Rohrer, Laurel (CTR)

From: Rohrer, Laurel (CTR)
Sent: Wednesday, April 27, 2011 11:48 AM
To: 'Bechdol.michael@epa.gov'
Subject: Solicitation of Views - Vermilion Parish Flood Protection Project
Attachments: NEMIS 1603-0004 Vermilion Parish - Forked Island ES Flood Wall Project SOW.doc

Mr. Bechdol,

FEMA is considering providing Hazard Mitigation Grant Program funding for the attached project in relation to Hurricanes Katrina and Rita (FEMA-1603/1607-DR-LA). FEMA has determined that the project overlies the Chicot Aquifer System, which has been designated as a Sole Source Aquifer. Please review the attached project description to determine whether the proposed project would have any adverse effect on the quality of the ground water underlying the site. The applicant is the Vermilion Parish, Louisiana Government. The proposed scope of work is to construct a flood wall/berm around the Forked Island/East Broussard Elementary School in Abbeville, Louisiana. FEMA will be writing an EA for this project. Please call me at (540) 842-3300 if you have any questions with this project. Thank you in advance for your time and attention to this matter.

Laurel Rohrer, CFM, CHMM, REM (CTR)
URS Corporation, Contractor
NEPA Environmental Specialist - Hazard Mitigation Grant Program
Federal Emergency Management Agency
4th Floor, Room 4049, FEMA Louisiana Recovery Office
1 Seine Court, 4th Floor
New Orleans, LA 70114
Office: (504) 762-2205
Cell: (540) 842-3300
Fax: (504) 762-2353
Email: laurel.rohrer@associates.dhs.gov

Damage Description:

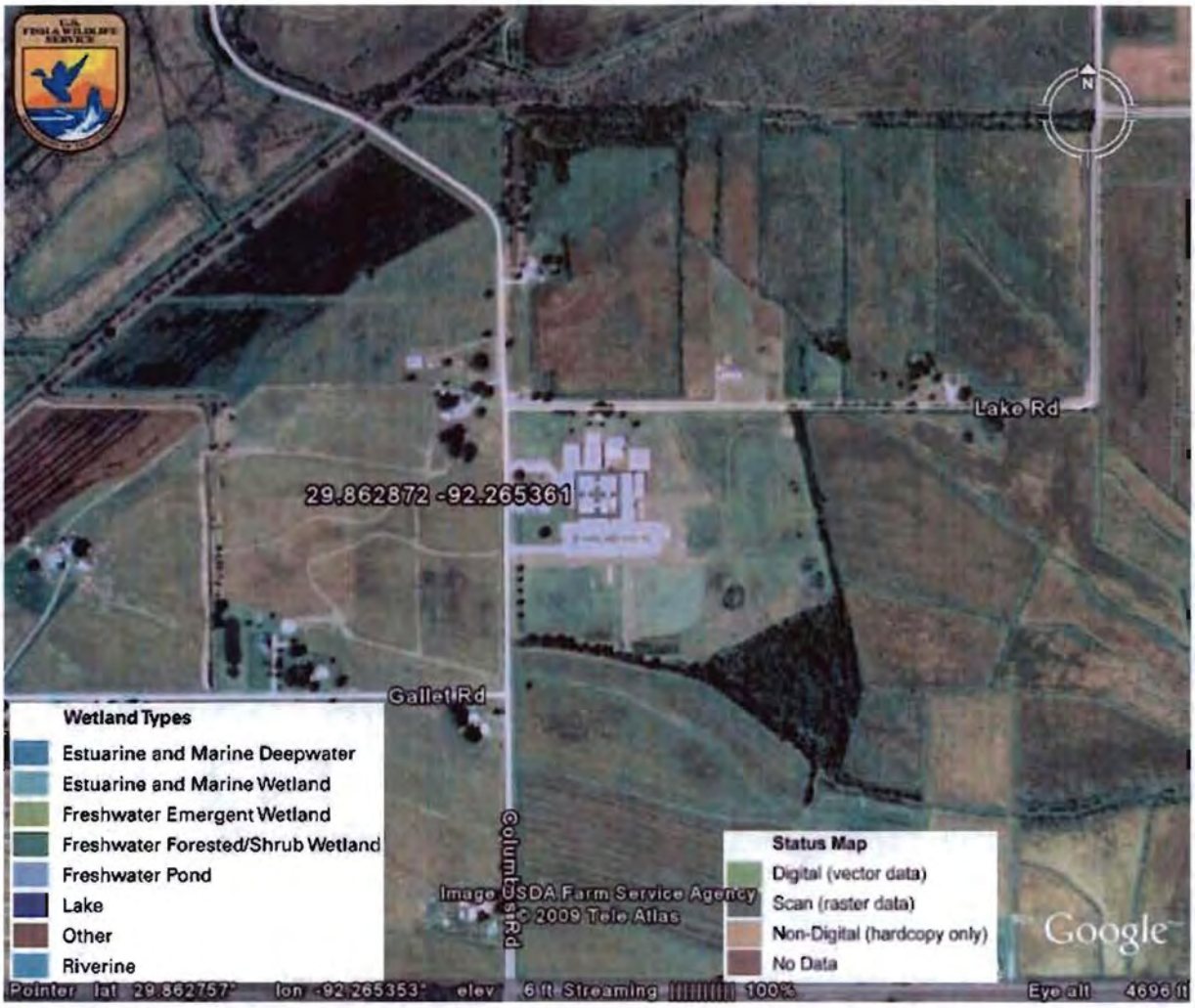
On September 24, 2005, storm surge caused by Hurricane Rita inundated large portions of southwest Louisiana causing extensive flood damage to structures in Vermillion Parish. This project entails construction of a flood wall and associated drainage improvements to reduce flooding at the Forked Island/East Broussard Elementary School. The structure is located at 19635 Columbus Road, Abbeville, LA, (29.862872, -92.265361), approximately 12 miles southwest of Abbeville, Louisiana. The area to be enclosed is approximately 12 acres. The proposed project is located within Section 33, Township 13S, Range 2E.

Scope of work:

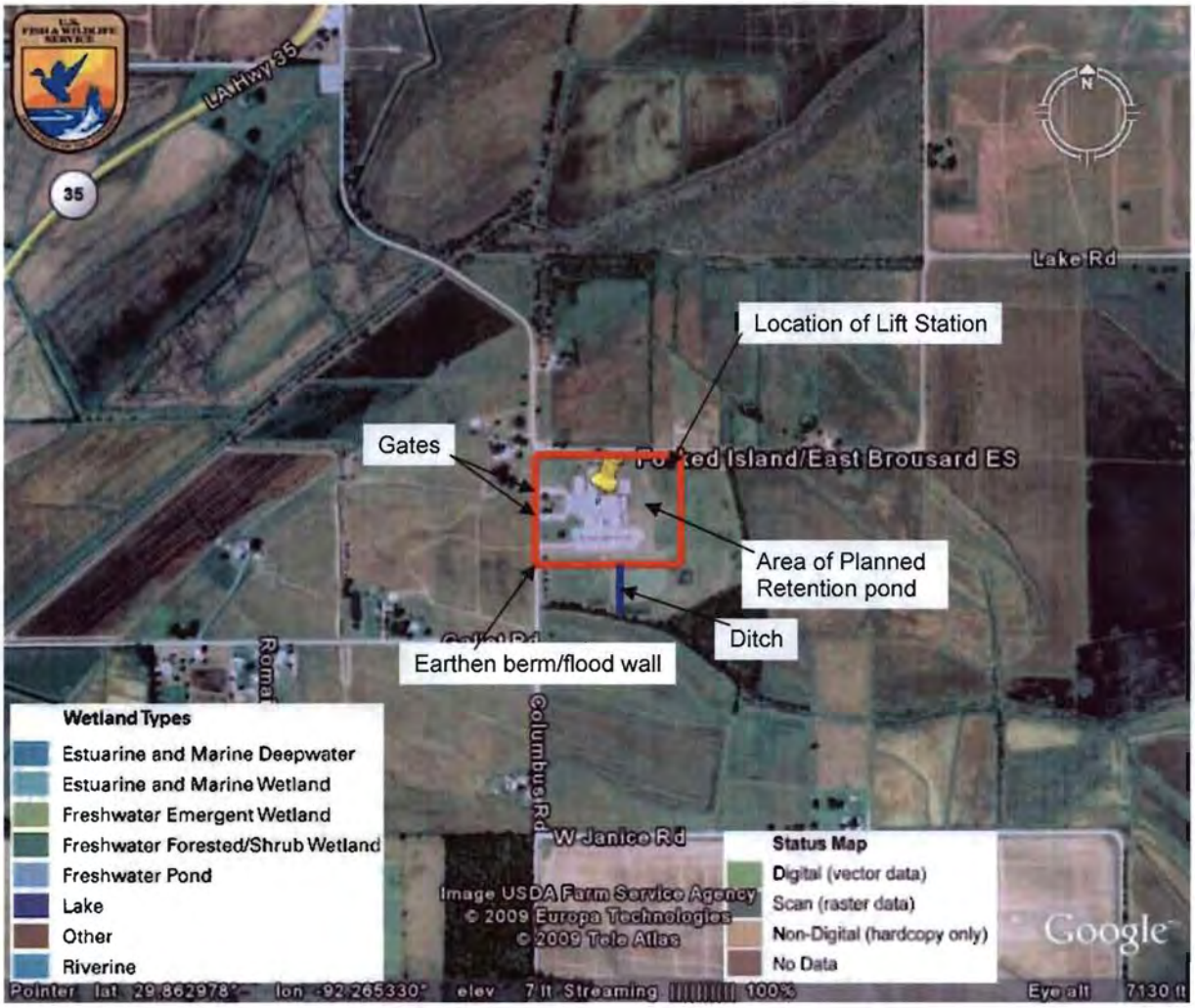
This project proposes to construct approximately 2,120 linear feet of earthen berm and 540 linear feet of concrete floodwall around the perimeter of the facilities to protect the Forked Island/East Broussard Elementary School from future flooding. The fill material for the proposed floodwall is proposed to be hauled in by the successful bidder/contractor for the project and will be taken from a location off-site from the Forked Island/East Broussard Elementary School site. The project also includes an interior drainage system consisting of a duplex 3,500 gallon per minute electric low lift pump, an underground storm water collection system, and discharge piping. Additionally, the project will include upgrading the existing sewer pump station and package sewage plant to assure continued operation of the facility during flooding events. The proposed improvement will provide protection to 4.0 feet above the current established base flood elevation (BFE) (100-year event) and 1.0 foot above the BFE of 13 feet as shown on the effective DFIRM, and is approximately 3.5 feet higher than the level of the floodwaters experienced during Hurricane Rita. The area to be enclosed is approximately 12 acres. In general, the earthen berm will be approximately 76 feet wide (40 feet on the landside, 30 feet on the floodside, and 6 feet at the top), 9 feet high, and 14 feet above mean sea level in elevation. The berm will be sloped 4 to 1 on the landside and 3 to 1 on the floodside. The concrete flood wall will also be 9 feet high and 14 feet above mean sea level in elevation. There will be two gates along Columbus Road; each will be 22 feet wide. A retention pond will be constructed on the eastern portion of the site within the ring flood wall/berm. The retention pond will have protective fencing and will sloped 5 percent. A lift station will be constructed at the northeast corner of the property within the ring flood wall/berm. A drainage ditch will be constructed to run to the south toward the southern edge of the property and an existing ditch from the south wall of the earthen berm. The ditch will be approximately 28 feet wide, and contain two 14 inch diameter steel pipes and one 24 inch diameter storm drain pipe. The 24 inch drain pipe will be contained in a 7 foot high box culvert with a sluice gate. The ditch will be sloped 3 to 1. Some trees will need to be removed along the northern portion of the property. The budget for the proposed project is $2,747,696.00. The federal share is 100%.

Please note that in August 2006, the applicant's construction contractor, Sellers & Associates, consulted with your agency regarding this project; however, for various reasons, the project has not yet been approved, and construction has not yet begun. Due to the time lag of nearly five years, FEMA is re-consulting to be sure that no changes to the original decision is warranted.

Project Vicinity Map



Vicinity Map with Major Project Features Shown



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS TX 75202-2733

April 28, 2011

Ms. Laurel Rohrer,
CFM, CHMM, REM (CTR)
Contractor
URS Corporation
Federal Emergency Management Agency
4th Floor, RM. 4049
FEMA Louisiana Recovery Office
1 Seine Court, 4th Floor
New Orleans, LA 70114

Dear Ms. Rohrer:

We have received your April 27, 2011, letter requesting our evaluation of the potential environmental impacts which might result from the following project:

Construction
Flood Wall/Berm
29.862872/-92.265361
Forked Island/East
Broussard Elementary School
Vermilion Parish
Abbeville, Louisiana

The project, proposed for financial assistance through the Federal Emergency Management Agency is located on the Chicot aquifer system which has been designated a sole source aquifer by the EPA. Based on the information provided for the project, we have determined that the project, as proposed, should not have an adverse effect on the quality of the ground water underlying the projects site.

This approval of the proposed project does not relieve the applicant from adhering to other State and Federal requirements, which may apply. This approval is based solely upon the potential impact to the quality of ground water as it relates to the EPA's authority pursuant to Section 1424(e) of the Safe Drinking Water Act.

If you did not include the Parish/County; a legal description; project location and the latitude and longitude if available, please do so in future Sole Source Aquifer correspondence.

If you have any questions on this letter or the sole source aquifer program please contact me at (214) 665-7133.

Sincerely yours,

Michael Bechdol, Coordinator
Sole Source Aquifer Program
Ground Water/UIC Section

cc: Jesse Means, LDEQ

U.S. Department of Homeland Security
Federal Emergency Management Agency
FEMA-1603/1607/1786/1792 -DR-LA
Louisiana Recovery Office
Environmental/Historic Preservation
1 Seine Court
New Orleans, LA 70114

5/2/2011

Pam Breaux
State Historic Preservation Officer
Department of Culture, Recreation & Tourism
P.O. Box 44247
Baton Rouge LA 70804

RE: Section 106 Review Consultation- Hurricane Katrina
Applicant: Vermilion Parish
Undertaking: Flood Protection of East Broussard Elementary School/Fork Island, 19635 Columbus Road, Abbeville, LA
(NEMIS # 1603-0004)
Determination: No Historic Properties Affected

Dear Ms. Breaux:

The Federal Emergency Management Agency (FEMA) will be providing funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the following major Disaster Declarations:

FEMA-1603-DR-LA, dated August 29, 2005, as amended,
FEMA-1607-DR-LA, dated September 23, 2005,
FEMA-1786-DR-LA, dated September 2, 2008,
FEMA-1792-DR-LA, dated September 13, 2008.

FEMA is initiating Section 106 review for the above referenced properties in accordance with the *Louisiana State-Specific Programmatic Agreement among FEMA, the Louisiana State Historic Preservation Officer of the Department of Culture Recreation and Tourism (SHPO), the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP), the Alabama-Coushatta Tribe of Texas (ACTT), the Chitimacha Tribe of Louisiana (CTL), the Choctaw Nation of Oklahoma (CNO), the Jena Band of Choctaw Indians (JBCI), the Mississippi Band of Choctaw Indians (MBCI), the Seminole Tribe of Florida (STF), and the Advisory Council on Historic Preservation (ACHP) regarding FEMA's Hazard Mitigation Grant Program (LA HMGP PA)* dated January 31st, 2011 and providing the Louisiana State Historic Preservation Officer (SHPO) a chance to comment.

Description of Undertaking

FEMA, through its 404 Hazard Mitigation Grant Program, proposes to fund the Flood Protection of East Broussard Elementary School/Fork Island, 19635 Columbus Road, Abbeville, LA (Undertaking)-see Figure 1. These undertakings will meet all applicable FEMA guidelines, the applicable International Building Code, and all other applicable state and local regulations.

The Undertaking includes approximately 2,120 linear feet of berms and 540 linear feet of concrete floodwall around the perimeter of the facilities to protect the school from future flooding. The fill material for the floodwall will be hauled in by the successful bidder/contractor for the project and will be taken from a location off-site from the Forked Island/East Broussard Elementary School site. The project also includes an interior drainage system consisting of a duplex 3,500 gallon per minute electric low lift pump, an underground storm water collection system, and discharge piping. Additionally, the undertaking includes upgrading the existing sewer pump station and package sewage plant to assure continued operation of the facility during flooding events (Figure 2).

The undertaking specifies construction of a ring flood wall/berm surrounding the school complex. There will be two gates along Columbus Road. In general, the earthen berm will be approximately 76 feet wide (40 feet on the landside, 30 feet on the floodside, and six feet at the top), nine feet high, and 14 feet above mean sea level in elevation. The berm will be sloped 4:1 on the landside and 3:1 on the floodside. The concrete flood wall will be nine feet high and 14 feet above mean sea level in elevation. The two gates along Columbus Road will each be 22 feet wide.

The undertaking includes a retention pond on the eastern portion of the site within the ring flood wall/berm. The retention pond will have protective fencing and sloped 5%. A lift station will be constructed at the northeast corner of the property within the ring flood wall/berm. A drainage ditch will be constructed to the south to run toward the southern edge of the property and an existing ditch from the south wall of the earthen berm. The ditch will be approximately 28 feet wide, and will contain two 14 inch diameter steel pipes and one 24 inch diameter storm drain pipe. The 24 inch drain pipe will be contained in a seven foot high box culvert with a sluice gate. The ditch will be sloped 3:1.

Area of Potential Effect (APE)

The viewshed APE for this project is defined as the surrounding area where the flood wall/berm is visible. The APE for ground disturbing activities is defined as the area in the south east quadrant of the intersection of Columbus Road and Lake Road. The area extends approximately 800’ to the east, and 780’ to the south, for an area of approximately 624,000 square feet. An additional 330 linear feet will be disturbed for a new sewage line, as well as another 8,100 square feet for replacement of the existing sewage plant. The total APE for the Undertaking will be in excess of 632,100 square feet (Figure 3).

Identification and Evaluation

FEMA has determined that no structures on the property meet the 50-year-criterion or criteria consideration G of the National Register guidelines to be considered eligible for the National Register of Historic Places (NRHP) nor does it contribute to existing or eligible National Register districts.

FEMA has consulted the Louisiana Cultural Resources Map, which contains the SHPO's cultural database, and determined that no recorded sites are located within one mile of the proposed project area. A site visit with the FEMA/SHPO Liaison, Jason Emery, was conducted on 12/01/2009 and no historic resources were identified in the APE at that time. The project will result in ground disturbing activities that will be primarily confined to previously disturbed areas or areas of low potential for archaeological resources. Additional soils that may be required for construction of the new berm should be procured from SHPO approved sources, in addition to any federal, state, or local regulation.

Two mounds of suspected modern origin were apparent along the west side of the school property, with one each between the southwest and northwest corners of the main building and Columbus Road. Both mounds were low and broad at their tops, rising no more than three feet above the surrounding elevation. Three soil cores were taken at 5 meter intervals running east from the western toe slope to the crown of each mound. These soil cores revealed an upper deposit of mixed silt loams over a mixed package of silt loam and silty clay loam. Brick and oyster shell flecking in the soils were consistent with the soil profiles expected of manmade historic landscaped features of recent construction. The mound to the south west was topped by a mature tree, while the one to north west was topped by a sapling.

This project is not expected to impact any subsurface archaeological resources. The ring wall will be constructed on previously disturbed (landscaped) soils. The drains along the interior will have a limited footprint for subsurface disturbance, as will the sewer plant and new connector line, and are in areas of low probability for historic resources. The retention pond will have a greater footprint and potential to impact subsurface resources, however, at least one existing disturbance is present (sewer line) and, as noted, the potential for historic resources in this vicinity is very low. No historic features were observed during the site visit, nor were any artifacts recovered.

Assessment of Effects

Therefore, FEMA determines a finding of **No Historic Properties Affected** and is submitting this undertaking to you for your review and comment. FEMA requests your comments within 15 days.

Should you have any questions or need additional information regarding this undertaking, please contact Mark Martinkovic at Mark.Martinkovic@associates.dhs.gov

Sincerely,

Katherine S. Zeringue
Environmental Liaison Officer
FEMA-DR-1603-LA, FEMA-DR-1607-LA,
FEMA-DR-1786-LA, FEMA-DR-1792-LA

CC: File
Jason Emery, Division of Archaeology Reviewer
David Livingstone, Division of Historic Preservation Reviewer
State Historic Preservation Office

Enclosures

The Division of Archaeology Reviewer concurs with the finding that there will be **No Historic Properties Affected** as a result of this undertaking.

Digitally signed by Jason A. Emery
Date: 2011.05.10 10:39:56 -05'00'

Division of Archaeology Reviewer _____ Date _____

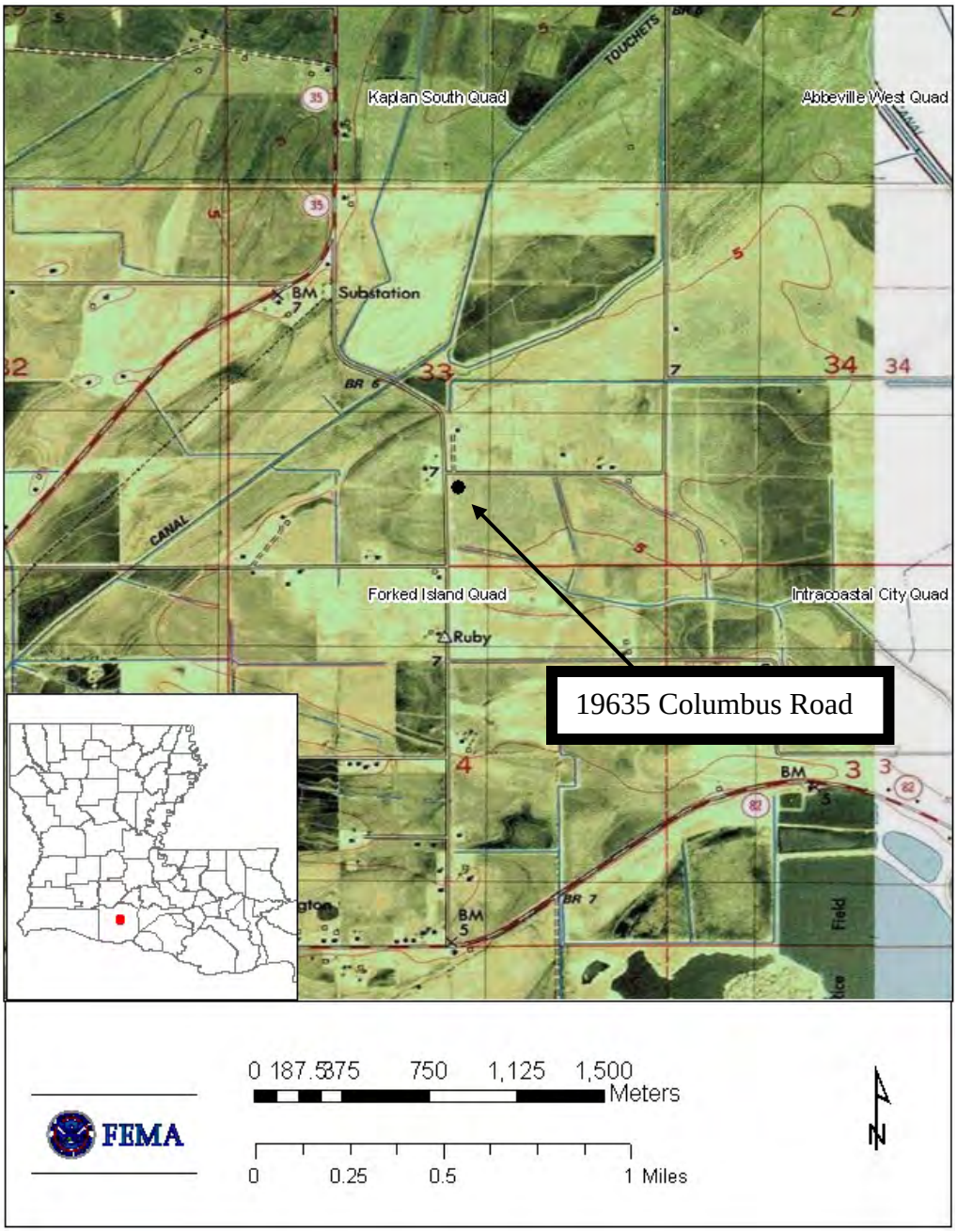
The Division of Historic Preservation Reviewer concurs with the finding that there will be **No Historic Properties Affected** as a result of this undertaking.

David M. Livingstone
2011.05.19 11:10:14 -05'00'

Division of Historic Preservation Reviewer _____ Date _____

U.S. Department of Homeland Security
Federal Emergency Management Agency
Section 106 Review: USGS Quad Location Map and Historic Maps – Figure 1

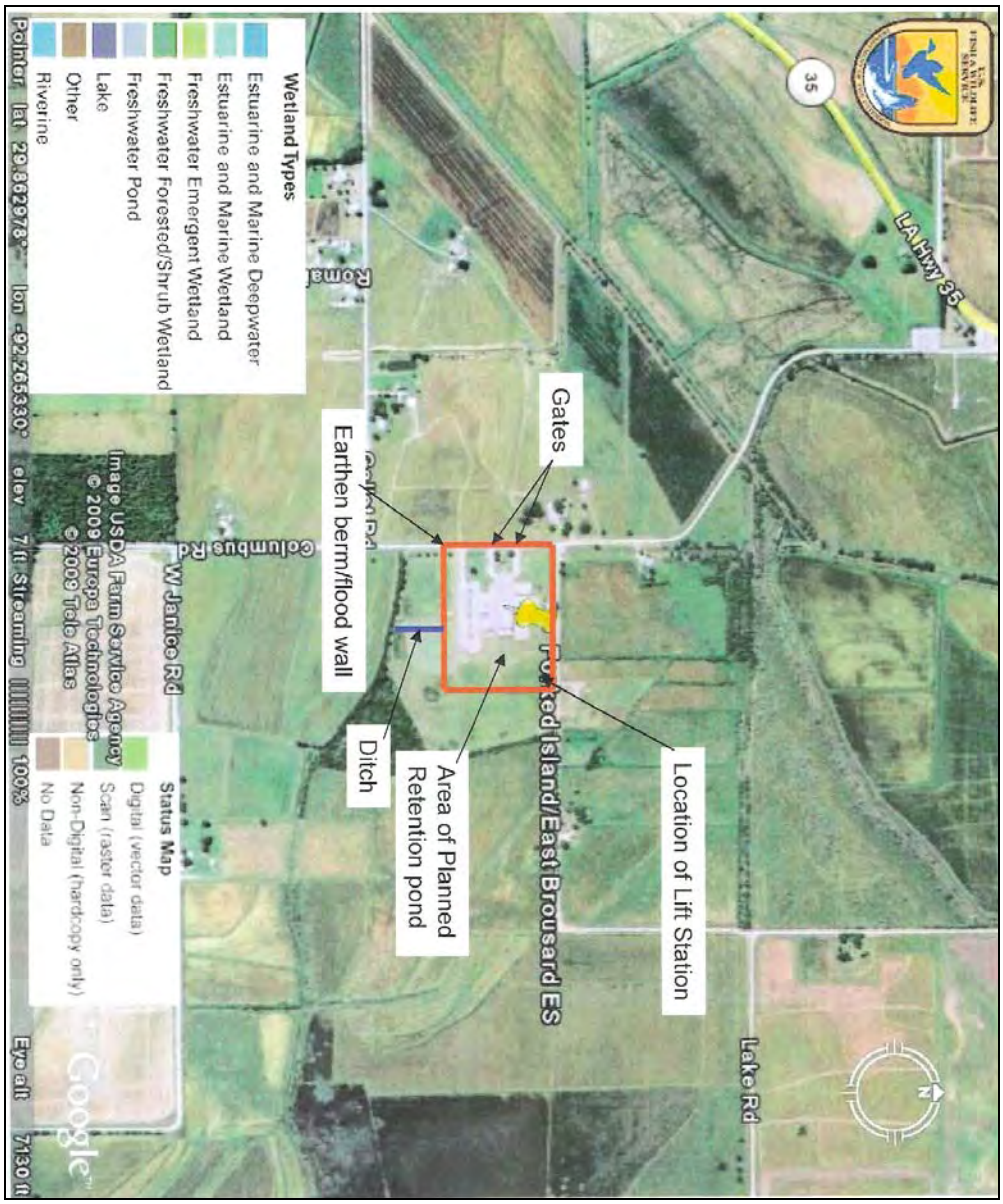
Map Name: Forked Island, Kaplan South, Abbeville West, Intracoastal City (LA), USGS 7.5' Topo Map
NEMIS # 1603-0004 (1603-113-0002)
Address: 19635 Columbus Road, Abbeville, LA
Coordinates: 29.862872/-92.265361



U.S. Department of Homeland Security
Federal Emergency Management Agency
Section 106 Review: Proposed Undertaking Plan Map – Figure 2

Resource Name: East Broussard Elementary School/Fork Island

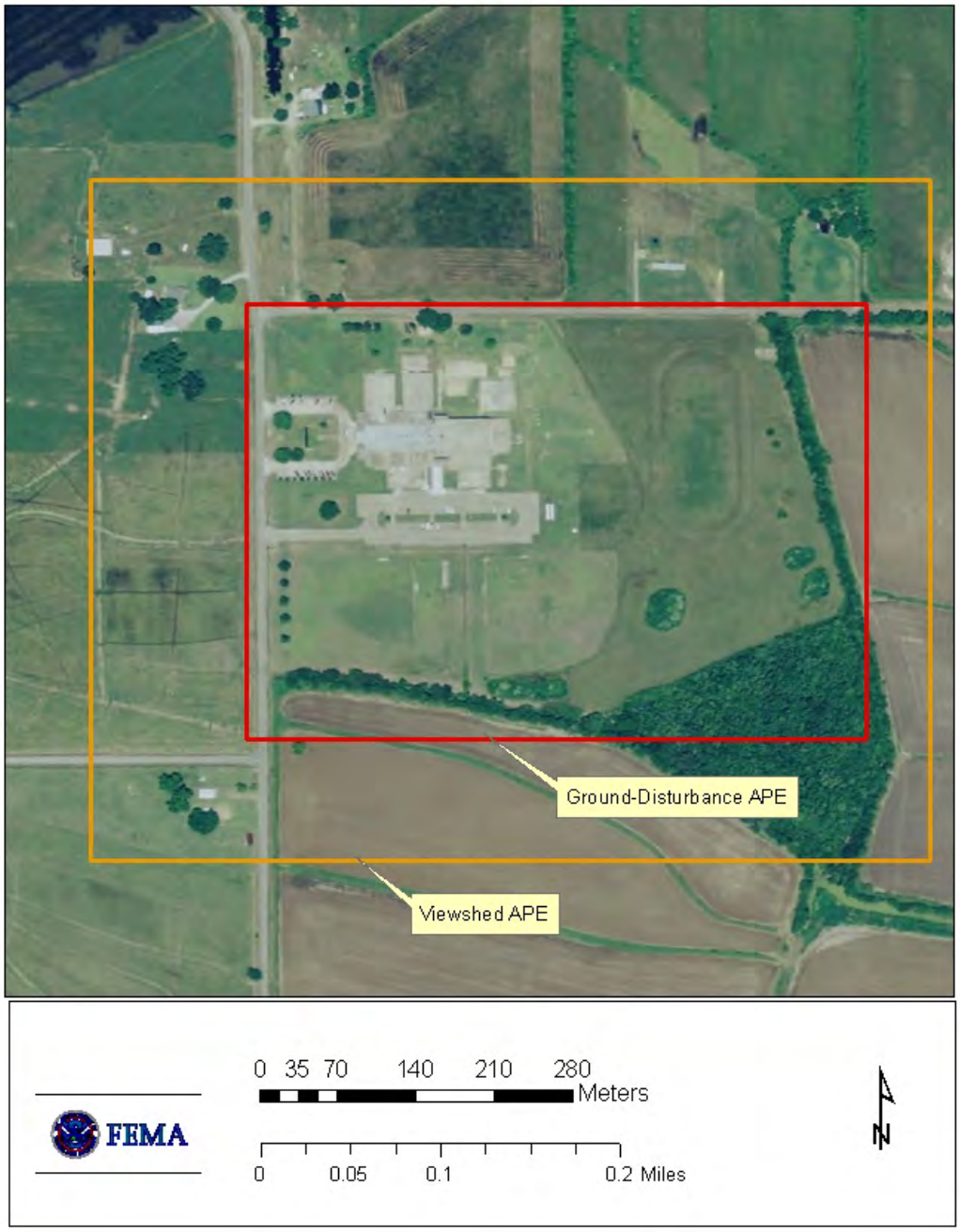
Resource Address: 19635 Columbus Road, Abbeville, LA



U.S. Department of Homeland Security
Federal Emergency Management Agency
Section 106 Review: Aerial View Location and APE Map – Figure 3

Resource Name: East Broussard Elementary School/Fork Island

Resource Address: 19635 Columbus Road, Abbeville, LA



U.S. Department of Homeland Security
Federal Emergency Management Agency
FEMA-1603/1607/1786/1792 -DR-LA
Louisiana Recovery Office
Environmental/Historic Preservation
1 Seine Court
New Orleans, LA 70114

5/2/2011

Beasley Denson
Miko
Mississippi Band of Choctaw Indians
Natural Resources Bldg., 101 Industrial Rd.
Choctaw MS 39350

RE: Section 106 Review Consultation- Hurricane Katrina
Applicant: Vermilion Parish
Undertaking: Flood Protection of East Broussard Elementary School/Fork Island, 19635 Columbus Road, Abbeville, LA
(NEMIS # 1603-0004)
Determination: No Historic Properties Affected

Dear Miko Denson:

The Federal Emergency Management Agency (FEMA) will be providing funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the following major Disaster Declarations:

FEMA-1603-DR-LA, dated August 29, 2005, as amended,
FEMA-1607-DR-LA, dated September 23, 2005,
FEMA-1786-DR-LA, dated September 2, 2008,
FEMA-1792-DR-LA, dated September 13, 2008.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800.5(c), FEMA is providing the Mississippi Band of Choctaw Indians with the opportunity to consult on the proposed Undertaking.

FEMA, through its 404 Hazard Mitigation Grant Program, proposes to fund the Flood Protection of East Broussard Elementary School/Fork Island, 19635 Columbus Road, Abbeville, LA. These undertakings will meet all applicable FEMA guidelines, the applicable International Building Code, and all other applicable state and local regulations.

Description of Undertaking

FEMA, through its 404 Hazard Mitigation Grant Program, proposes to fund the Flood Protection of East Broussard Elementary School/Fork Island, 19635 Columbus Road, Abbeville, LA (Undertaking)-see Figure 1. These undertakings will meet all applicable FEMA guidelines, the applicable International Building Code, and all other applicable state and local regulations.

The Undertaking includes approximately 2,120 linear feet of berms and 540 linear feet of concrete floodwall around the perimeter of the facilities to protect the school from future flooding. The fill material for the floodwall will be hauled in by the successful bidder/contractor for the project and will be taken from a location off-site from the Forked Island/East Broussard Elementary School site. The project also includes an interior drainage system consisting of a duplex 3,500 gallon per minute electric low lift pump, an underground storm water collection system, and discharge piping. Additionally, the undertaking includes upgrading the existing sewer pump station and package sewage plant to assure continued operation of the facility during flooding events (Figure 2).

The undertaking specifies construction of a ring flood wall/berm surrounding the school complex. There will be two gates along Columbus Road. In general, the earthen berm will be approximately 76 feet wide (40 feet on the landside, 30 feet on the floodside, and six feet at the top), nine feet high, and 14 feet above mean sea level in elevation. The berm will be sloped 4:1 on the landside and 3:1 on the floodside. The concrete flood wall will be nine feet high and 14 feet above mean sea level in elevation. The two gates along Columbus Road will each be 22 feet wide.

The undertaking includes a retention pond on the eastern portion of the site within the ring flood wall/berm. The retention pond will have protective fencing and sloped 5%. A lift station will be constructed at the northeast corner of the property within the ring flood wall/berm. A drainage ditch will be constructed to the south to run toward the southern edge of the property and an existing ditch from the south wall of the earthen berm. The ditch will be approximately 28 feet wide, and will contain two 14 inch diameter steel pipes and one 24 inch diameter storm drain pipe. The 24 inch drain pipe will be contained in a seven foot high box culvert with a sluice gate. The ditch will be sloped 3:1.

Area of Potential Effect (APE)

The viewshed APE for this project is defined as the surrounding area where the flood wall/berm is visible. The APE for ground disturbing activities is defined as the area in the south east quadrant of the intersection of Columbus Road and Lake Road. The area extends approximately 800’ to the east, and 780’ to the south, for an area of approximately 624,000 square feet. An additional 330 linear feet will be disturbed for a new sewage line, as well as another 8,100 square feet for replacement of the existing sewage plant. The total APE for the Undertaking will be in excess of 632,100 square feet (Figure 3).

Identification and Evaluation

FEMA has determined that no structures on the property meet the 50-year-criterion or criteria consideration G of the National Register guidelines to be considered eligible for the National Register of Historic Places (NRHP) nor does it contribute to existing or eligible National Register districts.

FEMA has consulted the Louisiana Cultural Resources Map, which contains the SHPO's cultural database, and determined that no recorded sites are located within one mile of the proposed project area. A site visit with the FEMA/SHPO Liaison, Jason Emery, was conducted on 12/01/2009 and no historic resources were identified in the APE at that time. The project will result in ground disturbing activities that will be primarily confined to previously disturbed areas or areas of low potential for archaeological resources. Additional soils that may be required for construction of the new berm should be procured from SHPO approved sources, in addition to any federal, state, or local regulation.

Two mounds of suspected modern origin were apparent along the west side of the school property, with one each between the southwest and northwest corners of the main building and Columbus Road. Both mounds were low and broad at their tops, rising no more than three feet above the surrounding elevation. Three soil cores were taken at 5 meter intervals running east from the western toe slope to the crown of each mound. These soil cores revealed an upper deposit of mixed silt loams over a mixed package of silt loam and silty clay loam. Brick and oyster shell flecking in the soils were consistent with the soil profiles expected of manmade historic landscaped features of recent construction. The mound to the south west was topped by a mature tree, while the one to north west was topped by a sapling.

This project is not expected to impact any subsurface archaeological resources. The ring wall will be constructed on previously disturbed (landscaped) soils. The drains along the interior will have a limited footprint for subsurface disturbance, as will the sewer plant and new connector line, and are in areas of low probability for historic resources. The retention pond will have a greater footprint and potential to impact subsurface resources, however, at least one existing disturbance is present (sewer line) and, as noted, the potential for historic resources in this vicinity is very low. No historic features were observed during the site visit, nor were any artifacts recovered.

Assessment of Effects

Therefore, in accordance with 36 CFR §800.4(d)(1), FEMA determines a finding of **No Historic Properties Affected** and is submitting this undertaking to you for your review and comment. FEMA requests your comments within 30 days.

Should you have any questions or need additional information regarding this undertaking, please contact Mark Martinkovic at Mark.Martinkovic@associates.dhs.gov

Sincerely,

Katherine S. Zeringue
Environmental Liaison Officer
FEMA-DR-1603-LA, FEMA-DR-1607-LA,
FEMA-DR-1786-LA, FEMA-DR-1792-LA

CC: File
Kenneth Carleton, Historic Preservation Officer/Archaeologist
Mississippi Band of Choctaw Indians

Enclosures

U.S. Department of Homeland Security
Federal Emergency Management Agency
Section 106 Review: USGS Quad Location Map and Historic Maps – Figure 1

Map Name: Forked Island, Kaplan South, Abbeville West, Intracoastal City (LA), USGS 7.5' Topo Map
NEMIS # 1603-0004 (1603-113-0002)
Address: 19635 Columbus Road, Abbeville, LA
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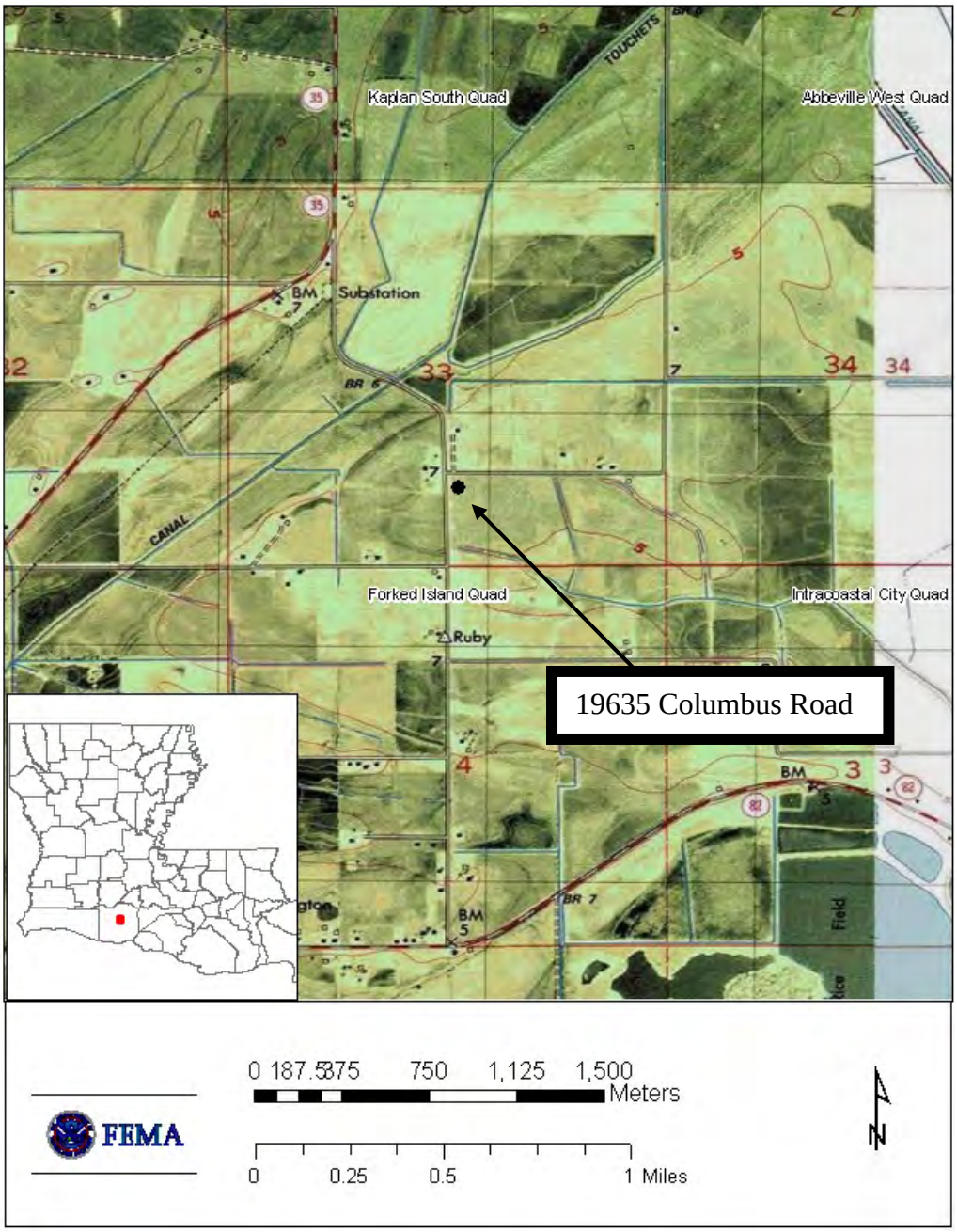
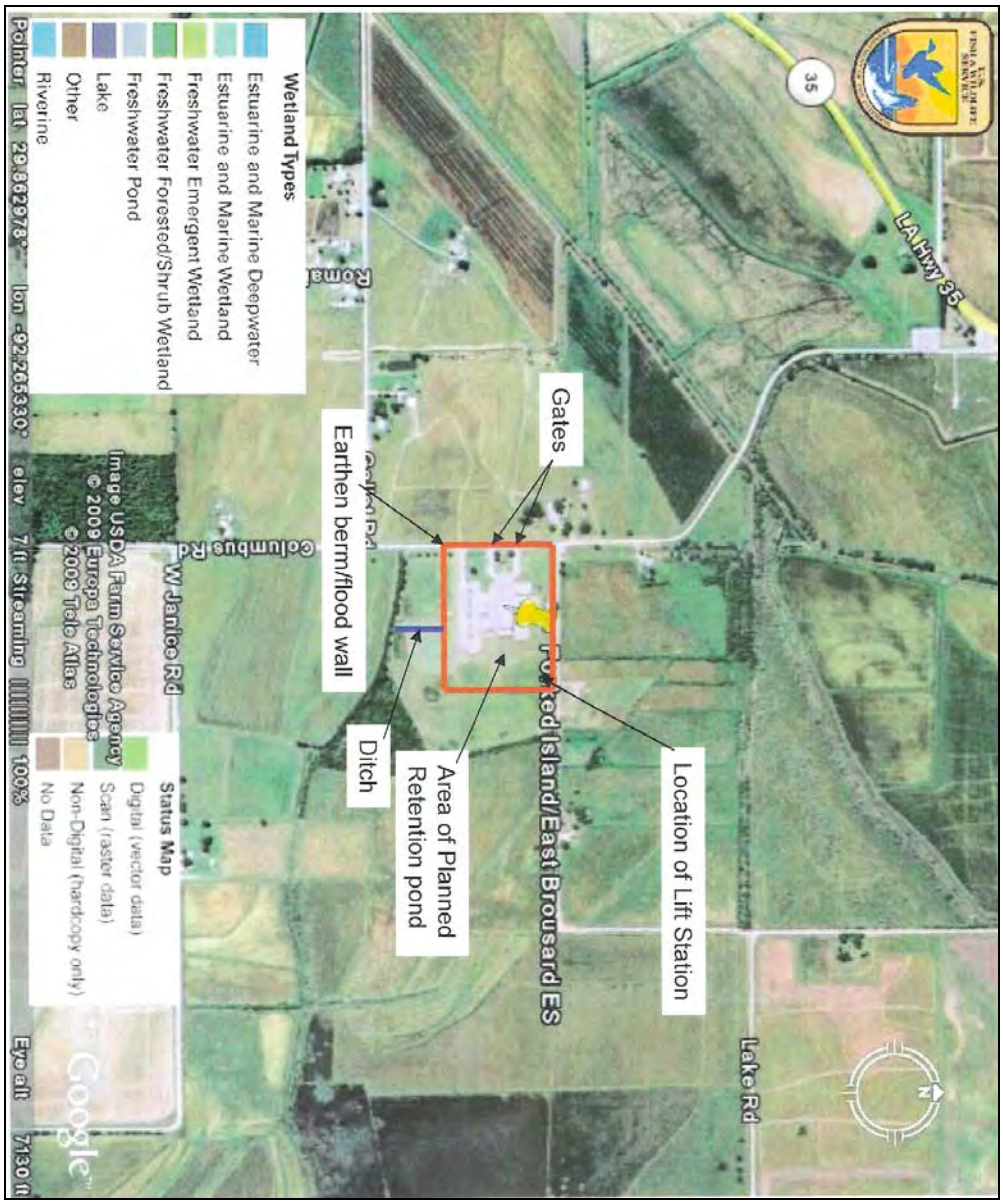


U.S. Department of Homeland Security
Federal Emergency Management Agency
Section 106 Review: Proposed Undertaking Plan Map – Figure 2

Resource Name: East Broussard Elementary School/Fork Island

Resource Address: 19635 Columbus Road, Abbeville, LA



U.S. Department of Homeland Security
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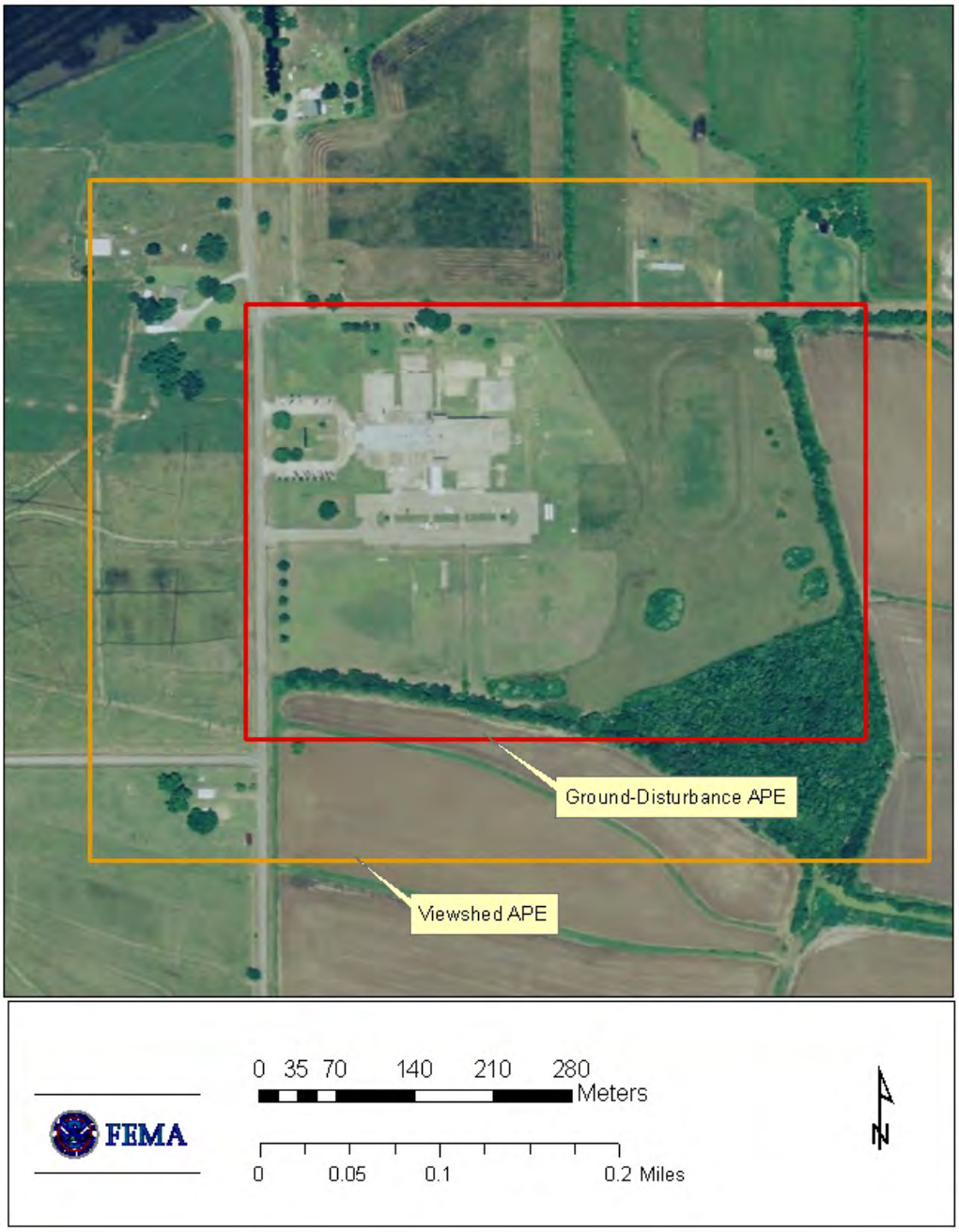

U.S. Department of Homeland Security
Federal Emergency Management Agency
FEMA-1603/1607/1786/1792 -DR-LA
Louisiana Recovery Office
Environmental/Historic Preservation
1 Seine Court
New Orleans, LA 70114

5/2/2011

Gregory Pyle
Chief
Choctaw Nation of Oklahoma
623 N 16th
Durant OK 74702

RE: Section 106 Review Consultation- Hurricane Katrina

Applicant: Vermilion Parish
Undertaking: Flood Protection of East Broussard Elementary School/Fork Island, 19635 Columbus Road, Abbeville, LA
(NEMIS # 1603-0004)
Determination: No Historic Properties Affected

Dear Chief Pyle:

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FEMA is initiating Section 106 review for the above referenced properties in accordance with the *Louisiana State-Specific Programmatic Agreement among FEMA, then Louisiana State Historic Preservation Officer of the Department of Culture Recreation and Tourism (SHPO), the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP), the Alabama-Coushatta Tribe of Texas (ACTT), the Chitimacha Tribe of Louisiana (CTL), the Choctaw Nation of Oklahoma (CNO), the Jena Band of Choctaw Indians (JBCI), the Mississippi Band of Choctaw Indians (MBCI), the Seminole Tribe of Florida (STF), and the Advisory Council on Historic Preservation (ACHP) dated January 31st , 2011* and providing the Choctaw Nation of Oklahoma with the opportunity to consult on the proposed Undertaking.

FEMA, through its 404 Hazard Mitigation Grant Program, proposes to fund the flood protection of 19635 Columbus Road, Abbeville, LA. This undertaking will meet all applicable FEMA guidelines, the applicable International Building Code, and all other applicable state and local regulations.

Description of Undertaking

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The undertaking includes a retention pond on the eastern portion of the site within the ring flood wall/berm. The retention pond will have protective fencing and sloped 5%. A lift station will be constructed at the northeast corner of the property within the ring flood wall/berm. A drainage ditch will be constructed to the south to run toward the southern edge of the property and an existing ditch from the south wall of the earthen berm. The ditch will be approximately 28 feet wide, and will contain two 14 inch diameter steel pipes and one 24 inch diameter storm drain pipe. The 24 inch drain pipe will be contained in a seven foot high box culvert with a sluice gate. The ditch will be sloped 3:1.

Area of Potential Effect (APE)

The viewshed APE for this project is defined as the surrounding area where the flood wall/berm is visible. The APE for ground disturbing activities is defined as the area in the south east quadrant of the intersection of Columbus Road and Lake Road. The area extends approximately 800’ to the east, and 780’ to the south, for an area of approximately 624,000 square feet. An additional 330 linear feet will be disturbed for a new sewage line, as well as another 8,100 square feet for replacement of the existing sewage plant. The total APE for the Undertaking will be in excess of 632,100 square feet (Figure 3).

Identification and Evaluation

FEMA has determined that no structures on the property meet the 50-year-criterion or criteria consideration G of the National Register guidelines to be considered eligible for the National Register of Historic Places (NRHP) nor does it contribute to existing or eligible National Register districts.

FEMA has consulted the Louisiana Cultural Resources Map, which contains the SHPO's cultural database, and determined that no recorded sites are located within one mile of the proposed project area. A site visit with the FEMA/SHPO Liaison, Jason Emery, was conducted on 12/01/2009 and no historic resources were identified in the APE at that time. The project will result in ground disturbing activities that will be primarily confined to previously disturbed areas or areas of low potential for archaeological resources. Additional soils that may be required for construction of the new berm should be procured from SHPO approved sources, in addition to any federal, state, or local regulation.

Two mounds of suspected modern origin were apparent along the west side of the school property, with one each between the southwest and northwest corners of the main building and Columbus Road. Both mounds were low and broad at their tops, rising no more than three feet above the surrounding elevation. Three soil cores were taken at 5 meter intervals running east from the western toe slope to the crown of each mound. These soil cores revealed an upper deposit of mixed silt loams over a mixed package of silt loam and silty clay loam. Brick and oyster shell flecking in the soils were consistent with the soil profiles expected of manmade historic landscaped features of recent construction. The mound to the south west was topped by a mature tree, while the one to north west was topped by a sapling.

This project is not expected to impact any subsurface archaeological resources. The ring wall will be constructed on previously disturbed (landscaped) soils. The drains along the interior will have a limited footprint for subsurface disturbance, as will the sewer plant and new connector line, and are in areas of low probability for historic resources. The retention pond will have a greater footprint and potential to impact subsurface resources, however, at least one existing disturbance is present (sewer line) and, as noted, the potential for historic resources in this vicinity is very low. No historic features were observed during the site visit, nor were any artifacts recovered.

Assessment of Effects

Therefore, FEMA has determined a finding of **No Historic Properties Affected** and is submitting this undertaking to you for your review and comment. FEMA requests your comments within 15 days.

Should you have any questions or need additional information regarding this undertaking, please contact Mark Martinkovic at Mark.Martinkovic@associates.dhs.gov

Sincerely,

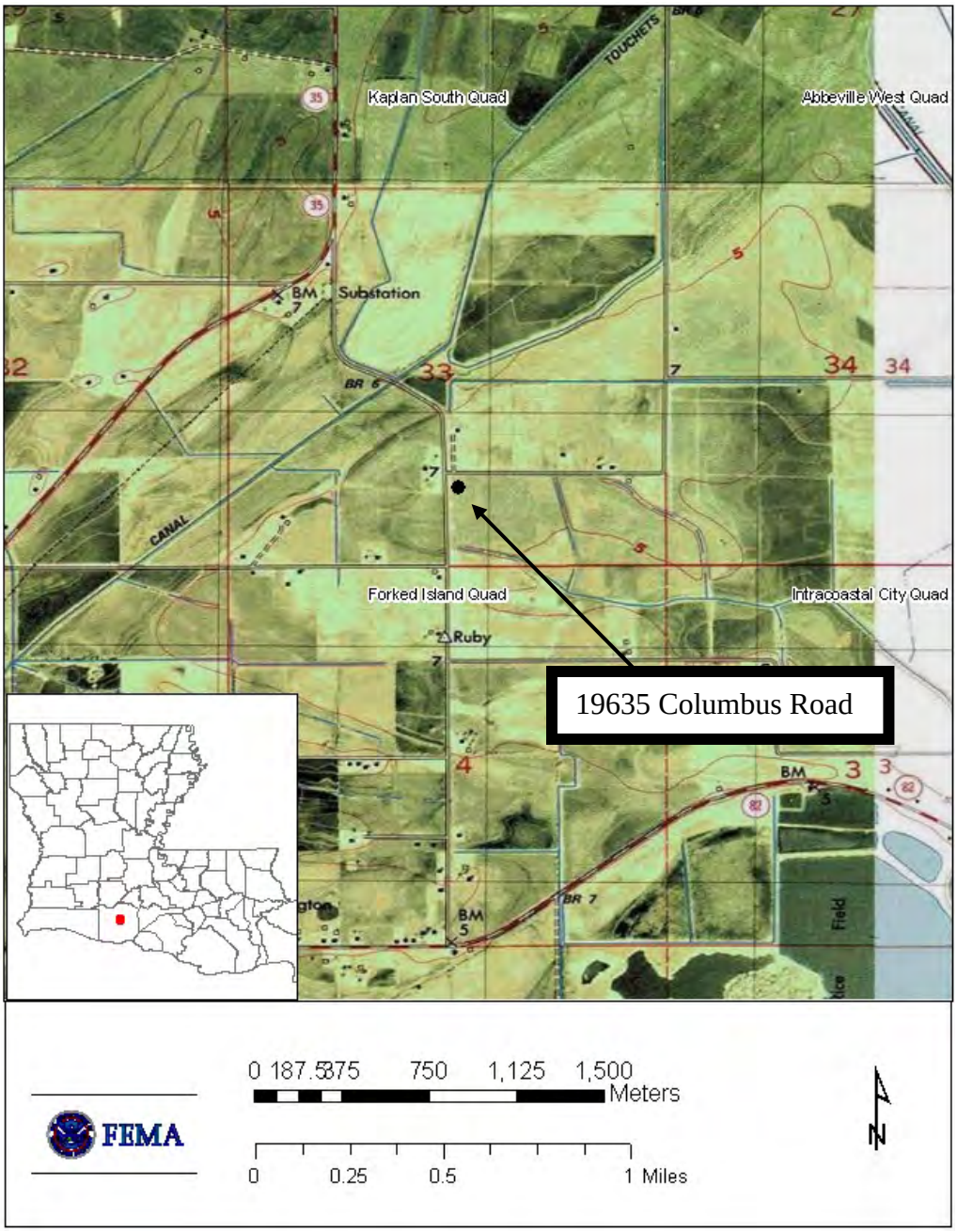
Katherine S. Zeringue
Environmental Liaison Officer
FEMA-DR-1603-LA, FEMA-DR-1607-LA,
FEMA-DR-1786-LA, FEMA-DR-1792-LA

CC: File
Terry Cole, Director/THPO
Choctaw Nation of Oklahoma

Enclosures

U.S. Department of Homeland Security
Federal Emergency Management Agency
Section 106 Review: USGS Quad Location Map and Historic Maps – Figure 1

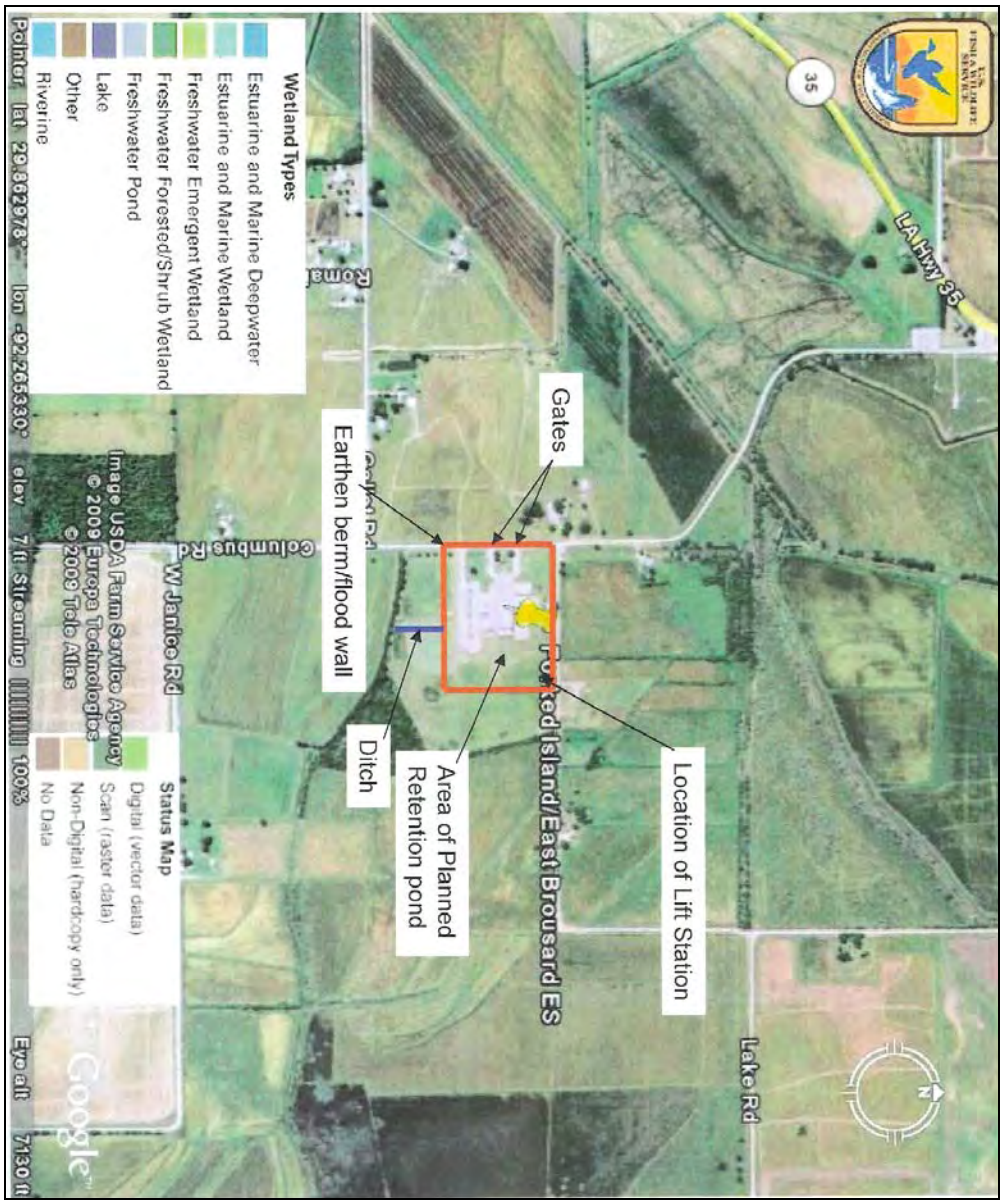
Map Name: Forked Island, Kaplan South, Abbeville West, Intracoastal City (LA), USGS 7.5' Topo Map
NEMIS # 1603-0004 (1603-113-0002)
Address: 19635 Columbus Road, Abbeville, LA
Coordinates: 29.862872/-92.265361



U.S. Department of Homeland Security
Federal Emergency Management Agency
Section 106 Review: Proposed Undertaking Plan Map – Figure 2

Resource Name: East Broussard Elementary School/Fork Island

Resource Address: 19635 Columbus Road, Abbeville, LA



U.S. Department of Homeland Security
Federal Emergency Management Agency
Section 106 Review: Aerial View Location and APE Map – Figure 3

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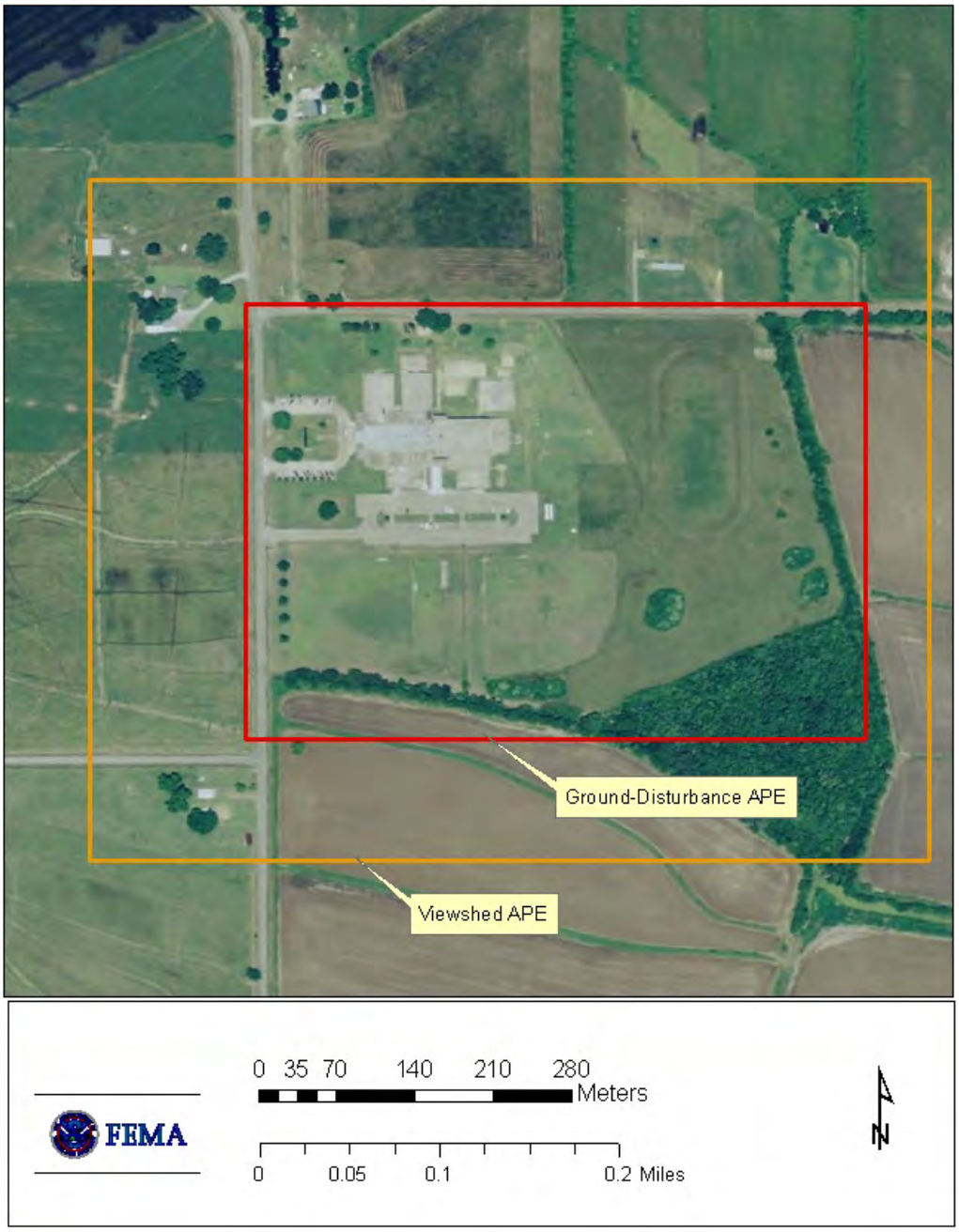

U.S. Department of Homeland Security
Federal Emergency Management Agency
FEMA-1603/1607/1786/1792 -DR-LA
Louisiana Recovery Office
Environmental/Historic Preservation
1 Seine Court
New Orleans, LA 70114

5/2/2011

B. Cheryl Smith
Chief
Jena Band of Choctaw Indians
1052 Chanaha Hina St.
Trout LA 71371

RE: Section 106 Review Consultation- Hurricane Katrina
Applicant: Vermilion Parish
Undertaking: Flood Protection of East Broussard Elementary School/Fork Island, 19635 Columbus Road, Abbeville, LA
(NEMIS # 1603-0004)
Determination: No Historic Properties Affected

Dear Chief Smith:

The Federal Emergency Management Agency (FEMA) will be providing funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the following major Disaster Declarations:

FEMA-1603-DR-LA, dated August 29, 2005, as amended,
FEMA-1607-DR-LA, dated September 23, 2005,
FEMA-1786-DR-LA, dated September 2, 2008,
FEMA-1792-DR-LA, dated September 13, 2008.

FEMA is initiating Section 106 review for the above referenced properties in accordance with the *Louisiana State-Specific Programmatic Agreement among FEMA, then Louisiana State Historic Preservation Officer of the Department of Culture Recreation and Tourism (SHPO), the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP), the Alabama-Coushatta Tribe of Texas (ACTT), the Chitimacha Tribe of Louisiana (CTL), the Choctaw Nation of Oklahoma (CNO), the Jena Band of Choctaw Indians (JBCI), the Mississippi Band of Choctaw Indians (MBCI), the Seminole Tribe of Florida (STF), and the Advisory Council on Historic Preservation (ACHP) dated January 31st , 2011* and providing the Jena Band of Choctaw Indians with the opportunity to consult on the proposed Undertaking.

FEMA, through its 404 Hazard Mitigation Grant Program, proposes to fund the flood protection of 19635 Columbus Road, Abbeville, LA. This undertaking will meet all applicable FEMA guidelines, the applicable International Building Code, and all other applicable state and local regulations.

Description of Undertaking

FEMA, through its 404 Hazard Mitigation Grant Program, proposes to fund the Flood Protection of East Broussard Elementary School/Fork Island, 19635 Columbus Road, Abbeville, LA (Undertaking)-see Figure 1. These undertakings will meet all applicable FEMA guidelines, the applicable International Building Code, and all other applicable state and local regulations.

The Undertaking includes approximately 2,120 linear feet of berms and 540 linear feet of concrete floodwall around the perimeter of the facilities to protect the school from future flooding. The fill material for the floodwall will be hauled in by the successful bidder/contractor for the project and will be taken from a location off-site from the Forked Island/East Broussard Elementary School site. The project also includes an interior drainage system consisting of a duplex 3,500 gallon per minute electric low lift pump, an underground storm water collection system, and discharge piping. Additionally, the undertaking includes upgrading the existing sewer pump station and package sewage plant to assure continued operation of the facility during flooding events (Figure 2).

The undertaking specifies construction of a ring flood wall/berm surrounding the school complex. There will be two gates along Columbus Road. In general, the earthen berm will be approximately 76 feet wide (40 feet on the landside, 30 feet on the floodside, and six feet at the top), nine feet high, and 14 feet above mean sea level in elevation. The berm will be sloped 4:1 on the landside and 3:1 on the floodside. The concrete flood wall will be nine feet high and 14 feet above mean sea level in elevation. The two gates along Columbus Road will each be 22 feet wide.

The undertaking includes a retention pond on the eastern portion of the site within the ring flood wall/berm. The retention pond will have protective fencing and sloped 5%. A lift station will be constructed at the northeast corner of the property within the ring flood wall/berm. A drainage ditch will be constructed to the south to run toward the southern edge of the property and an existing ditch from the south wall of the earthen berm. The ditch will be approximately 28 feet wide, and will contain two 14 inch diameter steel pipes and one 24 inch diameter storm drain pipe. The 24 inch drain pipe will be contained in a seven foot high box culvert with a sluice gate. The ditch will be sloped 3:1.

Area of Potential Effect (APE)

The viewshed APE for this project is defined as the surrounding area where the flood wall/berm is visible. The APE for ground disturbing activities is defined as the area in the south east quadrant of the intersection of Columbus Road and Lake Road. The area extends approximately 800’ to the east, and 780’ to the south, for an area of approximately 624,000 square feet. An additional 330 linear feet will be disturbed for a new sewage line, as well as another 8,100 square feet for replacement of the existing sewage plant. The total APE for the Undertaking will be in excess of 632,100 square feet (Figure 3).

Identification and Evaluation

FEMA has determined that no structures on the property meet the 50-year-criterion or criteria consideration G of the National Register guidelines to be considered eligible for the National Register of Historic Places (NRHP) nor does it contribute to existing or eligible National Register districts.

FEMA has consulted the Louisiana Cultural Resources Map, which contains the SHPO's cultural database, and determined that no recorded sites are located within one mile of the proposed project area. A site visit with the FEMA/SHPO Liaison, Jason Emery, was conducted on 12/01/2009 and no historic resources were identified in the APE at that time. The project will result in ground disturbing activities that will be primarily confined to previously disturbed areas or areas of low potential for archaeological resources. Additional soils that may be required for construction of the new berm should be procured from SHPO approved sources, in addition to any federal, state, or local regulation.

Two mounds of suspected modern origin were apparent along the west side of the school property, with one each between the southwest and northwest corners of the main building and Columbus Road. Both mounds were low and broad at their tops, rising no more than three feet above the surrounding elevation. Three soil cores were taken at 5 meter intervals running east from the western toe slope to the crown of each mound. These soil cores revealed an upper deposit of mixed silt loams over a mixed package of silt loam and silty clay loam. Brick and oyster shell flecking in the soils were consistent with the soil profiles expected of manmade historic landscaped features of recent construction. The mound to the south west was topped by a mature tree, while the one to north west was topped by a sapling.

This project is not expected to impact any subsurface archaeological resources. The ring wall will be constructed on previously disturbed (landscaped) soils. The drains along the interior will have a limited footprint for subsurface disturbance, as will the sewer plant and new connector line, and are in areas of low probability for historic resources. The retention pond will have a greater footprint and potential to impact subsurface resources, however, at least one existing disturbance is present (sewer line) and, as noted, the potential for historic resources in this vicinity is very low. No historic features were observed during the site visit, nor were any artifacts recovered.

Assessment of Effects

Therefore, FEMA has determined a finding of **No Historic Properties Affected** and is submitting this undertaking to you for your review and comment. FEMA requests your comments within 15 days.

Should you have any questions or need additional information regarding this undertaking, please contact Mark Martinkovic at Mark.Martinkovic@associates.dhs.gov

Sincerely,

for
Katherine S. Zeringue
Environmental Liaison Officer
FEMA-DR-1603-LA, FEMA-DR-1607-LA,
FEMA-DR-1786-LA, FEMA-DR-1792-LA

CC: File
Michael L. Tarpley, Tribal Historic Preservation Officer
Jena Band of Choctaw Indians

Enclosures

U.S. Department of Homeland Security
Federal Emergency Management Agency
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Map Name: Forked Island, Kaplan South, Abbeville West, Intracoastal City (LA), USGS 7.5' Topo Map
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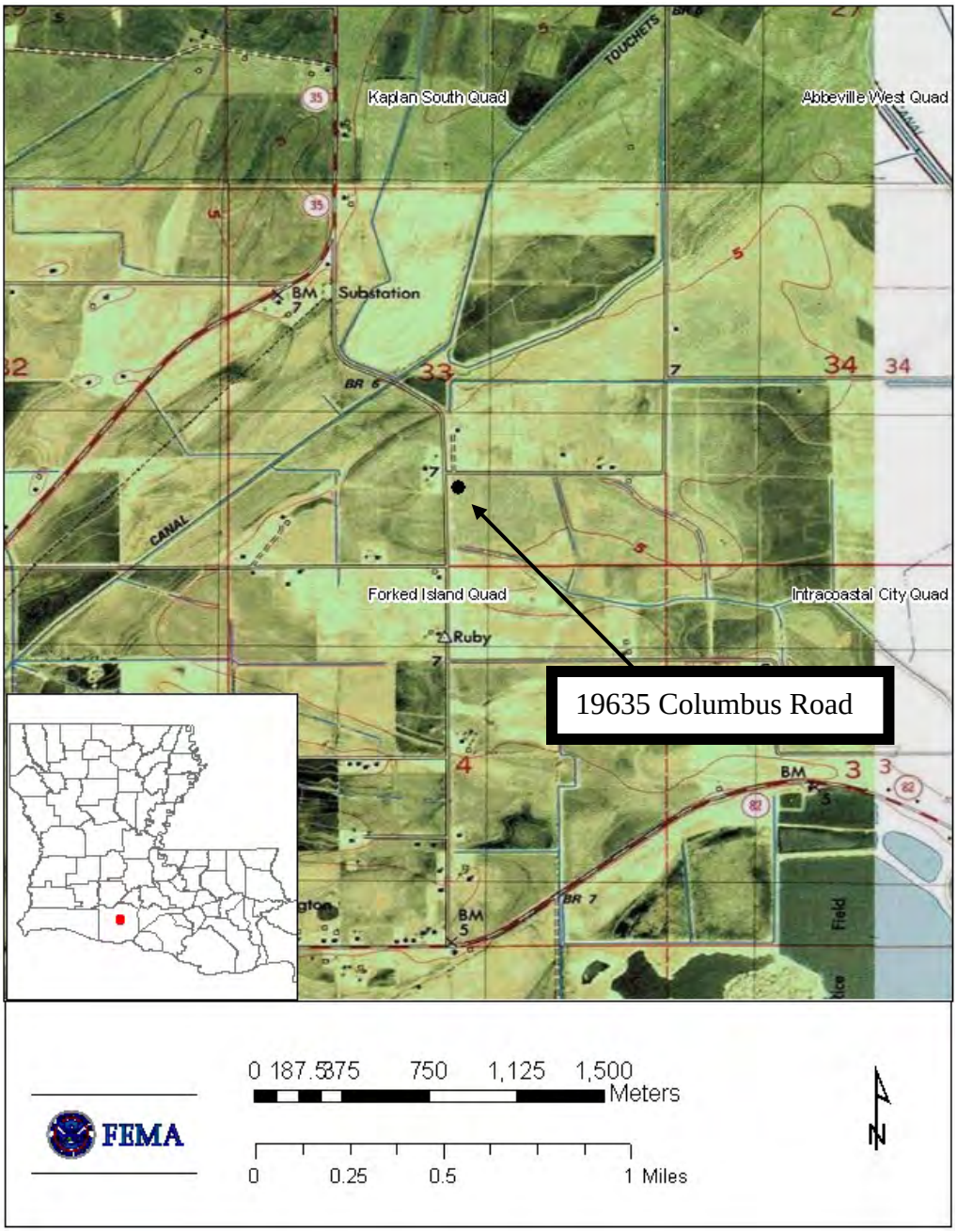

U.S. Department of Homeland Security
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Section 106 Review: Proposed Undertaking Plan Map – Figure 2

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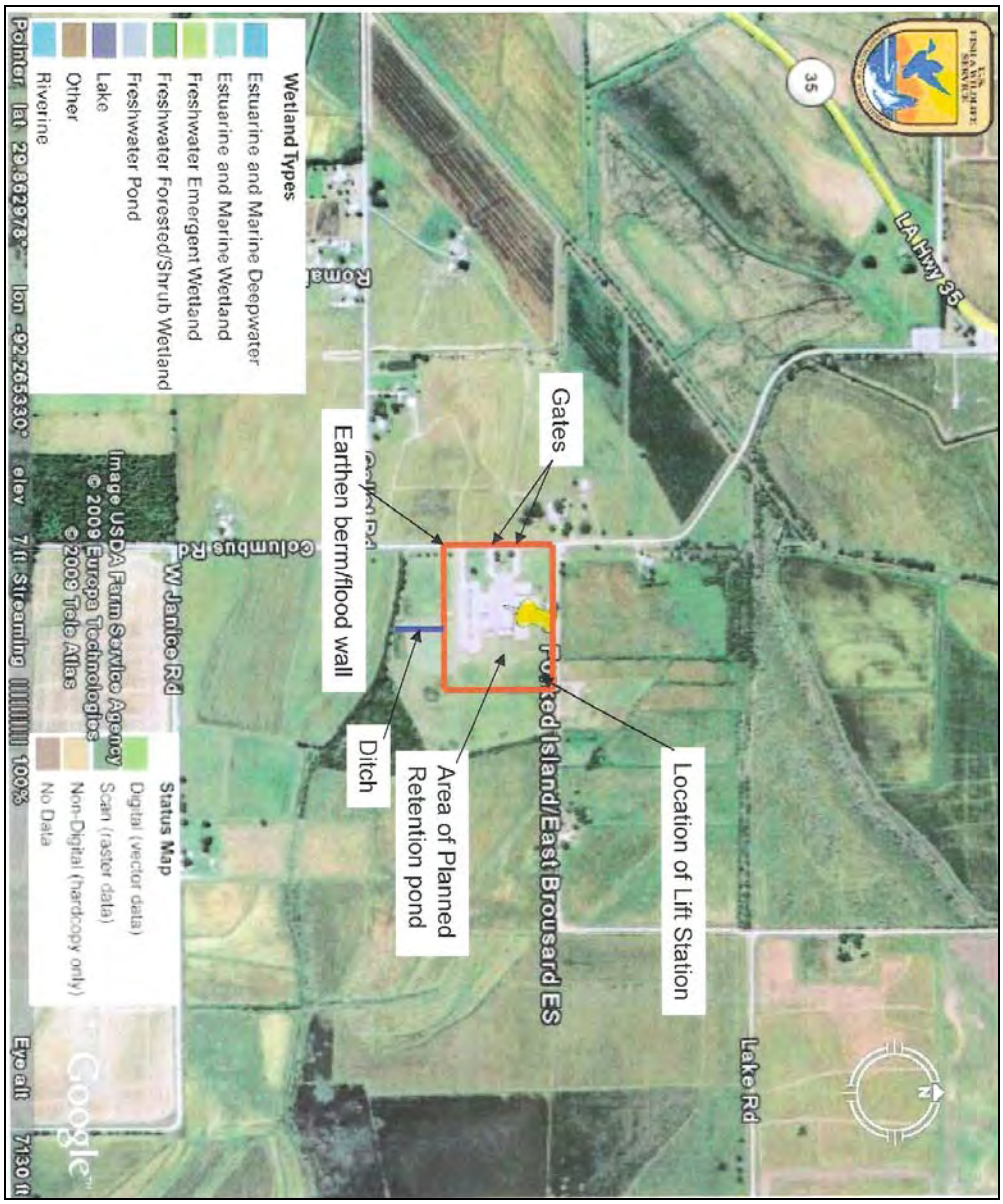

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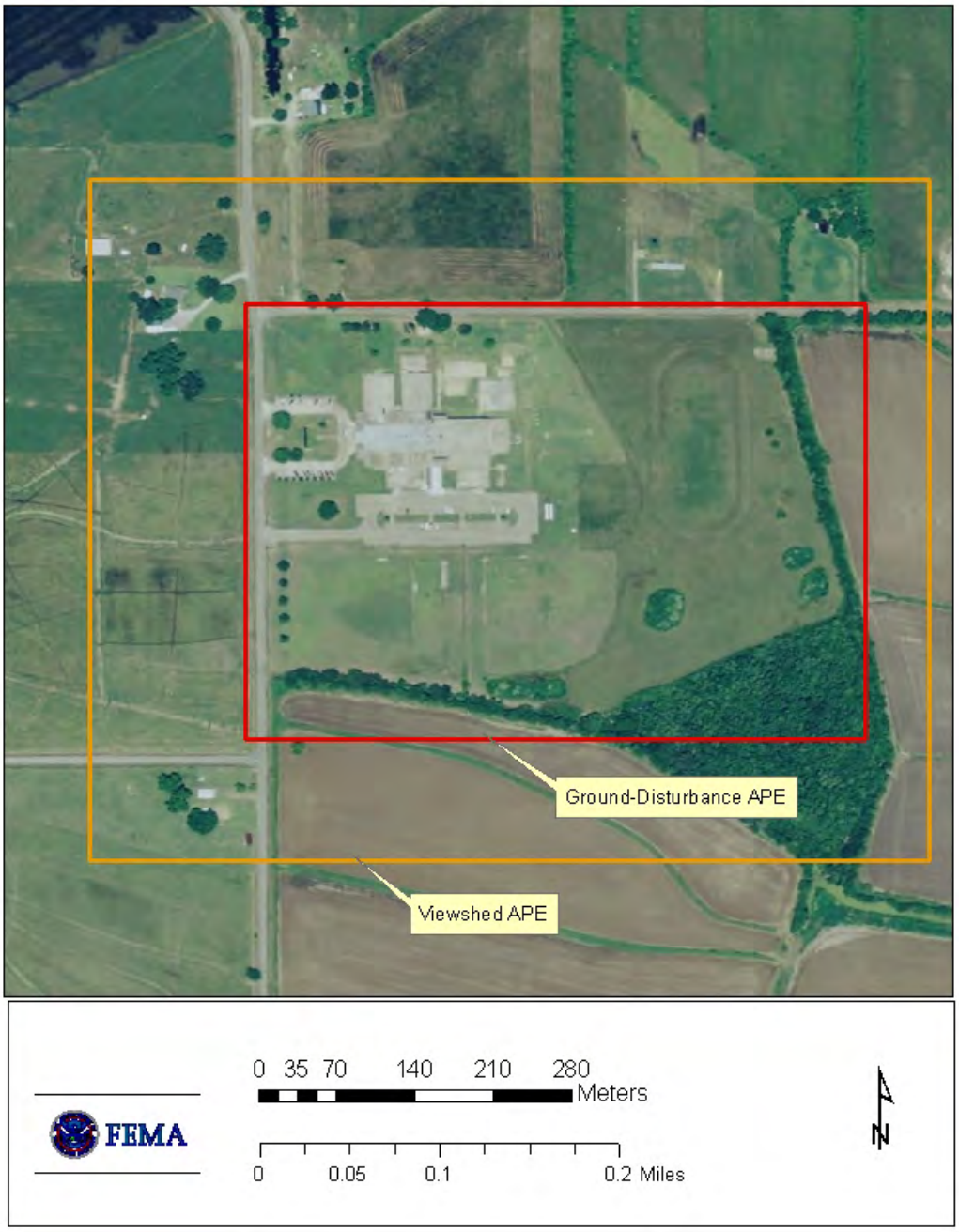


1603-0004 Vermilion Parish

Cultural Resources
Regulatory Setting

The consideration of impacts to cultural resources is mandated under Section 106 of the National Historic Preservation Act (NHPA) as implemented by 36 CFR Part 800. Requirements include the identification of significant historic properties that may be impacted by the proposed action or alternatives within the project's Area of Potential Effects (APE). Historic properties are defined as archaeological sites, standing structures or other historic resources listed in or determined eligible for listing in the National Register of Historic Places (NRHP). If adverse effects on historic, archaeological or cultural properties are identified, agencies must consider effects of their activities and attempt to avoid, minimize, or mitigate the impacts to these resources.

FEMA has reviewed this project in accordance with the *Louisiana State-Specific Programmatic Agreement among FEMA, the Louisiana State Historic Preservation Officer of the Department of Culture Recreation and Tourism (SHPO), the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP), the Alabama-Coushatta Tribe of Texas (ACTT), the Chitimacha Tribe of Louisiana (CTL), the Choctaw Nation of Oklahoma (CNO), the Jena Band of Choctaw Indians (JBCI), the Mississippi Band of Choctaw Indians (MBCI), the Seminole Tribe of Florida (STF), and the Advisory Council on Historic Preservation (ACHP) dated January 31st , 2011 (LA HMGP PA).* The LA HMGP PA was created to streamline the Section 106 review process.

Existing Conditions
Vermilion Parish applied for funding for flood protection and drainage improvements for the East Broussard Elementary School located at 19635 Columbus Road in Abbeville, LA. The viewshed APE for this project is defined as the surrounding area where the flood wall and berm is visible (see Figure 1). The APE for ground disturbing activities is defined as the area in the southeast quadrant of the intersection of Columbus Road and Lake Road (see Figure 1). The area extends approximately 800' to the east, and 780' to the south, for an area of approximately 624,000 square feet. An additional 300 linear feet will be disturbed for a new sewage line, as well as another 8,100 square feet for replacement of the existing sewage plant. The total APE will be in excess of 632,100 square feet.

The proposed undertaking involves the construction of a ring floodwall and berm surrounding the school complex. The proposed undertaking includes approximately 2,120 linear feet of berms and 540 linear feet of concrete floodwall around the perimeter of the facilities to protect the school from future flooding. The earthen berm will have the following dimensions: 76 feet in width (40 feet on the landside, 30 feet on the floodside, and six feet on top); nine feet in height; and 14 feet above mean sea level in elevation. The berm will be sloped 4:1 on the landside and 3:1 on the floodside. The concrete wall will also be nine feet high and 14 feet above mean sea level elevation. The two gates along Columbus Road will each be 22 feet wide. The undertaking also includes a retention pond on the eastern portion of the site within the ring flood wall and berm. A lift station will be constructed at the northeast corner of the property, also within the ring flood wall and berm. A drainage ditch will be excavated to the south to run toward the southern edge of the property and toward an existing ditch from the south wall of the earthen berm. The ditch will be approximately 28 feet wide, and will contain two 14-inch diameter steel pipes and one 24-inch diameter storm drain pipe. The ditch will be sloped 3:1.

FEMA has determined that no structures on the property meet the 50-year Criterion or Criteria of Consideration G of the NR guidelines to be considered eligible for the NRHP, nor do they contribute to existing or eligible NR districts.

FEMA has consulted the Louisiana Cultural Resources Map, which contains the SHPO's cultural database, and determined there are no recorded archaeological sites located within one mile of the proposed project area. A site visit was conducted in conjunction with the FEMA/SHPO liaison on December 1, 2009 and no historic resources were identified in the APE at that time. The project will result in ground disturbing activities that will primarily be confined to previously disturbed areas or areas of low potential for archaeological resources. Additional soils that may be required for construction of the new berm should be procured from SHPO approved sources, in addition to any federal, state, or local regulation.

Two mounds of suspected modern origin were apparent along the west side of the school property, with one each between the southwest and northwest corners of the main building and Columbus Road. Both mounds were low and broad at their tops, rising no more than three feet above the surrounding elevation. Three soil cores were taken at five meter intervals running east from the silt loams over a mixed package of silt loam and silty clay loam. Brick and oyster shell flecking in the soils were consistent with the soil profiles expected of manmade historic landscaped features of recent construction. The mound to the southwest was topped by a mature tree, while the one to the northwest was topped by a sapling. This project is not expected to impact any subsurface archaeological resources. The ring wall will be constructed on previously disturbed soils. The drains along the interior will have a limited footprint for subsurface disturbance, as will the sewer plant and new connector line, and are in areas of low probability for historic resources. The retention pond will have a greater footprint and potential to impact subsurface resources, however, at least one existing disturbance (a sewer line) is present; as noted, the potential for historic resources in this vicinity is low. No historic features were observed during the site visit, nor were any artifacts recovered.

Alternative 1: No Action Alternative
This alternative does not include any FEMA undertaking; therefore FEMA has no further responsibilities under Section 106 of the NHPA.

Alternative 2: Proposed Action Alternative
The undertaking proposed would utilize FEMA funding for the flood protection and drainage improvements at the East Broussard School in Vermilion Parish.

FEMA has determined that there is No Effect to Historic Properties as a result of the proposed undertaking. SHPO concurrence with this determination was received March 29, 2011. Consultation with affected tribes, including the Choctaw Nation of Oklahoma, Coushatta Tribe of Louisiana, Jena Band of Choctaw Indians, Mississippi Band of Choctaw Indians, and Tunica-Biloxi Tribe of Louisiana, was conducted per 36 CFR §800.2(c)(2)(i)(B). No tribal responses were received. Therefore, no impacts to cultural resources are anticipated by the proposed action. The applicant must comply with the Louisiana Unmarked Human Burial Sites Preservation Act (R.S. 8:671 et seq.) and the Inadvertent Discovery Clause, which can be found under the conditions section of this Environmental Assessment.

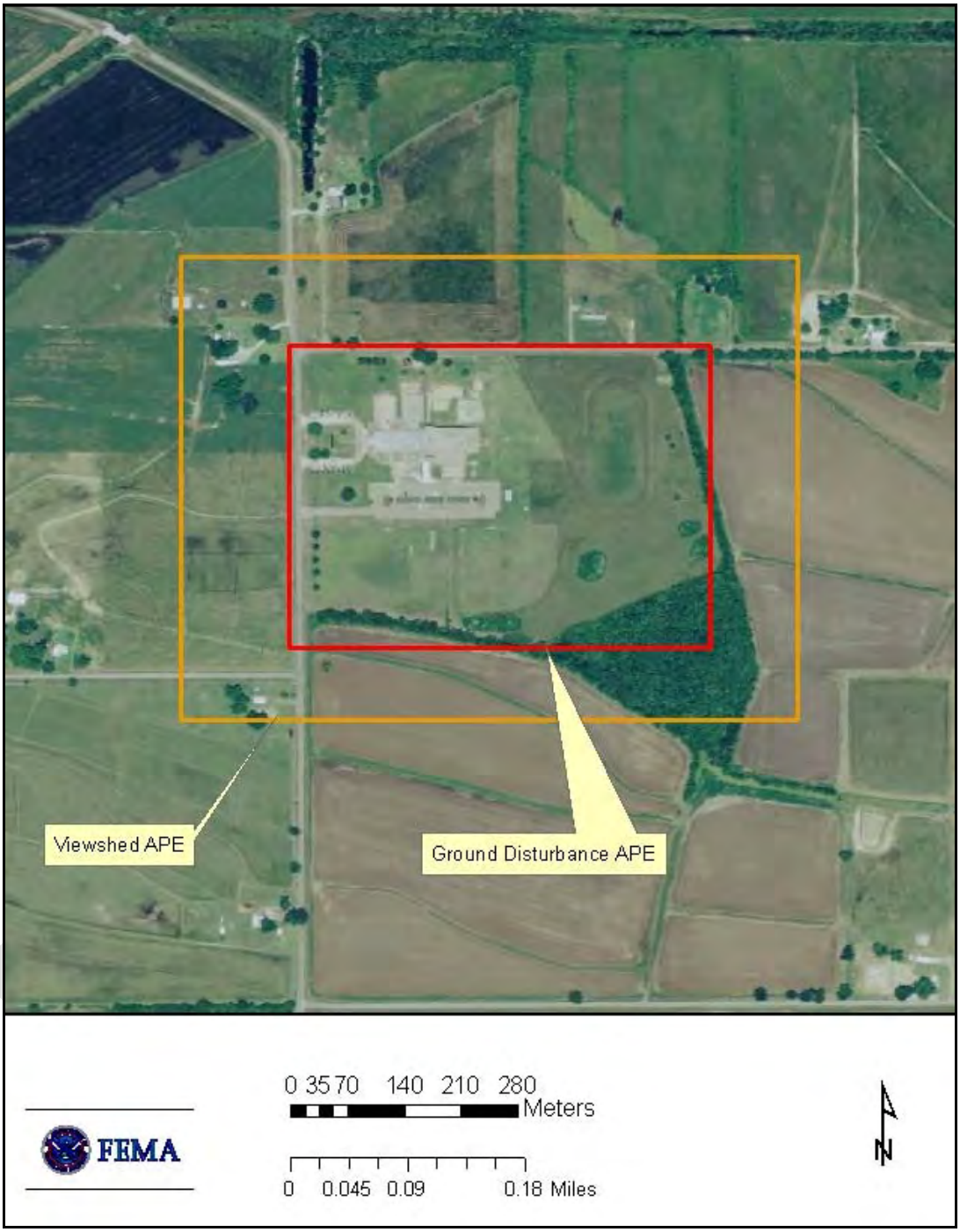


Figure 1. East Broussard Elementary School (1603-0004) Viewshed and Ground Disturbance Area of Potential Effects.

APPENDIX C

8-STEP PROCESS, FEMA APPROVAL FOR EVALUATION OF A V-ZONE CONSTRUCTION PROJECT, WAVE RUN-UP MODEL, SIMPLIFIED H&H STUDY, AND CLOMR APPLICATION

FORKED ISLAND/EAST BROUSSARD ELEMENTARY SCHOOL FLOOD PROTECTION PROJECT, ABBEVILLE, LOUISIANA
Executive Order 11988 – Floodplain Management
Eight-Step Decision Making Process

Executive Order 11988 (Floodplain Management) requires federal agencies "to avoid to the extent possible the long and short term adverse impacts associated with occupancy and modification of the floodplain and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative." FEMA's implementing regulations are at 44 CFR Part 9, which includes an eight step decision making process for compliance with this part.

This eight step process is applied to the proposed flood protection project, which consists of the proposed construction of an earthen berm and concrete floodwall with automatic gates to protect the Forked Island/East Broussard Elementary School from flood damage. The entire proposed project area is located within the 100-year floodplain within Vermilion Parish. The steps in the decision making process are as follows:

Step 1 Determine whether the proposed action is in the Base Floodplain

The Parish of Vermilion enrolled in the National Flood Insurance Program (NFIP) on May 15, 1985. According to Effective Digital Flood Insurance Rate Map (DFIRM) 22113C0475F, dated January 19, 2011, the site is located in zones VE (EL 12) and VE (EL 13).

Historically, the proposed project site was located in an AE zone. According to FIRM panel 220221 0400D dated May 15, 1985, the proposed project site was located in zone A8 (EL 9). The Advisory BFE was zone AE (EL 10), according to ABFE panel LA-Z53, dated March 2006. The ABFE maps were created for the Louisiana coastal parishes after Hurricanes Katrina and Rita to provide homeowners and public officials with assistance in elevating, reconstructing, retrofitting, or repairing their structures after these events.

Step 2 Early public notice (Preliminary Notice)

A cumulative public concerning the Hazard Mitigation Grant Program (HMGP) Assistance in floodplain and wetland areas will be or has been published in the New Orleans Times-Picayune, Baton Rouge Advocate, Lafayette Daily Advertiser, Lake Charles American Press, Hammond Star, Monroe News-Star, Shreveport Times, and the Alexandria Daily Town Talk.

Step 3 **Identify and evaluate alternatives to locating in the base floodplain.**

The entire community surrounding the proposed project area is located within the 100-year floodplain.

ALTERNATIVE 1: NO ACTION: This alternative would leave the Forked Island/East Broussard Elementary School, which is a repetitive loss structure, at substantial risk in a highly flood prone area. It is likely future floods would damage the school beyond repair.

ALTERNATIVE 2: CONSTRUCTION OF FLOOD WALL WITH AUTOMATIC GATES (Proposed Alternative): By constructing the flood wall, flooding of the Forked Island/East Broussard Elementary School will be reduced, while flooding in surrounding residential areas will not be significantly affected.

ALTERNATIVE 3: DEMOLISH EXISTING STRUCTURE AND RECONSTRUCT AN ELEVATED STRUCTURE (Dismissed): One alternative considered was to demolish the existing slab-on-grade elementary school, elevate the site location to the Base Flood Elevation (BFE) listed on the effective DFIRM panel for the project site with fill, and re-build the same size elementary school, (78,620 square feet) at the same location to serve community students. The estimated cost would be $12,500,000. This alternative was dismissed due to the increase cost of the project, and the due to fact the placement of structural fill is not permitted in the V-zone. This alternative would also result in the students having to relocate to another school during the construction process.

ALTERNATIVE 4: RELOCATION OF FORKED ISLAND/EAST BROUSSARD ELEMENTARY SCHOOL STUDENTS TO ANOTHER LOCATION WITHIN VERMILION PARISH (Dismissed): Another potentially feasible alternative would be to relocate students to another elementary school within Vermilion Parish. Students were temporarily relocated to other schools after Hurricane Rita; however, there was severe overcrowding. This caused undue hardship on the students of the school that was not damaged. This alternative was not considered feasible because it is not a long term solution.

ALTERNATIVE 5: RELOCATE THE FORKED ISLAND/EAST BROUSSARD ELEMENTARY SCHOOL TO ANOTHER LOCATION (Dismissed): Another potentially feasible alternative would be to relocate the Forked Island/East Broussard Elementary School physical structure to a new location. The Forked Island/East Broussard students would have to relocate to another school during the reconstruction process. This alternative was not considered feasible due to costs of the project and inconvenience to the students and their families. In addition, given the fact the Forked Island/East Broussard Elementary School project area is surrounded for several miles in all directions by the 100-year floodplain, it would be very difficult for Vermilion Parish to identify a suitable location which would be outside of the 100- or 500-year floodplain.

ALTERNATIVE 6: CONSTRUCTION OF A FLOOD WALL/BERM WITH MANUAL GATES (Dismissed): Another alternative that was considered was to build a flood wall/berm to a height 4.0 feet above the current BFE and approximately 3.5 feet higher than the floodwaters experienced during Hurricane Rita. This option, which costs less than the proposed alternative, differs from proposed alternative because this option uses a flood gate which must be closed manually. This option was dismissed due to safety concerns, as someone would need to be physically located at the site to close the manual flood gates during hazardous weather conditions.

Step 4 **Identify impacts of the proposed action associated with occupancy or modification of the floodplain.**

Impact of natural function of the floodplain

The construction of the earthen berm/concrete floodwall would result in added fill within the floodplain; however, the amount of fill relative to the area of the floodplain is minimal. Flood flows would be minimally impeded and redirected by construction of the proposed flood control structure, which would enclose 12 acres of land. In addition, during a flooding event, water that would normally occupy the area within the flood control structure would be pumped outside of, and away from, the flood control structure. However, according the Applicant's hydrology and hydraulic studies, the construction of the floodwall will have minimal potential to impact the area immediately surrounding the school structure and the floodplain in general.

Implementing the proposed action is not likely to encourage further development near or adjacent to the Forked Island/East Broussard Elementary School as the flood protection would only be provided to the proposed project site.

The construction of the floodwall will be coordinated and comply with the local floodplain administration. All required permits will be obtained and kept for permanent documentation.

By implementing the proposed activity, flood hazards at the Forked Island/East Broussard Elementary School would be significantly reduced. There are no wetlands in the immediate proposed project area that would be affected by the proposed action.

Impact of the flood water on the proposed facility

During future catastrophic floods, the school structure would continue to flood and experience damage to the physical structure and the contents of the structure. If the Applicant does not implement the proposed action; and the structure continues to experience flood damage, or the Applicant chooses to relocate the Forked Island/East Broussard Elementary School students (Alternative 4) or reconstruct a new physical elementary school structure in an alternative location (Alternative 5); Vermilion Parish citizens with school-age would likely leave the project area to live closer to the school

that their children would be attending. This may impact Vermilion Parish by reducing the tax base; thereby reducing funding for other essential services in the project area.

Step 5 **Design or modify the proposed action to minimize threats to life and property and preserve its natural and beneficial floodplain values.**

The proposed project is designed to minimize floodplain impacts while providing flood protection for the Forked Island/East Broussard Elementary School structure. Because the proposed flood control earthen berm/concrete floodwall structure would be located on vacant areas within a sparsely developed residential neighborhood and would enclose only 12 acres, it would have minimal effect on the natural and beneficial values of the floodplain

Step 6 **Re-evaluate the proposed action.**

According to the proposed project site DFIRM panel 22113C0475F, and adjoining DFIRM panels 22113C0325F (to the north of the proposed project site), 22113C0350F (to the northeast of the proposed project site), and 22113C0500F (to the east of the proposed project site), the vast majority of Vermilion Parish within a reasonable commuting distance of the current Forked Island/East Broussard Elementary School location lies primarily within the 100-year floodplain with a few areas of mapped 500-year floodplain areas several miles away to the north and northeast. See attached Figures for views of the effective DFIRM panels discussed above. Legend - All light gray areas are located in the 500-year floodplain. All dark gray areas are located in the 100-year floodplain, which includes the A, AE, V, and VE zones.

There are no other practicable alternate locations outside the floodplain available. Student relocation (Alternative 4) and physical structure relocation to another site (Alternative 5) would cause inconvenience and hardship to area residents and would be very costly to the Parish and to American taxpayers. For Alternative 5, it would be very difficult for Vermilion Parish to identify a suitable location which would be outside of the 100- or 500-year floodplain.

The proposed alternative would provide protection to 14 feet above mean sea level. A wave analysis run-up value resulted in a freeboard of approximately 1.3 feet. The wave run-up analysis indicated that the proposed elevation of the berm provides reasonable protection from the 100-year wave and run-up conditions.

The proposed action will reduce or eliminate possible flood hazards at the Forked Island/East Broussard Elementary School, with minimal increase of flood elevations at nearby and adjacent areas. There are no wetlands in the immediate proposed project area that would be affected by the proposed action.

Alternatives consisting of locating the proposed project outside the floodplain or taking “no action” are not practicable.

Step 7 **Findings and Public Explanation (Final Notification).**

The EA went out for public review from December 7 to December 26, 2011.

After evaluating alternatives, including impacts to the floodplain, Vermilion Parish determined that the proposed project is the most practical alternative.

It was determined that no practicable alternative to constructing the earthen berm/floodwall within the 100-year floodplain because:

1. The entire proposed project area and surrounding community lies within 100-year floodplains and no practical locations outside of the 100-year or 500-year floodplain within a reasonable commuting distance of the existing location could be identified. If the school would be physically relocated outside the 100-year or 500-year floodplain, it would no longer be able to serve the needs of the students in the southern part of Vermilion Parish.

2. Relocating the Forked Island/East Broussard Elementary School students would cause hardship and inconvenience to their families and overcrowding at the school where the students are relocated to.

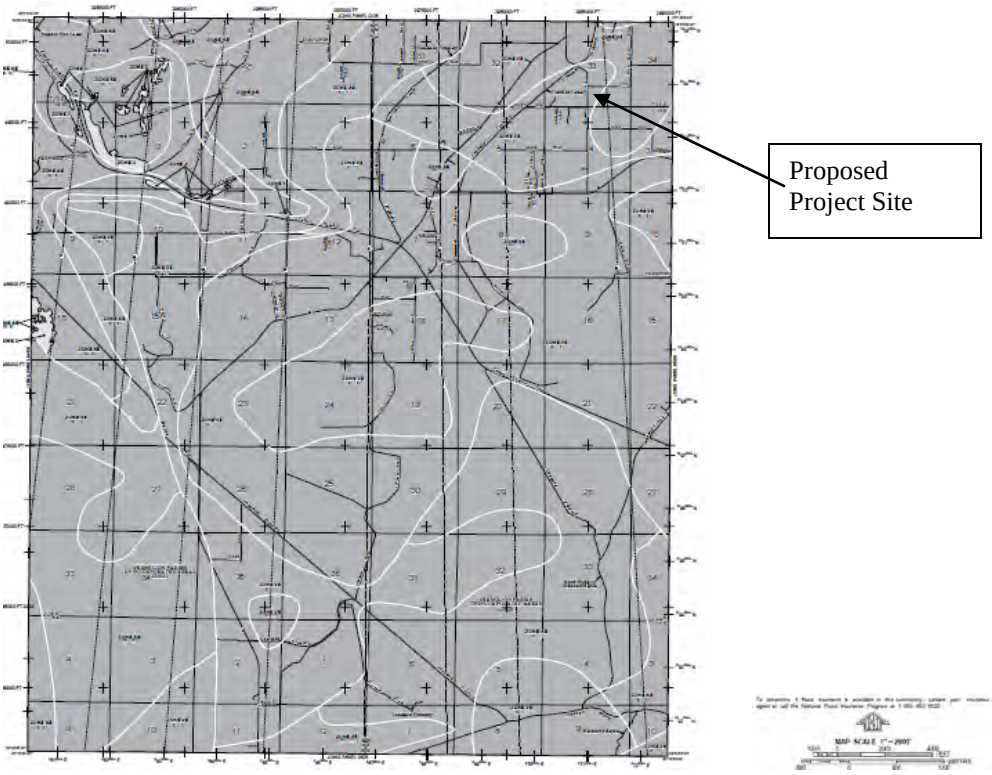
3. Rebuilding and elevating a new structure at the existing location is not practicable because it would displace the students during reconstruction, structural fill in not allowed the V-zone, and the cost would extremely high.

4. A "no action" plan would not provide a feasible solution to the flooding problems.

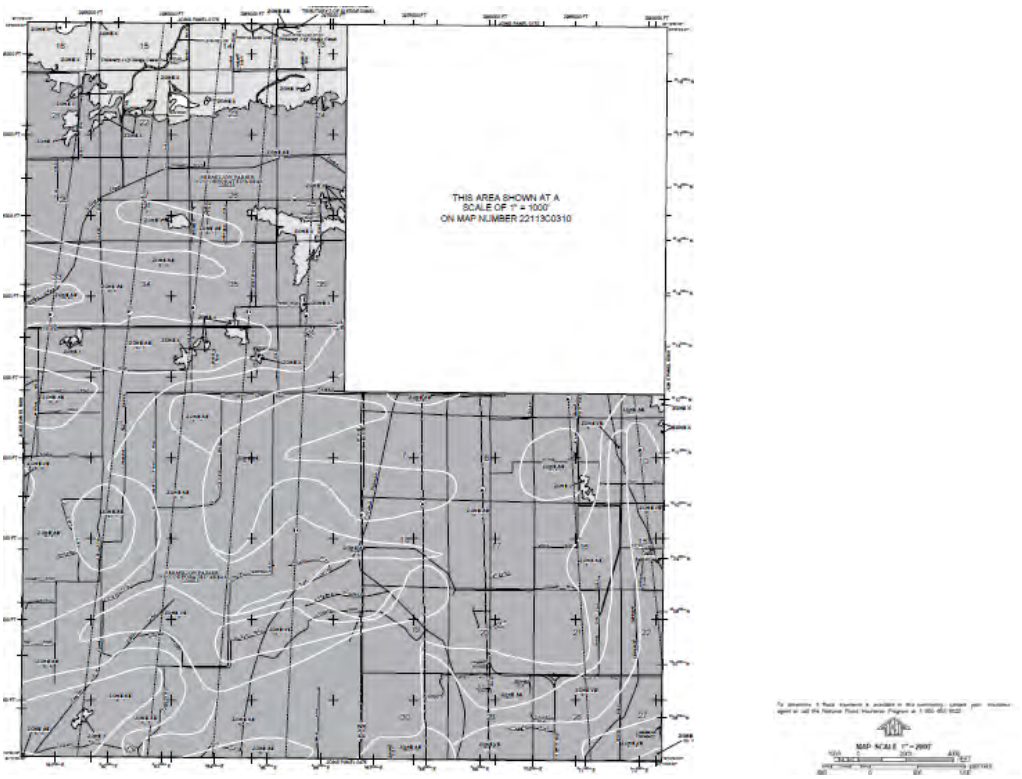
Step 8 **Implement the action.**

The proposed flood protection project consisting of the construction of an earthen berm/concrete floodwall would be constructed in accordance with all applicable floodplain requirements.

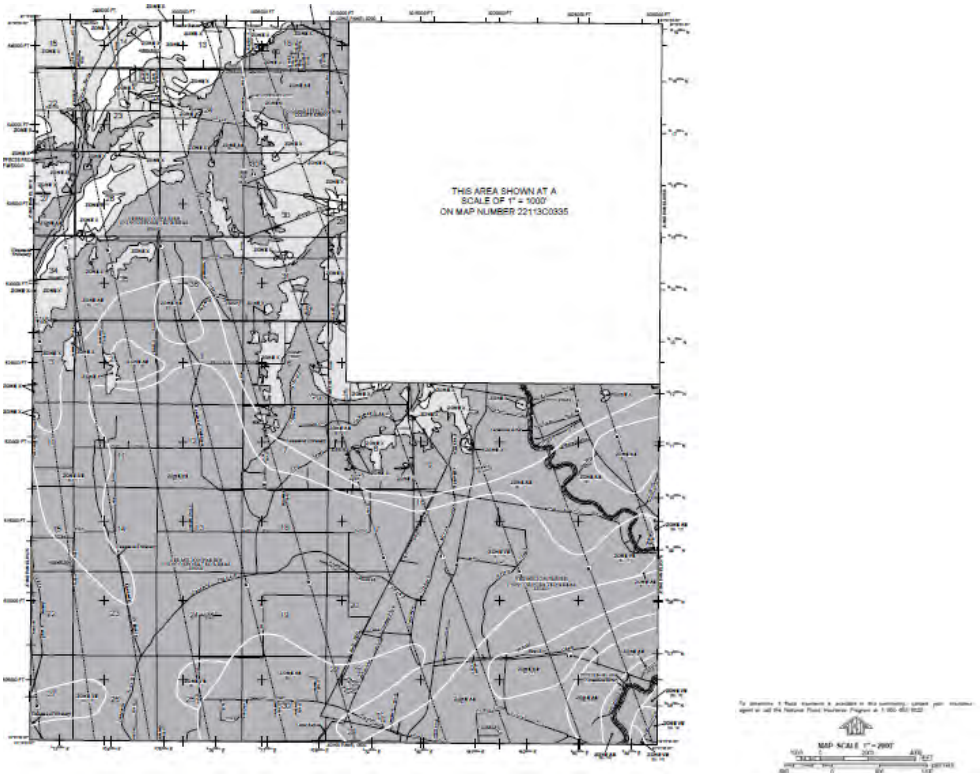
Effective DFIRM Panel 220113C 0475F (Vicinity of Proposed Project Site)



Effective DFIRM Panel 22113C 0325F (North of Proposed Project Site)



Effective DFIRM Panel 22113C 0350F (Northeast of Proposed Project Site)



Effective DFIRM Panel 22113C 0500F (East of Proposed Project Site)

U.S. Department of Homeland Security
Federal Emergency Management Agency
Louisiana Transitional Recovery Office
1250 Poydras Street, Box 43
New Orleans, LA 70113
(504) 762-2018 office
(504) 762-2899 fax

November 16, 2009

Mark Cooper, Director
Governor's Office of Homeland Security
and Emergency Preparedness
7667 Independence Blvd
Baton Rouge, LA 70806

RE: FEMA-1603-DR-LA, Project 0004
Vermillion Parish Flood Protection Project, Forked Island/E. Broussard Elementary School Flood Protection using HMGP Funding

Dear Mark Cooper:

This letter is to inform you that FEMA has reconsidered our position concerning the Hazard Mitigation Grant Program (HMGP) project submitted for Vermillion Parish. Phase 1 activities were approved for this project on February 28, 2008 and federal funding in the amount of $183,800 was obligated to allow the Parish to acquire the information needed to obtain engineering and design data, and to initiate permitting activities. FEMA received the deliverables from Phase 1 and initiated our full review of the proposed undertaking. Upon additional consideration of the site location in a Velocity Zone, we concluded that the proposed action was not in compliance with our regulations, and on September 8, 2009 we notified your office that the project was not eligible for additional funding based on policy guidance regarding new construction and substantial improvements in Coastal High Hazard Areas, or "V-Zones".

Our determination was that the proposed berm constituted new construction in a high flood hazard area, which is prohibited. However after evaluating the entire project, which proposes to place a berm as a retrofit measure to an existing facility, FEMA has reversed our decision and has placed this project back into review for the remaining proposed actions. This letter does not constitute full approval. It is a notification that the project is being evaluated and may be eligible for additional funding.

This project will require an Environmental Assessment (EA) to determine full compliance with all environmental and historic criteria. An evaluation of alternatives is a component of the EA, and it is possible that during the review it will be discovered that a more acceptable alternative should be explored, or that this project cannot meet program eligibility.

Mitigation staff at the Louisiana Transitional Recovery Office (TRO) will coordinate with your office as we continue the review for Phase 2 of this project and every effort will be made to resolve issues as they are identified.

Please direct any questions concerning this matter to Robert Picarazzi, Mitigation Section Chief at (504) 762-2065. FEMA is committed to working together to support the State's recovery activities.

Sincerely,

Tony Russell
Acting Director
Louisiana Transitional Recovery Office

cc: Gary Jones, Acting Administrator, FEMA Region VI
Mark DeBosier, Deputy Director, Disaster Recovery Division, GOHSEP
D. Casey Levy, Mitigation Section Chief, GOHSEP

State of Louisiana

BOBBY JINDAL
GOVERNOR

GOVERNOR'S OFFICE OF HOMELAND SECURITY AND EMERGENCY PREPAREDNESS

MARK A. COOPER
DIRECTOR

June 24, 2009

Mr. Bob Picarazzi
Mitigation Section Chief
1250 Poydras Street, 14th Floor
New Orleans, Louisiana 70113

ATTENTION: Tim Tempfer

SUBJECT: Scope Change Request
Vermilion Parish–Forked Island/E. Broussard Elem. Phase I- Flood Protection
FEMA-1603-DR-LA, Project #0004, DR #1603-113-0002

Dear Mr. Picarazzi:

On behalf of Vermilion Parish, the State of Louisiana is requesting a Scope Change Approval, for the above referenced application. The change will include the removal of the CLOMR/LOMR that is stated in the project description, milestones, flood control worksheet, and FEMA award letter. The submittal of this document is not feasible due to time constraints to gather information and increased labor cost associated with this task. The removal of this item will not change the budget due to CLOMR/LOMR fees being waived for projects that are funded 50% or greater with federal dollars.

Please find attached the formal request from the Parish which includes justification for this scope change. Should additional information be needed, please contact Shontae Harris at 225-267-2847 or at shontae.Harris@LA.gov.

Sincerely,

for Paul Rainwater
Governor's Authorized Representative

PR:sh

Enc. 1. Vermilion Parish Scope Change Request Letter Dated June 24, 2009
2. Revised Project Description
3. Revised Milestones
4. Flood Control Worksheet
5. FEMA Award Letter

7667 INDEPENDENCE BOULEVARD BATON ROUGE, LA 70806
TELEPHONE (225) 925-7500 FAX (225) 925-7501

Sellers & Associates, Inc.
ENGINEERS **SURVEYORS**

ELIZABETH S. GIROUARD, PRESIDENT
TODD A. VINCENT, VICE PRESIDENT

EUGENE M. SELLERS, P.E.,P.L.S.
WARREN P. BEEDLE, P.E.,P.L.S.
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ELIZABETH S. GIROUARD, C.E.
DANA MONTET SIMON, M.S.,P.E.
LARRY A. CRAMER, P.E.
T. J. HOLLON, P.E.
STEVE A. DRONET, E.I.
STEPHANIE M. BRIGGS, E.I.
BLAKE BELAIRE, E.I.
WILBERT J. GUIDRY, P.L.S.

April 30, 2009

FEMA NATIONAL SERVICE PROVIDER
3601 Eisenhower Avenue
Alexandria, VA 22304-6425

Re: HMGP #1603-113-0002
Forked Island E. Broussard School
Hurricane Flood Protection
File No. 7601-05

On behalf of the Vermilion Parish Police Jury and the Vermilion Parish School Board, as requested by the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP), Hazard Mitigation Grant Program, and as a regulatory requirement, please find attached for your review a CLOMR application package for the above mentioned project consisting of the following:

1. Completed application MT-2 Form 1, Form 3 and Form 5

2. Continuation sheets which includes a photograph of the Hurricane Rita 2005 flood event, brief project description, explanations of Form questions, and copies of FIRM's utilized

3. Proposed project plans (3 sheets), and

4. Engineering design documents dated April 2009

Should you have any questions regarding the enclosed information or wish to discuss this project further, please contact me.

Sincerely,
SELLERS AND ASSOCIATES, INC.

Larry Cramer

LARRY A. CRAMER, PE, PLS

c: Shontae Harris, GOHSEP (letter only)
Randy Schexnayder, VPSB (letter only)
Chris Theriot, VPPJ (letter only)

LAC\FEMA_0430091.wpd
Attachments

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

OVERVIEW & CONCURRENCE FORM

O.M.B No. 1660-0016
Expires: 12/31/2010

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, U.S. Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

A. REQUESTED RESPONSE FROM DHS-FEMA

This request is for a (check one):

☒ CLOMR: A letter from DHS-FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72).

☐ LOMR: A letter from DHS-FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See 44 CFR Ch. 1, Parts 60, 65 & 72)

B. OVERVIEW

1. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Ex: 480301	City of Katy	TX	480301	0005D	02/08/83
480287	Harris County	TX	48201C	0220G	09/28/90
220221	Vermilion Parish	LA		0400D	05/15/85
220221	Vermilion Parish	LA	22113C	0475F	02/29/08

2. a. Flooding Source:

b. Types of Flooding: ☐ Riverine ☒ Coastal ☐ Shallow Flooding (e.g., Zones AO and AH)

☐ Alluvial fan ☐ Lakes ☐ Other (Attach Description)

3. Project Name/Identifier: Forked Island E. Broussard Hurricane Protection

4. FEMA zone designations affected: A8 (EL 9) & VE (EL 13) (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5. Basis for Request and Type of Revision:

a. The basis for this revision request is (check all that apply)

☒ Physical Change ☐ Improved Methodology/Data ☐ Regulatory Floodway Revision ☐ Base Map Changes

☐ Coastal Analysis ☐ Hydraulic Analysis ☐ Hydrologic Analysis ☐ Corrections

☐ Weir-Dam Changes ☐ Levee Certification ☐ Alluvial Fan Analysis ☐ Natural Changes

☐ New Topographic Data ☐ Other (Attach Description)

Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

b. The area of revision encompasses the following structures (check all that apply)

Structures: ☐ Channelization ☒ Levee/Floodwall ☐ Bridge/Culvert

☐ Dam ☐ Fill ☐ Other (Attach Description)

C. REVIEW FEE

Has the review fee for the appropriate request category been included?	☐ Yes	Fee amount: $_____
	☒ No, Attach Explanation	

Please see the DHS-FEMA Web site at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm for Fee Amounts and Exemptions.

D. SIGNATURE

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: Randy Schexnayder, Superintendent	Company: Vermilion Parish School Board	
Mailing Address: P.O. Drawer 520 Abbeville, LA 70510	Daytime Telephone No.: (337) 893-3973	Fax No.: (337) 898-0939
	E-Mail Address: randys@vrml.k12.la.us	
Signature of Requester (required):	Date: April 29, 2009	

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirement that no fill be placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title: Chris Theriot, Floodplain Manager	Community Name: Vermilion Parish, LA	
Mailing Address: 100 North State Street, Suite 200 Abbeville, LA 70510	Daytime Telephone No.: (337) 898-4300	Fax No.: (337) 898-4310
	E-Mail Address: vermilionppj@yahoo.com	
Community Official's Signature (required):	Date: April 29, 2009	

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information data, hydrologic and hydraulic analysis, and any other supporting data. All documents submitted in support of this request are correct to the best of my knowledge. All analyses have been performed correctly and in accordance with sound engineering practices. All project works are designed in accordance with sound engineering practices to provide protection from the 1% annual chance flood. If "as-built" conditions data/plan provided, then the structure(s) has been built according to the plans being certified, is in place, and is fully functioning. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: Eugene M. Sellers, PE, PLS	License No.: PE. 6457	Expiration Date: 9/30/2009
Company Name: Sellers & Associates, Inc.	Telephone No.: (337) 232-0777	Fax No.: (337) 232-0851
Signature:		Date: April 29, 2009

Ensure the forms that are appropriate to your revision request are included in your submittal.

Form Name and (Number)	Required if ...
☐ Riverine Hydrology and Hydraulics Form (Form 2)	New or revised discharges or water-surface elevations
☒ Riverine Structures Form (Form 3)	Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam
☐ Coastal Analysis Form (Form 4)	New or revised coastal elevations
☒ Coastal Structures Form (Form 5)	Addition/revision of coastal structure
☐ Alluvial Fan Flooding Form (Form 6)	Flood control measures on alluvial fans

Seal (Optional)

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

O.M.B No. 1660-0016
Expires: 12/31/2010

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 7 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, U.S. Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: Hurricane Storm Surge
Note: Fill out one form for each flooding source studied

A. GENERAL

Complete the appropriate section(s) for each Structure listed below:

Channelization ..... complete Section B
Bridge/Culvert ..... complete Section C
Dam/Basin ..... complete Section D
Levee/Floodwall ..... complete Section E
Sediment Transport..... complete Section F (if required)

Description Of Structure

1. **Name of Structure: Forked Island E. Broussard Hurricane Protection**

   Type (check one): ☐ Channelization ☐ Bridge/Culvert ☒ Levee/Floodwall ☐ Dam/Basin

   Location of Structure: Forked Island E. Broussard School

   Downstream Limit/Cross Section: NA

   Upstream Limit/Cross Section: NA

2. **Name of Structure:**

   Type (check one): ☐ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam/Basin

   Location of Structure:

   Downstream Limit/Cross Section:

   Upstream Limit/Cross Section:

3. **Name of Structure:**

   Type (check one) ☐ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam/Basin

   Location of Structure:

   Downstream Limit/Cross Section:

   Upstream Limit/Cross Section:

NOTE: For more structures, attach additional pages as needed.

B. CHANNELIZATION

Flooding Source:

Name of Structure:

1. Accessory Structures

The channelization includes (check one):

- ☐ Levees [Attach Section E (Levee/Floodwall)]
- ☐ Superelevated sections
- ☐ Debris basin/detention basin [Attach Section D (Dam/Basin)]
- ☐ Other (Describe):
- ☐ Drop structures
- ☐ Transitions in cross sectional geometry
- ☐ Energy dissipator

2. Drawing Checklist

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Hydraulic Considerations

The channel was designed to carry (cfs) and/or the -year flood.

The design elevation in the channel is based on (check one):

☐ Subcritical flow ☐ Critical flow ☐ Supercritical flow ☐ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ☐ At Drop Structures ☐ At Transitions
☐ Other locations (specify):

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☐ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source:

Name of Structure:

1. This revision reflects (check one):

- ☐ Bridge/culvert not modeled in the FIS
- ☐ Modified bridge/culvert previously modeled in the FIS
- ☐ Revised analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8):
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

- ☐ Dimensions (height, width, span, radius, length)
- ☐ Shape (culverts only)
- ☐ Material
- ☐ Beveling or Rounding
- ☐ Wing Wall Angle
- ☐ Skew Angle
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection
- ☐ Low Chord Elevations – Upstream and Downstream
- ☐ Top of Road Elevations – Upstream and Downstream
- ☐ Structure Invert Elevations – Upstream and Downstream
- ☐ Stream Invert Elevations – Upstream and Downstream
- ☐ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

D. DAM/BASIN

Flooding Source:

Name of Structure:

1. This request is for (check one): ☐ Existing dam ☐ New dam ☐ Modification of existing dam

2. The dam was designed by (check one): ☐ Federal agency ☐ State agency ☐ Local government agency ☐ Private organization

   Name of the agency or organization:

3. The Dam was permitted as (check one):

   a. ☐ Federal Dam ☐ State Dam

      Provide the permit or identification number (ID) for the dam and the appropriate permitting agency or organization

      Permit or ID number Permitting Agency or Organization

   b. ☐ Local Government Dam ☐ Private Dam

      Provided related drawings, specification and supporting design information.

4. Does the project involve revised hydrology? ☐ Yes ☐ No

   If Yes, complete the Riverine Hydrology & Hydraulics Form (Form 2).

   Was the dam/basin designed using critical duration storm?

   ☐ Yes, provide supporting documentation with your completed Form 2.

   ☐ No, provide a written explanation and justification for not using the critical duration storm.

5. Does the submittal include debris/sediment yield analysis? ☐ Yes ☐ No

   If yes, then fill out Section F (Sediment Transport).
   If No, then attach your explanation for why debris/sediment analysis was not considered.

6. Does the Base Flood Elevation behind the dam or downstream of the dam change?

   ☐ Yes ☐ No If Yes, complete the Riverine Hydrology & Hydraulics Form (Form 2) and complete the table below.

   Stillwater Elevation Behind the Dam

FREQUENCY (% annual chance)	FIS	REVISED
10-year (10%)		
50-year (2%)		
100-year (1%)		
500-year (0.2%)		
Normal Pool Elevation		

7. Please attach a copy of the formal Operation and Maintenance Plan

E. LEVEE/FLOODWALL

1. System Elements

a. This Levee/Floodwall analysis is based on (check one):

- ☐ upgrading of an existing levee/floodwall system
- ☒ a newly constructed levee/floodwall system
- ☐ reanalysis of an existing levee/floodwall system

b. Levee elements and locations are (check one):

☒ earthen embankment, dike, berm, etc.	Station 0+00 to 25+91
☒ structural floodwall	Station 25+91 to 29+11
☐ Other (describe):	Station to

c. Structural Type (check one):

- ☒ monolithic cast-in place reinforced concrete
- ☐ reinforced concrete masonry block
- ☐ sheet piling
- ☐ Other (describe):

d. Has this levee/floodwall system been certified by a Federal agency to provide protection from the base flood?

☐ Yes ☒ No

If Yes, by which agency?

e. Attach certified drawings containing the following information (indicate drawing sheet numbers):

1. Plan of the levee embankment and floodwall structures.	Sheet Numbers: 2 of 11
2. A profile of the levee/floodwall system showing the Base Flood Elevation (BFE), levee and/or wall crest and foundation, and closure locations for the total levee system.	Sheet Numbers: 3 of 11
3. A profile of the BFE, closure opening outlet and inlet invert elevations, type and size of opening, and kind of closure.	Sheet Numbers: 2, 3 of 11
4. A layout detail for the embankment protection measures.	Sheet Numbers: NA
5. Location, layout, and size and shape of the levee embankment features, foundation treatment, floodwall structure, closure structures, and pump stations.	Sheet Numbers: 2, 3, 4 of 11

2. Freeboard

a. The minimum freeboard provided above the BFE is:

Riverine

3.0 feet or more at the downstream end and throughout	☐ Yes	☐ No
3.5 feet or more at the upstream end	☐ Yes	☐ No
4.0 feet within 100 feet upstream of all structures and/or constrictions	☐ Yes	☐ No

Coastal

1.0 foot above the height of the one percent wave associated with the 1%-annual-chance stillwater surge elevation or maximum wave runup (whichever is greater).	☐ Yes	☒ No
2.0 feet above the 1%-annual-chance stillwater surge elevation	☐ Yes	☒ No

E. LEVEE/FLOODWALL (CONTINUED)

2. Freeboard (continued)

Please note, occasionally exceptions are made to the minimum freeboard requirement. If an exception is requested, attach documentation addressing Paragraph 65.10(b)(1)(ii) of the NFIP Regulations.

If No is answered to any of the above, please attach an explanation.

b. Is there an indication from historical records that ice-jamming can affect the BFE? ☐ Yes ☒ No

If Yes, provide ice-jam analysis profile and evidence that the minimum freeboard discussed above still exists.

3. Closures

a. Openings through the levee system (check one): ☒ exists ☐ does not exist

If opening exists, list all closures:

Channel Station	Left or Right Bank	Opening Type	Highest Elevation for Opening Invert	Type of Closure Device
See Plan	West Side	Driveway	5.5'	Flood Gate
See Plan	West Side	Driveway	5.5'	Flood Gate

(Extend table on an added sheet as needed and reference)

Note: Geotechnical and geologic data

In addition to the required detailed analysis reports, data obtained during field and laboratory investigations and used in the design analysis for the following system features should be submitted in a tabulated summary form. (Reference U.S. Army Corps of Engineers [USACE] EM-1110-2-1906 Form 2086.)

4. Embankment Protection

a. The maximum levee slope landside is: 4:1

b. The maximum levee slope floodside is: 3:1

c. The range of velocities along the levee during the base flood is: NA (min.) to NA (max.)

d. Embankment material is protected by (describe what kind): Hydroseeding

e. Riprap Design Parameters (check one): ☐ Velocity ☐ Tractive stress
Attach references

Reach		Sideslope	Flow Depth	Velocity	Curve or Straight	Stone Riprap			Depth of Toedown
						D_{100}	D_{50}	Thickness	
Sta	to								
Sta	to								
Sta	to								
Sta	to								
Sta	to								
Sta	to								

(Extend table on an added sheet as needed and reference each entry)

E. LEVEE/FLOODWALL (CONTINUED)

4. Embankment Protection (continued)

f. Is a bedding/filter analysis and design attached? ☐ Yes ☒ No

g. Describe the analysis used for other kinds of protection used (include copies of the design analysis):

NA

Attach engineering analysis to support construction plans.

5. Embankment And Foundation Stability

a. Identify locations and describe the basis for selection of critical location for analysis:

☒ Overall height: Sta. NA ; height 9.0 ft.

☐ Limiting foundation soil strength:

Sta. , depth to

strength ϕ = degrees, c = psf

slope: SS = (h) to (v)

(Repeat as needed on an added sheet for additional locations)

b. Specify the embankment stability analysis methodology used (e.g., circular arc, sliding block, infinite slope, etc.):

Circular Arc

c. Summary of stability analysis results:

Case	Loading Conditions	Critical Safety Factor	Criteria (Min.)
I	End of construction	4.8	1.3
II	Sudden drawdown	NA	1.0
III	Critical flood stage	3.86	1.4
IV	Steady seepage at flood stage	NA	1.4
VI	Earthquake (Case I)	NA	1.0

(Reference: USACE EM-1110-2-1913 Table 6-1)

d. Was a seepage analysis for the embankment performed? ☐ Yes ☒ No

If Yes, describe methodology used:

e. Was a seepage analysis for the foundation performed? ☐ Yes ☒ No

f. Were uplift pressures at the embankment landside toe checked? ☐ Yes ☒ No

g. Were seepage exit gradients checked for piping potential? ☐ Yes ☒ No

h. The duration of the base flood hydrograph against the embankment is 48 hours.

Attach engineering analysis to support construction plans.

E. LEVEE/FLOODWALL (CONTINUED)

6. Floodwall And Foundation Stability

a. Describe analysis submittal based on Code (check one):

☐ UBC (1988) or ☒ Other (specify): IBC 2003

b. Stability analysis submitted provides for:

☒ Overturning ☒ Sliding If not, explain:

c. Loading included in the analyses were:

☐ Lateral earth @ P_A = psf; P_p = psf

☐ Surcharge-Slope @ , ☐ surface psf

☒ Wind @ P_w = 50 psf

☐ Seepage (Uplift); ☐ Earthquake @ P_{eq} = %g

☒ 1%-annual-chance significant wave height: 7.0 ft.

☐ 1%-annual-chance significant wave period: sec.

d. Summary of Stability Analysis Results: Factors of Safety.

Itemize for each range in site layout dimension and loading condition limitation for each respective reach.

Loading Condition	Criteria (Min)		Sta	To	Sta	To
	Overturn	Sliding	Overturn	Sliding	Overturn	Sliding
Dead & Wind	1.5	1.5	7.0	3.6	NA	NA
Dead & Soil	1.5	1.5	NA	NA	NA	NA
Dead, Soil, Flood, & Impact	1.5	1.5	3.7	1.5	NA	NA
Dead, Soil, & Seismic	1.3	1.3	NA	NA	NA	NA

(Ref: FEMA 114 Sept 1986; USACE EM 1110-2-2502)

(Note: Extend table on an added sheet as needed and reference)

e. Foundation bearing strength for each soil type:

Bearing Pressure	Sustained Load (psf)	Short Term Load (psf)
Computed design maximum	1291	826
Maximum allowable	1875	1875

f. Foundation scour protection ☐ is, ☒ is not provided. If provided, attach explanation and supporting documentation:

Attach engineering analysis to support construction plans.

E. LEVEE/FLOODWALL (CONTINUED)

7. Settlement

a. Has anticipated potential settlement been determined and incorporated into the specified construction elevations to maintain the established freeboard margin? ☒ Yes ☐ No

b. The computed range of settlement is 0.0 ft. to 0.1 ft.

c. Settlement of the levee crest is determined to be primarily from :

☒ Foundation consolidation
☐ Embankment compression
☐ Other (Describe):

d. Differential settlement of floodwalls ☐ has ☒ has not been accommodated in the structural design and construction.

Attach engineering analysis to support construction plans.

8. Interior Drainage

a. Specify size of each interior watershed:

Draining to pressure conduit: 12.0 acres
Draining to ponding area: 12.0 acres

b. Relationships Established

Ponding elevation vs. storage	☒ Yes	☐ No
Ponding elevation vs. gravity flow	☒ Yes	☐ No
Differential head vs. gravity flow	☒ Yes	☐ No

c. The river flow duration curve is enclosed: ☐ Yes ☒ No

d. Specify the discharge capacity of the head pressure conduit: 57 cfs (100-yr) cfs

e. Which flooding conditions were analyzed?

• Gravity flow (Interior Watershed)	☒ Yes	☐ No
• Common storm (River Watershed)	☐ Yes	☒ No
• Historical ponding probability	☒ Yes	☐ No
• Coastal wave overtopping	☐ Yes	☒ No

If No for any of the above, attach explanation.

f. Interior drainage has been analyzed based on joint probability of interior and exterior flooding and the capacities of pumping and outlet facilities to provide the established level of flood protection. ☒ Yes ☐ No

If No, attach explanation.

g. The rate of seepage through the levee system for the base flood is cfs

h. The length of levee system used to drive this seepage rate in item g: ft.

E. LEVEE/FLOODWALL (CONTINUED)

8. Interior Drainage (continued)

i. Will pumping plants be used for interior drainage? ☒ Yes ☐ No

If Yes, include the number of pumping plants: 1
For each pumping plant, list:

	Plant #1	Plant #2
The number of pumps	2	
The ponding storage capacity	180,000 cu ft	
The maximum pumping rate	3,500 gpm	
The maximum pumping head	21 ft	
The pumping starting elevation	2.00	
The pumping stopping elevation	-2.00	
Is the discharge facility protected?	Yes	
Is there a flood warning plan?	No	
How much time is available between warning and flooding?	No	

Will the operation be automatic? ☒ Yes ☐ No

If the pumps are electric, are there backup power sources? ☒ Yes ☐ No

(Reference: USACE EM-1110-2-3101, 3102, 3103, 3104, and 3105)

Include a copy of supporting documentation of data and analysis. Provide a map showing the flooded area and maximum ponding elevations for all interior watersheds that result in flooding.

9. Other Design Criteria

a. The following items have been addressed as stated:

Liquefaction ☐ is ☐ is not a problem
Hydrocompaction ☐ is ☐ is not a problem
Heave differential movement due to soils of high shrink/swell ☐ is ☐ is not a problem

b. For each of these problems, state the basic facts and corrective action taken:

Attach supporting documentation

c. If the levee/floodwall is new or enlarged, will the structure adversely impact flood levels and/or flow velocities floodside of the structure?
☐ Yes ☒ No

Attach supporting documentation

d. Sediment Transport Considerations:

Was sediment transport considered? ☐ Yes ☒ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

E. LEVEE/FLOODWALL (CONTINUED)

10. Operational Plan And Criteria

a. Are the planned/installed works in full compliance with Part 65.10 of the NFIP Regulations? ☒ Yes ☐ No

b. Does the operation plan incorporate all the provisions for closure devices as required in Paragraph 65.10(c)(1) of the NFIP regulations?
☒ Yes ☐ No

c. Does the operation plan incorporate all the provisions for interior drainage as required in Paragraph 65.10(c)(2) of the NFIP regulations?
☒ Yes ☐ No

If the answer is No to any of the above, please attach supporting documentation.

11. Maintenance Plan

a. Are the planned/installed works in full compliance with Part 65.10 of the NFIP Regulations? ☒ Yes ☐ No
If No, please attach supporting documentation.

12. Operations and Maintenance Plan

Please attach a copy of the formal Operations and Maintenance Plan for the levee/floodwall.

F. SEDIMENT TRANSPORT

Flooding Source:

Name of Structure:

If there is any indication from historical records that sediment transport (including scour and deposition) can affect the Base Flood Elevation (BFE); and/or based on the stream morphology, vegetative cover, development of the watershed and bank conditions, there is a potential for debris and sediment transport (including scour and deposition) to affect the BFEs, then provide the following information along with the supporting documentation:

Sediment load associated with the base flood discharge: Volume acre-feet

Debris load associated with the base flood discharge: Volume acre-feet

Sediment transport rate (percent concentration by volume)

Method used to estimate sediment transport:

Most sediment transport formulas are intended for a range of hydraulic conditions and sediment sizes; attach a detailed explanation for using the selected method.

Method used to estimate scour and/or deposition:

Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport:
Please note that bulked flows are used to evaluate the performance of a structure during the base flood; however, FEMA does not map BFEs based on bulked flows.

If a sediment analysis has not been performed, an explanation as to why sediment transport (including scour and deposition) will not affect the BFEs or structures must be provided.

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

COASTAL STRUCTURES FORM

O.M.B No. 1660-0016
Expires:12/31/2010

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 1 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, U.S. Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: Hurricane Storm Surge
Note: Fill out one form for each flooding source studied

A. BACKGROUND

1. Name of structure (if applicable): Forked Island E. Broussard Hurricane Protection

2. Structure location: Forked Island E. Broussard School

3. Type of structure (check one):

☒ Levee/Floodwall* ☐ Anchored Bulkhead ☐ Revetment ☐ Gravity Seawall

☐ Breakwater ☐ Pile supported seawall ☐ Other:

***Note:** If the coastal structure is a levee/floodwall, complete Section E of Form 3 (Riverine Structures Form). The remainder of this form does not need to be completed.

4. Material structure is composed of (check all that apply):

☐ Stone ☒ Earthen fill ☒ Concrete ☐ Steel

☐ Sand ☐ Other

5. The structure is (check one):

☒ New or proposed ☐ Existing ☐ Modification of existing structure

☐ Replacement structure of the same size and design as what was previously at the site

Describe in detail the existing structure and/or modifications being made to the structure and the purpose of the modifications:

If existing, please include date of construction:

6. Copies of certified "as-built" plans ☐ are ☒ are not attached. Attach all design analyses that apply.

If "as-built" plans are not available for submittal, please explain why and attach a sketch with general structure dimensions including: face slope, height, length, depth, and toe elevation referenced to the appropriate datum (e.g. NGVD 1929, NAVD 1988, etc.).

7. Has a Federal agency with responsibility for the design of coastal flood protection structures designed or certified that the structures have been adequately designed and constructed to provide protection against the 1%-annual-chance event?

☐ Yes ☒ No

If Yes, specify the name of the agency and dates of project completion and certification.

If Yes, then no other sections of this form need to be completed.

B. DESIGN CRITERIA

1. Design Parameters

   a. Were physical parameters representing the 1%-annual-chance event or greater used to design the coastal flood protection structure?

   ☒ Yes ☐ No

   b. The number of design water levels that were evaluated 1 (number) range from the mean low water elevation of NA feet to the 1%-annual-chance stillwater surge elevation of 13 feet. The critical water level is 13 feet. The datum that these elevations are referenced to is NAVD 1988 (e.g.: NGVD 1929, NAVD 1988, etc.).

   Attach an explanation specifying which water levels and associated wave heights and periods were analyzed.

   c. Were breaking wave forces used to design the structure?

   ☐ Yes ☒ No If No, attach an explanation why they were not used for design.

2. Settlement

   a. What is the expected settlement rate at the site of the structure? Less than 1 inch

   Please attach a settlement analysis.

3. Freeboard

   a. Does the structure have 1 foot of freeboard above the height of the 1%-annual-chance wave-height elevation or maximum wave runup (whichever is greater)?

   ☐ Yes ☒ No

   b. Does the structure have freeboard of at least 2 feet above the 1% annual chance stillwater surge elevation?

   ☐ Yes ☒ No

4. Toe Protection

   Specify the type of toe protection: None

   If no toe protection is provided, provide analysis of scour potential and attach an evaluation of structural stability performed with potential scour at the toe.

5. Backfill Protection

   Will the structure be overtopped during the 1%-annual-chance event? ☐ Yes ☒ No

   If the structure will be overtopped, attach an explanation of what measures are used to prevent the loss of backfill from rundown over the structure, drainage landward, under or laterally around the ends of the structure, or through seams and drainage openings in the structure.

6. Structural Stability - Minimum Water Level

   a. For coastal revetments, was a geotechnical analysis of potential failure in the landward direction by rotational gravity slip performed for maximum loads associated with minimum seaward water level, no wave action, saturated soil conditions behind the structure, and maximum toe scour?

   ☒ Yes ☐ No

   b. For gravity and pile-supported seawalls, were engineering analyses of landward sliding, landward overturning, and of foundation adequacy using maximum pressures developed in the sliding and overturning calculations performed?

   ☒ Yes ☐ No

   c. For anchored bulkheads, were engineering analyses performed for shear failure, moment failure, and adequacy of tiebacks and deadmen to resist loading under low-water conditions?

   ☐ Yes ☐ No

B. DESIGN CRITERIA (CONTINUED)

7. Structural Stability - Critical Water Level (Note: All structures must be designed to resist the maximum loads associated with the critical water level to be credited as providing protection from the 1% annual chance event.)

   a. For coastal revetments were geotechnical analyses performed investigating the potential failure in the seaward direction by rotational gravity slip or foundation failure due to inadequate bearing strength?

      ☒ Yes ☐ No

   b. For revetments, were engineering analyses of rock, riprap, or armor blocks' stability under wave action or uplift forces on the rock, riprap, or armor blocks performed?

      ☐ Yes ☐ No

   c. Are the rocks graded?

      ☐ Yes ☐ No

   d. Are soil or geotextile filters being used in the design?

      ☒ Yes ☐ No

   e. For gravity and pile supported seawalls, were engineering analyses of landward sliding, landward overturning, and foundation adequacy performed?

      ☒ Yes ☐ No

   f. For anchored bulkheads, were engineering analyses of shear and moment failure performed using "shock" pressures?

      ☐ Yes ☐ No

      For all analyses marked "No" above for the appropriate type of structure, please attach an explanation why the analyses were not performed.

8. Material Adequacy

   The design life of the structure given the existing conditions at the structure site is NA years.

9. Ice and Impact Alignment

   a. Will the structure be subjected to ice forces?

      ☐ Yes ☒ No

      If Yes, attach impact analysis and design details for such forces.

   b. Will the structure be subjected to impact forces from boats, ships, or large debris?

      ☐ Yes ☒ No

      If Yes, attach impact analysis.

10. Structure Plan Alignment

    The structure is (check one):

    ☒ Isolated ☐ Part of a continuous structure with redundant return walls at frequent intervals.

    Please provide a map showing the location of the structure and any natural land features that shelter the structure from wave actions.

C. ADVERSE IMPACT EVALUATION

If the structure is new, proposed, or modified, will the structure impact flooding and erosion for areas adjacent to the structure?

☐ Yes ☒ No

If Yes, attach an explanation.

D. COMMUNITY AND/OR STATE REVIEW

Has the design, maintenance, and impact of the structure been reviewed and approved by the community, and any Federal, State, or local agencies having jurisdiction over flood control and coastal construction activities in the area the structure impacts?

☐ Yes ☒ No

If Yes, attach a list of agencies who have reviewed and approved the project.

If No, attach an explanation why review and approval by the appropriate community or agency has not been obtained.

E. CERTIFICATION

As a Professional Engineer, I certify that the above structures will withstand all hydraulic and wave forces associated with the 1% annual chance flood without significant structural degradation. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: Eugene M. Sellers, PE, PLS

License No.: PE. 6457 Exp. Date: 9/30/2009

Company Name: Sellers & Associates, Inc.

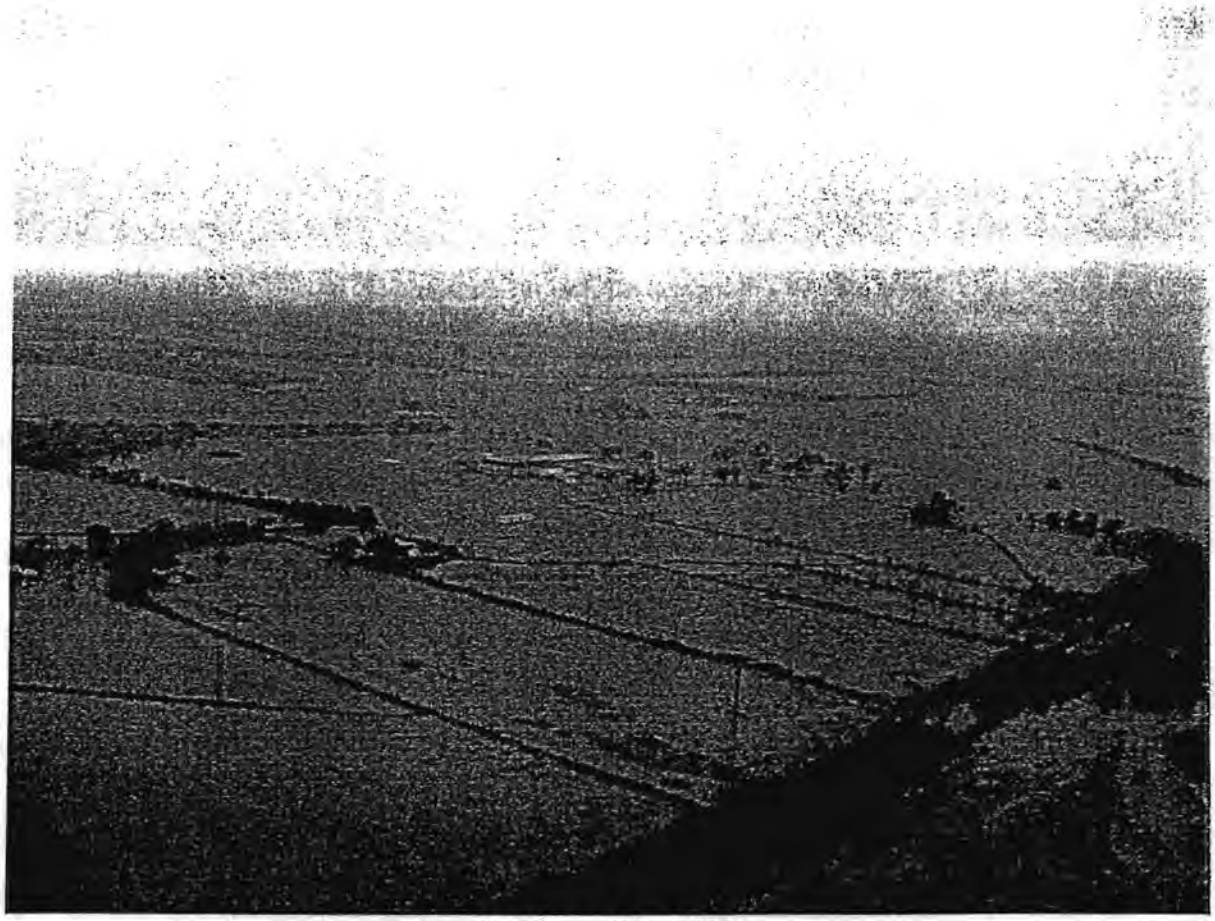
Telephone No.: (337) 232-0777 Fax. No.: (337) 232-0851

Signature:  Date: April 29, 2009

Seal (optional)

MT-2 Form 1 – Overview & Concurrence (Continued)

Section B - Overview



Hurricane Rita 2005
Forked Island / E. Broussard School Campus
Aerial Photo

Project Description:
The project consists of building a hurricane protection wall/levee surrounding the school to reduce the risk of future losses due to coastal flooding.

Section C – Review Fee
Review fee exemption requested for Hazard Mitigation Grant Program No. 1603-113-0002.

MT-2 Form 3 – Riverine Structures (Continued)

Section E.2.a - Freeboard
The existing school FFE is at elevation 6.4' and existing ground at elevation 5.4'. The recorded high water mark elevation during hurricane Rita (Event Date: September 24, 2005) is 8.4'.

The FEMA flood zone and BFE is Zone A8 (EL 9) according to the 2202210400D FIRM map dated May 15, 1985. The Advisory BFE is Zone AE (EL 10) according to the LA-Z53 map dated March 16, 2006. The preliminary FEMA flood zone and BFE is Zone VE (EL 13) according to the preliminary 22113C0475F FIRM map.

The protection elevation of 14.0' provides 5.0' freeboard above the 1985 BFE, 4.0' freeboard above the 2006 ABFE, and 1.0' freeboard above the recent preliminary 1%-annual –chance stillwater surge elevation.

Section E.8.e – Interior Drainage
The flooding conditions analyzed where the 10, 25 and 100-year events within the interior watershed with and without the pumps in operation.

Section E.9.c – Other Design Criteria
See Engineering Design Documents (February 2009) Section 3. Potential Impact Evaluation from PBS&J dated February 19, 2009.

Section E.10, 11 & 12 – Operational and Maintenance Plan
Upon completion of the project and receipt of all mechanical data and individual plans and requirements, a complete operational and maintenance plan will be assimilated.

MT-2 Form 5 – Coastal Structures (Continued)

Section E.2.a - Freeboard
The existing school FFE is at elevation 6.4' and existing ground at elevation 5.4'. The recorded high water mark elevation during hurricane Rita (Event Date: September 24, 2005) is 8.4'.

The FEMA flood zone and BFE is Zone A8 (EL 9) according to the 2202210400D FIRM map dated May 15, 1985. The Advisory BFE is Zone AE (EL 10) according to the LA-Z53 map dated March 16, 2006. The preliminary FEMA flood zone and BFE is Zone VE (EL 13) according to the preliminary 22113C0475F FIRM map.

The protection elevation of 14.0' provides 5.0' freeboard above the 1985 BFE, 4.0' freeboard above the 2006 ABFE, and 1.0' freeboard above the recent preliminary 1%-annual –chance stillwater surge elevation.

Section D – Community and/or State Review
Mr. Dennis A. Quan, BCA Specialist has made a review of the project (HMGP Project # 1603-113-002) and has requested additional information including CLOMR.

STATE OF LOUISIANA
E. M. SELLERS
REG No. 6457
REGISTERED
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING

Sincerely,

Eugene M. Sellers, PE, PLS
Sellers & Associates, Inc.

January 12, 2011

Mr. Eugene Sellers, P.E.
Sellers & Associates, Inc.
148-B Easy Street
Lafayette, LA 70506

Re: Limited Coastal Engineering Analysis for Development of Levee Certification Criteria

Dear Mr. Sellers,

Taylor Engineering has completed a limited engineering analysis to evaluate the height of proposed flood protection embankment (or berm) surrounding the Forked Island E. Broussard School Campus in southern Vermilion Parish.

Per our scope of work, this report documents our data collection and review, 100-year wave height calculations, and wave runup calculations. It also summarizes study results and provides recommendations. Notably, these results only provide information on FEMA's levee crest elevation requirements for the berm surrounding the school. Given the limited scope of work, the results included in this report are not suitable for detailed levee or berm design.

Background

We understand that the objective of the study does not include levee certification to withstand a 1% annual chance flood. However, for your reference, the *National Flood Insurance Program (NFIP) Regulations* provides a brief summary of FEMA's certification requirements for coastal levees. According NFIP regulations (Section 44CFR65.10), FEMA accredits a coastal levee as providing protection from the 1% annual chance flood when the levee crest elevation meets the following criteria:

- "The freeboard must be established at one foot above the height of the one percent wave or the maximum wave runup (whichever is greater) associated with the 100-year stillwater surge elevation at the site."
- "...under no circumstances, however, will a freeboard of less than two feet above the 100-year stillwater surge elevation be accepted."

FEMA also considers other criteria in the accreditation of coastal levees including, but not limited to, design, construction, maintenance, and operation. Note that Taylor Engineering only performed wave runup calculations to evaluate FEMA's levee crest elevation requirements.

Data Collection and Review

Taylor Engineering staff gathered readily available data used in the 2008 Preliminary Flood Insurance Study (FIS), including coastal model (WHAFIS) results, LiDAR terrain, and vegetation land cover. We applied USACE's storm surge data developed for the 2011 FIS to determine stillwater elevations and wave set up. We approximated the berm's location surrounding the school based on aerial photography, LiDAR terrain, and project design drawings provided by Sellers & Associates. Figure 1 (see Attachment) shows the typical berm cross section, which is the basis for all calculations in this study.

Wave Height Analyses

Taylor Engineering staff performed two wave height simulations with WHAFIS — a one-dimensional wave model — to determine controlling wave heights and peak wave periods at the toe of the embankment. The first WHAFIS transect (22A), oriented south-to-north, simulated waves propagating from the coastline. The second transect (22B), oriented east-to-west, simulated locally generated waves originating through areas of open fetch east of the project site. As shown in Figure 2 (see Attachment), transect 22A runs between FIS transects 22 and 23. For transect 22A, we adopted the starting wave conditions from transect 22 in the 2008 Preliminary Flood Insurance Study (FIS). Transect 22B originates in an area with an approximate fetch of two miles. We applied a 100-year wind velocity of 80 mph.

Given WHAFIS outputs values of H_c (controlling wave height) and T_p (peak wave period) along the two transects, we calculated H_s (significant wave height), H_{mo} (first moment), and $T_{m-1.0}$ (spectral wave period). Figure 3 (see Attachment) shows the source stations that provided the WHAFIS values. Table 1 below lists the parameters used in this study.

We also considered but deemed unnecessary any wave analyses on the north and west sides of the structure based on the natural direction of hurricane winds, which are stronger from the south and east. We assumed that hurricane waves propagating from the north and west would have a lesser impact than waves propagating from the south and east.

Table 1 Wave Runup Calculation Input Parameters

Variable	Source	Value
Transect 22A		
H_c (controlling wave height)	WHAFIS Station 117355	2.13 ft
H_s (significant wave height)	$H_s = H_c/1.6$ (WHAFIS Manual)	1.33 ft
H_{mo}	$H_{mo} = H_s/[(R')_{av}]$ (WHAFIS Manual)	1.07 ft
T_p (peak wave period)	WHAFIS Station 117355	5.5 s
$T_{m-1.0}$ (spectral wave period)	$T_{mo-1.0} = T_p/1.1$ (TAW Report)	4.5 s
Wave Set up	ADCIRC	0.5 ft
SWEL (Stillwater Elevation)	ADCIRC	9.2 ft NAVD
Berm Toe Ground elevation	LiDAR	6.3 ft NAVD
Berm Slope	Design drawings	0.333
Berm Crest Elevation	Design drawings	14.0 ft NAVD
Transect 22B		
H_c (controlling wave height)	WHAFIS Station 5943	2.17 ft
H_s (significant wave height)	$H_s = H_c/1.6$ (WHAFIS Manual)	1.36 ft
H_{mo}	$H_{mo} = H_s/[(R')_{av}]$ (WHAFIS Manual)	1.22 ft
T_p (peak wave period)	WHAFIS Station 5943	3.97 s
$T_{m-1.0}$ (spectral wave period)	$T_{mo-1.0} = T_p/1.1$ (TAW Report)	3.61 s
Transect 22B		

Table 1 Wave Runup Calculation Input Parameters

Variable	Source	Value
Wave Set up	ADCIRC (USACE)	0.5 ft
SWEL (Stillwater Elevation)	ADCIRC (USACE)	9.25 ft NAVD
Berm Toe Ground elevation	LiDAR	5.65 ft NAVD
Berm Slope	Design drawings	0.333
Berm Crest Elevation	Design drawings	14.0 ft NAVD

Wave Runup Analyses

Taylor Engineering applied two FEMA-approved methodologies — the TAW methodology, and the USACE ACES computer program — to calculate wave runup on the southern and eastern sides of the school campus proposed berms. FEMA's Atlantic Ocean and Gulf of Mexico Coastal Guidelines define wave runup as the uprush of water from wave action on a shore barrier intercepting the stillwater level. Using the wave characteristics obtained through WHAFIS and the berm design drawings provided by Seller & Associates, we calculated the 2% wave runup, as required by FEMA. Tables 2 and 3 show calculated wave heights and period from WHAFIS along with the TAW and ACES wave runup results. All wave runup calculations assume structures (berms) have a smooth slope.

Table 2 TAW Runup Calculations

Transect	Berm Slope	ξ_0	s_0	H_{m0} (ft)	$T_{m-1,0}$ (s)	γ_β	γ_f	SWEL (ft NAVD)	Removed Wave Setup (ft NAVD)	Runup $z_{2\%}$ (ft)	Runup $z_{2\%}$ (ft NAVD)
22A	0.33	3.65	0.01	1.07	5.00	1	1	9.20	8.70	3.71	12.41
22B	0.33	2.47	0.02	1.22	3.61	1	1	9.25	8.75	3.99	12.74

Table 3 ACES Runup Calculations

Transect	H_s (ft)	T_p (s)	Berm Height, h_s (ft)	Berm Toe Elevation (ft NAVD)	d_s (ft)	COTAN (berm) (θ)	COTAN (ground) (Φ)	Runup (ft)	Runup Elev (ft NAVD)
22A	1.33	5.50	7.70	6.30	2.90	3	145.8	3.89	12.59
22B	1.36	3.97	8.35	5.65	3.60	3	427.5	3.51	12.26

Notes:
H_s (significant wave height) used for H_i (incident wave height)
T_p (peak wave period) used for T (wave period)

Wave Runup Velocities

Limited literature exists to determine wave runup velocities on embankments. Taylor Engineering staff applied *Estimation of Overtopping Flow Velocities on Earthen Levees Due to Irregular Waves* (USACE, 2008) to obtain a reasonable estimate of runup velocities.

Table 4 shows wave runup velocities for the project site. Clearly, a velocity of ~21 ft/s appears too high. This value is comparable with the celerity of a progressive wave. However, wave runup on embankments should also consider slope and friction. We recommend using typical erosion and scour prevention techniques, which might include riprap and rock blankets, concrete mats, and

vegetation with strong root systems. You may also consider extending the embankment protection over the crest of the berm to provide erosion protection from waves larger than the 100-year event.

Table 4 Wave Runup Velocities

Methodology / Transect	g (ft/s^2)	Hs (ft)	$C_{Au2\%}$	$Ru_{2\%}$ (ft NAVD)	R_c (ft)	$u_{a2\%}$ (ft/s)
TAW / 22A	32.2	1.33	1.37	12.41	4.8	21.4
TAW / 22B	32.2	1.35	1.37	12.74	4.75	22.0
ACES / 22A	32.2	1.33	1.37	12.59	4.8	21.7
ACES / 22B	32.2	1.35	1.37	12.26	4.75	21.3

Conclusions and Recommendations

This study incorporated a higher level of detail than the flood hazard zones included in the new (2011) FEMA FIS. This increased level of detail helped incorporate local ground elevations excluded from the 2011 FIS due to scale issues.

Wave height elevations (and resulting BFEs) near the berm are lower than those values included in the 2011 FIS. We expected this conclusion based on the higher ground elevations near the school campus.

Results show that the top of wave runup reaches a maximum of 12.7 feet NAVD. According to the ~~Sellers & Associates~~ design drawings, this runup value results in a freeboard of about 1.3 feet.

This analysis indicates that the elevation of the berm provides reasonable protection from 100-year wave and runup conditions. As mentioned above, the results of this study are not suitable for comprehensive berm design. A more detailed study to determine design parameters should also incorporate other factors such as levels of protection beyond the 100-year wave and runup conditions.

If you have any questions about the contents of this report, please contact me.

Sincerely,

Guillermo Simón, P.E., CFM
Director, Hydrology and Hydraulics

:lgr

Attachment

References

Atlantic Ocean and Gulf of Mexico Coastal Guidelines Update, February 2007, FEMA Region VI, FEMA Headquarters

Automated Coastal Engineering System (ACES) Technical Reference, U.S. Army Corps of Engineers.

National Flood Insurance Program regulations (Section 44CFR65.10)

Technical Report Wave Run-up and Wave Overtopping at Dikes. Technical Advisory Committee on Flood Defence (TAW). May 2002.

Wave Height Analysis for Flood Insurance Studies: Technical Documentation for WHAFIS Program Version 3.0. Federal Emergency Management Agency, Federal Insurance Administration. September 1988.

Estimation of Overtopping Flow Velocities on Earthen Levees Due to Irregular Waves, US Army Corps of Engineers (2008). Report No. ERDC/CHL CHETN-III-77.

Flood Insurance Study, Vermilion Parish, Louisiana (Preliminary). Federal Emergency Management Agency (2008).

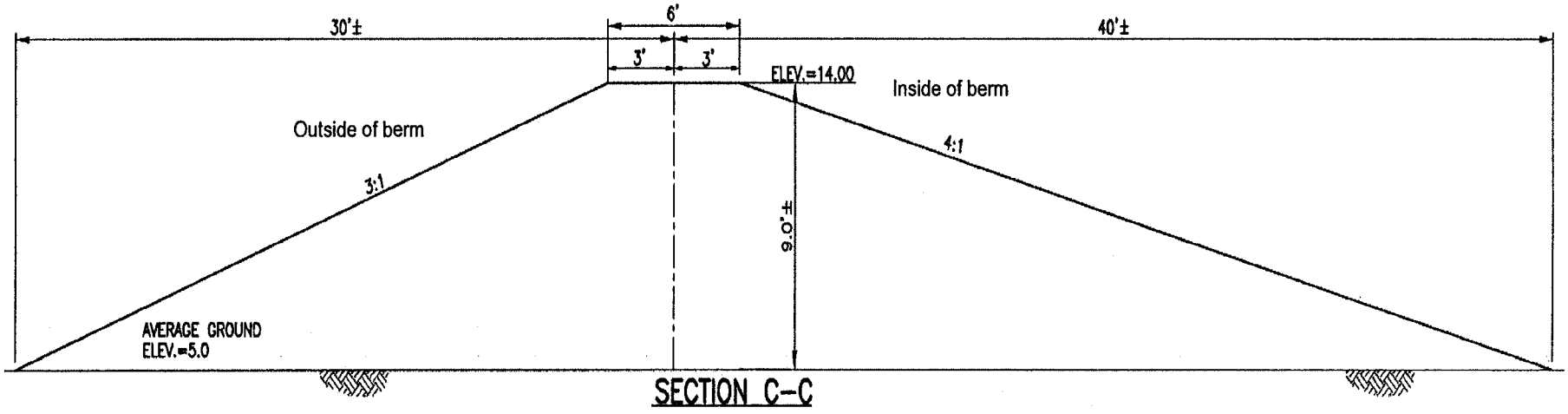


Figure 1 Berm Design Cross Section (source: Sellers & Associates, Inc.)

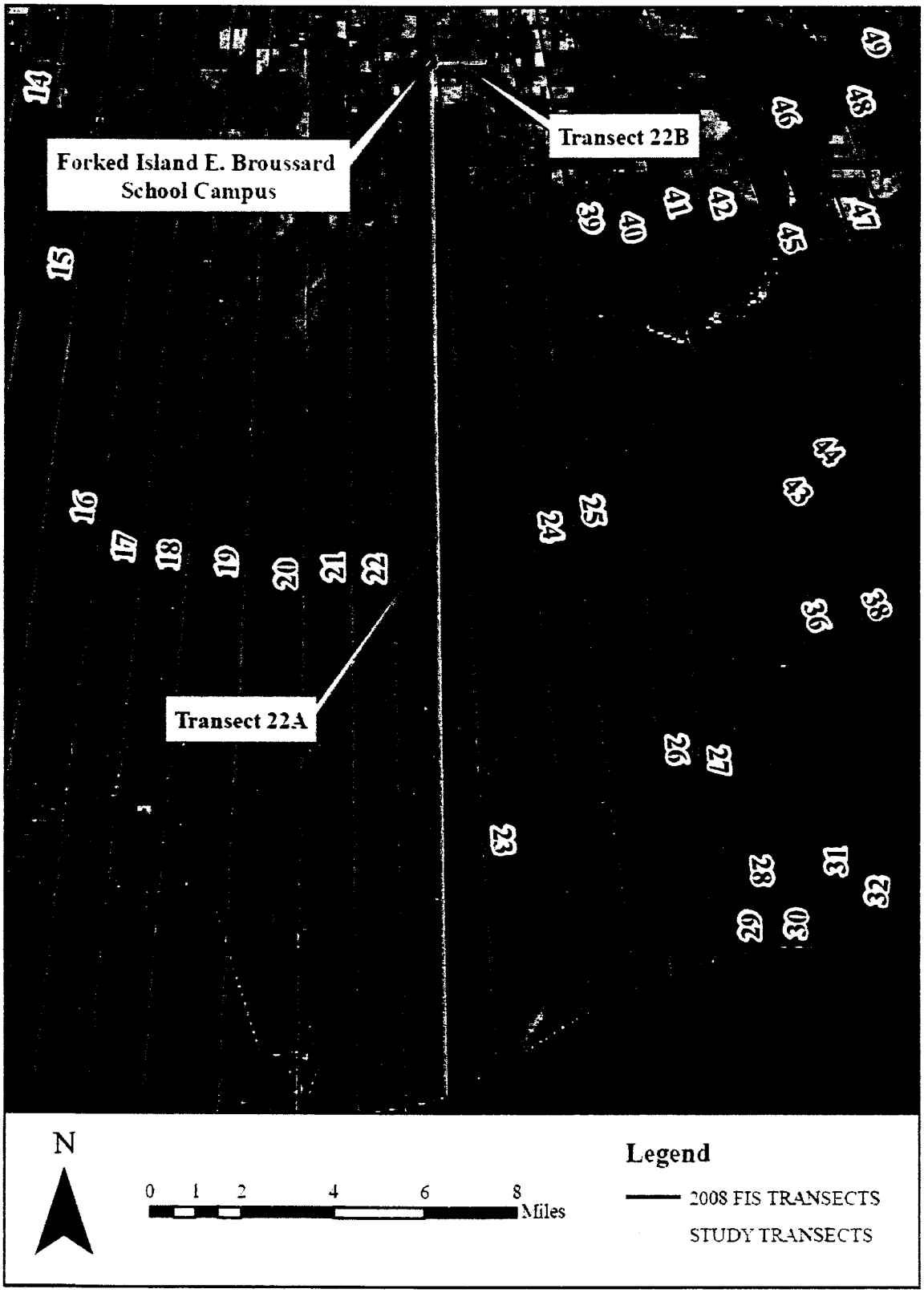


Figure 2 Transect Layout

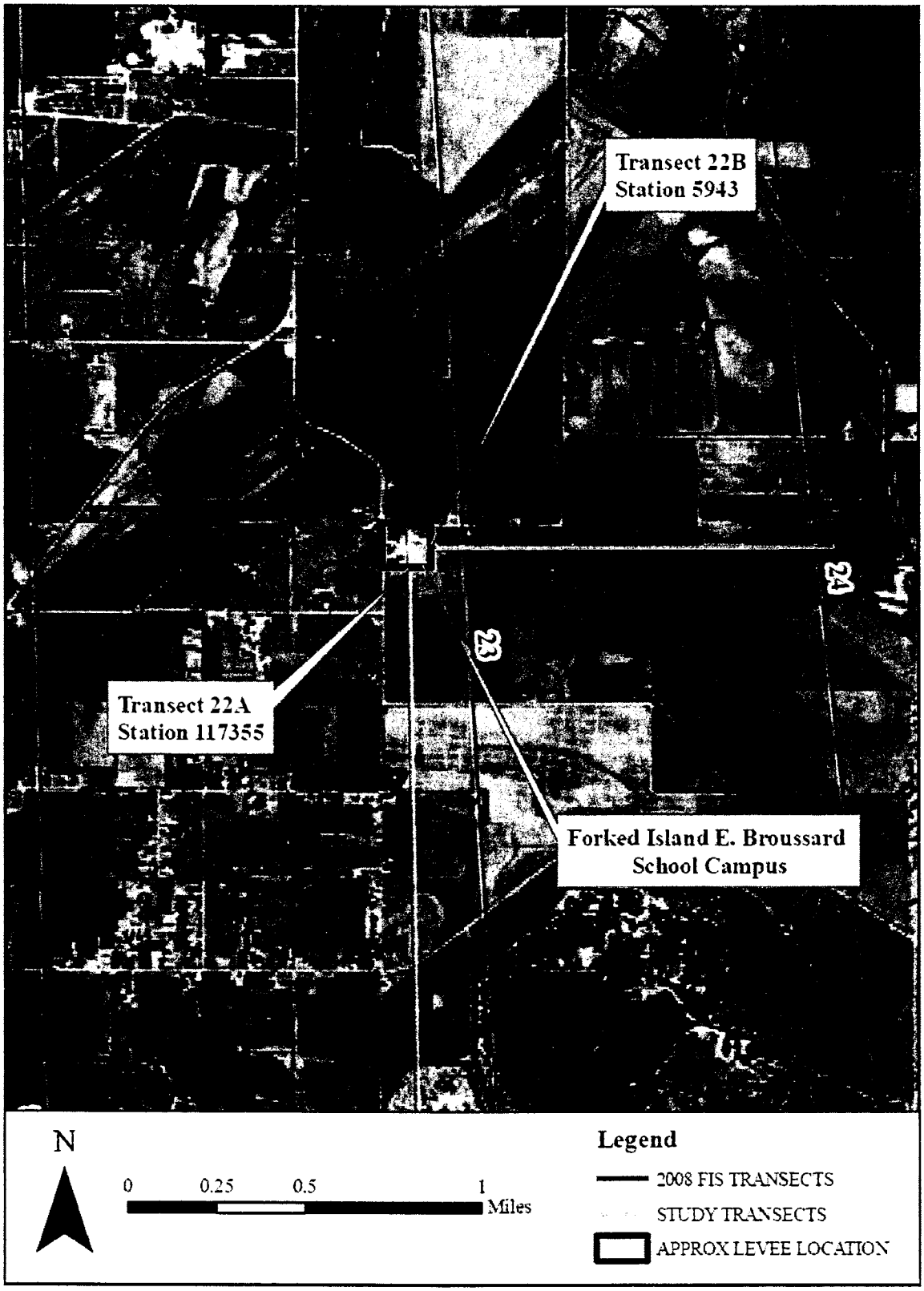


Figure 3 Transect Stationing at the Toe of Berm

PBS&J®

An employee-owned company

February 19, 2009

Eugene M. Seller, PE
Sellers & Associates, Inc.
148-B Easy Street
Lafayette, LA 70506-3095

Subject: **Potential Impact on Floodplain Elevations from the Proposed Levee at Forked Island E. Broussard Elementary School Vermilion Parish, LA**

Dear Mr. Sellers:

Attached is PBS&J's evaluation of the potential impacts of construction of the proposed ring levee at Forked Island E. Broussard (FI-EB) Elementary School on the surrounding floodplain elevation. We have evaluated the project on both qualitative and semi-quantitative bases. Based on our evaluation, we conclude that construction of the hazard mitigation measure will not have a significant impact on the surrounding floodplain elevation. The details of our evaluation are in the attached document.

Should you have any questions or require additional information, please feel free to contact me at 504-841-2226, extension 225, or on my mobile number at 504-715-8563.

Sincerely,

Donald B. Boyle, PE
Project Director

STATE OF LOUISIANA
E.M. SELLERS
Reg. No. 6457
REGISTERED
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING

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Potential Impact on Floodplain Elevations from the Proposed Levee at Forked Island E. Broussard Elementary School Vermilion Parish, LA

PBS&J has been retained by Sellers & Associates, Inc. of Lafayette, LA to evaluate the potential impacts, on the surrounding base flood elevation, of a proposed ring levee to be constructed at Forked Island-East Broussard (FI-EB) Elementary School in Vermilion Parish, LA. This evaluation was requested in support of a hazard mitigation project at the school being conducted in accordance with Federal Emergency Management Agency (FEMA) guidelines.

Scope and Objective

In order to approve the proposed hazard mitigation measure, FEMA has required that the Vermilion Parish School Board demonstrate there will be no significant impact of levee construction on the surrounding 100-year base flood elevation. Such an assessment is required in areas where reduced storage, impediments to drainage, or other hydraulic affects could adversely impact flood elevations in the surrounding areas. Based on PBS&J experience elsewhere, FEMA typically requires the impacts of construction in a floodplain to be less than a 0.5 foot increase for the effective base flood elevation. However, FEMA and local floodplain administrator may impose tighter restrictions in some locations. In preparation of this assessment, PBS&J has not discussed site-specific restrictions for Vermilion Parish or for the FI-EB School site. Therefore, PBS&J has assumed that the 0.5-foot maximum increase in base flood elevation will be applied here.

The scope of the following assessment is to provide a qualitative and semi-quantitative analysis of the potential impacts of the ring levee on the surrounding flood plain. This analysis relies on a qualitative evaluation of the forces that cause flooding during a storm surge in coastal environments, and also utilizes basic quantitative calculations of flood volume and storage in the vicinity of the site. This analysis does not contain a rigorous numerical analysis of the potential effects of storm-surge circulation or wave dynamics in the vicinity of the school. However, given the physical conditions at the site, such numerical analysis may not be required to assess whether there would be significant adverse affect on the surrounding base flood elevation. In short, the objective is to determine whether the potential impacts are sufficient enough to warrant more rigorous quantitative numerical analysis.

This evaluation was prepared by Harley S. Winer, PhD, PE. Dr. Winer is a professional hydraulic and coastal engineer with 18 years experience working on coastal issues in Louisiana. The evaluation was reviewed by Yu-Chun Su, PhD, PE, CFM. Dr. Su is a professional engineer and a Certified Floodplain Manager. Both Dr. Winer and Dr. Su are licensed professional engineers in the State of Louisiana.

Site Description and Background

The FI-EB Elementary School in Vermilion Parish, Louisiana is located on Columbus Road approximately three miles northeast of Forked Island, La. The school is about 20 miles inland from the Gulf of Mexico shoreline. The area is rural and sparsely populated. The nearest neighboring buildings are several hundred feet away. The land surrounding the school is predominantly agricultural. The terrain is relatively flat. The school is located entirely within the coastal 100-year floodplain.

The FI-EB Elementary School was flooded by storm surges caused by Hurricane Rita during the days following landfall of the hurricane on September 24, 2005. Several of the buildings that comprise the school were flooded by up to 4 feet of water, and remained flooded for a period of several days. The flooding caused extensive damage to the school, and caused long-term disruption in school service to residents in the area.

Proposed Hazard Mitigation Measure

An earthen ring levee is proposed as a hazard mitigation measure to surround the school campus and thus reduce the risk of storm surge inundation at the school. The area to be enclosed by the levee is approximately 12 acres. The approximate dimensions of the rectangular area to be protected are 800 by 600 feet.

Qualitative Assessment of Riverine Versus Storm Surge Flooding

The requirement to evaluate the effects of construction in the floodplain on surrounding flood elevations is very relevant for floodplains located along rivers and streams. With a riverine flood event, there is a given quantity of water (i.e. the discharge resulting from the volume of rainfall runoff) that must be contained within a finite area of land, or storage area. The depth of flooding is a function of the storage area and the rates of inflow and outflow that enter and leave the storage area. If the finite storage area is reduced through the construction of a new facility, or by raising a portion of the floodplain, then the height of flood level in the decreased storage area will be increased. Imagine pouring a given quantity of water from a 10-inch diameter pot into an 8-inch diameter pot (which has a smaller storage area). The height of water in the smaller pot will be higher than in the larger pot. Similarly, a significant decrease in the floodplain area caused by construction activity can result in higher flood elevations for a given riverine flood event.

However, there is a fundamental difference between flooding resulting from an extreme riverine event and coastal flooding resulting from a storm surge. With a coastal storm surge event, there is a virtually infinite amount of water available and the water level will rise to fill the coastal floodplain to a height that is driven by the atmospheric pressure deficit, the wind stress on the water surface, and the wave radiation stresses (which are generally proportional to the wind stress). Other factors such as the roughness and slope of the ground surface (especially when the water depth is shallow), and the duration of the event will also influence the water level. Wind stress on shallow water produces a slope of the water surface. This slope of the water surface is proportional to the strength of the wind. This slope over distance results in elevated water levels and higher waves. The height of the water is a function of the slope of the water and the distance of the slope, as well as other factors such as duration and roughness. Having minor changes in the coastal floodplain storage area or volume will not change the global slope of the water surface and thus will not change the overall height of the storm surge. Likewise the reduced pressure within the center of a storm system will produce a global water surface elevation increase that is totally independent of the local storage area.

Semi-Quantitative Analysis of Base Flood Elevation Change

Even though the mechanisms that determine flood elevations in coastal regions are fundamentally different than in riverine areas, as described above, a simplified quantitative volumetric calculation can also be used to demonstrate that the effects of constructing the ring levee will have minimal or insignificant impact on the surrounding base flood elevation. The FI-

EB Elementary School site on Columbus Road is 20 miles from the coast. In order for this area to get flooded, the width of the storm surge would be at least 10 miles wide (a very conservative estimate) so that there would be essentially a 200-square mile coastal floodplain between the coast and the school. 200 square miles is equal to 128,000 acres. The proposed new levee is to enclose a 12-acre area. Thus mathematically, construction of the ring levee reduces the storage area by less than 0.01 percent. This is based on the simplified assumption that the loss of storage is evenly distributed over the remaining area of the floodplain. In other words, for each foot of flooding reduction at the school there would be a less than 0.0001 foot increase on average over the 200-square mile floodplain. For example, using this simplified calculation, a 5-foot deep flood would result in a less than 0.0005 ft rise on average in the surrounding 200-square mile flood elevation. Again, this simplified calculation imposes a conservative assumption that the floodwaters are contained within a 200 square mile storage area.

Limitations and Exceptions

We have evaluated the effects of the proposed ring levee construction on the surrounding base flood elevation using both a qualitative and a simplified, semi-quantitative approach. As indicated above, this approach is not a rigorous numerical modeling effort that might be warranted if the potential change in flood elevation were significant. Also, this approach does not account for potential local effects in the immediate vicinity of the levee that could be caused by circulation flow dynamics and/or wave action. However, based on our understanding of surge flooding in coastal environments, any circulation or wave effects in shallow surge water 20 miles from the coast – if measurable at all – would be limited to within a few feet of the levee. This is supported by anecdotal evidence from Hurricane Rita, in which the surge that caused flooding at the FI-EB Elementary School site did not reach the school until several hours after the storm had passed, and was characterized by a relatively slow rise in water elevation. Hurricane Rita also resulted in shallow water depths at the project site that physically cannot support large waves.

Conclusions and Recommendations

Based on PBS&J's evaluation and assumptions, it is anticipated that the construction of the ring levee at FI-EB school would not result in a significant increase in the surrounding base flood elevation. It is more likely that the resulting base flood elevation change, if even measurable, would be several orders of magnitude less than 0.5 foot. If 0.5 foot is the criterion to be used for changes in the surrounding base flood elevation, and if changes in the surrounding global base flood elevation is the only criterion to be used to determine if the levee may be built, then more rigorous numerical analysis or modeling is probably not warranted.

APPENDIX D

PUBLIC NOTICE

PUBLIC NOTICE
FEMA NOTICE OF AVAILABILITY
DRAFT ENVIRONMENTAL ASSESSMENT
DRAFT FINDING OF NO SIGNIFICANT IMPACT
FORKED ISLAND/EAST BROUSSARD ELEMENTARY SCHOOL FLOOD PROTECTION PROJECT
ABBEVILLE, VERMILION PARISH, LOUISIANA

Interested parties are hereby notified that the Federal Emergency Management Agency (FEMA) has prepared a draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) in compliance with the National Environmental Policy Act (NEPA). The purpose of the EA and FONSI is to assess the effects on the human and natural environment from the construction of a concrete flood wall and earthen berm for flood protection around the Forked Island/East Broussard Elementary School on Columbus Road, Abbeville, LA, a proposed action for which FEMA is considering providing funding assistance.

The purpose of the draft EA is to analyze the potential environmental impacts associated with construction of the flood protection concrete flood wall and earthen berm. The draft EA evaluates a No Action Alternative and the Proposed Action, which is to construct the flood protection concrete flood wall and earthen berm around the Forked Island/East Broussard Elementary School building. The FONSI will be FEMA's finding that the proposed action will not have a significant effect on the human and natural environment, if no additional substantive information is discovered during the comment period.

The location of the site is 19635 Columbus Road, Abbeville, Vermilion Parish, Louisiana. The proposed action involves constructing a ring concrete flood wall and earthen berm around the Forked Island/East Broussard Elementary School building to protect it from flooding during future storm events. The Forked Island/East Broussard Elementary School was constructed in 1979. The structure was constructed on grade, and is located in the floodplain. The Forked Island/East Broussard Elementary School flooded during Hurricane Rita.

A draft EA was written to evaluate the proposed action's potential impacts on the human and natural environment. The draft EA summarizes the purpose and need, affected environment, and potential environmental consequences associated with the proposed action and alternatives.

The draft EA and draft FONSI are available for review at the Vermilion Parish Library (Kaplan Branch) – 815 North Cushing Avenue, Kaplan, Louisiana 70548, from 9:00 a.m. to 5:30 p.m., Monday, Wednesday, and Thursday; 9:00 a.m. to 8:00 p.m., Tuesday; 9:00 a.m. to 5:00 p.m., Friday; and 9:00 a.m. to 12:00 p.m., Saturday. The documents can be downloaded from FEMA's website at www.fema.gov/plan/ehp/envdocuments/ea-region6.shtm . The comment period will begin December 7, 2011 and ends December 26, 2011 (20 days) at 4 pm. Comments may be mailed to: DEPARTMENT OF HOMELAND SECURITY--FEMA E/HP—Forked Island/East Broussard Elementary School Flood Protection Project, 1 Seine Court, 4th Floor New Orleans, LA 70114. Comments may be emailed to: FEMA-NOMA@dhs.gov or faxed to: 504-762-2353. Verbal comments will be accepted or recorded at 504-762-2205. If no substantive comments are received, the draft EA and associated Finding of No Significant Impact (FONSI) will become final and this initial Public Notice will also serve as the final Public Notice for work in the floodplain in accordance with 44 CFR Part 9.12.