Lieutenant Governor Jay Dardenne

Developed by the Education staff of Lieutenant Governor Jay Dardenne and the Department of Culture, Recreation and Tourism

For more information, please contact

Richard Hartley
Special Projects Director
Office of the Lieutenant Governor
rhartley@crt.la.gov

Debra Credeur
Atchafalaya National Heritage Area Director
Dept. of Culture, Recreation and Tourism
dcredeur@crt.la.gov
Our country's landscape is rich and mysterious. It is filled with twisting bayous, backwater lakes, vast marshes, and America's largest river swamp. We have fields of sugar cane and cotton, ancient live oaks and towering cypress. Alligators, raccoons, and even bears roam our lands while 270 species of birds take to our skies. From our waters come catfish, shrimp, and the crawfish that make us so well known. From this bounty, our country has created food unique to the entire world. Our cuisine is an intricate mixture of European as well as African and Native American descent using ingredients such as roux, picante, the trinity – onion, bell pepper and celery, filé, and tasso. We eat boudin, gumbo, étouffée, and gateau sirop.

With food comes celebration. Our country's musicians have inspired the world of rock and roll, country, gospel and rockabilly. Our native music is a complex melding of culture to create the Cajun rhythm and the staccato of zydeco. We use the frottoir and the accordion, the triangle and the fiddle. We dance the two-step, the waltz, and the jig.

The music and food are emblems of our country's rich culture. From the Diaspora of L'Acadie in Canada and colonial French influence comes our French speaking tradition. This melded with our deep Native American and African American roots created our Cajun dialect. Ours is a history of man and nature in an often-foreboding and always majestic environment. Our history and culture remain intact and we celebrate it with a joie de vivre unmatched in other lands. Our country is vast and varied but we share the story of water and swamp, man and survival around the river we call the Atchafalaya, still traveling our waters as did our forebears.

We invite you to journey through our country and explore our mysterious landscape, dine on our rich cuisine, celebrate with our music, and immerse yourself in our culture. Our country requires no passport, because our country is right here in America. The Atchafalaya National Heritage Area, America's Foreign Country

A partnership with The National Park Service
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The Atchafalaya National Heritage Area,
America’s Foreign Country
National Heritage Areas

A national heritage area is a nationally distinctive landscape shaped by natural, cultural, historic and recreational resources that is recognized by the U.S. Congress. A heritage area tells a nationally important story through its geography, its manmade structures and the traditions that have evolved within its landscape.

Since 1984, Congress has created forty-nine national heritage areas, stretching from the Essex National Heritage Area in Massachusetts to the newly designated Kenai Mountain-Turnagain Arm National Heritage Area in Alaska.

Louisiana has two national heritage areas, the Cane River National Heritage Area and the Atchafalaya National heritage Area.

Atchafalaya National Heritage Area

"Atchafalaya" is an American Indian word meaning “long river.” The Atchafalaya Basin and region is among the most culturally rich and ecologically varied regions in the United States. It is home to the widely recognized Cajun culture as well as a diverse population of European, African, Caribbean and Native American descent.

Within the Atchafalaya, a penchant for adventure, adaptation, ingenuity, and exploitation has created a unique cultural legacy. Atchafalaya National Heritage Area (AHNA) is a national treasure of history, culture, and nature in south central Louisiana. This region is one of the most complex and least understood places in Louisiana and the nation. Yet, the stories of the Atchafalaya National Heritage Area are emblematic of the broader American experience. Here there are opportunities to understand and witness the complicated, sometimes harmonious, sometimes adversarial interplay between nature and culture.

The Atchafalaya National Heritage Area was designated on October 6, 2006 by the National Heritage Act of 2006. The ANHA stretches across 14 parishes in south-central Louisiana: Ascension, Assumption, Avoyelles, Concordia, East and West Baton Rouge, Iberia, Iberville, Lafayette, Pointe Coupee, St. Landry, St. Martin, St. Mary and Terrebonne.

The National Heritage Act of 2006 gave the existing Atchafalaya Trace Commission, an agency of the Louisiana Department of Culture, Recreation and Tourism under the Office of the Lieutenant Governor, the authority to oversee the development of a federal management plan and to coordinate the implementation of its recommendations. The Commission is composed of 14 members appointed by the governing authority of each parish within the heritage area, with terms not to exceed three years.
**Atchafalaya National Heritage Area**

**Waterways and Structures**

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BEFORE THE 15th CENTURY: The Red River and Mississippi River were separate rivers, more or less parallel.

15th CENTURY: The Mississippi River turned west and a loop, later called Turnbull’s Bend, formed. It intercepted the Red River, which became a tributary of the Mississippi River and the Atchafalaya River was formed as a distributary of the Mississippi River.

BY 1778: The entrance to the Atchafalaya River was occluded by a logjam.

1831: Capt. Henry M. Shreve, founder of Shreveport and a world-renowned river engineer, dug a canal through the neck of Turnbull’s Bend, thus shortening river travel time.

United States Army Corps of Engineers (origins as far back as 1775)

The Atchafalaya River and Basin are maintained by the United States Army Corp of Engineers.

Mississippi River & Tributaries Project (MR&T)

4 major elements of the MR&T project are:
- Levees
- Floodways
- Channel improvement and stabilization
- Tributary basin

The Floods of the 1800s & 1927

1900’s—Present Day

Mississippi River levee’s designed, constructed and maintained by the Army Corp of Engineers, MRC, and various state and local agencies

Backwater Areas from the Flood Control Areas of 1927

- St. Francis River Backwater Area
- White River Backwater Area
- Yazoo Backwater Area
- Red River Backwater Area

Mississippi River Commission (MRC) (Established June 28, 1879)

Mississippi River levee’s privately owned and maintained 1700-1800's

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Over time, the north section of Turnbull’s Bend filled in with sediment. The lower half remained open and became known as Old River and linked the three rivers.

1953: The U.S. Army Corps of Engineers concluded that the Mississippi River could change course to the Atchafalaya River bed by 1990 if it were not controlled. This observation came from studies that monitored latitude flow over the years.

1963: The Old River Control Complex (ORCC) was completed.

1953: The Morganza Spillway is allowed to be opened is in flood emergencies; it has been opened twice since being built—in 1973 and 2011.

Morganza Spillway (construction began in late 1930s—completed in 1954) The Spillway was incorporated into the Mississippi River Commission’s 1956 project design flood.

For a complete history, visit www.americaswetlandresources.com

Timeline:
- Late 1930’s
- 1963: Old River Control Structure (expanded in 1990)
- 1973
- 2011
The word/name "Atchafalaya" came from the Choctaw Indians. It means "Long River," and is derived from hachcha, meaning "river," and falaya, meaning "long."

The Atchafalaya River’s source is near Simmesport, at the confluence of the Red River with the Mississippi River; they merge within a 7-mile (11 km) span of levees along the Old River, and continue flowing south to the Gulf of Mexico.

The Atchafalaya River is a distributary of the Mississippi River and Red River in south central Louisiana. It flows south, just west of the Mississippi River for about 140 miles (225 km) before entering the Atchafalaya Bay and on into the Gulf of Mexico.

Since it is navigable, the Atchafalaya River provides a significant industrial shipping channel for the state of Louisiana.

The Atchafalaya River, originally the Old Mississippi River, is a natural course for the Mississippi River to the Gulf of Mexico; the Atchafalaya River captures the major flow of the Mississippi River. A series of manmade structures direct 70% of the volume of the Mississippi River to flow to New Orleans and Baton Rouge and only 30% of the volume to flow through the Atchafalaya to the Gulf of Mexico.

The volume of water the Atchafalaya receives from the Mississippi River is controlled by the Old River Control Structure located in Concordia Parish, Louisiana, and a system of dams and spillways near Red River Landing, Louisiana. During times of extreme flooding, several additional systems are put in motion, one of which is the Morganza Spillway further downstream.

A significant responsibility of the U.S. Army Corps of Engineers is maintaining the Mississippi River as a navigable channel.

The Atchafalaya River and the land between the levees form what is called the Atchafalaya Basin and Atchafalaya Swamp located in southern Louisiana.

The Mississippi River flow is diverted into the Atchafalaya River and the West Atchafalaya Floodway (the basin west of, and parallel to, the river) through the Old River Control Structures at the Mississippi. However, during times of severe flooding, as in 1973 and 2011, an emergency flood control system, i.e., the Morganza Floodway (east of, and parallel to, the Atchafalaya), is used.

The Atchafalaya River intersects the Gulf Intracoastal Waterway below Grand Lake (Six Mile Lake) in an area in the vicinity of Morgan City, Louisiana.

The Atchafalaya River is located in the Atchafalaya National Heritage Area.

The Atchafalaya River is a natural outlet for the Atchafalaya River Basin and is the only area building new ground near the Gulf of Mexico.
A hardwood swamp in the Sherburne Wildlife Management Area on the Atchafalaya River in Louisiana.

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The Mississippi River is a vital part of American history, commerce and culture. The Mississippi River is one of the largest rivers in North America flowing 2,340 mi (3,765 km) from its source at Lake Itasca in the Minnesota North Woods, through the mid-continental United States, the Gulf of Mexico Coastal Plain and entering the Gulf of Mexico.

The Mississippi River has been and is today a route for cargo ships for more than 200 years. The river is now one of the biggest and busiest commercial waterways in the world. The river carries approximately 175 million tons (159 million metric tons) of cargo each year.

The Mississippi River is also the source of drinking water for 18 million people, supplies water to farms, factories, hydroelectric dams along the river, provides freshwater for many species, plants and animals as well as offering opportunities for water sports and recreation.

The Mississippi River is one of the world’s major river systems in terms of size, habitat diversity, and biological productivity.

The Mississippi River has 250-plus tributaries which are a vital component of the nations and the world’s commerce. Although, the most important of which are the Arkansas, Ohio, and Missouri Rivers.

The river’s floodplain encompasses more than 30 million acres (12 million hectares). Most of this floodplain, approximately 25 million acres (10 million hectares), occurs adjacent to the lower Mississippi, which meanders in great loops. Natural levees, oxbow lakes, and marshes mark this area.

“Mississippi” is an Ojibwa (Chippewa) word meaning great river or gathering of waters—an appropriate name because the river basin, or watershed, extends from the Allegheny Mountains in the eastern United States to the Rocky Mountains, including all or parts of 31 states and 2 Canadian provinces. The river basin measures 1.85 million mi² (4.76 million km²), covering about 41 percent of the United States and about one-eighth of North America. Of the world’s rivers, the Mississippi River ranks third in watershed area and seventh in average discharge.

The Mighty Mississippi River is one of the Nation’s outstanding assets but uncontrolled, it could be a great a liability.

The Mississippi River always has been a threat to the security of the valley through which it flows.

Since the time of the first documented flood in 1543 by Garciaiso de la Vaga explorers, traders, farmers, men of commerce, and engineers have known, sometimes too well, the Mississippi in flood.

The Mississippi has several nicknames that reflect the history and presence of the river, Old Man River, Old Muddy, the Father of Waters, and the Mighty Mississippi.

The Mississippi is well known for its steamboat era and activity with 2012 marking the 200th anniversary of the first successful steamboat, The New Orleans, trip down the Ohio and Mississippi Rivers to New Orleans.
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Atchafalaya Basin (Swamp)

- The Atchafalaya swamp is the largest river swamp in the United States and North America and consists of rivers, bayous, lakes, wetlands, marshes, backwater, estuaries and river delta.

- The Atchafalaya Swamp consists of three floodways:
  - Morganza Floodway
  - West Atchafalaya Floodway
  - Atchafalaya Basin Floodway

- The Atchafalaya Basin is distinctive and varied in its landscape and habitat: 173,000 acres of cypress swamps and 64,000 acres of aquatic habitat. The acreage is either under the management of or owned by various agencies or it is privately owned:
  - 18,000 acres are under the jurisdiction of the State Land Office
  - 37,280 acres are managed by the Department of Wildlife & Fisheries
  - 15,220 acres are owned by the U.S. Fish & Wildlife Service (Atchafalaya National Wildlife Refuge)
  - 36,000 acres are owned by the Corps of Engineers, and
  - 40 percent is owned by private landowners

- The Atchafalaya River and Basin are maintained by the United States Army Corp of Engineers.

- The control is accomplished by movable structures at the head and a series of levees running roughly parallel with the center channel of the river.

- The minimum distance between the east and west protection levee is about 15 miles; the area within the levees is known as the basin.

- On an annual basis the water elevation between the levees can change as much as 15 feet.

- The Atchafalaya is unique because it has a growing delta system with nearly stable wetlands.

- Many years ago the Atchafalaya River was the main channel of the Mississippi River through the process of delta switching, which has built the extensive delta plain of the river. The natural levees created by earlier main channels border and help define the Atchafalaya Basin, with the Atchafalaya River’s natural levee running southward along the western edge of the basin.

- The central basin is further bordered by manmade levees designed to contain and funnel floodwaters released from the Mississippi at Morganza south toward Morgan City, and eventually to the Gulf of Mexico.
Mississippi Delta

- The Lower Mississippi Delta “Delta” is a vast and vital part of the American landscape.
- Another common usage of "delta" refers to the "recent delta" that area of new land built by the Mississippi onto the continental shelf in approximately the last 5,000 years.
- The "true delta" is essentially the new land built by alluvium after the valley delta was filled.
- The river occupied seven different deltas (deltaic lobes) and more than 30 main channels in the process of building the "recent delta," all are located in south-central and southeast Louisiana.
- The most recent of the deltaic lobes is also referred to as the "delta" or sometimes the "modern" or "bird’s foot" delta and is the area below New Orleans at the present mouth of the river where the channel forks into the various passes.
- According to the Lower Mississippi Delta Region Initiatives the delta includes a total of 308 counties and parishes in Illinois, Kentucky, Missouri, and Tennessee as well as the entire states of Arkansas, Louisiana, and Mississippi.
- The Mississippi Delta is the alluvial valley stretching from southern Illinois to central Louisiana at the junction of the Red, Atchafalaya, and Mississippi Rivers.
- The broad, alluvial valley provides habitat and ecological support for a wide variety of plants, animals, and aquatic species integral to health of the North American continent.
- The Mississippi River forms the most important bird and waterfowl migration corridor on the continent.
- The river bottoms comprise North America’s largest wetland area and bottomland hardwood forest.
- More than 20 percent of the nation’s duck population migrates along the river and one-third of the freshwater fish species in North America live in the river.
The Mississippi River Drainage Basin is 1,245,000 square miles in area. All the water from 41% of the continental United States and 15% of North America flows through the state of Louisiana and the Atchafalaya National Heritage Area entering the Gulf of Mexico on the Louisiana coast.

The area includes 32 states and 2 Canadian Provinces and extends from Montana to New York.

The Mississippi River Drainage Basin is recognized as the third largest water shed in the World (Behind the Amazon and Congo River Basins).

Throughout history, the Mississippi River and its tributaries have had significant effects on the settlement, national commerce and the American economy since the 1700’s.

Significant amounts of water accumulation cause flooding of the Mississippi River and its tributaries. The United States Congress has been aggressive in addressing the issue from a national standpoint by creating agencies, enacting laws and building manmade structures to assist in controlling significant flooding.

Nature has had a way of changing the course of a river about every 1000 years, a process called avulsion. The Mississippi River is once again at its 1000 year changing time. Since the 1700-1800’s, and particularly since the severe 1927 flood, man has tried to intervene with manmade structures that could control the Mississippi River and its tributaries. These efforts have been successful in minimizing the flood damage over the years.

The United States Congress formed the Mississippi River Commission and Army Corps of Engineers because of the great need for navigational improvements and flood control on the Mississippi River.

The ANHA is located in the Lower Mississippi River Valley Division.

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The three different divisions of the Army Corp of Engineers Mississippi Valley Division are:

- Upper Mississippi River Valley Division
- Middle Mississippi River Valley Division
- Lower Mississippi River Valley Division
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- Lower Mississippi River Valley Division
Mississippi River Commission (MRC)

- The Mississippi River Commission (MRC) was established by an act of Congress on June 28, 1879, and is located in Vicksburg, Mississippi.
- Congress charged the MRC with the mission of developing plans to improve the condition of the Mississippi River, foster navigation, promote commerce, and prevent destructive floods.
- The MRC oversees the planning and reports on improvements on the Mississippi River, provides direction for water resources engineering, and provides policy advice to the Administration, Congress, and the Army for the large drainage basin. This drainage basin covers 41 percent of the United States, 15 percent of North America, and parts of two Canadian provinces.
- The MRC is intended to be a leader in the sustainable management and development of water-related resources for the nation’s benefit and the people’s well-being.

- The MRC visions for the future is:
  - To have inland navigable waterways that are adequately prepared to survive and compete in the ever-changing global economy
  - To find comprehensive solutions to flooding that save lives, relieve human suffering, and reduce financial losses in the six major basins that drain 41 percent of the continental United States and two provinces of Canada
  - To develop and implement programs, based on objective scientific data, that work in harmony with nature’s laws while recognizing the vital economic realities of human needs.

United States Army Corps of Engineers

- The United States Congress formed the United States Army Corps of Engineers (Corps) in 1802 but it has origins as far back as 1775.
- An organization of the U.S. Army and headquartered in Washington, D.C., the Corps, with approximately 34,600 civilian and 650 military men and women, is responsible for:
  - Providing responsive engineering services, including the planning, design, construction, and operation of water resources and other civil works projects;
  - Designing and managing the construction of military facilities for the Army and the Air Force; and
  - Providing design and construction management support for other defense and federal agencies.
- The Corps’ mission is to provide vital public engineering services in peace and war to strengthen the nation’s security, energize the economy, and reduce risks from disasters.
- Their most visible missions include:
  - Planning, designing, building, and operating locks and dams. Other civil engineering projects include flood control, beach nourishment, and dredging for waterway navigation,
  - Design and construction of flood protection systems through various federal mandates,
  - Design and construction management of military facilities for the Army, Air Force, Army Reserve and Air Force Reserve and other defense and federal agencies, and
  - Environmental regulation and ecosystem restoration.
- Major areas of emphasis include the following: navigation, flood risk management, recreation, hydroelectric power, shore protection and the water supply.
- The United States Army Corps of Engineers Mississippi Valley Division (MVD) and the complementary Mississippi River Commission (MRC) are the regional agencies responsible for maintaining the Mississippi River and its tributaries in this area.
The Mississippi River Commission (MRC) was established by an act of Congress on June 28, 1879, and is located in Vicksburg, Mississippi. Congress charged the MRC with the mission of developing plans to improve the condition of the Mississippi River, foster navigation, promote commerce, and prevent destructive floods.

The MRC oversees the planning and reports on improvements on the Mississippi River, provides direction for water resources engineering, and provides policy advice to the Administration, Congress, and the Army for the large drainage basin. This drainage basin covers 41 percent of the United States, 15 percent of North America and parts of two Canadian provinces.

The MRC is intended to be a leader in the sustainable management and development of water-related resources for the nation’s benefit and the people’s well-being.

The MRC visions for the future is:
- To have inland navigable waterways that are adequately prepared to survive and compete in the ever-changing global economy
- To find comprehensive solutions to flooding that save lives, relieve human suffering, and reduce financial losses in the six major basins that drain 41 percent of the continental United States and 2 provinces of Canada
- To develop and implement programs, based on objective scientific data, that work in harmony with nature’s laws while recognizing the vital economic realities of human needs.
Mississippi River & Tributaries Project (MR&T)

- The Army Corps of Engineers was officially established in 1802 but has origins as far back as 1775.
- The flooding issues of the Mississippi River gained the attention of the United States Congress and led to the establishment of the Mississippi River Commission in 1879.
- Significant flooding of the Mississippi River occurred in 1849, 1850, 1882 and 1927.
- Due to the devastating flood of 1927, Congress passed the Flood Control Act of 1928 which directly addressed Mississippi River flooding and established the Mississippi River & Tributaries Project (MR&T), a comprehensive river management program. Later Congress passed the Flood Control Act of 1965.
- The four major elements of the MR&T project are:
  - Leves for containing flood flows
  - Floodways for the passage of excess flows past critical reaches of the Mississippi River
  - Channel improvement and stabilization to provide an efficient and reliable navigation channel, increase the flood-carrying capacity of the river, and protect the levee system
  - Tributary basin improvements for major drainage basins to include dams and reservoirs, pumping plants, auxiliary channels and pumping stations.
- The MR&T is the largest flood control project in the world.
- The MR&T provides protection to the 36,000 square-mile lower Mississippi Valley.
- The flood control features of the project are designed to control the “project flood” (the largest flood that might reasonably occur).
- The project flood is 11 percent greater than the 1927 flood at the mouth of the Arkansas River and 29 percent greater at the latitude of Red River Landing, Louisiana, amounting to 3,030,000 cfs at the latter location about 60 miles below Natchez, Mississippi.
- The MR&T project represents one of mankind’s most successful civil works projects and one of the wisest investments.
- The navigation features of the MR&T project are intended to facilitate navigation and promote commerce on the nation’s most vital commercial artery:
  - Waterborne commerce on the Mississippi River increased from 30 million tons in 1940 to nearly 500 million tons today.
  - The heavy commercial traffic on the Mississippi River includes grains, coal and coke, petroleum products, sand and gravel, salt, sulphur and chemicals and building materials, etc.
  - Many pleasure craft now use the Mississippi River for vacation and travel.
  - Since the MR&T Project in 1928, the United States has received a $24 return for every dollar invested, not including positive environmental impacts.
  - Upon the completion of remaining work an estimated 37 to 1 return on investment.
- Foremost among the flood control works is the 3,500-mile MR&T levee system. The levee system, constructed of compacted soil and clay, rivals the Great Wall of China in length.
- MR&T levees currently protect more than 4 million citizens, 1.5 million homes, 33,000 farms, and countless vital transportation routes from destructive floods. The levees are designed to protect the alluvial valley against the project flood by confining flow to the levied channel, except where it enters the natural backwater areas or is diverted purposely into the floodway areas.
- The main stem levee system, comprised of levees, floodwalls, and various control structures, is 2,203 miles long. Some 1,607 miles lie along the Mississippi River itself and 596 miles lie along the south banks of the Arkansas and Red rivers and in the Atchafalaya Basin.
Levee Systems (MR&T)

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- Some 1,607 miles lie along the Mississippi River itself and 596 miles lie along the south banks of the Arkansas and Red rivers and in the Atchafalaya Basin.
- The levees are constructed by the Federal Government and are maintained by local interests, except for government assistance as needed during major floods.
- Periodic inspections of maintenance are made by personnel from the U.S. Army Corps of Engineers and from local levee and drainage districts as it is essential that the levees be maintained in good condition for their proper functioning in the flood control plan.
MR&T Backwater Areas

- Backwater areas are the necessary result of gaps left in the main-stem Mississippi River levee system at the mouths of major tributaries that empty into the river.
- During large flood events floodwaters from the Mississippi River back into the gaps and/or block discharges from the tributary streams.
- The backwater areas have played a crucial role in the development of the MR&T project.
- MR&T Backwater Areas from the Flood Control Areas of 1927
  - St. Francis River Backwater Area
  - White River Backwater Area
  - Yazoo Backwater Area
  - Red River Backwater Area
- The MR&T flood control plan is augmented by four backwater areas located at the mouths of the St. Francis, White, Yazoo and Red rivers.
- Significant portions of the upper limits of these backwater areas are protected by main-stem levees from overflows from the Mississippi River.
- The lower portions of these areas must serve as natural storage areas during floods approaching the project design flood.
- The backwater areas are placed into operation by natural overtopping of the protection levees at the appropriate time to reduce project flood peak discharges and associated flood stages.
- When flood stages on the Mississippi River or its tributaries subside, floodwaters from within the backwater areas are evacuated through floodgates.
- Prior to the early construction of the levee system, the backwater areas were no different than most lands comprising the alluvial valley. The backwater areas flooded when the Mississippi River overflowed its natural alluvial banks or backed its floodwaters into the tributary Streams.
- As the levee system was extended further and further upriver with higher and stronger levees during the 19th century, the confinement of Mississippi River floodwaters protected lands upriver from the backwater areas from overbank flows.
- Historically, the Mississippi River Commission recognized the importance of maintaining the natural storage capacities of the backwater areas as a benefit for flood control.
- Congress first showed a willingness to accept the responsibility of partially protecting the backwater areas through the 1936 Overton Act. That act authorized improvements toward the protection of a portion of the White River backwater area. Five years later, Congress authorized extensive improvements to partially protect the Red River and Yazoo backwater areas.
- The original MR&T flood control plan had the Red River backwater area subject to flooding and functioning as a storage area for excess flows.
- During the project design flood, the area was to receive the additional discharges from the Boeuf and Eudora floodways. The low-lying backwater area would act as a natural reservoir, storing those discharges and excess flows.
- Project flood flows in the Red River backwater area would ultimately be conveyed downstream through the West Atchafalaya floodway and the Atchafalaya River. Plans to eliminate the Boeuf and Eudora floodways from the MR&T project, combined with improvements made to increase the carrying capacity of the Atchafalaya River during the 1930s, opened the door for partial protection of the Red River backwater area.
- The 1941 Act authorized a plan to protect 373,000-acre portion of the backwater area known as the Tensas-Cocodrie area.
• The plan called for the frontline Mississippi River levee to be raised to the full 1941 grade from Deer Park, Louisiana, to Black Hawk, Louisiana. Backwater protection for the area necessitated the construction of a 93-mile long levee extending from Black Hawk westward along the east bank of the Red River to its junction with the Black River, then northward along the east banks of the Black and Tensas rivers, and reconnecting with the frontline levee just above Lake St. John.

• The backwater levee was completed in 1954.

• The lower 38 miles of the backwater levee serve as the fuseplug entrance into the backwater area during project flood conditions and is constructed at heights ranging from three to four feet below the Mississippi River levee grade at Red River Landing. The plan also provided for a floodgate at the mouth of Bayou Cocodrie to evacuate runoff impounded by the backwater levee to the Red River.

• The floodgate was completed in 1952.

• A comprehensive review of the MR&T project in 1959 recommended additional improvements to the Red River backwater area. The improvements are as follows:
  • Modifications to the Tensas-Cocodrie area included 22 miles of channel enlargement in Bayou Cocodrie
  • 4,000 cfs pumping plant to be constructed adjacent to the existing floodgate and drainage structures at the mouth of the bayou.
  • Protecting additional areas within the larger Red River backwater area with loop levees, interior drainage structures and channel improvements. (These areas included the 102,000-acre Larto Lake to Jonesville area, the 73,000-acre Sicily Island area, the 54,000-acre Bushley Creek area, and the 37,800-acre area designated as the “Below Red River Area.”)
  • The 1965 Flood Control Act authorized the commission’s proposals.
  • Construction of the 64 miles of protection levees for the Larto Lake to Jonesville area commenced in the early 1970’s.
  • The plan for channel improvements and the pumping station at Bayou Cocodrie in the Tensas-Cocodrie area and an additional floodgate and associated drainage structures that would evacuate runoff into the Black River was approved and completed in the following phases:
    • 1978 the diversion channel was completed by the Army Corps of Engineers
    • The drainage structures and 4,000 cfs capacity Tensas-Cocodrie pumping plant were completed in 1984 and 1987
    • Construction of the Sicily Island area improvements did not commence until 1980 with the 56 miles of Sicily Island levee being completed in phases between 1984 and 1993.
    • The project’s two pumping stations, one with a capacity of 300 cfs and the other with a capacity of 750 cfs, along with all channel improvements was completed by 2002
    • The improvements authorized at Bushley Creek and below Red River were not constructed after further studies indicated that they were no longer economically justified. Both projects have been placed in an inactive status.
West Atchafalaya Floodway & Atchafalaya Basin Floodway

West Atchafalaya Floodway

- The West Atchafalaya Floodway is a flood control structure of the Mississippi River and Tributaries Project located in the Lower Atchafalaya Basin in south-central Louisiana. It has a project design flood flow capacity of 250,000 cu ft/s (7,100 m³/s).

- The portion of the flow diverted from the Mississippi River near Old River is carried by the Atchafalaya River, Morganza Floodway and the West Atchafalaya Floodway. The Morganza and West Atchafalaya floodways introduce flows down opposite sides of the Atchafalaya River until the end of the levee system along the Atchafalaya River is reached. There they merge into a single broad floodway that passes the flow to the Gulf through two outlets, Wax Lake and lower Atchafalaya River. In major floods, the Morganza would be the first of these two floodways to be used, with water entering it through a control structure just above Morganza.

Lower Atchafalaya Basin Floodway System

Location:

- The Atchafalaya Basin is located in south-central Louisiana and extends from the confluence of the Mississippi, Red and Atchafalaya Rivers near Simmesport, Louisiana to the Atchafalaya Bay in the Gulf of Mexico.

- The Lower Atchafalaya Basin Floodway (833,000 acres) is bounded on the north by U.S. 190, on the east and west by the Atchafalaya Basin protection levees, and extends south to the Gulf of Mexico.

Purpose:

- The Lower Atchafalaya Basin Floodway System Project Goals:
  - To preserve the habitat of nation’s largest and oldest river-basin swamp
  - Ensure that the Lower Atchafalaya Basin can pass a floodwater of 1.5 million cubic feet per second as required by the Mississippi River and Tributaries Project (MR&T).

Atchafalaya Basin Floodway Structures

- Bayou Courtableau Control Structure:
  - Completed in 1956; Consists of five reinforced concrete box culverts, each measuring 10 feet by 15 feet by 234 feet.

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- Bayou Darbonne Control Structure:
  - Completed in 1941; one reinforced concrete box culvert measuring 10 feet by 10 feet by 265 feet.

- Bayou Sorrel Lock:
  - completed 1952; 56 feet wide, 970 feet long, -14.75 feet mean low gulf; operated 24 hours a day; 25 million tons passed annually; 9,300 average annual lockages.

- Bayou Boeuf Lock:
  - completed 1954; 75 feet wide, 1,156 feet long, -13.8 feet mean low gulf; operated 24 hours a day; 25 million tons passed annually; 15,400 average annual lockages.

- Berwick Lock:
  - Completed 1950; 45 feet wide, 294 feet long, -9.8 feet mean low gulf; operated daily 6 a.m. to 10 p.m.; 300,000 tons passed annually; 3,200 average annual lockages.

  (Information on marine traffic is only taken during high river stages, averaging about seven months a year.)

- East and West Calumet Floodgates: completed
  - 1950; 45 feet wide, -10.8 feet mean low gulf
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Bonnet Carré Spillway (MR&T Project)

- The **Bonnet Carré Spillway** is a flood control operation in the Lower Mississippi Valley.
- Bonnet Carré Spillway is located in St. Charles Parish, Louisiana - about 12 miles (19 km) west of New Orleans - it allows floodwaters from the Mississippi River to flow into Lake Pontchartrain and thence into the Gulf of Mexico.
- The construction of the spillway was completed in 1931.
- The spillway was built in response to the Great Mississippi Flood of 1927 that inundated much of the Mississippi River basin.
- Bonnet Carré spillway is part of the United States Army Corps of Engineers’ multi-state plan, called the Mississippi River and Tributaries Project (MR&T), providing flood protection for the alluvial valley between Cape Girardeau, Missouri and the mouth of the river near Venice, Louisiana. Due to the wide expanse of the project and the complex problems involved, the plan contains an array of features.
- The MR&T Project provides for levees to contain flood flows, floodways such as the Bonnet Carré to redirect excess flows away from the Mississippi and has other aspects such as channel improvement and river bank stabilization for efficient navigation and protection of the levee system. It also involves reservoirs and pumping plants for flood control drainage.
- The Bonnet Carré Spillway consists of two basic components:
  - a control structure along the east bank of the Mississippi River and
  - a floodway that transfers the diverted flood waters to the lake.
- The control structure is a mechanically controlled concrete weir which extends for over a mile and a half parallel to the river. When opened, the control structure slightly restricts the flow of the river (at the structure’s location) toward its main channel, thereby causing it to rise in elevation just high enough to flow into the diversion channel; and, with sufficient elevation (or head), to carry the overflow volume into Lake Pontchartrain.
- The lake’s opening to the gulf is sufficient to absorb and dissipate any conceivable volume of flood flow. Thus, the flood surcharge portion of the water from the Mississippi is divided between the main river and the diversion channel; with the surcharge bypassing the New Orleans metropolitan area, resulting in the Mississippi being lower (through that area) than it could have been; and reducing the stress on the area’s levees that line the river.
- Confined by guide levees, the floodway stretches nearly six miles (10 km) to Lake Pontchartrain, with a design capacity of 250,000 cu ft/s (7,100 m³/s)
- Bonnet Carré first opened during the flood of 1937, and nine times thereafter through 2011 to lower river stages at New Orleans. The most recent opening began on May 9, 2011, when river levels in New Orleans approached the flood stage of 17 feet (5.2 m).
- Years when the spillway was opened, number of days it remained open, and peak number of bays opened:
  - 1937 48 days, 285 bays opened
  - 1945 57 days, all 350 bays opened
  - 1950 38 days, all 350 bays opened
  - 1973 75 days, all 350 bays opened
  - 1975 13 days, 225 bays opened
  - 1979 45 days, all 350 bays opened
  - 1983 35 days, all 350 bays opened
  - 1997 31 days, 298 bays opened
  - 2008 31 days, 160 bays opened
  - 2011 42 days, 330 bays opened
The Bonnet Carré Spillway diverted excess Mississippi River water in 2011.

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BATON ROUGE, LA (WAFB) - A request has been made to the Mississippi River Commission to open the Morganza Spillway. If the commission approves it, the anticipated opening date is May 12.

The Army Corps of Engineers released a map Saturday showing what could happen if the Morganza Spillway is opened. Sections of Iberville, St. Mary, and Terrebonne parishes could get up to five feet of water. WAFB weathercaster Jeff Morrow said the Corps map shows the worst case scenarios. The Corps said the map is only a prediction.

"As floodwaters progress through the Morganza Floodway to the Gulf of Mexico, the height of the water could reach between five and upwards of 25 feet above ground elevation, causing widespread flooding and inundation," the Corps said in a news release. "Notification will be given in advance with adequate time for evacuation; however, expeditious action must be taken to protect life and property."

The Mississippi River is continuing to swell at near historic levels, not seen since 1927. One of the ways the Corps can reduce the amount of flooding and impacts of the high water is by opening spillways that fall under the Mississippi River Commission's authority.

"Morganza Floodway is only operated when existing conditions, combined with predicted stages and discharges, indicate that mainline levees in Baton Rouge, New Orleans and other downstream communities will be subjected to unacceptable risk from high water," the news release said. "The decision to open Morganza is the responsibility of the Mississippi River Commission President Maj. Gen. Michael Walsh, commander of the Corps' Mississippi Valley Division in Vicksburg, Mississippi."

Operation of the Morganza Floodway would require the evacuation of people and livestock, and removal of personal belongings for communities within the Atchafalaya River Basin, the Corps said. The Corps is monitoring weather conditions and river conditions to determine if the spill should be opened.

Morganza Spillway

- Significant flooding occurred in 1849, 1850, 1882 and 1927.
- The Morganza Spillway is located at Point Breeze in Pointe Coupee Parish.
- The flooding issues of the Mississippi River gained the attention of the United States Congress, leading to the establishment of the Mississippi River Commission in 1879.
- Serious Mississippi River flooding moved the United States Congress to establish the Mississippi River & Tributaries Project (MR&T) in 1928.
- The Army Corps of Engineers became officially established in 1802 but dates as far back as 1775.
- Captain Henry M. Shreve, river engineer and founder of Shreveport, dug a channel in 1831 at Turnbull's Bend, between the Mississippi River and the Atchafalaya River.
- Due to the devastating flood of 1927, the United States Congress passed the Flood Control Act of 1928 and, again in 1965, which directly addressed Mississippi River flooding.
- Construction of the levees that make up part of the Morganza Spillway began in the late 1930s. The Morganza Control Structure portion of the project was completed in 1954, subsequently incorporated into the Mississippi River Commission's 1956 project design flood. In 1963, the Old River Control Structure (ORCS) was added to the protections used to prevent Mississippi River flooding. The Flood Control Act of 1965 provided further regulation over the Morganza Spillway's role in Mississippi River flood prevention. A concrete pit called a stilling basin was added at the Morganza Spillway in 1977 "to provide erosion protection after the velocity of water pouring through the open bays during a 1973 flood caused severe scouring of the land behind the bays."
- The purposes of the Morganza Spillway were to:
  - Control Mississippi River flooding
  - Save national commerce and the American economy
  - Prevent the Mississippi River from altering its course to Baton Rouge and New Orleans thus taking the shorter and more natural path through the Atchafalaya River to the Gulf of Mexico.

- When open, the Morganza Spillway gates allow 600,000 cubic feet of water per second to move through the gates.
- The only time the Morganza Spillway is allowed to be opened is in flood emergencies; it has been opened twice since being built—in 1973 and 2011.
- Morganza Spillway and ORCS are critical in preventing the Mississippi River from changing its course to the Atchafalaya River.
- Avulsion, a natural process that occurs about every 1000 years, is caused by floods, sediments and the slope of a new channel being greater. It is the natural erosion of a new channel creating a straighter path for the river through the landscape.
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Old River Control Structure (ORCS)

- The Old River Control Structure (ORCS) is located in Concordia Parish.
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- Captain Henry M. Shreve, river engineer and founder of Shreveport, dug a channel in 1831, at Turnbull’s Bend, between the Mississippi River and the Atchafalaya River.
- The ORCS was built in 1963 and expanded in 1990. The purpose of the ORCS:
  - Control Mississippi River flooding
  - Save national commerce and American economy
  - Prevent the Mississippi River from altering its course to Baton Rouge and New Orleans (taking the shorter and more natural path through the Atchafalaya River to the Gulf of Mexico).
- The ORCS has several components that assist in controlling the Mississippi River water flow: Low Sill Control Structure, Overbank Control Structure, Sidney A. Murray, Jr. Hydroelectric Plant (1985) and the Auxiliary Structure (1986).
- Avulsion (a river changing its course) is a natural process that occurs about every 1000 years as erosion creates a new channel that is a straighter path through the landscape. Avulsion is caused by floods, sediment and a greater slope of the new channel.
- The Mississippi River changing its course could also be termed Delta Switching.
- Of the water being controlled by the ORCS, 70% is diverted to the Mississippi River and 30% is diverted to the Atchafalaya River.
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Of the water being controlled by the ORCS, 70% is diverted to the Mississippi River and 30% is diverted to the Atchafalaya River.
Mississippi River Flood of 2011

- The Mississippi River floods in April and May 2011 were among the largest and most damaging recorded along the U.S. waterway in the past century, comparable only to the flood of 1927 and the flood of 1993.
- The unprecedented extensive rainfall from these four storms, combined with springtime snow melt from the Upper Midwest, created the perfect situation for a 500-year flood along the Mississippi.
- The springtime snowmelt and the large amount of water from the major storm systems accumulated in the Mississippi River and its tributaries causing the water levels to reach record levels by the beginning of May.
- Flooding began occurring in the states of Illinois, Missouri, Kentucky, Tennessee, Arkansas, Mississippi, and Louisiana.
- Flooding on the Mississippi River and the seven states was severe enough to create an emergency situation requiring the opening of the Bonnet Carre Spillway on May 09, and Morganza Spillway on May 14.
- The Morganza Spillway being opened for the first time in 37 years created deliberate flooding of 4,600 square miles (12,000 km²) of rural Louisiana to save most of Baton Rouge and New Orleans.
- Overall flooding statistics indicated fourteen people were killed in Arkansas, with at least 383 killed across seven states in the preceding storms. Thousands of homes were ordered evacuated, including over 1,300 in Memphis, Tennessee, and more than 24,500 in Louisiana and Mississippi state, though some people disregarded mandatory evacuation orders.

Great Mississippi Floods

1. Flood of March 1543
2. Flood of 1734-35
3. Flood of 1788
4. Flood of 1809
5. Flood of 1825
6. Great Flood of 1844
7. Great Flood of 1851
8. Great Mississippi Flood of 1927
9. Great Flood of 1937
10. Flood of 1945
11. Mississippi Flood of 1973
12. Flood of 1975
13. Flood of 1979
14. Lower Mississippi Flood of 1983
15. Great Mississippi and Missouri Rivers Flood of 1993
16. Flood of 2002
17. Flood of 2008
18. Great Mississippi Flood of 2011

Mississippi River Flood of 1927

- The Mississippi Flood of 1927 was the most destructive river flood in the history of the United States.
- The flood began when heavy rains pounded the central basin of the Mississippi in the summer of 1926. By September, the Mississippi's tributaries in Kansas and Iowa were swollen to capacity. On Christmas Day of 1926, the Cumberland River at Nashville topped levees at 56.2 feet (17 m), a level that remains a record to this day, even exceeding the devastating 2010 floods.
- Flooding overtook the levees causing the Mounds Landing to break with more than double the water volume of Niagara Falls. The Mississippi River broke out of its levee system in 145 places and flooded 27,000 square miles (70,000 km²). This water flooded an area 80 km (50 mi) wide and more than 160 km (99 mi) long. The area was inundated up to a depth of 30 feet (10 m). The flood caused over $400 million in damages and killed 246 people in seven states.
- The flood affected Arkansas, Illinois, Kentucky, Louisiana, Mississippi, Missouri, Tennessee, Texas, Oklahoma and Kansas. Arkansas was hardest hit, with 14% of its territory covered by floodwaters. By May 1927, the Mississippi River below Memphis, Tennessee, reached a width of 60 miles (97 km).
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Mississippi Alluvial Valley (Flood Plain)

- The Mississippi Alluvial Valley extends from Cape Girardeau, Missouri to Houma, Louisiana.
- The Mississippi River Alluvial Plain is an alluvial plain created by the Mississippi River on which lie parts of seven states, from southern Illinois to southern Louisiana.
- An alluvial plain (flood plain) is a relatively flat landform created by the deposition of sediment over a long period of time by one or more rivers coming from highland regions, from which alluvial soil forms.
- A floodplain is part of the process, being the smaller area over which the rivers flood at a particular period of time, whereas the alluvial plain is the larger area representing the region over which the floodplains have shifted over geological time.
- Over 20 million acres lay within the Mississippi Alluvial Valley (MAV) along the lower half of the Mississippi River.
- It is the largest ecoregion of Louisiana, covering 12,350 square miles (32,000 km²), and including all of the historic Mississippi River floodplain.
- As the highlands erode due to weathering and water flow, the sediment from the hills is transported to the lower plain.
- As the sediments are deposited during flood conditions in the floodplain of a creek, the elevation of the floodplain will be raised.
- As sediments reduce the channel floodwater capacity, the creek will, over time, seek new, lower paths, forming meanders (a curving sinuous path).
- The leftover higher locations, typically natural levees at the margins of the flood channel, will themselves be eroded by lateral stream erosion and from local rainfall and possibly wind transport if the climate is arid and does not support soil-holding grasses.
- These processes, over geologic time, will form the plain - a region with little relief (local changes in elevation), yet with a constant but small slope.

Mississippi Embayment

- The Mississippi embayment stretches from central Louisiana into southern Missouri.
- The Mississippi embayment represents a break in what was once a single, continuous mountain range comprising the modern Appalachian range, which runs roughly on a north-south axis along the Atlantic coast of the United States, and the Ouachita range, which runs on a rough east-west axis west of the Mississippi River.
- The Appalachian-Ouachita range was thrust up when the tectonic plate carrying North America came into contact with the plates carrying South America and Africa when all three became joined in the ancient supercontinent Pangaea about 300 million years ago. The formation of the embayment requires understanding how part of a mountain range began forming a basin.
- Pangaea (the majority of the earth’s landmasses connected together prior to the continents breaking apart and separating) began to break up about 95 million years ago, North America passed over a volcanic "hotspot" in the Earth’s mantle (specifically, the Bermuda hotspot) that was undergoing a period of intense activity. The upwelling of magma from the hotspot forced the further uplift to a height of perhaps 2–3 km of part of the Appalachian-Ouachita range, forming an arch. The uplifted land quickly eroded and, as North America moved away from the hot spot and as the hotspot’s activity declined, the crust beneath the embayment region cooled, contracted and subsided to a depth of 2.6 km, forming a trough that was flooded by the Gulf of Mexico. When the dropped, the Mississippi and other rivers extended their courses into the embayment, which gradually became filled with sediment.

Ecoregions, and Meanders

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Meanders
- Meanders are a significant part of the Mississippi Alluvial Valley and reflect the winding and turning course the Mississippi River has taken through the years as it makes its way to the Gulf of Mexico.

Physiography
- Physiography is the physical patterns and processes of the Earth; natural features of the earth's surface, including land formation, climate, currents, and distribution of plants and animals.

Ecoregion
- Ecoregions are areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources; "recurring pattern of ecosystems associated with characteristic combinations of soil and landform that characterize a region; an area defined by its environmental conditions, esp climate, landforms, and soil characteristics.
Growing Delta - Atchafalaya Wax Lake

- A **delta** is a landform that is formed at the mouth of a river, where the river flows into an ocean, sea, estuary, lake, or reservoir.
- Wax Lake Delta is located adjacent to the Atchafalaya delta, which is a growing Delta.
- The Wax Lake outlet is an artificial channel that was created by the United States Army Corps of Engineers in 1942 to divert 30 percent of the flow from the Atchafalaya River to the Gulf of Mexico and reduce flood stages at Morgan City, Louisiana. The project design flood flow capacity for the outlet is 440,000 cu ft/s (12,000 m³/s).
- The Wax Lake Delta is a river delta in Louisiana that was formed by rapid deposition of sediment following the creation of a canal through Wax Lake off of the Atchafalaya River in 1942.
- The two deltas, Atchafalaya River and Wax Lake, became visible in 1973 after depositional sediments filled the Atchafalaya Basin and fluvial sediments started to be deposited in the Atchafalaya Bay as deltaic deposits.
- The Atchafalaya River Delta and Wax Lake Delta are characteristic of a low energy, low tidal range environment.
- The Wax Lake Delta receives 34 million tons of sediment per year. In the 64 years between 1941 and 2005, Wax Lake was completely filled with sediment and the delta approximately 8 km into the sea.
- The delta having been created during an observable time period, with only the canal being created by the Army Corp of Engineers and not altered by humans in any way, allows the focus to be on the study of deltaic formation.
- The two deltas continue to grow and are examples of almost unique regions of land gain along the Louisiana coast.
Wetlands

- Coastal Louisiana wetlands make up the seventh largest delta on Earth, contain about 37 percent of the estuarine herbaceous marshes in the United States, and support the largest commercial fishery in the lower 48 States.
- The wetlands are disappearing at an alarming rate
- The wetlands are in peril because Louisiana currently undergoes about 90 percent of the total coastal wetland loss in the continental United States.
- Wetlands provide a habitat for a wide variety of plants and animals, and protect inland ecosystems and resources.
- Wetlands can be either fresh or salt water.
- Wetlands basically have three distinguishing features: water (surface or root zone), soil conditions unique to a wet environment, and vegetation known as hydrophytes adapted to the wetland environment.
- Wetlands act as a natural filter as plants soak up pollutants from the water.
- Wetlands absorb the impact of a storm surge or a river flood by providing a break over which the water loses its destructive energy.
- The world’s wetlands are sinking into the ocean faster than they are building up. Some of the wetlands sinking is associated with a process called subsidence.
- Human and natural causes are responsible for wetland loss:
  - wetlands are drained or filled in for agriculture or industry
  - In Louisiana, the wetlands are being lost to the Gulf.
- In southern Louisiana, wetland loss is compounded by the lack of fresh sediment from regular river floods. Floods along the Mississippi River are extremely destructive, and a control system of flood levees has been built for protection against river flooding. The levee system prevents the sediment from ever reaching the wetlands.
- Canals have cut through the wetlands to provide shipping channels thus canals provide a setting which allow salt water to seep into the freshwater wetlands.
- Coastal Louisiana has experienced a change in land area of about 1,883 square miles (mi²) from 1932 to 2010, which is a decrease of about 25 percent of the 1932 land area.
- Persistent losses account for 95 percent of this land area decrease; the remainder are areas that have converted to water but have not yet exhibited the persistence necessary to be classified as "loss."
- Trend analyses from 1985 to 2010 show a wetland loss rate of 16.57 mi² per year. If this loss were to occur at a constant rate, it would equate to Louisiana losing an area the size of one football field per hour.
Estuaries

- An estuary is a body of water formed where freshwater from rivers and streams flows into the ocean, mixing with the seawater.
- Estuaries and the lands surrounding them are places of transition from land to sea, and from freshwater to saltwater.
- Estuaries are influenced by the tides, but are protected from the full force of ocean waves, winds, and storms by the reefs, barrier islands, or fingers of land, mud, or sand that surround them.
- Estuaries come in all shapes and sizes and are called many different names bays, lagoons, harbors, or inlets. Note that not all water bodies by those names are necessarily estuaries; the defining feature of an estuary is the mixing of fresh and salt water, not the name.
- The sheltered waters of estuaries are home to countless plants and animals that like to live in water that is part fresh and part salty.
- Plants and animals living in Estuaries include horseshoe crabs, ospreys, manatees, mangroves, and seagrasses. Hundreds of fish and shellfish, such as scallops, shrimp, and salmon, live in estuaries at some point in their life.
- Estuaries and the land surrounding them are places where people live, sail, fish, swim, and bird watch. As a result, estuaries are often the centers of our coastal communities.
- Estuaries have important commercial value and their resources provide economic benefits for tourism, fisheries, and recreational activities.
- As the water flows through wetlands such as swamps and salt marshes, much of the sediments and pollutants are filtered out and help provide cleaner water.
- Wetland plants and soils also act as natural buffers between the land and ocean, absorbing flood waters and dissipating storm surges.
- Salt marsh grasses and other estuarine plants also help prevent erosion and stabilize shorelines.
- Salt marsh grasses and other estuarine plants also help prevent erosion and stabilize shorelines.
- Estuaries in the Atchafalaya National Heritage Area are: Barataria-Terrebonne Estuary

Southeast Louisiana is made up of land deposited by the Mississippi River as a series of successive delta lobes.
Barataria -Terrebonne National Estuary Program

- The Environmental Protection Agency (EPA) and the state of Louisiana committed to a cooperative agreement under the National Estuary Program to form the Barataria-Terrebonne National Estuary Program.
- The BTNEP Program was charged with developing a coalition of government, private, and commercial interests for the preservation of the Barataria and Terrebonne basins by identifying problems; assessing trends; designing pollution control; developing resources management strategies; recommending corrective actions; and seeking implementation commitments.
- Established in 1991, the mission of the BTNEP is the preservation and restoration of the Barataria-Terrebonne estuarine system, the 4.2 million acre region between the Atchafalaya and Mississippi Rivers.
- The BTNEP strives to rebuild and protect the estuary for future generations through the implementation of a science-based, consensus-driven plan that utilizes partnerships focused on the estuary's rich cultural, economic, and natural resources.

- The Barataria-Terrebonne National Estuary Program is one of the 28 congressionally-mandated National Estuary Programs created under the Clean Water Act to identify, restore and protect nationally significant estuaries of the United States.
- The main field of Focus of the BTNEP is on habitat, living resources, water quality, cultural heritage, and economic development of the Barataria-Terrebonne Estuarine Complex.
- A Long-term Plan for Louisiana's Coastal Wetlands, 1993
- Barataria-Terrebonne National Estuary Program, 1996
- An Environmental-Economic Blueprint for Restoring the Louisiana Coastal Zone: The State Plan, 1994
Salt Domes

- Louisiana is the nation's leading salt producer.
- Louisiana has a little over 200 salt domes. There are about 30 in north Louisiana, 100 toward the coast, and 70 offshore.
- Salt domes are found in every ocean and continent.
- Salt domes had their beginning during prehistoric times as seas were periodically connected and disconnected from oceans. Areas being separated from the main body of water would evaporate and leave salt deposits. As years would go by the salt deposits would have sediment collect and salt being less dense than sediment salt would rise to the top in the form of salt domes, sheets or pillows.
- Salt domes are known to have oil and gas deposits around the salt dome location.
- Salt domes supply industrial commodities, including fuel, minerals, chemical feedstock, and storage caverns.
- Salt domes are also used to store crude oil, natural gas (methane), liquefied petroleum gas, and radioactive or toxic wastes.
- Avery Island and Weeks Island are salt domes and are a part of the Five Island chain of salt domes (Belle Isle, Cote Blanche, Weeks, Avery Island, and Jefferson Island). The Five Island chain of salt domes are the only salt domes in Louisiana with high elevations above the surrounding territory.
- The only salt mines being mined today are Weeks, Avery, and Cote Blanche Islands.
- Avery Island is the top of a salt dome covered with sediment and located in the deltaic wetlands of Louisiana, beneath the Mississippi delta region. Avery Island is 152 feet above sea level, 8 miles long and 1 mile wide. The island is the highest point on the Gulf coast from Brownsville, Texas, and Key Largo, Florida, because of the salt dome.
- Avery Island has leased the salt mine To Cargill Salt Co. of Minnesota. The company mines approximately 2 million tons of salt yearly from a depth of 1,600 feet by workers who are surrounded by floors, walls, and ceilings of pure rock salt!
- Avery Island is also famous for production of Tabasco Sauce (a mixture of Tabasco peppers, salt and vinegar) and a bird sanctuary (Snowy Egret and varieties of Heron’s).
- A salt dome disaster occurred November 20, 1980 at Lake Peigneur on Jefferson Island. Texaco Oil Company was drilling and penetrated the Diamond Crystal Salt Mine. A 1,300 acre and eleven foot deep lake drained into the salt mine and created a whirlpool that sucked mansions, barges, oil rigs, tugboats, fishing boats, Oak gardens and salt water from the Gulf of Mexico into the lake. This occurrence continued for two days before forever changing a fresh water lake into a salt water lake with water from the Gulf of Mexico coming in through a reversal of water flow coming through the Delcambre Canal.
Marsh and Barrier Islands

- Marsh means any area that holds water and has non-woody vegetation growing
- Types of marsh found in the coastal wetlands of the ANHA:
  - Freshwater Marsh
    An area of wet low-lying land found in freshwater with vegetation growing. Freshwater marshes have a high diversity of plant species and wildlife (alligators, snakes, turtles, herons, ducks, raccoons, etc.).
  - Intermediate Marsh
    A mild saline content in the water and it is characterized by a medley of plant species common to freshwater marsh and the saltier versions toward the sea. Intermediate Marsh has Wire Grass (straw colored) mixed with freshwater plants and animal life is found to be less diverse but high in population. Some of the wildlife is water birds, alligators, turtles, and other fur-bearing mammals.
  - Brackish Marsh
    Salty water and Wire Grass (straw colored) characterize the Brackish Marsh. Great habitat for blue crabs, redfish, speckled trout and fiddler crabs. Snails, ribbed mussels, Clapper Rails, and Seaside Sparrows can be found living in the brackish marsh.
  - Salt Marsh
    An area inundated daily by salt water tides. Oyster Grass and Black Mangrove plants survive and grow in the Salt Marsh. Snails, ribbed mussels, Clapper Rails, and Seaside Sparrows can be found living in the salt marsh.
  - Flotant Marsh (floating)
    Vegetation that does not anchor to the soil below where it grows. It usually consists of tightly entangled plants and their roots, mixed with peat. The floating marsh typically has flowing water underneath it, some oozing soil, and then clay and may or may not hold the weight of a person. This type of marsh allows for the water levels to rise and lower without drowning the plants. The floating marsh can be found in fresh or intermediate marsh areas.
- Barrier Islands are long relatively narrow islands running parallel to the mainland, built up by the action of waves and currents and serving to protect the coast from erosion by surf and tidal surges.
  - Isles Dernieres and Timbalier chains
Bayous & Rivers

- Bayous and waterways are a defining feature that has shaped the ANHA and the state of Louisiana.
- The term "bayou" is believed to have originated from "bayuk," a Native American word meaning "small stream."
- The name Bayou is native to Louisiana, considering it was first used in Louisiana.
- Louisiana is known as the Bayou state which is considering it was first used in Louisiana.
- The name Bayou is native to Louisiana, "small stream."
- The term "bayou" is believed to have originated from "bayuk," a Native American word meaning "small stream."
- The Cajun Culture is found along the bayous and waterways of the ANHA with some Cajun Communities still speaking French today.
- Bayous are fighting to survive from disappearing in an environment that has been experiencing considerable human manipulation.
- The Bayous are serene, mysterious and beautiful. They are the home of Cypress Swamps abundant wildlife and fish.
- Bayous, swamps, canals, Intracosastal Waterway and rivers tell the life and story of the ANHA, Louisiana, and the United States of America. The waterways of the ANHA are the life line of a nation.
- Bayous were and are the connecting transportation arties of the coastal wetland environment.

This list of Louisiana Rivers is arranged by drainage basin, with respective tributaries indented under each larger stream’s name.

**Gulf of Mexico**

**East of the Mississippi**
- Pearl River
- Bogue Chitto River
- The Rigolets
- Lake St. Catherine
- Lake Pontchartrain
- Lacombe Bayou
- Tchefuncte River
- Bogue Falaya
- Abita River
- Tangipahoa River
- Tickfaw River
- Lake Maurepas
- Pass Manchac
- Lake St. Catherine
- Blood River
- Amite River
- Bayou Manchac
- Comite River
- Blind River
- Petite Amite River
- New River
- Bayou Bienvenue

Satellite image of Bayou Petit Caillou
Atchafalaya’s Cornerstones

Mississippi River
- Mississippi River
  Distributaries
  - Bayou Lafourche
  - Atchafalaya River
  - Bayou Cocodrie
  - Bayou Teche
  - Bayou Boeuf
  - Bayou Long
  - Belle River
  - Big Goddel Bayou
  - Bay Natchez
  - Chopin Chute
  - Lower Grand River
  - Upper Grand River
  - Bayou Plaquemine
  - Rouge Bayou
  - Bayou Jack
  - Bayou des Glaises

Red River
- Red River
- Black River
- Little River
- Castor Creek
- Dugdemona River
- Tensas River
- Bayou Macon
- Ouachita River
- Boeuf River
- Bayou Lafourche
- Big Creek
- Bayou D’Arbonne
- Cornie Bayou
- Bayou de Loutre
- Bayou Bartholomew
- Cane River
- Saline Bayou
- Black Lake Bayou
- Bayou Pierre
- Loggy Bayou
- Flat River
- Red Chute Bayou
- Bodcau Bayou
- Dorcheat Bayou
- Cross Bayou
- Twelvemile Bayou
- Black Bayou

Gulf west of the Mississippi
- Vermilion River
- Bayou Carencro
- Bayou Fusilier
- Bayou Bourbeux
- Mermentau River
- Bayou Queue de Tortue
- Bayou Nezpique
- Bayou des Cannes
- Bayou Mallet
- Bayou Plaquemine Brule
- Bayou Wikoff
- Calcasieu River
- West Fork Calcasieu River
- Houston River
- Ouiski Chitto Creek
- Sabine River
- Old River
- Bayou Anacoco

Alphabetical List of Rivers
- Abita River
- Amite River
- Atchafalaya River
- Bay Natchez
- Bayou Baratholomew
- Bayou Bienvenue
- Bayou Bourbeux
- Bayou Carencro
- Bayou Chicot
- Bayou Choupic
- Bayou Courtbureau
- Bayou des Cannes
- Bayou des Glaises
- Bayou Fusilier
- Bayou Jack
- Bayou Lafourche, Mississippi River distributary
- Bayou Lafourche (Boeuf River)
- Bayou Long
- Bayou Macon
- Bayou Mallet
- Bayou Manchac
- Bayou Nezpique
- Bayou Plaquemine Brule
- Bayou Plaquemine (Grand River)
- Bayou Queue de Tortue
Alphabetical List of Rivers (continued)

- Bayou Teche
- Bayou Wikoff
- Big Goddel Bayou
- Black Bayou
- Black Lake Bayou
- Black River
- Blind River
- Boeuf River
- Bogue Chitto River
- Bogue Falaya
- Calcasieu River
- Cane River
- Castor Creek
- Chopin Chute
- Comite River
- Dorcheat Bayou
- Dugdemonia River
- Flat River
- Houston River
- Irish Bayou
- Little River - tributary of the Black (Ouachita) River
- Loggy Bayou
- Mermentau River
- Mississippi River
- Natalbany River
- New River
- Old River (Louisiana), in Pointe Coupee and West Feliciana parishes
- Old River (Sabine River)
- Ouachita River
- Ouiski Chitto Creek
- Pass Manchac
- Pearl River
- Ponchatoula Creek
- Red River
- Rouge Bayou
- Rigolets
- Sabine River
- Saline Bayou
- Sims Creek
- Tangipahoa River
- Tchefuncte River
- Tensas River
- Tickfaw River
- Twelvemile Bayou
- Vermilion River
Gulf Intracoastal Waterway

- The Gulf Intracoastal Waterway is the portion of the Intracoastal Waterway located along the Gulf Coast of the United States.
- It is a navigable inland waterway that is designed to provide a safe channel for vessels such as ships that are traveling along the Coastal areas of the Gulf of Mexico.
- The waterway provides a channel with a controlling depth of 3.7 meters (12 ft), designed primarily for barge transportation.
- The Gulf Intracoastal Waterway was completed in 1949 and is a manmade canal connecting with other bodies of water such as the Atchafalaya River and Bayou Lafourche.
Atcha
falaya’s
Cornerstones

National Wildlife Management Refuges & State Wildlife Management Areas & Refuges

Ascension
Maurepas Swamp WMA

Assumption
Elm Hall

Avoyelles
Acadiana Conservation Corridor
Grand Cote National Wildlife Refuge (part)
Grassy Lake
Lake Ophelia National Wildlife Refuge,
Pomme de Terre WMA
Spring Bayou WMA

Concordia
Bayou Cocodrie National Wildlife Refuge
Old River Control
Red River WMA
Three Rivers WMA

East Baton Rouge
None

Iberia
Atakapas
Marsh Island Wildlife Refuge
Shell Keys National Wildlife Refuge

Iberville
Atchafalaya National Wildlife Refuge
Sherburne

Pointe Coupee
Atchafalaya National Wildlife Refuge
Old River Control
Sherburne

St. Landry
Acadiana Conservation Corridor
Indian Bayou
Thistlethwaite WMA

St. Martin
Atakapas
Indian Bayou
Sherburne

St. Mary
Atchafalaya Delta
Atakapas
Bayou Teche National Wildlife Refuge

Terrebonne
Terrebonne Barrier Islands Refuge
Pointe-aux-Chenes WMA

West Baton Rouge
None

Interactive Map of Louisiana Wildlife Management Areas
http://www.wlf.louisiana.gov/wma

To view all Wildlife Management Areas in Louisiana, visit http://www.wlf.louisiana.gov/wma
United States Environmental Protection Agency

- The United States Environmental Protection Agency, EPA, was established December 2, 1970, as a result of concerns involving environmental pollution, protection, and conservation.

- The **U.S. Environmental Protection Agency** (EPA or sometimes USEPA) is an agency of the federal government of the United States charged with protecting human health and the environment, by writing and enforcing regulations based on laws passed by Congress.

- The formation of the EPA provided an avenue to consolidate multiple groups (federal research, monitoring, standard setting and enforcement activities) under one agency to ensure environmental protection and a cleaner healthier environment for the people of the United States of America.

- The EPA employs approximately 17,000 people, and engages many more on a contractual basis. More than half of EPA human resources are engineers, scientists, and environmental protection specialists; other groups include legal, public affairs, financial, and information technologists.

- The agency conducts environmental assessment, research, and education. It has the responsibility of maintaining and enforcing national standards under a variety of environmental laws, in consultation with state, tribal, and local governments.

- The agency also works with industries and all levels of government in a wide variety of voluntary pollution prevention programs and energy conservation efforts.

- The EPA has ten regions across the United States and each EPA regional office, including Indian Tribal Lands is responsible within its states for implementing the Agency's programs, with the exception of those programs that have been specifically delegated to states or Tribal authorities.

- A list of EPA offices is as follows:
  - Office of Administration and Resources
  - Office of Air and Radiation
  - Office of Enforcement and Compliance Assurance
  - Office of Environmental Information
  - Office of Environmental Justice
  - Office of the Chief Financial Officer
  - Office of General Counsel
  - Office of Inspector General
  - Office of International Affairs
  - Office of Prevention, Pesticides, and Toxic Substances
  - Office of Research and Development
  - Office of Solid Waste and Emergency Response
  - Office of Water
  - Office of Chemical Safety & Pollution Prevention
Focus and Overview
The students use Internet research, video, study notes, vocabulary sheets, images and maps for understanding and learning specifics about the ANHA.

Learning Objectives
• The students will learn the definition and specific elements of a National Heritage Area and the key components associated with the ANHA.
• The students will identify specific criteria that qualify the ANHA as being a National Heritage Area.
• The students will learn to recognize and identify the state of Louisiana by name, shape and location.
• The students will learn how to locate and identify the perimeters of the outer boundaries, regional boundaries, and parish boundaries of the ANHA using a Louisiana parish map.
• The students will learn to locate and identify the Mississippi River, tributaries, and Drainage Basin, and the Atchafalaya River, tributaries and Basin as well as other waterways and key characteristic of the ANHA.
• The students will learn the relationship and importance of the ANHA and Louisiana to the United States of America, its history, water commerce and national economy.

Learning Procedures
1. The students will research and review through current technology, vocabulary, videos, study notes, Information Guide and class discussion of the definition of a National Heritage Area and the benefits of becoming a National Heritage Area.
2. The students will outline the steps required to meet the criteria for becoming a National Heritage Area and list the benefits.
3. The students will determine through current technology, maps and Information Guide if Louisiana has a National Heritage Area, where it is located and the criteria which establish it as a National Heritage Area. Students will discuss how that affects the ANHA, state of Louisiana, nation and themselves personally?
4. The students will view and locate on maps the Mississippi River, tributaries, and Drainage Basin and the Atchafalaya River, tributaries and Basin as well as other waterways in the ANHA.

National Heritage Areas Lesson
Grades four through six

Common Core Standards
Social Studies
• CCSS.ELA-Literacy.RH.6-8.2 Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
• CCSS.ELA-Literacy.RH.6-8.7 Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.
• CCSS.ELA-Literacy.RH.6-8.8 Distinguish among fact, opinion, and reasoned judgment in a text.
• CCSS.ELA-Literacy.RH.9-10.7 Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.
• CCSS.ELA-Literacy.RH.9-10.8 Assess the extent to which the reasoning and evidence in a text support the author's claims.
• CCSS.ELA-Literacy.RH.9-10.9 Compare and contrast treatments of the same topic in several primary and secondary sources.
Focus and Overview
The students use Internet research, video, study notes, vocabulary sheets, images and maps for understanding and learning specifics about the ANHA.

Learning Objectives
- The students will learn the definition and specific elements of a National Heritage Area and the key components associated with the ANHA.
- The students will identify specific criteria that qualify the ANHA as being a National Heritage Area.
- The students will learn to recognize and identify the state of Louisiana by name, shape and location.
- The students will learn how to locate and identify the perimeters of the outer boundaries, regional boundaries, and parish boundaries of the ANHA using a Louisiana parish map.
- The students will learn to locate and identify the Mississippi River, tributaries, and Drainage Basin, and the Atchafalaya River, tributaries and Basin as well as other waterways and key characteristic of the ANHA.
- The students will learn the relationship and importance of the ANHA and Louisiana to the United States of America, its history, water commerce and national economy.

Learning Procedures
1. The students will research and review through current technology, vocabulary, videos, study notes, Information Guide and class discussion of the definition of a National Heritage Area and the benefits of becoming a National Heritage Area.
2. The students will outline the steps required to meet the criteria for becoming a National Heritage Area and list the benefits.
3. The students will determine through current technology, maps and Information Guide if Louisiana has a National Heritage Area, where it is located and the criteria which establish it as a National Heritage Area. Students will discuss how that affects the ANHA, state of Louisiana, nation and themselves personally?
4. The students will view and locate on maps the Mississippi River, tributaries, and Drainage Basin and the Atchafalaya River, tributaries and Basin as well as other waterways in the ANHA.

Common Core Standards

Social Studies
- CCSS.ELA-Literacy.RH.6-8.2 Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
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- CCSS.ELA-Literacy.RH.9-10.8 Assess the extent to which the reasoning and evidence in a text support the author’s claims.
- CCSS.ELA-Literacy.RH.9-10.9 Compare and contrast treatments of the same topic in several primary and secondary sources.
5. The students will use a Louisiana Parish map with the ANHA color coded by region and parishes to learn the outer, region and parish geographical boundaries of the ANHA.
6. The students will use a parish and region ANHA Word Search/ Hidden Meaning worksheet to recognize and reinforce knowledge of the parishes and regions located in the ANHA.
7. The students complete the worksheet connecting the numbers dot-to-dot and orally naming the state, describing its shape and telling its location (southeastern corner of the United States and borders the Gulf of Mexico).
8. The students will view maps and the Information Guide then develop an outline to help them understand the relationship and importance that the ANHA and Louisiana have to the United States of America, its history, water commerce and American economy.

Activities

1. The students review and discuss the definition of a National Heritage Area and determine if Louisiana has any place that meets the criteria of a National Heritage Area; name, location, regions and parishes.
2. The students view the handout of the Louisiana parish map with the outer, region and parish boundaries color coded and follows up with a test.
3. The students view the ANHA video and review the study notes then follow up with class discussion.
4. The students will view images and maps of the Mississippi River and its tributaries, Mississippi River Drainage Basin, Atchafalaya River and Basin and other waterways in the ANHA, following up with a test.
5. The students complete the ANHA Word Search/ Hidden Meaning worksheet on regions and parishes of the ANHA.
6. The students complete the video worksheet test.
7. The students will view maps and the Information Guide and outline the relationship and importance the ANHA and Louisiana have had to the United States of America, its history, water commerce and the American economy.

Assessment

- The students write the definition of a National Heritage Area and list the qualifying characteristics that make the ANHA a National Heritage Area. List the benefits of being an ANHA.
- The students view the video of the ANHA and review the study notes, following up with class discussion.
- The students follow up with a written test on the Video and study notes of the ANHA.
- The students complete the written outline of a National Heritage Area.
- The students complete a map test on the parishes and regions of the ANHA by color coding the parishes located in each of the four regions a different color and naming the parishes and region (use highlighters or colored pencils).
- The students will label and complete a blank ANHA waterways test and color code the Mississippi River Drainage Basin using a United States map and highlighters or colored pencils.
- The students will complete an outline showing the relationship and importance of the ANHA and Louisiana to the United States of America, its history, water commerce and national economy.
The students will use a Louisiana Parish map with the ANHA color coded by region and parishes to learn the outer, region and parish geographical boundaries of the ANHA.

The students will use a parish and region ANHA Word Search/ Hidden Meaning worksheet to recognize and reinforce knowledge of the parishes and regions located in the ANHA.

The students complete the worksheet connecting the numbers dot-to-dot and orally naming the state, describing its shape and telling its location (southeastern corner of the United States and borders the Gulf of Mexico).

The students will view maps and the Information Guide then develop an outline to help them understand the relationship and importance that the ANHA and Louisiana have to the United States of America, its history, water commerce and American economy.

Activities

1. The students review and discuss the definition of a National Heritage Area and determine if Louisiana has any place that meets the criteria of a National Heritage Area; name, location, regions and parishes.

2. The students view the handout of the Louisiana parish map with the outer, region and parish boundaries color coded and follows up with a test.

3. The students view the ANHA video and review the study notes then follow up with class discussion.

4. The students will view images and maps of the Mississippi River and its tributaries, Mississippi River Drainage Basin, Atchafalaya River and Basin and other waterways in the ANHA, following up with a test.

5. The students complete the ANHA Word Search/ Hidden Meaning worksheet on regions and parishes of the ANHA.

6. The students complete the video worksheet test.

7. The students will view maps and the Information Guide and outline the relationship and importance the ANHA and Louisiana have had to the United States of America, its history, water commerce and the American economy.

Assessment

• The students write the definition of a National Heritage Area and list the qualifying characteristics that make the ANHA a National Heritage Area. List the benefits of being an ANHA.

• The students view the video of the ANHA and review the study notes, following up with class discussion.

• The students follow up with a written test on the Video and study notes of the ANHA.

• The students complete the written outline of a National Heritage Area.

• The students complete a map test on the parishes and regions of the ANHA by color coding the parishes located in each of the four regions a different color and naming the parishes and region (use highlighters or colored pencils).

• The students will label and complete a blank ANHA waterways test and color code the Mississippi River Drainage Basin using a United States map and highlighters or colored pencils.

• The students will complete an outline showing the relationship and importance of the ANHA and Louisiana to the United States of America, its history, water commerce and national economy.

Lesson Contributed by Glynn Ellen Putnam, Education Consultant

Resource List

• Image of Mississippi River entering the Gulf of Mexico

• Louisiana Rivers map (yellow)
  http://geology.com/state-map/louisiana.shtml

• Blank Louisiana waterways (test)
  http://www.louisiana101.com/map_rivers.html

• Blank United States map for color coding the Mississippi River Basin
  http://www.enchantedlearning.com/usa/label/whereilive/

• Atchafalaya and Mississippi River Map
  http://www.worldatlas.com/webimage/countrys/namerica/usstates/counties/la.htm

• Atchafalaya and Mississippi River Maps
  http://www.worldatlas.com/webimage/countrys/namerica/usstates/counties/la.htm

• Louisiana Drainage Systems Map
  http://www.americaswetlandresources.com/background_facts/detailedstory/coastal_def_and_maps.html

• Mississippi River Drainage Basin
  http://www.americaswetlandresources.com/background_facts/detailedstory/MississippiRiverAnatomy.html
  http://www.mvd.usace.army.mil/mrc/
  http://whale.wheelock.edu/watersheds/mississippi/intro.html

• Word Search/Hidden Meaning (parishes and regions)
  http://www.discoveryeducation.com/free-puzzlemaker/?CFID=466104&CFTOKEN=81202908

• Louisiana Dot-to-dot
# Atchafalaya Vocabulary

## Teacher Key

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>boundary</td>
<td>Something that indicates or fixes a limit or extent.</td>
</tr>
<tr>
<td>geography or geographical</td>
<td>The description, distribution, and interaction of physical, biological, and cultural features of the earth’s surface.</td>
</tr>
<tr>
<td>heritage</td>
<td>Property that descends to an heir: legacy, inheritance: tradition A result of one’s natural situation or birth: birthright</td>
</tr>
<tr>
<td>heritage area</td>
<td>Regions with significant natural, cultural, historic, and recreational resources and known for their unique culture and identity. They are partnerships where residents, businesses, local governments, and state and federal agencies create more liveable and economically sustainable regions.</td>
</tr>
<tr>
<td>Atchafalaya</td>
<td>An Indian word for long river.</td>
</tr>
<tr>
<td>national heritage area</td>
<td>A nationally distinctive landscape shaped by natural, cultural, historic, and recreational resources that is recognized by the United States Congress. It tells a nationally important story through its geography, manmade structures, and the traditions that have evolved within its landscape.</td>
</tr>
<tr>
<td>region</td>
<td>A broad geographic area with similar features.</td>
</tr>
<tr>
<td>swamp</td>
<td>A wetland partially covered by water.</td>
</tr>
<tr>
<td>river</td>
<td>A natural stream of water of considerable volume.</td>
</tr>
<tr>
<td>wetlands</td>
<td>Land (marshes or swamps) that is covered with shallow water or has soil saturated with moisture.</td>
</tr>
<tr>
<td>bayous</td>
<td>Marshy or sluggish bodies of water: A secondary watercourse to another body of water.</td>
</tr>
<tr>
<td>bottomland</td>
<td>Low-lying land along a watercourse.</td>
</tr>
<tr>
<td>coast</td>
<td>The land near a shore.</td>
</tr>
<tr>
<td>marsh</td>
<td>A tract of soft wet land that usually has grasses.</td>
</tr>
<tr>
<td>basin</td>
<td>An enclosed or partly enclosed water area.</td>
</tr>
<tr>
<td>spillway</td>
<td>A passage for extra water to run over, around an obstruction (as a dam) or through gates.</td>
</tr>
<tr>
<td>tributary</td>
<td>A stream flowing into a larger body of water.</td>
</tr>
<tr>
<td>estuary</td>
<td>The area where a river meets the sea, where fresh water from the river meets salt water from the sea.</td>
</tr>
<tr>
<td>sediment</td>
<td>The matter that settles to the bottom of a liquid; Material deposited by water.</td>
</tr>
</tbody>
</table>
# Vocabulary Review

<table>
<thead>
<tr>
<th>river</th>
<th>boundary</th>
<th>bottomland</th>
<th>heritage area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atchafalaya</td>
<td>region</td>
<td>geography/geographical</td>
<td>national heritage area</td>
</tr>
<tr>
<td>swamp</td>
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<td></td>
</tr>
</tbody>
</table>

1. ____________ Something that indicates or fixes a limit or extent.
2. ____________ The description, distribution, and interaction of physical, biological, and cultural features of the earth’s surface.
3. ____________ Property that is passed to an heir, their inheritance: a person’s birthright.
4. ____________ A passage for extra water to run over, around an obstruction (as a dam) or through gates.
5. ____________ Regions with concentrations of significant natural, cultural, historic, and recreational resources and known for their unique culture and identity.
6. ____________ A wetland partially covered by water.
7. ____________ A nationally distinctive landscape shaped by natural, cultural, historic, and recreational resources that is recognized by the United States Congress. It tells a nationally important story through its geography, manmade structures, and the traditions that have evolved within its landscape.
8. ____________ A broad geographic area with similar features.
9. ____________ An Indian word for long river.
10. ____________ A natural stream of water of considerable volume.
11. ____________ Any marshy or sluggish bodies of water: A secondary watercourse to another body of water.
12. ____________ The area where a river meets the sea, where fresh water from the river meets salt water from the sea.
13. ____________ Low-lying land along a watercourse.
14. ____________ The land near a shore.
15. ____________ A water passage where the tide meets a river current; The sea at the lower end of a river.
16. ____________ Land (marshes or swamps) that is covered with shallow water or has soil saturated with moisture.
17. ____________ A stream flowing into a larger body of water.
18. ____________ An enclosed or partly enclosed water area.
19. ____________ The matter that settles to the bottom of a liquid; Material deposited by water.
Atchafalaya Video Student Worksheet

Name _______________________________

1. Heritage Area
   - The Atchafalaya is located in the _________________ of Louisiana.
   - The Atchafalaya is considered a _________________ country in America.
   - How many parishes out of 64 make up the Atchafalaya National Heritage Area?
     __________________

2. Landscape and wildlife
   - The landscape is ________________ and ________________.
   - It is made up of ________________, ________________, and America’s largest ________________
     and towering ________________ trees cover our landscape.
   - From our waters come catfish, oysters, shrimp and crawfish. ________________ make us well known.
   - Four types of wildlife found in the Atchafalaya are ________________, ________________, ________________ and ________________.

3. Cuisine/Food
   - Our food is ________________ to the world.
   - Our cuisine is ________________, ________________, and ________________.
   - The Trinity is ________________, ________________, and ________________.
   - Foods found on our tables are ________________, ________________, ________________, ________________, ________________, ________________, ________________, and ________________.
   - With food and eating comes a ________________.

4. Music and Instruments
   - Our native music is a complex molding of culture. We have ________________ as well as ________________, ________________, ________________, and ________________.
   - Some of our instruments are ________________ and ________________.

5. Dance
   - Our dance has a life all its own. We do the ________________ and ________________. It doesn’t matter who you are young, old or families you just dance together and have a good time.
   - We have an unrivaled ________________ of life.

6. Language
   - ________________-Colonial-French, French, Spanish, African and Indian

7. Atchafalaya Swamp
   - God forbid we ever get lost in the Atchafalaya Swamp.
   - Our history is about man and nature and a fight to survive
   - Our country is vast and varied but we share the story of water and swamp, man and survival, on a river we call the Atchafalaya.
   - Our country, The Atchafalaya National Heritage Area, doesn’t require a passport; it is in the heart of Louisiana, a state in the United States of America.
Atchafalaya Video Notes

Location:
- Heart of Louisiana

Parishes it covers:
- 14 (Concordia, Avoyelles, Point Coupee, East Baton Rouge, West Baton Rouge, Ascension, Iberville, St. Martin, Iberia, Lafayette, St. Landry, St. Mary, Assumption, Terrebonne)

Known as:
- Foreign country in America
- Largest water/river swamp in America

Landscape and Wildlife
- The landscape is rich and mysterious. It is made up of bayous, vast marshes, and America's largest river swamp.
- Fields of sugar cane and ancient live oaks
- Cypress trees cover our landscape.
- From our waters come catfish, shrimp and crawfish. Crawfish make us well known.
- Four types of wildlife found in the Atchafalaya are alligators, Black Bears, bobcats and birds.

Cuisine/food
- Unique to the world
- A mixture of European, African American, and Native American.
- The trinity is celery, onions, bell pepper, and celery.
- Foods found at our tables are roux, andouille, gumbo, file, jambalaya, etouffee, pralines, and boudin. With food comes a celebration.

Music
- Our native music is a complex molding of culture to make Cajun rhythm and Zydeco, as well as Rock’ n Roll, Rock-A-Billy, Gospel, Country.
- Some of our instruments are fiddle and accordion.
- Music and food is an unrivaled emblem of our rich culture.

Dance
- Two step and waltz
- It doesn’t matter who you are, young or old or families, you just dance together and have a good time.
- We have an unrivaled joy of life!

Language
- Cajun Dialect-Colonial-French, French, Spanish, African and Indian

Atchafalaya Swamp
- And God forbid if we ever get lost in the Atchafalaya Swamp.
- Our history is about man and nature and a fight to survive.
- Our country is vast and varied but we share the story of water and swamp, man and survival, on a river we call the Atchafalaya.
- Our country, The Atchafalaya National Heritage Area, does not require a passport; it is in the heart of Louisiana, a state in the United States.
Atchafalaya Video Teacher Key

Heritage Area
- The Atchafalaya is located in the heart of Louisiana.
- The Atchafalaya is considered a foreign country in America.
- 14 parishes out of 64 make up the Atchafalaya National Heritage Area.

Landscape and Wildlife
- The landscape is rich and mysterious.
- It is made up of bayous, vast marshes, and America’s largest river swamp. Fields of sugar cane, ancient live oaks and towering cypress trees cover our landscape.
- From our waters come catfish, shrimp and crawfish. Crawfish make us well known.
- Four types of wildlife found in the Atchafalaya are alligators, Black Bears, bobcats and birds.

Cuisine/Food
- Our food is unique to the world.
- Our cuisine is European, African American, and Native American.
- The Trinity is onions, bell pepper, and celery.
- Foods found on our tables are roux, andouille, gumbo, etouffee, filé, jambalaya, pralines, and boudin.
- With food and eating comes a celebration.

Music and Instruments
- Our native music is a complex molding of culture. We have Cajun rhythm and Zydeco as well as Rock’n Roll, Rock-A-Billy, Gospel, and Country.
- Some of our instruments are fiddle and accordion.

Dance
- Our dance has a life all its own. We do the two-step and waltz.
- It doesn’t matter who you are, young, old or families you just dance together and have a good time.
- We have an unrivaled joy of life.

Language
- Cajun Dialect- Colonial-French, French, Spanish, African and Indian

Atchafalaya Swamp
- God forbid we ever get lost in the Atchafalaya Swamp.
- Our history is about man and nature and a fight to survive.
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- Our country, The Atchafalaya National Heritage Area, doesn’t require a passport; it is in the heart of Louisiana, a state in the United States of America.
Atchafalaya Video Teacher Key
Heritage Area

• The Atchafalaya is located in the heart of Louisiana.
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Landscape and Wildlife

• The landscape is rich and mysterious.
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• Our dance has a life all its own. We do the two-step and waltz.
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• We have an unrivaled joy of life.

Language

• Cajun Dialect-Colonial-French, French, Spanish, African and Indian

Atchafalaya Swamp

• God forbid we ever get lost in the Atchafalaya Swamp.
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Atchafalaya National Heritage Area
Regions of the ANHA

UPPER WESTCENTEY WTOE
RIVERESCBAYOUTLREECT
HECORSIODORCOLDARST
TALTEYTENTLZRINIRXE
TJLZBPTBECMCMCVAXEELY
AMFEAMKWEAPESRLSBF
MXRBJLXIAYTURAEETROBF
FIDUNLVTCLUDOSBNVAN
AFKMVXRTRLKNCIPQNL
QUNLBRQERBWOWMRTAVEGE
LOSNITRAMTZRONEZBF
JBIAYUMENTIESZRUIAAK
SKTPRCQVOMOWXGSGOPS
QFNPSONENIFVTTOZEPX
USMRQNEBRSSUYMYBBGX
YMUXRILIROKCNUAALWBN
QESMPLUSUWWRECMVLDDR
RKSYZGTKMYWCKKHZOR
DVAAPODNEWQMODSEGZQK
MSAVOYLELSEMFKDAVJNI

ASCENSION ASSUMPTION AVOYELLES
CONCORDIA EASTBATONROUGE IBERIA
IBERVILLE LAFAYETTE POINTCOUPEE
STLANDRY STMARTIN STMARY
TERREBONNE WESTBATONROUGE

Hidden Message:

_________ , ___________ ______ _________

_________ ___________ _______________ , ___________
Focus and Overview
Students participate in a variety of activities to discover how waterways and water transportation have played and continue to play a significant part in the lives, lifestyle and culture in the ANHA.

Objectives
• The students use maps, Internet research, vocabulary, images and Information Guide to learn how to identify the types of waterways, location and purpose the waterways serve in the ANHA, Louisiana, and the United States of America.
• Students write a journal with brief entries reflecting discovery, exploration and settlement of waterways, water transportation, people, lifestyle, and culture of the ANHA.
• Students use research and vocabulary to determine the modes of water transportation used in the last two-hundred years on the waterways in the ANHA.
• The students make a picture dictionary and collage of the types of transportation used in the ANHA. The picture dictionary and collage includes waterway scenes.

Procedures
1. Students use maps, images, ANHA Information Guide and research to identify the types of waterways found in the ANHA, the location, and how each one relates to the ANHA. Students then discover the purpose the waterways serve in the three areas. Students use a three way worksheet or divide a notebook page into three equal sections to document the information on type of waterway, location, and purpose. The students also develop a map showing and naming key waterways.
2. The students use the Information Guide, Internet Research and maps to develop a journal showing brief informative entries concerning the discovery, exploration and settlement until

Atchafalaya Waterways and Structures
Grades four through six

Common Core Standards
Science
• CCSS.ELA-Literacy.RST.6-8.3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
• CCSS.ELA-Literacy.RST.6-8.6 Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.
• CCSS.ELA-Literacy.RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
• CCSS.ELA-Literacy.RST.6-8.9 Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
Focus and Overview

Students participate in a variety of activities to discover how waterways and water transportation have played and continue to play a significant part in the lives of the people, lifestyle and culture in the ANHA.

Objectives

- The students use maps, Internet research, vocabulary, images and Information Guide to learn how to identify the types of waterways, location and purpose the waterways serve in the ANHA, Louisiana, and the United States of America.
- Students write a journal with brief entries reflecting discovery, exploration and settlement of waterways, water transportation, people, lifestyle, and culture of the ANHA.
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- The students make a picture dictionary and collage of the types of transportation used in the ANHA. The picture dictionary and collage includes waterway scenes.

Procedures

1. Students use maps, images, ANHA Information Guide and research to identify the types of waterways found in the ANHA, the location, and how each one relates to the ANHA. Students then discover the purpose the waterways serve in the three areas. Students use a three way worksheet or divide a notebook page into three equal sections to document the information on type of waterway, location, and purpose. The students also develop a map showing and naming key waterways.
2. The students use the Information Guide, Internet Research and maps to develop a journal showing brief informative entries concerning the discovery, exploration and settlement until

Common Core Standards

Science

- CCSS.ELA-Literacy.RST.6-8.3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
- CCSS.ELA-Literacy.RST.6-8.6 Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.
- CCSS.ELA-Literacy.RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
- CCSS.ELA-Literacy.RST.6-8.9 Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
The present day of the Mississippi River, tributaries, waterways, people, lifestyle, and culture of the ANHA (fourteen parishes). The design of the journal should reflect something related to the ANHA. Students need to be creative in developing the journal. Example, pictures, maps, words, special sayings and names related to the ANHA, etc.

3. The students use the Information Guide, maps, images and Internet Research, and vocabulary sheets to learn the types of water transportation used during the last two-hundred years in the ANHA. The students review and discuss the vocabulary that represents the types of transportation used in the ANHA over the years. The students could also make a picture dictionary and collage of the different types of water transportation used in the ANHA over the years and different waterway scenes.

**Activities and Materials**

- Pencil or pen
- Computer/Internet
- Paper or notebook
- Poster board
- Construction paper
- Glue or glue sticks
- Magazine pictures or pictures from different sources of water transportation and waterways scenes
- Personally designed journal
- Vocabulary Teacher Key
- Information Guide

1. The students record the waterways, location and purpose of the waterways in a notebook or worksheet then develop a map showing and naming key waterways located in the ANHA, Louisiana and United States of America.

2. The students create a personal journal about the waterways of the ANHA representing two-hundred years of discovery, exploration, and settlement until present day. The journal has brief entries providing information concerning waterways, people, lifestyle and culture of the ANHA. The journal needs to be a personal reflection through the years of the ANHA. The students need to include maps, pictures, words, etc.

3. The students learn the vocabulary and types of water transportation used over the years in the ANHA, Louisiana and the United States of America. The students create a picture dictionary and

**Common Core Standards**

**Social Studies**

- CCSS.ELA-Literacy.RH.6-8.2
  Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.

- CCSS.ELA-Literacy.RH.6-8.7
  Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.

- CCSS.ELA-Literacy.RH.6-8.8
  Distinguish among fact, opinion, and reasoned judgment in a text.

- CCSS.ELA-Literacy.RH.9-10.7
  Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.

- CCSS.ELA-Literacy.RH.9-10.8
  Assess the extent to which the reasoning and evidence in a text support the author’s claims.

- CCSS.ELA-Literacy.RH.9-10.9
  Compare and contrast treatments of the same topic in several primary and secondary sources.

**Water Transportation Vocabulary**

1. tugboat
2. towboat
3. skiff
4. barge
5. row boats
6. paddleboat
7. raft
8. pirogue
9. Pontoon boat
10. ship
11. steamboat
12. cargo ship
13. canoe
14. airboat (swamp boat)
15. paddle wheeler
16. houseboat
17. ferry
18. motorboat
19. shrimp boat
20. fishing boat
collage including waterways scenes and the types of water transportation used in the ANHA over the years. Water transportation vocabulary:

1. tugboat
2. towboat
3. skiff
4. barge
5. row boats
6. paddleboat
7. raft
8. pirogue
9. Pontoon boat
10. ship
11. steamboat
12. cargo ship
13. canoe
14. airboat (swamp boat)
15. paddle wheeler
16. houseboat
17. ferry
18. motorboat
19. shrimp boat
20. fishing boat

Assessment

• The student’s completion of the worksheet or notebook activity identifying, locating and reporting the purpose the waterway serves in the ANHA
• The student’s completion of a personal journal reflecting two-hundred years on the waterways, people, lifestyle and culture of the ANHA
• The student’s participation in identifying the forms of transportation found on the waterways of the ANHA and the students knowledge in class discussion of the transportation vocabulary
• The student’s completion of the water transportation vocabulary test, picture dictionary booklet, and collage including scenes of waterways
Activity Websites

- Waterways
  - [mystatehistory.com/la/book/ch_2_2.pdf](http://mystatehistory.com/la/book/ch_2_2.pdf)
  - [traveltips.usatoday.com/louisiana-bayous-59733.html](http://traveltips.usatoday.com/louisiana-bayous-59733.html)
  - [www.eatel.net/~meme/LaIndex.html](http://www.eatel.net/~meme/LaIndex.html)
  - [en.wikipedia.org/wiki/Inland_waterways_of_the_United_States](http://en.wikipedia.org/wiki/Inland_waterways_of_the_United_States)
- Louisiana Waterways Map and Information
  - [geology.com/state-map/louisiana.shtml](http://geology.com/state-map/louisiana.shtml)
- Pattern of Waterways
- Intracoastal Waterway
  - [en.wikipedia.org/wiki/Gulf_Intracoastal_Waterway](http://en.wikipedia.org/wiki/Gulf_Intracoastal_Waterway)
  - [www.geog.nau.edu/courses/alew/ggr346/ft/south/index-coast.html](http://www.geog.nau.edu/courses/alew/ggr346/ft/south/index-coast.html)
- Mississippi River
  - [www.history.com/topics/mississippi-river](http://www.history.com/topics/mississippi-river)
- Atchafalaya River
  - [www.history.com/topics/atchafalaya-river](http://www.history.com/topics/atchafalaya-river)
- Interactive Louisiana Website
  - [logic.isu.edu/SatelliteTour/begintour_files/v3_slide0001.htm](http://logic.isu.edu/SatelliteTour/begintour_files/v3_slide0001.htm)
- Louisiana Public Lands, Lakes, Rivers, and Scenic Waterway
- Inland Waterways of the United States of America
  - [en.wikipedia.org/wiki/Inland_waterways_of_the_United_States](http://en.wikipedia.org/wiki/Inland_waterways_of_the_United_States)
- Louisiana Waterways and tributaries
- Water Transportation Army Corp of Engineers
  - [education.usace.army.mil/navigation/lessons/2/navhisls2lv2.html](http://education.usace.army.mil/navigation/lessons/2/navhisls2lv2.html)
- List of National Historic Landmarks in Louisiana
- Steamboats of the Mississippi River
  - [www.uncommoncruises.com/vessels/featured/show/5](http://www.uncommoncruises.com/vessels/featured/show/5)
- Images of Bayous and waterways
  - [www.superstock.com/stock-photography/Louisiana+bayou](http://www.superstock.com/stock-photography/Louisiana+bayou)
- Cajun Tales on the Bayou
  - [www.frenchcreoles.com/CreoleCulture/cajuntales/cajuntales2.htm](http://www.frenchcreoles.com/CreoleCulture/cajuntales/cajuntales2.htm)
- Barges and Tugboats
  - [en.wikipedia.org/wiki/Barge](http://en.wikipedia.org/wiki/Barge)
  - [www.answers.com/topic/tugboat](http://www.answers.com/topic/tugboat)
  - [www.answers.com/topic/tugboat#ixzz1f6OFui2X](http://www.answers.com/topic/tugboat#ixzz1f6OFui2X)
- Water Transportation
  - [education.usace.army.mil/navigation/lessons/2/navhisls2lv2.html](http://education.usace.army.mil/navigation/lessons/2/navhisls2lv2.html)
Louisiana Parishes

Directions

1. Locate and name the 14 parishes within the Atchafalaya National Heritage Area.
2. Shade each of the four ANHA regions and provide a key for your map.
3. For help with your map, see page 36 of the Regions and Parishes guide.

[Map of Louisiana parishes]
### Atchafalaya Water Transportation Vocabulary

**Teacher Guide**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>tugboat</td>
<td>Small powerful boat designed for towing or pushing larger vessels.</td>
</tr>
<tr>
<td>towboat</td>
<td>A powerful, shallow-draft boat with a broad bow, intended to push barges on rivers and canals.</td>
</tr>
<tr>
<td>skiff</td>
<td>Flat-bottom open boat, having a pointed bow and a square stern and propelled by oars, sail, or motor.</td>
</tr>
<tr>
<td>barge</td>
<td>A roomy usually flat-bottomed boat used for the transport of goods on inland waterways and usually propelled by towing.</td>
</tr>
<tr>
<td>row boats</td>
<td>A small boat designed to be rowed.</td>
</tr>
<tr>
<td>paddleboat</td>
<td>Boat easily moved by paddling with hands or feet, usually used in shallow water.</td>
</tr>
<tr>
<td>raft</td>
<td>Flat structure for transportation on water usually.</td>
</tr>
<tr>
<td>pirogue</td>
<td>A small boat that has been dugout.</td>
</tr>
<tr>
<td>Pontoon boat</td>
<td>A large flat bottomed boat or barge.</td>
</tr>
<tr>
<td>ship</td>
<td>A large sea going vessel.</td>
</tr>
<tr>
<td>steamboat</td>
<td>A boat driven by steam power; specifically: a shallow-draft vessel used on inland waterways.</td>
</tr>
<tr>
<td>cargo ship</td>
<td>A ship designed to carry cargo.</td>
</tr>
<tr>
<td>canoe</td>
<td>A light narrow boat with both ends sharp that is usually propelled by paddling.</td>
</tr>
<tr>
<td>airboat (swamp boat)</td>
<td>A shallow-draft boat driven by an airplane propeller and steered by an airplane rudder.</td>
</tr>
<tr>
<td>paddle wheeler</td>
<td>A boat propelled by a paddle wheel.</td>
</tr>
<tr>
<td>houseboat</td>
<td>A boat used as a dwelling.</td>
</tr>
<tr>
<td>ferry</td>
<td>A boat used to carry, people, cars, and things over water.</td>
</tr>
<tr>
<td>motorboat</td>
<td>A boat propelled by a motor.</td>
</tr>
<tr>
<td>shrimp boat</td>
<td>A boat used for catching shrimp.</td>
</tr>
<tr>
<td>fishing boat</td>
<td>A boat used for catching fish.</td>
</tr>
</tbody>
</table>
Focus and Overview

Students research, participate in class discussion, create a graph, compare and contrast the floods of 1927 and 2011, summarize, draw a conclusion, and complete a written report concerning two-hundred years of flooding events on the Atchafalaya and Mississippi rivers, tributaries and basins.

Learning Objectives

- The students will learn information pertaining to the historical flooding events that carved a path through the ANHA, Louisiana and the United States of America.
- The students will learn how to establish and formulate a graph using the information collected on the flood patterns occurring over the last 200 years on the Atchafalaya River and the Mississippi River and tributaries.
- The students will learn how man’s manipulation of nature’s chosen path for the Atchafalaya River and Mississippi River and all tributaries played a significant role in the 2011 flooding event of the Mississippi and Atchafalaya rivers.
- The students will learn how to gather, organize and enter data using a graphic organizer.
- The students will learn how to compile in a final written report the information gathered through graphs, notes, comparing and contrasting the floods of 1927 and 2011 and any significant data gathered in research, into a report including a summary and conclusion of findings.

Learning Procedures

1. Students conduct research using the internet and the Information Guide to provide written notes on the years and significance of the floods that occurred over the last two hundred years on the Atchafalaya and Mississippi rivers, tributaries and basins.
2. The students participate in class discussion concerning the flood events occurring over the last two-hundred years on the Atchafalaya and Mississippi rivers, tributaries and basins.

Common Core Standards

Social Studies

- CCSS.ELA-Literacy.RH.6-8.2 Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
- CCSS.ELA-Literacy.RH.6-8.7 Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.
- CCSS.ELA-Literacy.RH.6-8.8 Distinguish among fact, opinion, and reasoned judgment in a text.
- CCSS.ELA-Literacy.RH.9-10.7 Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.
- CCSS.ELA-Literacy.RH.9-10.8 Assess the extent to which the reasoning and evidence in a text support the author’s claims.
- CCSS.ELA-Literacy.RH.9-10.9 Compare and contrast treatments of the same topic in several primary and secondary sources.
3. Students use a graph to document, in chronological order, the floods that occurred over the last two-hundred years and the patterns established by the flooding that occurred on the Atchafalaya and Mississippi Rivers, tributaries and basins.
4. Students use the internet, current technology and the Information Guide to compare and contrast the floods of 1927 and 2011 using a graphic organizer.
5. Using data entered on a graphic organizer, graphs, notes, and research information, students then compile a written report, including a summary and conclusion

Activities

1. The students use internet research and review the Information Guide concerning flooding on the Atchafalaya and Mississippi rivers, tributaries and basins to establish the historical events that have occurred over the last 200 years.
2. The students divide into small groups and discuss the historical events that have taken place concerning the Atchafalaya and Mississippi rivers, tributaries and basins. Students share the small group information during a class discussion.
3. Students individually select a style and type of graph to be used in collecting and presenting data on the flood patterns that have occurred over the last 200 years on the Atchafalaya and Mississippi rivers, tributaries, and basins.
4. Using a graphic organizer, students provide written documentation to compare and contrast the floods of 1927 and 2011.
5. Students use the graphs, notes, research data, and information comparing and contrasting the floods of 1927 and 2011, to formulate a written report, including a summary and conclusion.

Assessment

- Participation in gathering research and class discussion concerning historical flooding events of the Atchafalaya and Mississippi rivers, tributaries and basins.
- Completion of a graph reporting accurate data on a pattern of flooding over the last 200 years on the Mississippi River, its tributaries and the Atchafalaya River.
- Completion of the data collected on the compare and contrast graphic organizer, concerning flooding events on the rivers.
- Completion of a written report compiling all the data, a summary, and a conclusion of all the information collected and reported.

Resources

- Kids’ Zone Create a Graph, http://nces.ed.gov/nceskids/createagraph/
- Graph (style and type students choice) http://www.google.com/search?q=graph&hl=en&prmd=imvns&tbs=isch&tbo=u&source=univ &sa=X&ei=rqsGT9f4GojAtgeC8pnOBg&ved=0CFwQsAQ&biw=1280&bih=681
- Compare and Contrast Graphic Organizer, http://www.ReadWriteThink.org
- Flood Records of the Lower Mississippi River over the last 200 years http://www.srh.noaa.gov/lix/?n=ms_flood_history
- Diagram of the Mississippi River Floodway, http://feww.wordpress.com/2011/05/14/
• Project Design Flood
  http://www.americaswetlandresources.com/background_facts/detailedstory/LouisianaRiverControl.html

• Comparison of the flood of 1927 & 2011 Map, http://www.mvd.usace.army.mil/ and

• Atchafalaya Plan and Profile Maps

• Atchafalaya Plan and Profile Maps
1. Locate and name the 14 parishes within the Atchafalaya National Heritage Area.
2. Shade each of the four ANHA regions and provide a key for your map.
3. For help with your map, see page 8 of the Regions and Parishes guide.
Louisiana Parishes

Directions.

1. Locate and name the 14 parishes within the Atchafalaya National Heritage Area.
2. Shade each of the four ANHA regions and provide a key for your map.
3. For help with your map, see page 36 of the Regions and Parishes guide.
Overview

The four major elements of the U.S. Army Corps of Engineers' Mississippi River and Tributaries Project are:

1. **Levees** for containing flood flows
2. **Floodways** for the passage of excess flows past critical reaches of the Mississippi
3. **Channel improvement and stabilization** for stabilizing the channel in order to provide an efficient navigation alignment, increase the flood-carrying capacity of the river, and for protection of the levees system
4. **Tributary basin improvements** for major drainage and for flood control, such as dams and reservoirs, pumping plants, auxiliary channels, etc.

Focus and Overview

Students learn the purpose, specifics and history of the MR&T Project and the responsibilities of the government, state, ANHA, and agencies involved with the Project. Students learn the MR&T Project design, location, operation and maintenance of the control structures in place.

Learning Objectives

- The students will learn the fourteen parishes and four regions of the ANHA and the importance of the Mississippi River Drainage Basin. In the process of learning the parishes and regions of the ANHA the students will also learn the major waterways of the ANHA and how significant they are to the ANHA, Louisiana and the United States of America.
- The students will learn the purpose and specifics of the MR&T Project (Why, Who, What, Where, When and How) and the history until present day of the project. Students identify and learn responsibilities of the government, state, ANHA and agencies involved with the MR&T Project.

**Mississippi River and Tributaries Project**

Grades four through six

Common Core Standards

**Social Studies**

- CCSS.ELA-Literacy.RH.6-8.2 Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
- CCSS.ELA-Literacy.RH.6-8.7 Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.
- CCSS.ELA-Literacy.RH.6-8.8 Distinguish among fact, opinion, and reasoned judgment in a text.

- CCSS.ELA-Literacy.RH.9-10.7 Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.
- CCSS.ELA-Literacy.RH.9-10.8 Assess the extent to which the reasoning and evidence in a text support the author's claims.
- CCSS.ELA-Literacy.RH.9-10.9 Compare and contrast treatments of the same topic in several primary and secondary sources.
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4. **tributary basin improvements** for major drainage and for flood control, such as dams and reservoirs, pumping plants, auxiliary channels, etc.

Focus and Overview
Students learn the purpose, specifics and history of the MR&T Project and the responsibilities of the government, state, ANHA, and agencies involved with the Project. Students learn the MR&T Project design, location, operation and maintenance of the control structures in place.

Learning Objectives

- The students will learn the fourteen parishes and four regions of the ANHA and the importance of the Mississippi River Drainage Basin. In the process of learning the parishes and regions of the ANHA the students will also learn the major waterways of the ANHA and how significant they are to the ANHA, Louisiana and the United States of America.
- The students will learn the purpose and specifics of the MR&T Project (Why, Who, What, Where, When and How) and the history until present day of the project. Students identify and learn responsibilities of the government, state, ANHA and agencies involved with the MR&T Project.

Common Core Standards

**Social Studies**

- CCSS.ELA-Literacy.RH.6-8.2 Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
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- CCSS.ELA-Literacy.RH.9-10.7 Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.
- CCSS.ELA-Literacy.RH.9-10.8 Assess the extent to which the reasoning and evidence in a text support the author’s claims.
- CCSS.ELA-Literacy.RH.9-10.9 Compare and contrast treatments of the same topic in several primary and secondary sources.
Learning Procedures

1. Using a Louisiana parish map with the ANHA color coded and the Information Guide the students will identify the parishes that are in each region of the ANHA. The students will use the Internet or materials the teacher supplies to view the Atchafalaya River and Basin and Mississippi River and its tributaries and Drainage Basin.

2. Using current technology, research, maps and the Information Guide the students will use a graphic organizer to document the purpose and specifics (Why, Who, What, Where, When and How) of the MR&T Project. Students prepare a written history concerning the MR&T Project and assigned responsibilities.

3. Using available research, maps and the Information Guide the students use an organizational chart to reflect the agencies that are directly involved in the MR&T Project, the assigned responsibility for the Project and the affects it has on the ANHA, Louisiana and the United States.

4. The students recognize, discuss and provide a written explanation of the MR&T Project’s design, location, operation and maintenance of the control structures in place:
   - Levees for containing flood flows
   - Floodways for the passage of excess flows past critical reaches of the Mississippi River
   - Channel improvement and stabilization to provide an efficient and reliable navigation channel, increase the flood-carrying capacity of the river, and protect the levee system
   - Tributary basin improvements for major drainage basins to include dams and reservoirs, pumping plants, auxiliary channels and pumping stations

5. The students will orally discuss and provide a written report on the importance of the Mississippi River and its tributaries in the settlement, development and future of the ANHA, Louisiana and the United States of America.

Activities

1. Students use the Louisiana parish map with the ANHA color coded, a Louisiana waterways map and the Atchafalaya River and Basin and Mississippi River and its tributaries and Drainage Basin maps to understand the geography and environment of the ANHA.

2. The students use a graphic organizer to document the purpose and specifics (Why, Who, What, Where, When and How) of the MR&T Project. Students show the history of the MR&T Project reflecting the designated areas of responsibility in the project in the form of a written report.

3. Using available research, maps and the Information Guide the students use an organizational chart to reflect the agencies that are directly involved in the MR&T Project, the assigned responsibility for the Project and the affects it has on the ANHA, Louisiana and the United States.
4. The students will use a map of the MR&T Project and a four-column chart to organize the MR&T Project, design, location, operation, and maintenance.
5. The students will orally discuss and make a report on the importance of the Mississippi River and its tributaries in the settlement, development and future of the ANHA, Louisiana and the United States of America.

Assessment

- Map Quiz on ANHA, Louisiana Waterways and Mississippi River Drainage Basin.
- Participation in class discussion on each of the objectives and procedures of the lesson.
- Completion of the graphic organizer worksheet reflecting the history of the MR&T Project and assigned responsibilities.
- Completion of the organizational chart to reflect the agencies involved in the project, assigned responsibilities for the project and the affects it has on the ANHA, Louisiana and the United States.
- Completion of the four column chart organizing the MR&T Project, design, location, operation and maintenance.
- Oral class discussion and written report on the importance of the Mississippi River and its tributaries in settlement, development and future of the ANHA, Louisiana and the United States.

Resources

- Atchafalaya River [http://www.history.com/topics/atchafalaya-river](http://www.history.com/topics/atchafalaya-river)
- USGS Infobank: Atchafalaya River
- MR&T Project
  1st website needs to be cut and pasted into Google Search before it will open [http://www.americaswetlandresources.com/background_facts/detailedsty/LouisianaRiverControl.html](http://www.americaswetlandresources.com/background_facts/detailedsty/LouisianaRiverControl.html)
  [http://en.wikipedia.org/wiki/Mississippi_Valley_Division](http://en.wikipedia.org/wiki/Mississippi_Valley_Division)
• Video of the ORCS operating
• Morganza Spillway
  http://en.wikipedia.org/wiki/Morganza_Spillway
  http://www.youtube.com/watch?v=wqp8R-xv8jE
  http://media.nola.com/environment/photo/morganza-spillway-scenario-1ajpg-27146e2a1790746d.jpg
  http://999ktdy.com/all-eyes-on-the-morganza-spillway/
  http://www.wwltv.com/home/All-eyes-turn-to-Morganza-Spillway-121672234.html
  http://www.nola.com/weather/index.ssf/2011/05/record_high_river_likely_to_re.html
• Mississippi and Atchafalaya Flooding 2011
  http://www.freerepublic.com/focus/chat/2721855/posts
• Mississippi River Drainage Basin
  http://www.mvd.usace.army.mil/mrc/
• Structures in the Atchafalaya Basin MR&T Project
• Avulsion
  http://en.wikipedia.org/wiki/Avulsion_(river)
• Atchafalaya USACE
• Lower Mississippi Forecast Center
  http://www.srh.noaa.gov/lmrfc/?n=yazooriverbasin
• Interactive Map of Louisiana Wildlife Management Areas
  http://www.wlf.louisiana.gov/wma
Louisiana Parishes

Directions.

1. Locate and name the 14 parishes within the Atchafalaya National Heritage Area.
2. Shade each of the four ANHA regions and provide a key for your map.
3. For help with your map, see page 36 of the Regions and Parishes guide.
Directions.

3.

2.

1.

For help with your map, see page 8 of the Regions and Parishes guide.

Shade each of the four ANHA regions and provide a key for your map.

Acknowledgement is made to the following sources:

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Section: Background Pages

Atchafalaya National Heritage Area (11-15)


Ascension Parish: http://www.ascensiontourism.com/about/

Ascension Parish: http://www.ascensiontourism.com/history/

Assumption Parish: http://assumptionlona.com


Averyelles Parish: http://louisianatravel.com/avoyelles-parish


Cajun Coast: http://www.cajuncoast.com/public/about/history/thechitimacha/

Cajun country: http://cajuncountry.org/history.html


Concordia Parish: http://www.concordiaed.com/weebpege2.emf?content=content&id=73

Concordia Parish: http://cct.louisiana.edu/tourism/parishes/Central_Louisiana/concordia.html

East Baton Rouge Parish: http://brgov.com


Evangeline Oak: http://www.stoppingpoints.com/louisiana/St-Martin/EvangelineOak.html


Iberia Parish: http://www.lapage.com/crt/a-cj-ibe.html


Iberia Travel: http://www.iberiatravel.com


Iberville Parish: http://visitiberville.com/recreational_waterways/


Lafayette Parish: http://www.crt.state.la.us/history.htm

Lafayette Parish: http://www.crt.state.la.us/history.htm

Louisiana Travel: http://louisianatravel.com/new-iberia

Louisiana: http://www.louisiana-destinations.com/opelousas.htm


Plaquemines Lock: http://www.crt.state.la.us/parks/iplaqlock.aspx

Pointe Coupee Parish: http://en.wikipedia.org/wiki/Morganza_Spillway

Pointe Coupee Parish: http://en.wikipedia.org/wiki/Pointe_Coupee_Parish_Louisiana

Pointe Coupee Parish: http://www.pcatm.org/mainpages/pchistory.html

Pointe Coupee Parish: http://www.pchamber.org/CatSubCat/CatSubCat.asp?p=CS2

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