacuation Road Project. Substantial progress has been completed for required National Environmental Policy Act (NEPA) documentation and approvals, demonstrating project readiness for meeting the statutory obligation date for the potential receipt of the Better Utilizing Investments to Leverage Development (BUILD) grant.

2.0 PROJECT DESCRIPTION

The CTLA is seeking federal funding through the U.S. Department of Transportation (USDOT) BUILD Transportation Discretionary Grants Program to create an emergency evacuation route from the CTLA Reservation to a state evacuation route (State Highway LA 26) in Allen Parish, Louisiana. When completed, the road will provide the only ingress and egress for the CTLA Reservation during frequent flood events.

The proposed 2.5-mile roadway will connect Powell Road to LA 26 (see Figures 1 and 2) and will consist of improving approximately 1.2 miles of existing unpaved roadway and constructing 1.3 miles of new roadway. Approximately 0.2-mile of roadway improvements would occur on a gravel drive, a portion of which is on Coushatta Trust Land; and 1.0 mile of existing roadway improvements would occur on Briscoe Road, which is surrounded by farm and timber land and intersects with LA 26. To connect these two roadway sections, 1.3 miles of new roadway would be constructed through a forested area and would include a bridge crossing Bayou Blue. The proposed 2.5-mile roadway will be designed to meet federal highway USDOT standards as well as Louisiana Department of Transportation (LADOTD) standards for roadway classification Rural Local 2 (RL-2).

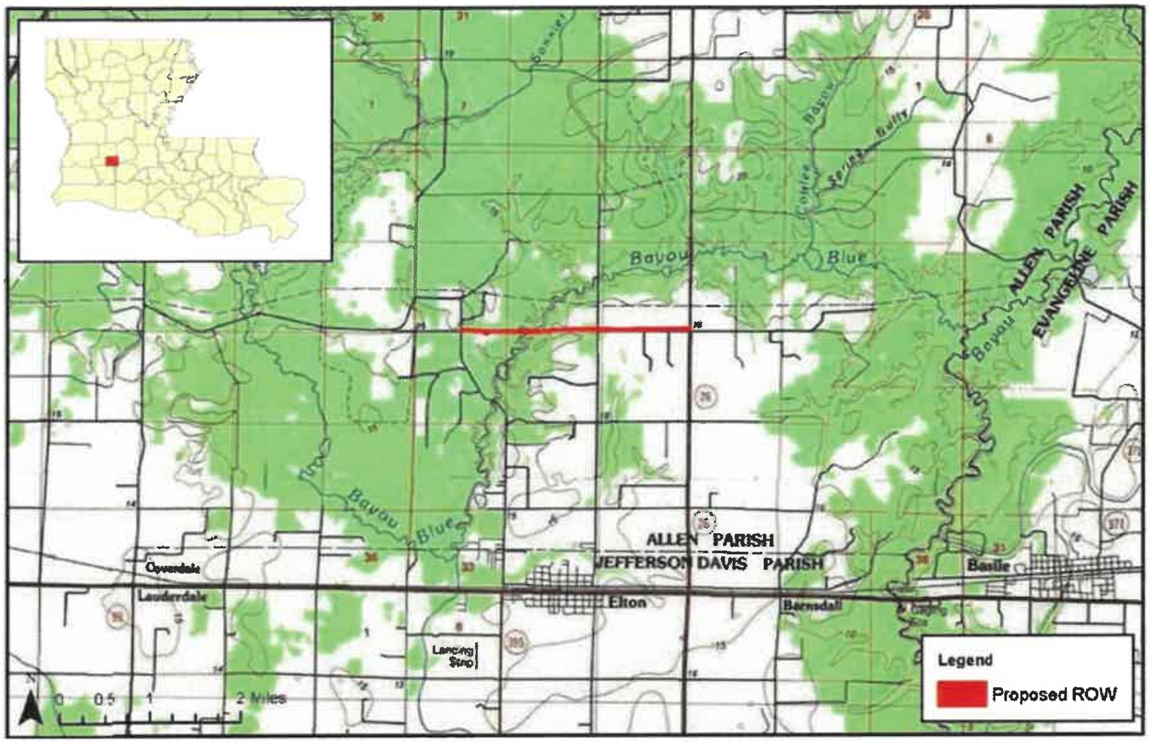

Figure 1. Project location

Figure 2. Project vicinity

3.0 PURPOSE AND NEED

The Reservation is plagued by frequent rain storms, which causes Powell and CC Bel Roads to be impassable, isolating tribal members until the water recedes. Both roads have bridges that have recently been replaced by LADOTD. However, one was designed for a 10-year storm and the other for a 5-year storm. Rain events like these are very common, rendering the roads impassable. This project is designed to create an emergency evacuation route that the Tribe and surrounding rural residents can use in instances of flooding.

4.0 REQUIRED PERMITS AND NEPA DOCUMENTATION

Based on the environmental analysis and coordination with public stakeholders and federal and state resource agencies, the proposed project is expected to have minimal effects on the natural and human environment. However, depending on final plans and specifications for the project, it might impact wetlands identified in the project area. It is anticipated that the type of NEPA review required would be an Environmental Assessment (EA)/Finding of No Significant Impact (FONSI). The following permits would be obtained and mitigation measures implemented for the project:

- Section 404 Wetland Permit from the U.S. Army Corps of Engineers (USACE);
- Water Quality Certification and a Louisiana Pollutant Discharge Elimination System (LPDES) Permit from the Louisiana Department of Environmental Quality (LDEQ);
- An approved wetland mitigation plan developed during the permitting process.

5.0 PUBLIC INVOLVEMENT

5.1 Agency Coordination

Information regarding the proposed project was sent to federal, state, and local agencies and officials on June 20-25, 2018. The Solicitation of Views information and the associated responses are included in Appendix A.

5.2 Public Meeting

On October 2, 2017, the Allen Parish Police Jury held a public meeting in Oberlin, Louisiana, the parish seat, to provide an overview of the project to parish officials, residents, and stakeholders, and to offer the opportunity to answer any questions. Public comment and feedback from attendees were both strongly supportive of the project, as public officials and residents recognized the potential savings of time, fuel, and enhanced safety that the road would provide for the parish. Attendees also acknowledged the potential for enhanced economic development activities that the road may provide. Subsequent to the hearing, the Police Jury adopted a resolution of support and the Parish Engineer added a commitment letter emphasizing the need for the road and expressing a pledge of support for the project (see Attachment 4 of the grant application).

6.0 REAL ESTATE REQUIREMENTS

The Project would be constructed on a total of 27.5 acres consisting of private property, land owned by the CTLA (Trust land), and existing parish road right-of-way (ROW) (16.5, 5.0, and 6.0 acres, respectively). These lands consist of forested and agricultural land and do not include burial or cemetery sites, or properties enrolled in the Natural Resources Conservation Service (NRCS) Wetland Reserve Program (WRP) (NRCS 2018).

No relocation of residences or businesses would occur. Construction of drainage servitudes would be required for the bridged portion of the proposed project that would cross Bayou Blue.

7.0 SECTION 4(F) AND SECTION 6(F)

Section 4(f) of the Department of Transportation Act of 1966 stipulates the Federal Highway Administration (FHWA) cannot approve the use of land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites unless: (1) there is no feasible and prudent avoidance alternative; or (2) use of the land would have only a *de minimis* impact, or no adverse effect, to key features of such properties. The project would not involve the acquisition of ROW from publicly owned land or historical sites. According to coordination with the Louisiana Department of Wildlife and Fisheries (LDWF), "No state or federal parks, wildlife refuges, scenic streams, or wildlife management areas are known at the specified site" (see Appendix A).

Section 6(f) of the Land and Water Conservation Act requires that unavoidable conversion of lands or facilities acquired or developed with Land and Water Conservation Act funds be replaced in kind or coordinated with the Department of the Interior. In correspondence dated June 19, 2018, Louisiana's Office of State Parks, Division of Outdoor Recreation stated that the project would not conflict with any recreation areas, including Land and Water Conservation Fund projects (see correspondence in Appendix A).

8.0 CULTURAL SECTION 106

Consideration of impacts on cultural resources is mandated under Section 106 of the National Historic Preservation Act as implemented by 36 Code of Federal Regulations (CFR) Part 800. Requirements include the identification of significant historic properties that might be impacted by the proposed project. Historic properties are defined as archaeological sites, standing structures, or other historic resources listed, or determined eligible for listing, in the National Register of Historic Places (NRHP). If adverse effects on historic, archaeological, or cultural properties are identified, agencies must attempt to avoid, minimize, or mitigate the impacts to these resources.

9.0 WETLAND AND OTHER WATERS OF THE U.S.

Executive Order No. 11990, Protection of Wetlands, issued May 24, 1977, directs federal agencies "to avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative." Wetlands are semiaquatic lands flooded or saturated by water for varying periods of time. For an area to be delineated as a wetland, it must exhibit appropriate hydrology, contain hydric soils, and support hydrophytic vegetation (Environmental Laboratory 1987).

Wetlands restore and maintain water quality by removing and retaining nutrients contained in storm water runoff that would otherwise flow directly into the water column. These ecosystems provide critical habitat for a diversity of plants and animals, including fish, shellfish, waterfowl, shorebirds, wading birds, songbirds, and mammals. Wetlands provide flood control by retaining water that would otherwise flood nearby residential and agricultural areas.

Project scientists conducted a desktop analysis to determine the potential presence of wetlands in the proposed project ROW using data from the USFWS National Wetlands Inventory (NWI) and soils data from the U.S. Department of Agriculture's Natural Resource Conservation Service (NRCS). These data indicate that the area of the proposed ROW in vicinity of Bayou Blue may be wetlands (see Figure 3). A wetland delineation and coordination with the USACE is recommended to determine whether this area is considered jurisdictional wetlands requiring a USACE wetland permit.

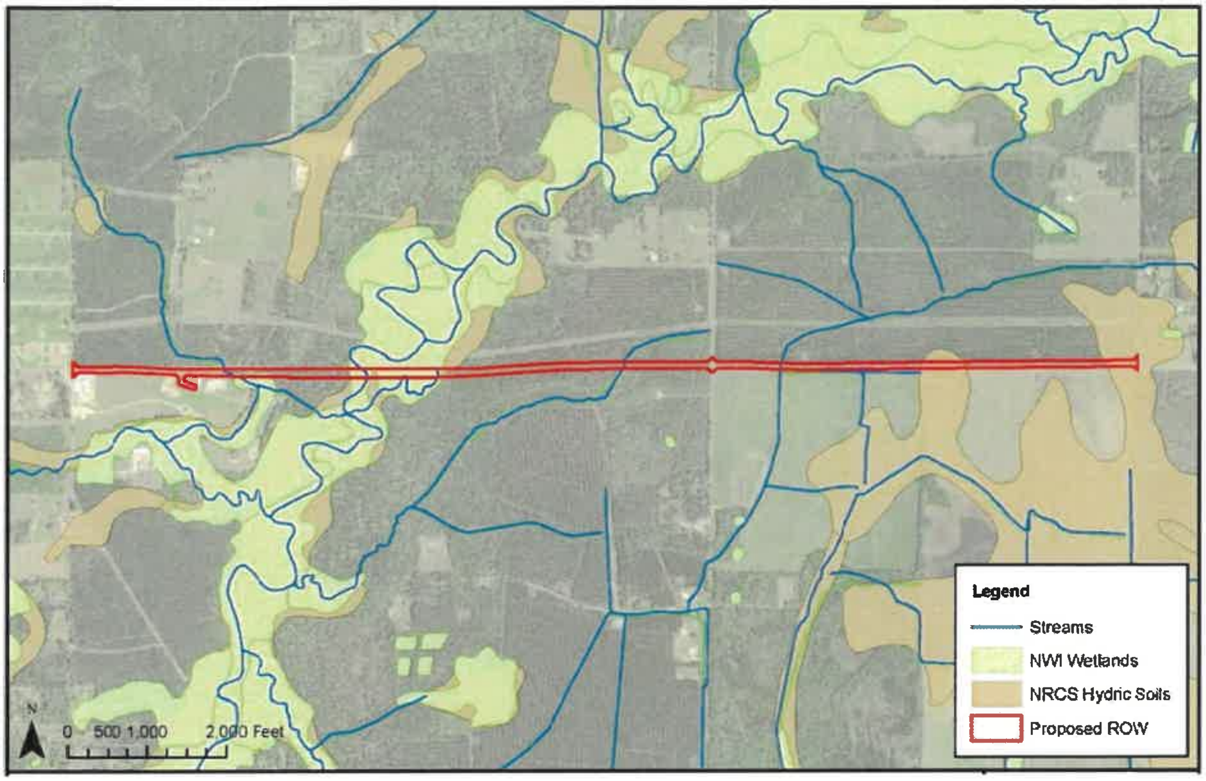

Figure. 3 Potential wetlands in vicinity of the project

10.0 THREATENED AND ENDANGERED SPECIES

Section 7 of the Endangered Species Act (ESA) of 1973 requires federal actions to be implemented in a manner that does not jeopardize protected species or their habitat. The U.S. Fish and Wildlife Service (USFWS) is charged with implementing the ESA and maintains a list of protected plants and animals and their protection status. The Louisiana Natural Heritage Program (LNHP) of the Louisiana Department of Wildlife and Fisheries (LDWF) lists threatened and endangered species for each parish in Louisiana. The red-cockaded woodpecker (*Picoides borealis*) and the American chaffseed (*Schwalbea americana*) are listed as federally endangered species in Allen Parish (LNHP 2018). The USFWS Critical Habitat Mapper indicates that no critical habitat exists in vicinity of the proposed project (USFWS 2018).

A review of Light Detection and Ranging (LIDAR) data for the project area was conducted to identify the potential presence of American chaffseed, which is indicated by low, flattened, roughly circular or elliptical domes consisting of sandy loam soils. No such features were identified. Coordination with the USFWS' Louisiana Ecological Services Office confirmed that the absence of this distinct surface feature indicates that the proposed project would have no effect on the American chaffseed (see Appendix A). Suitable nesting habitat for the red-cockaded woodpecker is defined as pine or pine/hardwood stands that contain pines 60 years in age or older. Pine forests present in the proposed project footprint do not likely include trees that are 60 years or older.

Although preliminary coordination with the USFWS stated that the project would not likely affect nesting habitat for this species (Appendix A), the CTLA plans to confirm the absence of this habitat during the recommended wetland delineation survey.

11.0 FLOODPLAINS

Executive Order 11988 (Floodplain Management) and USDOT Order 5650.2 require federal agencies to avoid to the greatest extent possible long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. The 100-year floodplain is defined as an area that would be inundated by a precipitation event that has a 1-in-100 chance of occurring every year. Regulations require that encroachment within the 100-year floodplain be minimized and that land development inconsistent with floodplain values be avoided.

According to the project area Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), approximately 11.7 acres of the proposed ROW is located within Flood Zone A, a 100-year floodplain (see Figure 4).

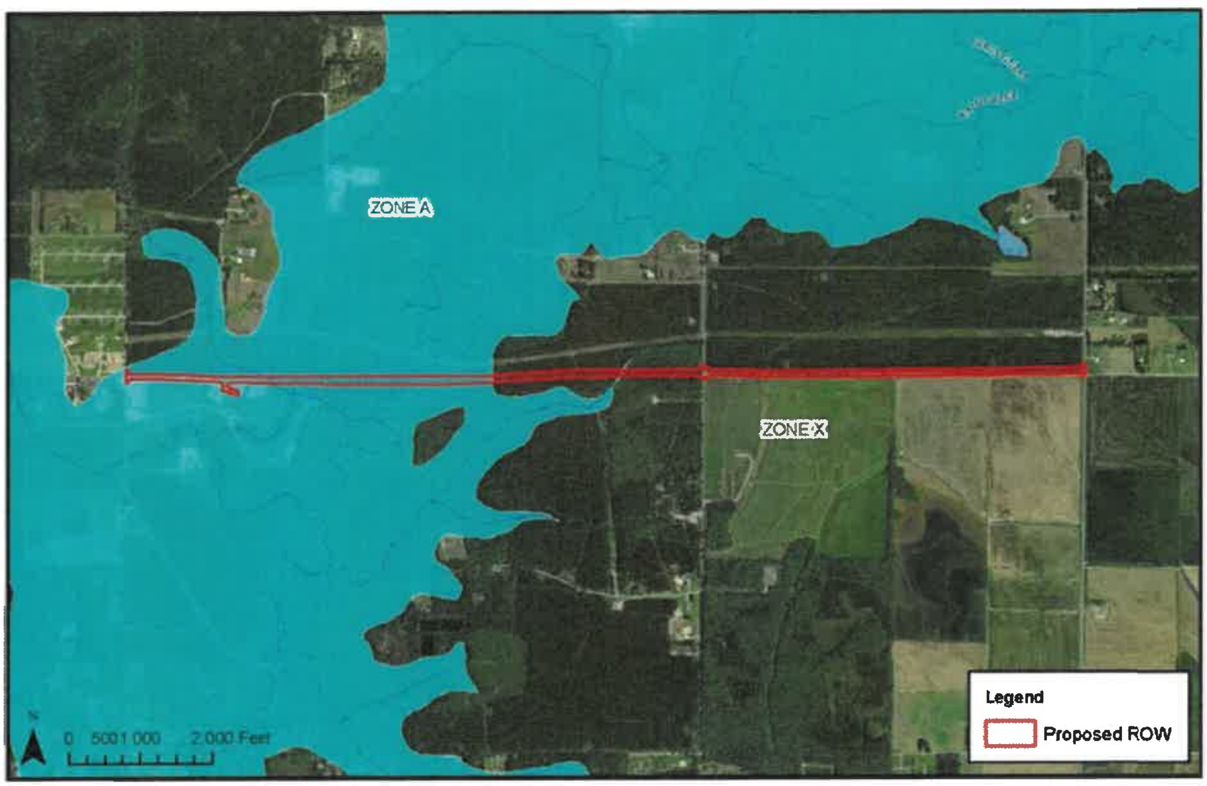

Figure 4. Flood Zones in the Project Area (Source: ESRI and FEMA 2018)

To help avoid impacts on floodplain features, stormwater runoff would be directed to the proposed roadway ditches and cross-drain culverts (reinforced concrete box culverts), thereby decreasing standing water and flooding along the roadway. A

200-foot-long slab-span bridge would be constructed for the section of roadway crossing Bayou Blue. The bridge and culverts would be designed to meet LADOTD design requirements. With the construction of these features, the project would not impact natural or beneficial floodplain values or significantly encroach upon the floodplain. Further, the proposed project would provide an evacuation route for the CTLA Reservation and surrounding rural residents during flood events, thereby providing increased flood protection. In correspondence dated June 24, 2018, the Allen Parish Police Jury floodplain coordinator stated support for the project (see Appendix A).

12.0 COASTAL ZONE AND COASTAL BARRIER RESOURCES

The Coastal Zone Management Act (CZMA) of 1972 authorizes the Coastal Zone Management Program (CZMP), a federal-state partnership dedicated to comprehensive management of the nation's coastal resources. Any federal or state agency whose activities directly affect the coastal zone must, to the maximum extent practicable, be consistent with approved state management programs. Allen Parish lies entirely outside of the Louisiana Coastal Zone; therefore, the proposed project would have no impacts on Louisiana's Coastal Zone.

The USFWS administers the Coastal Barrier Resource Act of 1982. The act designates various undeveloped coastal barrier lands and islands, depicted by specific maps and the new FEMA DFIRMs, for inclusion in the Coastal Barrier Resources System (CBRS). Allen Parish is not located in vicinity of any designated CBRS units in Louisiana. Therefore, the Coastal Barrier Resource Act would not apply.

13.0 SOLE SOURCE AQUIFERS

The EPA defines a sole source aquifer as an underground water source that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas have no alternative drinking water sources that could physically, legally, and economically supply all those who depend upon the aquifer for drinking water. The project is located on the Chicot Aquifer System, which has been designated a sole source aquifer by the U.S. Environmental Protection Agency (USEPA) (USEPA 2018a). Coordination is ongoing with USEPA's Sole Source Aquifer Program coordinator; no impacts on the Chicot Aquifer System are anticipated.

14.0 WILD, SCENIC, AND NATURAL RIVERS

The National Wild and Scenic Rivers System was created by Congress to preserve rivers possessing outstanding natural, cultural, and recreational values. In 1970, the Louisiana Legislature created the Louisiana Natural and Scenic Rivers System. The system was developed for the purpose of preserving, protecting, developing, reclaiming, and enhancing the wilderness qualities, scenic beauty, and ecological regimes of selected free-flowing streams in Louisiana. According to the Louisiana Department of Wildlife and Fisheries (LDWF), no scenic streams are located in or near the project area (LDWF 2018).

15.0 NAVIGABLE WATERWAYS

According to the 33 CFR, Navigation and Navigable Waters, navigable waters of the U.S. are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. The proposed project ROW would cross Bayou Blue, which may be considered a navigable waterway.

In compliance with the Surface Transportation Assistance Act (STAA) of 1982, a letter describing the proposed project comment was sent to the U.S. Coast Guard (USCG). A copy of the USCG coordination letter will be provided in Appendix A when received.

16.0 FARMLAND

Through the NRCS, the U.S. Department of Agriculture (USDA) administers the Farmland Protection Policy Act to minimize the extent to which federal actions contribute to the unnecessary conversion of farmland to non-agricultural uses. Of particular concern are prime or unique farmland soils. The USDA defines prime farmland as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses but is not urban, built-up land, or water. Unique farmland is land, other than prime farmland, that is used for production of specific high-value food and fiber crops.

Approximately 24.3 acres of land in the proposed ROW consists of soils classified as prime farmland (USDA-NRCS 2018). Because these soils are not in crop production, the project is not anticipated to affect farmland. A letter describing the project and a USDA Farmland Conversion Impact Rating (Form AD1006) was sent to the USDA District Conservationist. Correspondence from the NRCS regarding prime farmland will be included in Appendix A when received. The project is not anticipated to adversely affect prime farmland.

17.0 AIR QUALITY

Air quality in Louisiana is regulated by USEPA Region 6 and the LDEQ Air Quality Assessment Division. The Clean Air Act (42 USC 7401-7671q), as amended, gives USEPA the responsibility to establish the primary and secondary National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) that set acceptable concentration levels for six criteria pollutants: fine particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), carbon monoxide (CO), nitrous oxides (NO_x), ozone (O_3), and lead (Pb).

The USEPA's *Nonattainment Areas for Criteria Pollutants* (Green Book) maintains a list of all areas within the U.S. that are currently designated nonattainment areas, indicating that air pollution levels persistently exceed the NAAQS concentration. Allen Parish is currently in attainment for all criteria pollutants (USEPA 2018b).

In 1993, the USEPA established General Conformity Regulations under 40 CFR

Part 93, Subpart B to ensure that federal actions in nonattainment areas do not interfere with a state's ability to attain or maintain compliance with the NAAQS through the development of a conformity determination, if required. The regulations are applicable to actions that would generate emissions from construction and operations that exceed General Conformity Thresholds. However, because the project area is in attainment of the NAAQS, a conformity determination is not required.

The operation of heavy equipment during construction would produce engine emissions. If dry weather conditions are experienced during construction, there is the potential for soil disturbances to create blowing dust. Best Management Practices (BMPs) would be implemented during construction: engine emissions would be minimized by maintaining the emission control systems of the equipment in good working order; dust would be minimized through the spraying of water on exposed soil. These effects, however, would be largely restricted to the construction site and would be of short duration. Effects on regional air quality would be negligible. Once construction has been completed and exposed soil is revegetated, localized effects on air quality would be resolved.

18.0 NOISE

Noise is defined as unwanted sound and, in the context of protecting public health and welfare, implies potential effects on the human and natural environment. Noise is administered under the Noise Control Act of 1972, as amended. The USEPA has also established noise guidelines recommending noise limits for indoor and outdoor noise activities. Under these guidelines, an average noise level over a 24-hour period of 70 A-weighted decibels (dBA) is listed as the threshold for hearing loss. An outdoor 24-hour average sound level of 55 dBA is recommended for residential areas. Additionally, the U.S. Department of Housing and Urban Development (HUD) has also developed a noise abatement and control policy codified in 24 CFR Part 51. According to HUD policy, noise at or below 65 dBA is acceptable in all situations, noise between 65 and 75 dBA is generally acceptable, and noise exceeding 75 dBA is unacceptable in all situations. Noise monitoring and impacts are typically evaluated by the local government.

Ambient noise in the area is generated by a broad range of sources, both natural and anthropogenic. Natural noise sources include climatic sources, such as wind and precipitation. Potential sources of anthropogenic sound in vicinity of the proposed project include commercial and residential roadway traffic and heavy equipment associated with agricultural activities.

Additional noise generated from construction of the proposed project would be of a relatively short duration. BMPs to reduce noise produced by heavy equipment during construction include:

- Conduct work during daytime hours;
- Use standard equipment with noise control devices (for example, mufflers)

that meet manufacturers' specifications;

- Install portable barriers to shield compressors and other small stationary equipment where necessary;

- Direct equipment exhaust stacks and vents away from buildings, when feasible;

- Follow a common-sense approach to vehicle use, and encourage workers to shut off vehicle engines whenever possible; and

- Respond immediately to complaints raised by nearby residents.

Following construction, the project would have a minor impact on noise levels due to the increase in traffic that would result from vehicular use of the new road. This minor increase in ambient noise levels would not exceed HUD or USEPA guidelines.

19.0 HAZARDOUS MATERIALS

A Hazardous, Toxic, and Radioactive Waste (HTRW) assessment was conducted for the project area to identify any potential recognized environmental conditions (RECs) located in or adjacent to the project that have, or may have in the past, adversely impacted environmental conditions. As defined in the American Society for Testing and Materials (ASTM) E1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, a REC indicates "the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property" (ASTM 2013). The assessment identified a spill near an active oil and gas well located on property owned by Texas Petroleum at the southwest corner of Briscoe and Bel Oil roads. Investigators noticed that a current effort to clean up a spill was underway. This well site was considered a REC. However, the proposed project ROW would not cross any portion of the property owned by Texas Petroleum, and project construction would not disturb hazardous materials or create potential hazards to human health. The project would cross several buried natural gas pipelines that traverse the area. Coordination with the pipeline owners would be conducted prior to the start of construction activities to avoid any impacts to oil and gas activities.

If hazardous constituents are unexpectedly encountered in the project area during construction operations, LADOTD would be immediately notified and appropriate measures for the proper assessment, remediation, and management of contamination would be initiated in accordance with applicable federal, state, and local regulations. Liquid materials and chemicals such as fuels, lubricants, and paints would be stored on site during construction in accordance with all applicable regulations and requirements, and the contractor would be required to take appropriate measures to prevent, minimize, and control any release of hazardous materials in construction areas.

20.0 LAND USE

The land surrounding the proposed roadway includes the CTLA reservation to the west and southwest of the roadway, including tribal offices and shops. The properties along the remainder of the road are a mix of timber and crop agricultural land. The proposed project would not alter existing land use or community character. Access to the CTLA reservation would be improved, providing benefits to residents.

21.0 COMMUNITY FACILITIES, SERVICES, AND SOCIAL RESOURCES

Structures along the proposed portion of the roadway located on CTLA land include the following:

- the Buffalo Run convenience store;
- a barn;
- a lawn mower shop;
- a natural resources storage building and office;
- a hydroponic green house;
- an EPA office and storage building;
- a tribal dance arena; and
- a tribal heritage office complex.

The proposed project would not remove or adversely affect any of these structures, and no residences would be affected. No churches, schools, hospitals, fire, or police stations are located in vicinity of the proposed project (USEPA 2018). The proposed roadway project would significantly increase the accessibility of these community facilities for community residents, and residents would have the ability to quickly evacuate the area during times of emergency.

22.0 COMMUNITY COHESION

Communities are places where people reside and share daily activities. Community cohesion is the ability of people to communicate and interact with each other in ways that lead to a sense of community (Clark and Canter 1997, USDOT 1987). Measures of community cohesion are based on characteristics that keep members of a community together long enough to establish meaningful interactions, common institutions, and agreed upon behaviors. Ethnicity, neighborhood character, the availability of public and private facilities and services, and the shared values and perceptions of local residents all contribute to community cohesion. The proposed project would enhance community cohesion by increasing the accessibility of the CTLA reservation for tribal members, including important community institutions located along the proposed road ROW, such as the tribal dance arena and heritage offices listed in Section 8.2.

23.0 DEMOGRAPHICS AND ENVIRONMENTAL JUSTICE

Title VI of the Civil Rights Act (42 United States Code [USC] 2000) and Executive Order 12898 *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* mandate that federal agencies identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income communities. Socioeconomic and demographic data for the project area were reviewed to determine if the proposed action would have a disproportionately high and adverse impact on minority or low-income communities. For this analysis, low-income is defined as household income at or below the poverty line based on statistics updated annually by the U.S. Department of Health and Human Services and the U.S. Census Bureau's American Community Survey.

Minorities (all races/ethnicities except non-Hispanic white persons) make up 70 percent of the population in the project area (see Table 1). This proportion is significantly higher than the state minority percentage of 41 percent, indicating that this area is an Environmental Justice community. The percentage of the population living in poverty is lower than the percentage at the state level.

Table 1
Demographic Characteristics

Demographic	Project Area	State of Louisiana
Minority Population	70 % [1]	41 %
Population Living in Poverty	8 % [2]	20 %

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates, 2012-2016; USEPA 2018c
[1] Block group 220039505004 data
[2] Census tract 22003950500 data

Minority and low-income populations would not be adversely impacted by the project. The project would benefit the public through reduced flooding and reliability of the road to serve as a hurricane evacuation route.

24.0 ECONOMIC IMPACTS

Allen Parish is relatively rural, with only 34 people per square mile, as compared to the state average of 105 people per square mile (U.S. Census Bureau 2018). The largest employment sectors in Allen Parish are healthcare and social assistance, retail trade, and manufacturing (U.S. Census Bureau 2016).

The proposed project would not relocate any businesses or residences. Any impacts on economic activities would be beneficial due to the improved access to and from the CTLA reservation that the project would provide.

25.0 TRANSPORTATION PATTERNS

The proposed roadway would include two 11-foot-wide travel lanes with 3-foot-wide shoulders on both sides, drainage ditches, and a 20-foot-long slabbed concrete bridge with box culverts. The roadway would enhance accessibility to and from the CTLA reservation and facilities, and also provide an emergency evacuation route for CTLA and area residents. During construction, traffic flow would be maintained by keeping one lane open on existing roadway portions of CC Bel Road and Briscoe Road. Access to CTLA and agricultural properties along these existing roadways would not be altered. Once constructed, the proposed roadway would improve the efficiency and accessibility of transportation patterns to properties along the proposed and nearby roadways.

26.0 MITIGATION

The proposed project is expected to have minimal effects on the environment. For those impacts that cannot be avoided, the following mitigation measures would be implemented.

26.1 Wetlands and Other Waters

To ensure no net loss of wetlands, any impacts to wetlands as a result of the project would be compensated in accordance with an approved mitigation plan developed during the permit process. To mitigate potential water quality impacts to surface waters, the proposed project would adhere to standard LADOTD BMPs and applicable LDEQ permit provisions to prevent erosion and nonpoint source pollution that might result from construction-related activities.

26.2 Floodplains

Required drainage structures would be designed, installed, and maintained to ensure adequate water flow through the project area and to ensure no adverse impacts to the natural function of local floodplains.

26.3 Construction Impacts

Short-term construction impacts (for example, noise and air quality) would be mitigated through adherence to applicable local, state, and federal regulations, including (but not limited to) Section 107.14 (Environmental Protection) of the Louisiana Specifications for Roads and Bridges and appropriate LDEQ Air Quality Regulations governing fugitive emissions of particulate matter during road construction activities (LAC 33:III.1305). Standard specification 107.27 (Archaeological and Historical Findings) dictates procedures necessary in the event that archeological or historical material is discovered during the course of construction-related activities.

27.0 REFERENCES

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Appendix A:
Agency Coordination

Endangered Species Act (ESA) Project Review and Guidance for Other Federal Trust Resources Report

Instructions

Please keep a copy of this report for your records. It is not necessary to send this report to the Louisiana Ecological Services Office. Contact our office at (337) 291-3100 for further assistance.

Project Description: The Coushatta Tribe of Louisiana (CTLA) is seeking federal funding through the U.S. Department of Transportation (DOT) Better Utilizing Investments to Leverage Development (BUILD) Transportation Discretionary Grants program to create an emergency evacuation route from the CTLA Reservation to a state evacuation route (State Highway [LA] 26) in Allen Parish, Louisiana. When completed, the road will provide the only ingress and egress for the CTLA Reservation during frequent flood events.

The proposed 2.5-mile roadway will connect Powell Road to LA 26 (see Figure 1) and will consist of improving approximately 1.2 miles of existing unpaved roadway and constructing 1.3 miles of new roadway. Approximately 0.2-mile of roadway improvements would occur on a gravel road, a portion of which is on Coushatta Trust Land; and 1.0 mile of existing roadway improvements would occur on Briscoe Road, which is surrounded by farm and timber land and intersects with LA 26. To connect these two roadway sections, 1.3 miles of new roadway would be constructed through a forested area and would include a bridge crossing Bayou Blue. The proposed 2.5-mile roadway will be designed to meet federal highway DOT standards as well as Louisiana Department of Transportation (DOTD) standards for roadway classification Rural Local-2.

Requesting Agency: Bureau of Indian Affairs (BIA)

Project Coordinates: Latitude: 30.523810 Longitude: -92.694201

Point of Contact: Laura Carnes

Address: 8282 Goodwood Blvd.

City: Baton Rouge **State:** Louisiana **Zip Code:** 70806

Phone Number 1: 225-612-4287 **Phone Number 2:** ____________________

Email Address: lcarnes@gecinc.com

Does the proposed action only involve telecommunication structure(s)?

No

Would the proposed action occur entirely within an existing footprint or rights-of-way (ROW)?

No

American Chaff-seed

Would the proposed action occur on or around pimple mounds (low, flattened, roughly circular or elliptical domes consisting of sandy loam that is entirely distinct from surrounding soil with a basal diameter ranging from 3m to more than 30m and the height from 30cm to more than 2m) within long-leaf pine flatwoods?

No

Conclusion:
We have determined that the proposed action would have no effect on American Chaff-seed.

______________________________ __________
Project Representative *Date*

Red-cockaded Woodpecker

Would the proposed action involve removal of suitable foraging habitat (pine or pine/hardwood stands in which 50 percent or more of the dominant trees are pines and the dominant pine trees are 30 years of age or older)?

Yes

Would the proposed action involve removal of suitable nesting habitat (pine or pine/hardwood stands that contain pines 60 years in age or older)?

No

Does suitable nesting habitat occur with 0.5 mile of the suitable foraging habitat that would be impacted by the proposed action?

No

Conclusion:
We have determined that the proposed action would have no effect on the Red-cockaded Woodpecker.

________________________________ __________

Project Representative *Date*

Section 7 Consultation for the proposed action is concluded. To ensure continued compliance with the ESA, reinitiate consultation when:

- new information reveals that the action may affect listed species or designated critical habitat in a manner or to an extent not considered in this consultation
- the action is modified in a manner that causes effects to listed species or designated critical habitat not considered in this consultation
- a new species is listed or critical habitat designated that the action may affect.

Migratory Bird Conservation Recommendations

Bald Eagle

The proposed project area may provide nesting habitat for the bald eagle (*Haliaeetus leucocephalus*), which was officially removed from the List of Endangered and Threatened Species as of August 8, 2007. However, the bald eagle remains protected under the Bald and Golden Eagle Protection Act (BGEPA) (54 Stat. 250, as amended, 16 U.S.C. 668a-d) and theMigratory Bird Treaty Act (MBTA) (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.) The Louisiana Department of Wildlife and Fisheries (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.

The Service developed the National Bald Eagle Management (NBEM) Guidelines to provide landowners, land managers, and others with information and recommendations to minimize potential project impacts to bald eagles, particularly where such impacts may constitute "disturbance," which is prohibited by the BGEPA. A copy of the NBEM Guidelines is available at:

http://www.fws.gov/migratorybirds/pdf/management/nationalbaldeaglenanagementguidelines.pdf

In southern Louisiana parishes, eagles typically nest in mature trees (e.g., baldcypress, 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 Louisiana. If a bald eagle nest occurs or is discovered within 660 feet of the proposed project area, then an evaluation must be performed to determine whether the project is likely to disturb nesting bald eagles. That evaluation may be conducted 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.

Colonial Waterbirds

In accordance with the Migratory Bird Treaty Act of 1918 (as amended), please be advised should the project area be located in or near wetland habitats which may be inhabited by colonial nesting waterbirds and/or seabirds, additional restrictions may be necessary.

Colonies may be present that are not currently listed in the database maintained by the Louisiana Department of Wildlife and Fisheries. That database is updated primarily by (1) monitoring previously known colony sites and (2) augmenting point-to-point surveys with flyovers of adjacent suitable habitat. Although several comprehensive coast-wide surveys have been recently conducted to determine the location of newly-established nesting colonies, we recommend 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 our colonial nesting waterbird guidance on the LESO Webpage https://www.fws.gov/lafayette/Migratory_Birds/MigBird.html.

Additional Migratory Bird Conservation Recommendations

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 LESO webpage https://www.fws.gov/lafayette/Migratory_Birds/MigBird.html and the Service's Migratory Bird Program Webpage (https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/communication-towers.php).

JOHN BEL EDWARDS
GOVERNOR

JACK MONTOUCET
SECRETARY

PO BOX 98000 | BATON ROUGE LA | 70898

Date	July 12, 2018
Name	Laura Carnes
Company	G.E.C., Inc.
Street Address	8282 Goodwood Blvd.
City, State, Zip	Baton Rouge, La 70806
Project	Coushatta Tribe of Louuisiana Emergency Evacuation Route
Project ID	
Invoice Number	18071223

Personnel of the Coastal & Nongame Resources Division have reviewed the preliminary data for the captioned project. After careful review of our database, no impacts to rare, threatened, or endangered species or critical habitats are anticipated for the proposed project. No state or federal wildlife refuges, wildlife management areas, or scenic streams are known to occur at the specified site within Louisiana's boundaries.

The Louisiana Natural Heritage Program (LNHP) has compiled data on rare, endangered, or otherwise significant plant and animal species, plant communities, and other natural features throughout the state of Louisiana. Heritage reports summarize the existing information known at the time of the request regarding the location in question. The quantity and quality of data collected by the LNHP are dependent on the research and observations of many individuals. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Louisiana have not been surveyed. This report does not address the occurrence of wetlands at the site in question. Heritage reports should not be considered final statements on the biological elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. LNHP requires that this office be acknowledged in all reports as the source of all data provided here. If at any time Heritage tracked species are encountered within the project area, please contact the LNHP Data Manager at 225-765-2643. If you have any questions, or need additional information, please call 225-765-2357.

Sincerely,

for Carolyn Michon

Carey Lynn Perry, Program Manager
Natural Heritage Program

State of Louisiana
OFFICE OF THE LIEUTENANT GOVERNOR
DEPARTMENT OF CULTURE, RECREATION & TOURISM
OFFICE OF STATE PARKS

BILLY NUNGESSER
LIEUTENANT GOVERNOR

RICHARD H. HARTLEY
DEPUTY SECRETARY

GENE REYNOLDS
ASSISTANT SECRETARY

June 19, 2018

Ms. Laura Carnes
Environmental Scientist/Project Manager
G.E.C., Inc.
8282 Goodwood Boulevard
Baton Rouge, LA 70806

Re: Powell Road to LA 26 Road Improvements
Allen Parish, Louisiana

Dear Ms. Carnes,

I am in receipt of the solicitation of views request submitted by e-mail for a solicitation of views regarding road improvements impacting Powell Road to LA 26 in Allen Parish, Louisiana.

The Division of Outdoor Recreation in the Louisiana Office of State Parks administers the Land and Water Conservation Fund and the Recreational Trails Program for Louisiana. In this capacity we compile an inventory of recreational sites within the state for publication in the Statewide Comprehensive Outdoor Recreation Plan (SCORP) published periodically. The most recent SCORP was published for the period of 2014-2019 with an inventory developed in 2014.

Based on the information provided, there is no conflict with any recreation area within 1,000 feet and no conflict with any existing Land and Water Conservation Fund (LWCF) project. The nearest LWCF project is a baseball field and playground area on the south side of CC Bel Road within the Coushatta land holdings.

Sincerely,

Cleve Hardman
Director of Outdoor Recreation

Appendix B:
Categorical Exclusion Documentation

Categorical Exclusion Checklist

Project: Coushatta, Camp Coushatta Road **Date:** May 7, 2010

Proposed Action: This categorical exclusion documents the lack of environmental impact from providing federal funding for the reconstruction of Camp Coushatta Road for the Coushatta Indian Tribe. The work will include resurfacing and realignment entirely within the current right-of-way. No endangered and threatened species will be impacted, and the State Historic Preservation Officer has concluded that no historic properties will be affected.

Exclusion category 516 DM 10.5.A & L(8)

Evaluation of exceptions to actions within Categorical Exclusion:

1. This action will have significant adverse effects on public health or safety.	No	X	Yes	
2. This action will have an adverse effect on unique geographical features such as wetlands, wild or scenic rivers, refuges, floodplains, rivers placed on the nationwide river inventory, or prime or unique farmlands.	No	X	Yes	
3. The action will have highly controversial environmental effects.	No	X	Yes	
4. The action will have uncertain environmental effects or involve unique or unknown environmental risk.	No	X	Yes	
5. This action will establish a precedent for future actions.	No	X	Yes	
6. This action is related to other actions with individually insignificant but cumulatively significant environmental effects.	No	X	Yes	
7. This action will affect properties listed or eligible for listing in the National Register of Historic Places.	No	X	Yes	

8. This action will affect a species listed or proposed to be listed as endangered or threatened. No __X__ Yes ____

9. This action threatens to violate Federal, state, local, or tribal law or requirements imposed for protection of the environment. No __X__ Yes ____

10. This action will have a disproportionately high and adverse effect on low income or minority populations. No __X__ Yes ____

11. This action will limit access to, and ceremonial use of Indian sacred sites on federal lands by Indian religious practitioners, or significantly adversely affect the physical integrity of such sacred sites. No __X__ Yes ____

12. This action will contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area, or may promote the introduction, growth, or expansion of the range of such species. No __X__ Yes ____

A "yes" to any of the above exceptions will require that an Environmental Assessment (EA) be prepared.

NEPA Action --- CE ____X____ EA ________

Approval of the road work will have no adverse environmental impacts on public health or safety, wetlands, wild or scenic rivers, refuges, floodplains, rivers placed on the nationwide river inventory, prime or unique farmlands, and historic properties. The proposed project will not have any highly controversial or uncertain effects on the environment or pose any unique or unknown environmental risks to the immediate and surrounding environment. This action will not establish a precedent.

Preparer's Name and Title: Kurt G. Chandler, Regional Environmental Scientist

Regional Archeologist concurrence with item 7

Concur: David Saunders Date: 5/7/2010

David Saunders

Concur: Kurt G. Chandler Date: 5/7/10

Kurt G. Chandler
Regional Environmental Scientist

Concur: Date: 5/7/10

Acting Regional Director / Superintendent

MITCHELL J. LANDRIEU
LIEUTENANT GOVERNOR

State of Louisiana
OFFICE OF THE LIEUTENANT GOVERNOR
DEPARTMENT OF CULTURE, RECREATION & TOURISM
OFFICE OF CULTURAL DEVELOPMENT
DIVISION OF ARCHAEOLOGY

PAM BREAUX
SECRETARY

SCOTT HUTCHESON
ASSISTANT SECRETARY

April 28, 2010

Mr. Martin Handly
URS Corporation
7389 Florida Blvd., Suite 300
Baton Rouge, LA 70806

Re: Draft Phase I CRM Report
LA Division of Archaeology Report No. 22-3455
Phase I Cultural Resources Investigations -
Camp Coushatta Road Construction
Allen Parish, Louisiana

Dear Mr. Handly:

We are in receipt of your letter dated April 8, 2010, transmitting two copies of the above-cited report. We have completed our review and have the following comments to offer.

We concur with the findings presented in the report that it does not appear that any significant archaeological sites or other historic properties (i.e., standing structures) will be affected by the proposed project for which the investigations were conducted. Therefore, culture resources need not be further considered during the pursuit of the project for which the investigations were conducted

Technical comments concerning several items are included with this letter. Please address these as appropriate in the preparation of the final report for this project and transmit two copies for our files. Also, please include a compact disk containing a pdf copy of the report for the Division's electronic files. Should you have any questions concerning our current comments, do not hesitate to contact Dennis Jones in the Division of Archaeology at (225) 342-6932 or by email at djones@crt.state.la.us

Sincerely,

Scott Hutcheson
State Historic Preservation Officer
SH:DJ:s

TECHNICAL COMMENTS

1. Page 7. Please cite Figure 3.1 in the discussion of previous research and recorded sites. Please mention in the text that 16AL28 is the closest site to the current project area and provide some information on its chief characteristics and the current recommendation for the National Register of Historic Places. This information can be easily downloaded on the Division's GIS database.

URS

March 9, 2010

Ms. Heather Dyer
U.S. Fish & Wildlife Service
646 Cajundome Boulevard, Suite 400
Lafayette, Louisiana 70506-4290

RE: BIA Project: S 505-9711
Camp Coushatta Road
Improvements (Route 0072)

Dear, Ms. Dyer;

We are requesting statement of no impact from your office for the project locations described below:

S 505-9711

This project is located on the Coushatta Indian Reservation located in Allen Parish Louisiana, with the beginning Latitude and Longitude of N30°31'25.22",W92°42'50.13", having the end Latitude and Longitude of N30°31'25.48",W92°42'19.95". The project will be the upgrade and realignment of Camp Coushatta Road, from a crushed limestone surface and existing grass field to reinforced concrete pavement, it is expected to stay within the limits of the fifty foot right-of-way, and all trees within the fifty foot right-of-way have been identified for removal.

Attached are photos of project location.

If you have any questions, please do not hesitate to contact me at (337) 437-7676.

With kindest regards,

Jason Matte

Jason Matte
Senior Civil Designer

This project has been reviewed for effects to Federal trust resources under our jurisdiction and currently protected by the Endangered Species Act of 1973 (Act). The project, as proposed,
(X) Will have no effect on those resources
( ) Is not likely to adversely affect those resources.
This finding fulfills the requirements under Section 7(a)(2) of the Act.

Debra A Fuller March 10, 2010

Acting Supervisor Date
Louisiana Field Office
U.S. Fish and Wildlife Service

One Lakeshore Drive
Lake Charles, Louisiana 70629

Phone: (337) 437-7676
Fax: (337) 433-8217

Figure 1.1 Project Overview Map, Allen Parish

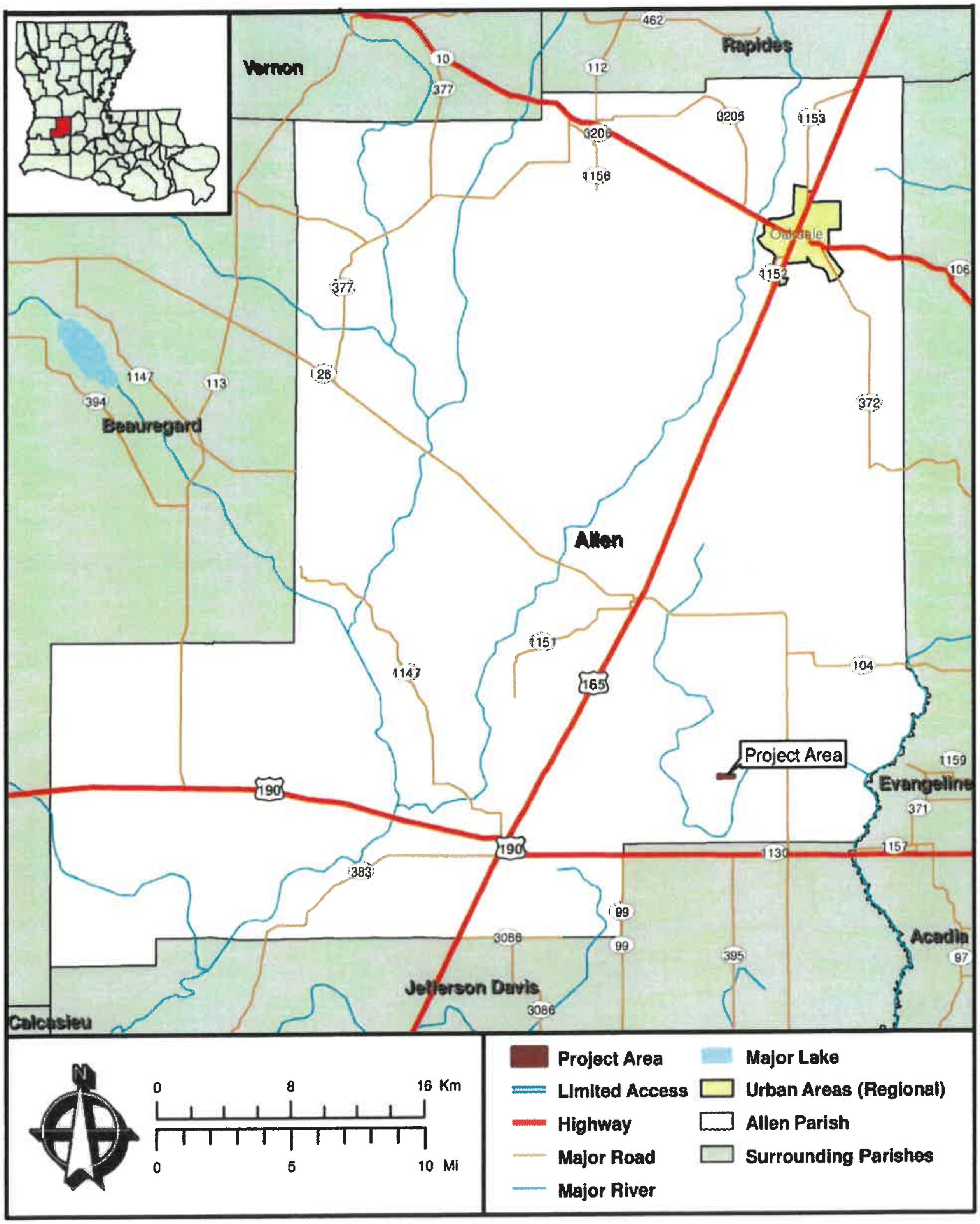


Figure 1.2 Location Map of Project Area

Soileau USGS Topographic Quadrangle Maps

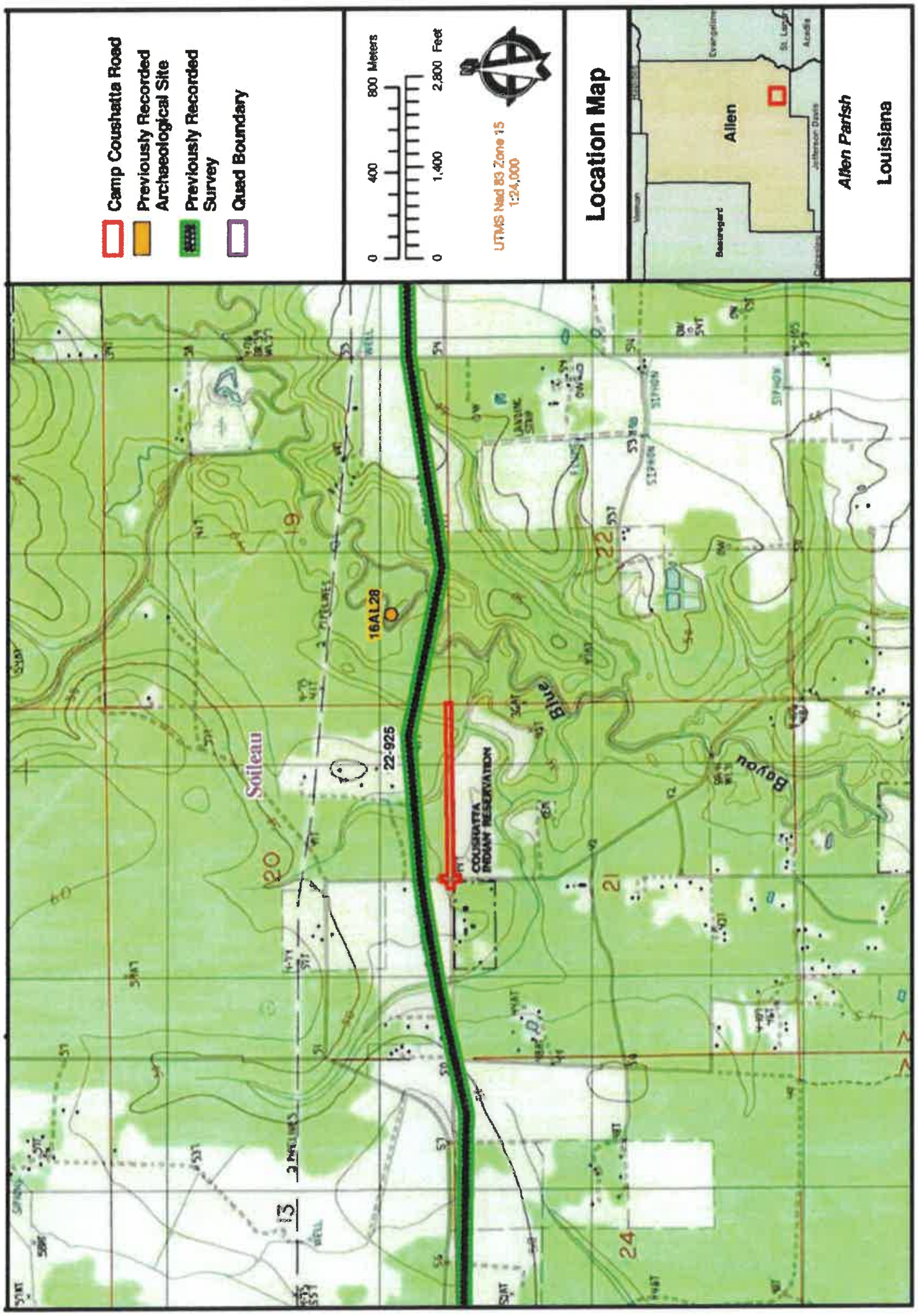
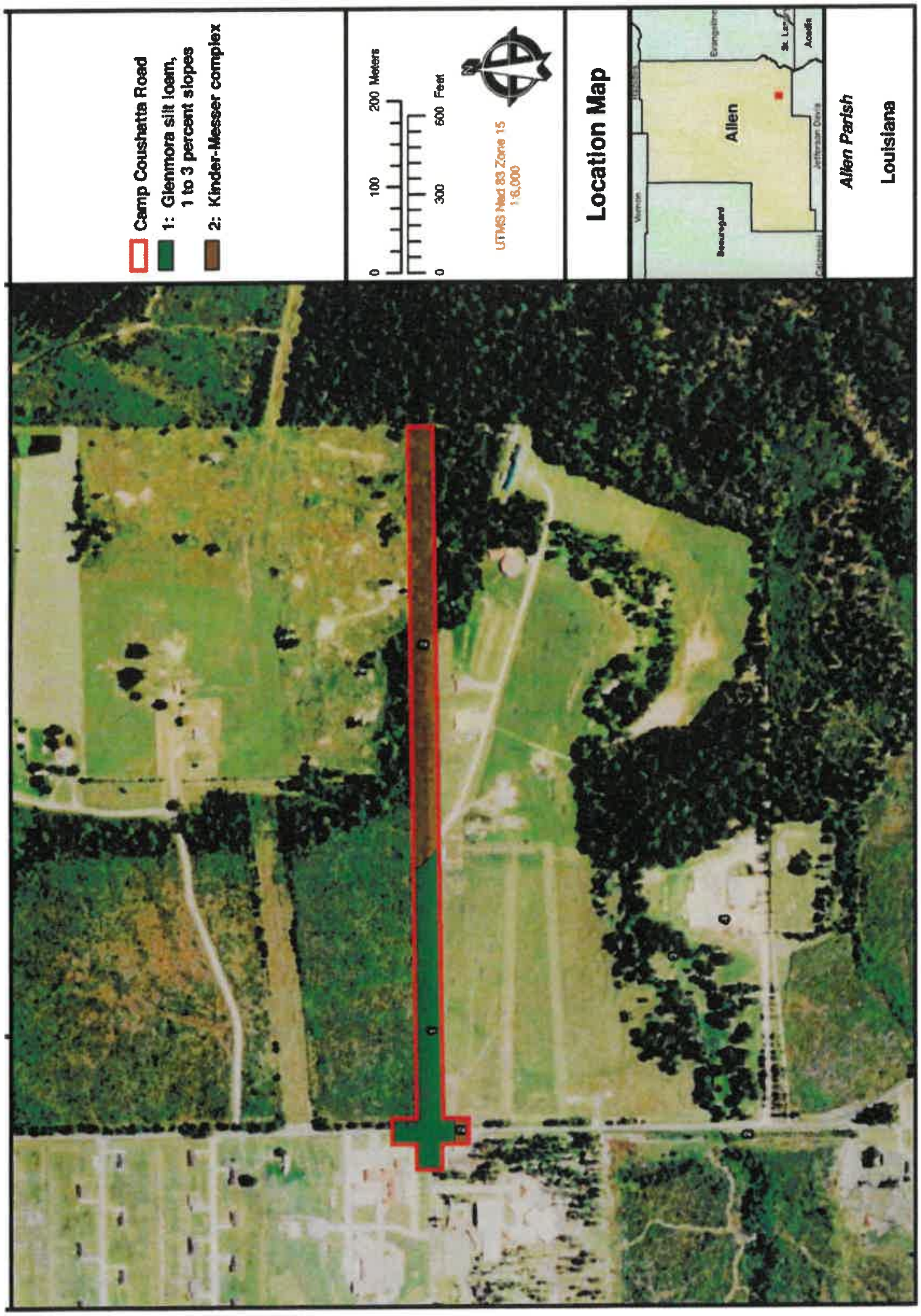


Figure 2.1 Project Area Soils



URS

Photograph location N30°31'25.22", W92°42'50.13"
(Beginning of Camp Coushatta Road Project looking toward the end)

Photograph location N30°31'25.34", W92°42'36.74"
(Beginning of realignment of Camp Coushatta Road Project looking toward the end)

Photograph location N30°31'25.34", W92°42'36.74"
(Beginning of realignment of Camp Coushatta Road Project looking toward the beginning)

Photograph location N30°31'25.48", W92°42'19.95"
(End of Camp Coushatta Road Project looking toward the beginning)

Figure 3.2 West end of Maintenance Road Project Area (looking east)

Figure 3.3 Maintenance Parking Lot Project Area (looking south)

COUSHATTA TRIBE

OF LOUISIANA

HERITAGE DEPARTMENT

05/24/2017

David Saunders, Regional Archaeologist
Bureau of Indian Affairs, Eastern Area Office
545 Marriott Drive, Suite 700
Nashville, TN 37214

Re: Camp Coushatta Road Categorical Exclusion

Dear David,

The Coushatta Tribe of Louisiana is in agreement with the categorical exclusion status for the Camp Coushatta Road reconstruction and re-surfacing project. We are satisfied with the archaeological and NEPA studies conducted, and concur that this project will have no adverse impact on either historical or cultural properties, nor have any adverse environmental impact. We also concur that approval of a categorical exclusion for this project will not establish a precedent.

Respectfully,

Linda Langley

Linda Langley, Ph.D.
Tribal Historic Preservation Officer