Environmental Assessment

Construction of Drainage Improvements for Palmisano Blvd., Plaza Drive and 20 Arpent Bridge

St. Bernard, Louisiana
HMGP 1603-087-0011
Project number 1603-0418

FEMA-1603-DR-LA

May 2015

FEMA

U.S. Department of Homeland Security
Louisiana Transitional Recovery Office
Baton Rouge, Louisiana 70802

TABLE OF CONTENTS

LIST OF TABLES

APPENDICES

LIST OF ACRONYMS

ABFE	Advisory Base Flood Elevation
ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effect
BFE	Base Flood Elevation
BMP	Best Management Practices
CAA	Clean Air Act
CBRA	Coastal Barrier Resources Act of 1982
CBRS	Coastal Barrier Resources System
CEQ	Council of Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CMP	Corrugated Metal Pipe
CUP	Coastal Use Permit
CWA	Clean Water Act
CZMA	Coastal Zone Management Act of 1972, as Amended
dB	Decibels
DFIRM	Digital Flood Insurance Rate Map
DNL	Day-Night Average Sound Level
EA	Environmental Assessment
e.g.	For Example
EHP	Environmental Historic Preservation
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FPPA	Farm Protection Policy Act
GCR	General Conformity Rule
GEC	Gulf Engineer and Consultants
GOHSEP	Governor's Office of Homeland Security and Emergency Preparedness
GNO	Greater New Orleans
H & H	Hydrologic and Hydraulic Study
HMGP	Hazard Mitigation Grant Program
HSDRRS	Hurricane Storm Damage Risk Reduction System
HP	Historic Preservation
ICRP	Interconnected Pond Routing
LAC	Louisiana Administrative Code
LADOTD	Louisiana Department of Transportation and Development
LDEQ	Louisiana Department of Environmental Quality
LA HMGP PA	Statewide Secondary Programmatic Agreement
LDNR	Louisiana Department of Natural Resources
LDWF	Louisiana Department of Wildlife and Fisheries
LPDES	Louisiana Pollutant Discharge Elimination System

MBTA	Migratory Bird Treaty Act
mph	miles per hours
NAAQS	National Ambient Air Quality Standards
NAVD 88	North American Vertical Datum 1988
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act of 1966, as Amended
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHD	National Register of Historic Districts
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OPA	Otherwise Protected Area
OSHA	Occupational Safety and Health Administration
PA	Public Assistance
PCB	Polychlorinated Biphenyls
pvc	Polymerized Vinyl Chloride
RCRA	Resource Conservation and Recovery Act
RHA	Rivers and Harbors Act
ROW	right of way
SHPO	State Historic Preservation Office/Officer
SO_2	Sulfur Dioxide
SONRIS	Strategic Online Natural Resources Information System
SPOC	Single Point of Contact
SBPG	St. Bernard Parish Government
SCS	Soil Conservation Service
TDSRS	Temporary Debris Staging and Reduction Sites
TSCA	Toxic Substances Control Act
U.S.	United States
USC	United States Code
USDA	United States Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
WSS	Web Soil Survey

1.0 INTRODUCTION

1.1 Project Authority

Hurricane Katrina, a Category 4 hurricane with a storm surge above normal high tide levels, moved across the Louisiana, Mississippi, and Alabama gulf coasts on August 29, 2005. Maximum sustained winds at landfall were estimated at 140 miles per hour (mph). President George W. Bush signed a disaster declaration (FEMA-1603-DR-LA) for the state of Louisiana on August 29, 2005, authorizing the Department of Homeland Security's Federal Emergency Management Agency (FEMA) to provide federal assistance in designated areas of Louisiana. FEMA is administering this disaster assistance pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), PL 93-288, as amended. Section 404 of the Stafford Act authorizes FEMA's Hazard Mitigation Program (HMGP) to provide funds to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration.

In accordance with the 44 Code of Federal Regulation (CFR) for FEMA, Subpart B – Agency Implementing Procedures, Section 10.9, an environmental assessment (EA) was prepared pursuant to Section 102 of the National Environmental Policy Act of 1969 (NEPA), as implemented by the regulations promulgated by the President's Council on Environmental Quality (CEQ) (40 CFR Parts 1500-1508). This EA evaluates St. Bernard Parish's, the applicant, proposal to upgrade the Palmisano drainage system in St. Bernard Parish, Louisiana to determine if the project will have the potential for significant adverse effects on the quality of the human and natural environment. The results of this EA will be used to make a decision whether to initiate preparation of an Environmental Impact Statement (EIS) or to prepare a Finding of No Significant Impact (FONSI).

1.2 Project Location

St. Bernard Parish is part of the New Orleans-Metairie, LA metropolitan area. The city of Chalmette serves as the Parish seat. The Parish is approximately 2,158 square miles, of which 378 square miles (approximately 12%) is land and the remainder is open water 1,781 square miles (83%). St. Bernard Parish is bordered to the east by Gulf of Mexico, to the north by Lake Borgne, and southwest by Mississippi River. St. Bernard Parish has approximately 35,897 residents according to 2010 census figures. St. Bernard is located southeast of New Orleans, and approximately 105 miles upriver from the Gulf of Mexico.

The Palmisano Drainage System is bounded by Lyndell Court/Plaza Drive Areas, the Mississippi River Levee, Volpe Drive, and the 20 Arpent Canal (near Missouri Street). It consists of approximately 100 plus acres of land that drains over ground surface through storm drain pipes and culverts and directed by via pump (Plaza Drive Pump Station) to an earthen ditch on East St. Bernard Hwy. across from Plaza Drive pump station. The earthen ditch, along with some poorly designed sub-surface drainage in the Lyndell Court/Plaza Drive area, connects to the Plaza Drive Pump Station, which runs under East St. Bernard Hwy. into the canal along East St. Bernard Hwy. to Palmisano Blvd., then from East St. Bernard Hwy. paralleling Palmisano Blvd. Canal running approximately 4,860 feet to the 20 Arpent Canal. The earthen ditch floods frequently

during heavy rainfall events due to inadequate capacity and undersized culvert and pipe crossing under roadways and residential driveways.

2.0 PURPOSE AND NEED

The HMGP provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. After Hurricane Katrina, St. Bernard Parish and particularly the Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge area, suffered from ancillary flooding. The existing drainage structures were not operational due to the ancillary flooding from excessive rainfall during and immediately after the storm event. Continuing to not have a adequately designed drainage structures on Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge increases the health and safety risk for the population and property of St. Bernard Parish during natural disasters or other unforeseen events that can cause excessive ancillary flooding. The purpose of the proposed project is to protect the health and safety of the residents of St. Bernard during the next 100-year flood event.

St. Bernard Parish needs to develop a solution that will minimize the ancillary flooding during and after storm events. There is a need to protect against future damage, loss of life and property from flooding during and after hurricane and other storm/flooding events.

3.0 ALTERNATIVES

3.1 Alternative 1 - No Action

Under this alternative, St. Bernard Parish Government (SBPG) would not engage in flood protection activities at the Palmasino drainage sites. Consequently, the area around the Plaza Drive Pump Station, East St. Bernard Hwy., Palmisano Blvd. and 20 Arpent Canal would continue to be susceptible to flooding from storm events. The inability for SBPG to supply adequate drainage to the community would cause a health and safety crisis to the city's population and environment as stormwater would overwhelm the drainage system. Old, undersized culverts; shallow ditches; and sewer piping would cause street floods that would impact other services in the area including business, homes and property.

3.2 Alternative 2 – Upgrade Plaza Drive Pump Station; Improve channel capacity on East St. Bernard Hwy.. and Palmasino Blvd.; and construct bridge crossing at 20 Arpent Canal (Proposed Action)

This drainage system consists of approximately 100 plus acres of land that drains over ground surface through storm drain pipe and directed via pump to an earthen ditch. The earthen ditch runs along St. Bernard Hwy. to Palmisano Blvd., then from St. Bernard Hwy.. paralleling Palmisano Blvd. running approximately 4,860 feet to the 20 Arpent Canal. The earthen ditch floods frequently during heavy rainfall events due to inadequate capacity and undersized culvert/pipe crossing under roadways and residential driveways. The applicant, proposes to 1)

improve the lift pump capacity of a badly drained area on Plaza Drive in Chalmette, Louisiana; 2) upgrade the pump station's outfall into the East St. Bernard Hwy.; 3) conduct drainage improvements on Palmisano Blvd., (from St. Bernard Hwy. to the outfall on the 20 Arpent Canal); and 4) improve the crossing at Palmisano Blvd. and 20 Arpent Canal. The proposed improvements would relieve the recurrent ponding during rainfall events. Table 1 identifies the locations of each site. A site map can be found in Appendix A.

Table 1: Project Site Locations

Site	Start Latitude	Start Longitude	End Latitude	End Longitude
Plaza Drive Pump Station	29.93363	-89.96016	n/a	n/a
St. Bernard Hwy.	29.93344	- 89.960290	29.931156	-89.956168
Palmisano Blvd	29.93164	-89.95594	29.943339	-89.949219
20 Arpent Bridge	29.943460	-89.949921	n/a	n/a

3.2.1 Site 1- Plaza Drive Pump Station Area

This segment of the project would consist of an upgrade and replacement to the existing undersized pumping station within the Plaza Drive Basin and upgrading their discharge capacity by improving the open canal along the south side of St. Bernard Hwy. to Palmisano Blvd. The area of the drainage basin is Marietta Street, East St. Bernard Hwy., Lyndell Court, Plaza Drive and including Lyndell Court. The existing pump would be removed and the new pump placed within the same location. Additional work in this area would be to reshape the existing open drainage ditches and replace any existing sub-surface drainage within the basin that is undersized or obstructed.

3.2.2 Site 2- East St. Bernard Hwy. Canal

The Plaza Drive Pump empties across the street to a canal which runs along East St. Bernard Hwy. The scope of work for this site would increase the capacity of the Plaza Drive Pump Station's outfall channel. Due the limited space between the right of way (ROW) and the active Railroad tracks, the applicant proposes to deepen the canal channel surface bottom from East St. Bernard Hwy. to Palmisano Blvd. Two (2) existing undersized culverts would be replaced with boxed culverts. The applicant would also flush and clean the existing sub-surface drainage within the basin. Additionally, the applicant proposes to reshape the existing open drainage ditches and replace any existing sub-surface drainage within the basin that is undersized or obstructed.

The proposed design would reshape and correct the open drainage area approximately 1000 feet along East St. Bernard Hwy. to accommodate the required capacity and construct a 48 inch culvert alongside the East St. Bernard Hwy. drainage canal approximately 200 feet, then crossing under East St. Bernard Hwy. with a 58 inch x 38 inch culvert north to Camille Place. This work would require the existing street pavement and curbs to be removed, and a trenchless installation of new gravity Polyvinyl Chloride (PVC) piping to connect to the existing sewer system.

3.2.3 Site 3- Palmisano Blvd. Canal

The design objectives for this site were to contain the flow within the channel for a 25-year storm event and to reduce the risk of flooding to the surrounding community. The proposed work for this site is to increase the canal capacity by deepening the bottom of the channel, and installing an open reinforced concrete box culvert with a swale ditch on top, from St. Bernard Hwy. to Camille place. Utilizing the swale ditch would collect sheet flow and divert it to the culvert.

The proposed design would construct an 8 foot x 4 foot box culvert from Camille Place to East Judge Perez Drive, then utilize a 10 foot x 6 foot box culvert from the Judge Perez Drive to the 20 Arpent Canal. Culverts under all cross-streets would be replaced to meet the new design standards. Catch basins and other existing drainage lines along with the replacement of existing driveways, landscaping, drain lines, as well as required sidewalks would be included into the Palmisano Canal drainage design plan. Additionally, St. Bernard would acquire and demolish a structure which lies in the path of the proposed work. This structure is located at 2101 Missouri Street, just before the 20 Arpernt Canal at approximately Latitude 29.943098, Longitude -89.949370. Then by acquiring and demolishing this property, the design of the box culvert would enable the water to flow unobstructed into the 20 Arpent Canal. In addition, it would avoid the need to acquire additional ROW to re-align the roadway to accommodate the new bridge design as described below.

3.2.4. Site 4 - 20 Arpent Canal Bridge

The scope of work for this site would consist of removing the existing, undersized culverts underneath the existing bridge, and constructing a two-lane, open-span bridge (plans found in Appendix B show a median incorporated into the design). The proposed bridge would be similar in design to others in the area which has recently been upgraded.

Per the Hydrology and Hydraulics (H&H) study conducted by Gulf Engineers and Consultants (GEC) in March 2013, due to the increased capacity of the design flows entering the 20 Arpent Canal, capacity levels would be diminished by the undersized culverts currently under the existing 20 Arpent Canal Crossing. The solution from GEC and the H&H would be to design and construct a 70 foot x 100 foot concrete span bridge crossing. The bridge would be pile supported and paved channel/aggregate. All water, sewer and other utilities would be attached to the design of the new bridge structure. Related paving, lighting and other infrastructure replacements would be required as part of the project.

4.0 AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

This section analyzes the surrounding environment for potential impacts of the Proposed Action Alternative and the No-Action Alternative. Where potential impacts exist, conditions or mitigation measures are used to implement these impacts.

4.1 PHYSICAL RESOURCES

4.1.1 Geology, Soils, and Seismicity

The Farmland Protection Policy Act (FPPA: P.L. 97-98, Sections 1539-1549; 7 U.S.C. 4201, *et seq*.) was enacted in 1981 and is intended to minimize the impact federal actions may have on the unnecessary and irreversible conversion of farmland to non-agricultural uses. It assures that, to the extent possible, federal programs and policies are administered to be compatible with state and local farmland protection policies and programs. To implement the FPPA, federal agencies are required to develop and review their policies and procedures every two (2) years. The FPPA does not authorize the federal government to regulate the use of private or nonfederal land or, in any way, affect the property rights of owners.

The Natural Resources Conservation Service (NRCS) is responsible for protecting significant agricultural lands from irreversible conversions that result in the loss of essential food or environment sources. For purposes of the FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Prime farmland is characterized as land with the best physical and chemical characteristics for production of food, feed, forage, fiber and oilseed crops (United States Department of Agriculture, USDA 2013). Farmland subject to FPPA requirements does not have to be currently used for cropland; it can be forest land, pastureland, cropland, or other land, but not water or built-up land.

The Louisiana gulf coastal region is located along the Gulf-margin Normal Faults, a fault belt with very low historical seismicity; the stress field and seismogenic potential of the underlying crust are unknown; and, therefore, the ability of the fault belt to generate significant seismic ruptures that could cause damaging ground motion is unclear. According to the United States Geological Survey (USGS) National Seismic Hazard Maps, the Louisiana Gulf Coast, including the project area, is located in the lowest hazard probability area for seismicity (USGS, 2012).

Alternative 1- No Action: Implementation of the No Action Alternative would include no undertaking and, therefore, would not impact the soils or geologic processes known for the area.

Alternative 2 Proposed Action – Upgrade Plaza Drive Pump Station; Improve channel capacity on East St. Bernard Hwy. and Palmasino Blvd.; and construct bridge crossing at 20 Arpent Canal: The Proposed Action is located on the geologic formation identified as Alluvium that originated from the Mississippi River. The alluvium consists of sandy and gravelly channel deposits mantled by sandy to muddy natural levee deposits, with organic-rich muddy backswamp deposits in between; coastal marsh deposits are chiefly mud and organic matter (Louisiana Geological Survey, 2008).

According to documentation from the USDA, NRCS, Soil Survey, this area is composed of 6.5% Cancienne Silty Clay Loam, and 93.5% Cancienne and Schriever soils, frequently flooded. Only the Cancienne soil series is classified as prime farmland soils (USDA/NRCS, 2012). The NRCS has determined in a consultation letter dated November 18, 2013 that the proposed project construction areas location will not impact prime farmland and therefore, is exempt from the rules and regulations of the FPPA (See Appendix C).

The contractor would implement construction Best Management Practices (BMPs); install silt fences/straw bales to reduce sedimentation. Area soils would be covered and/or wetted during construction. If fill is stored on site as part of unit installation or removal, the contractor would be required to appropriately cover it.

Construction contractor would be required to obtain a Louisiana Pollutant Discharge Elimination System (LPDES) permit, if applicable, and implement stormwater pollution prevention plan. The Louisiana Department of Environmental Quality (LDEQ) has stormwater general permits for construction areas equal to or greater than one (1) acre. It is recommended that the LDEQ Water Permit Division be contacted to determine whether the proposed improvements require one of these permits. All precaution will be observed to control nonpoint source pollution from construction activities.

4.1.2 Air Quality

The Clean Air Act (CAA) of 1963, as amended, provides for federal protection of air quality by regulating air pollutant sources and setting emissions standards for certain air pollutants. Under CAA, states adopt ambient air quality standards in order to protect the public from potentially harmful amounts of pollutants. The United States Environmental Protection Agency (USEPA) establishes primary and secondary air quality standards. Primary air quality standards protect the public health, including the health of "sensitive populations, such as people with asthma, children, and older adults." Secondary air quality standards protect the public welfare by promoting ecosystems health, and preventing decreased visibility and damage to crops and buildings. The USEPA has set National Ambient Air Quality Standards (NAAQS) for the following six criteria pollutants: ozone (O_3), particulate matter ($PM_{2.5}$, PM_{10}), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), and lead (Pb).

The USEPA has designated specific areas as NAAQS attainment or non-attainment areas. Non-attainment areas are any areas that do not meet the quality standard for a pollutant, while attainment areas do meet ambient air quality standards. St. Bernard Parish is a non-attainment parish with the NAAQS for SO_2 (EPA, 2014). The General Conformity Rule (GCR) currently applies to all Federal actions that are taken in designated non-attainment or maintenance areas, with the following exceptions: (1) actions covered by the transportation conformity rule; (2) actions with associated emissions clearly at or below specified *de minimis* levels; (3) actions listed as exempt in the rule; or, (4) actions covered by a Presumed-to-Conform approved list (40 CFR § 93.153(c). When the total direct and indirect emissions from the project or action are clearly below the *de minimis* levels, the project or action would not be subject to a conformity determination, and may proceed [40 CFR § 93.153(b) and (c)]. If, on the other hand, emissions are equal to or exceed 40 CFR. § 93.153 or Louisiana Administrative Code (LAC) 33:III.1405.B

de minimis levels, a general conformity determination must be made by the Federal agency involved. LDEQ requests a "general conformity applicability determination" in order to demonstrate that a formal general conformity determination is not required. Project-associated emissions are quantified using (1) direct emissions, and (2) indirect emissions within the scope of the Federal agency's authority. *See* 40 CFR § 93.158(a).

Alternative 1 – No Action: The No Action Alternative would involve no undertaking and, therefore, no long- or short-term impacts to geology, soils, seismicity or air quality would occur.

Alternative 2 Proposed Action – Upgrade Plaza Drive Pump Station; Improve channel capacity on East St. Bernard Hwy. and Palmasino Blvd.; and construct bridge crossing at 20 Arpent Canal: Minor impacts to air quality would be anticipated from movement of heavy equipment during demolition, excavation and construction activities. The effects would be localized and of short duration. The applicant initiated consultation with LDEQ on January 14, 2014; LEDQ responded to the applicant on April 4, 2014. Per LDEQ the applicant must submit a conformity determination for emissions of SO_2. FEMA-EHP conducted the required calculations and initiated consultation with LDEQ on May 11, 2015, to date no comments has been received; however, compliance with the CAA NAAQS has been fully coordinated with the Air Quality Section of the LDEQ. An air quality determination for emissions from the proposed Federal action was made using methods described in LAC 33:III.1411. Therefore, the analysis was based upon direct emissions for estimated construction hours. FEMA's air quality analysis for the proposed project resulted in a finding of anticipated SO_2 emissions of no more than 0.0104321 tons, while the *de minimis* threshold is 100 tons/yr. (See Appendix C). This project meets exception two (2) above and therefore no further action is required.

The contractor would be responsible for keeping all excavated areas periodically sprayed with water, all equipment maintained in good working order, and all construction vehicles would be limited to 15 mph to minimize pollution/fugitive dust.

4.2 WATER RESOURCES

4.2.1 Wetlands

The United States Army Corps Engineers (USACE) regulates the discharge of dredged or fill material into waters of the U.S., including wetlands, pursuant to Section 404 of the Clean Water Act (CWA). Wetlands are identified as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. The USACE also regulates the building of structures in waters of the U.S. pursuant to the Rivers and Harbors Act (RHA).

Executive Order (EO) 11990, Protection of Wetlands, directs federal agencies to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the values of wetlands for federally funded projects. FEMA regulations for complying with EO 11990 are found at 44 CFR Part 9, Floodplain Management and Protection of Wetlands. The U.S. Fish & Wildlife

Service (USFWS) National Wetlands Inventory (NWI) map did not identify wetlands within the proposed project area that could be adversely affected by the project.

Alternative 1 – No Action: The No Action Alternative would involve no undertaking and, therefore, no long- or short-term impacts wetlands would occur.

Alternative 2 Proposed Action – Upgrade Plaza Drive Pump Station; Improve channel capacity on East St. Bernard Hwy. and Palmasino Blvd.; and construct bridge crossing at 20 Arpent Canal: For the construction of drainage improvements on East St. Bernard Hwy., Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge, the USACE correspondence dated March 13, 2014, stated "…we have determined that this property is not in a wetland subject to Corps' Jurisdiction. A Department of the Army permit under Section 404 of the CWA or Section 10 of the RHA would not be required for the deposition or redistribution of dredged or fill material on this site." (See Appendix C). In addition, a FEMA- Environmental and Historic Preservation (EHP) specialist visited the sited on April 6, 2015. It was determined the site would not contain EO 11990 wetlands.

Any changes or modifications to the proposed project would require a wetland revised determination. Off-site locations of activities such as borrow; disposals, haul-and detour-roads and work mobilization site developments may be subject to the Department of the Army regulatory requirements and may have an impact to a Department of Army project.

4.2.2 Water Quality

The CWA, as amended, is the primary federal law in the United States regulating water pollution (P.L. 92–500, 33 United States Code [U.S.C.] §1251). The CWA regulates water quality of all discharges into "waters of the United States." Both wetlands and "dry washes" (channels that carry intermittent or seasonal flow) are considered "waters of the United States." Administered by USEPA, the CWA protects and restores water quality using both water quality standards and technology-based effluent limitations. The USEPA publishes surface water quality standards and toxic pollutant criteria in 40 CFR, Part 131.

The CWA also established the National Pollution Discharge Elimination System (NPDES) permitting program (Section 402) to regulate and enforce discharges into waters of the U.S. The NPDES permit program focuses on point-source outfalls associated with industrial wastewater and municipal sewage discharges. Congress has delegated to many states the responsibility to protect and manage water quality within their legal boundaries by establishing water quality standards and identifying waters not meeting these standards. States are also responsible for managing the NPDES system.

Under the Louisiana Water Control Law, Louisiana controls and regulates the discharged waste materials, pollutants, and other substances into Louisiana waters in order to properly protect and maintain the state's waters. The LDEQ is the state agency responsible for administering the NPDES Program known as LPDES.

Alternative 1 – No Action: The No Action Alternative would involve no undertaking and, therefore, no long or short term impacts water quality would occur.

Alternative 2 Proposed Action – Upgrade Plaza Drive Pump Station; Improve channel capacity on East St. Bernard Hwy. and Palmasino Blvd.; and construct bridge crossing at 20 Arpent Canal: Project would entail construction of buildings on previously developed land. There is a potential for short-term localized increase in sedimentation during construction. Long-term, post-construction runoff would not increase because the impervious surface area would be similar to the pre-disaster site conditions.

The USEPA stated in its response letter dated February 14, 2014 that "the project does not lie within the boundaries of a designated sole source aquifer and is thus not eligible for review under the Sole Source Aquifer program." (See Appendix C) According to the Louisiana Department of Natural Resources (LDNR) Strategic Online Natural Resources Information System (SONRIS) database, there are no groundwater areas of concern in the project vicinity. According to the Louisiana Department of Transportation and Development (LADOTD) database, accessed via SONRIS, no recorded drinking water wells are located within the project vicinity; however, there may be unrecorded drinking wells near the project work areas (SONRIS, 2013).

FEMA-EHP initiated coordination with LDEQ on May 11, 2015. LDEQ The response period ends on June 10, at which time FEMA-EHP will update this EA to reflect comments and conditions received by the regulatory agency. If substantial comments are received, this EA will be republished, if not this document will become final. (See Appendix C). However, to minimize indirect impacts (soil erosion, sedimentation, dust and other construction-related disturbances) to the areas surrounding the proposed action, the following best management practices should be included into the daily operations of construction activities: silt screens, barriers (e.g., hay bales), berms/dikes, and/or fences to be placed where and as needed. Fencing should be placed for marking staging areas to store construction equipment and supplies as well as conduct maintenance/repair operations. All precautions should be observed to control nonpoint source pollution from construction activities. Fencing should be placed for marking staging areas to store construction equipment and supplies as well as conduct maintenance/repair operations. Hazardous materials associated with construction equipment must be handled according to local, state, and federal regulations in order to minimize the risk of spills and leaks and subsequent impacts to surface and groundwater resources.

The LDEQ may require stormwater general permits for construction areas equal to or greater than one (1) acre. It is recommended that the LDEQ Water Permit Division be contacted to determine whether the proposed improvements require one of these permits. All precaution will be observed to control nonpoint source pollution from construction activities. The contractor should observe all precautions to protect the groundwater of the region. The LDNR Office of Conservation should be contacted if any unregistered drinking water wells are encountered during construction work.

All work associated with project that is conducted on potable water systems must comply with applicable sections of the federal Safe Drinking Water Act and state regulations under Louisiana

Title 51 Part XII (otherwise known as the Louisiana Public Health-Sanitary code and related State Plumbing code).

4.2.3 Hydrology & Floodplains

Per the H&H study, the Palmisano Canal drains an area of approximately 100 acres in size. The upstream channel begins at East St. Bernard Hwy. and flows east to the 20 Arpent Canal downstream from the Mississippi River. The 20 Arpent Canal then discharges into the 40 Arpent Canal which is drained by pump stations.

The upper reaches of the channel run adjacent to Palmisano Blvd. Currently, the left descending bank of the channel is within a few feet of Palmisano Blvd. The channel is approximately six (6) feet deep with steep side slopes. The right descending bank is very close to the property line of residential properties. There is bank erosion occurring at the side slope of the channel. The ROW of the channel is 20 feet wide (GEC, 2013).

The Plaza Drive area is drained by a pump station, mentioned in the beginning of this EA. The pump station discharges into the road side ditch located between St. Bernard Hwy. and the railroad tracks along East St. Bernard Hwy. Appendix A of the H&H (found in Appendix D) shows the drainage area map for Palmisano Canal and the Plaza Drive drainage area.

GEC used the Soil Conservation Service (SCS) method to compute the runoff hydrographs. Land use in the project area is 40 percent residential and 60 percent industrial, commercial and business. The storm duration used in the analysis is a 24 – hour. See Appendix D for the entire H&H study and soils found in the project area. GEC used the Interconnected Pond Routing (ICPR) model to compute the storm water runoff and to evaluate the hydraulic design of the channel.

Currently along the Palmisano Canal, as described in the H&H, it appears private individuals installed several culverts for their use. There are three (3) driveways, one (1) culvert which extends the homowner's backyard over the channel, and a business that extended the two (2) 5 foot x 5 foot box culverts with a single 60 inch diameter corrugated metal pipe (CMP).

To determine the in-bank capacity of Palmisano Canal, GEC simulated 2-year and the 5-year 24-hour storm events using the existing conditions model. The existing channel contained the 2-year storm event within the channel; however the analysis of the 5-year event shows minor over bank flooding.

Currently, the Plaza Drive area is drained by a ten (10) inch Farbanks Morse propeller pump. The ten (10) inch discharge pipe is approximately 65 feet in length and runs under St. Bernard Highway discharging into the road side ditch. This ditch drains to the east into the upper reach of Palmisano Canal (GEC, 2013). Per the H&H study, the 5-year peak water surface for these existing conditions is 7.90 feet North American Vertical Datum 1988 (NAVD 88).

According to the H&H study, the design objectives were to contain the flow within the channel for a 100-year storm event and to reduce the risk of injury to the driving public on Palmisano Blvd. In addition, the proposed solution must be contained within the existing ROW. The design storm is a 100-year, 24-hour rainfall event. Due to the design constraints, the channel could not be deepened or widened without increasing the risk of bank failures.

At the confluence of Palmisano Canal and the 20 Arent Canal, the flow in the 20 Arpent Canal is to the East. The flow then discharges into the Chalona Canal. At the upstream confluence West of 20 Arpent Canal, the flow is more restricted than the flow towards the East (GEC, 2013). Historical information of flooding problems in the study area indicate the drainage under the road crossing at Palmisano Blvd. and the 20 Arpent Canal is not adequately designed. The 20 Arpent Canal crossing parallel to Missouri Street consist of two (2) 60 inch culverts that are restricting drainage of the area upstream of Palmisano Canal (GEC, 2013)

Executive Order 11988 (Floodplain Management) requires federal agencies to avoid direct or indirect support or development within the 100-year floodplain whenever there is a practicable alternative. FEMA's regulations for complying with EO 11988 are found at 44 CFR Part 9, Floodplain Management and Protection of Wetlands. FEMA uses Flood Insurance Rate Maps (FIRMs) to identify the regulatory 100-year floodplain for the National Flood Insurance Program (NFIP). St. Bernard Parish enrolled in the NFIP on March 13, 1970.

In July 2005, FEMA initiated a series of flood insurance studies for many of the Louisiana coastal parishes as part of the Flood Map Modernization effort through FEMA's NFIP. These studies were necessary because the flood hazard and risk information shown on many FIRMs was developed during the 1970s, and the physical terrain had changed significantly, such as major loss of wetland areas. After hurricanes Katrina and Rita, FEMA expanded the scope of work to include all of coastal Louisiana. The magnitude of the impacts of hurricanes Katrina and Rita reinforced the urgency to obtain additional flood recovery data for the coastal zones of Louisiana. More detailed analysis was possible because new data obtained after the hurricanes included information on levees and levee systems, new high-water marks, and new hurricane parameters (FEMA RiskMap6.com, 2013).

During an initial post-hurricane analysis, FEMA determined that the "100-Year" or 1-percent chance storm flood elevations on FIRMs for many Louisiana communities, referred to as Base Flood Elevations (BFEs), were too low. FEMA created recovery maps showing the extent and magnitude of storm surge damage after hurricanes Katrina and Rita, as well as information on other storms over the past 25 years (FEMA RiskMap6.com, 2013). The 2006 advisory flood data shown on the recovery maps for the Louisiana-declared disaster areas show high-water marks surveyed after the storm; flood limits developed from these surveyed points; and Advisory Base Flood Elevations, or Advisory Base Flood Elevation (ABFEs). The recovery maps and other advisory data were developed to assist parish officials, homeowners, business owners, and other affected citizens with their recovery and rebuilding efforts (FEMA RiskMap6.com, 2013).

Updated preliminary flood hazard maps from an intensive five (5) year mapping project guided by FEMA are now provided to all Louisiana coastal parishes. The new maps released in early 2008, known as Preliminary Digital Flood Insurance Rate Maps (DFIRMs), are based on the

most technically advanced flood insurance studies ever performed for Louisiana, followed by multiple levels of review. The DFIRMs provide communities with a more scientific approach to economic development, hazard mitigation planning, emergency response and post-flood recovery (FEMA RiskMap6.com, 2013).

The USACE recently completed the Hurricane and Storm Damage Risk Reduction System (HSDRRS) for the Greater New Orleans (GNO) area (Miller, 2011). This 350-mile system of levees, floodwalls, surge barriers, and pump stations will reduce the flood risk associated with a storm event. In September of 2011, the USACE provided FEMA with assurances that the HSDRRS is capable of defending against a storm surge with a one percent (1%) annual chance event of occurring in any given year (Miller, 2011). The areas protected include portions of St. Bernard, St. Charles, Jefferson, Orleans, and Plaquemines parishes. FEMA has now begun revising the preliminary DFIRMs within the HSDRRS to incorporate the reduced flood risk associated with the system improvements.

On November 9, 2012, revised Preliminary DFIRMS were made available to the Proposed Project area in St. Bernard Parish and are now considered best available data for purposes of required elevations for reconstruction projects.

In compliance with FEMA policy implementing EO 11988, Floodplain Management, the proposed project was reviewed for possible impacts associated with occupancy or modification to a floodplain. To comply with EO 11988, Floodplain Management, FEMA is required to follow the procedure outlined in 44 CFR Part 9 to assure that alternatives to the action have been considered. This procedure is known as the EO 11988 - Floodplain Management Eight-Step Decision Making Process. In accordance with EO 11988, FEMA's Eight-Step Planning Process for Floodplains was completed to identify, minimize, and mitigate floodplain impacts (Appendix E).

Alternative 1 – No Action: The No Action Alternative would involve no undertaking and, therefore, no long- or short-term impacts the floodplain would occur.

Alternative 2 Proposed Action – Upgrade Plaza Drive Pump Station; Improve channel capacity on East St. Bernard Hwy. and Palmasino Blvd.; and construct bridge crossing at 20 Arpent Canal: Per the H&H, without acquiring additional ROW, the Palmasino channel could not be improved to meet the design objectives. To improve the channel capacity and reduce the risk to drivers, the proposed design uses reinforced box culverts and constructs a swale ditch on top of the box to collect sheet flow.

GEC used trial and error to analyze the sizes of the box culverts. The sizes were increased until the design objective to contain the 100-year design event was achieved. This resulted in constructing a 10 foot x 6 foot box culvert from 20 Arpent Canal to Judge Perez Blvd., an 8 foot x 4 foot box culvert from Judge Perez to Camille Place, and a 73 inch x 45 inch concrete arch culvert.

The Plaza Drive area consists of upgrading the existing pump station. The proposed upgrade is three (3) inches to ten (10) inches Farbanks Morse vertical propeller pumps. According to the H&H study the design condition for the peak water surface elevation is 8.10 feet NAVD 88.

When drainage improvements are made on one (1) channel there are possibilities for upstream and downstream effects. According to GEC, the proposed improvements would increase the peak discharge on Palmisano Canal. The H&H further states that comparing the size of the Palmisano and 20 Arpent watersheds, the increase in peak discharge would increase the flood stage on the 20 Arpent Canal. Unless the increase in flood stage is contained within the channel, there would be an adverse and unacceptable drainage impact (GEC 2013). Therefore, GEC's recommendation to mitigate the adverse drainage impacts from the proposed drainage improvements on the 20 Arpent Canal, the project design should replace the existing culverts at the road crossing of Palmisan Blvd and 20 Arpent Canal with a bridge.

As per the Preliminary DFIRM 22087C0487D dated November 9, 2012 for the drainage improvements on Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge, the proposed drainage improvements are located in the X Zone (500-year floodplain or 0.2% annual chance flood hazard) and are also located in an AE Zone (100-year floodplain or 1% annual chance flood hazard) (see Table 2).

Table 2: Flood Zone and Preliminary 2012 DFIRM Panel Data for the Proposed Project Sites

SPS Name	City	Flood Zone	Preliminary DFIRM Panel
Plaza Lift Station	Chalmette	X	22087C0487D
St. Bernard Hwy. Canal	Chalmette	AE (EL 6) & X	22087C0487D
Palmasino Canal	Chalmette	AE (EL 2) & X	22087C0487D
1201 Missouri St.	Chalmette	AE (EL 2)	22087C0487D
20 Arpent Canal	Chalmette	AE (EL 1)	22087C0487D

The drainage improvements would be considered as dependent on their location to be able to mitigate ancillary flooding. The proposed construction would have no impacts on flood elevations, nor will it increase development in this fully built-up area.

In compliance with FEMA policy implementing EO 11988, Floodplain Management, the proposed project was reviewed for possible impacts associated with occupancy or modification to a floodplain. The construction of the drainage improvements on Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge would not likely affect the functions and values of the 100-year floodplain as the structure would not impede or redirect flood flows. New construction must be

compliant with current codes and standards. St. Bernard Parish is required to coordinate with the local floodplain administrator regarding floodplain permit(s) prior to the start of any activities. All coordination pertaining to these activities and Applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files.

4.3 COASTAL MANAGEMENT

The Coastal Zone Management Act of 1972 (CZMA) encourages the management of coastal zone areas and provides grants to be used in maintaining coastal zone areas. It requires that federal agencies be consistent in enforcing the policies of state coastal zone management programs when conducting or supporting activities that affect a coastal zone. It is intended to ensure that federal activities are consistent with state programs for the protection and, where, possible, enhancement of the nation's coastal zones.

The CZMA's definition of a coastal zone includes coastal waters extending to the outer limit of state submerged land title and ownership, adjacent shorelines, and land extending inward to the extent necessary to control shorelines. A coastal zone includes islands, beaches, transitional and intertidal areas, and salt marshes. The CZMA requires that states develop a State Coastal Zone Management Plan or program and that any federal agency conducting or supporting activities affecting the coastal zone conduct or support those activities in a manner consistent with the approved state plan or program. The LDNR regulates development in Louisiana's designated coastal zone through the Coastal Use Permit (CUP) Program.

The USFWS regulates federal funding in Coastal Barrier Resource System (CBRS) units under the Coastal Barrier Resources Act (CBRA). This Act protects undeveloped coastal barriers and related areas by prohibiting direct or indirect Federal funding of projects that support development in these areas. The Act promotes appropriate use and conservation of coastal barriers along the Gulf of Mexico.

Alternative 1 – No Action: The No Action Alternative would involve no undertaking and, therefore, no impacts to coastal resources would occur.

Alternative 2 Proposed Action – Upgrade Plaza Drive Pump Station; Improve channel capacity on East St. Bernard Hwy. and Palmasino Blvd.; and construct bridge crossing at 20 Arpent Canal: Construction of the drainage improvements on Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge would have no impact on coastal resources. The LDNR – Louisiana Office of Coastal Management indicated in correspondence letters dated February 17, 2014 that the project is consistent with the Louisiana Coastal Resource Program. However, the project may require a Coastal Use Permit (CUP) (See Appendix C). Determination of CUP requirements must be obtained through the submission of a completed CUP application to the LDNR. Proposed projects may be coordinated by contacting LDNR at (225) 342-7591 or 1-800-267-4019. Refer to CUP Number P20120106. The application packet may be obtained by calling (225) 342-7591 or (800) 267-4019, or by visiting the LDNR website

at http://dnr.louisiana.gov/index.cfm?md=pagebuilder&tmp=home&pid=93&pnid=189&nid=191. The LDNR – Louisiana Office of Coastal Management issued a statewide letter dated September 28, 2012 indicating that the Louisiana Office of Coastal Management determined that the granting of financial assistance is fully consistent with the Louisiana Coastal Resources Program. However, the Applicant is responsible for coordinating with and obtaining any required CUP or other authorizations from the LDNR Office of Coastal Management's Permits and Mitigation Division prior to initiating work. The Applicant must comply with all conditions of the required permits. All coordination pertaining to these activities and Applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files (See Appendix C).

4.4 BIOLOGICAL RESOURCES

4.4.1 Threatened and Endangered Species and Critical Habitat

The Endangered Species Act of 1973 (16 U.S.C. 1531-1543; 87 Stat. 884)(ESA) prohibits the taking of listed, threatened, and endangered species unless specifically authorized by permit from the USFWS or the National Marine Fisheries Service (NMFS). "Take" is defined in 16 U.S.C. 1532 (19) as "*to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct.*" Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering (50 CFR 17.3).

Section 7(a)(2) of the ESA requires the lead federal government agency to consult with either the USFWS or the NMFS, depending which agency has jurisdiction over the federally listed species in question, when a federally funded project may have the potential to adversely affect a federally listed species or a federal action occurs within or may have the potential to impact designated critical habitat. The ESA defines critical habitat as "the specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and specific areas outside the geographical area occupied by the species at the time it is listed that are determined by the Secretary to be essential for the conservation of the species."

The lists the following federally threatened and endangered species for St. Bernard Parish:

Common Name Scientific Name Status
Piping Plover Charadrius melodus T
Gulf sturgeon Acipenser oxyrinchus desotoi T
Pallid sturgeon Scaphirhynchus albus E
West Indian Manatee *Trichechus manatus* E
Louisiana black bear Ursus americanus luteolus T
Hawksbill sea turtle Eretmochelys imbricata E
Leatherback sea turtle *Dermochelys coriacea* E
Kemp's ridley sea turtle *Lepidochelys kempii* E
Green sea turtle *Chelonia mydas* T

Source: USFWS, 2012; T = Threatened, E = Endangered

It should be noted that inclusion in the USFWS federally threatened and endangered species list does not necessarily imply occurrence of a species in the study area, but simply acknowledges the potential of occurrence.

The Migratory Bird Treaty Act (MBTA) of 1918 makes it unlawful to pursue, hunt, take, capture, kill, or sell birds listed in the statute as "migratory birds". It does not discriminate between live or dead birds, and also grants full protection to any bird parts including feathers, eggs, and nests. The MBTA is the primary law that affirms or implements the nation's commitment to four international conventions (with Canada, Japan, Mexico, and Russia) for the protection of a shared migratory bird resource.

EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) strengthens the protection of migratory birds and their habitats by directing federal agencies to take certain actions that implement the MBTA.

Alternative 1 – No Action: The No Action Alternative would involve no undertaking and, therefore, no impacts to biological resources would occur.

Alternative 2 Proposed Action – Upgrade Plaza Drive Pump Station; Improve channel capacity on East St. Bernard Hwy. and Palmasino Blvd.; and construct bridge crossing at 20 Arpent Canal: In correspondence dated February 12, 2014, USFWS stated the Service "The project, as proposed, will have no effect on those resources" (See Appendix C)." In addition, correspondence dated February 21, 2014, from the Louisiana Department of Wildlife and Fisheries (LDWF) stated "…no impacts to rare, threatened, or endanger species or critical habitats are anticipated for the proposed project" (See Appendix C). There are threatened/endangered species present within St. Bernard Parish. However, this project will not affect any threatened/endangered species or any critical habitat. The Applicant would be responsible for contacting FEMA and the resources agencies if there is a change in the scope of work.

4.5 CULTURAL RESOURCES

The consideration of impacts to historic and cultural resources is mandated under Section 101(b) 4 of the NEPA as implemented by 40 CFR Part 1501-1508. Section 106 of the National Historic Preservation Act (NHPA) requires Federal agencies to take into account their effects on historic properties (i.e. historic and cultural resources) and allow the Advisory Council on Historic Preservation (ACHP) an opportunity to comment. FEMA has chosen to address potential impacts to historic properties through the "Section 106 consultation process" of NHPA as implemented through 36 CFR Part 800.

In order to fulfill its Section 106 responsibilities, FEMA has initiated consultation on this project in accordance with the Louisiana State-Specific Hazard Mitigation Grant Program Programmatic Agreement (LA HMGP PA) dated January 31, 2011, between the Louisiana State Historic Preservation Officer (SHPO), the Louisiana Governor's Office of Homeland Security and

Emergency Preparedness (LA GOHSEP), the Alabama-Coushatta Tribe of Texas, the Chitimacha Tribe of Louisiana, the Choctaw Nation of Oklahoma, Choctaw Nation of Oklahoma, the Jena Band of Choctaw Indians, the Mississippi Band of Choctaw Indians, the Seminole Tribe of Florida, and the Advisory Council on Historic Preservation (http://www.fema.gov/pdf/hazard/hurricane/2005katrina/LA_HMGP%20PA.pdf). The PA was created to streamline the Section 106 review process.

The "Section 106 process" outlined in the LA HMGP PA requires the identification of historic properties that may be affected by the proposed action or alternatives within the project's area of potential effects (APE). Historic properties, defined in Section 101(a)(1)(A) of NHPA, include districts, sites (archaeological and religious/cultural), buildings, structures, and objects that are listed in or determined eligible for listing in the National Register of Historic Places (NRHP). Historic properties are identified by qualified agency representatives in consultation with interested parties. Below is a consideration of various alternatives and their effects on historic properties.

The Palmisano Drainage Canal is located in the City of Chalmette, in St. Bernard Parish. The date of the initial construction of the drainage canal is unknown as it is not substantial enough to be included on any maps of the area. FEMA Historic Preservation (HP) Staff consulted the NRHP database, the Louisiana Cultural Resources Map, and data collected on a site visit from April 6, 2015 and determined that the project locations for the Palmisano Drainage Improvement Projects are not located within a listed or eligible National Register Historic District (NRHD) nor are they located within the view-shed of a property individually listed in the National Register.

The APE for both standing structures and archaeology is limited to the immediate area of ground disturbing activities and the space for laydown or staging. It is 5.1 acres in size (2.1 hectacres). The scope of the project limits the APE, as the work occurs almost completely below grade. For the portion of the work along East St. Bernard Hwy. and the drainage canal along Palmisano Blvd., the APE is limited to the ROW in which the work would be completed. The applicant does not have right of access to any other areas and as such would be restricted to the ROW. The only above-grade work would be the replacement of the Plaza Drive pump station; the demolition of the structure at 1201 Missouri St; and the replacement of the existing canal crossing at Palmisano Blvd. and the 20 Arpent Canal. For these areas, the APE consists of direct effects and space for laydown, the entirety of the tax parcel for 1201 Missouri St is included within this area.

Standing Structures:
There are only two (2) standing structures within the project area: the existing crossing, located at Palmisano Blvd. and the 20 Arpent Canal, and a single residential house at 1201 Missouri St. Both properties are less than 50 years old. Historic aerials indicate that 1201 Missouri was constructed shortly after 1970, and that the canal crossing was constructed sometime between 1973 and 1980. Therefore, both properties are ineligible for listing on the NRHP. The 20 Arpent Canal itself is the only property within the APE more than 50 years of age.

Archaeology:
FEMA consulted the USDA interactive SoilWeb to determine the soil types for the project area. The findings are summarized in Table 3 (Primary soil type is in bold). In general, the soils within the APE start out as a natural levee and more towards wetter soils typically found in backswamps as they approach the 20 Arpent Canal

Table 3: Summary of Soil Types

Location	Soil Type	Drainage
St. Bernard Hwy.	**Cancienne/**Gramercy/Thibaut	Natural Levees and Toeslope
Palmisano Blvd to Karen Dr	**Cancienne/**Carville/Thibaut/Gramercy	Natural Levees
Palmisano Blvd to Missouri St	Schriever/Gramercy	Backswamps
Missouri St	Harahan	Backswamps

FEMA consulted the SHPO's Cultural Resources map and determined that there is one archaeological site within one (1) mile of the project area. Site 16SB88, the De La Ronde Plantation, is located half a mile from the Plaza Drive Pump Station APE on West St. Bernard Hwy. The site includes the ruin remains of a plantation house built in 1805; the site has not been evaluated for NRHP eligibility.

FEMA HP staff reviewed the early Orleans and St. Bernard parish map archives to obtain information about the project area. While the area appears on several early maps of the city, none show the project location in any detail. The 1723 Newberry Library Map, the LaTourrette map of 1848 and the Bayley Map of 1853, all show plantations within the vicinity of the project area, but do not indicate the individual presence of any associated structures. The first detailed map of the APE is the 1883 Mississippi River Commission Map. This map indicated that most of the APE is cultivated farms lands. While there are some structures indicated near the river, none appear to be located within the APE, the area to the west of the project APE is labelled as Battle Ground. While later MRC maps show some development in the vicinity, the APE is still labelled as cultivated fields until 1961. After this point historic aerials show development throughout the APE.

All work for this undertaking would take place in previously disturbed areas, within existing ROWs, and created drainage ditches

<u>Alternative 1 – No Action</u>
This alternative does not include any FEMA undertaking; therefore, FEMA has no further responsibilities under Section 106 of the NHPA.

<u>Alternative 2 Proposed Action – Upgrade Plaza Drive Pump Station; Improve channel capacity on East St. Bernard Hwy. and Palmasino Blvd</u>; Based on research using the NRHP database, the Louisiana Cultural Resources Map on the Louisiana Division of Historic Preservation's website, and agency files, FEMA has determined that the project area is not located within a

listed National Register Historic District nor is it located within the view-shed of a property individually listed in the NRHP. The structures located within the project area were found to be less than 50 years of age and do not exhibit the significance to qualify for listing under Criterion Consideration G. The 20 Arpent Canal is the only property over 50 years of age. The canal appears to have been associated with the draining of the area to make it suitable for development. By the 1960s, the construction of drainage canals was a standard part of the development of new neighborhoods. Readily available information has yielded little information regarding the design, construction or historical use of the 20 Arpent Canal and, therefore, it does not appear to represent or exemplify any area of potential historic significance. FEMA has determined that it is not eligible for the NRHP and submitted this determination to the SHPO on April 28, 2015. SHPO concurred with this determination on May 12, 2015.

FEMA completed a site visit to the project area on April 6, 2015 and determined all work for this undertaking will take place in previously disturbed areas, within existing ROWs, and created drainage ditches. While the undertaking will be enlarging and deepening these features, it is unlikely that any intact archaeological deposits will be affected by the undertaking. Therefore, FEMA determined that there will be "No Historic Properties Affected" by the proposed alternative.

SHPO concurred with FEMA's determination on May 12, 2015. Consultation with affected tribes (Alabama-Coushatta Tribe of Texas, Caddo Nation, Choctaw Nation of Oklahoma, Coushatta Tribe of Louisiana, Jena Band of Choctaw Indians, Mississippi Band of Choctaw Indians, Muscogee Creek Nation, Quapaw Tribe of Oklahoma, Seminole Nation of Oklahoma, and Tunica-Biloxi Tribe of Louisiana) was conducted per the LA HMGP PA and 36 CFR part 800.2(c)(2)(i)(B). The Choctaw Nation of Oklahoma concurred with FEMA's determination on June 9, 2015. The Jena Band of Choctaw Indians concurred with FEMA's determination on May 15, 2015. The Muscogee Creek Nation concurred with FEMA's determination on May 15, 2015. The remaining Tribes did not respond within the regulatory timeframes. Therefore, in accordance with Stipulation VIII.D of the PA and 36 CFR part 800.5(c)1, FEMA may proceed with funding the undertaking assuming concurrence. The applicant must comply with the NHPA conditions set forth in this EA (Louisiana Unmarked Human Burial Sites Preservation Act and Inadvertent Discovery Clause).

4.6 SOCIOECONOMIC RESOURCES

4.6.1 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, was signed on February 11, 1994. The EO directs federal agencies to make achieving environmental justice part of their missions by identifying and addressing, as appropriate, disproportionately high adverse human health, environmental, economic, and social effects of its programs, policies and activities on minority or low-income populations.

According to the U.S. Census Bureau State and Parish Quick Facts data for 2007-2011, the percentage of families in St. Bernard Parish below the poverty level is 14.6% and the State of Louisiana 18.4%. The median household income for St. Bernard Parish is $40,450 and for Louisiana is $44,086. The per capita income for St. Bernard Parish was $20,003 for Louisiana was $23,853. The 2011 demographic census data for St. Bernard Parish are as follows: Caucasian: 75%, African American: 19%, and Hispanic: 9%. The comparable demographic census data for the State of Louisiana are: Caucasian: 64%, African American: 32%, Hispanic: 4% (USCB, 2013).

Alternative 1 – No Action: The No Action Alternative would involve no undertaking and, therefore, no impacts to socioeconomic resources would occur.

Alternative 2 Proposed Action – Upgrade Plaza Drive Pump Station; Improve channel capacity on East St. Bernard Hwy. and Palmasino Blvd.; and construct bridge crossing at 20 Arpent Canal: The proposed action would protect against future damage, loss of life and property from flooding during and after Hurricane and other storm events in St. Bernard Parish. All populations would benefit from the proposed project.

4.6.2 Noise

Noise is generally defined as unwanted sound. Sound is most commonly measured in decibels (dB) on the A-weighted scale, which is the scale most similar to the range of sounds that the human ear can hear. The Day-Night Average Sound Level (DNL) is an average measure of sound. The DNL descriptor is accepted by federal agencies as a standard for estimating sound impacts and establishing guidelines for compatible land uses. USEPA guidelines, and those of many other federal agencies, state that outdoor sound levels in excess of 55 dB DNL are "normally unacceptable" for noise-sensitive land uses such as residences, schools, or hospitals.

The project site is in the immediate vicinity of heavy industrial, commercial, and municipal facilities. Sensitive noise receptors such as residential homes are located adjacent to the project area, along E. St. Bernard Hwy., Paris Road, E. Judge Perez Drive, Missouri Street, St. Avide Street, and Palmisano Blvd.

Alternative 1 – No Action: The No Action Alternative would involve no undertaking and, therefore, no impacts from noise would occur.

Alternative 2 Proposed Action – Upgrade Plaza Drive Pump Station; Improve channel capacity on East St. Bernard Hwy. and Palmasino Blvd.; and construct bridge crossing at 20 Arpent Canal: Under this action alternative, construction activities would result in short-term increases in noise during the reconstruction/reconfiguration period. Equipment and machinery utilized on the project site would meet all local, state, and federal noise regulations. Additionally, the contractor must coordinate with the Applicant so as to minimize the potential disruption of any school activities to the extent possible. Following the completion of construction activities, operations at the proposed expanded facility would not result in any significant permanent increases in noise levels.

Noise levels would comply with Parish Ordinance. St. Bernard Parish Code of Ordinance Sec. 11- 133. - Construction, power equipment. (a) Except as otherwise provided in this chapter, no person shall engage in, cause or permit any person to be engaged in construction activities in any residential or commercial district between the hours of 9:00 p.m. of one day and 7:00 a.m. of the following day. Construction projects shall be subject to the maximum permissible noise level specified for industrial districts for the periods within which construction is to be completed pursuant to any applicable building permit. (b) Construction activities directly connected with the abatement of an emergency are excluded from the provisions of this section. (c) No person shall operate on any property within a residential or commercial district or on any public way within a residential or commercial district, any power equipment, such as, but not limited to, chain saws, pavement breakers, log chippers, riding tractors, powered hand tools, between the hours of 10:00 p.m. of one day and 7:00 a.m. of the next day or within residential, commercial or industrial noise districts between the hours of 7:00 a.m. and 10:00 p.m. which emits a noise level in excess of the levels set in Section 11-132 (Municode.com, 2013).

4.6.3 Traffic and Transportation

The LADOTD is responsible for maintaining public transportation state highways, interstate highways under state jurisdiction, and bridges located within the State of Louisiana. These duties include the planning, design, and building of new highways in addition to the maintenance and upgrading of current highways. Roads not part of any highway system usually fall under the jurisdiction of and are maintained by applicable, local government entities. However, the LADOTD is responsible for assuring all local agency Federal-aid projects comply with all applicable federal and state requirements.

Alternative 1 – No Action: The No Action Alternative would involve no undertaking. Impacts to traffic would continue to occur as the road would continue to flood.

Alternative 2 Proposed Action – Upgrade Plaza Drive Pump Station; Improve channel capacity on East St. Bernard Hwy. and Palmasino Blvd.; and construct bridge crossing at 20 Arpent Canal: Traffic volumes along the respective work area would increase temporarily during work activities. Construction-related activities, heavy equipment and materials that may be needed for site access and site preparation would not pose a significant impact to the transportation network or cause a significant increase in traffic for the area. Construction of the proposed project may require numerous truck trips to haul materials to the project site. However, this would be temporary because it would only occur during site construction. Upon completion of the proposed action, there would be minimal long-term effect on the current traffic patterns.

During construction the contractor would take all reasonable precautions to control site access. All activities would be conducted in a safe manner in accordance with Occupational Safety and Health Administration (OSHA) work zone traffic safety requirements. The contractor would post appropriate signage and fencing to minimize foreseeable potential public safety concerns. Appropriate signage and barriers would be in place prior to construction activities in order to alert pedestrians and motorists of project activities and traffic pattern changes (detours/lanes dedicated for construction equipment egress).

Appropriate signage and barriers should be in place prior to construction activities in order to alert pedestrians and motorists of project activities and traffic pattern changes.

The contractor would implement traffic control measures, as necessary.

4.6.4 Public Safety – Hazardous Materials

Executive Order 13045 (Protection of Children) requires Federal agencies to make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children. Safety and security issues considered in this EA include the health and safety of area residents, the public-at-large, and the protection of personnel involved in the activities related to the construction of the proposed project.

The management of hazardous materials is regulated under various federal and state environmental and transportation laws and regulations, including the Resource Conservation and Recovery Act (RCRA); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Toxic Substances Control Act of 1976 (TSCA); the Emergency Planning and Community Right-to-Know Act; the Hazardous Materials Transportation Act; and the Louisiana Voluntary Investigation and Remedial Action statute. The purpose of the regulatory requirements set forth under these laws is to ensure the protection of human health and the environment through proper management (identification, use, storage, treatment, transport, and disposal) of these materials. Some of these laws provide for the investigation and cleanup of sites already contaminated by releases of hazardous materials, wastes, or substances.

The TSCA (codified at 15 U.S.C., Ch. 53), authorizes the USEPA to protect the public from "unreasonable risk of injury to health or the environment" by regulating the introduction, manufacture, importation, sale, use and disposal of specific new or already existing chemicals. "New Chemicals" are defined as "any chemical substance which is not included in the chemical substance list compiled and published under [TSCA] Section 8(b)." Existing chemicals include any chemical currently listed under Section 8(b), including polychlorinated biphenyls (PCBs), asbestos, radon, lead-based paint, chlorofluorocarbons, dioxin and hexavalent chromium.

TSCA Subchapter I, "Control of Toxic Substances" (Sections 2601-2629), regulates the disposal of PCB products, sets limits for PCB contamination of the environment, and authorizes the remediation of sites contaminated with PCB. Subchapter II, "Asbestos Hazard Emergency Response" (Sections 2641-2656), authorizes the USEPA to impose requirements for asbestos abatement in schools, and requires accreditation of those who inspect asbestos-containing materials. Subchapter IV, "Lead Exposure Reduction" (Sections 2681-2692), requires the USEPA to identify sources of lead contamination in the environment, to regulate the amounts of lead allowed in products, and to establish state programs that monitor and reduce lead exposure.

The USEPA (EPA – EnviroFacts, 2013) and LDEQ hazardous materials database searches were queried for the proposed project work areas. No sites of concern were identified by the database

search within the project work areas. No environmental conditions of concern observed during field reconnaissance within the proposed project work areas. The LDNR SONRIS database was queried for the project work areas. According to the LDNR, there are no recorded oil/gas wells located in the proposed project areas (SONRIS, 2013).

Alternative 1 – No Action: The No Action Alternative would involve no undertaking; therefore, no additional impacts to public safety and hazardous materials would be expected.

Alternative 2 Proposed Action – Upgrade Plaza Drive Pump Station; Improve channel capacity on East St. Bernard Hwy. and Palmasino Blvd.; and construct bridge crossing at 20 Arpent Canal: No impacts to public safety and security are anticipated. The contractor would place fencing around the work area perimeters to protect nearby residents from vehicular traffic. To minimize worker and public health and safety risks from project construction and closure, all construction and closure work would be done using qualified personnel trained in the proper use of construction equipment, including all appropriate safety precautions. Additionally, all activities would be conducted in a safe manner in accordance with the standards specified in the OSHA regulations. The contractor would post appropriate signage and fencing to minimize potential adverse public safety concerns.

Under the Proposed Action Alternative, the improvements the proposed project site would not increase potential hazards to human health. The site is not adjacent to hazardous or solid waste facilities.

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

Unusable equipment, debris and material shall be disposed of in an approved manner and location. In the event significant items (or evidence thereof) are discovered during implementation of the project applicant shall handle, manage, and dispose of petroleum products, hazardous materials and/or toxic waste in accordance to the requirements and to the satisfaction of the governing local, state and federal agencies. Applicant is responsible for acquiring LDEQ permits for the temporary debris staging and reduction sites (TDSRS) associated with this project prior to project closeout. Failure to provide FEMA with LDEQ approval may jeopardize project funding eligibility

5.0 CUMULATIVE IMPACTS

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

In its comprehensive guidance on cumulative impacts analysis under NEPA, the CEQ notes that: "[t]he range of actions that must be considered includes not only the project proposal, but all connected and similar actions that could contribute to cumulative effects" (CEQ, 1997). The term "similar actions" may be defined as "reasonably foreseeable or proposed agency actions [with] similarities that provide a basis for evaluating the environmental consequences together, such as common timing or geography" (40 CFR § 1508.25[a][3]; see also 40 CFR §§ 1508.25[a][2] and [c]).

Not all potential issues identified during cumulative effects scoping need be included in an EA. Because some effects may be irrelevant or inconsequential to decisions about the proposed action and alternatives, the focus of the cumulative effects analysis should be narrowed to important issues of national, regional, or local significance. To assist agencies in this narrowing process, CEQ lists seven (7) basic questions, including: (1) is the proposed action one of several similar past, present, or future actions in the same geographic area; (2) do other activities (governmental or private) in the region have environmental effects similar to those of the proposed action; (3) have any recent or ongoing NEPA analyses of similar actions or nearby actions identified important adverse or beneficial cumulative effect issues; and, (4) has the impact been historically significant, such that the importance of the resource is defined by past loss, past gain, or investments to restore resources (CEQ, 1997).

It is normally insufficient when analyzing the contribution of a proposed action to cumulative effects to merely analyze effects within the immediate area of the proposed action (CEQ, 1997, pg. 12). Geographic boundaries should be expanded for cumulative effects analysis, and conducted on the scale of human communities, landscapes, watersheds, or airsheds. Temporal frames should be extended to encompass additional effects on the resources, ecosystems, and human communities of concern. A useful concept in determining appropriate geographic boundaries for a cumulative effects analysis is the project impact zone; that is, the area (and resources within that area) that could be affected by the proposed action. The area appropriate for analysis of cumulative effects will, in most instances, be a larger geographic area occupied by resources outside of the project impact zone.

The proposed project sites are located in Chalmette, LA within St. Bernard Parish, starting at the Plaza Pumping Station to East St. Bernard Hwy., moving north to Palmasino Canal, and concluding at the 20 Arpent Canal. FEMA has determined that the area within the 100 acre watershed of the site constitutes an appropriate project impact zone, and the larger geographic area consisting of the 70043 zip code constitutes an appropriate boundary for a cumulative impact analysis of the proposed action and alternatives.

In accordance with NEPA, and to the extent reasonable and practicable, this EA considered the combined effects of the Proposed Action Alternative, as well as other actions undertaken by FEMA and other public and private entities that also affect environmental resources the proposed action would affect, and that occur within the considered geographic area and temporal frame(s).

Specifically, a range of past, present, and reasonably foreseeable actions undertaken by FEMA within the designated geographic boundary area were reviewed: (1) for similarities such as scope

of work, common timing, and geography; (2) to determine environmental effects similar to those of the proposed action, if any; and (3) to identify the potential for cumulative impacts. As part of the cumulative effects analysis, FEMA also reviewed known past, present, and reasonably foreseeable projects of Federal resource agencies and other parties within the designated geographic boundary. These reviews were performed in order to assess past proposed actions, as well as the effects of completed and ongoing actions in order to determine whether the incremental impacts of the current proposed action, when combined with the effects of other past, present, and reasonably foreseeable future projects, are cumulatively considerable or significant.

From August 2005 continuing to May 2015, within the 70043 geographic area, numerous Public Assistance and HMGP program funded, and numerous non-FEMA funded, debris removal, protective measures, mitigation, and repair projects have occurred, are occurring, or are reasonably foreseen to occur (developed with enough specificity to provide useful information to a decision maker and the interested public) to buildings, roads and bridges, recreational and educational facilities, public utilities, waterways, and more. All FEMA funded actions are subject to various levels of environmental review as a requirement for the receipt of Federal funding. An applicant's failure to comply with any required environmental permitting or other condition is a serious violation which can result in the loss of Federal assistance, including funding.

FEMA has determined that the incremental effects of the other infrastructure recovery and improvement actions are likely to be similar to the impacts and effects this EA previously described for the present proposed action, in that the effects to socioeconomic resources are expected to be beneficial, and effects to other resources expected to be either non-existent or minimal and temporary. FEMA has further determined that the incremental impact of the present proposed project, when combined with the effects of other past, present, and reasonably foreseeable future projects, is neither cumulatively considerable nor significant.

These infrastructure actions, some of which have already occurred, and many of which will occur concurrent with and/or subsequent to the proposed action, are necessary as a result of the unprecedented devastation caused by the 2005 hurricanes, both Katrina and Rita, in order to restore pre-disaster conditions. In reviewing impacts, socioeconomic resources were identified as having the most potential to experience cumulative effects. Although devastating, the 2005 storms created an opportunity for the applicant to serve residents in the Greater New Orleans area and surrounding neighborhoods by enhancing housing facilities, thus attracting more residents to return home. Considered in relation to past, present, and reasonably foreseeable future actions, the cumulative impact of the proposed action to the built and natural environment would be minimal, would be beneficial rather than detrimental, and is not expected to contribute to any adverse effects or to otherwise significantly affect the human environment.

6.0 CONDITIONS AND MITIGATION MEASURES

Based upon the studies and consultations undertaken in this environmental assessment, several conditions and mitigation measures must be taken by the applicant prior to and during project implementation.

- The Applicant is required to obtain and comply with all local, state and federal permits, approvals and requirements prior to initiating work on this project. All coordination pertaining to these activities and Applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files.

- Implement of BMPs that include; install silt fences/straw bales to reduce sedimentation. Area soils would be covered and/or wetted during construction. If fill were stored on site as part of unit installation or removal, the contractor would be required to appropriately cover it.

- Construction contractor would be required to obtain LPDES permit, if applicable, and implement stormwater pollution prevention plan. The LDEQ may require stormwater general permits for construction areas equal to or greater than one (1) acre. It is recommended that the LDEQ Water Permit Division be contacted to determine whether the proposed improvements require one of these permits.

- All precaution will be observed to control nonpoint source pollution from construction activities. The contractor should observe all precautions to protect the groundwater of the region.

- The LDNR Office of Conservation should be contacted if any unregistered drinking water wells are encountered during construction work.

- All work associated with project that is conducted on potable water systems must comply with applicable sections of the federal Safe Drinking Water Act and state regulations under Louisiana Title 51 Part XII (otherwise known as the Louisiana Public Health Sanitary code and related State Plumbing code).

- Applicant must contact the LDEQ to determine if a LPDES permit is required. If required, the contractor must follow all requirements of the LPDES permit including all applicable BMPs.

- New construction must be compliant with current codes and standards. St. Bernard Parish is required to coordinate with the local floodplain administrator regarding floodplain permit(s) prior to the start of any activities. All coordination pertaining to these activities and Applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files.

- The contractor must coordinate with the Applicant to minimize the potential disruption of any school activities to the extent possible.

- Appropriate signage and barriers should be in place prior to construction activities in order to alert pedestrians and motorists of project activities and traffic pattern changes.

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

- This project may require a CUP from the LDNR. Determination of CUP requirements must be obtained through the submission of a completed CUP application to the LDNR. Proposed projects may be coordinated by contacting LDNR at (225) 342-7591 or 1-800-267-4019. Refer to CUP Number P20120106. The application packet may be obtained by calling (225) 342-7591 or (800) 267-4019, or by visiting the LDNR website at http://dnr.louisiana.gov/index.cfm?md=pagebuilder&tmp=home&pid=93&pnid=189&nid=191 The Applicant must comply with all conditions of the required permits. All coordination pertaining to these activities and Applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files.

- Changes, additions, and/or supplements to the approved scope of work which alter the existing use and function of the structure, including additional work not funded by FEMA but performed substantially at the same time, will require resubmission of the application prior to construction to FEMA for re-evaluation under the National Environmental Policy Act.

- St. Bernard Parish Code of Ordinance Sec. 11-133. - Construction, power equipment.

Except as otherwise provided in this chapter, no person shall engage in, cause or permit any person to be engaged in construction activities in any residential or commercial district between the hours of 9:00 p.m. of one day and 7:00 a.m. of the following day. Construction projects shall be subject to the maximum permissible noise level specified for industrial districts for the periods within which construction is to be completed pursuant to any applicable building permit. (b) Construction activities directly connected with the abatement of an emergency are excluded from the provisions of this section. (c) No person shall operate on any property within a residential or commercial district or on any public way within a residential or commercial district, any power equipment, such as, but not limited to, chain saws, pavement breakers, log chippers, riding tractors, powered hand tools, between the hours of 10:00 p.m. of one day and 7:00 a.m. of the next day or within residential, commercial or industrial noise districts between the hours of 7:00 a.m. and 10:00 p.m. which emits a noise level in excess of the levels set in Section 11-132.

- The contractor would be responsible for keeping all excavated areas periodically sprayed with water, all equipment maintained in good working order, and all construction vehicles would be limited to 15 mph to minimize pollution/fugitive dust.

- Any changes or modifications to the proposed project would require a wetland revised determination. Off-site locations of activities such as borrow; disposals, haul-and detour-roads and work mobilization site developments may be subject to the Department of the Army regulatory requirements and may have an impact to a Department of Army project.

- If any solid or hazardous wastes, or soils and/or groundwater contaminated with hazardous constituents are encountered during the project, notification to LDEQ's Single-

Point-of-Contact (SPOC) at (225) 219-3640 is required. Additionally, precautions should be taken to protect workers from these hazardous constituents.

- Unusable equipment, debris and material shall be disposed of in an approved manner and location. In the event significant items (or evidence thereof) are discovered during implementation of the project applicant shall handle, manage, and dispose of petroleum products, hazardous materials and/or toxic waste in accordance to the requirements and to the satisfaction of the governing local, state and federal agencies. Applicant is responsible for acquiring LDEQ permits for the temporary debris staging and reduction sites (TDSRS) associated with this project prior to project closeout. Failure to provide FEMA with LDEQ approval may jeopardize project funding eligibility.

- Construction traffic should be closely monitored and controlled as appropriate. All construction activities would be conducted in a safe manner in accordance with OSHA requirements. To alert motorists and pedestrians of project activities, appropriate signage and barriers should be used during construction. During construction activities, the construction site(s) would be fenced off to discourage trespassers. Traffic on affected streets would be controlled, as necessary, during construction and excavation activities.

- If human bone or unmarked grave(s) are present within the project area, compliance with the Louisiana Unmarked Human Burial Sites Preservation Act (R.S. 8:671 et seq.) is required. The applicant shall notify the law enforcement agency of the jurisdiction where the remains are located within twenty-four hours of the discovery. The applicant shall also notify FEMA and the Louisiana Division of Archaeology at 225-342-8170 within seventy-two hours of the discovery. (**Louisiana Unmarked Human Burial Sites Preservation Act Clause)**

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

7.0 PUBLIC INVOLVEMENT

The Applicant published an Early Public notice on August 22, 2014 and a Floodplain and Wetlands Explanation Notice was on October 3, 2014.

The draft EA and draft FONSI are available for review at the St. Bernard Library located at 2600 Palmisano Blvd, Chalmette, LA 70043 Monday – Thursday 9 am – 7pm, Friday - Saturday 9 a.m – 5p.m., closed Sundays and Holidays. This public notice will run in the local newspaper in the

The Advocate New Orleans Edition on Monday June 8th, 2015, Tuesday June 9th, 2015, and Wednesday June 10th, 2015. It will also run in the The St. Bernard Voice, Friday June 12th, 2015. The documents can also be downloaded from FEMA's website at http://www.fema.gov/resource-document-library. There will be a ten (10) day comment period, beginning on June 8th, 2015 and concluding on June 19th, 2015 at 4 p.m. Comments may be mailed to: DEPARTMENT OF HOMELAND SECURITY-FEMA EHP, Palmisano 1500 MAIN STREET, BATON ROUGE, LOUISIANA 70802. Comments may be emailed to: FEMA-NOMA@dhs.gov or faxed to 225-346-5848. Verbal comments will be accepted or recorded at 504-427-8000. If no substantive comments are received, the draft EA and associated FONSI will become final.

8.0 AGENCY COORDINATION

As part of the development of the EA, Federal and State resource protection agencies were contacted. Responses received to date are included in Appendix C.

- Lake Borgne Basin Levee District
- Louisiana Department of Environmental Quality, Community and Industry Relations, Business and Community Outreach Division
- Louisiana Department of Environmental Quality, Environmental Services, Water Permits Division
- Louisiana Department of Natural Resources, Office of Coastal Management
- Louisiana Department Of Transportation and Development, District Design, Water Resources and Development Section
- Louisiana Department of Wildlife and Fisheries, Office of Wildlife, Natural Heritage Program
- Louisiana State Historic Preservation Office
- Choctaw Nation of Oklahoma
- Natural Resources Conservation Service, New Orleans Field Office
- United States Army Corps Of Engineers, New Orleans District
- United States Environmental Protection Agency, Sole Source Aquifer Program, Ground Water/UIC Section
- United States Fish and Wildlife, Louisiana Field Office

9.0 LIST OF PREPARERS

Tiffany Spann-Winfield, Deputy Environmental Liaison Officer, FEMA, LRO
Melanie Pitts, Lead Environmental Specialist, FEMA, LRO
Jason A. Emery, M.A. R.P.A., Lead Historic Preservation Specialist, FEMA, LRO
Emanuel Ross, Environmental Specialist, FEMA, LRO
Mary Shanks, Historic Specialist – Archeologist, FEMA LRO
Michael D. Hunnicutt, Hazard Mitigation Technical Advisor, St. Bernard Parish Government
Andrew Becker, Community Development Block Grant, St. Bernard Parish Government
Michael Bayham, Grants Specialist, St. Bernard Parish Government
Donald Bourgeois, Recovery Director, St Bernard Parish Government
Douglas Landry, Project Manager, CDM Corporation
Rob Bredberg, Engineer, BKI and Associates

Jack Hunt, HMGP Program Manager, Hunt, Guillot & Associates, LLC
Kendall Magee, Project Manager, Frye/Magee, LLC
Danny H. Magee, Sr., Senior Grant Manager, Frye/Magee, LLC
John Rahaim, Chief Administrative Officer and Homeland Security Director, St. Bernard Parish Government
Hillary Nunez, Public Works Director, St. Bernard Parish Government.

10.0 REFERENCES

Clean Air Act of 1963, as amended. Available at: http://www.epa.gov/air/caa/title1.html

Clean Water Act of 1972, as amended. Available at: http://www.epw.senate.gov/water.pdf

Coastal Barrier Resources Act of 1982, as amended.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended. Available at: http://www.epw.senate.gov/cercla.pdf

Council on Environmental Quality. 1997. Considering Cumulative Effects Under the National Environmental Policy Act. Available at: http://energy.gov/sites/prod/files/G-CEQ-40Questions.pdf

Executive Order 11988, Floodplain Management. 1977. Available at: http://www.fema.gov/plan/ehp/ehplaws/eo11988.shtm

Executive Order 11990, Wetlands Management. 1977. Available at: http://www.fema/gov/plan/ehp/ehplaws/eo11990.shtm

Executive Order 12898, Environmental Justice for Low Income and Minority Populations. 1994 Available at: http://www.fema.gov/plan/ehp/ehplaws

Environmental Protection Agency (EPA). 2013. Green Book. Available online at http://www.epa.gov/oaqps001/greenbk/o8index.html. Access February 2013. EPA. 2013. EnviroFacts. Available online at http://www.epa.gov/emefdata/em4ef.home. Access January 2014.

Endangered Species Act of 1973. Available at: http://epw.senate.gov/esa73.pdf

Farmland Protection Policy Act of 1981, as amended. Available at:
http://www.gpo.gov/fdsys/pkg/CFR-2010-title7-vol6/pdf/CFR-2010-title7-vol6-part658.pdf
http://www.gpo.gov/fdsys/pkg/CFR-2010-title7-vol6/pdf/CFR-2010-title7-vol6-part658.pdf

Federal Emergency Management Agency (FEMA). 2011. David Miller. Guidance for Use of Best Available Data in Complying with 44CFRPart 9 and EO 11988 for Certain Areas of Greater New Orleans.

Federal Emergency Management Agency. Hazard Mitigation Grant Program Programmatic Agreement. Online [Available]: http://www.fema.gov/pdf/hazard/hurricane/2005katrina/LA_HMGP%20PA.pdf

Federal Emergency Management Agency: Preliminary Digital Flood Insurance Rate Maps for Orleans Parish, dated November 13, 2008.
FEMA RiskMap6.com, 2013. Available online at http://www.riskmap6.com/Home.aspx. Accessed January 2014.

Gulf Engineers and Consultants (GEC). March 2013. Palmisano Drainage Project Report.

Google Earth. 2015. Aerial Imagery. [Online] Available: http://www.google.com/intl/en/earth/index.html

Louisiana Department of Environmental Quality. Air quality data. [Online] Available: http://www.deq.louisiana.gov/portal/tabid/37/Default.aspx?Search =non-attainment+areas

Louisiana Department of Environmental Quality. Electronic Data Management System. [Online] Available: http://www.deq.louisiana.gov/portal/tabid/2604/Default.aspx

Louisiana Department of Environmental Quality. Source Water Assessment Program. Potential Susceptibility Assessment of Ground Water Source of Public Drinking Water.

Louisiana Department of Environmental Quality. State Brownfields list [Online] Available: http://www.deq.louisiana.gov/portal/tabid/2620/Default.aspx

Louisiana Department of Environmental Quality. Voluntary Remediation Properties List. [Online] Available: http://www.deq.louisiana.gov/portal/LinkClick.aspx?fileticket=Y2QYdiziWh0%3d&tabid=269
Louisiana Department of Transportation and Development. DOTD: Ferry and Moveable Bridge Status. [Online] Available: http://www.dotd.la.gov/ferry/

Louisiana Department of Natural Resources. Coastal Zone Management Act. Available at: http://dnr.louisiana.gov/crm/coastmgt/coastmgt.asp

Louisiana Department of Natural Resources. SONRIS site. [Online] Available: http://sonris-www.dnr.state.la.us/www_root/sonris_portal_1.htm

Louisiana Geological Survey, 2008. Available online at http://www.lgs.lsu.edu/. Accessed January 2014.

Louisiana Mapping Project (LaMP). 2006-2014. Available at: http://www.lamappingproject.com

Municode.com. 2013. Chapter 11, Article VI – Noise Provisions and Prohibitions. Available online at http://library.municode.com/index.aspx?clientId=11497. Accessed January 2014.

National Oceanic and Atmospheric Administration. Coastal Barrier Resources Act. [Online] Available: http://www.csc.noaa.gov/cmfp/reference /Coastal_Barrier _Resources_Act.htm

Noise Control Act of 1972, as amended. Available at: http://www.epa.gov/air/noise/noise_control_act_of_1972.pdf

Office of the Federal Register National Archives and Records Administration. 2014. Code of Federal Regulations 36. Available at: http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&tpl=/ecfrbrowse/Title36/36tab_02.tpl

Office of the Federal Register National Archives and Records Administration. 2014. Code of Federal Regulations 40. Available at: http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40tab_02.tpl

Office of the Federal Register National Archives and Records Administration. 2014. Code of Federal Regulations 44. Available at: http://www.gpo.gov/fdsys/pkg/CFR-2002-title44-vol1/content-detail.html

Office of the Federal Register National Archives and Records Administration. 2014. Code of Federal Regulations 50. Available at: http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&tpl=/ecfrbrowse/Title50/50tab_02.tpl

Resource Conservation and Recovery Act of 1976, as amended. Available at: http://www.epw.senate.gov/rcra.pdf

Rivers and Harbors Act of 1899, as amended. Available at: http://www.epw.senate.gov/rivers.pdf

St. Bernard Noise Ordinance. [Online] Available: http://www.noisefree.org/cityord/new-orleans.pdf

Strategic Online Natural Resources Information System (SONRIS). 2013. Available online at http://sonris.com/. Accessed January 2014.

U.S. Census Bureau (USCB). 2013. American FactFinder. 2007-2011 Census Demographic Profiles Data. Available online at http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml. Accessed January 2014

U.S. Census Bureau. State & County QuickFacts. [Online] Available: http://quickfacts.census.gov/qfd/states/22/2255000.html

USDA/NRCS, 2012. Web Soil Survey. http://websoilsurvey.nrcs.usda.gov/app/. Assessed January 2014.

U.S. Geological Survey (USGS). 2012. USGS National Seismic Hazard Map. Available online at http://earthquake.usgs.gov/hazards/qfaults/eusa/gulf.php. Accessed January 2014.
U.S. Fish and Wildlife (USFWS). 2012. Species Reports, Environmental Conservation Online System. Available online at http://ecos.fws.gov/tess_public/. Accessed January 2014.

U.S.Environmental Protection Agency. 2006. Nonattainment Status for each Parish by year. [Online] Available: http://www.epa.gov/oar/oaqps/greenbk/anay.html

U.S. Environmental Protection Agency. Brownfields. [Online] Available: http://oaspub.epa.gov/enviro/bms_report.get_list?juris_value=&juris_search_type=Beginning+With&juris_type_label=-1&state_code=LA&zip_code=&proj_value=&proj_search_type=Beginning+With&rec_value=&rec_search_type=Beginning+With&cfda_type=NULL&CFDA_ID=&prop_value=&prop_search_type=Beginning+With&propaddr_name=&propcity_name=&propstate_code=LA

U.S. Environmental Protection Agency. NEPAssist. [Online] Available: http://134.67.99.123/nepassist/entry.aspx

U.S. Environmental Protection Agency, Region VI. Sole Source Aquifer Presentation from RTOC Meeting in Dallas, TX, March 13, 2008. [Online] Available: http://www.epa.gov/region6/water/swp/ssa/sole-source-aquifer.pdf

U.S. Environmental Protection Agency. Region VI Sole Source Aquifers. [Online] Available: http://www.epa.gov/region6/water/swp/ssa/maps.htm

U.S. Fish and Wildlife Service. Bald Eagle Management Guidelines and Conservation Measures. The Bald and Golden Eagle Protection Act. [Online] Available: http://www.fws.gov/midwest/Eagle/guidelines/bgepa.html

U.S. Fish and Wildlife Service. Endangered species data. [Online] Available: http://www.fws.gov/endangered/

U.S. Fish and Wildlife Service. National Wetlands Inventory. Wetlands Mapper. [Online] Available: http://www.fws.gov/wetlands/Data/Mapper.html

APPENDIX A

Site Photos and Figures

SITE PHOTOGRAPHS

Figure 1: Project Overview of the proposed locations

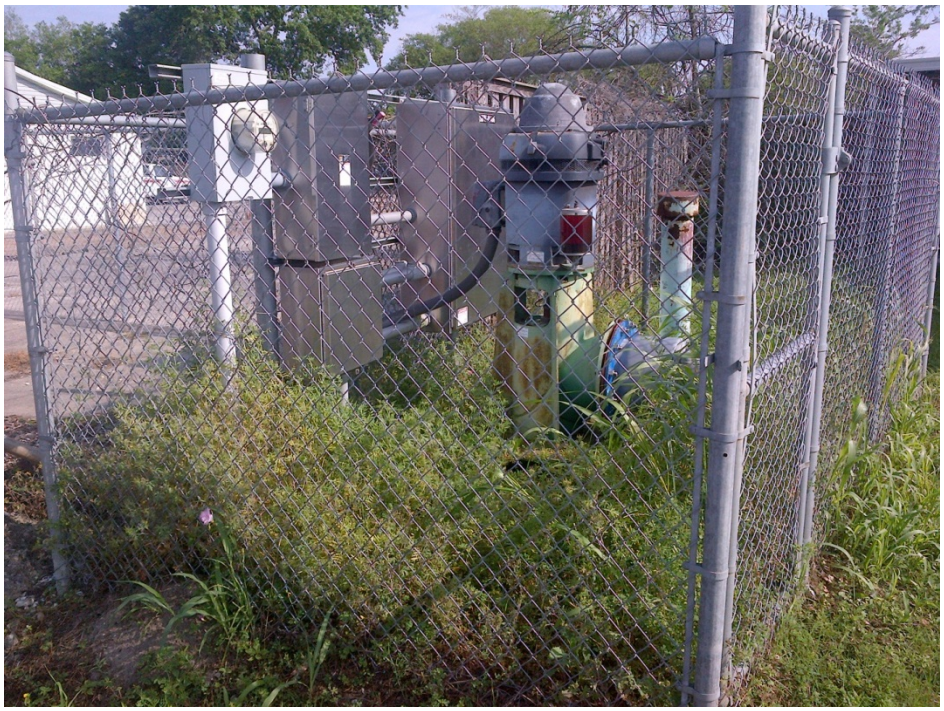


Figure 2: Existing Plaza Drive Pump Station to be replaced

Figure 3: Proposed locations of new Plaza Drive Pump Station

Figure 4: Earthern discharge ditch on East St. Bernard Hwy across from Plaza Drive pump station

Figure 5: Plaza Drive Pump Station – Discharge ditch from Plaza Drive pump station

Figure 6: Plaza Drive Canal Culvert #1proposed to be replaced

Figure 7: Plaza Drive Canal Culvert #2 proposed to be replaced

Figure 8: Palmisano Canal Culvert # 1- proposed box culvert to be replaced downstream

Figure 9: 2nd Proposed location of boxed culvert that would be installed on Palmisano Canal looking upstream

Figure 10: Location of proposed boxed culvert that would be replaced on Palmisano Canal looking downstream

Figure 11: Area where new culvert will be replaced with boxed culvert on Palmisano Canal going downstream

Figure 12: Existing culvert emptying into the 20 Arpent Canal

Figure 13: 1201 Missouri Street –Proposed House to be demolished

Figure 14: Location of proposed 20 Arpent arch bridge. These existing culverts would be removed

Figure 15: 20 Arpent Canal looking downsteam to chape canal

APPENDIX B

Construction Plans

ST. BERNARD PARISH GOVERNMENT
DEPARTMENT OF PUBLIC WORKS

PALMISANO BOULEVARD
DRAINAGE REPAIRS AND IMPROVEMENTS

St. Bernard Parish Government

PARISH PRESIDENT

DAVID E. PERALTA

COUNCIL MEMBERS

GUY McINNIS
GEORGE CAVIGNAC
RAY LAUGA, JR.
NATHAN J. GORBATY
RICHARD J. LEWIS
CASEY HUNNICUTT
MANUEL MONTELONGO

INDEX TO SHEETS

LADOTD STANDARD PLANS			REV. DATE
101-102	BM-01	BEDDING AND BACKFILL FOR DRAINAGE STRUCTURES	08-22-07
103	CB-01	CONCRETE OPEN TOP CATCH BASIN (12' MAX DEPTH)(24"x36" MAX PIPE)	11-02-00
104	CB-02	CONCRETE OPEN TOP CATCH BASIN (12' MAX DEPTH)(42"x72" MAX PIPE)	11-02-00
105-107	CP-01	PORTLAND CEMENT CONC. PAVEMENT DETAILS (SHEET 3 OF 4)	11-13-12
108	DW-01	URBAN DRIVEWAY DETAILS-COMB. CURB AND GUTTER	04-16-12
109-110	EC-01	TEMPORARY EROSION CONTROL DETAILS	10-01-08
111	PC-01	PRECAST CATCH BASINS AND MANHOLES	04-16-90
112-115	PED-01	PEDESTRIAN FACILITIES CURB RAMPS	05-05-08
116	PM-01	CENTERLINE AND EDGELINE MARKINGS	11-01-10
117	PM-02	PAVEMENT WORD AND SYMBOL MARKINGS	11-01-10
118	PM-05	TYPICAL INTERSECTION STRIPING LAYOUT	11-01-10

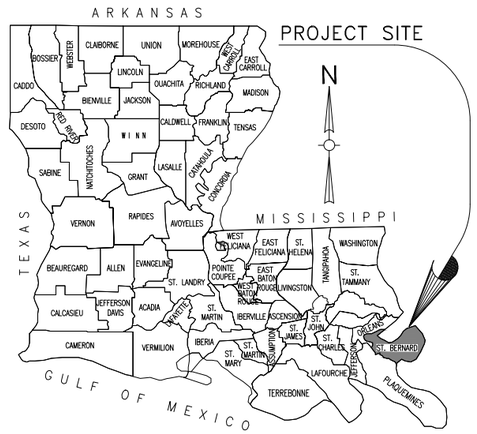
TOTAL SHEETS WITHOUT CROSS SECTIONS = XX

TOTAL SHEETS WITH CROSS SECTIONS = XX

SITE BENCH MARK:
TO BE IN PLACE AT FINAL DRAWINGS

TYPE OF CONSTRUCTION
This project consists of furnishing all supervision, equipment, and materials necessary to construct drainage improvements on Palmisano Blvd. (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal), to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system, and the construction of a bridge over the Twenty Arpent Canal at the intersection of Palmisano Blvd.

SITE MAP
NOT TO SCALE



95% Submittal

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

GEC Gulf Engineers & Consultants

PLANS PREPARED BY AND RECOMMENDED FOR APPROVAL BY:

VICE PRESIDENT
SID TROUARD, P.E.

GEC Gulf Engineers & Consultants
3445 N. CAUSEWAY
METAIRIE, LA. 70002
(504) 838-6009

SHEET NUMBER	
PARISH	ST. BERNARD PARISH
GEC PROJECT	KLS2.4800410.109
FEDERAL PROJECT	1603-087-0011
DESIGNED / CHECKED	
DETAILED / CHECKED	
DATE SHEET	APRIL 2015

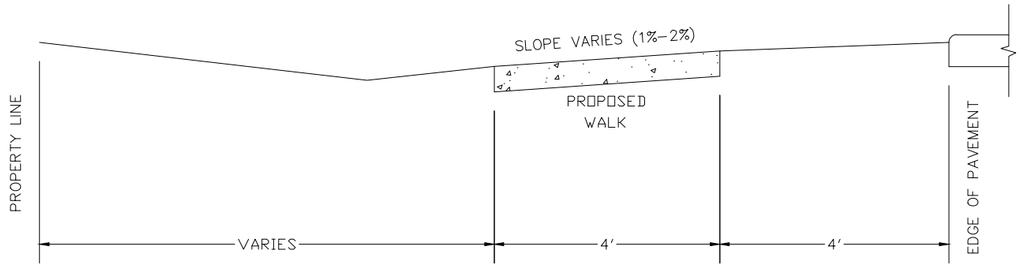
NO.	DATE	REVISION DESCRIPTION	BY

CDBG PALMISANO BOULEVARD
DRAINAGE REPAIRS AND IMPROVEMENTS
ST. BERNARD PARISH, LOUISIANA

TITLE SHEET

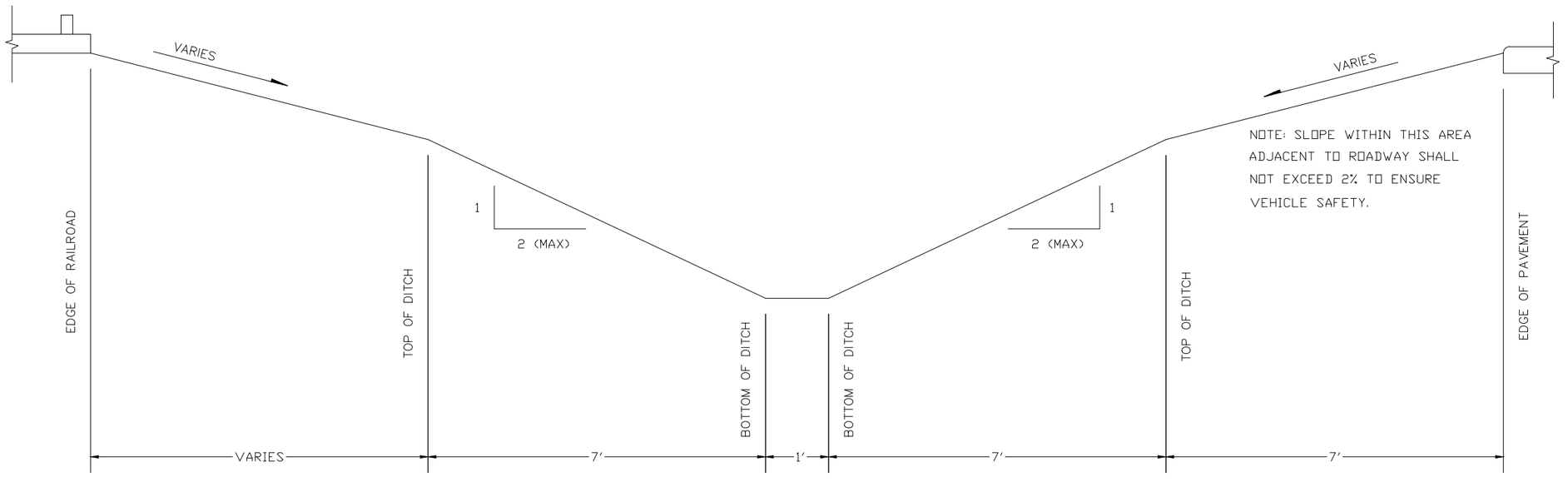
TL_01

G:\DWGS\410\0109 St Bernard Parish Palmisano Drainage Imp\2.DESIGN\Final\01_410.109-Sheet TL-01(Title).dwg



TYPICAL SECTION OF PALMISANO BOULEVARD

N.T.S.



TYPICAL SECTION OF ST. BERNARD HWY DITCH

N.T.S.

SHEET NUMBER	
PARISH	ST. BERNARD PARISH
GEC PROJECT	KLS2-480410.109
FEDERAL PROJECT	1603-087-0011
DESIGNED CHECKED	
DETAILED CHECKED	
DATE SHEET	APRIL 2015

NO.	DATE	REVISION DESCRIPTION	BY

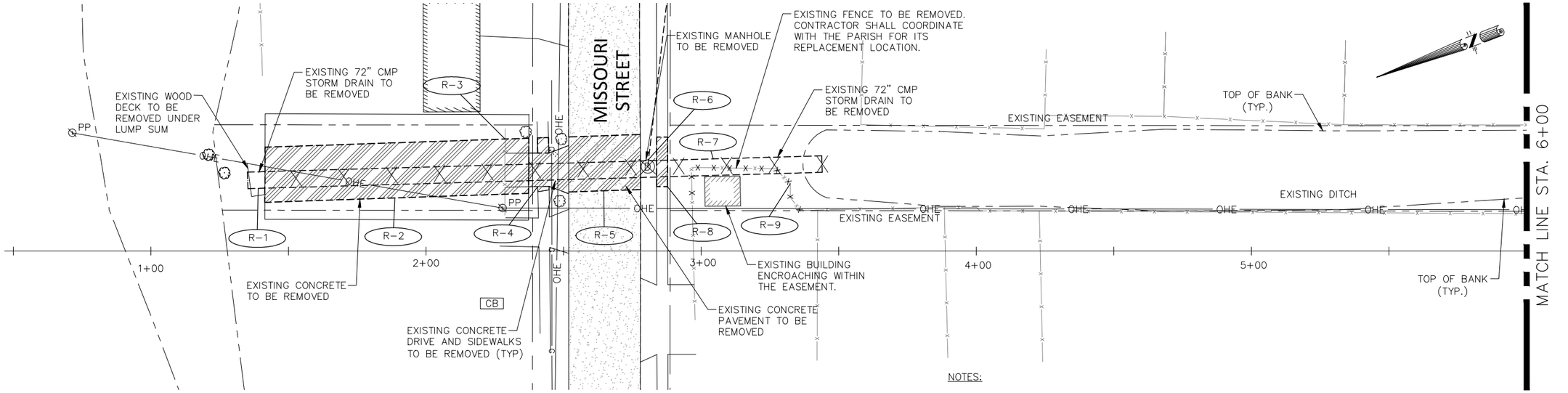
GEC
3445 N. CAUSEWAY
METAIRIE, LA. 70002
(504) 838-6009

CDBG PALMISANO BOULEVARD
DRAINAGE REPAIRS AND IMPROVEMENTS
ST. BERNARD PARISH, LOUISIANA

CONCRETE DETAILS

DETAILS

DT_14



REF.	STATION FROM	STATION TO	202-02-06040 REMOVAL OF CONCRETE HEADWALL EACH	202-02-06100 REMOVAL OF CONCRETE WALKS AND DRIVES SQ. YD.	202-02-06140 REMOVAL OF CONCRETE CURB LIN. FT.	202-02-12000 REMOVAL OF FENCE LIN. FT.	202-02-26000 REMOVAL OF STORM MANHOLE EACH	202-02-32140 REMOVAL OF STORM DRAIN > 48"ø LIN. FT.	202-02-32500 REMOVAL OF PCCP SQ. YD.	FULL DEPTH SAWCUTTING LIN. FT.
R-1	1+17	2+81						164		
R-2	1+41	2+37		213						192
R-3	2+29					50				
R-4	2+37	2+52		25						8
R-5	2+52	2+78			40				58	52
R-6	2+81						1			
R-7	2+81	3+44						63		
R-8	2+83	2+89		8						8
R-9	2+97	3+33				65				
R-10	7+38	8+01						70		
R-68	7+43		1							
R-11	7+45					29				
R-12	8+03					28				
R-69	8+04		1							
TOTALS THIS SHEET			2	246	40	172	1	133	58	260

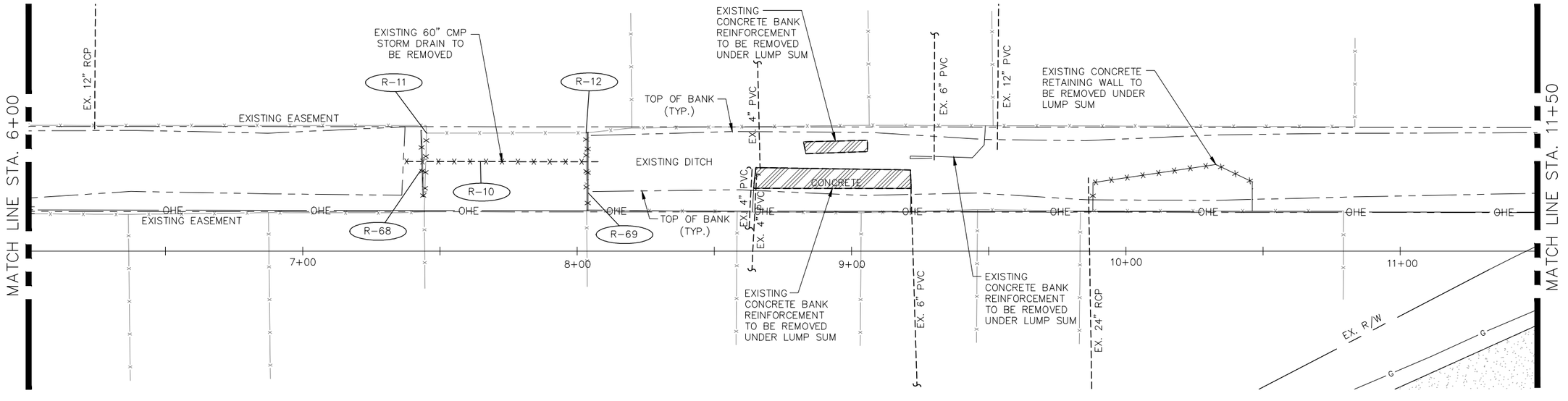
NOTES:

1. ANY SHORING, SHEETING, OR OTHER MEANS NECESSARY TO STABILIZE BANKS DURING CONSTRUCTION SHALL BE INSTALLED AT NO ADDITIONAL COST TO THE PARISH. ANY ADDITIONAL COSTS SHALL BE INCLUDED IN THE BID PRICE FOR THE VARIOUS OR RELATED ASSOCIATED BID ITEMS.
2. ITEMIZED REMOVAL ITEMS ARE SHOWN FOR EASE IN REVIEWING AND BIDDING THE PROJECT AND ARE NOT ALL INCLUSIVE. BID ITEM 202-01-00100, REMOVAL OF STRUCTURES AND OBSTRUCTIONS, LUMP SUM, SHALL BE USED FOR ALL ITEMS NOT SPECIFIED IN THESE PLANS. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH ALL ASPECTS OF THE PROJECT TO UNDERSTAND ANY ITEMS THAT NEED TO BE INCLUDED IN THIS BID ITEM.
3. PAVEMENT REMOVAL AND SAWCUTTING QUANTITIES ARE SHOWN FOR INFORMATION PURPOSES ONLY. THESE ITEMS WILL BE PAID UNDER BID ITEM 602-02-02160, FULL DEPTH PATCHING JOINTED CONCRETE PAVEMENT, (9" THICK).
4. ALL STRUCTURES LOCATED WITHIN RIGHT-OF-WAY ARE TO BE REMOVED UNLESS OTHERWISE DIRECTED.
5. ALL FENCING LOCATED WITHIN RIGHT-OF-WAY SHALL BE REINSTALLED AT THE EDGE OF THE RIGHT-OF-WAY.
6. ANY CMP WITH BITUMINOUS COATING LOCATED WITHIN THE PUBLIC RIGHT-OF-WAY SHALL BE REMOVED. PRIOR TO REMOVAL, THE CONTRACTOR SHALL CONTACT THE OWNER AND THE ENGINEER TO DETERMINE THE LENGTH TO BE REMOVED.

GRAPHIC SCALE
20 0 10 20
(IN FEET)
1 inch = 20 ft.

LEGEND

- REMOVAL OF CONCRETE PAVEMENT
- REMOVAL OF ASPHALTIC CONCRETE
- PAVEMENT FULL DEPTH SAWCUTTING
- REMOVAL OF PIPE/FENCING
- REMOVAL OF DRAINAGE STRUCTURE
- PP EXISTING POWER POLE
- EXISTING TREE
- CB EXISTING CATCH BASIN



SHEET NUMBER

PARISH	GEC PROJECT	FEDERAL PROJECT
ST. BERNARD PARISH	KLS2-480410.109	1603-087-0011

DESIGNED CHECKED	DETAILED CHECKED	DATE SHEET
		APRIL 2015

NO.	DATE	REVISION DESCRIPTION	BY

GEC
Gulf Engineers & Consultants
3445 N. CAUSEWAY
METAIRIE, LA. 70002
(504) 838-6009

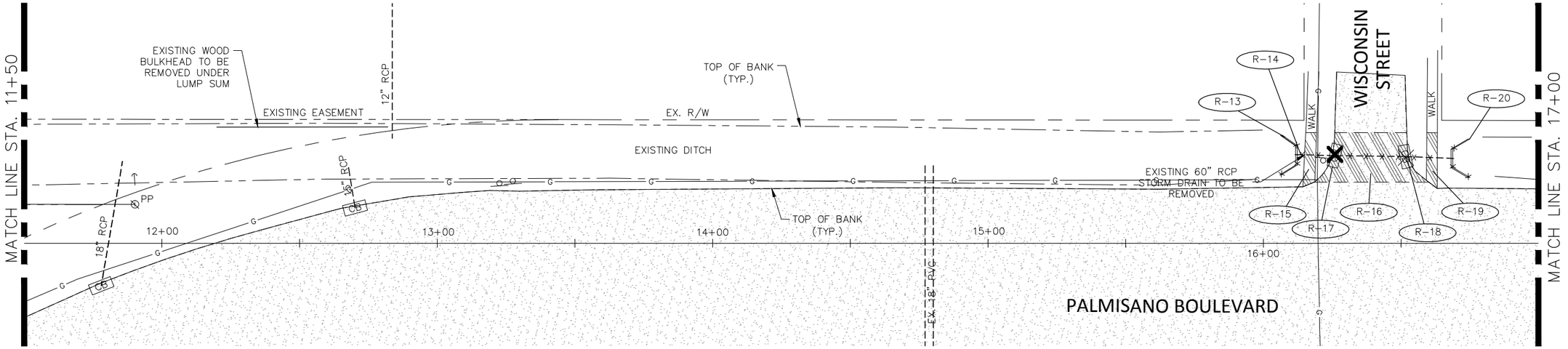
CDBG PALMISANO BOULEVARD
DRAINAGE REPAIRS AND IMPROVEMENTS
ST. BERNARD PARISH, LOUISIANA

PALMISANO BOULEVARD
REMOVAL PLAN

STA. 0+50 TO STA. 11+50

RM_01

G:\DWGS\410\0109 St Bernard Parish Palmisano Drainage Imp\2.DESIGN\Final\06_410.109-Sheets RM01-RM06(Removal)-Active.dwg

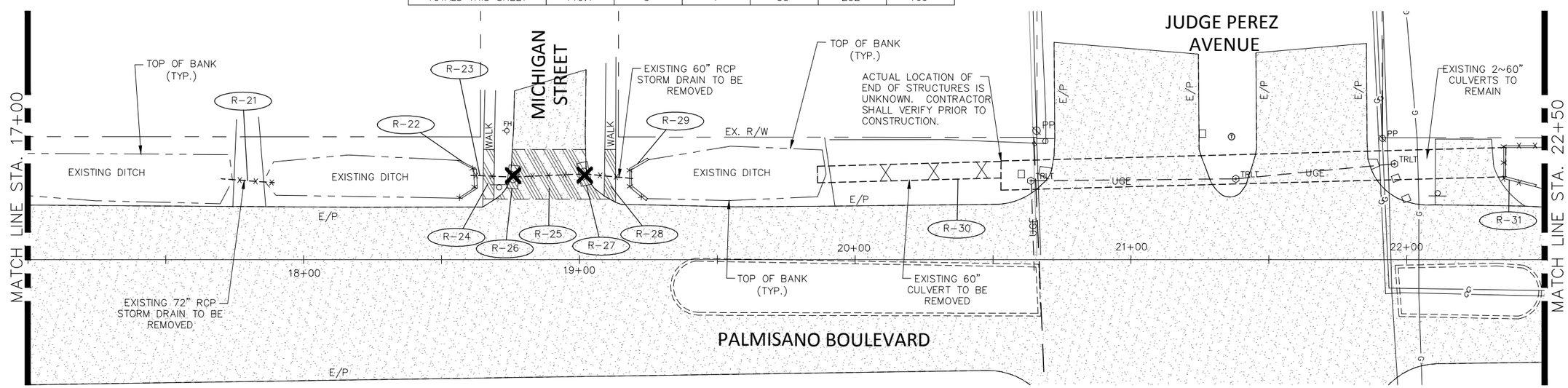


REF.	STATION		202-02-02020 REMOVAL OF ASPHALT PAVEMENT	202-02-06040 REMOVAL OF CONCRETE HEADWALL	202-02-06060 REMOVAL OF CONCRETE CATCH BASIN	202-02-06100 REMOVAL OF CONCRETE WALKS AND DRIVES	202-02-32140 REMOVAL OF STORM DRAIN > 48"ø	FULL DEPTH SAWCUTTING
	FROM	TO	SQ. YD.	EACH	EACH	SQ. YD.	LIN. FT.	LIN. FT.
R-13	16+06	16+12		1				
R-14	16+12	16+69					57	
R-15	16+15	16+19				9		8
R-16	16+19	16+59	59.6					68
R-17	16+26				1			
R-18	16+52				1			
R-19	16+59	16+43				8		8
R-20	16+68	16+75		1				
R-21	17+70	17+89					19	
R-22	18+56	18+63		1				
R-23	18+61	19+20					59	
R-24	18+65	18+69				8		8
R-25	18+69	19+08	59.5					69
R-26	18+76				1			
R-27	19+02				1			
R-28	19+09	19+13				8		8
R-29	19+18	19+25		1				
R-30	19+36	20+53					117	
R-31	22+35	22+47		1				
TOTALS THIS SHEET			119.1	5	4	33	252	169

GRAPHIC SCALE
20 0 10 20
(IN FEET)
1 inch = 20 ft.

LEGEND

- REMOVAL OF CONCRETE PAVEMENT
- REMOVAL OF ASPHALTIC CONCRETE
- PAVEMENT FULL DEPTH SAWCUTTING
- REMOVAL OF PIPE/FENCING
- REMOVAL OF DRAINAGE STRUCTURE
- EXISTING POWER POLE
- EXISTING TREE
- CB EXISTING CATCH BASIN



SHEET NUMBER

PARISH	GEC PROJECT	FEDERAL PROJECT
ST. BERNARD PARISH	KL52.480410.109	1603-087-0011

DESIGNED CHECKED	DETAILED CHECKED	DATE SHEET
		APRIL 2015

NO.	DATE	REVISION DESCRIPTION	BY

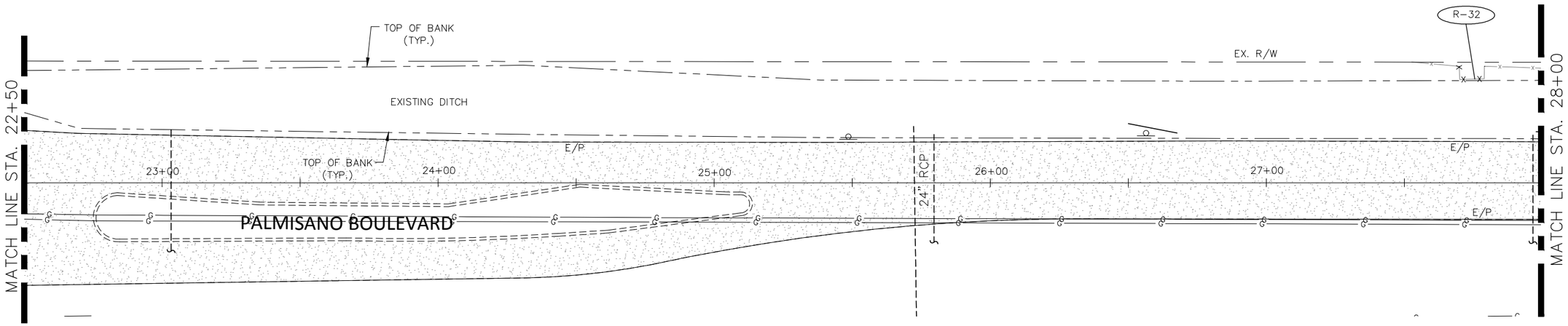
GEC Gulf Engineers & Consultants
3445 N. CAUSEWAY
METAIRIE, LA. 70002
(504) 838-6009

CDBG PALMISANO BOULEVARD
DRAINAGE REPAIRS AND IMPROVEMENTS
ST. BERNARD PARISH, LOUISIANA

PALMISANO BOULEVARD
REMOVAL PLAN

STA. 11+50 TO STA. 22+50

RM_02

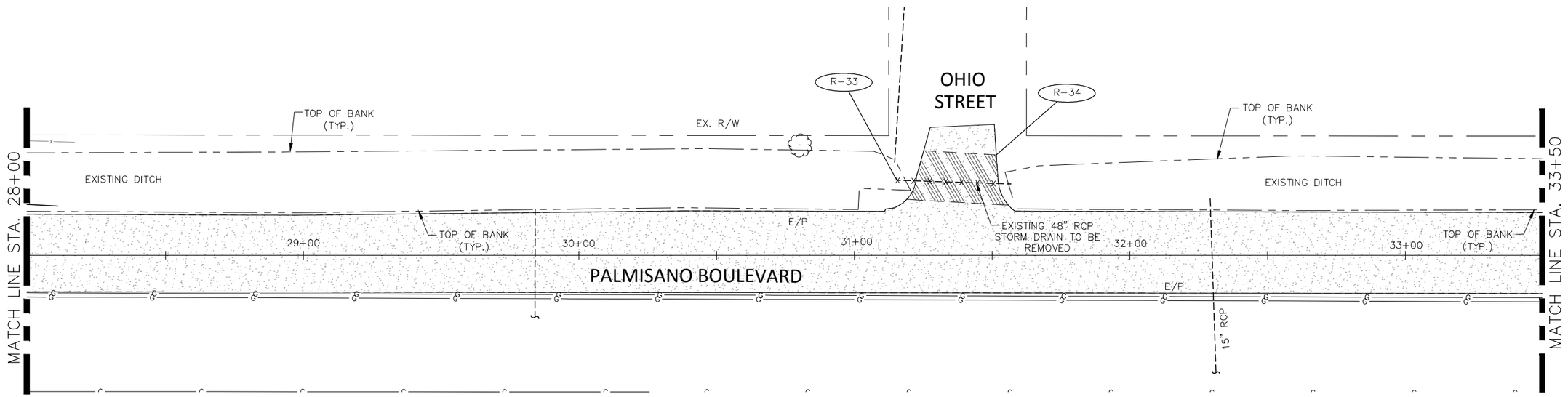


REF.	STATION		202-02-02020 REMOVAL OF ASPHALT PAVEMENT	202-02-06100 REMOVAL OF FENCE	202-02-32140 REMOVAL OF STORM DRAIN ≤ 48"ø	FULL DEPTH SAWCUTTING
	FROM	TO	SQ. YD.	LIN. FT.	LIN. FT.	LIN. FT.
R-32	27+70	27+79		17		
R-33	31+15	31+57			41	
R-34	31+19	31+55	60.1			63
TOTALS THIS SHEET			60.1	17	41	63

GRAPHIC SCALE
20 0 10 20
(IN FEET)
1 inch = 20 ft.

LEGEND

- REMOVAL OF CONCRETE PAVEMENT
- REMOVAL OF ASPHALTIC CONCRETE
- PAVEMENT FULL DEPTH SAWCUTTING
- REMOVAL OF PIPE/FENCING
- REMOVAL OF DRAINAGE STRUCTURE
- PP EXISTING POWER POLE
- EXISTING TREE
- CB EXISTING CATCH BASIN



SHEET NUMBER

PARISH	GEC PROJECT	FEDERAL PROJECT
ST. BERNARD PARISH	KLS2.480410.109	1603-087-0011

DESIGNED / CHECKED	DETAILED / CHECKED	DATE / SHEET
		APRIL 2015

NO.	DATE	REVISION DESCRIPTION	BY

GEC Gulf Engineers & Consultants
3445 N. CAUSEWAY
METAIRIE, LA. 70002
(504) 838-6009

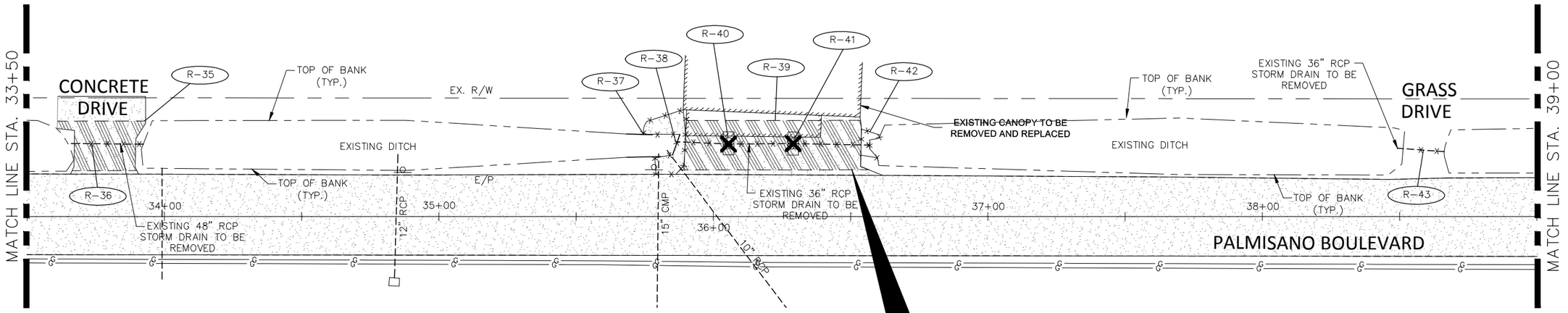
CDBG PALMISANO BOULEVARD
DRAINAGE REPAIRS AND IMPROVEMENTS
ST. BERNARD PARISH, LOUISIANA

PALMISANO BOULEVARD
REMOVAL PLAN

STA. 22+50 TO STA. 33+50

RM_03

G:\DWGS\410\0109 St Bernard Parish Palmisano Drainage Imp\2.DESIGN\Final\06_410.109-Sheets RM01-RM06(Removal)-Active.dwg



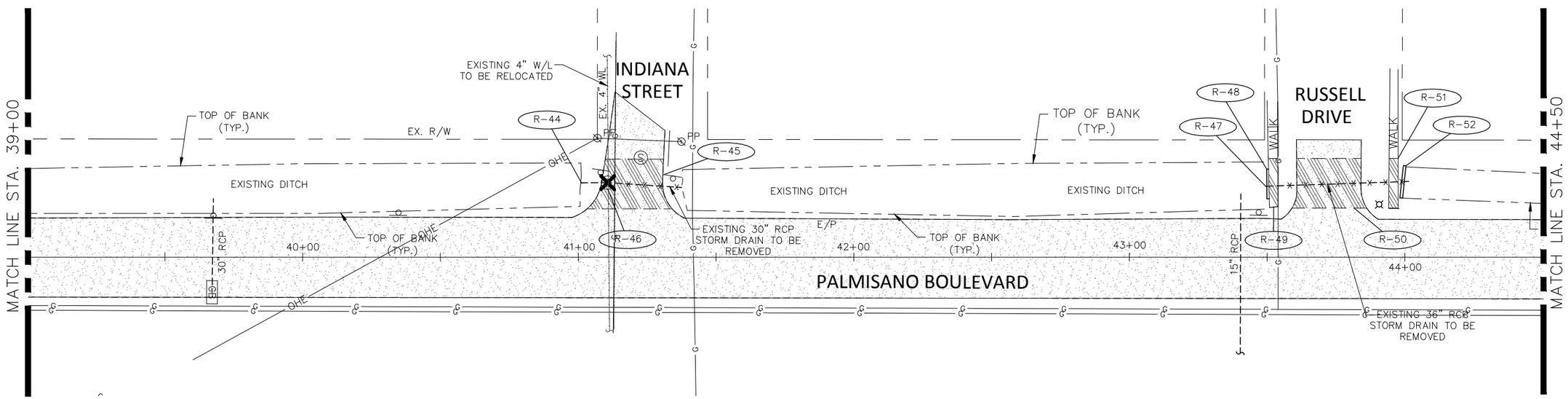
REF.	STATION		202-02-02020 REMOVAL OF ASPHALT PAVEMENT	202-02-06040 REMOVAL OF CONCRETE HEADWALL	202-02-06060 REMOVAL OF CONCRETE CATCH BASIN	202-02-06100 REMOVAL OF CONCRETE WALKS AND DRIVES	202-02-26000 REMOVAL OF STORM MANHOLE	202-02-32140 REMOVAL OF STORM DRAIN ≤ 48"ø	FULL DEPTH SAWCUTTING
	FROM	TO	SQ. YD.	EACH	EACH	SQ. YD.	EACH	LIN. FT.	LIN. FT.
R-35	33+61	33+93				48			56
R-36	33+66	33+92						26	
R-37	35+75	35+90		1					
R-38	35+86	36+57						71	
R-39	35+90	36+54	128.5						171
R-40	36+06				1				
R-41	36+29				1				
R-42	36+54	36+61		1					
R-43	38+49	38+66						17	
R-44	41+01	41+37						36	
R-45	41+03	41+34	46.8						52
R-46	41+11						1		
R-47	43+50			1					
R-48	43+50	43+84						34	
R-49	43+51	43+54				6			3
R-50	43+61	43+84	47.6						50
R-51	43+94	43+98				7			4
R-52	43+99			1					
TOTALS THIS SHEET			222.9	4	2	61	1	184	336

THE CONTRACTOR SHALL COORDINATE CLOSELY WITH THE OWNER OF THE "SNOWBALL STAND." ANY DEMOLITION ON THIS PROPERTY MUST HAVE WRITTEN APPROVAL BY THE OWNER AND ENGINEER PRIOR TO ANY CONSTRUCTION ACTIVITIES. RECONSTRUCTION WITHIN THE RIGHT-OF-WAY IS PERMITTED AT THIS LOCATION. HOWEVER, RECONSTRUCTION PLANS MUST BE APPROVED IN ADVANCE BY THE OWNER.

GRAPHIC SCALE
20 0 10 20
(IN FEET)
1 inch = 20 ft.

LEGEND

- REMOVAL OF CONCRETE PAVEMENT
- REMOVAL OF ASPHALTIC CONCRETE
- PAVEMENT FULL DEPTH SAWCUTTING
- REMOVAL OF PIPE/FENCING
- REMOVAL OF DRAINAGE STRUCTURE
- EXISTING POWER POLE
- EXISTING TREE
- CB EXISTING CATCH BASIN



SHEET NUMBER

PARISH	GEC PROJECT	FEDERAL PROJECT
ST. BERNARD PARISH	KLS2-480410.109	1603-087-0011

DESIGNED	DETAILED	DATE
CHECKED	CHECKED	SHEET
		APRIL 2015

NO.	DATE	REVISION DESCRIPTION	BY

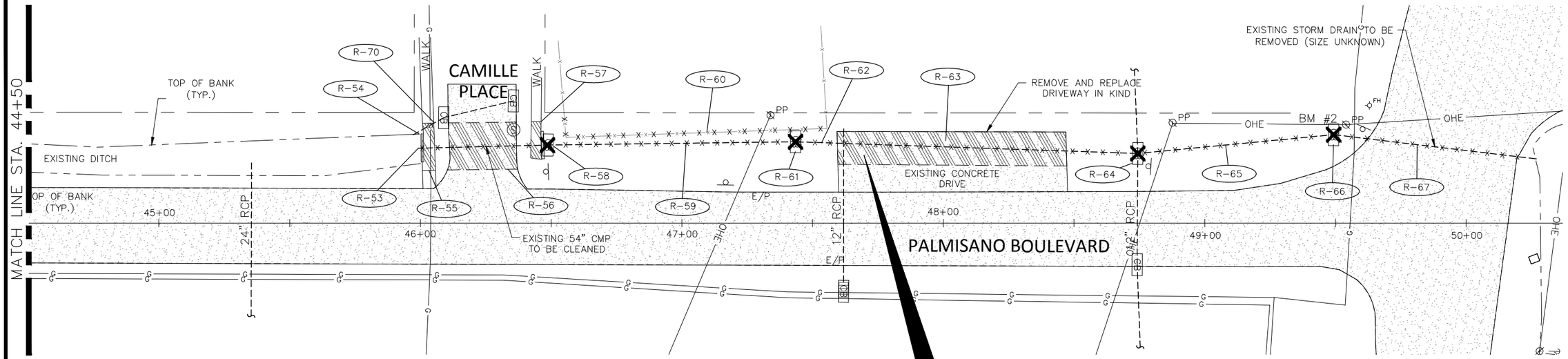
GEC Gulf Engineers & Consultants
3445 N. CAUSEWAY
METAIRIE, LA. 70002
(504) 838-6009

CDBG PALMISANO BOULEVARD
DRAINAGE REPAIRS AND IMPROVEMENTS
ST. BERNARD PARISH, LOUISIANA

PALMISANO BOULEVARD
REMOVAL PLAN

STA. 33+50 TO STA. 44+50

RM_04



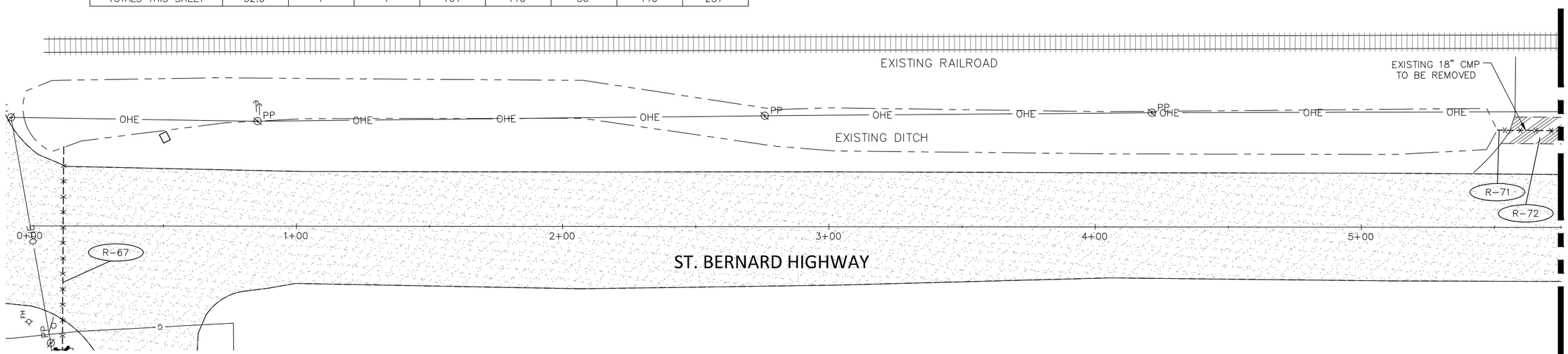
THE CONTRACTOR SHALL COORDINATE CLOSELY WITH THE PROPERTY OWNER PRIOR TO CONSTRUCTION. THE DEMOLITIONA AND RE-CONSTRUCTION OF THIS PARKING LOT SHALL BE DONE IN TIMELY MANNER AS TO OFFER THE LEAST DISTURBANCE TO CHURCH ACTIVITIES.

GRAPHIC SCALE
20 0 10 20
(IN FEET)
1 inch = 20 ft.

REF.	STATION FROM	STATION TO	202-02-02020 REMOVAL OF ASPHALT PAVEMENT SQ. YD.	202-02-06040 REMOVAL OF CONCRETE HEADWALL EACH	202-02-06060 REMOVAL OF CONCRETE CATCH BASIN EACH	202-02-06100 REMOVAL OF CONCRETE WALKS AND DRIVES SQ. YD.	202-02-26000 REMOVAL OF FENCE LIN. FT.	202-02-26000 REMOVAL OF STORM DRAIN > 48"ø LIN. FT.	202-02-32140 REMOVAL OF STORM DRAIN ≤ 48"ø LIN. FT.	FULL DEPTH SAWCUTTING LIN. FT.
R-70	45+97	46+07							12	
R-53	45+99	46+49						50		
R-54	46+00			1						
R-55	46+01	46+05				9				4
R-56	46+11	46+37	52.0							53
R-57	46+42	46+46				6				4
R-58	46+49				1					
R-59	46+49	47+43							94	
R-60	46+55	47+55					110			
R-61	47+43				1					
R-62	47+43	48+74							131	
R-63	47+49	48+47				124				196
R-64	48+47				1					
R-65	48+47	49+49							102	
R-66	49+49				1					
R-67	49+49	50+27							78	
R-71	5+51	5+75							23	
R-72	5+52	5+75				22				
TOTALS THIS SHEET			52.0	1	4	161	110	50	440	257

LEGEND

- REMOVAL OF CONCRETE PAVEMENT
- REMOVAL OF ASPHALTIC CONCRETE
- PAVEMENT FULL DEPTH SAWCUTTING
- REMOVAL OF PIPE/FENCING
- REMOVAL OF DRAINAGE STRUCTURE
- PP EXISTING POWER POLE
- EXISTING TREE
- CB EXISTING CATCH BASIN



SHEET NUMBER

PARISH	GEC PROJECT	FEDERAL PROJECT
ST. BERNARD PARISH	KLS2.4800410.109	1603-087-0011

DESIGNED CHECKED	DETAILED CHECKED	DATE SHEET
		APRIL 2015

NO.	DATE	REVISION DESCRIPTION	BY

GEC
Gulf Engineers & Consultants
3445 N. CAUSEWAY
METAIRIE, LA. 70002
(504) 838-6009

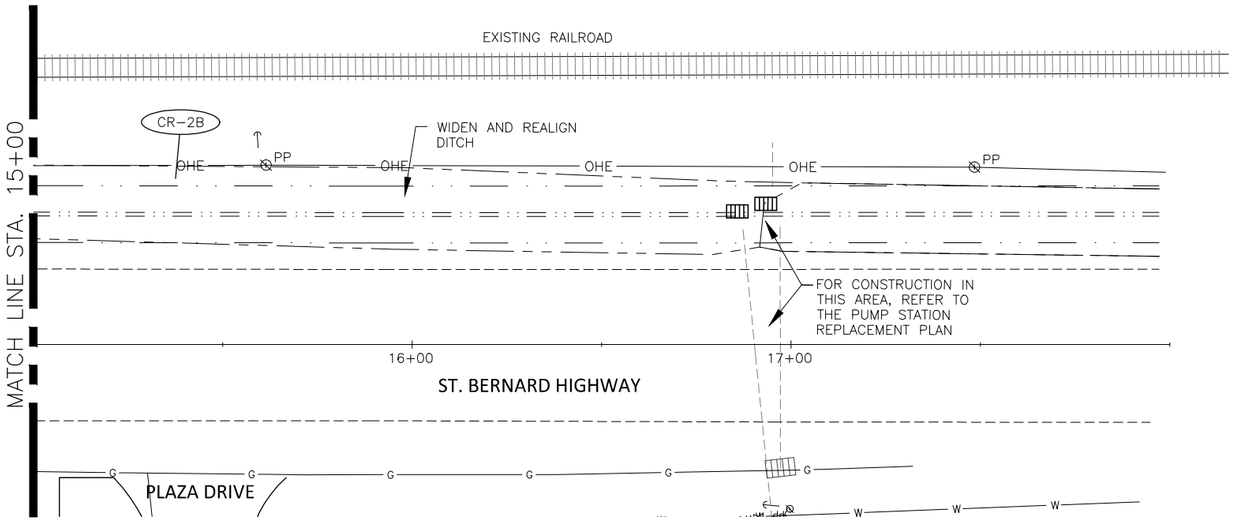
CDBG PALMISANO BOULEVARD
DRAINAGE REPAIRS AND IMPROVEMENTS
ST. BERNARD PARISH, LOUISIANA

PALMISANO BOULEVARD
ST. BERNARD BOULEVARD
REMOVAL PLAN

STA. 44+50 TO STA. 5+25

RM_05

G:\DWGS\410\0109 St Bernard Parish Palmisano Drainage Imp\2.DESIGN\Final\06_410.109-Sheets RM01-RM06(Removal)-Active.dwg



NOTE:

ST BERNARD HIGHWAY IS A STATE ROADWAY. A PERMIT IS REQUIRED FROM LADOTD BEFORE ANY CONSTRUCTION CAN OCCUR. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING THE PERMIT.

REF.	STATION		WIDEN AND REALIGN DITCH
	FROM	TO	LIN. FT.
CR-2B	15+00	16+81	181
TOTALS THIS SHEET			181

GRAPHIC SCALE

20 0 10 20

(IN FEET)
1 inch = 20 ft.

SHEET NUMBER

PARISH	GEC PROJECT	STATE PROJECT
ST. BERNARD PARISH	KLS2.489040.109	S.P. 013-12-0060 AND S.P. 297-04-0040

DESIGNED	CHECKED	DETAILED	CHECKED	DATE	SHEET
				APRIL 2015	

NO.	DATE	REVISION DESCRIPTION	BY

GEC Engineers & Consultants
3445 N. CAUSEWAY
METAIRIE, LA. 70002
(504) 838-6009

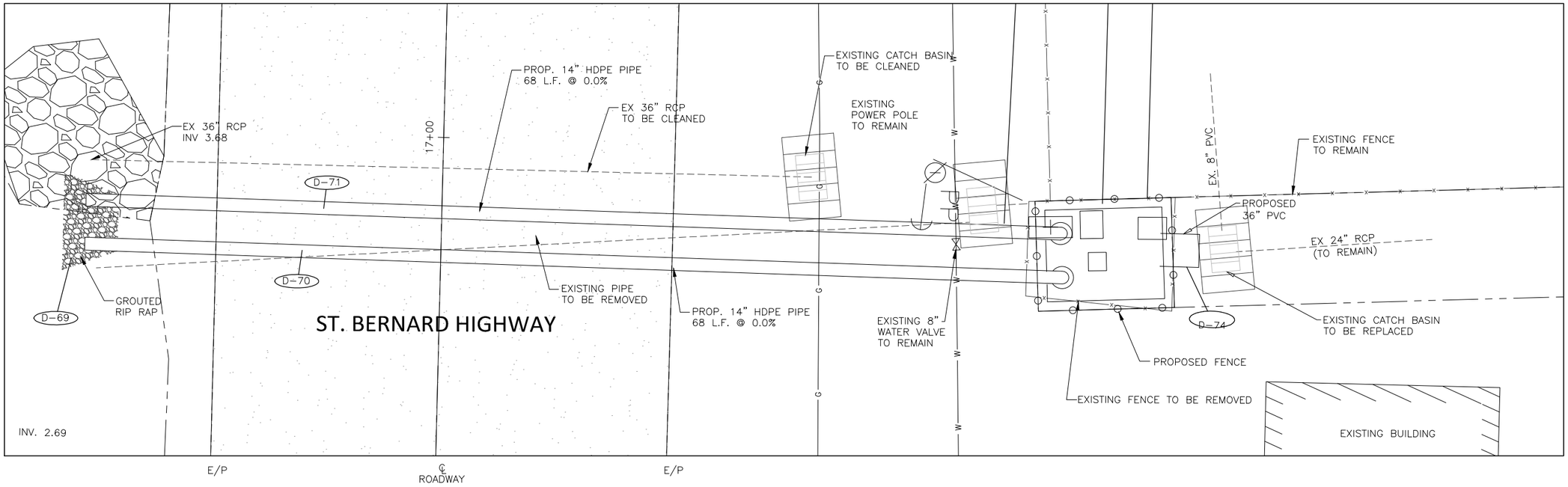
CDBG PALMISANO BOULEVARD
DRAINAGE REPAIRS AND IMPROVEMENTS
ST. BERNARD PARISH, LOUISIANA

ST. BERNARD HIGHWAY
PLAN AND PROFILE

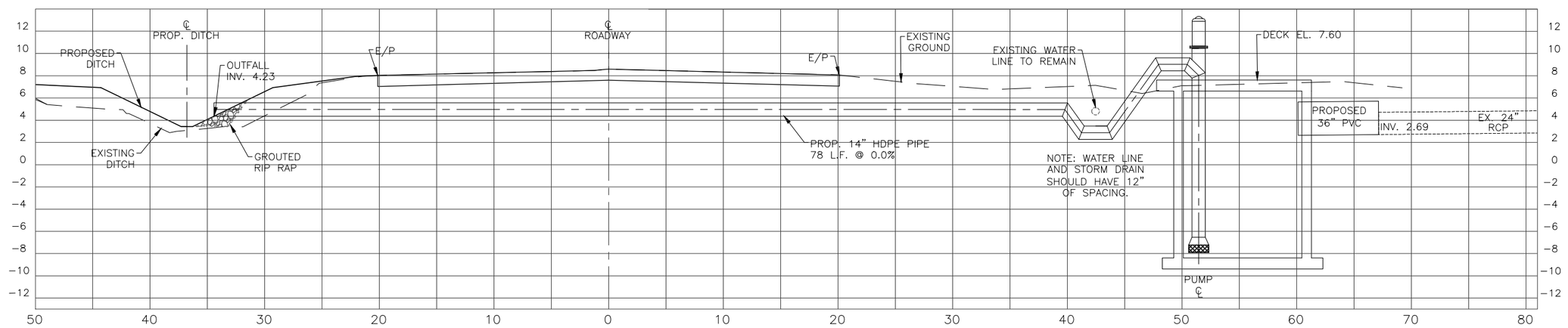
STA. 15+00 TO STA. 18+00

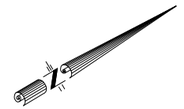
PP_14

G:\DWGS\410\0109 St Bernard Parish Palmisano Drainage Imp\2.DESIGN\Final\07_410.109-Sheets PP01-PP14(Profiles)-Active.dwg



REF.	STATION	SIDE	???? STRUCTURAL CONCRETE	???? REINFORCING STEEL	???? HDPE PIPE	???? CMP PIPE	???? 36" PVC	???? FENCING	???? 14" PUMP	???? GROUTED RIP RAP
			CU. YD.	LB.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	SQ. YD
D-69	16+80	LT.								9
D-70	16+80	LT./RT.			156					
D-71	16+80	RT.				58				
D-72	16+80	RT.							2	
D-73	16+80	RT.	30.05	2900						
F-6	16+80	RT.						57		
D-74	16+80	RT.					7			
	TOTALS		30.05	2900	78	29	7	57	2	9





GRAPHIC SCALE

5 0 2.5 5

(IN FEET)
1 inch = 5 ft.

SHEET NUMBER

PARISH	GEC PROJECT	FEDERAL PROJECT
ST. BERNARD PARISH	KLS2-480410.109	1603-087-0011

DESIGNED	DETAILED	DATE
CHECKED	CHECKED	APRIL 2015

NO.	DATE	REVISION DESCRIPTION	BY

GEC
Gulf Engineers & Consultants
3445 N. CAUSEWAY
METAIRIE, LA. 70002
(504) 838-6009

CDBG PALMISANO BOULEVARD
DRAINAGE REPAIRS AND IMPROVEMENTS
ST. BERNARD PARISH, LOUISIANA

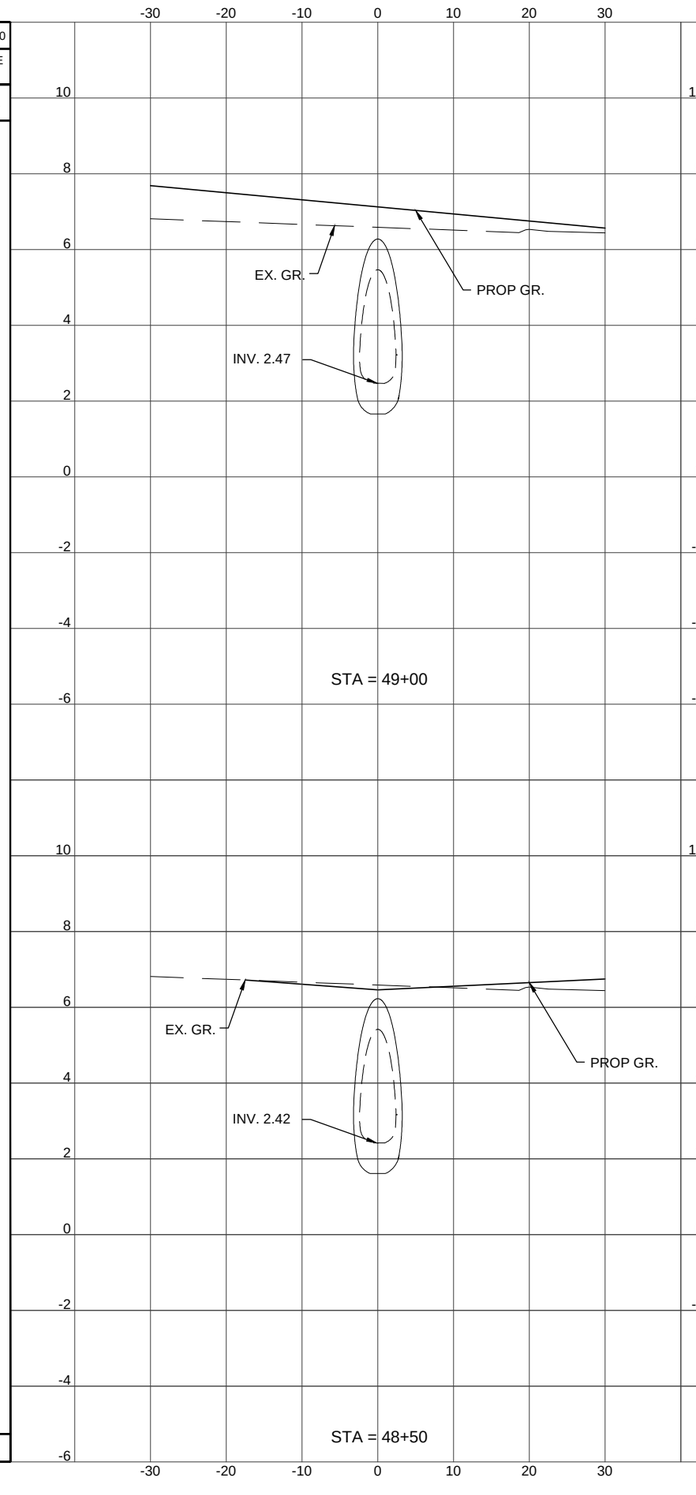
PALMISANO BOULEVARD
DRAINAGE PUMP STATION

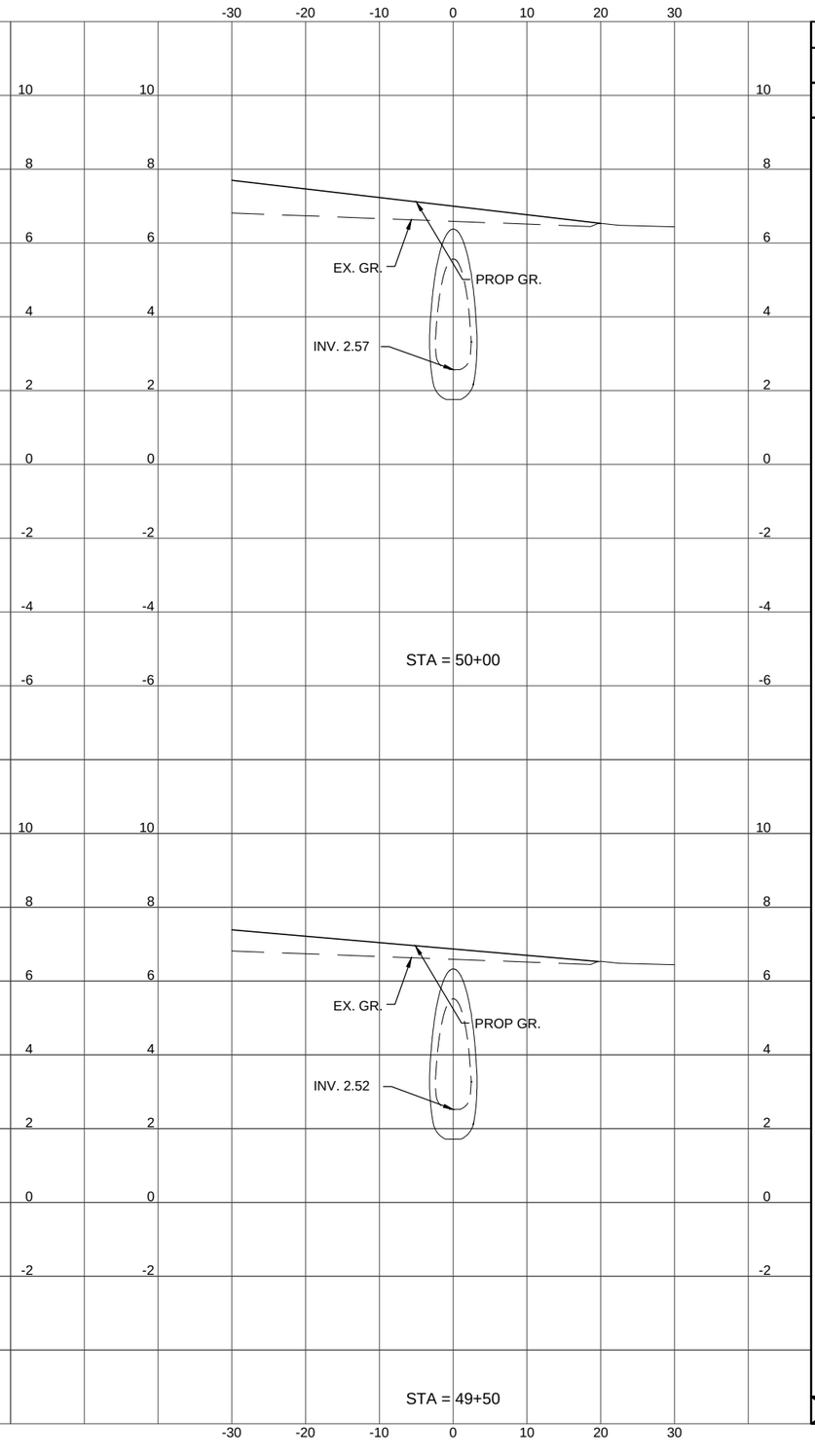
PLAN AND PROFILE

PS_01

G:\DWGS\410\0109 St Bernard Parish Palmisano Drainage Imp\2.DESIGN\Final\08_410.109-Sheets PS01-PS03 (Pump Station).dwg

203-02-00100		726-01-00100		717-01-00100		1019-01-00100	
DRAINAGE EXCAVATION		BEDDING MATERIAL		SEEDING		GEOTEXTILE FABRIC	
S.F.	C.Y.	S.F.	C.Y.	L.F.	C.Y.	L.F.	S.Y.
49		7		60		8	
	91		12		1		44
49		7		48		8	
	94		12		1		44
	185		24		2		88





203-02-00100		726-01-00100		717-01-00100		1019-01-00100	
DRAINAGE EXCAVATION		BEDDING MATERIAL		SEEDING		GEOTEXTILE FABRIC	
S.F.	C.Y.	S.F.	C.Y.	L.F.	C.Y.	L.F.	S.Y.
48		7		50		8	
	90		12		1		44
49		7		50		8	
	91		12		1		44
	181		24		2		88

SHEET NUMBER

PARISH: ST. BERNARD PARISH
GEC PROJECT: KLS2.480410.109
FEDERAL PROJECT: 1603-087-0011

DESIGNED CHECKED
DETAILED CHECKED
DATE SHEET: APRIL 2015

NO.	DATE	REVISION DESCRIPTION	BY

GEC Engineers & Consultants
3445 N. CAUSEWAY
METAIRIE, LA. 70002
(504) 838-6009

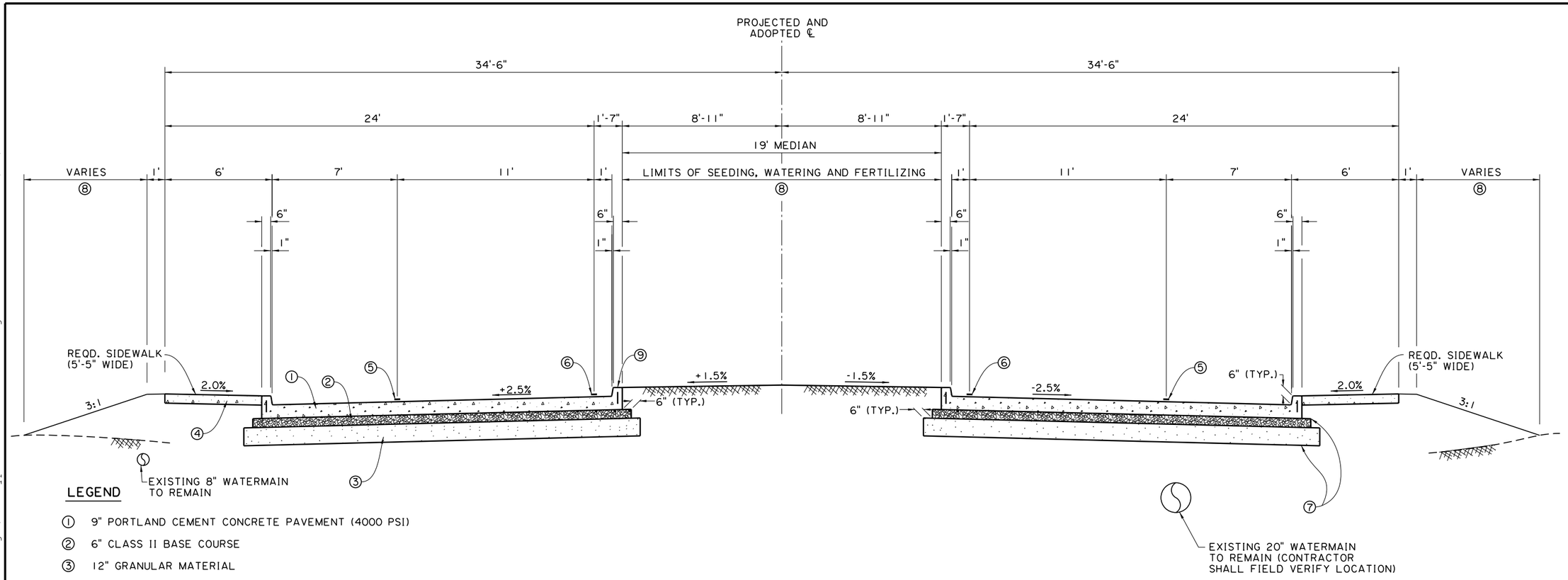
CDBG PALMISANO BOULEVARD
DRAINAGE REPAIRS AND IMPROVEMENTS
ST. BERNARD PARISH, LOUISIANA

PALMISANO BOULEVARD
CROSS SECTIONS

STA. XX+XX TO STA. XX+XX

XS_25

G:\DWGS\410\0109 St Bernard Parish Palmisano Drainage Imp\2.DESIGN\Final\410.109-Sheets XS01-XS34(Sections)-Active.dwg



LEGEND

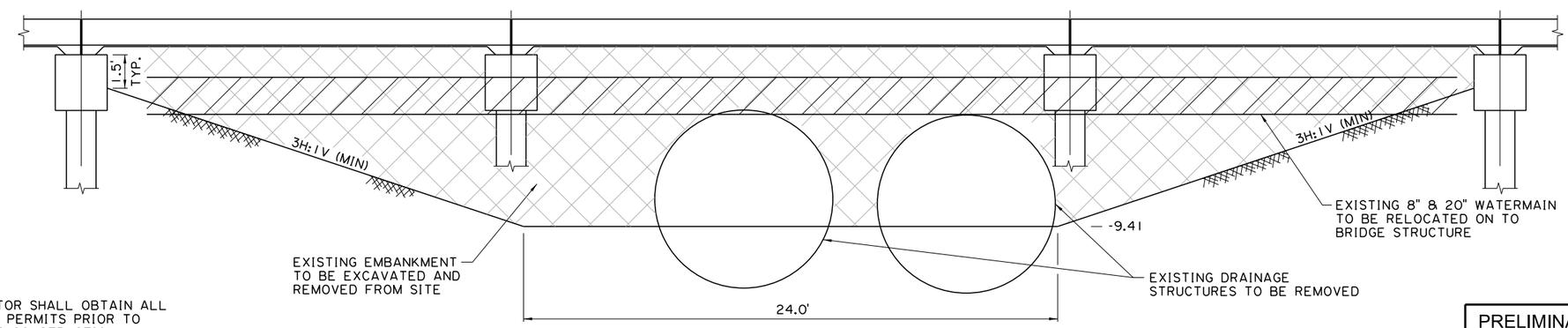
① 9" PORTLAND CEMENT CONCRETE PAVEMENT (4000 PSI)
② 6" CLASS II BASE COURSE
③ 12" GRANULAR MATERIAL
④ 6" PORTLAND CEMENT CONCRETE PAVEMENT (4000 PSI)
⑤ WHITE PLASTIC PVMT STRIPING (4" WIDTH) (THERMOPLASTIC 90 MIL)
⑥ YELLOW PLASTIC PVMT STRIPING (4" WIDTH) (THERMOPLASTIC 90 MIL)
⑦ GEOTEXTILE FABRIC
⑧ SEEDING, WATERING AND FERTILIZING
⑨ 6" CONCRETE BARRIER CURB

ROADWAY TYPICAL FINISHED SECTION

SCALE: 1"=3'

HORIZONTAL CLEARANCE:

OUTSIDE (FROM BACK OF CURB) - 1' (MIN), 6' DES.
MEDIAN (FROM BACK OF CURB) - 1' (MIN), 6' DES.



TWENTY ARPENT CANAL TYPICAL FINISHED SECTION

SCALE: 1"=3'

NOTES:

1. CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO BEGINNING CONSTRUCTION.
2. CONTRACTOR SHALL NOTIFY LEVEE BOARD AND PARISH ENGINEER PRIOR TO BEGINNING CONSTRUCTION.
3. CONTRACTOR SHALL MAINTAIN DRAINAGE DURING CONSTRUCTION.

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION BIDDING, RECORDATION, CONVEYANCE, SALES, OR AS THE BASIS FOR ISSUANCE OF A PERMIT

GEC Gulf Engineers & Consultants
8282 GOODWOOD BLVD.
BATON ROUGE, LA. 70806
PHONE: (225)612-3000
FAX: (225)612-3015

DESIGNER: BRIAN S. SMITH
LICENSE No. 32484

THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY

SHEET NUMBER 100

PARISH	GEC PROJECT	STATE PROJECT
ST. BERNARD PARISH		S.P. 013-12-0060 AND S.P. 261-06-0040

DESIGNED	DETAILED	DATE
B. SMITH	K. MARTIN	MARCH 2015
CHECKED	CHECKED	SHEET
S. METZGER	B.SMITH	

NO.	DATE	REVISION DESCRIPTION	BY

GEC Gulf Engineers & Consultants
3445 N. CAUSEWAY
METAIRIE, LA. 70002
(504) 838-6009

CDBG PALMISANO BOULEVARD
DRAINAGE REPAIRS AND IMPROVEMENTS
ST. BERNARD PARISH, LOUISIANA

TYPICAL SECTION

PALMISANO BOULEVARD

J:\00GECMain\Y_Drive\410 - Palmisano Blvd\KL524890410.109\DGN\Oct 2014 span change\101-Drainage-PP-01.dgn 3/26/2015 1:08:55 PM

STA. 12+38.28
SURVEYED AND ADOPTED ℄ =
STATION 12+38.28
PROJECTED AND ADOPTED ℄
BEGIN PROJECT

STA. 14+49.43
SURVEYED AND ADOPTED ℄ =
STATION 14+48.32
PROJECTED AND ADOPTED ℄
END PROJECT

TO REMAIN

SURVEYED AND ABANDONED ℄

SURVEYED AND ADOPTED ℄

PALMISANO BLVD.

PALMISANO BOULEVARD

STA. 12+59.36 BEGIN NEW PVMT.

STA. 12+80.9 REQ'D. CB-07 (101)

STA. 13+20.59 BEGIN BRIDGE

STA. 13+86.59 END BRIDGE

STA. 13+95, 53' LT. REQ'D. R CB II T.C. = 0.25 INV. = TBDIF (107)

STA. 14+27.35 END NEW PVMT.

TWENTY ARPENT CANAL ℄

6' SIDEWALK

APPR. SLAB

19' CLR. RDWY.

18' MEDIAN

R=9'

ST. AVIDE STREET

FULL DEPTH SAW CUT

4.5' (TYP.)

7'

9' SIDEWALK

PROJECTED AND ADOPTED ℄ AND ℄ BRIDGE

MISSOURI ST.

STA. 12+82.9 REQ'D. CB-07 (103)

STA. 14+18.0 REQ'D. CB-07 (105)

P & L SERVITUDE

SCALES:
1"=20' HORIZONTAL
1"=2' VERTICAL

NOTES:
1. ALL EXISTING DRAINAGE STRUCTURE WITHIN THE RIGHT-OF-WAY ARE TO BE REMOVED UNLESS NOTED "TO REMAIN".
2. REFER TO SURVEY SHEETS FOR ALL TBM LOCATIONS.

CROSS SLOPE TRANSITION (SEE GRAPHICAL GRADES) | NORMAL CROWN SEE TYPICAL SECTION | CROSS SLOPE TRANSITION (SEE GRAPHICAL GRADES)

STA. 13+17.34

STA. 13+95.83

EXISTING GRADE

PROFILE GRADE LINE (SEE GRAPHICAL GRADES)
0.00%

(102) 18" x 52' CMP OUTFALL @ 0.85%

(103)

(101)

(105)

(106) 15" x 38' CMP OUTFALL @ 0.85%

F.L. -3.40

F.L. -3.71

F.L. -4.06

3H:1V

(104) 18" x 56' CMP OUTFALL @ 0.85%

TYP. 3.0

EXISTING 36" RCP LOCATION TO BE FIELD VERIFIED

(108) ** 36" x 46' CMP OUTFALL

(107) STA. 13+95, 53' LT. REQ'D. R CB II T.C. = 0.25 INV. = TBDIF

* SUBSURFACE UTILITIES NOT SHOWN IN PROFILE. CONTRACTOR SHALL LOCATE PRIOR TO CONSTRUCTION, AND SHALL COORDINATE ANY CONFLICTS WITH OWNER.

** EXIST. 36" RCP SHALL BE REMOVED AS SHOWN AND REPLACED WITH 36" CMP @ SAME GRADE.

EXIST. ELEV.
PROP. ELEV.

EL. 0.59
EL. 0.38

EL. 0.39
EL. 0.38

+4 +2 0 -2 -4 -6 -8 -10 -12 -14

11+00 12+00 13+00 14+00 15+00 16+00

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION BIDDING, RECORDATION, CONVEYANCE, SALES, OR AS THE BASIS FOR ISSUANCE OF A PERMIT

GEC Gulf Engineers & Consultants
8282 GOODWOOD BLVD, BATON ROUGE, LA. 70806
PHONE: (225)612-3000 FAX: (225)612-3015
DESIGNER: BRIAN S. SMITH
LICENSE No. 32484

THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY

SHEET NUMBER 101

PARISH	GEC PROJECT	STATE PROJECT
ST. BERNARD PARISH		S.P. 013-12-0060 AND S.P. 261-06-0040

DESIGNED	B. SMITH
CHECKED	S. METZGER
DETAILED	K. MARTIN
CHECKED	B. SMITH
DATE	MARCH 2015
SHEET	

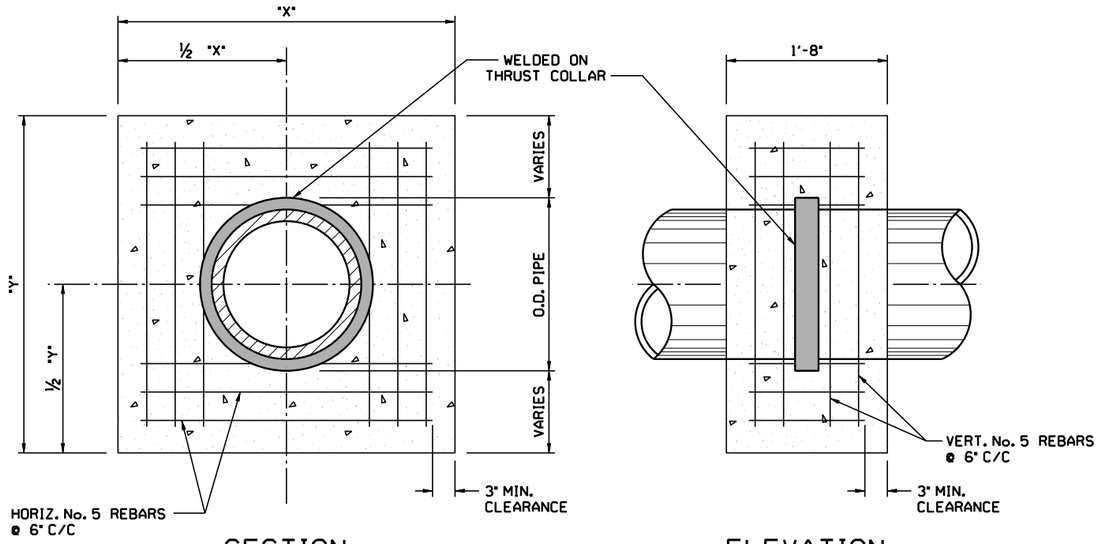
NO.	DATE	REVISION DESCRIPTION	BY

GEC Gulf Engineers & Consultants
3445 N. CAUSEWAY
METAIRIE, LA. 70002
(504) 838-6009

CDBG PALMISANO BOULEVARD
DRAINAGE REPAIRS AND IMPROVEMENTS
ST. BERNARD PARISH, LOUISIANA

PLAN - PROFILE
PALMISANO BRIDGE

PALMISANO BOULEVARD



SECTION

ELEVATION

CONCRETE THRUST COLLAR BLOCK		
PIPE SIZE	"X"	"Y"
8"	3'-6"	3'-6"
20"	4'-6"	4'-6"

NOTES:

(1) CONCRETE SHALL BE 3000 P.S.I.

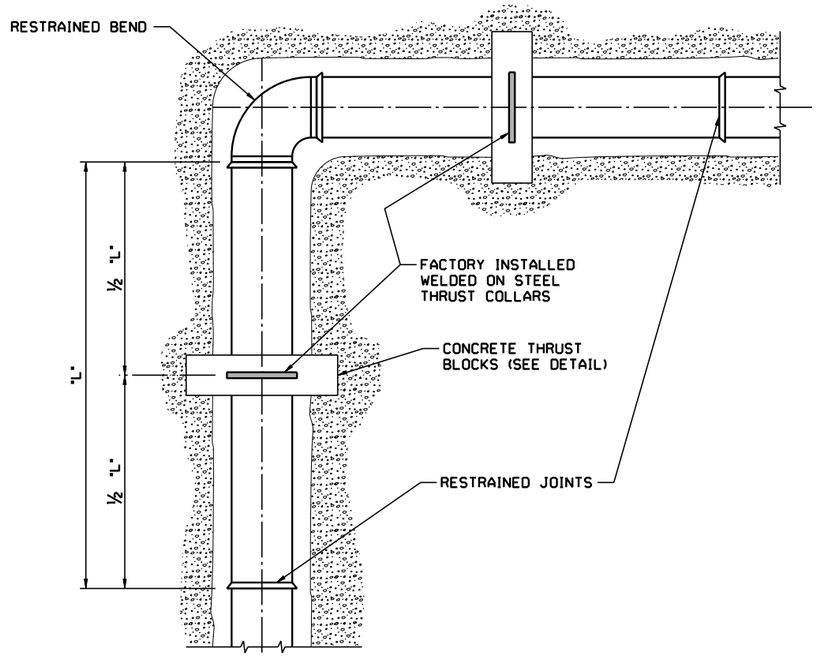
(2) REINFORCING BARS SHALL BE DEFORMED, AND TIED TOGETHER.

WELDED ON THRUST COLLAR			
PIPE SIZE	PIPE O.D.	COLLAR O.D.	COLLAR THICKNESS
8"	9.05"	11.05"	0.25"
20"	21.60"	24.60"	0.38"

NOTES:

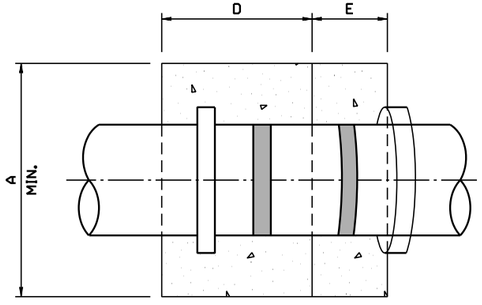
(1) STEEL THRUST COLLAR MAY BE FABRICATED FROM STEEL OR ANNEALED DUCTILE IRON.

(2) WELDED ON THRUST COLLAR SHALL BE FACTORY WELDED ON BOTH SIDES OF THE STEEL COLLAR 360° AROUND THE CIRCUMFERENCE OF THE PIPE.

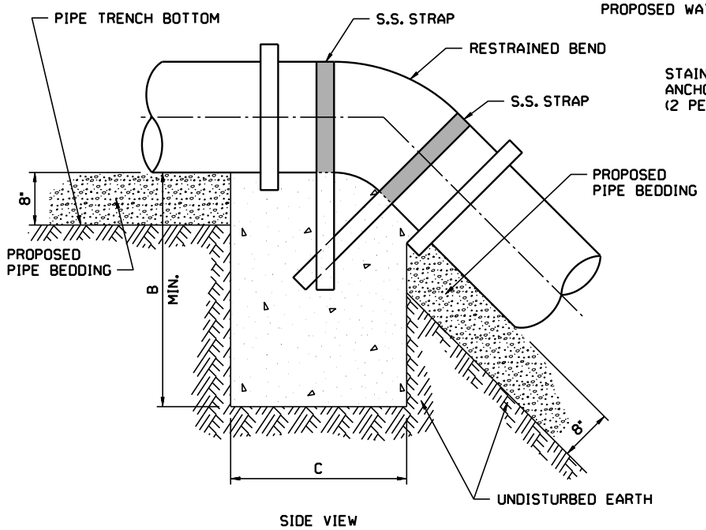


TYPICAL THRUST COLLAR PLAN

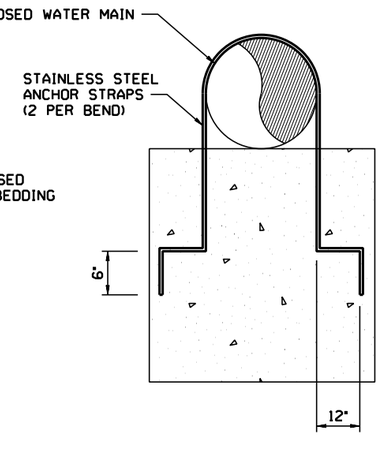
NOT TO SCALE



TOP VIEW TOP BEND



SIDE VIEW



STRAP EMBEDMENT FRONT VIEW

ANCHOR BLOCK								
DIMENSION							STRAPS	
BEND	No.	A	B MIN.	C MIN.	D	E	SIZE	EMBED.
8" x 45°	2	3'-0"	4'-0"	4'-0"	2'-0"	2'-0"	1" x 1/4"	18"
20" x 45°	2	8'-0"	5'-8"	6'-0"	3'-0"	3'-0"	2" x 3/8"	30"

NOTES:

(1) ALL CONCRETE SHALL BE 3,000 P.S.I.

(2) ALL CONCRETE COLLARS SHALL BE CONSTRUCTED SUCH THAT THEY ARE ANCHORED AGAINST UNDISTURBED SOIL.

45° VERTICAL TOP BEND ANCHOR BLOCK

NOT TO SCALE

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION BIDDING, RECORDATION, CONVEYANCE, SALES, OR AS THE BASIS FOR ISSUANCE OF A PERMIT

GEC Gulf Engineers & Consultants
8282 GOODWOOD BLVD.
BATON ROUGE, LA. 70806
PHONE: (225)612-3000
FAX: (225)612-3015

DESIGNER: JEROME M. KLIER

LICENSE No. 11591

THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY

SHEET NUMBER 111

PARISH	GEC PROJECT	STATE PROJECT
ST. BERNARD PARISH		S.P. 013-12-0060 AND S.P. 261-06-0040

DESIGNED	CHECKED	DETAILED	CHECKED	DATE	SHEET
J. KLIER	B. SMITH	H. TAYLOR	J. KLIER	MARCH 2015	

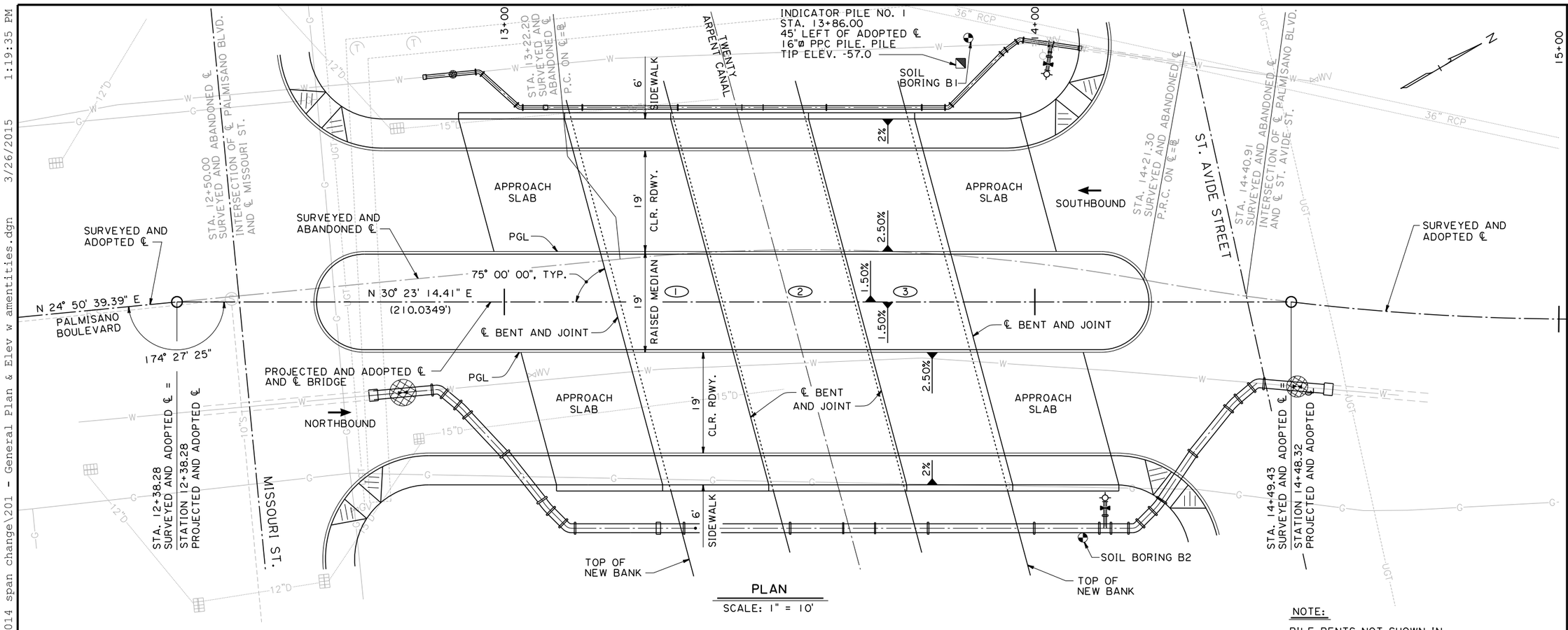
NO.	DATE	REVISION DESCRIPTION	BY

GEC Gulf Engineers & Consultants
3445 N. CAUSEWAY
METAIRIE, LA. 70002
(504) 838-6009

CDBG PALMISANO BOULEVARD
DRAINAGE REPAIRS AND IMPROVEMENTS
ST. BERNARD PARISH, LOUISIANA

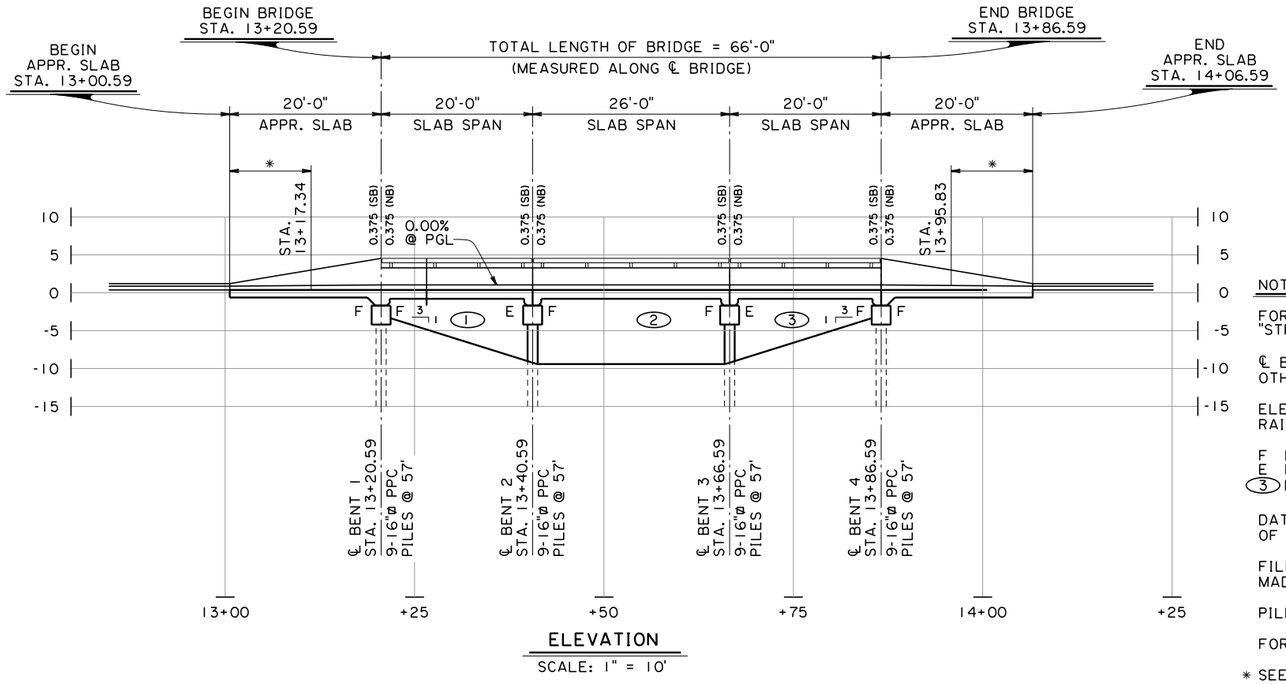
THRUST COLLAR DETAILS

PALMISANO BOULEVARD



PLAN

SCALE: 1" = 10'



ELEVATION

SCALE: 1" = 10'

NOTE:

PILE BENTS NOT SHOWN IN PLAN FOR CLARITY.

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION BIDDING, RECORDATION, CONVEYANCE, SALES, OR AS THE BASIS FOR ISSUANCE OF A PERMIT

GEC Gulf Engineers & Consultants
8282 GOODWOOD BLVD, BATON ROUGE, LA. 70806
PHONE: (225)612-3000
FAX: (225)612-3015
DESIGNER: ROBERT PAUL DUGAS, Jr.
LICENSE No. 21944

THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY

NOTES:

FOR GENERAL NOTES, SEE "STRUCTURAL GENERAL NOTES" SHEET.

℄ BENT STATIONS ARE GIVEN AT ℄ BRIDGE UNLESS OTHERWISE NOTED.

ELEVATIONS ARE GIVEN AT INSIDE GUTTER LINE OF RAISED MEDIAN (PGL) UNLESS OTHERWISE NOTED.

F DENOTES "FIXED"
E DENOTES "EXPANSION"
(3) DENOTES SPAN NUMBER

DATE OF CONSTRUCTION REQUIRED AT ONCOMING END OF EACH BRIDGE, SEE LA DOTD STANDARD PLAN YP-01.

FILL TO BE IN PLACE AND EXCAVATION TO BE MADE PRIOR TO DRIVING PILES AFFECTED.

PILE LENGTH SHOWN FOR ESTIMATING PURPOSE ONLY.

FOR SOIL BORING, SEE "LOGS OF SOIL BORINGS".

* SEE ROADWAY PLANS FOR GRAPHICAL GRADES.

SHEET NUMBER 201

PARISH	GEC PROJECT	STATE PROJECT
ST. BERNARD PARISH		S.P. 013-12-0060 AND S.P. 261-06-0040

DESIGNED R. McLELLAN	DETAILED D. INWOOD	DATE MARCH 2015
CHECKED V. PRASAD	CHECKED V. PRASAD	SHEET 1 OF 1

NO.	DATE	REVISION DESCRIPTION	BY

GEC Gulf Engineers & Consultants
3445 N. CAUSEWAY
METAIRIE, LA. 70002
(504) 838-6009

CDBG PALMISANO BOULEVARD
DRAINAGE REPAIRS AND IMPROVEMENTS
ST. BERNARD PARISH, LOUISIANA

GENERAL PLAN AND ELEVATION

PALMISANO BOULEVARD BRIDGE

J:\00GECMain\Y_Drive\410 - Palmisano Blvd\KL524890410.109\DGN\Oct 2014 span change\201 - General Plan & Elev w amentities.dgn 3/26/2015 1:19:35 PM

APPENDIX C

Regulatory Agency Correspondence

2014-048

Jena Band of Choctaw Indians

P. O. Box 14 • Jena, Louisiana 71342-0014 • Phone: 318-992-2717 • Fax: 318-992-8244

COPY

March 6, 2014

Danny H. Magee, Sr.
Frye/Magee, LLC
117 Tioga Road
Ball, LA 71405

Re: Construction of Drainage Improvements, Palmisano Blvd., Plaze Drive, and 20 Arpent Bridge, St. Bernard Parish, LA

Dear Mr. Magee:

In order to properly comment, the Jena Band of Choctaw Tribal Historic Preservation Office is requesting a Cultural Resources Survey and all other pertinent information regarding the project area. Thank you for your cooperation in this matter.

Sincerely,

Dana Masters
JBC THPO
P.O. Box 14
Jena, LA 71342-0014
(318)-992-1205

Prepared by: Alina J. Shively

Alina J. Shively
Deputy THPO
Jbc.thpo106@aol.com

St. Bernard Parish Government

8208 West Judge Perez Drive
Phone (504) 278-4233

Chalmette, Louisiana 70043
Fax (504) 278-4330

David E. Peralta
Parish President

January 21, 2014

Gregory Pyle, Chief
Choctaw Nation of Oklahoma
P. O. Drawer 1210
Durant, Oklahoma 74702

Re: Construction of Drainage Improvements
Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge
St. Bernard Parish, Louisiana

Dear Mr. Pyle:

The St. Bernard Parish Government (SBPG) has applied to the Federal Emergency Management Agency (FEMA) for Hazard Mitigation Grant Program (HMGP) funding under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA's Hazard Mitigation Grant Program provides grants to states and local governments to implement long-term hazard mitigation measures that reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

FEMA proposes to provide funding to St. Bernard Parish for the design and construction of drainage improvements on Palmisano Blvd, (from St Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. This drainage system consists of approximately 100 plus acres of land that drains over ground surface through storm drain pipe and directed via pump to an earthen ditch. The earthen ditch runs along St. Bernard Hwy. to Palmisano Boulevard, then from St. Bernard Highway paralleling Palmisano Blvd. running approximately 4,860 feet to the Twenty Arpent Canal. The earthen ditch floods frequently during heavy rainfall events due to inadequate capacity and undersized culvert/pipe crossing under roadways and residential driveways.

The proposed scope of work includes the following:

Plaza Drive Lift Station Pump: This segment of the project will consist of an upgrade to the existing pumping station within the Plaza Drive Basin and upgrading their discharge capacity by improving the open canal along the south side of St. Bernard Hwy. to Palmisano Blvd. and flushing and cleaning the existing sub-surface drainage within the basin. The proposed pump station is 3"-1" Fairbanks Morse or equivalent vertical propeller pumps.

Palmisano Canal – East St. Bernard Hwy (LA46) to Twenty Arpent Canal: The design objectives were to contain the flow within the channel for a 25-year storm event and to reduce the risk. To improve the channel capacity and to reduce the risk, the proposed design uses reinforce concrete box culverts. Using the box culverts and constructing a swale ditch on top of the box to collect sheet flow. The proposed design is to construct an 8-foot x 4-foot box culvert from Camille Place to East Judge Perez Drive, then design and construct a 10-foot x 6-foot box culvert from the Judge Perez Drive to the 20 Arpent Canal.

Palmisano at 20 Arpent Canal Crossing: Design and construct a bridge crossing approximately 70' x100' concrete span, pile supported and paved channel aggregate.

Location of each of the proposed improvements are as follows:

Site	City	State	Latitude	Longitude
Plaza Pump	Chalmette	LA	29.93363	-89.96016
Palmisano Canal	Chalmette	LA	29.93143	-89.95604
Palmisano 20 Arpent Bridge	Chalmette	LA	29.94325	-89.94995

In accordance with NEPA and the implementing regulations of the Council of Environmental Quality (40 CFR 1500-1508), the St. Bernard Parish Government is preparing an Environmental Assessment for the construction of drainage improvements on Palmisano Blvd, (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA. and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. Therefore, we are requesting your agency's comments to the project relative to:

1. Archaeological or Historic Sites or Properties Listed in the National Register or Historic Places or Other Significant Cultural Resources
2. Cultural Facilities Located in the Project Area

Please fax your response to 318–640-5856, email your response to danny.magee@fryemagee.com, or mail your response to the following address:

Danny H. Magee, Sr.
Frye/Magee, LLC
117 Tioga Road
Ball, LA 71405

If you should have any questions or request additional information for your review, please contact me at 318-640-1520.

Sincerely,

DAVID PERALTA
Parish President

Enclosure

St. Bernard Parish Government

8201 West Judge Perez Drive
Phone (504) 278-4200

Chalmette, Louisiana 70043
Fax (504) 278-4330

David E. Peralta
Parish President

January 21, 2014

Kevin Sickey, Chairman
Coushatta Tribe of Louisiana
P. O. Box 818
Elton, Louisiana 70532

Re: Construction of Drainage Improvements
Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge
St. Bernard Parish, Louisiana

Dear Mr. Sickey:

The St. Bernard Parish Government (SBPG) has applied to the Federal Emergency Management Agency (FEMA) for Hazard Mitigation Grant Program (HMGP) funding under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA's Hazard Mitigation Grant Program provides grants to states and local governments to implement long-term hazard mitigation measures that reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

FEMA proposes to provide funding to St. Bernard Parish for the design and construction of drainage improvements on Palmisano Blvd. (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. This drainage system consists of approximately 100 plus acres of land that drains over ground surface through storm drain pipe and directed via pump to an earthen ditch. The earthen ditch runs along St. Bernard Hwy. to Palmisano Boulevard, then from St. Bernard Highway paralleling Palmisano Blvd. running approximately 4,860 feet to the Twenty Arpent Canal. The earthen ditch floods frequently during heavy rainfall events due to inadequate capacity and undersized culvert/pipe crossing under roadways and residential driveways.

The proposed scope of work includes the following:

Plaza Drive Lift Station Pump: This segment of the project will consist of an upgrade to the existing pumping station within the Plaza Drive Basin and upgrading their discharge capacity by improving the open canal along the south side of St. Bernard Hwy. to Palmisano Blvd. and flushing and cleaning the existing sub-surface drainage within the basin. The proposed pump station is 3"-10" Fairbanks Morse or equivalent vertical propeller pumps.

Palmisano Canal – East St. Bernard Hwy (LA46) to Twenty Arpent Canal: The design objectives were to contain the flow within the channel for a 25-year storm event and to reduce the risk. To improve the channel capacity and to reduce the risk, the proposed design uses reinforce concrete box culverts. Using the box culverts and constructing a swale ditch on top of the box to collect sheet flow. The proposed design is to construct an 8-foot x 4-foot box culvert from Camille Place to East Judge Perez Drive, then design and construct a 10-foot x 6-foot box culvert from the Judge Perez Drive to the 20 Arpent Canal.

Palmisano at 20 Arpent Canal Crossing: Design and construct a bridge crossing approximately 70'x 100' concrete span, pile supported and paved channel/aggregate.

Location of each of the proposed improvements are as follows:

Site	City	State	Latitude	Longitude
Plaza Pump	Chalmette	LA	29.93363	-89.96016
Palmisano Canal	Chalmette	LA	29.93143	-89.95604
Palmisano 20 Arpent Bridge	Chalmette	LA	29.94325	-89.94995

In accordance with NEPA and the implementing regulations of the Council of Environmental Quality (40 CFR 1500-1508), the St. Bernard Parish Government is preparing an Environmental Assessment for the construction of drainage improvements on Palmisano Blvd. (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA. and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. Therefore, we are requesting your agency's comments to the project relative to:

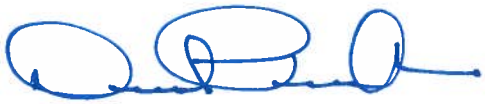
1. Archaeological or Historic Sites or Properties Listed in the National Register or Historic Places or Other Significant Cultural Resources
2. Cultural Facilities Located in the Project Area

Please fax your response to 318–640-5856, email your response to danny.magee@fryemagee.com, or mail your response to the following address:

Danny H. Magee, Sr.
Frye/Magee, LLC
117 Tioga Road
Ball, LA 71405

If you should have any questions or request additional information for your review, please contact me at 318-640-1520.

Sincerely,



DAVID PERALTA
Parish President

Enclosures

St. Bernard Parish Government

8201 West Judge Perez Drive
Phone (504) 278-4200

Chalmette, Louisiana 70043
Fax (504) 278-4330

David E. Peralta
Parish President

January 21, 2014

Mr. Michael Bechdol, Coordinator
Sole Source Aquifer Program
Ground Water/UIC Section
United States Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Re: Construction of Drainage Improvements
Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge
St. Bernard Parish, Louisiana

Dear Mr. Bechdol:

The St. Bernard Parish Government (SBPG) has applied to the Federal Emergency Management Agency (FEMA) for Hazard Mitigation Grant Program (HMGP) funding under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA's Hazard Mitigation Grant Program provides grants to states and local governments to implement long-term hazard mitigation measures that reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

FEMA proposes to provide funding to St. Bernard Parish for the design and construction of drainage improvements on Palmisano Blvd, (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. This drainage system consists of approximately 100 plus acres of land that drains over ground surface through storm drain pipe and directed via pump to an earthen ditch. The earthen ditch runs along St. Bernard Hwy. to Palmisano Boulevard, then from St. Bernard Highway paralleling Palmisano Blvd. running approximately 4,860 feet to the Twenty Arpent Canal. The earthen ditch floods frequently during heavy rainfall events due to inadequate capacity and undersized culvert/pipe crossing under roadways and residential driveways.

The proposed scope of work includes the following:

Plaza Drive Lift Station Pump: This segment of the project will consist of an upgrade to the existing pumping station within the Plaza Drive Basin and upgrading their discharge capacity by improving the open canal along the south side of St. Bernard Hwy. to Palmisano Blvd. and flushing and cleaning the existing sub-surface drainage within the basin. The proposed pump station is 3"-10" Fairbanks Morse or equivalent vertical propeller pumps.

Palmisano Canal – East St. Bernard Hwy (LA46) to Twenty Arpent Canal: The design objectives were to contain the flow within the channel for a 25-year storm event and to reduce the risk. To improve the channel capacity and to reduce the risk, the proposed design uses reinforce concrete box culverts. Using the box culverts and constructing a swale ditch on top of the box to collect sheet flow. The proposed design is to construct an 8-foot x 4-foot box culvert from Camille Place to East Judge Perez Drive, then design and construct a 10-foot x 6-foot box culvert from the Judge Perez Drive to the 20 Arpent Canal.

Palmisano at 20 Arpent Canal Crossing: Design and construct a bridge crossing approximately 70' x 100' concrete span, pile supported and paved channel/aggregate.

Location of each of the proposed improvements are as follows:

Site	City	State	Latitude	Longitude
Plaza Pump	Chalmette	LA	29.93363	-89.96016
Palmisano Canal	Chalmette	LA	29.93143	-89.95604
Palmisano 20 Arpent Bridge	Chalmette	LA	29.94325	-89.94995

In accordance with NEPA and the implementing regulations of the Council of Environmental Quality (40 CFR 1500-1508), the St. Bernard Parish Government is preparing an Environmental Assessment for the construction of drainage improvements on Palmisano Blvd. (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA. and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events.. Therefore, we are requesting your agency's comments to the project relative to:

1. Sole Source Aquifers

Please fax your response to 318–640-5856, email your response to danny.magee@fryemagee.com, or mail your response to the following address:

Danny H. Magee, Sr.
Frye/Magee, LLC
117 Tioga Road
Ball, LA 71405

If you should have any questions or request additional information for your review, please contact me at 318-640-1520.

Sincerely,

DAVID PERALTA
Parish President

Enclosures

St. Bernard Parish Government

8201 West Judge Perez Drive
Phone (504) 278-4200

Chalmette, Louisiana 70043
Fax (504) 278-4330

David E. Peralta
Parish President

January 21, 2014

Christine Norris, Principal Chief
Jena Band of Choctaw Indians
P. O. Box 14
Jean, Louisiana 71342

Re: Construction of Drainage Improvements
Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge
St. Bernard Parish, Louisiana

Dear Ms. Norris:

The St. Bernard Parish Government (SBPG) has applied to the Federal Emergency Management Agency (FEMA) for Hazard Mitigation Grant Program (HMGP) funding under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA's Hazard Mitigation Grant Program provides grants to states and local governments to implement long-term hazard mitigation measures that reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

FEMA proposes to provide funding to St. Bernard Parish for the design and construction of drainage improvements on Palmisano Blvd, (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. This drainage system consists of approximately 100 plus acres of land that drains over ground surface through storm drain pipe and directed via pump to an earthen ditch. The earthen ditch runs along St. Bernard Hwy. to Palmisano Boulevard, then from St. Bernard Highway paralleling Palmisano Blvd. running approximately 4,860 feet to the Twenty Arpent Canal. The earthen ditch floods frequently during heavy rainfall events due to inadequate capacity and undersized culvert/pipe crossing under roadways and residential driveways.

The proposed scope of work includes the following:

Plaza Drive Lift Station Pump: This segment of the project will consist of an upgrade to the existing pumping station within the Plaza Drive Basin and upgrading their discharge capacity by improving the open canal along the south side of St. Bernard Hwy. to Palmisano Blvd. and flushing and cleaning the existing sub-surface drainage within the basin. The proposed pump station is 3"-10" Fairbanks Morse or equivalent vertical propeller pumps.

Palmisano Canal – East St. Bernard Hwy (LA46) to Twenty Arpent Canal: The design objectives were to contain the flow within the channel for a 25-year storm event and to reduce the risk. To improve the channel capacity and to reduce the risk, the proposed design uses reinforce concrete box culverts. Using the box culverts and constructing a swale ditch on top of the box to collect sheet flow. The proposed design is to construct an 8-foot x 4-foot box culvert from Camille Place to East Judge Perez Drive, then design and construct a 10-foot x 6-foot box culvert from the Judge Perez Drive to the 20 Arpent Canal.

Palmisano at 20 Arpent Canal Crossing: Design and construct a bridge crossing approximately 70' x 100' concrete span, pile supported and paved channel/aggregate.

Location of each of the proposed improvements are as follows:

Site	City	State	Latitude	Longitude
Plaza Pump	Chalmette	LA	29.93363	-89.96016
Palmisano Canal	Chalmette	LA	29.93143	-89.95604
Palmisano 20 Arpent Bridge	Chalmette	LA	29.94325	-89.94995

In accordance with NEPA and the implementing regulations of the Council of Environmental Quality (40 CFR 1500-1508), the St. Bernard Parish Government is preparing an Environmental Assessment for the construction of drainage improvements on Palmisano Blvd, (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA. and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events.. Therefore, we are requesting your agency's comments to the project relative to:

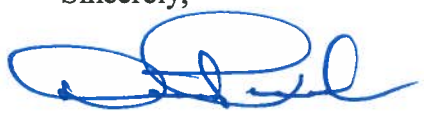
1. Archaeological or Historic Sites or Properties Listed in the National Register or Historic Places or Other Significant Cultural Resources
2. Cultural Facilities Located in the Project Area

Please fax your response to 318–640-5856, email your response to danny.magee@fryemagee.com, or mail your response to the following address:

Danny H. Magee, Sr.
Frye/Magee, LLC
117 Tioga Road
Ball, LA 71405

If you should have any questions or request additional information for your review, please contact me at 318-640-1520.

Sincerely,



DAVID PERALTA
Parish President

Enclosures

St. Bernard Parish Government

8201 West Judge Perez Drive
Phone (504) 278-4200

Chalmette, Louisiana 70043
Fax (504) 278-4330

David E. Peralta
Parish President

January 21, 2014

Ms. Linda Hardy
LA Department of Environmental Quality
Post Office Box 4303
Baton Rouge, Louisiana 70821-4303

Re: Construction of Drainage Improvements
Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge
St. Bernard Parish, Louisiana

Dear Ms. Hardy:

The St. Bernard Parish Government (SBPG) has applied to the Federal Emergency Management Agency (FEMA) for Hazard Mitigation Grant Program (HMGP) funding under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA's Hazard Mitigation Grant Program provides grants to states and local governments to implement long-term hazard mitigation measures that reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

FEMA proposes to provide funding to St. Bernard Parish for the design and construction of drainage improvements on Palmisano Blvd, (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. This drainage system consists of approximately 100 plus acres of land that drains over ground surface through storm drain pipe and directed via pump to an earthen ditch. The earthen ditch runs along St. Bernard Hwy. to Palmisano Boulevard, then from St. Bernard Highway paralleling Palmisano Blvd. running approximately 4,860 feet to the Twenty Arpent Canal. The earthen ditch floods frequently during heavy rainfall events due to inadequate capacity and undersized culvert/pipe crossing under roadways and residential driveways.

The proposed scope of work includes the following:

Plaza Drive Lift Station Pump: This segment of the project will consist of an upgrade to the existing pumping station within the Plaza Drive Basin and upgrading their discharge capacity by improving the open canal along the south side of St. Bernard Hwy. to Palmisano Blvd. and flushing and cleaning the existing sub-surface drainage within the basin. The proposed pump station is 3"-10" Fairbanks Morse or equivalent vertical propeller pumps.

Palmisano Canal – East St. Bernard Hwy (LA46) to Twenty Arpent Canal: The design objectives were to contain the flow within the channel for a 25-year storm event and to reduce the risk. To improve the channel capacity and to reduce the risk, the proposed design uses reinforce concrete box culverts. Using the box culverts and constructing a swale ditch on top of the box to collect sheet flow. The proposed design is to construct an 8-foot x 4-foot box culvert from Camille Place to East Judge Perez Drive, then design and construct a 10-foot x 6-foot box culvert from the Judge Perez Drive to the 20 Arpent Canal.

Palmisano at 20 Arpent Canal Crossing: Design and construct a bridge crossing approximately 70' x 100' concrete span, pile supported and paved channel/aggregate.

Location of each of the proposed improvements are as follows:

Site	City	State	Latitude	Longitude
Plaza Pump	Chalmette	LA	29.93363	-89.96016
Palmisano Canal	Chalmette	LA	29.93143	-89.95604
Palmisano 20 Arpent Bridge	Chalmette	LA	29.94325	-89.94995

In accordance with NEPA and the implementing regulations of the Council of Environmental Quality (40 CFR 1500-1508), the St. Bernard Parish Government is preparing an Environmental Assessment for the construction of drainage improvements on Palmisano Blvd. (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA. and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. Therefore, we are requesting your agency's comments to the project relative to:

1. Water resources
2. Water Quality and Aquifers
3. Air Quality and Ambient Air Quality

Please fax your response to 318–640-5856, email your response to danny.magee@fryemagee.com, or mail your response to the following address:

Danny Magee
Frye/Magee, LLC
117 Tioga Road
Ball, LA 71405

If you should have any questions or request additional information for your review, please contact me at 318-640-1520.

Sincerely,

DAVID PERALTA
Parish President

Enclosures

St. Bernard Parish Government

8201 West Judge Perez Drive
Phone (504) 278-4200

Chalmette, Louisiana 70043
Fax (504) 278-4330

David E. Peralta
Parish President

January 21, 2014

Mr. Jeff Harris
Louisiana Department of Natural Resources
Coastal Management Division
P.O. Box 44487
Baton Rouge, LA 70804

Re: Construction of Drainage Improvements
Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge
St. Bernard Parish, Louisiana

Dear Mr. Harris:

The St. Bernard Parish Government (SBPG) has applied to the Federal Emergency Management Agency (FEMA) for Hazard Mitigation Grant Program (HMGP) funding under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA's Hazard Mitigation Grant Program provides grants to states and local governments to implement long-term hazard mitigation measures that reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

FEMA proposes to provide funding to St. Bernard Parish for the design and construction of drainage improvements on Palmisano Blvd, (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. This drainage system consists of approximately 100 plus acres of land that drains over ground surface through storm drain pipe and directed via pump to an earthen ditch. The earthen ditch runs along St. Bernard Hwy. to Palmisano Boulevard, then from St. Bernard Highway paralleling Palmisano Blvd. running approximately 4,860 feet to the Twenty Arpent Canal. The earthen ditch floods frequently during heavy rainfall events due to inadequate capacity and undersized culvert/pipe crossing under roadways and residential driveways.

The proposed scope of work includes the following:

Plaza Drive Lift Station Pump: This segment of the project will consist of an upgrade to the existing pumping station within the Plaza Drive Basin and upgrading their discharge capacity by improving the open canal along the south side of St. Bernard Hwy. to Palmisano Blvd. and flushing and cleaning the existing sub-surface drainage within the basin. The proposed pump station is 3"-10" Fairbanks Morse or equivalent vertical propeller pumps.

Palmisano Canal – East St. Bernard Hwy (LA46) to Twenty Arpent Canal: The design objectives were to contain the flow within the channel for a 25-year storm event and to reduce the risk. To improve the channel capacity and to reduce the risk, the proposed design uses reinforce concrete box culverts. Using the box culverts and constructing a swale ditch on top of the box to collect sheet flow. The proposed design is to construct an 8-foot x 4-foot box culvert from Camille Place to East Judge Perez Drive, then design and construct a 10-foot x 6-foot box culvert from the Judge Perez Drive to the 20 Arpent Canal.

Palmisano at 20 Arpent Canal Crossing: Design and construct a bridge crossing approximately 70'x 100' concrete span, pile supported and paved channel/aggregate.

Location of each of the proposed improvements are as follows:

Site	City	State	Latitude	Longitude
Plaza Pump	Chalmette	LA	29.93363	-89.96016
Palmisano Canal	Chalmette	LA	29.93143	-89.95604
Palmisano 20 Arpent Bridge	Chalmette	LA	29.94325	-89.94995

In accordance with NEPA and the implementing regulations of the Council of Environmental Quality (40 CFR 1500-1508), the St. Bernard Parish Government is preparing an Environmental Assessment for the construction of drainage improvements on Palmisano Blvd, (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. Therefore, we are requesting your agency's comments to the project relative to:

1. Consistency with the Coastal Zone Management Act

Please fax your response to 318–640-5856, email your response to danny.magee@fryemagee.com, or mail your response to the following address:

Danny H. Magee, Sr.
Frye/Magee, LLC
117 Tioga Road
Ball, LA 71405

If you should have any questions or request additional information for your review, please contact me at 318-640-1520.

Sincerely,

DAVID PERALTA
Parish President

Enclosures

St. Bernard Parish Government

8201 West Judge Perez Drive
Phone (504) 278-4200

Chalmette, Louisiana 70043
Fax (504) 278-4330

David E. Peralta
Parish President

January 21, 2014

Mr. Kyle Balkum
Habitat Section Program Manager
Louisiana Department of Wildlife and Fisheries
Post Office Drawer 98000
Baton Rouge, Louisiana 70898-9000

Re: Construction of Drainage Improvements
Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge
St. Bernard Parish, Louisiana

Dear Mr. Balkum:

The St. Bernard Parish Government (SBPG) has applied to the Federal Emergency Management Agency (FEMA) for Hazard Mitigation Grant Program (HMGP) funding under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA's Hazard Mitigation Grant Program provides grants to states and local governments to implement long-term hazard mitigation measures that reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

FEMA proposes to provide funding to St. Bernard Parish for the design and construction of drainage improvements on Palmisano Blvd, (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. This drainage system consists of approximately 100 plus acres of land that drains over ground surface through storm drain pipe and directed via pump to an earthen ditch. The earthen ditch runs along St. Bernard Hwy. to Palmisano Boulevard, then from St. Bernard Highway paralleling Palmisano Blvd. running approximately 4,860 feet to the Twenty Arpent Canal. The earthen ditch floods frequently during heavy rainfall events due to inadequate capacity and undersized culvert/pipe crossing under roadways and residential driveways.

The proposed scope of work includes the following:

Plaza Drive Lift Station Pump: This segment of the project will consist of an upgrade to the existing pumping station within the Plaza Drive Basin and upgrading their discharge capacity by improving the open canal along the south side of St. Bernard Hwy. to Palmisano Blvd. and flushing and cleaning the existing sub-surface drainage within the basin. The proposed pump station is 3"-10" Fairbanks Morse or equivalent vertical propeller pumps.

Palmisano Canal – East St. Bernard Hwy (LA46) to Twenty Arpent Canal: The design objectives were to contain the flow within the channel for a 25-year storm event and to reduce the risk. To improve the channel capacity and to reduce the risk, the proposed design uses reinforce concrete box culverts. Using the box culverts and constructing a swale ditch on top of the box to collect sheet flow. The proposed design is to construct an 8-foot x 4-foot box culvert from Camille Place to East Judge Perez Drive, then design and construct a 10-foot x 6-foot box culvert from the Judge Perez Drive to the 20 Arpent Canal.

Palmisano at 20 Arpent Canal Crossing: Design and construct a bridge crossing approximately 70' x 100' concrete span, pile supported and paved channel/aggregate.

Location of each of the proposed improvements are as follows:

Site	City	State	Latitude	Longitude
Plaza Pump	Chalmette	LA	29.93363	-89.96016
Palmisano Canal	Chalmette	LA	29.93143	-89.95604
Palmisano 20 Arpent Bridge	Chalmette	LA	29.94325	-89.94995

In accordance with NEPA and the implementing regulations of the Council of Environmental Quality (40 CFR 1500-1508), the St. Bernard Parish Government is preparing an Environmental Assessment for the construction of drainage improvements on Palmisano Blvd. (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA. and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. Therefore, we are requesting your agency's comments to the project relative to:

1. Endangered Fish and Wildlife
2. Critical Habitat
3. Wild and Scenic Rivers

Please fax your response to 318–640-5856, email your response to danny.magee@fryemagee.com, or mail your response to the following address:

Danny H. Magee, Sr.
Frye/Magee, LLC
117 Tioga Road
Ball, LA 71405

If you should have any questions or request additional information for your review, please contact me at 318-640-1520.

Sincerely,

DAVID PERALTA
Parish President

Enclosures

St. Bernard Parish Government

8201 West Judge Perez Drive
Phone (504) 278-4200

Chalmette, Louisiana 70043
Fax (504) 278-4330

David E. Peralta
Parish President

January 21, 2014

Beasley Denson, Chief
Mississippi Band of Choctaw Indians
P. O. Box 6010, Choctaw Branch
Philadelphia, Mississippi 39350

Re: Construction of Drainage Improvements
Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge
St. Bernard Parish, Louisiana

Dear Mr. Denson:

The St. Bernard Parish Government (SBPG) has applied to the Federal Emergency Management Agency (FEMA) for Hazard Mitigation Grant Program (HMGP) funding under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA's Hazard Mitigation Grant Program provides grants to states and local governments to implement long-term hazard mitigation measures that reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

FEMA proposes to provide funding to St. Bernard Parish for the design and construction of drainage improvements on Palmisano Blvd, (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. This drainage system consists of approximately 100 plus acres of land that drains over ground surface through storm drain pipe and directed via pump to an earthen ditch. The earthen ditch runs along St. Bernard Hwy. to Palmisano Boulevard, then from St. Bernard Highway paralleling Palmisano Blvd. running approximately 4,860 feet to the Twenty Arpent Canal. The earthen ditch floods frequently during heavy rainfall events due to inadequate capacity and undersized culvert/pipe crossing under roadways and residential driveways.

The proposed scope of work includes the following:

Plaza Drive Lift Station Pump: This segment of the project will consist of an upgrade to the existing pumping station within the Plaza Drive Basin and upgrading their discharge capacity by improving the open canal along the south side of St. Bernard Hwy. to Palmisano Blvd. and flushing and cleaning the existing sub-surface drainage within the basin. The proposed pump station is 3"-10" Fairbanks Morse or equivalent vertical propeller pumps.

Palmisano Canal – East St. Bernard Hwy (LA46) to Twenty Arpent Canal: The design objectives were to contain the flow within the channel for a 25-year storm event and to reduce the risk. To improve the channel capacity and to reduce the risk, the proposed design uses reinforce concrete box culverts. Using the box culverts and constructing a swale ditch on top of the box to collect sheet flow. The proposed design is to construct an 8-foot x 4-foot box culvert from Camille Place to East Judge Perez Drive, then design and construct a 10-foot x 6-foot box culvert from the Judge Perez Drive to the 20 Arpent Canal.

Palmisano at 20 Arpent Canal Crossing: Design and construct a bridge crossing approximately 70'x 100' concrete span, pile supported and paved channel/aggregate.

Location of each of the proposed improvements are as follows:

Site	City	State	Latitude	Longitude
Plaza Pump	Chalmette	LA	29.93363	-89.96016
Palmisano Canal	Chalmette	LA	29.93143	-89.95604
Palmisano 20 Arpent Bridge	Chalmette	LA	29.94325	-89.94995

In accordance with NEPA and the implementing regulations of the Council of Environmental Quality (40 CFR 1500-1508), the St. Bernard Parish Government is preparing an Environmental Assessment for the construction of drainage improvements on Palmisano Blvd. (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. Therefore, we are requesting your agency's comments to the project relative to:

1. Archaeological or Historic Sites or Properties Listed in the National Register or Historic Places or Other Significant Cultural Resources
2. Cultural Facilities Located in the Project Area

Please fax your response to 318–640-5856, email your response to danny.magee@fryemagee.com, or mail your response to the following address:

Danny H. Magee, Sr.
Frye/Magee, LLC
117 Tioga Road
Ball, LA 71405

If you should have any questions or request additional information for your review, please contact me at 318-640-1520.

Sincerely,

DAVID PERALTA
Parish President

Enclosures

St. Bernard Parish Government

8201 West Judge Perez Drive
Phone (504) 278-4200

Chalmette, Louisiana 70043
Fax (504) 278-4330

David E. Peralta
Parish President

January 21, 2014

Ms. Pam Breaux
State Historic Preservation Officer
P. O. Box 442747
Baton Rouge, LA 70804

Re: Construction of Drainage Improvements
Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge
St. Bernard Parish, Louisiana

Dear Ms. Breaux:

The St. Bernard Parish Government (SBPG) has applied to the Federal Emergency Management Agency (FEMA) for Hazard Mitigation Grant Program (HMGP) funding under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA's Hazard Mitigation Grant Program provides grants to states and local governments to implement long-term hazard mitigation measures that reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

FEMA proposes to provide funding to St. Bernard Parish for the design and construction of drainage improvements on Palmisano Blvd. (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. This drainage system consists of approximately 100 plus acres of land that drains over ground surface through storm drain pipe and directed via pump to an earthen ditch. The earthen ditch runs along St. Bernard Hwy. to Palmisano Boulevard, then from St. Bernard Highway paralleling Palmisano Blvd. running approximately 4,860 feet to the Twenty Arpent Canal. The earthen ditch floods frequently during heavy rainfall events due to inadequate capacity and undersized culvert/pipe crossing under roadways and residential driveways.

The proposed scope of work includes the following:

Plaza Drive Lift Station Pump: This segment of the project will consist of an upgrade to the existing pumping station within the Plaza Drive Basin and upgrading their discharge capacity by improving the open canal along the south side of St. Bernard Hwy. to Palmisano Blvd. and flushing and cleaning the existing sub-surface drainage within the basin. The proposed pump station is 3"-10" Fairbanks Morse or equivalent vertical propeller pumps.

Palmisano Canal – East St. Bernard Hwy (LA46) to Twenty Arpent Canal: The design objectives were to contain the flow within the channel for a 25-year storm event and to reduce the risk. To improve the channel capacity and to reduce the risk, the proposed design uses reinforce concrete box culverts. Using the box culverts and constructing a swale ditch on top of the box to collect sheet flow. The proposed design is to construct an 8-foot x 4-foot box culvert from Camille Place to East Judge Perez Drive, then design and construct a 10-foot x 6-foot box culvert from the Judge Perez Drive to the 20 Arpent Canal.

Palmisano at 20 Arpent Canal Crossing: Design and construct a bridge crossing approximately 70' x 100' concrete span, pile supported and paved channel/aggregate.

Location of each of the proposed improvements are as follows:

Site	City	State	Latitude	Longitude
Plaza Pump	Chalmette	LA	29.93363	-89.96016
Palmisano Canal	Chalmette	LA	29.93143	-89.95604
Palmisano 20 Arpent Bridge	Chalmette	LA	29.94325	-89.94995

In accordance with NEPA and the implementing regulations of the Council of Environmental Quality (40 CFR 1500-1508), the St. Bernard Parish Government is preparing an Environmental Assessment for the construction of drainage improvements on Palmisano Blvd. (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA.. and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. Therefore, we are requesting your agency's comments to the project relative to:

1. Archaeological or Historic Sites or Properties Listed in the National Register or Historic Places or Other Significant Cultural Resources.
2. Cultural Facilities Located in the Project Area.

Please fax your response to 318–640-5856, email your response to danny.magee@fryemagee.com, or mail your response to the following address:

Danny H. Magee, Sr.
Frye/Magee, LLC
117 Tioga Road
Ball, LA 71405

If you should have any questions or request additional information for your review, please contact me at 318-640-1520.

Sincerely,

DAVID PERALTA
Parish President

Enclosures

St. Bernard Parish Government

8201 West Judge Perez Drive
Phone (504) 278-4200

Chalmette, Louisiana 70043
Fax (504) 278-4330

David E. Peralta
Parish President

January 21, 2014

Mr. Kevin Norton, Resource Conservationist
National Resources Conservation Services
3737 Government Street, Suite 116
Alexandria, Louisiana 71302

Re: Construction of Drainage Improvements
Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge
St. Bernard Parish, Louisiana

Dear Mr. Norton:

The St. Bernard Parish Government (SBPG) has applied to the Federal Emergency Management Agency (FEMA) for Hazard Mitigation Grant Program (HMGP) funding under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA's Hazard Mitigation Grant Program provides grants to states and local governments to implement long-term hazard mitigation measures that reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

FEMA proposes to provide funding to St. Bernard Parish for the design and construction of drainage improvements on Palmisano Blvd, (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. This drainage system consists of approximately 100 plus acres of land that drains over ground surface through storm drain pipe and directed via pump to an earthen ditch. The earthen ditch runs along St. Bernard Hwy. to Palmisano Boulevard, then from St. Bernard Highway paralleling Palmisano Blvd. running approximately 4,860 feet to the Twenty Arpent Canal. The earthen ditch floods frequently during heavy rainfall events due to inadequate capacity and undersized culvert/pipe crossing under roadways and residential driveways.

The proposed scope of work includes the following:

Plaza Drive Lift Station Pump: This segment of the project will consist of an upgrade to the existing pumping station within the Plaza Drive Basin and upgrading their discharge capacity by improving the open canal along the south side of St. Bernard Hwy. to Palmisano Blvd. and flushing and cleaning the existing sub-surface drainage within the basin. The proposed pump station is 3"-10" Fairbanks Morse or equivalent vertical propeller pumps.

Palmisano Canal – East St. Bernard Hwy (LA46) to Twenty Arpent Canal: The design objectives were to contain the flow within the channel for a 25-year storm event and to reduce the risk. To improve the channel capacity and to reduce the risk, the proposed design uses reinforce concrete box culverts. Using the box culverts and constructing a swale ditch on top of the box to collect sheet flow. The proposed design is to construct an 8-foot x 4-foot box culvert from Camille Place to East Judge Perez Drive, then design and construct a 10-foot x 6-foot box culvert from the Judge Perez Drive to the 20 Arpent Canal.

Palmisano at 20 Arpent Canal Crossing: Design and construct a bridge crossing approximately 70' x 100' concrete span, pile supported and paved channel/aggregate.

Location of each of the proposed improvements are as follows:

Site	City	State	Latitude	Longitude
Plaza Pump	Chalmette	LA	29.93363	-89.96016
Palmisano Canal	Chalmette	LA	29.93143	-89.95604
Palmisano 20 Arpent Bridge	Chalmette	LA	29.94325	-89.94995

In accordance with NEPA and the implementing regulations of the Council of Environmental Quality (40 CFR 1500-1508), the St. Bernard Parish Government is preparing an Environmental Assessment for the construction of drainage improvements on Palmisano Blvd. (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. Therefore, we are requesting your agency's comments to the project relative to:

1. Prime Farmland
2. Any NRCS work in the immediate area

Please fax your response to 318–640-5856, email your response to danny.magee@fryemagee.com, or mail your response to the following address:

Danny H. Magee, Sr.
Frye/Magee, LLC
117 Tioga Road
Ball, LA 71405

If you should have any questions or request additional information for your review, please contact me at 318-640-1520.

Sincerely,

DAVID PERALTA
Parish President

Enclosures

St. Bernard Parish Government

8201 West Judge Perez Drive
Phone (504) 278-4200

Chalmette, Louisiana 70043
Fax (504) 278-4330

David E. Peralta
Parish President

January 21, 2014

Earl J. Barbry, THPO
Tunica-Biloxi Indians Tribe of Louisiana
P.O. Box 1589
Marksville, Louisiana 71351

Re: Construction of Drainage Improvements
Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge
St. Bernard Parish, Louisiana

Dear Mr. Barbry:

The St. Bernard Parish Government (SBPG) has applied to the Federal Emergency Management Agency (FEMA) for Hazard Mitigation Grant Program (HMGP) funding under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA's Hazard Mitigation Grant Program provides grants to states and local governments to implement long-term hazard mitigation measures that reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

FEMA proposes to provide funding to St. Bernard Parish for the design and construction of drainage improvements on Palmisano Blvd, (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. This drainage system consists of approximately 100 plus acres of land that drains over ground surface through storm drain pipe and directed via pump to an earthen ditch. The earthen ditch runs along St. Bernard Hwy. to Palmisano Boulevard, then from St. Bernard Highway paralleling Palmisano Blvd. running approximately 4,860 feet to the Twenty Arpent Canal. The earthen ditch floods frequently during heavy rainfall events due to inadequate capacity and undersized culvert/pipe crossing under roadways and residential driveways.

The proposed scope of work includes the following:

Plaza Drive Lift Station Pump: This segment of the project will consist of an upgrade to the existing pumping station within the Plaza Drive Basin and upgrading their discharge capacity by improving the open canal along the south side of St. Bernard Hwy. to Palmisano Blvd. and flushing and cleaning the existing sub-surface drainage within the basin. The proposed pump station is 3"-10" Fairbanks Morse or equivalent vertical propeller pumps.

Palmisano Canal – East St. Bernard Hwy (LA46) to Twenty Arpent Canal: The design objectives were to contain the flow within the channel for a 25-year storm event and to reduce the risk. To improve the channel capacity and to reduce the risk, the proposed design uses reinforce concrete box culverts. Using the box culverts and constructing a swale ditch on top of the box to collect sheet flow. The proposed design is to construct an 8-foot x 4-foot box culvert from Camille Place to East Judge Perez Drive, then design and construct a 10-foot x 6-foot box culvert from the Judge Perez Drive to the 20 Arpent Canal.

Palmisano at 20 Arpent Canal Crossing: Design and construct a bridge crossing approximately 70' x 100' concrete span, pile supported and paved channel/aggregate.

Location of each of the proposed improvements are as follows:

Site	City	State	Latitude	Longitude
Plaza Pump	Chalmette	LA	29.93363	-89.96016
Palmisano Canal	Chalmette	LA	29.93143	-89.95604
Palmisano 20 Arpent Bridge	Chalmette	LA	29.94325	-89.94995

In accordance with NEPA and the implementing regulations of the Council of Environmental Quality (40 CFR 1500-1508), the St. Bernard Parish Government is preparing an Environmental Assessment for the construction of drainage improvements on Palmisano Blvd. (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA. and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. Therefore, we are requesting your agency's comments to the project relative to:

1. Archaeological or Historic Sites or Properties Listed in the National Register or Historic Places or Other Significant Cultural Resources
2. Cultural Facilities Located in the Project Area

Please fax your response to 318–640-5856, email your response to danny.magee@fryemagee.com, or mail your response to the following address:

Danny H. Magee, Sr.
Frye/Magee, LLC
117 Tioga Road
Ball, LA 71405

If you should have any questions or request additional information for your review, please contact me at 318-640-1520.

Sincerely,

DAVID PERALTA
Parish President

Enclosures

St. Bernard Parish Government

8201 West Judge Perez Drive
Phone (504) 278-4200

Chalmette, Louisiana 70043
Fax (504) 278-4330

David E. Peralta
Parish President

January 21, 2014

Mr. Pete J. Serio
Department of the Army, Corps of Engineers
New Orleans District
P. O. Box 60267
New Orleans, Louisiana 70160-0267

Re: Construction of Drainage Improvements
Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge
St. Bernard Parish, Louisiana

Dear Mr. Serio:

The St. Bernard Parish Government (SBPG) has applied to the Federal Emergency Management Agency (FEMA) for Hazard Mitigation Grant Program (HMGP) funding under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA's Hazard Mitigation Grant Program provides grants to states and local governments to implement long-term hazard mitigation measures that reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

FEMA proposes to provide funding to St. Bernard Parish for the design and construction of drainage improvements on Palmisano Blvd, (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. This drainage system consists of approximately 100 plus acres of land that drains over ground surface through storm drain pipe and directed via pump to an earthen ditch. The earthen ditch runs along St. Bernard Hwy. to Palmisano Boulevard, then from St. Bernard Highway paralleling Palmisano Blvd. running approximately 4,860 feet to the Twenty Arpent Canal. The earthen ditch floods frequently during heavy rainfall events due to inadequate capacity and undersized culvert/pipe crossing under roadways and residential driveways.

The proposed scope of work includes the following:

Plaza Drive Lift Station Pump: This segment of the project will consist of an upgrade to the existing pumping station within the Plaza Drive Basin and upgrading their discharge capacity by improving the open canal along the south side of St. Bernard Hwy. to Palmisano Blvd. and flushing and cleaning the existing sub-surface drainage within the basin. The proposed pump station is 3"-10" Fairbanks Morse or equivalent vertical propeller pumps.

Palmisano Canal – East St. Bernard Hwy (LA46) to Twenty Arpent Canal: The design objectives were to contain the flow within the channel for a 25-year storm event and to reduce the risk. To improve the channel capacity and to reduce the risk, the proposed design uses reinforce concrete box culverts. Using the box culverts and constructing a swale ditch on top of the box to collect sheet flow. The proposed design is to construct an 8-foot x 4-foot box culvert from Camille Place to East Judge Perez Drive, then design and construct a 10-foot x 6-foot box culvert from the Judge Perez Drive to the 20 Arpent Canal.

Palmisano at 20 Arpent Canal Crossing: Design and construct a bridge crossing approximately 70' x 100' concrete span, pile supported and paved channel/aggregate.

Location of each of the proposed improvements are as follows:

Site	City	State	Latitude	Longitude
Plaza Pump	Chalmette	LA	29.93363	-89.96016
Palmisano Canal	Chalmette	LA	29.93143	-89.95604
Palmisano 20 Arpent Bridge	Chalmette	LA	29.94325	-89.94995

In accordance with NEPA and the implementing regulations of the Council of Environmental Quality (40 CFR 1500-1508), the St. Bernard Parish Government is preparing an Environmental Assessment for the construction of drainage improvements on Palmisano Blvd, (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. Therefore, we are requesting your agency's comments to the project relative to:

1. Wetlands

Please fax your response to 318–640-5856, email your response to danny.magee@fryemagee.com, or mail your response to the following address:

Danny Magee
Frye/Magee, LLC
117 Tioga Road
Ball, LA 71405

If you should have any questions or request additional information for your review, please contact me at 318-640-1520.

Sincerely,

DAVID PERALTA
Parish President

Enclosures

St. Bernard Parish Government

8201 West Judge Perez Drive
Phone (504) 278-4200

Chalmette, Louisiana 70043
Fax (504) 278-4330

David E. Peralta
Parish President

January 21, 2014

Endangered Species Coordinator
U.S. Fish and Wildlife Service
646 Cajun Dome Blvd. Suite #400
Lafayette, Louisiana 70506

Re: Construction of Drainage Improvements
Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge
St. Bernard Parish, Louisiana

Dear Sir:

The St. Bernard Parish Government (SBPG) has applied to the Federal Emergency Management Agency (FEMA) for Hazard Mitigation Grant Program (HMGP) funding under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA's Hazard Mitigation Grant Program provides grants to states and local governments to implement long-term hazard mitigation measures that reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

FEMA proposes to provide funding to St. Bernard Parish for the design and construction of drainage improvements on Palmisano Blvd, (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. This drainage system consists of approximately 100 plus acres of land that drains over ground surface through storm drain pipe and directed via pump to an earthen ditch. The earthen ditch runs along St. Bernard Hwy. to Palmisano Boulevard, then from St. Bernard Highway paralleling Palmisano Blvd. running approximately 4,860 feet to the Twenty Arpent Canal. The earthen ditch floods frequently during heavy rainfall events due to inadequate capacity and undersized culvert/pipe crossing under roadways and residential driveways.

The proposed scope of work includes the following:

Plaza Drive Lift Station Pump: This segment of the project will consist of an upgrade to the existing pumping station within the Plaza Drive Basin and upgrading their discharge capacity by improving the open canal along the south side of St. Bernard Hwy. to Palmisano Blvd. and flushing and cleaning the existing sub-surface drainage within the basin. The proposed pump station is 3"-10" Fairbanks Morse or equivalent vertical propeller pumps.

Palmisano Canal – East St. Bernard Hwy (LA46) to Twenty Arpent Canal: The design objectives were to contain the flow within the channel for a 25-year storm event and to reduce the risk. To improve the channel capacity and to reduce the risk, the proposed design uses reinforce concrete box culverts. Using the box culverts and constructing a swale ditch on top of the box to collect sheet flow. The proposed design is to construct an 8-foot x 4-foot box culvert from Camille Place to East Judge Perez Drive, then design and construct a 10-foot x 6-foot box culvert from the Judge Perez Drive to the 20 Arpent Canal.

Palmisano at 20 Arpent Canal Crossing: Design and construct a bridge crossing approximately 70' x 100' concrete span, pile supported and paved channel/aggregate.

Location of each of the proposed improvements are as follows:

Site	City	State	Latitude	Longitude
Plaza Pump	Chalmette	LA	29.93363	-89.96016
Palmisano Canal	Chalmette	LA	29.93143	-89.95604
Palmisano 20 Arpent Bridge	Chalmette	LA	29.94325	-89.94995

In accordance with NEPA and the implementing regulations of the Council of Environmental Quality (40 CFR 1500-1508), the St. Bernard Parish Government is preparing an Environmental Assessment for the construction of drainage improvements on Palmisano Blvd. (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. Therefore, we are requesting your agency's comments to the project relative to:

1. Endangered Species

Please fax your response to 318–640-5856, email your response to danny.magee@fryemagee.com, or mail your response to the following address:

Danny H. Magee, Sr.
Frye/Magee, LLC
117 Tioga Road
Ball, LA 71405

If you should have any questions or request additional information for your review, please contact me at 318-640-1520.

Sincerely,

DAVID PERALTA
Parish President

Enclosures

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

February 14, 2014

Mr. David E. Peralta
President
St. Bernard Parish Government
8201 West Judge Perez Drive
Chalmette, LA 70043

Dear Mr. Peralta:

We have received your January 21, 2014, letter requesting our evaluation of the potential environmental impacts that might result from the following project:

Construction of Drainage Improvements
Palmisano Blvd., Plaza Dr. & 20 Arpent Bridge
St. Bernard Parish
Chalmette, Louisiana

In administering the sole source aquifer (SSA) program under Section 1424 of the Safe Drinking Water Act our Office performs evaluations of projects with federal financial assistance which are located over a designated sole source aquifer.

Based on the information provided, we have concluded that the project does not lie within the boundaries of a designated sole source aquifer and is thus not eligible for review under the SSA program.

If you did not include a project description, project location, the parish and the federal funding agency 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
Danny H. Magee, Sr., Fry/Magee, LLC

BOBBY JINDAL
GOVERNOR

STEPHEN CHUSTZ
INTERIM SECRETARY

State of Louisiana

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF COASTAL MANAGEMENT

September 28, 2012

To whom it may concern:

The Louisiana Department of Natural Resources, Office of Coastal Management (LDNR OCM) administers the state's federally-approved Coastal Zone Management (CZM) program.

A number of federal and state agencies are involved in providing financial assistance to state and local governments, non-governmental organizations, businesses, and individuals in Louisiana. As part of their award process, many of these agencies require the applicant to coordinate with the Louisiana CZM program. This coordination is generally intended to address one of two questions: concerns about awarding the financial assistance, or concerns about implementing the proposed project.

As a result of an internal review of program functions, OCM is streamlining its financial assistance review procedure to ensure response to all requests in a timely and appropriate manner. The OCM is confident that this procedure change will greatly improve office productivity, and provide for better accountability to the public we serve. Consequently, as of October 1, 2012, the coordination with OCM concerning applications for federal financial assistance should follow the procedures below, depending on the nature of the inquiry:

Consistency review for Federal Assistance

Federal regulations at 15 CFR §930.90 *et seq*. require state and local government bodies applying for federal financial assistance (grants, loans, guarantees, insurance, contractual arrangements, or other form of financial aid) to submit a request for Consistency review of that assistance to OCM. Since the inception of the Louisiana Coastal Resources Program in 1980, OCM has never found that financial assistance for a proposed project would be inconsistent with the state Coastal Zone Management program. The Office of Coastal Management therefore is issuing this letter of general consistency concurrence, which shall serve as formal notification that, as of October 1, 2012, the granting of any financial assistance as defined at 15 CFR §930.91, is fully consistent with the Louisiana Coastal Resources Program. Federal agencies should not require applicants for financial assistance to seek OCM's approval for that assistance.

Request for Determination for project implementation

If the applicant is seeking comments on the need to obtain a Coastal Use Permit or other authorization from OCM, for projects in or near to the Louisiana Coastal Zone, a Request for Determination or Solicitation of Views should be submitted to OCM's Permits and Mitigation

Post Office Box 44487 • Baton Rouge, Louisiana 70804-4487
617 North Third Street • 10th Floor • Suite 1078 • Baton Rouge, Louisiana 70802
(225) 342-7591 • Fax (225) 342-9439 • http://www.dnr.louisiana.gov
An Equal Opportunity Employer

Division. Instructions and downloadable and online applications are located online at http://dnr.louisiana.gov/index.cfm?md=pagebuilder&tmp=home&pid=93. In Step 3 of the application, the box for Request for Determination or Solicitation of Views should be checked. Questions regarding this process may be directed to the OCM Permits Section staff at (225) 342-7591 or 1-800-267-4019, or by mail at P.O. Box 44487, Baton Rouge, LA 70804.

Outside of the Coastal Zone

Projects which are clearly located outside of the Coastal Zone and are not likely to have an impact on coastal waters generally will not require coordination with the OCM. However, projects near the Coastal Zone boundary where there may be some doubt, or those which may involve discharges into waters that flow into the Coastal Zone, should be submitted to OCM for review. A map of the Coastal Zone may be found at http://dnr.louisiana.gov/index.cfm?md=pagebuilder&tmp=home&pid=89&pnid=0&nid=39.

Finally, OCM may find it necessary to change or rescind the provisions of this letter. Should this become necessary, OCM will publish a public notice in the Official State Journal (The Baton Rouge Advocate) and on the DNR web page, and attempt to contact all affected federal agencies directly.

Questions concerning these procedures should be addressed to Mr. Jeff Harris of the Consistency Section, at (225) 342-7949 or via e-mail to Jeff.Harris@LA.gov.

Sincerely,

Keith Lovell
Acting Administrator
Interagency Affairs/Field Services Division

cc: Karl Morgan, P/M Division
Consistency file C20120326
rev 11/14/2012

BOBBY JINDAL
GOVERNOR

State of Louisiana
DEPARTMENT OF WILDLIFE AND FISHERIES
OFFICE OF WILDLIFE

ROBERT J. BARHAM
SECRETARY
JIMMY L. ANTHONY
ASSISTANT SECRETARY

Date	February 21, 2014
Name	Danny H. Magee
Company	Frye/Magee, LLC
Street Address	117 Tioga Road
City, State, Zip	Ball, La 71405
Project	Construction of Drainage Improvements Palmisano Blvd., Plaza Drive and 20 Arpent Bridge
Project ID	
Invoice Number	14022111

Personnel of the Habitat Section of the Coastal & Nongame Resources Division have reviewed the preliminary data for the captioned project. After careful review of our database, no impacts to rare, threatened, or endangered species or critical habitats are anticipated for the proposed project. No state or federal parks, wildlife refuges, scenic streams, or wildlife management areas are known at the specified site within Louisiana's boundaries.

The Louisiana Natural Heritage Program (LNHP) has compiled data on rare, endangered, or otherwise significant plant and animal species, plant communities, and other natural features throughout the state of Louisiana. Heritage reports summarize the existing information known at the time of the request regarding the location in question. The quantity and quality of data collected by the LNHP are dependent on the research and observations of many individuals. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Louisiana have not been surveyed. This report does not address the occurrence of wetlands at the site in question. Heritage reports should not be considered final statements on the biological elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. LNHP requires that this office be acknowledged in all reports as the source of all data provided here. If at any time Heritage tracked species are encountered within the project area, please contact the LNHP Data Manager at 225-765-2643. If you have any questions, or need additional information, please call 225-765-2357.

Sincerely,

for Amity Bass, Coordinator
Natural Heritage Program

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
3737 Government Street
Alexandria, LA 71302

(318) 473-7751
Fax: (318) 473-7626

March 3, 2014

Danny H. Magee, Sr.
Frye/Magee, LLC
117 Tioga Road
Ball, Louisiana 71405

RE: Construction of Drainage Improvements
Palmisano Boulevard, Plaza Drive, and 20 Arpent Bridge
St. Bernard Parish, Louisiana

Dear Mr. Magee:

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

Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a federal agency or with assistance from a federal agency. For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements can be forest land, pastureland, cropland, or other land, but not water or urban built-up land.

The project maps submitted with your request indicates that the proposed construction areas are within urban areas and therefore is exempt from the rules and regulations of the Farmland Protection Policy Act (FPPA)—Subtitle I of Title XV, Section 1539-1549. Furthermore, we predict no impact to NRCS projects in the vicinity.

For specific information about the soils found in the project area, please visit our Web Soil Survey at the following location: http://websoilsurvey.nrcs.usda.gov/

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

Respectfully,

Kevin D. Norton
State Conservationist

ACTING FOR

Helping People Help the Land

St. Bernard Parish Government

8201 West Judge Perez Drive
Phone (504) 278-4200

Chalmette, Louisiana 70043
Fax (504) 278-4330

David E. Peralta
Parish President

January 21, 2014

No known historic properties will be affected by this undertaking. This effect determination could change should new information come to our attention.

Pam Breaux 2-27-14
Pam Breaux Date
State Historic Preservation Officer

Ms. Pam Breaux
State Historic Preservation Officer
P. O. Box 442747
Baton Rouge, LA 70804

Re: Construction of Drainage Improvements
Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge
St. Bernard Parish, Louisiana

Dear Ms. Breaux:

The St. Bernard Parish Government (SBPG) has applied to the Federal Emergency Management Agency (FEMA) for Hazard Mitigation Grant Program (HMGP) funding under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA's Hazard Mitigation Grant Program provides grants to states and local governments to implement long-term hazard mitigation measures that reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

FEMA proposes to provide funding to St. Bernard Parish for the design and construction of drainage improvements on Palmisano Blvd, (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. This drainage system consists of approximately 100 plus acres of land that drains over ground surface through storm drain pipe and directed via pump to an earthen ditch. The earthen ditch runs along St. Bernard Hwy. to Palmisano Boulevard, then from St. Bernard Highway paralleling Palmisano Blvd. running approximately 4,860 feet to the Twenty Arpent Canal. The earthen ditch floods frequently during heavy rainfall events due to inadequate capacity and undersized culvert/pipe crossing under roadways and residential driveways.

The proposed scope of work includes the following:

Plaza Drive Lift Station Pump: This segment of the project will consist of an upgrade to the existing pumping station within the Plaza Drive Basin and upgrading their discharge capacity by improving the open canal along the south side of St. Bernard Hwy. to Palmisano Blvd. and flushing and cleaning the existing sub-surface drainage within the basin. The proposed pump station is 3"-10" Fairbanks Morse or equivalent vertical propeller pumps.

Palmisano Canal – East St. Bernard Hwy (LA46) to Twenty Arpent Canal: The design objectives were to contain the flow within the channel for a 25-year storm event and to reduce the risk. To improve the channel capacity and to reduce the risk, the proposed design uses reinforce concrete box culverts. Using the box culverts and constructing a swale ditch on top of the box to collect sheet flow. The proposed design is to construct an 8-foot x 4-foot box culvert from Camille Place to East Judge Perez Drive, then design and construct a 10-foot x 6-foot box culvert from the Judge Perez Drive to the 20 Arpent Canal.

Palmisano at 20 Arpent Canal Crossing: Design and construct a bridge crossing approximately 70' x 100' concrete span, pile supported and paved channel/aggregate.

Location of each of the proposed improvements are as follows:

Site	City	State	Latitude	Longitude
Plaza Pump	Chalmette	LA	29.93363	-89.96016
Palmisano Canal	Chalmette	LA	29.93143	-89.95604
Palmisano 20 Arpent Bridge	Chalmette	LA	29.94325	-89.94995

In accordance with NEPA and the implementing regulations of the Council of Environmental Quality (40 CFR 1500-1508), the St. Bernard Parish Government is preparing an Environmental Assessment for the construction of drainage improvements on Palmisano Blvd, (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. Therefore, we are requesting your agency's comments to the project relative to:

1. Archaeological or Historic Sites or Properties Listed in the National Register or Historic Places or Other Significant Cultural Resources.
2. Cultural Facilities Located in the Project Area.

Please fax your response to 318–640-5856, email your response to danny.magee@fryemagee.com, or mail your response to the following address:

Danny H. Magee, Sr.
Frye/Magee, LLC
117 Tioga Road
Ball, LA 71405

If you should have any questions or request additional information for your review, please contact me at 318-640-1520.

Sincerely,

DAVID PERALTA
Parish President

Enclosures

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P. O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

MAR 1 3 2014

REPLY TO
ATTENTION OF

Operations Division
Operations Manager,
Completed Works

Mr. Danny Magee
Frye/Magee, LLC
117 Tioga Road
Ball, Louisiana 71405

Dear Mr. Magee:

This is in response to the Solicitation of Views request dated January 21, 2014, on behalf of St. Bernard Parish Government, concerning the construction of drainage improvements along Palmisano Boulevard, Plaza Drive and 20 Arpent Bridge, in St. Bernard Parish, Louisiana.

We have reviewed your request for potential Department of the Army regulatory requirements and impacts on any Department of the Army projects.

We do not anticipate any adverse impacts to any Corps of Engineers projects.

Based on review of recent maps, aerial photography, soils data, and a previous determination, we have determined that this property is not in a wetland subject to Corps' jurisdiction. A Department of the Army permit under Section 404 of the Clean Water Act will not be required for the deposition or redistribution of dredged or fill material on this site.

Please be advised that this property is in the Louisiana Coastal Zone and a Coastal Use Permit may be required prior to initiation of any activities on this site. For additional information, contact Ms. Christine Charrier, Office of Coastal Management, Louisiana Department of Natural Resources at (225) 342 7953.

You are advised that this jurisdictional determination is valid for a period of 5 years from the date of this letter unless new information warrants revision prior to the expiration date or the District Commander has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.

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

Please contact Mr. Robert Heffner, of our Regulatory Branch by telephone at (504) 862-1288, or by e-mail at Robert.A.Heffner@usace.army.mil for questions concerning wetlands determinations or need for on-site evaluations. Questions concerning regulatory permit requirements may be addressed to Mr. Michael Farabee by telephone at (504) 862-2292 or by email at Michael.V.Farabee@usace.army.mil.

Future correspondence concerning this matter should reference our account number MVN-2014-00383-SE. This will allow us to more easily locate records of previous correspondence, and thus provide a quicker response.

Sincerely,

Karen L. Clement

Karen L. Clement
Solicitation of Views Manager

Copy Furnished:

Ms. Christine Charrier
Coastal Zone Management
Department of Natural Resources
Post Office Box 44487
Baton Rouge, Louisiana 70804-4487

St. Bernard Parish Government

8201 West Judge Perez Drive Chalmette, Louisiana 70043
Phone (504) 278-4200 Fax (504) 278-4330

David E. Peralta
Parish President

This project has been reviewed for effects to Federal trust resources under our jurisdiction and currently protected by the Endangered Species Act of 1973 (Act). The project, as proposed,
(✓) Will have no effect on those resources
( ) Is not likely to adversely affect those resources.
This finding fulfills the requirements under Section 7(a)(2) of the Act.

Acting Supervisor
Louisiana Field Office
U.S. Fish and Wildlife Service

Date

RECEIVED
FEB 12 2014
FISH & WLDL. SERV
LAFAYETTE, LA.

January 21, 2014

Endangered Species Coordinator
U.S. Fish and Wildlife Service
646 Cajun Dome Blvd. Suite #400
Lafayette, Louisiana 70506

Re: Construction of Drainage Improvements
Palmisano Blvd., Plaza Drive, and 20 Arpent Bridge
St. Bernard Parish, Louisiana

Dear Sir:

The St. Bernard Parish Government (SBPG) has applied to the Federal Emergency Management Agency (FEMA) for Hazard Mitigation Grant Program (HMGP) funding under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA's Hazard Mitigation Grant Program provides grants to states and local governments to implement long-term hazard mitigation measures that reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

FEMA proposes to provide funding to St. Bernard Parish for the design and construction of drainage improvements on Palmisano Blvd, (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. This drainage system consists of approximately 100 plus acres of land that drains over ground surface through storm drain pipe and directed via pump to an earthen ditch. The earthen ditch runs along St. Bernard Hwy. to Palmisano Boulevard, then from St. Bernard Highway paralleling Palmisano Blvd. running approximately 4,860 feet to the Twenty Arpent Canal. The earthen ditch floods frequently during heavy rainfall events due to inadequate capacity and undersized culvert/pipe crossing under roadways and residential driveways.

The proposed scope of work includes the following:

Plaza Drive Lift Station Pump: This segment of the project will consist of an upgrade to the existing pumping station within the Plaza Drive Basin and upgrading their discharge capacity by improving the open canal along the south side of St. Bernard Hwy. to Palmisano Blvd. and flushing and cleaning the existing sub-surface drainage within the basin. The proposed pump station is 3"-10" Fairbanks Morse or equivalent vertical propeller pumps.

Palmisano Canal – East St. Bernard Hwy (LA46) to Twenty Arpent Canal: The design objectives were to contain the flow within the channel for a 25-year storm event and to reduce the risk. To improve the channel capacity and to reduce the risk, the proposed design uses reinforce concrete box culverts. Using the box culverts and constructing a swale ditch on top of the box to collect sheet flow. The proposed design is to construct an 8-foot x 4-foot box culvert from Camille Place to East Judge Perez Drive, then design and construct a 10-foot x 6-foot box culvert from the Judge Perez Drive to the 20 Arpent Canal.

Palmisano at 20 Arpent Canal Crossing: Design and construct a bridge crossing approximately 70' x 100' concrete span, pile supported and paved channel/aggregate.

Location of each of the proposed improvements are as follows:

Site	City	State	Latitude	Longitude
Plaza Pump	Chalmette	LA	29.93363	-89.96016
Palmisano Canal	Chalmette	LA	29.93143	-89.95604
Palmisano 20 Arpent Bridge	Chalmette	LA	29.94325	-89.94995

In accordance with NEPA and the implementing regulations of the Council of Environmental Quality (40 CFR 1500-1508), the St. Bernard Parish Government is preparing an Environmental Assessment for the construction of drainage improvements on Palmisano Blvd, (from St. Bernard Hwy. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Blvd. drainage system to relieve the recurrent ponding during rainfall events. Therefore, we are requesting your agency's comments to the project relative to:

1. Endangered Species

Please fax your response to 318–640-5856, email your response to danny.magee@fryemagee.com, or mail your response to the following address:

Danny H. Magee, Sr.
Frye/Magee, LLC
117 Tioga Road
Ball, LA 71405

If you should have any questions or request additional information for your review, please contact me at 318-640-1520.

Sincerely,

DAVID PERALTA
Parish President

Enclosures

From:	Michael D. Hunnicutt
To:	Rose, Emanuel; Holmes, Leschina; Pitts, Melanie
Cc:	Sistern, Tiffany; Shanks, Mary; Emery, Jason; Daniel R. Fernandez; paulbrooks; Poche, Billy (BPoche@hga-llc.com); saunders@hga-llc.com; Mahoney, Caroline (CMahoney@hga-llc.com)
Subject:	RE: St. Bernard Projects
Date:	Friday, May 08, 2015 12:02:48

Emanuel,
The following was sent to us from Ms. Harding:

April 4, 2014

Danny Magee
Frye/Magee, LLC
117 Tioga Road
Ball, LA 71405
danny.magee@fryemagee.com

RE: 140213/0135 Drainage Improvements Palmisano Blvd,
Plaza Drive, and 20 Arpent Bridge
FEMA Hazard Mitigation Grant Program Funding
St. Bernard Parish

Dear Mr. Magee:

The Assessment Division of the Office of Environmental Compliance has reviewed the information provided in your letter dated January 21, 2014, regarding the referenced project. Effective October 4, 2013, St. Bernard Parish was designated by EPA as an Sulfur Dioxide (SO2) nonattainment parish for the 2010 Sulfur Dioxide standard (Federal Register Volume 78, Number 150 (Monday, August 5, 2013)). As part of a nonattainment area, federal activities proposed in St. Bernard Parish may be subject to the State's general conformity regulations as promulgated under LAC 33:III.Chapter 14, Subchapter A, *Determining Conformity of General Federal Actions to State or Federal Implementation Plans*.

In order to determine if the proposed project in St. Bernard Parish is subject to the full requirements of the general conformity regulations, the project sponsor must first make a general conformity applicability determination. This determination can be made by summing the total of direct and indirect Sulfur Dioxide (SO2) emissions caused by the project. If the net total of SO2 emissions is determined to be less than the prescribed *de minimis* level of 100 tons per year per pollutant, then this action will comply with the conformity provisions of Louisiana's State Implementation Plan (SIP) and the Assessment Division will not object to implementation of the project.

Please email your general conformity applicability determination to linda.hardy@la.gov. Should you have any questions regarding state rules and regulations pertaining to general conformity, please contact me at (225) 219-3803. Thank you for affording us the opportunity to comment on the proposed action.

Sincerely,

Yasoob Zia
Environmental Senior Scientist
Assessment Division

SOV #140213/0135

Linda M. Hardy
Technical Assistant to the Deputy Secretary
Louisiana Department of Environmental Quality
Office of the Secretary
P.O. Box 4301
Baton Rouge, LA 70821-4301
Ph: (225) 219-3954
Fax: (225) 219-3971
Email: linda.hardy@la.gov

If you need anything additional, please let me know.

Michael D. Hunnicutt, CFM
504-278-4223

From: Ross, Emanuel [mailto:emanuel.ross@fema.dhs.gov]
Sent: Thursday, May 07, 2015 3:29 PM
To: Michael D. Hunnicutt; Holmes, Leschina; Pitts, Melanie
Cc: Spann, Tiffany; Shanks, Mary; Emery, Jason; Daniel R. Fernandez; causbrooks; Poche, Billy (BPoche@hga-llc.com); ssumpter@hga-llc.com; Mahoney, Candice (CMahoney@hga-llc.com)
Subject: RE: St. Bernard Projects

Thanks,

Emanuel Ross III
Environmental Protection Specialist
FEMA Region VI
1500 Main St., Baton Rouge, LA 70802
Mobile: (504) 256 -1898 (BB)
Office: (504) 284 – 2811
Email: emanuel.ross@fema.dhs.gov

From: Michael D. Hunnicutt [mailto:mhunnicutt@sbpg.net]
Sent: Thursday, May 07, 2015 4:26 PM
To: Ross, Emanuel; Holmes, Leschina; Pitts, Melanie
Cc: Spann, Tiffany; Shanks, Mary; Emery, Jason; Daniel R. Fernandez; causbrooks; Poche, Billy (BPoche@hga-llc.com); ssumpter@hga-llc.com; Mahoney, Candice (CMahoney@hga-llc.com)
Subject: RE: St. Bernard Projects

Emanuel,

Sorry forgot your documentation request. I have a copy of the LDEQ letter sent, but I do not see any response. I will have HGA look through their records to see if they have it. If not, we will contact Ms. Hardy with LDEQ and see why it was not sent or if she has a copy of what was sent.

Michael D. Hunnicutt, CFM
504-278-4223

From: Ross, Emanuel [mailto:emanuel.ross@fema.dhs.gov]
Sent: Thursday, May 07, 2015 3:18 PM
To: Michael D. Hunnicutt; Holmes, Leschina; Pitts, Melanie
Cc: Spann, Tiffany; Shanks, Mary; Emery, Jason; Daniel R. Fernandez; causbrooks; Poche, Billy (BPoche@hga-llc.com); ssumpter@hga-llc.com; Mahoney, Candice (CMahoney@hga-llc.com)
Subject: RE: St. Bernard Projects

Thanks Mr. Hunnicutt for this information. Appreciate it.

Emanuel Ross III
Environmental Protection Specialist
FEMA Region VI
1500 Main St., Baton Rouge, LA 70802
Mobile: (504) 256 -1898 (BB)
Office: (504) 284 – 2811
Email: emanuel.ross@fema.dhs.gov

From: Michael D. Hunnicutt [mailto:mhunnicutt@sbpg.net]
Sent: Thursday, May 07, 2015 4:13 PM
To: Holmes, Leschina; Pitts, Melanie
Cc: Ross, Emanuel; Spann, Tiffany; Shanks, Mary; Emery, Jason; Daniel R. Fernandez; causbrooks; Poche, Billy (BPoche@hga-llc.com); ssumpter@hga-llc.com; Mahoney, Candice (CMahoney@hga-llc.com)
Subject: RE: St. Bernard Projects

Leschina,

Responses for 418. Revised and updated Scope and revised Attainment. I think all is covered, please let me know if we are missing any information. Thanks.

Michael D. Hunnicutt, CFM
504-278-4223

From: Holmes, Leschina [mailto:Leschina.Holmes@fema.dhs.gov]
Sent: Thursday, May 07, 2015 1:03 PM
To: Michael D. Hunnicutt; Pitts, Melanie

Cc: Ross, Emanuel; Spann, Tiffany; Shanks, Mary; Emery, Jason; Daniel R. Fernandez; causbrooks; Poche, Billy (BPoche@hga-llc.com); ssumpter@hga-llc.com; Mahoney, Candice (CMahoney@hga-llc.com)
Subject: RE: St. Bernard Projects

Thanks so much Mike. We appreciate the timely response. We will review the documentation and incorporate into the review of 421 and 417, and will let you know if we need additional information for these. We will await your response regarding for 415. Let us know if we can help or if there are any questions/concerns.

Thanks,
LeSchina Holmes
Lead Environmental Protection Specialist
Region VI – LRO
504-155-6512

From: Michael D. Hunnicutt [mailto:mhunnicutt@hga.net]
Sent: Thursday, May 07, 2015 12:32 PM
To: Holmes, Leschina; Pitts, Melanie
Cc: Ross, Emanuel; Spann, Tiffany; Shanks, Mary; Emery, Jason; Daniel R. Fernandez; causbrooks; Poche, Billy (BPoche@hga-llc.com); ssumpter@hga-llc.com; Mahoney, Candice (CMahoney@hga-llc.com)
Subject: RE: St. Bernard Projects

Leschina,
Attached are the items for 421.

Michael D. Hunnicutt, CFM
504-178-4223

From: Holmes, Leschina [mailto:Leschina.Holmes@fema.dhs.gov]
Sent: Tuesday, May 05, 2015 2:00 PM
To: Michael D. Hunnicutt; Pitts, Melanie
Cc: Ross, Emanuel; Spann, Tiffany; Shanks, Mary; Emery, Jason; Daniel R. Fernandez; causbrooks; Poche, Billy (BPoche@hga-llc.com); ssumpter@hga-llc.com; Mahoney, Candice (CMahoney@hga-llc.com)
Subject: RE: St. Bernard Projects

Mike,

Unfortunately, the timeframe for the previous solicitations are outdated. The time limit on these is 5 years, which would have ended in 2013. FEMA EHP is in the process of drafting a Solicitation of Views (SOVs) and expects to move them forward on Friday of this week (05/08/2015). We will keep you posted as to the status of the responses from the resource agencies.

Please see below for the action item list:

421

- Clarify the scope of work at Munster WWTP including the connection of Violet WWTP that pumps to Munster and the directional drilling to take place on St. Bernard Highway for pump station V1-5 to V1-6
- We need more information on the Clean Air conformity sheet (new document attached)
- HP consultation is ongoing, depending on the outcome may need to do archeological monitoring during construction. Path forward will be clearer after Tribal Call scheduled for 5/5.

418

- Clarify the scope of work based on the new drawings for the Plaza Drive pump station on St. Bernard Highway
- We need more information on the Clean Air conformity sheet (new document attached)
- HP releasing consultation today, barring surprises NHPA consult complete in 30 days.

417

- We need more information on the Clean Air conformity sheet (new document attached)
- Still in need of the 30% drawings and site visit
- HP might be able to clear programmatically, (need plans and site visit to confirm) if not then a consultation will be required (min 45 days).

The Deputy Environmental Liaison Officer (DELO) has requested a 48 hour turnaround to ensure an expedited review timeframe. If anything here is unclear or if anything further is needed, please let me know.

Thanks,
LeSchina Holmes
Lead Environmental Protection Specialist
Region VI – LRO
504-235-6512

From: Michael D. Hunnicutt [mailto:mhunnicutt@shpg.net]
Sent: Friday, May 01, 2015 11:16 AM
To: Pitts, Melanie
Cc: Ross, Emanuel; Spann, Tiffany; Shanks, Mary; Emery, Jason; Holmes, Leschina; Daniel R. Fernandez; causbrooks; Poche, Billy (BPoche@hga-llc.com); ssumpter@hga-llc.com; Mahoney, Candice (CMahoney@hga-llc.com)
Subject: RE: St. Bernard Projects

Melanie,

Can you please send me the action items needed as we discussed on the Phone Call. Also, on the Violet/DRAVO Project, it was discussed that the Munster Environmental was competed in 2008. I noticed we received our project award on May 3, 2013. Does this fall within the 5 years or is it over. Just trying to save us some time if we can use the 2008 Report. Thanks.

Michael D. Hunnicutt, CFM
504-278-4223

From: Pitts, Melanie [mailto:melanie.pitts@fema.dhs.gov]
Sent: Tuesday, April 28, 2015 11:43 AM
To: Michael D. Hunnicutt
Cc: Ross, Emanuel; Spann, Tiffany; Shanks, Mary; Emery, Jason; Holmes, Leschina; Daniel R. Fernandez; causbrooks; Poche, Billy (BPoche@hga-llc.com); ssumpter@hga-llc.com; Mahoney, Candice (CMahoney@hga-llc.com)
Subject: RE: St. Bernard Projects

Today at 2pm would be great. How many people on your end will be on the call as I can set up a conference line?

Melanie Pitts
Environmental & Historic Preservation (EHP)
Lead Environmental Preservation Specialist
1603/1607-DR-LA
BB (504) 427-8000

From: Michael D. Hunnicutt [mailto:mhunnicutt@shpg.net]
Sent: Tuesday, April 28, 2015 9:59 AM
To: Pitts, Melanie
Cc: Ross, Emanuel; Spann, Tiffany; Shanks, Mary; Emery, Jason; Holmes, Leschina; Daniel R. Fernandez; causbrooks; Poche, Billy (BPoche@hga-llc.com); ssumpter@hga-llc.com; Mahoney, Candice (CMahoney@hga-llc.com)
Subject: Re: St. Bernard Projects

After 2 today or before 10am Wednesday is good.

Michael Hunnicutt, CFM
504-278-4223

On Apr 28, 2015, at 9:01 AM, "Pitts, Melanie" <melanie.pitts@fema.dhs.gov> wrote:

> Lol, yes April. Sorry for the mistake.
>
> **Melanie Pitts**
> **Environmental & Historic Preservation (EHP)**
> **Lead Environmental Preservation Specialist**
> **1603/1607-DR-LA**
> **BB (504) 427-8000**

From: Michael D. Hunnicutt [mailto:mhunnicutt@sbpg.net]
Sent: Tuesday, April 28, 2015 8:21 AM
To: Pitts, Melanie
Cc: Ross, Emanuel; Spann, Tiffany; Shanks, Mary; Emery, Jason; Holmes, Leschina; Daniel R. Fernandez; causbrooks; Poche, Billy (BPoche@hga-llc.com); ssumpter@hga-llc.com; Mahoney, Candice (CMahoney@hga-llc.com)
Subject: RE: St. Bernard Projects

Melanie,
Can I assume you meant to say April 28 and 29, not May?

Michael D. Hunnicutt, CFM
504-278-4223

From: Pitts, Melanie [mailto:melanie.pitts@fema.dhs.gov]
Sent: Monday, April 27, 2015 5:08 PM
To: Michael D. Hunnicutt
Cc: Ross, Emanuel; Spann, Tiffany; Shanks, Mary; Emery, Jason; Holmes, Leschina
Subject: St. Bernard Projects
Importance: High

Good Evening Mike,
EHP has received the RFI responses and would like to set up a conference with you to discuss the St. Bernard projects. We would like to address the RFI items received, the Draft EAs, and formulate a path forward for the projects. We are eager to move as many projects into public notice as we can by May 18th.

EHP is available to Conference Tuesday, May 28 after 2pm or Wednesday, May 29 before 11am. Which one of these dates/times work for you?

Thanks,

Melanie Pitts
Environmental & Historic Preservation (EHP)
Lead Environmental Preservation Specialist
1603/1607-DR-LA
BB (504) 427-8000

Results of Clean Air Act applicability determination - Ozone

All values shown on this Results page are derived from data entered manually on the other worksheets. Do not edit any of the numbers or formulas on this page.

		Basic Exhaust Emission Level (BER)	Gasoline Hvy. Duty Temp. Correction Factor (TCF) or Lt. Duty Operating-Mode/TCF (OMTCF)	Gasoline Tampering Offset (OMTTAM)	Speed Correction Factor (SALCHF)	Travel Weighting Fraction (TF) (Not Used)	Calculated Basic Exhaust Emission Factor (BEF) (g/mi) **(Stop for NO_x)**	Gasoline Crankcase and Evaporative Emissions (CCEVRT)	Gasoline Refueling Emissions	Gasoline Running Loss Emissions	Gasoline Resting Loss Emissions	Calculated Total Hydrocarbon (HC) Emissions Factor (g/mi)	Calculated Total VOC (g/mi)	Miles of Travel per Trip	Total Number of Trips	Total Emissions (metric tons)	Total Emissions (U.S. tons)
Section 1 - Road Vehicles																	
Heavy duty gasoline vehicles																	
Crew-cab Pick-up	VOC																
	NO_x																
Crew-cab Pick-up with Loaded Trailer	VOC																
	NO_x																
Heavy duty diesel vehicles																	
Dump Truck (20 CY)	VOC	2.100	N/A	N/A	0.7189237		1.5097398	N/A	N/A	N/A	N/A	1.50973984	1.589756052	320	260	0.1322677	0.1457987
	NO_x	6.490	N/A	N/A	0.8824969		5.7274049							320	260	0.4765201	0.5252681
Tractor Trailer	VOC	2.100	N/A	N/A	0.7189237		1.5097398	N/A	N/A	N/A	N/A	1.50973984	1.589756052	80	260	0.0330669	0.0364497
	NO_x	6.490	N/A	N/A	0.8824969		5.7274049							80	260	0.1191300	0.1313170
Cement Pump Truck	VOC	2.100	N/A	N/A	0.7189237		1.5097398	N/A	N/A	N/A	N/A	1.50973984	1.589756052	10	200	0.0031795	0.0035048
	NO_x	6.490	N/A	N/A	0.8824969		5.7274049							10	200	0.0114548	0.0126266
Tractor Semi-Trailer (Debris)	VOC																
	NO_x																
Light duty gasoline trucks 1																	
Pick up Truck	VOC	0.562	1.0260908	0.020	0.9774461		0.5832060	0.6481	0.228	0	0.000	1.459309945	1.636230857	30	520	0.0255252	0.0281364
	NO_x	0.651	1.0078115	0.020	0.9957155		0.6731886							30	520	0.0105017	0.0115761
Light duty gasoline trucks 2																	
Management Pick-up	VOC																
	NO_x																
Light duty diesel trucks																	
None	VOC																
	NO_x																
Light duty gasoline vehicles																	
Automobile	VOC																
	NO_x																
Light duty diesel vehicles																	
None	VOC																
	NO_x																
On-road motorcycles																	
Kawasaki KLR650	VOC																
	NO_x																
	Table:	X.1(A/B).1	X.7B	X.2B.1	X.6C	Downloads	↑	X.(2/9)(A/B/G)	X.2D	X.2C	X.9F	↑	↑			↑	↑
	Formula:						Formula 1					Formula 2	Formula 3			Formula 4	Formula 5

Section 1 - Table of Formulas:

Formula 1		Formula 2		Formula 3		Formula 4		Formula 5
Gasoline:	((Col. D x Col. E) + Col. F) x Col. G	Gasoline:	Sum of Cols. I through M	Gasoline:	Col. N (adj. by fuel forms)	VOC:	(Col. O x Col. P x Col. Q) ÷ 1000000	Col. R x 1.1023
Diesel:	Col. D x Col. G [x Col. E Lt. Duty]	Diesel:	= Col. I	Diesel:	Col. N - methane offset	NO_x:	(Col. I x Col. P x Col. Q) ÷ 1000000	

All road vehicle emissions factors taken from tabular or calculated values derived from EPA publication AP-42 Vol. 2, planned 5th edition.
(http://www.epa.gov/oms/ap42.htm)

Road Sub-Total VOC (tons)	0.1940393	0.2138896
Road Sub-Total NO_x (tons)	0.6176067	0.6807878

Sub-Total Road Vehicles: Road Combined (tons) 0.8116460 0.8946774

		Steady-State Engine Emission Factors	Transient Adjustment Factor (Spark Ignition >25 HP and All Diesel)	Deteri-oration Factor	Temperature Correction Factor (Certain 4-Stroke Spark Ignition Only)	Calculated Emission Factor (BEF) (g/hp-hr) **(Stop for NO_x)**	Calculated Total VOC (g/hp-hr)	Number of HP	Number of Hours (or Miles)	Total Emissions (metric tons)	Total Emissions (U.S. tons)
Section 2 - Non-Road Equiment											
Compression ignition engines											
Bobcat	VOC	0.184	2.290	1.0049690	N/A	0.4225332	0.4449274	75	2080	0.0694087	0.0765092
	NO_x	3.000	1.210	1.0014723	N/A	3.6353444		75	2080	0.5671137	0.6251295
Crane	VOC	0.167	1.000	1.0123140	N/A	0.1689552	0.1779098	300	2080	0.1110157	0.1223726
	NO_x	2.500	1.000	1.0036486	N/A	2.5091215		300	2080	1.5656918	1.7258621
Backhoe	VOC	0.184	2.290	1.0068946	N/A	0.4233428	0.4457800	93	2080	0.0862317	0.0950532
	NO_x	3.000	1.210	1.0020429	N/A	3.6374156		93	2080	0.7036217	0.7756022
Backhoe	VOC										
	NO_x										
Rough Terrain Forklift	VOC										
	NO_x										
Generator	VOC										
	NO_x										
Marine Inboard Engine	VOC										
	NO_x										
Switch Locomotive	VOC										
	NO_x										
Jet Airliner											
	NO_x										
	Table:	A4	A5	1, 2, & A6		↑	↑			↑	↑
	Formula:					Formula 6	Formula 7			Formula 8	Formula 9

Section 2 - Table of Compression Formulas:

Formula 6	Formula 7	Formula 8		Formula 9
Col. D x Col. E x Col. F	Col. I x table VOC conversion factor	VOC:	(Col. O x Col. P x Col. Q) ÷ 1000000	Col. R x 1.1023
		NO_x:	(Col. I x Col. P x Col. Q) ÷ 1000000	

All non-road emissions factors taken from tabular or calculated values derived from various EPA non-road engine technical reports.
(http://www.epa.gov/otaq/nonrdmdl.htm#techrept)

Spark ignition engines											
Air Compressor	VOC										
	NO_x										
Compactor - Vibr. Plate	VOC										
	NO_x										
Compactor - Tamp. Ft.	VOC										
	NO_x										
Concrete Cutting Saw	VOC										
	NO_x										
Cement/Mortar Mixer	VOC										
	NO_x										

Hand-held Leaf Blower	VOC										
	NO_x										
All-Terrain Vehicle	VOC										
	NO_x										
Marine Outboard Engine	VOC										
	NO_x										
	Table:	1-6	14	1, 2, & 4	TCF document						
	Formula:					↑ Formula 10			↑ Formula 11	↑ Formula 12	↑ Formula 13

Section 2 - Table of Spark Formulas:

Formula 10		Formula 11	Formula 12		Formula 13
4-Stroke	Col. D x Col. F x Col. G [x Col. E]	Col. I x table VOC conversion factor	VOC:	(Col. O x Col. P x Col. Q) ÷ 1000000	Col. R x 1.1023
2-Stroke	Col. D x Col. F		NO_x:	(Col. I x Col. P x Col. Q) ÷ 1000000	

All non-road emissions factors taken from tabular or calculated values derived from various EPA non-road engine technical reports. (http://www.epa.gov/otaq/nonrdmdl.htm#techrept)

		Non-Road Sub-Total VOC (tons)	0.2666561	0.2939350
		Non-Road Sub-Total NO_x (tons)	2.8364272	3.1265937
Sub-Total - Non-Road:		Non-Road Combined (tons)	3.1030833	3.4205287

==========

Grand Total:

The *de minimis* threshold for each of the two pollutants (VOC and NO_x) is 100 tons/year within the five parishes surrounding Baton Rouge.

Combined Grand Total VOC (tons)	**0.4606954**	**0.5078246**
Combined Grand Total NO_x (tons)	**3.4540339**	**3.8073815**
Combined Grand Total of VOC and NO_x Emissions (tons)	**3.9147293**	**4.3152061**

Developed by R. Darrell Smith, Ph.D. - 2014-15
NISTAC contractor for FEMA LRO

U.S. Department of Homeland Security
Federal Emergency Management Agency
FEMA-1603/1607 -DR-LA
FEMA Louisiana Recovery Office
Environmental/Historic Preservation
1500 Main Street
Baton Rouge, LA 70802

April 28, 2015

No known historic properties will be affected by this undertaking. This effect determination could change should new information come to our attention.

Pam Breaux 5-12-15
Pam Breaux Date
State Historic Preservation Officer

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, FEMA-1603-DR-LA
Applicant: St. Bernard Parish
Undertaking: Palmisano Drainage Improvement Project, Palmisano Blvd, Chalmette, St. Bernard Parish, LA
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, through its Hazard Mitigation Assistance Program, proposes to fund the Palmisano Drainage Improvement Project (Undertaking) as requested by the parish of St. Bernard (Applicant). FEMA is initiating Section 106 review for the above referenced properties in accordance with the *Louisiana State-Specific Programmatic Agreement* (LA HMGP PA) dated January 21, 2011, between the *Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP), the Louisiana State Historic Preservation Officer (SHPO), the Alabama-Coushatta Tribe of Texas, the Caddo Nation, the Chitimacha Tribe of Louisiana, the Choctaw Nation of Oklahoma, the Jena Band of Choctaw Indians, the Mississippi Band of Choctaw Indians, the Seminole Tribe of Florida, and the Advisory Council on Historic Preservation Regarding FEMA's Hazard Mitigation Grant Program* and providing the State Historic Preservation Office with the opportunity to consult on the proposed Undertaking. Documentation in this letter is consistent with the requirements in 36 CFR §800.11(d).

Description of the Undertaking
The project consists of drainage improvements along East St. Bernard Highway and Palmisano Blvd (Figure 1). Currently this area experiences significant flooding, or ponding, during rain events. The purpose of the project is to increase the drainage capacity of the area and prevent flooding. The Undertaking includes five (5) components:

1) The total replacement of the existing Plaza Drive Pump Station (29.933811, -89.960420) with a new pump located immediately adjacent to the existing pump (Figure 3);
2) Cleaning and shaping the open drainage ditch, and replacement of 2 culverts located along the south side of East St. Bernard Highway from Plaza Dr. (29.933614, -89.960603) to Palmisano Blvd (29.931153, -89.956107) (Figures 4);
3) Improvements to the Palmisano Blvd drainage ditch starting at East St. Bernard Highway (29.931153, -89.956107) and continuing to the 20 Arpent Canal (29.943388, -89.949370). The Palmisano Blvd Canal is a primarily open drainage ditch but runs underground at street crossings, driveways, and parking areas (Figures 5 and 6). Improvements include:
    a. Deepening the channel to a total depth of 10 feet (the current depth of the canal is variable form 3-6 feet in depth), and installing a box culvert along the base with a swale ditch on top;
    b. Replacing/enlarging existing culverts located at all cross streets, driveways, and buried segments of the ditch. Current culverts along Palmisano Blvd are not standardized, some having been installed by the parish and others by individual land owners in order to construct driveways or parking areas. All culverts will be standardized as part of this undertaking in order to improve flow.
        i. Culverts from Camille Place to East Judge Perez Highway will be enlarged to 8 ft x 4ft.
        ii. Culverts from East Judge Perez Highway to the 20 Arpent Canal will be enlarged to 10ft x6 ft.
4) The demolition of the structure located at 1201 Missouri St (29.943206, -89.949719) in order to gain access to the right of way (portions of the this property were constructed on top of the existing path of the canal) (Figure 7); and
5) The replacement of the canal crossing located at Palmisano Blvd and the 20 Arpent Canal with a bridge (Figures 8 and 9).

Area of Potential Effects (APE)

In accordance with Stipulation VII.B of the 2011 HMGP PA, the APE for both the standing structures and archaeology were developed in coordination with SHPO staff. The APE for both standing structures and archaeology is limited to the immediate area of ground disturbing activities and space for laydown and is 5.1 acres in size (2.1 hectacres) (Figures 2). The scope of the project limits the area potential effects, as the work occurs almost completely below grade. For the portion of the work along East St. Bernard Highway and the drainage canal along Palmisano Blvd, the APE is limited to the Right of Way (ROW) in which the work will be completed. The applicant does not have right of access to any other areas and as such will be restricted to the ROW. The only above grade work will be the replacement of the Plaza Drive pump station; the demolition of the structure at 1201 Missouri St; and the replacement of the existing canal crossing at Palmisano Blvd and the 20 Arpent Canal. For these areas the APE consists of the area of direct effects and space for laydown, the entirety of the tax parcel for 1201 Missouri St is included within this area.

Identification and Evaluation

Historic Properties within the APE were identified based on FEMA's review of the National Register of Historic Places (NRHP) database, the Louisiana Cultural Resources Map, historic map

research, and a site visit conducted April 6, 2015 by FEMA Historic Preservation staff. This data was evaluated by FEMA using the National Register (NRHP) eligibility criteria.

Standing Structures:

There are only two standing structures within the APE: the existing crossing, located at Palmisano Blvd and the 20 Arpent Canal, and a single residential house at 1201 Missouri St. Both properties are less than 50 years old. Historic aerials indicate that 1201 Missouri was constructed shortly after 1970, and that the canal crossing was constructed sometime between 1973 and 1980. Therefore, both properties are ineligible for listing on the NRHP. The 20 Arpent Canal itself is the only property within the APE more than 50 years of age, and FEMA has determined that it is not eligible for the NRHP (Please see attached Determination of Eligibility).

Archaeology:

FEMA consulted the US Department of Agriculture's interactive SoilWeb to determine the soil types for each of the APEs. The findings are summarized in Table 1 (Primary soil type is in bold). In general, the soils within the APE start out as a natural levee and more towards backswamp as they approach the 20 Arpent Canal (Figure 10).

Table 1: Summary of Soil Types

Location	Soil Type	Drainage
St. Bernard Highway	**Cancienne**/Gramercy/Thibaut	Natural Levees and Toeslope
Palmisano Blvd to Karen Dr	**Cancienne**/Carville/Thibaut/Gramercy	Natural Levees
Palmisano Blvd to Missouri St	**Schriever**/Gramercy	Backswamps
Missouri St	**Harahan**	Backswamps

FEMA consulted the SHPO's Cultural Resources map and determined that there is one archaeological site within 1 mile of the APE. Site 16SB88, the De La Ronde Plantation, is located half a mile from the Plaza Drive Pump Station APE on West St. Bernard Highway. The site includes the ruin remains of a plantation house built in 1805; the site has not been evaluated for NRHP eligibility.

FEMA HP staff reviewed the early Orleans and St. Bernard parish map archives to obtain information about the APE. While the area appears on several early maps of the city, none show the project location in any detail. The 1723 Newberry Library Map, the LaTourrette map of 1848 and the Bayley Map of 1853, all show plantations within the vicinity of the project area, but do not indicate individual the presence of any associated structures. The first detailed map of the APE is the 1883 Mississippi River Commission Map (Figure 11). This map indicated that most of the APE is cultivated farms lands. While there are some structures indicated near the river, none appear to be located with the APE, the area to the west of the project APE is labelled as Battle Ground. While later MRC maps show some development in the vicinity, the APE is still labelled as

cultivated fields until 1961 (Figure 12). After this point historic aerials show development throughout the APE.

All work for this undertaking will take place in previously disturbed areas, within existing ROWs, and created drainage ditches. While the undertaking will be enlarging and deepening these features, it is unlikely that any intact archaeological deposits will be affected by the undertaking.

Assessment of Effects
Based on the aforementioned identification and evaluation, FEMA has determined that there are no historic properties as defined in 36 CFR 800.16(l) within the APE. Therefore, FEMA has determined a finding of **No Historic Properties Affected** for this Undertaking and is submitting this Undertaking to you for your review and comment. FEMA requests your comments within 30 days.

We look forward to your concurrence with this determination. Should you have any questions or need additional information regarding this Undertaking, please contact me at (504) 247-7771 or jerame.cramer@fema.dhs.gov, or Kathryn Wollan, Lead Historic Preservation Specialist at (504) 289-1941 or kathryn.wollan@fema.dhs.gov Jason Emery, Lead Historic Preservation Specialist at (504) 570-7292 or jason.emery@fema.dhs.gov.

Sincerely,

JERAME J CRAMER

Digitally signed by JERAME J CRAMER
DN: c=US, o=U.S. Government, ou=Department of Homeland Security, ou=FEMA, ou=People, cn=JERAME J CRAMER, 0.9.2342.19200300.100.1.1=0972893910.FEMA
Date: 2015.04.28 13:30:53 -05'00'

Jeramé J. Cramer
Environmental Liaison Officer
FEMA-DR-1603-LA, FEMA-DR-1607-LA

CC: File
Division of Archaeology Reviewer
Division of Historic Preservation Reviewer
State Historic Preservation Office

Enclosures

From: Emery, Jason
To: Shanks, Mary; Jones, Gwendolyn
Subject: FW: FEMA Section 106 consult: HMA-1603-0418 Palmisano Blvd Drainage
Date: Tuesday, June 09, 2015 14:39:58

Fyi- CNO concurs. Please place in the file and add to the comment. Jason

---

Jason A. Emery
Cell: (504) 570-7292
jason.emery@fema.dhs.gov

From: Lindsey Bilyeu [mailto:lbilyeu@choctawnation.com]
Sent: Tuesday, June 09, 2015 1:39 PM
To: Emery, Jason
Subject: RE: FEMA Section 106 consult: HMA-1603-0418 Palmisano Blvd Drainage

Mr. Emery,

The Choctaw Nation of Oklahoma thanks FEMA for providing the additional information. The Choctaw Nation Historic Preservation Department concurs with the finding of "no historic properties affected". However, as the project lies in an area of historic interest to the Tribe, we ask that work be stopped and our office contacted immediately in the event that Native American artifacts or human remains are encountered.

If you have any questions, please contact me.

Thank you,

Lindsey D. Bilyeu
NHPA Senior Section 106 Reviwer
Historic Preservation Department
Choctaw Nation of Oklahoma
P.O. Box 1210
Durant, OK 74701
580-924-8280 ext. 2631
lbilyeu@choctawnation.com

From: Emery, Jason [mailto:Jason.Emery@fema.dhs.gov]
Sent: Tuesday, June 09, 2015 11:09 AM
To: Lindsey Bilyeu
Subject: RE: FEMA Section 106 consult: HMA-1603-0418 Palmisano Blvd Drainage

Lindsey,

No worries and thanks (at the same time).

Jason

Jason A. Emery
Cell: (504) 570-7292
jason.emery@fema.dhs.gov

From: Lindsey Bilyeu [mailto:lbilyeu@choctawnation.com]
Sent: Tuesday, June 09, 2015 10:58 AM
To: Emery, Jason
Subject: RE: FEMA Section 106 consult: HMA-1603-0418 Palmisano Blvd Drainage

Jason,

I'm sorry that I haven't issued a final determination for this project. I've been traveling the past few weeks and I've gotten a little behind in my reviews. I will look this project over again and get a determination to you ASAP.

Thank you,

Lindsey D. Bilyeu
NHPA Senior Section 106 Reviwer
Historic Preservation Department
Choctaw Nation of Oklahoma
P.O. Box 1210
Durant, OK 74701
580-924-8280 ext. 2631
lbilyeu@choctawnation.com

From: Emery, Jason [mailto:Jason.Emery@fema.dhs.gov]
Sent: Friday, June 05, 2015 5:51 PM
To: Lindsey Bilyeu
Cc: Shanks, Mary
Subject: RE: FEMA Section 106 consult: HMA-1603-0418 Palmisano Blvd Drainage

Lindsey,

I was wondering if this information was sufficient to answer your questions and allow you to concur with FEMA's determination, or if you needed additional information?

Let me know, when you get a chance.

Jason

Jason A. Emery
Cell: (504) 570-7292
jason.emery@fema.dhs.gov

From: Emery, Jason
Sent: Monday, June 01, 2015 5:25 PM
To: 'Lindsey Bilyeu'
Cc: Shanks, Mary
Subject: RE: FEMA Section 106 consult: HMA-1603-0418 Palmisano Blvd Drainage

Dear Lindsay,

Thank you for your response regarding FEMA's recent consultation on FEMA's proposal to fund improvements to the Palmisano Blvd Drainage canal.

In answer to your questions, FEMA did conduct site visits to the project locations (see attached memo). While the culverts and the ditch itself will be deepened, the site visit indicated that the ditches currently range between 3-6 feet in depth (see photos). During the site visit, Mary Shanks, FEMA archaeologist, examined the culverts along the route for visible archaeological deposits and found no indication of them.

As referenced in FEMA's consultation letter, the culverts will be increased in size, but the overall project will not extended beyond the currently established Rights-of-Way. As far as the culvert size increase goes, the southerly section of the APE closest to the battle field will receive upgrades to 8x4 ft culverts (between St. Bernard Hwy and East Judge Perez Blvd), and the northern section of the APE furthest away from the battle field area, will receive 10x6 ft culverts (between East Judge Perez Blvd and the 20 Arpent Canal). This means that the larger culverts are located at a great distance from the Mississippi River, away from the main area of the Battle of New Orleans where the soils start getting wetter, and are characterized as backswamp, and all of the upgrades will take place in areas of pre-exiting soil disturbance without visible archaeological deposits.

In addition to the site visit, HP staff reviewed the scope of work description, the 90% design plans, and a series of historic maps. FEMA reviewed a series of historic maps, and presented a geo-referenced portion of the 1883 Mississippi River Commission maps. This map, when seen in its entirety, references the "Battle Ground" associated with the Battle of New Orleans. It is FEMA's understanding that the primary battle took place to the west of the APE. It was generally where the Chalmette Unit of Jean Lafitte Park and Preserve is located. Additionally, FEMA recognizes that much of the landscape has been altered by residential and industrial development (the Chalmette Slip, Domino Sugar, a now-defunct Kaiser Aluminum Plant, an Oil Refinery, the communities of Chalmette and Mereux, and the current drainage way). The elements that remain on the landscape from the Battle of New Orleans are a series of Live Oaks-near the intersection of Paris Rd and St. Bernard Highway, the collapsing remains of the De la Ronde Great House (in the median of St. Bernard Highway across the street from the Live Oaks—seen in Figure 1 of the consultation and recorded as archaeological site 16SB88), and the area inside the National Battlefield Park and National Cemetery.

In summary, after conducting historic research, having a clear, detailed understanding of the proposed SOW, and conducting a site visit, FEMA came to the determination that no historic properties will be affected by the implementation of this undertaking. As always, FEMA will be happy to discuss the project in more detail at tomorrow's tribal coordination meeting, should you want to. Please let either Mary or myself know if you have any further questions.

Mary K. Shanks
Archaeologist/HP Specialist

BB: 504-491-0895
Louisiana Recovery Office – New Orleans

And

Jason A. Emery, RPA
Lead Historic Preservation Specialist
FEMA Region 6 - Louisiana Recovery Office
DR-1603 & 1607-LA
Duty Station: FEMA Area Field Office-USDA Facility New Orleans, LA

cell: (504) 570-7292
jason.emery@fema.dhs.gov

Mailing address: Attn: EHP Section, FEMA Louisiana Recovery Office, 1500 Main St, Baton Rouge, LA 70802

From: Lindsey Bilyeu [mailto:lbilyeu@choctawnation.com]
Sent: Thursday, May 28, 2015 9:42 AM
To: Emery, Jason
Cc: Shanks, Mary
Subject: RE: FEMA Section 106 consult: HMA-1603-0418 Palmisano Blvd Drainage

Mr. Emery,

The Choctaw Nation of Oklahoma thanks FEMA for the correspondence regarding the above referenced project. St. Bernard Parish, LA lies in the Choctaw Nation's area of historic interest. This project is going to be located within 2 miles of the Battle of New Orleans battle sites where Choctaws fought. The Choctaw Nation does have concerns about deepening the culverts. Have any site visits been performed in the area?

Thank you,

Lindsey D. Bilyeu
NHPA Senior Section 106 Reviwer
Historic Preservation Department
Choctaw Nation of Oklahoma
P.O. Box 1210
Durant, OK 74701
580-924-8280 ext. 2631
lbilyeu@choctawnation.com

From: Shanks, Mary [mailto:mary.shanks@fema.dhs.gov]
Sent: Tuesday, April 28, 2015 3:22 PM
To: Lindsey Bilyeu
Cc: Ian Thompson; Jones, Gwendolyn; Shanks, Mary
Subject: FEMA Section 106 consult: HMA-1603-0418 Palmisano Blvd Drainage

Dear Ms. Bilyeu:

Attached please find FEMA's Section 106 consultation letter regarding the below project:

RE: Section 106 Review Consultation, Hurricane Katrina, FEMA-1603-DR-LA
Applicant: St. Bernard Parish
Undertaking: Palmisano Drainage Improvement Project, Palmisano Blvd, Chalmette, St. Bernard Parish, LA
Determination: No Historic Properties Affected

Your prompt review is greatly appreciated. Should you have any questions or need additional information regarding this undertaking, please contact the reviewer on the letter, or you may contact Jerame Cramer, Environmental Liaison Officer at 504-247-7771, or Jerame.Cramer@fema.dhs.gov.

V/r,

Mary

Mary K. Shanks
Archaeologist/HP Specialist
BB: 504-491-0895
Louisiana Recovery Office – New Orleans

From: Shanks, Mary
To: Ross, Emanuel
Cc: Emery, Jason; Pitts, Melanie
Subject: FW: FEMA Section 106 consult: HMA-1603-0418 Palmisano Blvd Drainage
Date: Monday, May 18, 2015 15:40:17

As requested. - Mary

From: Emery, Jason
Sent: Friday, May 15, 2015 4:44 PM
To: Shanks, Mary
Cc: Jones, Gwendolyn
Subject: FW: FEMA Section 106 consult: HMA-1603-0418 Palmisano Blvd Drainage

Mary-for the project file.

Gwen—for the 106 files.

Jason

Jason A. Emery
Cell: (504) 570-7292
jason.emery@fema.dhs.gov

From: Alina Shively [mailto:ashively@jenachoctaw.org]
Sent: Friday, May 15, 2015 4:25 PM
To: Emery, Jason
Subject: RE: FEMA Section 106 consult: HMA-1603-0418 Palmisano Blvd Drainage

Dear Mr. Emery:

Regarding the above-mentioned project, the Jena Band of Choctaw Indians' THPO hereby concurs with the determination of No Properties. Should any inadvertent discoveries occur, please contact our office. Thank you.

Sincerely,

Alina J. Shively
Jena Band of Choctaw Indians
Deputy Tribal Historic Preservation Officer
P.O. Box 14
Jena, LA 71342
(318) 992-1205
ashively@jenachoctaw.org

From: Emery, Jason [mailto:Jason.Emery@fema.dhs.gov]

Sent: Tuesday, April 28, 2015 5:08 PM
To: Alina Shively
Cc: Shanks, Mary; Jones, Gwendolyn
Subject: FW: FEMA Section 106 consult: HMA-1603-0418 Palmisano Blvd Drainage

Dear Alina:

FEMA is currently proposing to fund improvements to the Palmisano Blvd Drainage canal. The Parish of St. Bernard previously requested information from the Jena Band on January 21, 2014 regarding this undertaking. On March 6, 2014 the Jena Band replied and requested additional information and a cultural resources survey. Additionally, this project was the subject of an recent request from Fry/Magee, LLC on behalf of St. Bernard Parish government. Based on the current information on file with FEMA, FEMA's EHP team noted that the Scope of Work (SOW) for the project is slightly different than the one consulted on previously; therefore, FEMA is re-consulting regarding this project.

In preparation for drafting the attached consultation letter, FEMA reviewed the scope of work of the undertaking, 90% design plans, a series of historic maps, and completed a site visit. Based on this additional research and a clear, detailed understanding of the proposed SOW, FEMA has come to a determination of No Historic Properties Affected. Please review the attached letter and let us know if you concur with FEMA's determination, or if the Jena Band feel that additional information is necessary.

Attached please find FEMA's Section 106 consultation letter regarding the below project:

RE: Section 106 Review Consultation, Hurricane Katrina, FEMA-1603-DR-LA
Applicant: St. Bernard Parish
Undertaking: Palmisano Drainage Improvement Project, Palmisano Blvd, Chalmette, St.
Bernard Parish, LA
Determination: No Historic Properties Affected

Should you have any questions or need additional information regarding this undertaking, please contact the reviewer on the letter, or you may contact Jerame Cramer, Environmental Liaison Officer at 504-247-7771, or Jerame.Cramer@fema.dhs.gov.

Jason

Jason A. Emery, RPA
Lead Historic Preservation Specialist
FEMA Region 6 - Louisiana Recovery Office
DR-1603 & 1607-LA
Duty Station: FEMA Area Field Office-USDA Facility New Orleans, LA

cell: (504) 570-7292
jason.emery@fema.dhs.gov

Mailing address: Attn: EHP Section, FEMA Louisiana Recovery Office, 1500 Main St, Baton Rouge, LA 70802

From: Shanks, Mary
To: Ross, Emanuel
Cc: Emery, Jason; Pitts, Melanie
Subject: FW: FEMA Section 106 consult: HMA-1603-0418 Palmisano Blvd Drainage
Date: Monday, May 18, 2015 15:40:57

FYI

From: Odette Freeman [mailto:ofreeman@mcn-nsn.gov]
Sent: Friday, May 15, 2015 9:35 AM
To: Shanks, Mary
Subject: RE: FEMA Section 106 consult: HMA-1603-0418 Palmisano Blvd Drainage

Thank you for the correspondence regarding the Palmisano Boulevard Drainage project. St Bernard Parrish is within our historic area of interest. The Muscogee (Creek) Nation is unaware of any Muscogee cultural or sacred sites located within the immediate project area. We concur that there should be no effects to any known historic properties and that work should proceed as planned. However, as the project is located in an area that is of general historic interest to the Tribe, we request that work be stopped and our office contacted immediately if any Native American cultural materials or remains are encountered.

Odette Freeman
Historic and Cultural Preservation Department, Manager's Assistant
Muscogee (Creek) Nation
P. O. Box 580 | Okmulgee, OK 74447
T 918.732.7758
F 918.758.0649
ofreeman@mcn-nsn.gov
www.MCN-nsn.gov

From: Shanks, Mary [mailto:mary.shanks@fema.dhs.gov]
Sent: Tuesday, April 28, 2015 3:43 PM
To: Odette Freeman
Cc: Jones, Gwendolyn; Shanks, Mary; Johnnie Jacobs; Emman Spain
Subject: FEMA Section 106 consult: HMA-1603-0418 Palmisano Blvd Drainage

Dear Odette:

Attached please find FEMA's Section 106 consultation letter regarding the below project:

RE: Section 106 Review Consultation, Hurricane Katrina, FEMA-1603-DR-LA
Applicant: St. Bernard Parish
Undertaking: Palmisano Drainage Improvement Project, Palmisano Blvd, Chalmette, St.
Bernard Parish, LA
Determination: No Historic Properties Affected

Your prompt review is greatly appreciated. Should you have any questions or need additional information regarding this undertaking, please contact the reviewer on the letter, or you may contact Jerame Cramer, Environmental Liaison Officer at 504-247-7771, or Jerame.Cramer@fema.dhs.gov.

V/r,

Mary

Mary K. Shanks
Archaeologist/HP Specialist
BB: 504-491-0895
Louisiana Recovery Office – New Orleans

Ross, Emanuel

Sent:
To:
Cc:
Subject:

Attachments:

Importance:

Dear Ms. Hardy,

The attachments contain the general conformity applicability determinations for the subject project referenced above. This conformity is in reference to a solicitation of views letter dated January 21, 2014 from St. Bernard Parish Government for Sulfur Dioxide (SO_2) nonattainment standards. The projects SO_2 emissions are well below the de minimis threshold for ozone. Please let us know if you have any questions.

Thanks,

Emanuel Ross III
Environmental Protection Specialist
FEMA Region VI
1500 Main St., Baton Rouge, LA 70802
Mobile: (504) 256 -1898 (BB)
Office: (504) 284 – 2811
Email: emanuel.ross@fema.dhs.gov

APPENDIX D

H &H Study Conducted by Gulf Engineers and Consultants March 2013

March 2015
(Revised)

PALMISANO DRAINAGE PROJECT REPORT

Prepared for

St. Bernard Parish Government
8201 W. Judge Perez Drive
Chalmette, Louisiana 70043

Prepared by

Gulf Engineers & Consultants
3445 N. Causeway Boulevard, Suite 401
Metairie, Louisiana 70002

TABLE OF CONTENTS

TABLE OF CONTENTS

Section **Page**

APPENDICES

TABLE

Table **Page**

PALMISANO DRAINAGE PROJECT REPORT

1.0 INTRODUCTION

The Palmisano Canal drains an area approximately 100 acres in size. The upstream reach of the channel begins at St. Bernard Highway and storm water flows to the northeast to its confluence with 20 Arpent Canal. The 20 Arpent Canal discharges into 40 Arpent Canal and the 40 Arpent Canal is drained by pump stations.

On the upper reaches the channel runs adjacent to Palmisano Boulevard. The left descending bank of the channel is within a few feet of the road. The channel is approximately six feet deep with steep side slopes. The channel and its location with respect to the road is a safety concern. The right descending bank is at or very near the property line of residential property. At several locations along the channel there is evidence of bank erosion and bank failure due to the steep side slopes of the channel. The apparent right-of-way of the channel is approximately 20 feet wide.

The Plaza Drive area is drained by a pump station. The pump station discharges into the road side ditch located between St. Bernard Highway and the railroad track. Subbasin area P1 is the Plaza Drive's drainage area. Appendix A shows the drainage area map for Palmisano Canal and Plaza Drive drainage area.

2.0 HYDROLOGIC AND HYDRAULIC ANALYSIS

2.1 Hydrologic Analysis

The runoff hydrographs were computed using the SCS method. The soils in the watershed are Cancienne Silt Loam (Cm), Cancienne Silt Clay Loam (Co), Harahan Clay (Ha) and Schriever Clay (Sk). The hydrologic soil group for Cancienne soil is C and the Harahan and Schriever clay is D. Land use is 40 percent residential and 60 percent industrial, commercial and business. Table 1 shows the drainage areas, the hydrologic soil group and the time of concentration for each sub-basin. A 256 peaking factor was used for the analysis. Technical Paper 40 was used for rainfall total and the rainfall frequency. The storm duration used in the analysis is a 24-hour. Scsiii was used for the rainfall distribution. The drainage area map is in Appendix A.

Table 1. Drainage Areas, Hydrologic Soil Group and Time of Concentration

Sub-Basin	Drainage Area Acres	Hydrologic Soil Group	CN Number	Time of Concentration Minutes	Peaking Factor
P1	21.00	C	85	36.6	256
B1	4.65	C	90	50.9	256
B2	2.76	C	88	25.5	256
B3	5.57	C	88	33.8	256
B4	5.68	C	88	34.4	256
B5	5.61	C	85	28.9	256
B6	6.14	C	85	30.1	256
B7	5.10	C	82	29.7	256
B8	5.67	C	85	29.2	256

Sub-Basin	Drainage			Time of	
B9	5.51	C	85	28.0	256
B10	10.81	C	88	33.8	256
B11	11.72	C	91	24.1	256
B12	3.95	C	95	20.5	256
B13	4.01	C	91	20.5	256
B14	3.09	C	91	20.5	256
B15	6.01	C	92	19.2	256
B16	3.44	D	88	16.5	256
B17	6.51	D	88	23.6	256
B18	8.33	D	88	16.8	256
Total	**125.56**				

2.2 Hydraulic Analysis

Interconnected Pond Routing (ICPR) model was used to compute the storm water runoff and to evaluate the hydraulic design of the channel. The ICPR hydraulic model is a system of nodes and links between nodes. A node is location where the water surface elevation is computed. A link defines the channel geometry and the resistance to flow. A link can be a pipe, a culvert, or a channel section. A node is a location where you can input flow, account for storage of excess storm water, and change the size or the type of a link.

2.3 Existing Conditions Model

2.3.1 Palmisano Canal

The existing channel has several culverts apparently installed by private individuals for their use. There are three driveways, one culvert to extend the homeowners backyard over the channel, and a business that extended the two 5 foot x 5 foot box culverts with a single 60-inch diameter corrugated metal pipe. The culverts installed by private individuals do not appear to have been properly designed.

Photograph 1 was taken looking upstream of Missouri Street and shows a culvert installed by a private individual (see Appendix B).

Photograph 2 was taken looking downstream from Russell Drive and shows the channel and Palmisano Boulevard.

The 2-year and 5-year 24-hour storm events were simulated in the existing conditions model. These storms were used to determine the in-bank capacity of Palmisano Canal. The existing channel contained the 2-year storm event within the channel. The analysis of 5-year storm event shows minor over bank flooding. The location of the culverts and the 5-year flood profile for the existing channel is shown in Appendix C.

2.3.2 Plaza Drive

The Plaza Drive area is drained by a 10-inch Farbanks Morse propeller pump. The 10-inch discharge pipe is approximately 65 feet in length and runs under St. Bernard Highway and discharges into the road side ditch. The road side ditch drains to the east into the upper reach of Palmisano Canal.

For existing conditions the 5-year peak water surface elevation is 7.91 feet NAVD 88.

A summary of the Existing Conditions ICPR Model is shown in Appendix D.

2.4 Design Condition Model

2.4.1 Palmisano Canal

The design objectives were to contain the flow within the channel for a 100-year storm event and to reduce the risk of injury to the driving public on Palmisano Boulevard (see Photograph 2, Appendix B). In addition to the design objectives, the proposed channel must also be contained within the existing channel right-of-way. The design storm is a 100-year 24-hour rainfall event. Because of the design constraint to stay within the existing right-of-way, the channel could not be deepened or widened without increasing risk of bank failures. Without acquiring additional right-of-way, channel could not be improved to meet the design objectives to reduce the risk of flooding and reducing the risk to the driving public could not be achieved. To improve the channel capacity and to reduce the risk to the driving public, the proposed design uses reinforced concrete box culverts. Using the box culverts and constructing a swale ditch on top of the box to collect sheet flow, the risk to the driving public is reduced. A typical design cross section is shown in Appendix E.

The hydraulic design is a trial and error process. The sizes of the box culverts were increased until the design objective to contain the 100-year design event was achieved. The proposed design is to construct a 10-foot x 6-foot box culvert from 20 Arpent Canal to Judge Perez Boulevard, an 8-foot x 4-foot box culvert from Judge Perez to Camille Place, and a 73” x 45” concrete arch culvert. The proposed drainage improvements and the 100-year flood profiles are shown in Appendix F.

2.4.2 Plaza Drive

Drainage improvement for the Plaza Drive area consists of an upgrade to the existing pumping station. The proposed pump station is 3”-10” Farbanks Morse (or the equivalent) vertical propeller pumps.

For the design condition the peak water surface elevation is 8.10 feet NAVD 88.

A summary of the Design Conditions ICPR Model is shown in Appendix G.

3.0 DRAINAGE IMPACTS

When drainage improvements are made on one channel there is a possibility of having an adverse drainage impact on the receiving stream. There will be an increase in the peak discharge on Palmisano Canal due to the drainage improvements. Comparing the size of the Palmisano and 20 Arpent watersheds, the increase in peak discharge will increase the flood stage on the 20 Arpent Canal. If the increase in flood stage is not contained within the channel and causes overbank flooding, then this would be an adverse or unacceptable drainage impact. If the increase in flood stage is contained within the channel then drainage impact would be acceptable.

At the confluence of Palmisano Canal and 20 Arpent Canal, the flow in 20 Arpent Canal is to the East. The flow in 20 Arpent Canal discharges into Chalona Canal. To the West or upstream of the confluence the 20 Arpent Canal the flow is more restricted than the flow towards the East. St. Bernard Parish Government Public Works Staff provided historical information of flooding problems in the study area. The road crossing of Palmisano Boulevard at 20 Arpent Canal the existing culverts two 60" diameter CMP are restricting drainage of the area upstream of Palmisano Boulevard. It is a recommendation to replace the existing culverts with a bridge. The bridge will mitigate the adverse drainage impact caused by the proposed drainage improvements on Palmisano Canal.

Appendix A

DRAINAGE AREA MAP

FLOOD PROFILES

PALMISANO DRIVE

ST. BERNARD PARISH

P1

B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B11 B12 B13 B14 B15 B16 B17 B18

N31 N30 N29 N28 N27 N26 N25 N24 N23 N22 N21 N20 N19 N18 N17 N16 N15 N14 N13 N12 N11 N10 N09 N08 N07 N06 N05 N04 N03 N02 N01

PALMISANO BOULEVARD

PALMISANO BOULEVARD

PALMISANO BOULEVARD

BELLE PLACE

RUSSELL DRIVE

INDIANA STREET

OHIO STREET

JUDGE PEREZ AVENUE

MICHIGAN STREET

WISCONSIN STREET

MISSOURI STREET

TWENTY ARPENT CANAL

SCALE 1' = 500'

1 of 1

Appendix B

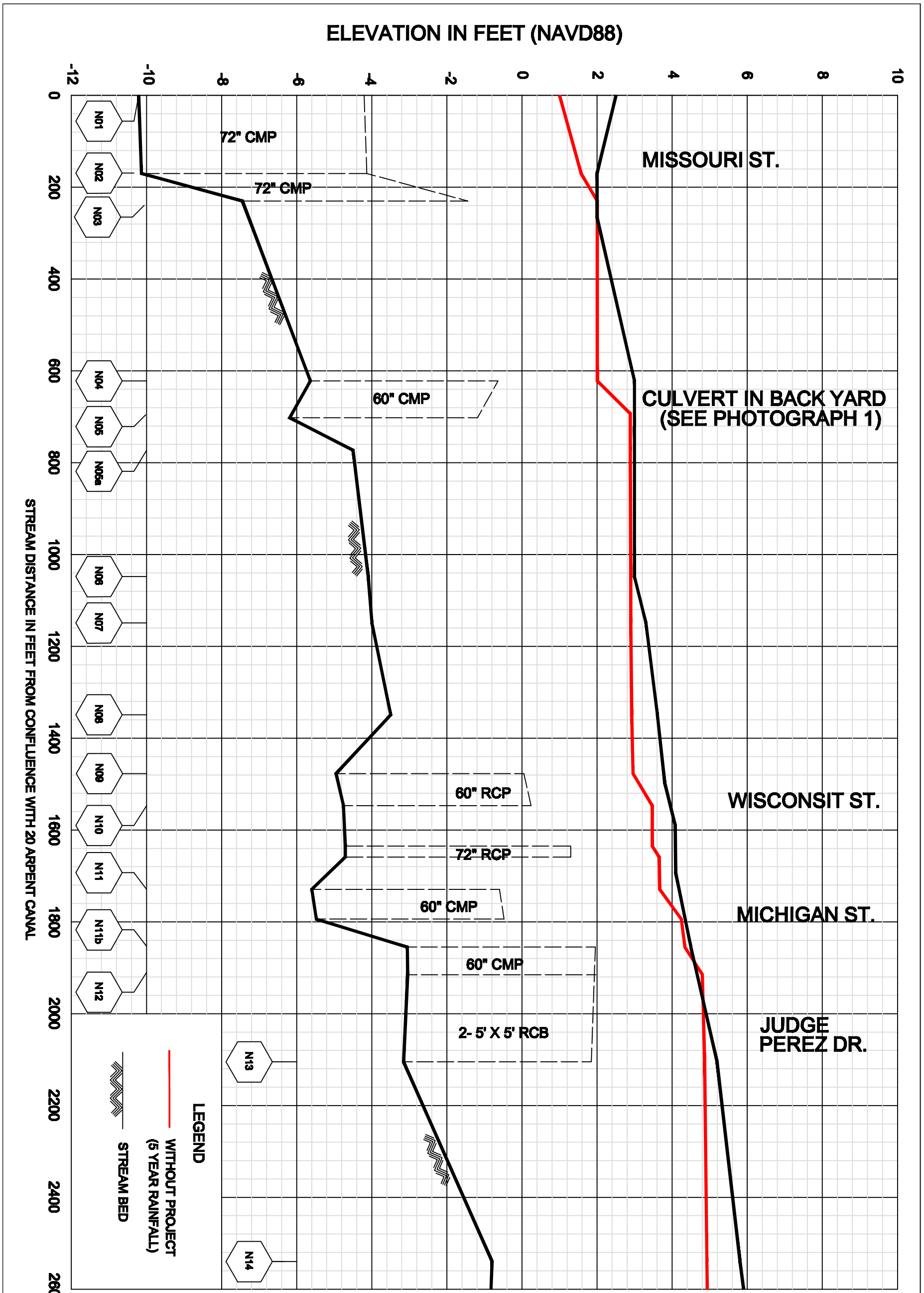
PHOTOGRAPHS

Photograph 1. Culvert Installed in Channel

Photograph 2. Location of Channel and Edge of Palmisano Boulevard

Appendix C

EXISTING CONDITIONS 5-YEAR FLOOD PROFILE

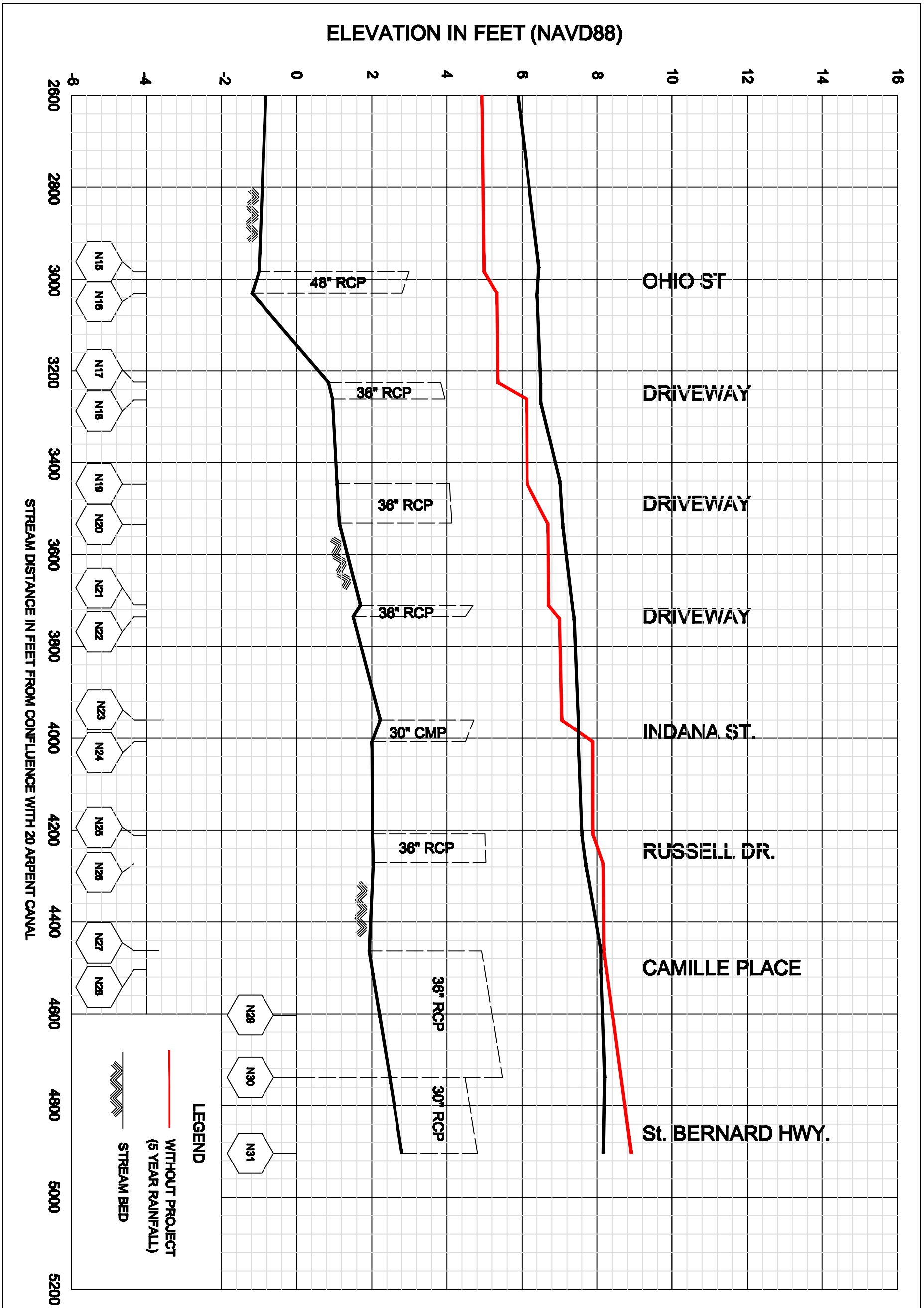


1 of 2

ST. BENARD PARISH, LA

FLOOD PROFILES

PALMISANO CANAL



2 of 2

ST. BENARD PARISH, LA

FLOOD PROFILES

PALMISANO CANAL

Appendix C

EXISTING CONDITIONS 5-YEAR FLOOD PROFILE

Appendix D.1

Hydrology

```
            Basin Name: B01
            Group Name: BASE
            Simulation: 5YEAR24HOUR
             Node Name: N31
            Basin Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh256
         Peaking Fator: 256.0
  Spec Time Inc (min): 6.79
  Comp Time Inc (min): 5.00
        Rainfall File: Scsiii
 Rainfall Amount (in): 7.700
 Storm Duration (hrs): 24.00
               Status: Onsite
   Time of Conc (min): 50.90
     Time Shift (hrs): 0.00
            Area (ac): 4.650
 Vol of Unit Hyd (in): 1.000
         Curve Number: 90.000
             DCIA (%): 0.000

       Time Max (hrs): 12.67
       Flow Max (cfs): 9.17
  Runoff Volume (in): 6.502
  Runoff Volume (ft3): 109745
--------------------------------------------------------------------------------

            Basin Name: B02
            Group Name: BASE
            Simulation: 5YEAR24HOUR
             Node Name: N30
            Basin Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh256
         Peaking Fator: 256.0
  Spec Time Inc (min): 3.40
  Comp Time Inc (min): 3.40
        Rainfall File: Scsiii
 Rainfall Amount (in): 7.700
 Storm Duration (hrs): 24.00
               Status: Onsite
   Time of Conc (min): 25.50
     Time Shift (hrs): 0.00
            Area (ac): 2.760
 Vol of Unit Hyd (in): 1.000
         Curve Number: 88.000
             DCIA (%): 0.000

       Time Max (hrs): 12.35
       Flow Max (cfs): 8.00
  Runoff Volume (in): 6.271
  Runoff Volume (ft3): 62830

--------------------------------------------------------------------------------
```

```
            Basin Name: B03
            Group Name: BASE
            Simulation: 5YEAR24HOUR
             Node Name: N28
            Basin Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh256
         Peaking Fator: 256.0
  Spec Time Inc (min): 4.51
  Comp Time Inc (min): 4.51
        Rainfall File: Scsiii
 Rainfall Amount (in): 7.700
 Storm Duration (hrs): 24.00
               Status: Onsite
   Time of Conc (min): 33.80
     Time Shift (hrs): 0.00
            Area (ac): 5.570
 Vol of Unit Hyd (in): 1.000
         Curve Number: 88.000
             DCIA (%): 0.000

       Time Max (hrs): 12.47
       Flow Max (cfs): 13.87
  Runoff Volume (in): 6.271
  Runoff Volume (ft3): 126785

--------------------------------------------------------------------------------

            Basin Name: B04
            Group Name: BASE
            Simulation: 5YEAR24HOUR
             Node Name: N26
            Basin Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh256
         Peaking Fator: 256.0
  Spec Time Inc (min): 4.59
  Comp Time Inc (min): 4.59
        Rainfall File: Scsiii
 Rainfall Amount (in): 7.700
 Storm Duration (hrs): 24.00
               Status: Onsite
   Time of Conc (min): 34.40
     Time Shift (hrs): 0.00
            Area (ac): 5.680
 Vol of Unit Hyd (in): 1.000
         Curve Number: 88.000
             DCIA (%): 0.000

       Time Max (hrs): 12.46
       Flow Max (cfs): 14.00
  Runoff Volume (in): 6.268
  Runoff Volume (ft3): 129246
```

Basin Name: B05
Group Name: BASE
Simulation: 5YEAR24HOUR
Node Name: N24
Basin Type: SCS Unit Hydrograph

Unit Hydrograph: Uh256
Peaking Fator: 256.0
Spec Time Inc (min): 3.85
Comp Time Inc (min): 3.85
Rainfall File: Scsiii
Rainfall Amount (in): 7.700
Storm Duration (hrs): 24.00
Status: Onsite
Time of Conc (min): 28.90
Time Shift (hrs): 0.00
Area (ac): 5.610
Vol of Unit Hyd (in): 1.000
Curve Number: 85.000
DCIA (%): 0.000

Time Max (hrs): 12.39
Flow Max (cfs): 14.53
Runoff Volume (in): 5.919
Runoff Volume (ft3): 120543

Basin Name: B06
Group Name: BASE
Simulation: 5YEAR24HOUR
Node Name: N22
Basin Type: SCS Unit Hydrograph

Unit Hydrograph: Uh256
Peaking Fator: 256.0
Spec Time Inc (min): 4.01
Comp Time Inc (min): 4.01
Rainfall File: Scsiii
Rainfall Amount (in): 7.700
Storm Duration (hrs): 24.00
Status: Onsite
Time of Conc (min): 30.10
Time Shift (hrs): 0.00
Area (ac): 6.140
Vol of Unit Hyd (in): 1.000
Curve Number: 85.000
DCIA (%): 0.000

Time Max (hrs): 12.44
Flow Max (cfs): 15.61
Runoff Volume (in): 5.919

```
    Runoff Volume (ft3): 131920

--------------------------------------------------------------------------------

            Basin Name: B07
            Group Name: BASE
            Simulation: 5YEAR24HOUR
             Node Name: N20
            Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh256
          Peaking Fator: 256.0
    Spec Time Inc (min): 3.96
    Comp Time Inc (min): 3.96
          Rainfall File: Scsiii
   Rainfall Amount (in): 7.700
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 29.70
       Time Shift (hrs): 0.00
              Area (ac): 5.100
   Vol of Unit Hyd (in): 1.000
           Curve Number: 82.000
               DCIA (%): 0.000

         Time Max (hrs): 12.41
         Flow Max (cfs): 12.35
     Runoff Volume (in): 5.571
    Runoff Volume (ft3): 103136

--------------------------------------------------------------------------------

            Basin Name: B08
            Group Name: BASE
            Simulation: 5YEAR24HOUR
             Node Name: N18
            Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh256
          Peaking Fator: 256.0
    Spec Time Inc (min): 3.89
    Comp Time Inc (min): 3.89
          Rainfall File: Scsiii
   Rainfall Amount (in): 7.700
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 29.20
       Time Shift (hrs): 0.00
              Area (ac): 5.670
   Vol of Unit Hyd (in): 1.000
           Curve Number: 85.000
               DCIA (%): 0.000

         Time Max (hrs): 12.39
```

```
         Flow Max (cfs): 14.59
     Runoff Volume (in): 5.919
    Runoff Volume (ft3): 121819

--------------------------------------------------------------------------------

            Basin Name: B09
            Group Name: BASE
            Simulation: 5YEAR24HOUR
             Node Name: N16
            Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh256
          Peaking Fator: 256.0
    Spec Time Inc (min): 3.73
    Comp Time Inc (min): 3.73
          Rainfall File: Scsiii
   Rainfall Amount (in): 7.700
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 28.00
       Time Shift (hrs): 0.00
             Area (ac): 5.510
   Vol of Unit Hyd (in): 1.000
           Curve Number: 85.000
               DCIA (%): 0.000

         Time Max (hrs): 12.38
         Flow Max (cfs): 14.52
     Runoff Volume (in): 5.919
    Runoff Volume (ft3): 118395

--------------------------------------------------------------------------------

            Basin Name: B10
            Group Name: BASE
            Simulation: 5YEAR24HOUR
             Node Name: N14
            Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh256
          Peaking Fator: 256.0
    Spec Time Inc (min): 4.51
    Comp Time Inc (min): 4.51
          Rainfall File: Scsiii
   Rainfall Amount (in): 7.700
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 33.80
       Time Shift (hrs): 0.00
             Area (ac): 10.810
   Vol of Unit Hyd (in): 1.000
           Curve Number: 88.000
               DCIA (%): 0.000
```

```
         Time Max (hrs): 12.47
         Flow Max (cfs): 26.92
     Runoff Volume (in): 6.271
    Runoff Volume (ft3): 246059

-------------------------------------------------------------------------------

             Basin Name: B11
             Group Name: BASE
             Simulation: 5YEAR24HOUR
              Node Name: N13
             Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh256
          Peaking Fator: 256.0
    Spec Time Inc (min): 3.21
    Comp Time Inc (min): 3.21
          Rainfall File: Scsiii
   Rainfall Amount (in): 7.700
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 24.10
       Time Shift (hrs): 0.00
              Area (ac): 11.720
   Vol of Unit Hyd (in): 1.000
           Curve Number: 91.000
               DCIA (%): 0.000

         Time Max (hrs): 12.37
         Flow Max (cfs): 36.28
     Runoff Volume (in): 6.626
    Runoff Volume (ft3): 281881

-------------------------------------------------------------------------------

             Basin Name: B12
             Group Name: BASE
             Simulation: 5YEAR24HOUR
              Node Name: N11a
             Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh256
          Peaking Fator: 256.0
    Spec Time Inc (min): 2.73
    Comp Time Inc (min): 2.73
          Rainfall File: Scsiii
   Rainfall Amount (in): 7.700
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 20.50
       Time Shift (hrs): 0.00
              Area (ac): 3.950
   Vol of Unit Hyd (in): 1.000
```

```
          Curve Number: 95.000
              DCIA (%): 0.000

         Time Max (hrs): 12.35
         Flow Max (cfs): 13.71
     Runoff Volume (in): 7.098
    Runoff Volume (ft3): 101771
```

```
             Basin Name: B13
             Group Name: BASE
             Simulation: 5YEAR24HOUR
              Node Name: N11b
             Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh256
          Peaking Fator: 256.0
    Spec Time Inc (min): 2.73
    Comp Time Inc (min): 2.73
          Rainfall File: Scsiii
   Rainfall Amount (in): 7.700
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 20.50
       Time Shift (hrs): 0.00
              Area (ac): 4.010
   Vol of Unit Hyd (in): 1.000
          Curve Number: 91.000
              DCIA (%): 0.000

         Time Max (hrs): 12.35
         Flow Max (cfs): 13.45
     Runoff Volume (in): 6.624
    Runoff Volume (ft3): 96417
```

```
             Basin Name: B14
             Group Name: BASE
             Simulation: 5YEAR24HOUR
              Node Name: N10
             Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh256
          Peaking Fator: 256.0
    Spec Time Inc (min): 2.73
    Comp Time Inc (min): 2.73
          Rainfall File: Scsiii
   Rainfall Amount (in): 7.700
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 20.50
       Time Shift (hrs): 0.00
```

```
           Area (ac): 3.090
Vol of Unit Hyd (in): 1.000
        Curve Number: 91.000
            DCIA (%): 0.000

      Time Max (hrs): 12.35
      Flow Max (cfs): 10.36
  Runoff Volume (in): 6.624
 Runoff Volume (ft3): 74297
```

```
           Basin Name: B15
           Group Name: BASE
           Simulation: 5YEAR24HOUR
            Node Name: N08
           Basin Type: SCS Unit Hydrograph

     Unit Hydrograph: Uh256
       Peaking Fator: 256.0
 Spec Time Inc (min): 2.56
 Comp Time Inc (min): 2.56
      Rainfall File: Scsiii
Rainfall Amount (in): 7.700
Storm Duration (hrs): 24.00
              Status: Onsite
  Time of Conc (min): 19.20
    Time Shift (hrs): 0.00
           Area (ac): 6.010
Vol of Unit Hyd (in): 1.000
        Curve Number: 92.000
            DCIA (%): 0.000

      Time Max (hrs): 12.33
      Flow Max (cfs): 21.03
  Runoff Volume (in): 6.743
 Runoff Volume (ft3): 147107
```

```
           Basin Name: B16
           Group Name: BASE
           Simulation: 5YEAR24HOUR
            Node Name: N07
           Basin Type: SCS Unit Hydrograph

     Unit Hydrograph: Uh256
       Peaking Fator: 256.0
 Spec Time Inc (min): 2.20
 Comp Time Inc (min): 2.20
      Rainfall File: Scsiii
Rainfall Amount (in): 7.700
Storm Duration (hrs): 24.00
              Status: Onsite
```

```
     Time of Conc (min): 16.50
       Time Shift (hrs): 0.00
             Area (ac): 3.440
   Vol of Unit Hyd (in): 1.000
          Curve Number: 88.000
              DCIA (%): 0.000

         Time Max (hrs): 12.32
         Flow Max (cfs): 12.29
     Runoff Volume (in): 6.272
    Runoff Volume (ft3): 78317

--------------------------------------------------------------------------------

             Basin Name: B17
             Group Name: BASE
             Simulation: 5YEAR24HOUR
              Node Name: N05
             Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh256
          Peaking Fator: 256.0
    Spec Time Inc (min): 3.15
    Comp Time Inc (min): 3.15
          Rainfall File: Scsiii
   Rainfall Amount (in): 7.700
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 23.60
       Time Shift (hrs): 0.00
             Area (ac): 6.510
   Vol of Unit Hyd (in): 1.000
          Curve Number: 88.000
              DCIA (%): 0.000

         Time Max (hrs): 12.38
         Flow Max (cfs): 19.63
     Runoff Volume (in): 6.271
    Runoff Volume (ft3): 148192

--------------------------------------------------------------------------------

             Basin Name: B18
             Group Name: BASE
             Simulation: 5YEAR24HOUR
              Node Name: N03
             Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh256
          Peaking Fator: 256.0
    Spec Time Inc (min): 2.24
    Comp Time Inc (min): 2.24
          Rainfall File: Scsiii
   Rainfall Amount (in): 7.700
```

```
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 16.80
       Time Shift (hrs): 0.00
              Area (ac): 8.330
   Vol of Unit Hyd (in): 1.000
          Curve Number: 88.000
              DCIA (%): 0.000

         Time Max (hrs): 12.32
         Flow Max (cfs): 29.56
     Runoff Volume (in): 6.271
    Runoff Volume (ft3): 189623

--------------------------------------------------------------------------------

              Basin Name: P1
              Group Name: BASE
              Simulation: 5YEAR24HOUR
               Node Name: N32
              Basin Type: SCS Unit Hydrograph

        Unit Hydrograph: Uh256
          Peaking Fator: 256.0
    Spec Time Inc (min): 4.88
    Comp Time Inc (min): 4.88
         Rainfall File: Scsiii
   Rainfall Amount (in): 7.700
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 36.60
       Time Shift (hrs): 0.00
              Area (ac): 21.000
   Vol of Unit Hyd (in): 1.000
          Curve Number: 85.000
              DCIA (%): 0.000

         Time Max (hrs): 12.53
         Flow Max (cfs): 47.13
     Runoff Volume (in): 5.922
    Runoff Volume (ft3): 451413
```

Appendix D.2

Hydraulics

NODES

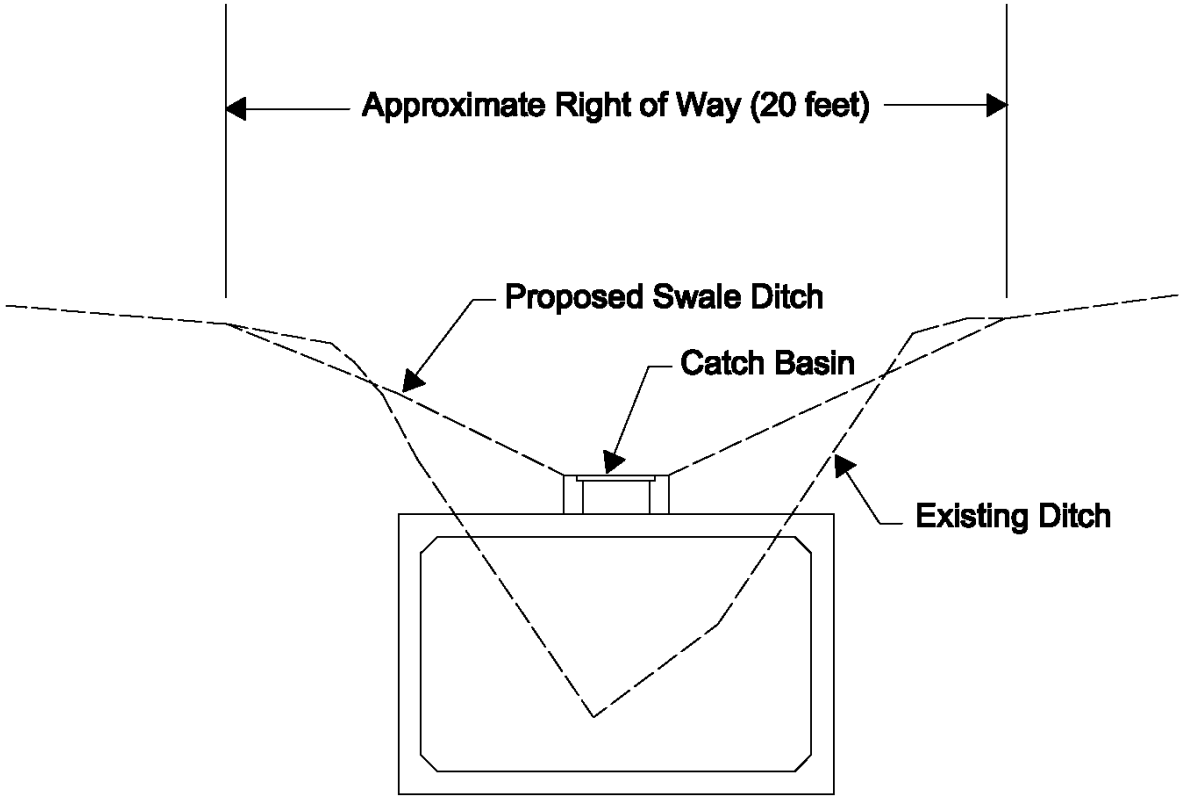
Name	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
N01	EXISTING	13.00	1.00	2.50	0.0016	26	14.38	110.89	0.00	0.00
N02	EXISTING	13.01	1.59	2.00	0.0066	13772	14.53	110.58	14.38	110.89
N03	EXISTING	13.05	2.02	2.00	-0.0042	20701	14.47	108.50	14.53	110.58
N04	EXISTING	13.05	2.03	3.00	-0.0017	14630	14.54	104.02	14.57	105.45
N05	EXISTING	13.38	2.89	3.00	-0.0048	24455	14.77	223.09	14.54	104.02
N05a	EXISTING	13.38	2.89	3.00	-0.5000	11795	14.77	98.01	14.77	220.74
N06	EXISTING	13.39	2.92	2.90	-0.1000	76673	12.34	95.29	14.77	98.01
N07	EXISTING	13.39	2.93	2.90	0.0012	38031	12.34	103.22	12.34	95.29
N08	EXISTING	13.40	2.97	3.40	0.0010	31099	12.33	96.44	12.35	91.18
N09	EXISTING	13.40	3.00	3.50	0.0046	20463	13.83	82.08	14.09	83.20
N10	EXISTING	13.43	3.48	3.60	-0.0057	5138	12.31	128.19	13.83	82.08
N10a	EXISTING	13.43	3.48	3.60	0.0057	5165	14.09	79.83	12.31	117.97
N10b	EXISTING	13.46	3.67	3.60	-0.0050	6948	12.26	106.84	14.09	79.83
N11	EXISTING	13.46	3.68	3.80	0.0057	15337	13.32	78.89	12.26	106.84
N11a	EXISTING	13.45	4.26	3.80	0.0436	33747	11.98	359.40	13.32	78.89
N11b	EXISTING	13.45	4.35	4.20	-0.4600	53534	12.33	84.59	11.98	352.11
N12	EXISTING	13.34	4.82	4.20	-0.4600	1637	12.72	73.93	12.75	73.67
N13	EXISTING	13.32	4.89	5.20	-0.3500	134816	12.42	107.83	12.72	73.93
N14	EXISTING	13.26	4.94	5.20	-0.2000	7378	12.49	76.25	12.50	73.85
N15	EXISTING	13.23	5.01	6.00	0.0012	3720	12.48	50.90	12.49	49.72
N16	EXISTING	13.00	5.35	6.50	0.0013	2069	12.46	51.63	12.48	50.90
N17	EXISTING	13.00	5.37	6.50	-1.8400	1774	15.79	39.71	15.76	40.21
N18	EXISTING	12.91	6.14	6.50	-1.9500	2793	12.19	39.37	15.79	39.71
N19	EXISTING	12.93	6.15	6.50	0.0013	6160	15.81	37.38	15.81	37.75
N20	EXISTING	13.45	6.71	6.70	-0.0013	35768	15.81	36.95	15.81	37.38
N21	EXISTING	13.46	6.73	7.00	0.0011	17480	15.82	35.21	15.81	35.58
N22	EXISTING	13.80	7.07	7.00	-0.0014	87427	12.43	35.12	15.82	35.21
N23	EXISTING	13.80	7.08	7.50	-0.0013	8751	16.40	28.54	16.19	29.38
N24	EXISTING	13.81	7.92	7.50	-0.0022	25371	16.46	27.51	16.40	28.54
N25	EXISTING	13.81	7.92	7.60	-0.0022	4866	16.67	25.74	16.48	26.20
N26	EXISTING	14.06	8.08	7.70	-0.0025	42469	16.73	25.19	16.67	25.74
N27	EXISTING	14.07	8.09	7.70	-0.0025	6307	16.74	23.29	16.74	23.85
N28	EXISTING	14.31	8.17	7.70	-0.0046	67952	17.74	20.84	16.74	23.29
N29	EXISTING	14.50	8.22	7.80	0.0045	6494	17.77	19.90	17.77	19.9
N30	EXISTING	14.81	8.27	7.90	0.0048	61352	17.94	18.89	17.77	19.90
N31	EXISTING	15.32	8.45	8.00	-0.0142	91078	12.67	15.87	17.95	18.48
N32	EXISTING	15.66	7.91	7.50	-0.0050	423078	12.50	47.13	7.81	6.70

LINKS

Name	Simulation	Max Time Flow hrs	Max Flow cfs	Max Delta Q cfs	Max Time US Stage hrs	Max US Stage ft	Max Time DS Stage hrs	Max DS Stage ft
C01	EXISTING	16.74	23.85	-2.869	14.07	8.09	14.06	8.08
C02	EXISTING	16.48	26.20	-0.097	13.81	7.92	13.81	7.92
C03	EXISTING	16.19	29.38	0.264	13.80	7.08	13.80	7.07
C04	EXISTING	15.81	35.58	-0.148	13.46	6.73	13.45	6.71
C05	EXISTING	15.81	37.75	-0.188	12.93	6.15	12.91	6.14
C06	EXISTING	15.76	40.21	0.078	13.00	5.37	13.00	5.35
C07	EXISTING	12.49	49.72	0.015	13.23	5.01	13.26	4.94
C08	EXISTING	12.50	73.85	0.041	13.26	4.94	13.32	4.89
C09	EXISTING	11.98	352.11	352.107	13.45	4.35	13.45	4.26
C10	EXISTING	12.26	106.84	76.104	13.46	3.68	13.46	3.67
C11	EXISTING	12.31	117.97	84.458	13.43	3.48	13.43	3.48
C12	EXISTING	14.09	83.20	0.193	13.40	3.00	13.40	2.97
C13	EXISTING	12.35	91.18	0.197	13.40	2.97	13.39	2.93
C14	EXISTING	12.34	95.29	-0.650	13.39	2.93	13.39	2.92
C15	EXISTING	14.77	98.01	-5.693	13.39	2.92	13.38	2.89
C16	EXISTING	14.77	220.74	-111.041	13.38	2.89	13.38	2.89
C17	EXISTING	14.57	105.45	1.101	13.05	2.03	13.05	2.02
P01	EXISTING	17.95	18.48	1.299	15.32	8.45	14.81	8.27
P02	EXISTING	17.77	19.90	2.302	14.81	8.27	14.50	8.22
P03	EXISTING	17.77	19.93	2.150	14.50	8.22	14.31	8.17
P04	EXISTING	16.74	23.29	0.407	14.31	8.17	14.07	8.09
P05	EXISTING	16.67	25.74	-0.033	14.06	8.08	13.81	7.92
P06	EXISTING	16.40	28.54	-0.437	13.81	7.92	13.80	7.08
P07	EXISTING	15.82	35.21	-0.026	13.80	7.07	13.46	6.73
P08	EXISTING	15.81	37.38	0.098	13.45	6.71	12.93	6.15
P09	EXISTING	15.79	39.71	1.107	12.91	6.14	13.00	5.37
P10	EXISTING	12.48	50.90	0.015	13.00	5.35	13.23	5.01
P11	EXISTING	12.72	73.93	-2.191	13.32	4.89	13.34	4.82
P12	EXISTING	12.75	73.67	4.667	13.34	4.82	13.45	4.35
P13	EXISTING	13.32	78.89	5.475	13.45	4.26	13.46	3.68
P14	EXISTING	14.09	79.83	-2.672	13.46	3.67	13.43	3.48
P15	EXISTING	13.83	82.08	3.047	13.43	3.48	13.40	3.00
P16	EXISTING	14.54	104.02	-0.476	13.38	2.89	13.05	2.03
P17	EXISTING	14.53	110.58	20.204	13.05	2.02	13.01	1.59
P18	EXISTING	14.38	110.89	-8.242	13.01	1.59	13.00	1.00
PUMP	EXISTING	7.81	6.70	6.700	15.66	7.91	15.32	8.45

Appendix E

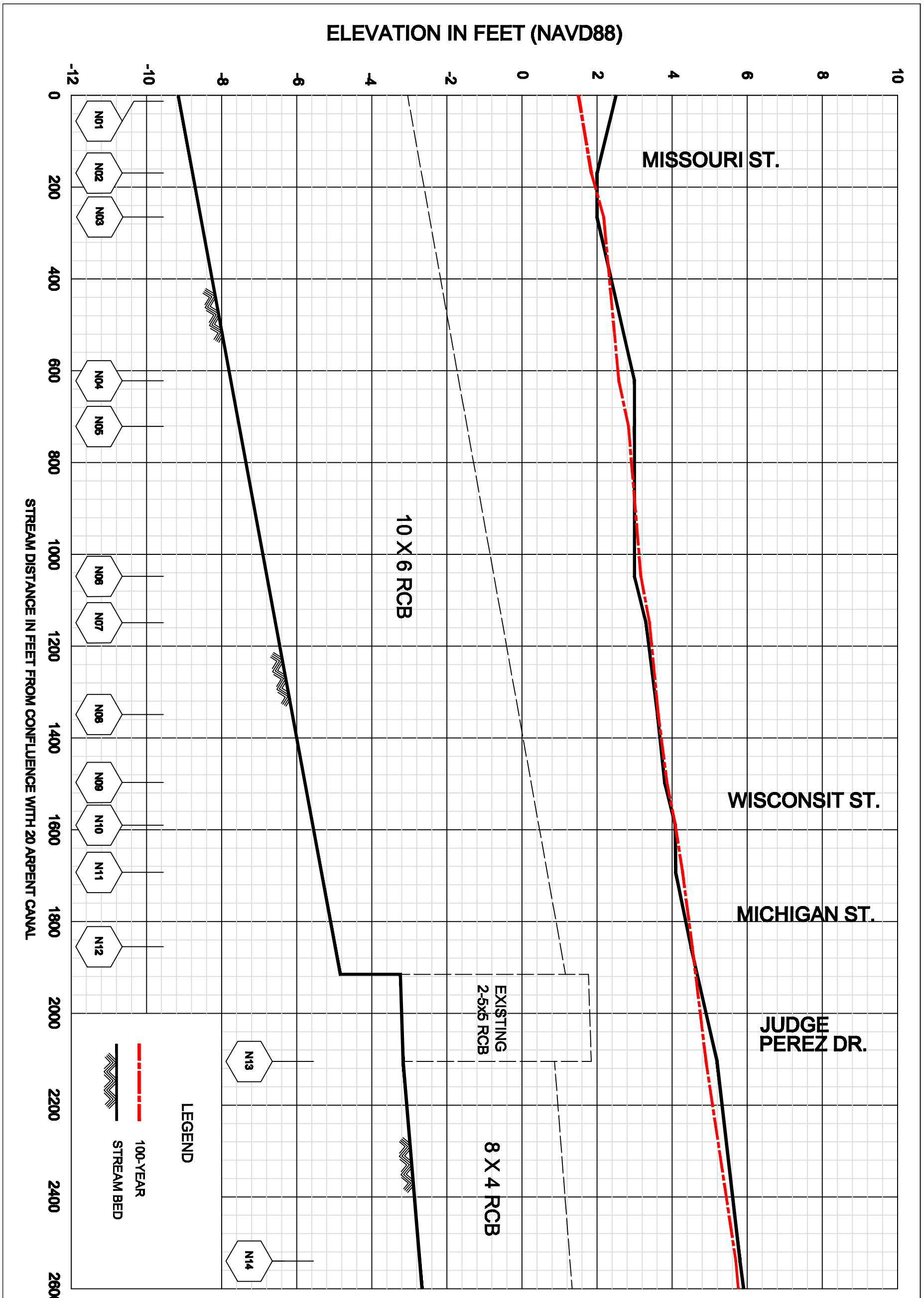
TYPICAL CROSS SECTION



TYPICAL CROSS SECTION

Appendix F

DESIGN CONDITIONS 100-YEAR FLOOD PROFILE

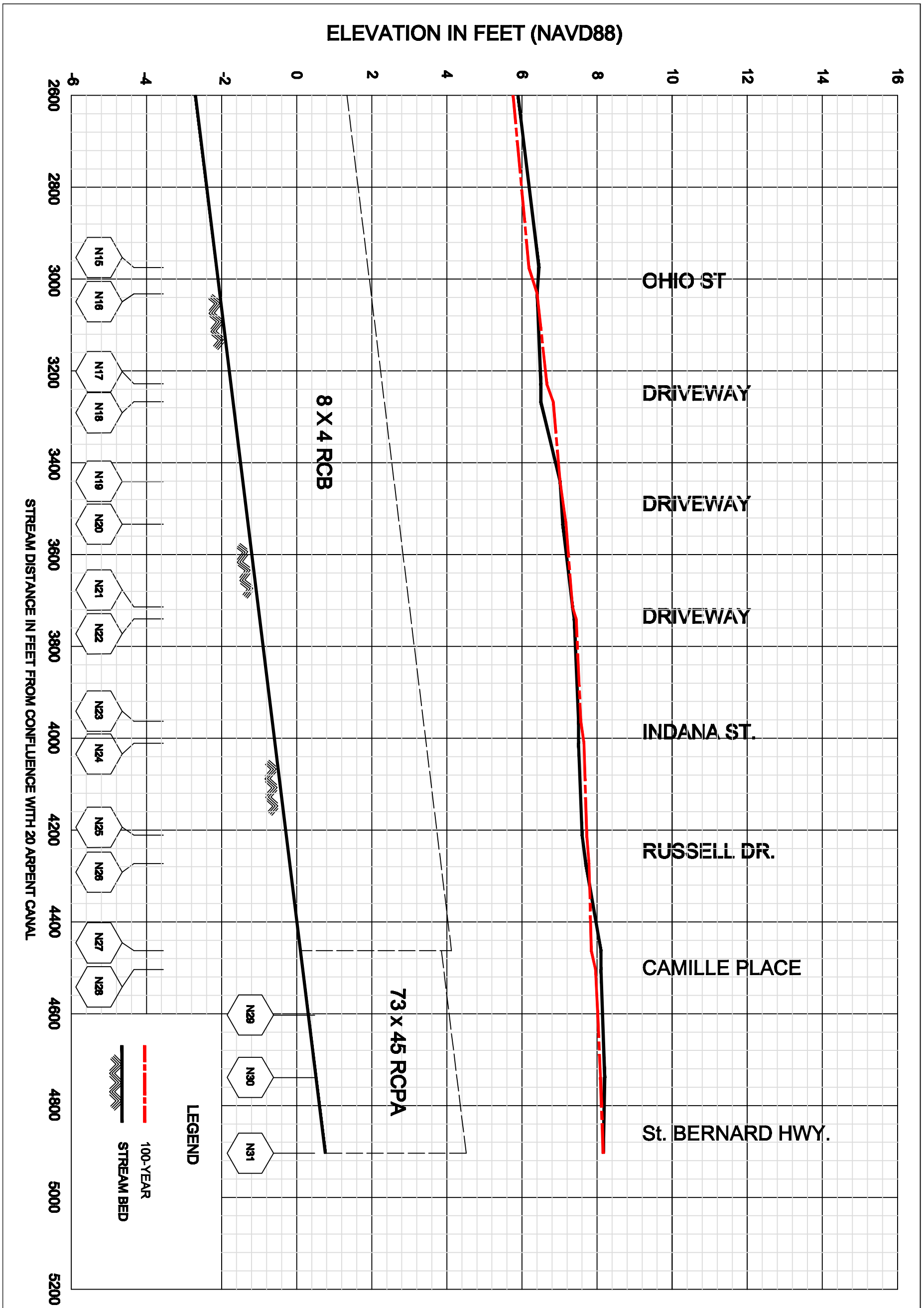


1 of 2

ST. BENARD PARISH, LA

FLOOD PROFILES

PALMISANO CANAL



2 of 2

ST. BENARD PARISH, LA

FLOOD PROFILES

PALMISANO CANAL

Appendix G

DESIGN CONDITIONS ICPR MODEL

Appendix G.1

ICPR Model Input

```
================================================================================
==== Basins ====================================================================
================================================================================

        Name: B01                     Node: N31                     Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

      Unit Hydrograph: Uh256                 Peaking Factor: 256.0
        Rainfall File: Scsiii             Storm Duration(hrs): 24.00
  Rainfall Amount(in): 7.800                Time of Conc(min): 50.90
            Area(ac): 3.500                   Time Shift(hrs): 0.00
        Curve Number: 85.00               Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


--------------------------------------------------------------------------------
        Name: B02                     Node: N30                     Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

      Unit Hydrograph: Uh256                 Peaking Factor: 256.0
        Rainfall File: Scsiii             Storm Duration(hrs): 24.00
  Rainfall Amount(in): 7.800                Time of Conc(min): 25.50
            Area(ac): 2.760                   Time Shift(hrs): 0.00
        Curve Number: 88.00               Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


--------------------------------------------------------------------------------
        Name: B03                     Node: N28                     Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

      Unit Hydrograph: Uh256                 Peaking Factor: 256.0
        Rainfall File: Scsiii             Storm Duration(hrs): 24.00
  Rainfall Amount(in): 7.800                Time of Conc(min): 33.80
            Area(ac): 5.570                   Time Shift(hrs): 0.00
        Curve Number: 88.00               Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


--------------------------------------------------------------------------------
        Name: B04                     Node: N26                     Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

      Unit Hydrograph: Uh256                 Peaking Factor: 256.0
        Rainfall File: Scsiii             Storm Duration(hrs): 24.00
  Rainfall Amount(in): 7.800                Time of Conc(min): 34.40
            Area(ac): 5.680                   Time Shift(hrs): 0.00
        Curve Number: 88.00               Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


--------------------------------------------------------------------------------
        Name: B05                     Node: N24                     Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

      Unit Hydrograph: Uh256                 Peaking Factor: 256.0
        Rainfall File: Scsiii             Storm Duration(hrs): 24.00
  Rainfall Amount(in): 7.800                Time of Conc(min): 28.90
            Area(ac): 5.610                   Time Shift(hrs): 0.00
        Curve Number: 85.00               Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00
```

```
--------------------------------------------------------------------------------------------------
        Name: B06                     Node: N22                     Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

    Unit Hydrograph: Uh256                  Peaking Factor: 256.0
      Rainfall File: Scsiii              Storm Duration(hrs): 24.00
Rainfall Amount(in): 7.800                 Time of Conc(min): 30.10
           Area(ac): 6.140                   Time Shift(hrs): 0.00
       Curve Number: 85.00               Max Allowable Q(cfs): 999999.000
            DCIA(%): 0.00


--------------------------------------------------------------------------------------------------
        Name: B07                     Node: N20                     Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

    Unit Hydrograph: Uh256                  Peaking Factor: 256.0
      Rainfall File: Scsiii              Storm Duration(hrs): 24.00
Rainfall Amount(in): 7.800                 Time of Conc(min): 29.70
           Area(ac): 5.100                   Time Shift(hrs): 0.00
       Curve Number: 82.00               Max Allowable Q(cfs): 999999.000
            DCIA(%): 0.00


--------------------------------------------------------------------------------------------------
        Name: B08                     Node: N18                     Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

    Unit Hydrograph: Uh256                  Peaking Factor: 256.0
      Rainfall File: Scsiii              Storm Duration(hrs): 24.00
Rainfall Amount(in): 7.800                 Time of Conc(min): 29.20
           Area(ac): 5.670                   Time Shift(hrs): 0.00
       Curve Number: 85.00               Max Allowable Q(cfs): 999999.000
            DCIA(%): 0.00


--------------------------------------------------------------------------------------------------
        Name: B09                     Node: N16                     Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

    Unit Hydrograph: Uh256                  Peaking Factor: 256.0
      Rainfall File: Scsiii              Storm Duration(hrs): 24.00
Rainfall Amount(in): 7.800                 Time of Conc(min): 28.00
           Area(ac): 5.510                   Time Shift(hrs): 0.00
       Curve Number: 85.00               Max Allowable Q(cfs): 999999.000
            DCIA(%): 0.00


--------------------------------------------------------------------------------------------------
        Name: B10                     Node: N14                     Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

    Unit Hydrograph: Uh256                  Peaking Factor: 256.0
      Rainfall File: Scsiii              Storm Duration(hrs): 24.00
Rainfall Amount(in): 7.800                 Time of Conc(min): 33.80
           Area(ac): 10.810                  Time Shift(hrs): 0.00
       Curve Number: 88.00               Max Allowable Q(cfs): 999999.000
            DCIA(%): 0.00
```

```
--------------------------------------------------------------------------------------------------
        Name: B06                     Node: N22                     Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

    Unit Hydrograph: Uh256                  Peaking Factor: 256.0
      Rainfall File: Scsiii              Storm Duration(hrs): 24.00
Rainfall Amount(in): 7.800                 Time of Conc(min): 30.10
           Area(ac): 6.140                   Time Shift(hrs): 0.00
       Curve Number: 85.00               Max Allowable Q(cfs): 999999.000
            DCIA(%): 0.00


--------------------------------------------------------------------------------------------------
        Name: B07                     Node: N20                     Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

    Unit Hydrograph: Uh256                  Peaking Factor: 256.0
      Rainfall File: Scsiii              Storm Duration(hrs): 24.00
Rainfall Amount(in): 7.800                 Time of Conc(min): 29.70
           Area(ac): 5.100                   Time Shift(hrs): 0.00
       Curve Number: 82.00               Max Allowable Q(cfs): 999999.000
            DCIA(%): 0.00


--------------------------------------------------------------------------------------------------
        Name: B08                     Node: N18                     Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

    Unit Hydrograph: Uh256                  Peaking Factor: 256.0
      Rainfall File: Scsiii              Storm Duration(hrs): 24.00
Rainfall Amount(in): 7.800                 Time of Conc(min): 29.20
           Area(ac): 5.670                   Time Shift(hrs): 0.00
       Curve Number: 85.00               Max Allowable Q(cfs): 999999.000
            DCIA(%): 0.00


--------------------------------------------------------------------------------------------------
        Name: B09                     Node: N16                     Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

    Unit Hydrograph: Uh256                  Peaking Factor: 256.0
      Rainfall File: Scsiii              Storm Duration(hrs): 24.00
Rainfall Amount(in): 7.800                 Time of Conc(min): 28.00
           Area(ac): 5.510                   Time Shift(hrs): 0.00
       Curve Number: 85.00               Max Allowable Q(cfs): 999999.000
            DCIA(%): 0.00


--------------------------------------------------------------------------------------------------
        Name: B10                     Node: N14                     Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

    Unit Hydrograph: Uh256                  Peaking Factor: 256.0
      Rainfall File: Scsiii              Storm Duration(hrs): 24.00
Rainfall Amount(in): 7.800                 Time of Conc(min): 33.80
           Area(ac): 10.810                  Time Shift(hrs): 0.00
       Curve Number: 88.00               Max Allowable Q(cfs): 999999.000
            DCIA(%): 0.00
```

```
--------------------------------------------------------------------------------------------
        Name: B11                     Node: N13                     Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

      Unit Hydrograph: Uh256                 Peaking Factor: 256.0
        Rainfall File: Scsiii             Storm Duration(hrs): 24.00
  Rainfall Amount(in): 7.800                Time of Conc(min): 24.10
            Area(ac): 11.720                  Time Shift(hrs): 0.00
        Curve Number: 91.00              Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


--------------------------------------------------------------------------------------------
        Name: B12                     Node: N12                     Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

      Unit Hydrograph: Uh256                 Peaking Factor: 256.0
        Rainfall File: Scsiii             Storm Duration(hrs): 24.00
  Rainfall Amount(in): 7.800                Time of Conc(min): 20.50
            Area(ac): 3.950                   Time Shift(hrs): 0.00
        Curve Number: 95.00              Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


--------------------------------------------------------------------------------------------
        Name: B13                     Node: N11                     Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

      Unit Hydrograph: Uh256                 Peaking Factor: 256.0
        Rainfall File: Scsiii             Storm Duration(hrs): 24.00
  Rainfall Amount(in): 7.800                Time of Conc(min): 20.50
            Area(ac): 4.010                   Time Shift(hrs): 0.00
        Curve Number: 91.00              Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


--------------------------------------------------------------------------------------------
        Name: B14                     Node: N10                     Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

      Unit Hydrograph: Uh256                 Peaking Factor: 256.0
        Rainfall File: Scsiii             Storm Duration(hrs): 24.00
  Rainfall Amount(in): 7.800                Time of Conc(min): 20.50
            Area(ac): 3.090                   Time Shift(hrs): 0.00
        Curve Number: 91.00              Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


--------------------------------------------------------------------------------------------
        Name: B15                     Node: N08                     Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

      Unit Hydrograph: Uh256                 Peaking Factor: 256.0
        Rainfall File: Scsiii             Storm Duration(hrs): 24.00
  Rainfall Amount(in): 7.800                Time of Conc(min): 19.20
            Area(ac): 6.010                   Time Shift(hrs): 0.00
        Curve Number: 92.00              Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00
```

```
--------------------------------------------------------------------------------------------
        Name: B16                       Node: N07                     Status: Onsite
       Group: BASE                      Type: SCS Unit Hydrograph CN

      Unit Hydrograph: Uh256                    Peaking Factor: 256.0
        Rainfall File: Scsiii               Storm Duration(hrs): 24.00
   Rainfall Amount(in): 7.800                 Time of Conc(min): 16.50
            Area(ac): 3.440                     Time Shift(hrs): 0.00
        Curve Number: 88.00                 Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


--------------------------------------------------------------------------------------------
        Name: B17                       Node: N05                     Status: Onsite
       Group: BASE                      Type: SCS Unit Hydrograph CN

      Unit Hydrograph: Uh256                    Peaking Factor: 256.0
        Rainfall File: Scsiii               Storm Duration(hrs): 24.00
   Rainfall Amount(in): 7.800                 Time of Conc(min): 23.60
            Area(ac): 6.510                     Time Shift(hrs): 0.00
        Curve Number: 88.00                 Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


--------------------------------------------------------------------------------------------
        Name: B18                       Node: N03                     Status: Onsite
       Group: BASE                      Type: SCS Unit Hydrograph CN

      Unit Hydrograph: Uh256                    Peaking Factor: 256.0
        Rainfall File: Scsiii               Storm Duration(hrs): 24.00
   Rainfall Amount(in): 7.800                 Time of Conc(min): 16.80
            Area(ac): 8.330                     Time Shift(hrs): 0.00
        Curve Number: 88.00                 Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


--------------------------------------------------------------------------------------------
        Name: P1                        Node: N32                     Status: Onsite
       Group: BASE                      Type: SCS Unit Hydrograph CN

      Unit Hydrograph: Uh256                    Peaking Factor: 256.0
        Rainfall File: Scsiii               Storm Duration(hrs): 24.00
   Rainfall Amount(in): 7.800                 Time of Conc(min): 36.60
            Area(ac): 21.000                    Time Shift(hrs): 0.00
        Curve Number: 85.00                 Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


============================================================================================
==== Nodes =================================================================================
============================================================================================

      Name: N01               Base Flow(cfs): 0.000          Init Stage(ft): -6.000
     Group: BASE                                             Warn Stage(ft): 2.500
      Type: Time/Stage


      Time(hrs)       Stage(ft)
--------------- ---------------
           0.00          -6.000
```

10.00	-5.000
11.00	-3.000
12.00	1.000
13.00	1.500
18.00	1.000
24.00	-2.000
30.00	-3.000

Name: N02 Base Flow(cfs): 0.000 Init Stage(ft): -6.000
Group: BASE Warn Stage(ft): 2.000
Type: Stage/Area

Stage(ft)	Area(ac)
1.000	0.0100
2.000	0.5300
2.500	1.5300
3.000	4.3000

Name: N03 Base Flow(cfs): 0.000 Init Stage(ft): -6.000
Group: BASE Warn Stage(ft): 2.000
Type: Stage/Area

Stage(ft)	Area(ac)
1.000	0.2000
1.500	0.2500
2.000	0.3000
2.500	0.4000
3.000	0.7800
3.500	0.9800

Name: N04 Base Flow(cfs): 0.000 Init Stage(ft): -6.000
Group: BASE Warn Stage(ft): 3.000
Type: Stage/Area

Stage(ft)	Area(ac)
1.500	0.1200
2.000	0.1800
2.500	0.1900
3.000	0.2000
3.500	0.6500

Name: N05 Base Flow(cfs): 0.000 Init Stage(ft): -6.000
Group: BASE Warn Stage(ft): 3.000
Type: Stage/Area

Stage(ft)	Area(ac)
1.500	0.1200
2.000	0.1500
2.500	0.1700
3.000	0.2000

3.500	0.6500	

Name: N06 Base Flow(cfs): 0.000 Init Stage(ft): -6.000
Group: BASE Warn Stage(ft): 3.000
Type: Stage/Area

Stage(ft)	Area(ac)
1.500	0.1000
2.000	0.2000
2.500	0.9400
3.000	1.7700
3.500	1.9300

Name: N07 Base Flow(cfs): 0.000 Init Stage(ft): -6.000
Group: BASE Warn Stage(ft): 3.300
Type: Stage/Area

Stage(ft)	Area(ac)
1.500	0.0800
2.000	0.1000
2.500	0.3100
3.000	0.8700
3.500	2.6000
4.000	2.8000

Name: N08 Base Flow(cfs): 0.000 Init Stage(ft): -6.000
Group: BASE Warn Stage(ft): 3.600
Type: Stage/Area

Stage(ft)	Area(ac)
2.000	0.1000
2.500	0.1700
3.000	0.6600
3.500	1.5200
4.000	2.5000

Name: N09 Base Flow(cfs): 0.000 Init Stage(ft): -5.810
Group: BASE Warn Stage(ft): 3.800
Type: Stage/Area

Stage(ft)	Area(ac)
2.000	0.0100
2.500	0.1100
3.000	0.4300
3.500	1.1000
4.000	1.5000

Name: N10 Base Flow(cfs): 0.000 Init Stage(ft): -5.640
Group: BASE Warn Stage(ft): 4.100

Type: Stage/Area

Stage(ft)	Area(ac)
2.000	0.0100
2.500	0.0300
3.000	0.0600
3.500	0.3200
4.000	0.6500

Name: N11 Base Flow(cfs): 0.000 Init Stage(ft): -5.390
Group: BASE Warn Stage(ft): 4.200
Type: Stage/Area

Stage(ft)	Area(ac)
3.000	0.1800
3.500	0.3500
4.000	1.2000
4.500	1.8000

Name: N12 Base Flow(cfs): 0.000 Init Stage(ft): -4.740
Group: BASE Warn Stage(ft): 4.500
Type: Stage/Area

Stage(ft)	Area(ac)
3.000	0.0100
3.500	0.4500
4.000	0.8000
4.500	1.3800
5.000	1.5000

Name: N13 Base Flow(cfs): 0.000 Init Stage(ft): -3.150
Group: BASE Warn Stage(ft): 5.200
Type: Stage/Area

Stage(ft)	Area(ac)
3.000	0.0100
4.000	0.2600
4.500	1.9000
5.000	3.3200
5.500	5.4500
6.000	8.1100

Name: N14 Base Flow(cfs): 0.000 Init Stage(ft): -2.710
Group: BASE Warn Stage(ft): 5.200
Type: Stage/Area

Stage(ft)	Area(ac)

5.000	0.2000
5.500	0.2500
6.000	0.4100
6.500	0.5700

Name: N15 Base Flow(cfs): 0.000 Init Stage(ft): -1.290
Group: BASE Warn Stage(ft): 6.200
Type: Stage/Area

Stage(ft)	Area(ac)
5.500	0.2700
6.000	0.3500
6.500	1.6600
7.000	2.5000

Name: N16 Base Flow(cfs): 0.000 Init Stage(ft): -1.230
Group: BASE Warn Stage(ft): 6.400
Type: Stage/Area

Stage(ft)	Area(ac)
5.500	0.0400
6.000	0.1000
6.500	0.1500
7.000	0.3000

Name: N17 Base Flow(cfs): 0.000 Init Stage(ft): -1.030
Group: BASE Warn Stage(ft): 6.700
Type: Stage/Area

Stage(ft)	Area(ac)
6.000	0.0200
6.500	0.1000
7.000	0.1500

Name: N18 Base Flow(cfs): 0.000 Init Stage(ft): -0.950
Group: BASE Warn Stage(ft): 6.800
Type: Stage/Area

Stage(ft)	Area(ac)
6.000	0.0200
6.500	0.0700
7.000	0.6100

Name: N19 Base Flow(cfs): 0.000 Init Stage(ft): -0.820
Group: BASE Warn Stage(ft): 7.000
Type: Stage/Area

Stage(ft)	Area(ac)
6.000	0.0600
6.500	0.2300
7.000	0.7800

Name: N20 Base Flow(cfs): 0.000 Init Stage(ft): -0.730
Group: BASE Warn Stage(ft): 7.100
Type: Stage/Area

Stage(ft)	Area(ac)
6.000	0.0600
6.500	0.1500
7.000	1.6300

Name: N21 Base Flow(cfs): 0.000 Init Stage(ft): -0.570
Group: BASE Warn Stage(ft): 7.300
Type: Stage/Area

Stage(ft)	Area(ac)
6.000	0.0800
6.500	0.1100
7.000	0.6800

Name: N22 Base Flow(cfs): 0.000 Init Stage(ft): -0.540
Group: BASE Warn Stage(ft): 7.400
Type: Stage/Area

Stage(ft)	Area(ac)
6.000	0.2500
6.500	0.7000
7.000	1.8100

Name: N23 Base Flow(cfs): 0.000 Init Stage(ft): -0.310
Group: BASE Warn Stage(ft): 7.600
Type: Stage/Area

Stage(ft)	Area(ac)
6.000	0.0100
7.000	0.1000
7.500	0.2100
8.000	0.7100

Name: N24 Base Flow(cfs): 0.000 Init Stage(ft): -0.260
Group: BASE Warn Stage(ft): 7.700
Type: Stage/Area

Stage(ft)	Area(ac)
6.000	0.0100
7.000	0.0700
7.500	0.1000
8.000	0.6300

Name: N25 Base Flow(cfs): 0.000 Init Stage(ft): -0.060
Group: BASE Warn Stage(ft): 7.800
Type: Stage/Area

Stage(ft)	Area(ac)
7.000	0.0100
7.500	0.0500
8.000	0.0800

Name: N26 Base Flow(cfs): 0.000 Init Stage(ft): 0.000
Group: BASE Warn Stage(ft): 7.800
Type: Stage/Area

Stage(ft)	Area(ac)
7.000	0.0100
7.800	0.0500
8.000	0.8100

Name: N27 Base Flow(cfs): 0.000 Init Stage(ft): 0.000
Group: BASE Warn Stage(ft): 7.900
Type: Stage/Area

Stage(ft)	Area(ac)
7.000	0.0200
7.500	0.0500
8.000	0.1000

Name: N28 Base Flow(cfs): 0.000 Init Stage(ft): 2.030
Group: BASE Warn Stage(ft): 8.000
Type: Stage/Area

Stage(ft)	Area(ac)
7.000	0.0500
7.500	0.5400
8.000	1.3000

Name: N29 Base Flow(cfs): 0.000 Init Stage(ft): 2.210
Group: BASE Warn Stage(ft): 8.100
Type: Stage/Area

Stage(ft)	Area(ac)
7.500	0.0200
8.000	0.1100

Name: N30 Base Flow(cfs): 0.000 Init Stage(ft): 2.480
Group: BASE Warn Stage(ft): 8.200
Type: Stage/Area

Stage(ft)	Area(ac)
6.000	0.0100
8.000	0.2000
8.500	2.4000

Name: N31 Base Flow(cfs): 0.000 Init Stage(ft): 2.800
Group: BASE Warn Stage(ft): 8.000
Type: Stage/Area

Stage(ft)	Area(ac)
7.000	0.5000
8.000	1.6000
9.000	2.7000
9.500	4.4000

Name: N32 Base Flow(cfs): 0.000 Init Stage(ft): 0.000
Group: BASE Warn Stage(ft): 8.100
Type: Stage/Area

Stage(ft)	Area(ac)
-2.000	0.0100
0.000	0.0100
2.900	0.0500
4.000	0.1000
6.000	0.2000
7.000	0.7200
7.500	4.1000
8.000	11.0000
8.500	19.6000

Operating Tables

Name: PUMP1 Group: BASE
Type: Rating Curve
Function: US Stage vs. Discharge

US Stage(ft)	Discharge(cfs)
4.000	6.70
9.000	6.70

```
-------------------------------------------------------------------------------------------
      Name: PUMP2                Group: BASE
      Type: Rating Curve
  Function: US Stage vs. Discharge


   US Stage(ft)  Discharge(cfs)
--------------- ---------------
          7.000            6.70
          9.000            6.70

-------------------------------------------------------------------------------------------
      Name: PUMP3                Group: BASE
      Type: Rating Curve
  Function: US Stage vs. Discharge


   US Stage(ft)  Discharge(cfs)
--------------- ---------------
          6.000            6.70
          9.000            6.70

===========================================================================================
==== Pipes ================================================================================
===========================================================================================

        Name: P01                From Node: N31              Length(ft): 165.00
       Group: BASE                 To Node: N30                   Count: 1
                                                       Friction Equation: Automatic
              UPSTREAM       DOWNSTREAM               Solution Algorithm: Always Outlet
    Geometry: Arch           Arch                                Flow: Both
    Span(in): 73.00          73.00                  Entrance Loss Coef: 0.50
    Rise(in): 45.00          45.00                      Exit Loss Coef: 0.00
  Invert(ft): 1.490          1.280                      Bend Loss Coef: 0.00
 Manning's N: 0.013000       0.013000                 Outlet Ctrl Spec: Use dn or tw
Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dn
Bot Clip(in): 0.000          0.000                   Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Pipe Arch 18" Corner Radius CM: 90° headwall

Downstream FHWA Inlet Edge Description:
Pipe Arch 18" Corner Radius CM: 90° headwall


-------------------------------------------------------------------------------------------
        Name: P02                From Node: N30              Length(ft): 135.00
       Group: BASE                 To Node: N29                   Count: 1
                                                       Friction Equation: Automatic
              UPSTREAM       DOWNSTREAM               Solution Algorithm: Always Outlet
    Geometry: Arch           Arch                                Flow: Both
    Span(in): 73.00          73.00                  Entrance Loss Coef: 0.20
    Rise(in): 45.00          45.00                      Exit Loss Coef: 0.00
  Invert(ft): 1.280          1.100                      Bend Loss Coef: 0.00
 Manning's N: 0.013000       0.013000                 Outlet Ctrl Spec: Use dn or tw
Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dn
Bot Clip(in): 0.000          0.000                   Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
```

Pipe Arch 18" Corner Radius CM: 90° headwall

Downstream FHWA Inlet Edge Description:
Pipe Arch 18" Corner Radius CM: 90° headwall

Name:	P03	From Node:	N29	Length(ft): 90.00
Group:	BASE	To Node:	N28	Count: 1
				Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Always Outlet
Geometry:	Arch	Arch		Flow: Positive
Span(in):	73.00	73.00		Entrance Loss Coef: 0.20
Rise(in):	45.00	45.00		Exit Loss Coef: 0.00
Invert(ft):	1.100	0.990		Bend Loss Coef: 0.00
Manning's N:	0.013000	0.013000		Outlet Ctrl Spec: Use dn or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Pipe Arch 18" Corner Radius CM: 90° headwall

Downstream FHWA Inlet Edge Description:
Pipe Arch 18" Corner Radius CM: 90° headwall

Name:	P04	From Node:	N28	Length(ft): 51.00
Group:	BASE	To Node:	N27	Count: 1
				Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Always Outlet
Geometry:	Arch	Arch		Flow: Positive
Span(in):	73.00	73.00		Entrance Loss Coef: 0.20
Rise(in):	45.00	45.00		Exit Loss Coef: 1.00
Invert(ft):	0.990	0.920		Bend Loss Coef: 0.00
Manning's N:	0.013000	0.013000		Outlet Ctrl Spec: Use dn or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Pipe Arch 18" Corner Radius CM: 90° headwall

Downstream FHWA Inlet Edge Description:
Pipe Arch 18" Corner Radius CM: 90° headwall

Name:	P05	From Node:	N27	Length(ft): 193.00
Group:	BASE	To Node:	N26	Count: 1
				Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Always Outlet
Geometry:	Rectangular	Rectangular		Flow: Positive
Span(in):	96.00	96.00		Entrance Loss Coef: 0.50
Rise(in):	48.00	48.00		Exit Loss Coef: 0.00
Invert(ft):	-0.080	-0.340		Bend Loss Coef: 0.00
Manning's N:	0.013000	0.013000		Outlet Ctrl Spec: Use dn or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P06	From Node:	N26	Length(ft): 62.00
Group:	BASE	To Node:	N25	Count: 1
				Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Always Outlet
Geometry:	Rectangular	Rectangular		Flow: Positive
Span(in):	96.00	96.00		Entrance Loss Coef: 0.00
Rise(in):	48.00	48.00		Exit Loss Coef: 0.00
Invert(ft):	-0.340	-0.420		Bend Loss Coef: 0.00
Manning's N:	0.013000	0.013000		Outlet Ctrl Spec: Use dn or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P07	From Node:	N25	Length(ft): 200.00
Group:	BASE	To Node:	N24	Count: 1
				Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Always Outlet
Geometry:	Rectangular	Rectangular		Flow: Positive
Span(in):	96.00	96.00		Entrance Loss Coef: 0.00
Rise(in):	48.00	48.00		Exit Loss Coef: 0.00
Invert(ft):	-0.420	-0.680		Bend Loss Coef: 0.00
Manning's N:	0.013000	0.013000		Outlet Ctrl Spec: Use dn or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P08	From Node:	N24	Length(ft): 48.00
Group:	BASE	To Node:	N23	Count: 1
				Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Always Outlet
Geometry:	Rectangular	Rectangular		Flow: Positive
Span(in):	96.00	96.00		Entrance Loss Coef: 0.00
Rise(in):	48.00	48.00		Exit Loss Coef: 0.00
Invert(ft):	-0.680	-0.740		Bend Loss Coef: 0.00
Manning's N:	0.013000	0.013000		Outlet Ctrl Spec: Use dn or tw

Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P09	From Node: N23	Length(ft): 223.00
Group:	BASE	To Node: N22	Count: 1
			Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Always Outlet
Geometry:	Rectangular	Rectangular	Flow: Positive
Span(in):	96.00	96.00	Entrance Loss Coef: 0.00
Rise(in):	48.00	48.00	Exit Loss Coef: 0.00
Invert(ft):	-0.740	-1.030	Bend Loss Coef: 0.00
Manning's N:	0.013000	0.013000	Outlet Ctrl Spec: Use dn or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P10	From Node: N22	Length(ft): 26.00
Group:	BASE	To Node: N21	Count: 1
			Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Always Outlet
Geometry:	Rectangular	Rectangular	Flow: Positive
Span(in):	96.00	96.00	Entrance Loss Coef: 0.00
Rise(in):	48.00	48.00	Exit Loss Coef: 0.00
Invert(ft):	-1.030	-1.060	Bend Loss Coef: 0.00
Manning's N:	0.013000	0.013000	Outlet Ctrl Spec: Use dn or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P11	From Node: N21	Length(ft): 180.00
Group:	BASE	To Node: N20	Count: 1
			Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Always Outlet
Geometry:	Rectangular	Rectangular	Flow: Positive
Span(in):	96.00	96.00	Entrance Loss Coef: 0.00

Rise(in):	48.00	48.00	Exit Loss Coef: 0.00
Invert(ft):	-1.060	-1.300	Bend Loss Coef: 0.00
Manning's N:	0.013000	0.013000	Outlet Ctrl Spec: Use dn or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P12	From Node: N20	Length(ft): 93.00
Group:	BASE	To Node: N19	Count: 1
			Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Always Outlet
Geometry:	Rectangular	Rectangular	Flow: Positive
Span(in):	96.00	96.00	Entrance Loss Coef: 0.00
Rise(in):	48.00	48.00	Exit Loss Coef: 0.00
Invert(ft):	-1.300	-1.420	Bend Loss Coef: 0.00
Manning's N:	0.013000	0.013000	Outlet Ctrl Spec: Use dn or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P13	From Node: N19	Length(ft): 173.00
Group:	BASE	To Node: N18	Count: 1
			Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Always Outlet
Geometry:	Rectangular	Rectangular	Flow: Positive
Span(in):	96.00	96.00	Entrance Loss Coef: 0.00
Rise(in):	48.00	48.00	Exit Loss Coef: 0.00
Invert(ft):	-1.420	-1.640	Bend Loss Coef: 0.00
Manning's N:	0.013000	0.013000	Outlet Ctrl Spec: Use dn or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P14	From Node: N18	Length(ft): 40.00
Group:	BASE	To Node: N17	Count: 1
			Friction Equation: Automatic

	UPSTREAM	DOWNSTREAM		
Geometry:	Rectangular	Rectangular	Solution Algorithm:	Always Outlet
Span(in):	96.00	96.00	Flow:	Positive
Rise(in):	48.00	48.00	Entrance Loss Coef:	0.00
Invert(ft):	-1.640	-1.690	Exit Loss Coef:	0.00
Manning's N:	0.013000	0.013000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dn or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P15	From Node: N17	Length(ft): 193.00
Group:	BASE	To Node: N16	Count: 1
			Friction Equation: Automatic

	UPSTREAM	DOWNSTREAM		
Geometry:	Rectangular	Rectangular	Solution Algorithm:	Always Outlet
Span(in):	96.00	96.00	Flow:	Positive
Rise(in):	48.00	48.00	Entrance Loss Coef:	0.00
Invert(ft):	-1.690	-1.940	Exit Loss Coef:	0.00
Manning's N:	0.013000	0.013000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dn or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P16	From Node: N16	Length(ft): 57.00
Group:	BASE	To Node: N15	Count: 1
			Friction Equation: Automatic

	UPSTREAM	DOWNSTREAM		
Geometry:	Rectangular	Rectangular	Solution Algorithm:	Always Outlet
Span(in):	96.00	96.00	Flow:	Positive
Rise(in):	48.00	48.00	Entrance Loss Coef:	0.00
Invert(ft):	-1.940	-2.020	Exit Loss Coef:	0.00
Manning's N:	0.013000	0.013000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dn or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P17	From Node:	N15	Length(ft):	435.00
Group:	BASE	To Node:	N14	Count:	1
				Friction Equation:	Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Always Outlet
Geometry:	Rectangular	Rectangular		Flow:	Positive
Span(in):	96.00	96.00		Entrance Loss Coef:	0.00
Rise(in):	48.00	48.00		Exit Loss Coef:	0.00
Invert(ft):	-2.020	-2.580		Bend Loss Coef:	0.00
Manning's N:	0.013000	0.013000		Outlet Ctrl Spec:	Use dn or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P18	From Node:	N14	Length(ft):	435.00
Group:	BASE	To Node:	N13	Count:	1
				Friction Equation:	Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Always Outlet
Geometry:	Rectangular	Rectangular		Flow:	Positive
Span(in):	96.00	96.00		Entrance Loss Coef:	0.00
Rise(in):	48.00	48.00		Exit Loss Coef:	0.20
Invert(ft):	-2.580	-3.150		Bend Loss Coef:	0.00
Manning's N:	0.013000	0.013000		Outlet Ctrl Spec:	Use dn or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P19	From Node:	N13	Length(ft):	190.00
Group:	BASE	To Node:	N12	Count:	2
				Friction Equation:	Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Always Outlet
Geometry:	Rectangular	Rectangular		Flow:	Positive
Span(in):	60.00	60.00		Entrance Loss Coef:	0.20
Rise(in):	60.00	60.00		Exit Loss Coef:	0.20
Invert(ft):	-3.150	-3.240		Bend Loss Coef:	0.00
Manning's N:	0.013000	0.013000		Outlet Ctrl Spec:	Use dn or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P20	From Node:	N12	Length(ft):	220.00
Group:	BASE	To Node:	N11	Count:	1
				Friction Equation:	Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Always Outlet
Geometry:	Rectangular	Rectangular		Flow:	Positive
Span(in):	120.00	120.00		Entrance Loss Coef:	0.20
Rise(in):	72.00	72.00		Exit Loss Coef:	0.00
Invert(ft):	-4.840	-5.390		Bend Loss Coef:	0.00
Manning's N:	0.013000	0.013000		Outlet Ctrl Spec:	Use dn or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P21	From Node:	N11	Length(ft):	103.00
Group:	BASE	To Node:	N10	Count:	1
				Friction Equation:	Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Always Outlet
Geometry:	Rectangular	Rectangular		Flow:	Positive
Span(in):	120.00	120.00		Entrance Loss Coef:	0.00
Rise(in):	72.00	72.00		Exit Loss Coef:	0.00
Invert(ft):	-5.390	-5.640		Bend Loss Coef:	0.00
Manning's N:	0.013000	0.013000		Outlet Ctrl Spec:	Use dn or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P22	From Node:	N10	Length(ft):	98.00
Group:	BASE	To Node:	N09	Count:	1
				Friction Equation:	Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Always Outlet
Geometry:	Rectangular	Rectangular		Flow:	Positive
Span(in):	120.00	120.00		Entrance Loss Coef:	0.00
Rise(in):	72.00	72.00		Exit Loss Coef:	0.00
Invert(ft):	-5.640	-5.810		Bend Loss Coef:	0.00
Manning's N:	0.013000	0.013000		Outlet Ctrl Spec:	Use dn or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P23	From Node: N09	Length(ft):	149.00
Group:	BASE	To Node: N08	Count:	1
			Friction Equation:	Automatic
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Always Outlet
Geometry:	Rectangular	Rectangular	Flow:	Positive
Span(in):	120.00	120.00	Entrance Loss Coef:	0.00
Rise(in):	72.00	72.00	Exit Loss Coef:	0.00
Invert(ft):	-5.810	-6.070	Bend Loss Coef:	0.00
Manning's N:	0.013000	0.013000	Outlet Ctrl Spec:	Use dn or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P24	From Node: N08	Length(ft):	210.00
Group:	BASE	To Node: N07	Count:	1
			Friction Equation:	Automatic
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Always Outlet
Geometry:	Rectangular	Rectangular	Flow:	Positive
Span(in):	120.00	120.00	Entrance Loss Coef:	0.00
Rise(in):	72.00	72.00	Exit Loss Coef:	0.00
Invert(ft):	-6.070	-6.880	Bend Loss Coef:	0.00
Manning's N:	0.013000	0.013000	Outlet Ctrl Spec:	Use dn or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P25	From Node: N07	Length(ft):	101.00
Group:	BASE	To Node: N06	Count:	1
			Friction Equation:	Automatic
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Always Outlet
Geometry:	Rectangular	Rectangular	Flow:	Positive
Span(in):	120.00	120.00	Entrance Loss Coef:	0.00
Rise(in):	72.00	72.00	Exit Loss Coef:	0.00
Invert(ft):	-6.880	-6.930	Bend Loss Coef:	0.00
Manning's N:	0.013000	0.013000	Outlet Ctrl Spec:	Use dn or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P26	From Node:	N06	Length(ft):	346.00
Group:	BASE	To Node:	N05	Count:	1
				Friction Equation:	Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Always Outlet
Geometry:	Rectangular	Rectangular		Flow:	Positive
Span(in):	120.00	120.00		Entrance Loss Coef:	0.00
Rise(in):	72.00	72.00		Exit Loss Coef:	0.00
Invert(ft):	-6.930	-7.830		Bend Loss Coef:	0.00
Manning's N:	0.013000	0.013000		Outlet Ctrl Spec:	Use dn or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P27	From Node:	N05	Length(ft):	83.00
Group:	BASE	To Node:	N04	Count:	1
				Friction Equation:	Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Always Outlet
Geometry:	Rectangular	Rectangular		Flow:	Positive
Span(in):	120.00	120.00		Entrance Loss Coef:	0.00
Rise(in):	72.00	72.00		Exit Loss Coef:	0.00
Invert(ft):	-7.830	-7.970		Bend Loss Coef:	0.00
Manning's N:	0.013000	0.013000		Outlet Ctrl Spec:	Use dn or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P28	From Node:	N04	Length(ft):	402.00
Group:	BASE	To Node:	N03	Count:	1
				Friction Equation:	Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Always Outlet
Geometry:	Rectangular	Rectangular		Flow:	Positive
Span(in):	120.00	120.00		Entrance Loss Coef:	0.00
Rise(in):	72.00	72.00		Exit Loss Coef:	0.00
Invert(ft):	-7.970	-8.940		Bend Loss Coef:	0.00
Manning's N:	0.013000	0.013000		Outlet Ctrl Spec:	Use dn or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P29	From Node: N03	Length(ft):	55.00
Group:	BASE	To Node: N02	Count:	1
			Friction Equation:	Automatic
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Always Outlet
Geometry:	Rectangular	Rectangular	Flow:	Positive
Span(in):	120.00	120.00	Entrance Loss Coef:	0.20
Rise(in):	72.00	72.00	Exit Loss Coef:	0.00
Invert(ft):	-8.940	-8.990	Bend Loss Coef:	0.00
Manning's N:	0.013000	0.013000	Outlet Ctrl Spec:	Use dn or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	P30	From Node: N02	Length(ft):	170.00
Group:	BASE	To Node: N01	Count:	1
			Friction Equation:	Automatic
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Always Outlet
Geometry:	Rectangular	Rectangular	Flow:	Positive
Span(in):	120.00	120.00	Entrance Loss Coef:	0.00
Rise(in):	72.00	72.00	Exit Loss Coef:	1.00
Invert(ft):	-8.940	-9.160	Bend Loss Coef:	0.00
Manning's N:	0.013000	0.013000	Outlet Ctrl Spec:	Use dn or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

==========
==== Channels ==========
==========

Name:		From Node:	Length(ft):	0.00
Group:	BASE	To Node:	Count:	1
	UPSTREAM	DOWNSTREAM	Friction Equation:	Automatic
Geometry:	Trapezoidal	Trapezoidal	Solution Algorithm:	Automatic

```
    Invert(ft): 0.000          0.000                                Flow: Both
 TClpInitZ(ft): 9999.000       9999.000          Contraction Coef: 0.100
   Manning's N: 0.000000       0.000000            Expansion Coef: 0.300
  Top Clip(ft): 0.000          0.000           Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000               Exit Loss Coef: 0.000
     Main XSec:                                 Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                  Inlet Ctrl Spec: Use dc
     Aux XSec1:                                Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 0.000          0.000
  LtSdSlp(h/v): 0.00           0.00
  RtSdSlp(h/v): 0.00           0.00


================================================================================
==== Rating Curves =============================================================
================================================================================

         Name: PUMP                From Node: N32                    Count: 1
        Group: BASE                  To Node: N31                     Flow: Both

               TABLE           ELEV ON(ft)     ELEV OFF(ft)
           #1: PUMP1           2.000           2.000
           #2: PUMP2           4.000           2.000
           #3: PUMP3           6.000           2.000
           #4:                 0.000           0.000


================================================================================
==== Hydrology Simulations =====================================================
================================================================================

         Name: 100 year
     Filename: C:\Users\lhallner\Desktop\Temp\Palmisano Report\100YEAR24HOUR.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Scsiii
    Rainfall Amount(in): 13.20

Time(hrs)       Print Inc(min)
--------------- ---------------
30.000          5.00

--------------------------------------------------------------------------------
         Name: 25YEAR24HOUR
     Filename: C:\Users\lhallner\Desktop\Temp\Palmisano Report\25YEAR24HOUR .R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Scsiii
    Rainfall Amount(in): 10.50

Time(hrs)       Print Inc(min)
--------------- ---------------
30.000          5.00

================================================================================
==== Routing Simulations =======================================================
================================================================================
```

```
        Name: 100 year            Hydrology Sim: 100 year
    Filename: C:\Users\lhallner\Desktop\Temp\Palmisano Report\DESIGN-100.I32

     Execute: Yes         Restart: No            Patch: No
 Alternative: No

       Max Delta Z(ft): 1.00                    Delta Z Factor: 0.00500
   Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                    End Time(hrs): 20.00
    Min Calc Time(sec): 0.2000               Max Calc Time(sec): 60.0000
       Boundary Stages:                         Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
999.000         15.000

Group           Run
--------------- -----
BASE            Yes
```

```
        Name: 25year-desig        Hydrology Sim: 25YEAR24HOUR
    Filename: C:\Users\lhallner\Desktop\Temp\Palmisano Report\DESIGN25.I32

     Execute: No          Restart: No            Patch: No
 Alternative: No

       Max Delta Z(ft): 0.50                    Delta Z Factor: 0.00500
   Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                    End Time(hrs): 20.00
    Min Calc Time(sec): 0.0500               Max Calc Time(sec): 60.0000
       Boundary Stages:                         Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
999.000         15.000

Group           Run
--------------- -----
BASE            Yes
```

Appendix G.2

Hydrology

```
           Basin Name: B01
           Group Name: BASE
           Simulation: 100 year
            Node Name: N31
           Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh256
        Peaking Fator: 256.0
  Spec Time Inc (min): 6.79
  Comp Time Inc (min): 5.00
         Rainfall File: Scsiii
Rainfall Amount (in): 13.200
Storm Duration (hrs): 24.00
               Status: Onsite
   Time of Conc (min): 50.90
     Time Shift (hrs): 0.00
            Area (ac): 3.500
Vol of Unit Hyd (in): 1.000
        Curve Number: 85.000
            DCIA (%): 0.000

       Time Max (hrs): 12.67
       Flow Max (cfs): 11.93
   Runoff Volume (in): 11.280
  Runoff Volume (ft3): 143316
```

```
           Basin Name: B02
           Group Name: BASE
           Simulation: 100 year
            Node Name: N30
           Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh256
        Peaking Fator: 256.0
  Spec Time Inc (min): 3.40
  Comp Time Inc (min): 3.40
         Rainfall File: Scsiii
Rainfall Amount (in): 13.200
Storm Duration (hrs): 24.00
               Status: Onsite
   Time of Conc (min): 25.50
     Time Shift (hrs): 0.00
            Area (ac): 2.760
Vol of Unit Hyd (in): 1.000
        Curve Number: 88.000
            DCIA (%): 0.000

       Time Max (hrs): 12.35
       Flow Max (cfs): 14.48
   Runoff Volume (in): 11.687
  Runoff Volume (ft3): 117085
```

```
           Basin Name: B03
           Group Name: BASE
           Simulation: 100 year
            Node Name: N28
           Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh256
        Peaking Fator: 256.0
```

```
    Spec Time Inc (min): 4.51
    Comp Time Inc (min): 4.51
          Rainfall File: Scs111
  Rainfall Amount (in): 13.200
  Storm Duration (hrs): 24.00
                Status: Onsite
    Time of Conc (min): 33.80
      Time Shift (hrs): 0.00
              Area (ac): 5.570
  Vol of Unit Hyd (in): 1.000
           Curve Number: 88.000
              DCIA (%): 0.000

        Time Max (hrs): 12.47
        Flow Max (cfs): 25.13
    Runoff Volume (in): 11.686
   Runoff Volume (ft3): 236271


--------------------------------------------------------------------------------

             Basin Name: B04
             Group Name: BASE
             Simulation: 100 year
              Node Name: N26
             Basin Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh256
         Peaking Fator: 256.0
    Spec Time Inc (min): 4.59
    Comp Time Inc (min): 4.59
          Rainfall File: Scs111
  Rainfall Amount (in): 13.200
  Storm Duration (hrs): 24.00
                Status: Onsite
    Time of Conc (min): 34.40
      Time Shift (hrs): 0.00
              Area (ac): 5.680
  Vol of Unit Hyd (in): 1.000
           Curve Number: 88.000
              DCIA (%): 0.000

        Time Max (hrs): 12.46
        Flow Max (cfs): 25.39
    Runoff Volume (in): 11.682
   Runoff Volume (ft3): 240862


--------------------------------------------------------------------------------

             Basin Name: B05
             Group Name: BASE
             Simulation: 100 year
              Node Name: N24
             Basin Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh256
         Peaking Fator: 256.0
    Spec Time Inc (min): 3.85
    Comp Time Inc (min): 3.85
          Rainfall File: Scs111
  Rainfall Amount (in): 13.200
  Storm Duration (hrs): 24.00
                Status: Onsite
    Time of Conc (min): 28.90
      Time Shift (hrs): 0.00
```

```
            Node Name: N14
           Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh256
        Peaking Fator: 256.0
  Spec Time Inc (min): 4.51
  Comp Time Inc (min): 4.51
        Rainfall File: Scsiii
Rainfall Amount (in): 13.200
Storm Duration (hrs): 24.00
              Status: Onsite
  Time of Conc (min): 33.80
    Time Shift (hrs): 0.00
           Area (ac): 10.810
Vol of Unit Hyd (in): 1.000
        Curve Number: 00.000
            DCIA (%): 0.000

      Time Max (hrs): 12.47
      Flow Max (cfs): 48.78
  Runoff Volume (in): 11.686
 Runoff Volume (ft3): 458543

--------------------------------------------------------------------------------

            Basin Name: B11
            Group Name: BASE
            Simulation: 100 year
             Node Name: N13
           Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh256
        Peaking Fator: 256.0
  Spec Time Inc (min): 3.21
  Comp Time Inc (min): 3.21
        Rainfall File: Scsiii
Rainfall Amount (in): 13.200
Storm Duration (hrs): 24.00
              Status: Onsite
  Time of Conc (min): 24.10
    Time Shift (hrs): 0.00
           Area (ac): 11.720
Vol of Unit Hyd (in): 1.000
        Curve Number: 91.000
            DCIA (%): 0.000

      Time Max (hrs): 12.37
      Flow Max (cfs): 64.23
  Runoff Volume (in): 12.078
 Runoff Volume (ft3): 513853

--------------------------------------------------------------------------------

            Basin Name: B12
            Group Name: BASE
            Simulation: 100 year
             Node Name: N12
           Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh256
        Peaking Fator: 256.0
  Spec Time Inc (min): 2.73
  Comp Time Inc (min): 2.73
        Rainfall File: Scsiii
```

```
    Runoff Volume (ft3): 201419

----------------------------------------------------------------------------

            Basin Name: B08
            Group Name: BASE
            Simulation: 100 year
             Node Name: N18
            Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh256
        Peaking Fator: 256.0
  Spec Time Inc (min): 3.89
  Comp Time Inc (min): 3.89
        Rainfall File: Scsiii
Rainfall Amount (in): 13.200
Storm Duration (hrs): 24.00
              Status: Onsite
   Time of Conc (min): 29.20
     Time Shift (hrs): 0.00
            Area (ac): 5.670
Vol of Unit Hyd (in): 1.000
       Curve Number: 85.000
           DCIA (%): 0.000

      Time Max (hrs): 12.39
      Flow Max (cfs): 27.08
   Runoff Volume (in): 11.286
  Runoff Volume (ft3): 232282

----------------------------------------------------------------------------

            Basin Name: B09
            Group Name: BASE
            Simulation: 100 year
             Node Name: N16
            Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh256
        Peaking Fator: 256.0
  Spec Time Inc (min): 3.73
  Comp Time Inc (min): 3.73
        Rainfall File: Scsiii
Rainfall Amount (in): 13.200
Storm Duration (hrs): 24.00
              Status: Onsite
   Time of Conc (min): 28.00
     Time Shift (hrs): 0.00
            Area (ac): 5.510
Vol of Unit Hyd (in): 1.000
       Curve Number: 85.000
           DCIA (%): 0.000

      Time Max (hrs): 12.38
      Flow Max (cfs): 26.95
   Runoff Volume (in): 11.287
  Runoff Volume (ft3): 225752

----------------------------------------------------------------------------

            Basin Name: B10
            Group Name: BASE
            Simulation: 100 year
```

```
            Node Name: N14
           Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh256
        Peaking Fator: 256.0
  Spec Time Inc (min): 4.51
  Comp Time Inc (min): 4.51
        Rainfall File: Scs1ii
Rainfall Amount (in): 13.200
Storm Duration (hrs): 24.00
              Status: Onsite
  Time of Conc (min): 33.80
    Time Shift (hrs): 0.00
           Area (ac): 10.810
Vol of Unit Hyd (in): 1.000
        Curve Number: 88.000
           DCIA (%): 0.000

      Time Max (hrs): 12.47
      Flow Max (cfs): 48.78
  Runoff Volume (in): 11.686
 Runoff Volume (ft3): 458543

================================================================================

           Basin Name: B11
           Group Name: BASE
           Simulation: 100 year
            Node Name: N13
           Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh256
        Peaking Fator: 256.0
  Spec Time Inc (min): 3.21
  Comp Time Inc (min): 3.21
        Rainfall File: Scs1ii
Rainfall Amount (in): 13.200
Storm Duration (hrs): 24.00
              Status: Onsite
  Time of Conc (min): 24.10
    Time Shift (hrs): 0.00
           Area (ac): 11.720
Vol of Unit Hyd (in): 1.000
        Curve Number: 91.000
           DCIA (%): 0.000

      Time Max (hrs): 12.37
      Flow Max (cfs): 64.23
  Runoff Volume (in): 12.078
 Runoff Volume (ft3): 513853

================================================================================

           Basin Name: B12
           Group Name: BASE
           Simulation: 100 year
            Node Name: N12
           Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh256
        Peaking Fator: 256.0
  Spec Time Inc (min): 2.73
  Comp Time Inc (min): 2.73
        Rainfall File: Scs1ii
```

```
   Rainfall Amount (in): 13.200
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 20.50
       Time Shift (hrs): 0.00
              Area (ac): 3.950
  Vol of Unit Hyd (in): 1.000
          Curve Number: 95.000
              DCIA (%): 0.000

        Time Max (hrs): 12.35
       Flow Max (cfs): 23.76
    Runoff Volume (in): 12.580
   Runoff Volume (ft3): 180384


------------------------------------------------------------------------------

            Basin Name: B13
            Group Name: BASE
            Simulation: 100 year
             Node Name: N11
            Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh256
        Peaking Fator: 256.0
   Spec Time Inc (min): 2.73
   Comp Time Inc (min): 2.73
         Rainfall File: Scsiii
   Rainfall Amount (in): 13.200
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 20.50
       Time Shift (hrs): 0.00
              Area (ac): 4.010
  Vol of Unit Hyd (in): 1.000
          Curve Number: 91.000
              DCIA (%): 0.000

        Time Max (hrs): 12.35
       Flow Max (cfs): 23.78
    Runoff Volume (in): 12.075
   Runoff Volume (ft3): 175766


------------------------------------------------------------------------------

            Basin Name: B14
            Group Name: BASE
            Simulation: 100 year
             Node Name: N10
            Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh256
        Peaking Fator: 256.0
   Spec Time Inc (min): 2.73
   Comp Time Inc (min): 2.73
         Rainfall File: Scsiii
   Rainfall Amount (in): 13.200
   Storm Duration (hrs): 24.00
                 Status: Onsite
     Time of Conc (min): 20.50
       Time Shift (hrs): 0.00
              Area (ac): 3.090
  Vol of Unit Hyd (in): 1.000
          Curve Number: 91.000
```

```
              DCIA (%): 0.000

         Time Max (hrs): 12.35
         Flow Max (cfs): 18.33
    Runoff Volume (in): 12.075
  Runoff Volume (ft3): 135441

------------------------------------------------------------------------------

            Basin Name: B15
            Group Name: BASE
            Simulation: 100 year
             Node Name: N08
            Basin Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh256
          Peaking Fator: 256.0
  Spec Time Inc (min): 2.56
  Comp Time Inc (min): 2.56
          Rainfall File: Scsiii
 Rainfall Amount (in): 13.200
 Storm Duration (hrs): 24.00
                Status: Onsite
    Time of Conc (min): 19.20
      Time Shift (hrs): 0.00
             Area (ac): 6.010
 Vol of Unit Hyd (in): 1.000
          Curve Number: 92.000
              DCIA (%): 0.000

         Time Max (hrs): 12.33
         Flow Max (cfs): 36.97
    Runoff Volume (in): 12.204
  Runoff Volume (ft3): 266257

------------------------------------------------------------------------------

            Basin Name: B16
            Group Name: BASE
            Simulation: 100 year
             Node Name: N07
            Basin Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh256
          Peaking Fator: 256.0
  Spec Time Inc (min): 2.20
  Comp Time Inc (min): 2.20
          Rainfall File: Scsiii
 Rainfall Amount (in): 13.200
 Storm Duration (hrs): 24.00
                Status: Onsite
    Time of Conc (min): 16.50
      Time Shift (hrs): 0.00
             Area (ac): 3.440
 Vol of Unit Hyd (in): 1.000
          Curve Number: 88.000
              DCIA (%): 0.000

         Time Max (hrs): 12.32
         Flow Max (cfs): 22.12
    Runoff Volume (in): 11.688
  Runoff Volume (ft3): 145946
```

```
------------------------------------------------------------------------------

           Basin Name: B17
           Group Name: BASE
           Simulation: 100 year
            Node Name: N05
           Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh256
        Peaking Fator: 256.0
  Spec Time Inc (min): 3.15
  Comp Time Inc (min): 3.15
        Rainfall File: Scs1ii
 Rainfall Amount (in): 13.200
 Storm Duration (hrs): 24.00
               Status: Onsite
   Time of Conc (min): 23.60
     Time Shift (hrs): 0.00
            Area (ac): 6.510
 Vol of Unit Hyd (in): 1.000
        Curve Number: 88.000
            DCIA (%): 0.000

      Time Max (hrs): 12.38
      Flow Max (cfs): 35.45
  Runoff Volume (in): 11.686
 Runoff Volume (ft3): 276161

------------------------------------------------------------------------------

           Basin Name: B18
           Group Name: BASE
           Simulation: 100 year
            Node Name: N03
           Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh256
        Peaking Fator: 256.0
  Spec Time Inc (min): 2.24
  Comp Time Inc (min): 2.24
        Rainfall File: Scs1ii
 Rainfall Amount (in): 13.200
 Storm Duration (hrs): 24.00
               Status: Onsite
   Time of Conc (min): 16.80
     Time Shift (hrs): 0.00
            Area (ac): 8.330
 Vol of Unit Hyd (in): 1.000
        Curve Number: 88.000
            DCIA (%): 0.000

      Time Max (hrs): 12.32
      Flow Max (cfs): 53.23
  Runoff Volume (in): 11.686
 Runoff Volume (ft3): 353370

------------------------------------------------------------------------------

           Basin Name: P1
           Group Name: BASE
           Simulation: 100 year
            Node Name: N32
           Basin Type: SCS Unit Hydrograph
```

```
      Unit Hydrograph: Uh256
        Peaking Fator: 256.0
  Spec Time Inc (min): 4.88
  Comp Time Inc (min): 4.88
         Rainfall File: Scsiii
Rainfall Amount (in): 13.200
Storm Duration (hrs): 24.00
               Status: Onsite
  Time of Conc (min): 36.60
    Time Shift (hrs): 0.00
            Area (ac): 21.000
Vol of Unit Hyd (in): 1.000
        Curve Number: 85.000
            DCIA (%): 0.000

      Time Max (hrs): 12.44
      Flow Max (cfs): 87.81
  Runoff Volume (in): 11.291
 Runoff Volume (ft3): 860710
```

Appendix G.3

Hydraulics

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
N01	BASE	100 year	13.00	1.50	2.50	0.0012	43	12.43	259.00	0.00	0.00
N02	BASE	100 year	13.03	1.84	2.00	-0.0513	19553	12.42	261.02	12.43	259.00
N03	BASE	100 year	13.04	2.18	2.00	0.0201	14708	12.42	263.04	12.42	261.02
N04	BASE	100 year	13.08	2.58	3.00	-0.0472	8463	11.24	255.44	13.58	228.89
N05	BASE	100 year	13.14	2.83	3.00	0.0297	8378	13.55	228.14	11.24	255.44
N06	BASE	100 year	13.28	3.17	3.00	0.0735	79523	13.65	214.49	13.85	218.60
N07	BASE	100 year	13.31	3.40	3.30	0.0432	98824	11.48	377.60	13.65	214.49
N08	BASE	100 year	13.31	3.67	3.60	-0.0530	81081	12.33	218.35	11.48	374.02
N09	BASE	100 year	13.31	3.89	3.80	-0.0783	61654	11.48	234.19	13.00	196.76
N10	BASE	100 year	13.27	4.09	4.10	-0.0679	31070	11.75	434.76	11.48	234.19
N11	BASE	100 year	13.24	4.29	4.20	-0.0381	67277	12.42	208.32	11.75	430.52
N12	BASE	100 year	13.18	4.53	4.50	0.0160	60490	12.16	203.08	12.66	188.28
N13	BASE	100 year	13.07	4.89	5.20	0.0051	130876	12.42	216.45	12.15	183.04
N14	BASE	100 year	12.88	5.70	5.20	-0.1300	13802	12.42	158.96	12.51	154.83
N15	BASE	100 year	12.97	6.18	6.20	-0.0127	35878	15.59	132.94	14.57	121.28
N16	BASE	100 year	12.97	6.42	6.40	-0.0153	6218	12.32	122.01	15.59	132.94
N17	BASE	100 year	13.06	6.66	6.70	-0.0428	5103	15.51	151.74	14.70	114.63
N18	BASE	100 year	13.13	6.83	6.80	-0.0188	18754	14.84	113.80	15.51	151.74
N19	BASE	100 year	13.27	7.02	7.00	0.0175	34845	14.99	107.95	14.84	109.79
N20	BASE	100 year	13.36	7.18	7.10	0.0149	93852	15.07	105.12	14.99	107.95
N21	BASE	100 year	13.41	7.33	7.30	-0.0533	46122	15.42	197.01	15.07	102.00
N22	BASE	100 year	13.41	7.44	7.40	-0.0216	121125	12.43	107.26	15.42	197.01
N23	BASE	100 year	13.34	7.56	7.60	0.0252	11712	15.38	135.77	15.16	84.78
N24	BASE	100 year	13.29	7.64	7.70	0.0126	10836	12.53	82.51	15.38	135.77
N25	BASE	100 year	13.27	7.72	7.80	0.0200	2802	15.35	128.24	15.19	75.69
N26	BASE	100 year	13.29	7.78	7.80	0.0103	2183	15.21	75.25	15.35	128.24
N27	BASE	100 year	13.30	7.84	7.90	0.0087	3686	15.22	71.20	15.22	71.34
N28	BASE	100 year	13.37	7.96	8.00	-0.0065	54059	15.22	71.00	15.22	71.20
N29	BASE	100 year	13.45	8.03	8.10	-0.0094	5098	15.23	67.13	15.23	67.30
N30	BASE	100 year	13.53	8.12	8.20	-0.0218	31818	15.24	62.62	15.23	67.13
N31	BASE	100 year	13.61	8.20	8.00	-0.0520	79217	12.67	32.03	15.24	61.09
N32	BASE	100 year	14.81	8.10	8.10	0.0020	555203	12.50	87.58	11.99	20.10

LINKS

Name	Group	Simulation	Max Time Flow hrs	Max Flow cfs	Max Delta Q cfs	Max Time US Stage hrs	Max US Stage ft	Max Time DS Stage hrs	Max DS Stage ft
P01	BASE	100 year	15.24	61.09	23.638	13.61	8.20	13.53	8.12
P02	BASE	100 year	15.23	67.13	22.262	13.53	8.12	13.45	8.03
P03	BASE	100 year	15.23	67.30	18.654	13.45	8.03	13.37	7.96
P04	BASE	100 year	15.22	71.20	12.758	13.37	7.96	13.30	7.84
P05	BASE	100 year	15.22	71.34	-26.009	13.30	7.84	13.29	7.78
P06	BASE	100 year	15.35	128.24	-114.512	13.29	7.78	13.27	7.72
P07	BASE	100 year	15.19	75.69	50.712	13.27	7.72	13.29	7.64
P08	BASE	100 year	15.38	135.77	-114.132	13.29	7.64	13.34	7.56
P09	BASE	100 year	15.16	84.78	63.417	13.34	7.56	13.41	7.44
P10	BASE	100 year	15.42	197.01	-197.011	13.41	7.44	13.41	7.33
P11	BASE	100 year	15.07	102.00	-66.601	13.41	7.33	13.36	7.18
P12	BASE	100 year	14.99	107.95	-91.832	13.36	7.18	13.27	7.02
P13	BASE	100 year	14.84	109.79	-48.095	13.27	7.02	13.13	6.83
P14	BASE	100 year	15.51	151.74	124.905	13.13	6.83	13.06	6.66
P15	BASE	100 year	14.70	114.63	-35.362	13.06	6.66	12.97	6.42
P16	BASE	100 year	15.59	132.94	-80.534	12.97	6.42	12.97	6.18
P17	BASE	100 year	14.57	121.28	23.929	12.97	6.18	12.88	5.70
P18	BASE	100 year	12.51	154.83	14.630	12.88	5.70	13.07	4.89
P19	BASE	100 year	12.15	183.04	14.050	13.07	4.89	13.18	4.53
P20	BASE	100 year	12.66	188.28	132.912	13.18	4.53	13.24	4.29
P21	BASE	100 year	11.75	430.52	430.518	13.24	4.29	13.27	4.09
P22	BASE	100 year	11.48	234.19	215.145	13.27	4.09	13.31	3.89
P23	BASE	100 year	13.00	196.76	172.418	13.31	3.89	13.31	3.67
P24	BASE	100 year	11.48	374.02	312.970	13.31	3.67	13.31	3.40
P25	BASE	100 year	13.65	214.49	139.304	13.31	3.40	13.28	3.17
P26	BASE	100 year	13.85	218.60	-79.723	13.28	3.17	13.14	2.83
P27	BASE	100 year	11.24	255.44	234.847	13.14	2.83	13.08	2.58
P28	BASE	100 year	13.58	228.89	-96.044	13.08	2.58	13.04	2.18
P29	BASE	100 year	12.42	261.02	124.411	13.04	2.18	13.03	1.84
P30	BASE	100 year	12.43	259.00	-79.803	13.03	1.84	13.00	1.50
PUMP	BASE	100 year	11.99	20.10	6.700	14.81	8.10	13.61	8.20

Appendix E
Public Notice/ 8-Step/ FONSI

ST. BERNARD PARISH GOVERNMENT
CONSTRUCTION OF DRAINAGE IMPROVEMENTS ON PALMISANO BOULEVARD
FLOODPLAINS and WETLANDS NOTICE
EARLY PUBLIC REVIEW NOTICE

The St. Bernard Parish Government (SBPG) has applied to the Federal Emergency Management Agency (FEMA) for Hazard Mitigation Grant Program (HMGP) funding under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA's Hazard Mitigation Grant Program provides grants to states and local governments to implement long-term hazard mitigation measures that reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. SBPG intends to carry out actions which may affect or be affected by the 500-year and 100-year floodplain and seeks to involve the public in the decision making process.

FEMA proposes to provide funding to St. Bernard Parish for the design and construction of drainage improvements on Palmisano Blvd, (from St. Bernard Hwy.. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Bl vd. drainage system to relieve the recurrent ponding during rainfall events. This drainage system consists of approximately 100 plus acres of land that drains over ground surface through storm drain pipe and directed via pump to an earthen ditch. The earthen ditch ru ns along St. Bernard Hwy.. to Palmisano Boulevard, then from St. Bernard Highway paralleling Palmisano Blvd. running approximately 4,860 feet to the Twenty Arpent Canal. The earthen ditch floods frequently during heavy rainfall events due to inadequate capacity and undersized culvert/pipe crossing under roadways and residential driveways.

The proposed scope of work includes the following:

Plaza Drive Lift Station Pump: This segment of the project will consist of an upgrade to the existing pumping station within the Plaza Drive Basin and upgrading their discharge capacity by improving the open canal along the south side of St. Bernard Hwy.. to Palmisano Blvd. and flushing and cleaning the existing sub-surface drainage within the basin. The proposed pump station is 3"-10" Fairbanks Morse or equivalent vertical propeller pumps.

Palmisano Canal - East St. Bernard Hwy. (LA46) to Twenty Arpent Canal: The design objectives were to contain the flow within the channel for a 25-year storm event and to reduce the risk. To improve the channel capacity and to reduce the risk, the proposed design uses reinforce concrete box culverts. Using the box culverts and constructing a swale ditch on top of the box to collect sheet flow. The proposed design is to construct an 8-foot x 4-foot box culvert from Camille Place to East Judge Perez Drive, then design and construct a 10-foot x 6-foot box culvert from the Judge Perez Drive to the 20 Arpent Canal.

Palmisano at 20 Arpent Canal Crossing: Design and construct a bridge crossing approximately 70' x 100' concrete span, pile supported and paved channel/aggregate. Location of each of the proposed improvements are as follows:

Site	City	State	Latitude	Longitude
Plaza Pump	Chalmette	LA	29.93363	-89.96016
Palmisano Canal	Chalmette	LA	29.93143	-89.95604
Palmisano 20 Arpent Bridge	Chalmette	LA	29.94325	-89.94995

In accordance with Executive Order 11988, the SBPG has determined that the project lies within the 500-year and 100-year floodplain. Also, in accordance with Executive Order 11990, the SBPG has determined that the project is not likely to impact wetlands following a review of the U. S. Army Corps of Engineers of the area.

A full description of the proposed action may be reviewed at the SBPG Office located at the St. Bernard Parish Courthouse, 8201 West Judge Perez Boulevard, Chalmette, Louisiana 70043 on weekdays between 8:30 am and 4:00 pm. The can be reached by telecommunications for the deaf through the Louisiana Relay Service at 1-800-367-8939 (TDD). Special accommodations should be requested 3 days prior to the meeting by calling 504-278-4200. Written comments will be received until September 8, 2014 and should be mailed to the following address: St. Bernard Parish Government, 8201 West Judge Perez Boulevard, Chalmette, Louisiana 70043.

Date of publication: August 22, 2014

ST. BERNARD PARISH GOVERNMENT
CONSTRUCTION OF DRAINAGE IMPROVEMENTS
ON PALMISANO BOULEVARD
FLOODPLAIN & WETLANDS EXPLANATION NOTICE

The St. Bernard Parish Government (SBPG) has applied to the Federal Emergency Management Agency (FEMA) for Hazard Mitigation Grant Program (HMGP) funding under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA's Hazard Mitigation Grant Program provides grants to states and local governments to implement long-term hazard mitigation measures that reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. SBPG intends to carry out actions which may affect or be affected by the 500-year and 100-year floodplain and seeks to involve the public in the decision making process.

FEMA proposes to provide funding to St. Bernard Parish for the design and construction of drainage improvements on Palmisano Blvd, (from St. Bernard Hwy.. to the outfall on the Twenty Arpent Canal) in Chalmette, LA., and to improve the lift pump capacity of a badly drained area on Plaza Drive and upgrade its outfall into the Palmisano Bl vd. drainage system to relieve the recurrent ponding during rainfall events. This drainage system consists of approximately 100 plus acres of land that drains over ground surface through storm drain pipe and directed via pump to an earthen ditch. The earthen ditch ru ns along St. Bernard Hwy.. to Palmisano Boulevard, then from St. Bernard Highway paralleling Palmisano Blvd. running approximately 4,860 feet to the Twenty Arpent Canal. The earthen ditch floods frequently during heavy rainfall events due to inadequate capacity and undersized culvert/pipe crossing under roadways and residential driveways.

The proposed scope of work includes the following:

Plaza Drive Lift Station Pump: This segment of the project will consist of an upgrade to the existing pumping station within the Plaza Drive Basin and upgrading their discharge capacity by improving the open canal along the south side of St. Bernard Hwy.. to Palmisano Blvd. and flushing and cleaning the existing sub-surface drainage within the basin. The proposed pump station is 3"-10" Fairbanks Morse or equivalent vertical propeller pumps.

Palmisano Canal - East St. Bernard Hwy. (LA46) to Twenty Arpent Canal: The design objectives were to contain the flow within the channel for a 25-year storm event and to reduce the risk. To improve the channel capacity and to reduce the risk, the proposed design uses reinforce concrete box culverts. Using the box culverts and constructing a swale ditch on top of the box to collect sheet flow. The proposed design is to construct an 8-foot x 4-foot box culvert from Camille Place to East Judge Perez Drive, then design and construct a 10-foot x 6-foot box culvert from the Judge Perez Drive to the 20 Arpent Canal.

Palmisano at 20 Arpent Canal Crossing: Design and construct a bridge crossing approximately 70' x 100' concrete span, pile supported and paved channel/aggregate. Location of each of the proposed improvements are as follows:

Site	City	State	Latitude	Longitude
Plaza Pump	Chalmette	LA	29.93363	-89.96016
Palmisano Canal	Chalmette	LA	29.93143	-89.95604
Palmisano 20 Arpent Bridge	Chalmette	LA	29.94325	-89.94995

In accordance with Executive Order 11988, the SBPG has determined approximately 0.5 acres of the improvements are within the 100-year floodplain. In accordance with Executive Order 11990, the Corps of Engineers stated on January 2, 2014 that the project is not in a wetland subject to Corps' jurisdiction. However, if the proposed project involves deposit of dredged or fill material in the waters of the U.S. identified by the Corps, a Section 404 permit of the Clean Water Act will be required.

Practical alternatives to locating the proposed action in a floodplain and wetland were identified and evaluated. For each of the following alternatives, various factors were considered including feasibility, technology, hazard reduction and related mitigation costs, and environmental impacts.

Alternative 1 – The proposed construction of drainage improvements sites are that of an existing drainage control structures within St. Bernard Parish Government (SBPG) Palmisano Boulevard, Plaza Drive, and 20 Arpent Bridge. As such, the use of these particular locations are critical to the flood protection of St. Bernard Parish. The alternative of relocating the project outside of the floodplain and wetlands would fail to meet the needs of St. Bernard Parish and thus was rejected.

Alternative 2 – The SBPG considered a "No Action" alternative. The rationale for performing the proposed actions is to provide adequate drainage structures to carry out essential drainage activities to allow for the critical operations of the Palmisano Boulevard, Plaza Drive, and 20 Arpent Bridge drainage system during storm events to alleviate the issue of ancillary flooding in St. Bernard Parish. Taking no action would fail to meet the project objective of preventing further ancillary flooding in the target area. Failure to take the proposed actions would allow for continued ancillary flooding issues, creating hazardous conditions, posing a public health hazard to the surrounding area, and further devaluing the affected residential/commercial properties. For these reasons, the "No Action" alternative was rejected.

In accordance with Executive Order 11988, the SBPG has documented that there are no practicable alternatives to locating the proposed project in the 500-year and 100-year floodplain. Also, in accordance with Executive Order 11990, the SBPG has determined that the project is not likely to impact wetlands following a review of the U. S. Army Corps of Engineers of the area. Mitigation measures to be taken to minimize adverse impacts and to restore and preserve natural and beneficial values to the floodplain include the rehabilitation of existing infrastructure

with only minimal disturbance of the floodplain in the immediate area. Construction activities will occur within existing Palmisano Boulevard, Plaza Drive, and 20 Arpent Bridge sites.
A full description of the proposed action may be reviewed at the SBPG Office located at the St. Bernard Parish Courthouse, 8201 West Judge Perez Boulevard, Chalmette, Louisiana 70043 on weekdays between 8:30 am and 4:00 pm. The SBPG can be reached by telecommunications for the deaf through the Louisiana Relay Service at 1-800-367-8939 (TDD). Special accommodations should be requested 3 days prior to the meeting by calling 504-278-4200. Written comments will be received until October 10, 2014 and should be mailed to the following address: St. Bernard Parish Government, 8201 West Judge Perez Boulevard, Chalmette, Louisiana 70043.

Publish one time on October 3, 2014.

PUBLIC NOTICE
FEMA NOTICE OF AVAILABILITY
DRAFT ENVIRONMENTAL ASSESSMENT
DRAFT FINDING OF NO SIGNIFICANT IMPACT
ST. BERNARD PARISH GOVERNMENT MIGATION PROPOSAL FOR THE CONSTRUCTION OF DRAINAGE IMPROVEMENTS ON PALMISANO BOULEVARD, PLAZA DRIVE, AND 20 ARPENT BRIDGE
ST. BERNARD 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 is to assess the impacts of upgrades to the Palmisano Boulevard Drainage System on human health and the natural environment for the construction of drainage improvements on Palmisano Boulevard, Plaza Drive, and Arpent Bridge in St. Bernard Parish, Louisiana, a proposed action for which FEMA is considering providing funding assistance.

The Palmisano Boulevard Drainage System owned by the St. Bernard Parish Government, serves an area of approximately 100 plus acres and is bounded by Lyndell Drive, Mississippi River Levee, Volpe Drive, and Twenty Arpent Canal (near Missouri Street) in Chalmette, Louisiana. The St. Bernard Parish Government office address is 8201 West Judge Perez Drive Chalmette, LA 70043. The Palmisano Boulevard Drainage System regularly becomes over flooded during heavy storm events. The current drainage system consists of earthen ditches, underground pipes and culverts. These underground pipes and culverts are undersized that restrict the capacity of waterflow.

The purpose of the draft EA is to analyze the potential human health and environmental impacts associated with the preferred action and alternatives of upgrades to the Palmisano Drainage System and the Arpent Bridge. The draft EA evaluates a No Action Alternative; the Preferred Action Alternative, which is to upgrade Plaza Drive pump station by replacing the existing pump station with a new pump station, install 8 ft x 4 ft box culverts from Camille Place to East Judge Perez Drive and replace 10 ft x 6 ft box culverts on Palmasino Boulevard from Judge Perez Drive to 20 Arpent Canal and remove existing culverts at 20 Arpent Canal to construct a 70 ft x 100 ft concrete bridge at 20 Arpent.

The draft FONSI is FEMA's finding that the preferred action will not have a significant effect on the human and natural environment.

The draft EA and draft FONSI are available for review at the St. Bernard Library located at 2600 Palmisano Blvd, Chalmette, LA 70043 Monday – Thursday 9 am – 7pm, Friday - Saturday 9 a.m – 5p.m., closed Sundays and Holidays. This public notice will run in the local newspaper in the The Advocate New Orleans Edition on Monday June 8th, 2015, Tuesday June 9th, 2015, and Wednesday June 10th, 2015. It will also run in the The St. Bernard Voice, Friday June 12th, 2015. The documents can also be downloaded from FEMA's website at http://www.fema.gov/resource-document-library. There will be a ten (10) day comment period, beginning on June 8th, 2015 and concluding on June 19th, 2015 at 4 p.m. Comments may be mailed to: DEPARTMENT OF HOMELAND SECURITY-FEMA EHP, Palmisano 1500 MAIN STREET, BATON ROUGE, LOUISIANA 70802. Comments may be emailed to: FEMA-

NOMA@dhs.gov or faxed to 225-346-5848. Verbal comments will be accepted or recorded at 504-427-8000. If no substantive comments are received, the draft EA and associated FONSI will become final.

St. Bernard Parish Government
Construction of Drainage Improvement on
Palmisano Boulevard, Plaza Drive, and 20 Arpent Bridge
Executive Order 11988 – Floodplain Management
Eight-Step Decision Making Process

In compliance with FEMA regulations implementing Executive Order 11988, Floodplain Management, FEMA is required to carry out the Eight-step decision-making process for actions that are proposed in the floodplain per 44 CFR §9.6. Executive Order 11988 requires federal agencies "to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of the floodplain and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative."

This eight-step process is applied to the proposed St. Bernard Parish Government Construction of Drainage Improvements on Palmisano Boulevard, Plaza Drive, and 20 Arpent Bridge. Portions of the drainage improvements areas are within the 100-year floodplain of Mississippi River and 500-year floodplain of Chalmette, St. Bernard Parish, Louisiana. The steps in the decision making process are as follows:

***Step 1* Determine if the proposed action is located in the Base Floodplain.**
The proposed project involves the St. Bernard Parish Government (SBPG) Construction of Drainage Improvements on Palmisano Boulevard, Plaza Drive, and 20 Arpent Bridge. The proposed construction of the drainage improvements will be located in the X Zone 500- year floodplain (500-year floodplain or 0.2% percent annual change of flood hazard) and the proposed construction of the drainage improvements will be located in the AE Zone (100-year floodplain or 1% chance of flooding in any year) associated with the Mississippi River as depicted on the: Preliminary Digital Flood Insurance Rate Map Panel Number 22087C0487D dated November 9, 2012. Federal guidelines promulgated in 44 CFR 9.4 define activities and facilities that even a slight chance of flooding poses too great a threat as a Critical Action. As a result, these actions are given special consideration when formulating regulatory alternatives and floodplain management plans. The proposed construction of the drainage improvements would be classified as a "critical action" because it will be an integral component of the existing drainage system on Palmisano Boulevard, Plaza Drive, and 20 Arpent Bridge that provides the critical drainage operations for controlling ancillary flooding to the residences of St. Bernard Parish.

Step 2 Early public notice (Preliminary Notice)
The Initial Public Notice concerning FEMA actions located in or that may affect wetland areas or the 100-year floodplain, and critical actions within the 500-year floodplain was published in the St. Bernard Voice newspaper in St. Bernard Parish on January 31, 2014.

A public notice concerning the proposed project in the floodplain will be published in the St. Bernard Voice newspaper in conjunction with the Notice of Availability of the Draft EA

document for public review. The St. Bernard Voice is the local and regional newspaper for the St. Bernard Parish area, including the floodplain area of St. Bernard Parish.

Step 3 Identify and evaluate alternatives to locating in the base floodplain.
The proposed St. Bernard Parish Government (SBPG) construction of drainage improvements on Palmisano Boulevard, Plaza Drive, and 20 Arpent Bridge are functionally dependent on its location to be able to house critical employees during storm events to perform critical drainage operations to mitigate ancillary flooding in St. Bernard Parish. Therefore, there is no alternative to locating the construction of drainage improvements on Palmisano Boulevard, Plaza Drive, and 20 Arpent Bridge in the base floodplain.

Step 4 Identify impacts of proposed action associated with occupancy or modification of the floodplain.
Impact on natural function of the floodplain
The proposed St. Bernard Parish Government (SBPG) construction of drainage improvements on Palmisano Boulevard, Plaza Drive, and 20 Arpent Bridge would not impede or redirect floods. The project would be located in a partially developed area with existing infrastructure. When compared to the extensive floodplain area, the project will have little potential to impact the floodplain. Therefore, the Preferred Action should not result in an increased base discharge or increase the flood hazard potential to other structures.

Impact of the floodwater on the proposed facilities
The proposed St. Bernard Parish Government (SBPG) Lake construction of drainage improvements on Palmisano Boulevard, Plaza Drive, and 20 Arpent Bridge have been designed to minimize impacts from flooding. The proposed drainage improvements will be located among existing structures within the Palmisano Boulevard, Plaza Drive, and 20 Arpent Bridge drainage facilities. New construction must be compliant with current codes and standards.

Step 5 Design or modify the proposed action to minimize threats to life and property and preserve its natural and beneficial floodplain values.
In order to reduce the impact identified in Step 4 of flood hazards on the proposed facilities, the proposed drainage improvements for the St. Bernard Parish Government (SBPG) Palmisano Boulevard, Plaza Drive, and 20 Arpent Bridge will be designed to be compliant with FEMA recommendations for construction in flood hazard areas.

The Applicant must follow all applicable local, state, and federal laws, regulations and requirements and obtain and comply with all required permits and approvals, prior to initiating work on this project. No staging of equipment or project activities shall begin until all permits are obtained.

***Step 6* Re-evaluate the proposed action.**
Per the discussions above, the proposed project will be appropriately designed for the 100-year and 500-year floodplain. The project would be considered as functionally dependent because it must be able to house critical employees during storm events to perform critical operations of the pump stations to be able to mitigate ancillary flooding in St. Bernard Parish.

The proposed St. Bernard Parish Government (SBPG) construction of drainage improvements on Palmisano Boulevard, Plaza Drive, and 20 Arpent Bridge project will not aggravate the current flood hazard because the project would not impede or redirect flood flows. The project will not disrupt floodplain values because it will not change water levels in the floodplain. Therefore, it is still practicable to construct the proposed project within the floodplain. Alternatives consisting of locating the project outside the floodplain or taking "no action" are not practicable.

Step 7 Findings and Public Explanation (Final Notification)

In reevaluating the alternatives, it has been determined that there are no practical alternative to the proposed action. The proposed action has therefore been identified as the preferred action and will be implemented. In accordance with 44 CFR §9.12, the St. Bernard Parish prepared A Floodplains and Wetlands Explanation Notice dated October 3, 2014 in the St. Bernard Voice newspaper. This publication gave the public until October 10, 2014, (7 days), to comment on this undertaking in the 100 year floodplain and 500-year floodplain. No comments were received. Documentation of the public notice will be forwarded to FEMA for inclusion in the permanent project files.

Step 8 Implement the action

The St. Bernard Parish will incorporate into the design necessary mitigation efforts for building within a 100-year floodplain and 500-year floodplain.

As a result of this Eight-step process, FEMA has determined that the proposed St. Bernard Parish Government Construction of Drainage Improvements on Palmisano Boulevard, Plaza Drive, and 20 Arpent Bridge Project is in compliance with 44 CFR §9.6 because there are no practicable alternatives outside the 100-year floodplain and 500-year floodplain.

U.S. Department of Homeland Security
Louisiana Recovery Office
1500 Main St
Baton Rouge, Louisiana 70802

FINDING OF NO SIGNIFICANT IMPACT FOR THE PALMISANO DRAINAGE IMPROVEMENT ST. BERNARD, LOUISIANA *FEMA-1603-DR-LA*

BACKGROUND

The Palmisano Canal drainage area continuously becomes overwhelmed with flooding. Due to repetitive loss in the area, St. Bernard Parish (Applicant) has requested federal funding through FEMA's 404 Hazard Mitigation Grant Program to upgrade the Plaza Drive Lift Station, and to improve the drainage within the East St. Bernard Hwy Canal, Palmisano Blvd Canal, and the 20 Arpent Canal. Drainage improvements would include Palmisano Boulevard, (from St. Bernard Highway to the outfall on the 20 Arpent Canal) in Chalmette, Louisiana; improve the lift pump capacity of a badly drained area on Plaza Drive; and upgrade its outfall into the Palmisano Boulevard drainage system to relieve the recurrent ponding during rainfall events. The Palmisano drainage system consists of approximately 100 plus acres of land that drains over ground surface through storm drain pipe and directed via pump to an earthen ditch. The earthen ditch runs along St. Bernard Hwy. to Palmisano Boulevard, then from St. Bernard Highway paralleling Palmisano Blvd. running approximately 4,860 feet to the 20 Arpent Canal. The earthen ditch floods frequently during heavy rainfall events due to inadequate capacity and undersized culvert/pipe crossing under roadways and residential driveways.

In accordance with 44 CFR Part 10, FEMA regulations to implement the National Environmental Policy Act (NEPA), an Environmental Assessment (EA) was prepared. The purpose of the EA was to analyze the potential environmental impacts associated with the proposed drainage improvements and to determine whether to prepare an Environmental Impact Statement (EIS) or Finding of No Significant Impact (FONSI). The need for the proposed project is to minimize the ancillary flooding during and after storm events. The alternatives considered include 1) No Action, 2) Upgrade Plaza Drive Pump Station, Improve channel capacity Palmasino Blvd and construct bridge crossing at 20 Arpent Canal (Proposed Action).

The applicant proposes to improve the drainage by upgrading the pumping station and increasing the capacity of the existing canals: East St. Bernard Hwy Canal and Palmasino Blvd Canal. The applicant plans to upgrade the existing Plaza Drive Pump station by constructing a new pump station next to the existing lift station along East St. Bernard Highway. Across the street from the Plaza pump station on the south side along East St. Bernard Hwy work would consist of improving its discharge capacity by deepening the discharge earthen ditch area from East St. Bernard Hwy to Palmisano Blvd and flushing

and cleaning the existing sub-surface drainage within the basin. In addition two (2) existing, undersized culverts would be replaced with box culverts. The scope of work for the Palmisano Blvd Canal is to increase the capacity by deepening the bottom floor channel and installing an open reinforced concrete box culvert beneath a swale ditch, from St. Bernard Highway to Camille place. From Camille Place to East Judge Perez Drive a 8-foot x 4-foot box culvert would be installed and would be enlarged north of Judge Perez Drive to a 10-foot x 6-foot box all the way to the 20 Arpent Canal. Due to the increased capacity of the design flows entering the 20 Arpent Canal, capacity levels would be diminished by the undersized culverts currently under the existing 20 Arpent Canal Crossing. The solution identified in the Hydrology and Hydraulics (H&H) would be to design and construct a bridge crossing approximately 70'x100' concrete span, pile supported and paved channel /aggregate. The proposed project provides protection for the 100-year flood.

FINDINGS

FEMA has evaluated the proposed project for significant adverse impacts to geology, soils, water resources (surface water, groundwater, and wetlands), floodplains, coastal resources, air quality, biological resources (vegetation, fish and wildlife, Federally-listed threatened or endangered species and critical habitats), cultural resources, socioeconomics (including minority and low income populations), safety, noise, and hazardous materials. The results of these evaluations as well as consultations and input from other federal and state agencies are presented in the EA.

The applicant chose the proposed project to decrease the flood risk to nearby residents and provide protection to the 100-year flood event.

CONDITIONS

The following conditions must be met as part of the implementation of the project. Failure to comply with these conditions may jeopardize federal funds:

- The Applicant is required to obtain and comply with all local, state and federal permits, approvals and requirements prior to initiating work on this project. All coordination pertaining to these activities and Applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files.

- Construction contractor would be required to obtain Louisiana Pollutant Discharge Elimination System (LPDES) permit, if applicable, and implement stormwater pollution prevention plan. The Louisiana Department of Environmental Quality (LDEQ) may require stormwater general permits for construction areas equal to or greater than one (1) acre. It is recommended that the LDEQ Water Permit Division be contacted to determine whether the proposed improvements require one of these permits.

- All precaution will be observed to control nonpoint source pollution from construction activities. The contractor should observe all precautions to protect the groundwater of the region.

- The LDNR Office of Conservation should be contacted if any unregistered drinking water wells are encountered during construction work.

- All work associated with project that is conducted on potable water systems must comply with applicable sections of the federal Safe Drinking Water Act and state regulations under Louisiana Title 51 Part XII (otherwise known as the Louisiana Public Health Sanitary code and related State Plumbing code).

- New construction must be compliant with current codes and standards. St. Bernard Parish is required to coordinate with the local floodplain administrator regarding floodplain permit(s) prior to the start of any activities. All coordination pertaining to these activities and Applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files.

- The contractor must coordinate with the Applicant to minimize the potential disruption of any school activities to the extent possible.

- Appropriate signage and barriers should be in place prior to construction activities in order to alert pedestrians and motorists of project activities and traffic pattern changes.

- This project may require a Coastal Use Permit (CUP) from the Louisiana Department of Natural Resources (LDNR). Determination of CUP requirements must be obtained through the submission of a completed CUP application to the LDNR. Proposed projects may be coordinated by contacting LDNR at (225) 342-7591 or 1-800-267-4019. Refer to CUP Number P20120106. The application packet may be obtained by calling (225) 342-7591 or (800) 267-4019, or by visiting the LDNR website at http://dnr.louisiana.gov/index.cfm?md=pagebuilder&tmp=home&pid=93&pnid=189&nid=191 The Applicant must comply with all conditions of the required permits. All coordination pertaining to these activities and Applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files.

- Changes, additions, and/or supplements to the approved scope of work which alter the existing use and function of the structure, including additional work not funded by FEMA but performed substantially at the same time, will require resubmission of the application prior to construction to FEMA for re-evaluation under the National Environmental Policy Act.

- St. Bernard Parish Code of Ordinance Sec. 11-133. - Construction, power equipment. Except as otherwise provided in this chapter, no person shall engage in, cause or permit any person to be engaged in construction activities in any residential or commercial district between the hours of 9:00 p.m. of one day and 7:00 a.m. of the following day. Construction projects shall be subject to the maximum permissible noise level specified for industrial districts for the periods within which construction is to be completed pursuant to any applicable building permit. (b) Construction activities directly connected with the abatement of an emergency are excluded from the provisions of this section. (c) No person shall operate on any property within a residential or commercial district or on any public way within a residential or commercial district, any power equipment, such as, but not limited to, chain saws, pavement breakers, log chippers, riding tractors, powered hand tools, between the hours of 10:00 p.m. of one day and 7:00 a.m. of the next day or within residential, commercial or industrial noise districts between the hours of 7:00 a.m. and 10:00 p.m. which emits a noise level in excess of the levels set in Section 11-132.

- Any changes or modifications to the proposed project would require a wetland revised determination. Off-site locations of activities such as borrow; disposals, haul-and detour-roads and work mobilization site developments may be subject to the Department of the Army regulatory requirements and may have an impact to a Department of Army project.

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

- Unusable equipment, debris and material shall be disposed of in an approved manner and location. In the event significant items (or evidence thereof) are discovered during implementation of the project applicant shall handle, manage, and dispose of petroleum products, hazardous materials and/or toxic waste in accordance to the requirements and to the satisfaction of the governing local, state and federal agencies. Applicant is responsible for acquiring LDEQ permits for the temporary debris staging and reduction sites (TDSRS) associated with this project prior to project closeout. Failure to provide FEMA with LDEQ approval may jeopardize project funding eligibility

- If archaeological artifacts or features (prehistoric or historic) are discovered during the course of FEMA funded work at the project site, the applicant must ensure that their Contractor stops work in the vicinity of the discovery and takes all reasonable measures to avoid and minimize harm to the discovery. The applicant shall inform the GOHSEP and FEMA of the discovery, and FEMA would deploy an archaeologist to the location to conduct a site condition assessment. The applicant would not proceed with work until FEMA has completed consultation with the SHPO and other appropriate consulting parties on the treatment of the discovery.

- In addition, if human remains are discovered during the course of FEMA funded work, the applicant and the applicant's contractor are responsible for immediately halting work within the vicinity of the human remains finding. The applicant will immediately notify GOHSEP, FEMA, the local Police Department, and the local Coroner's Office of the discovery. The local Coroner's Office will assess the nature and age of the human skeletal remains. If the Coroner's Office determines that the human skeletal remains are older than 50 years of age, the Louisiana Division of Archaeology will take jurisdiction over the remains. Within seventy-two (72) hours, the applicant will notify FEMA and the Louisiana Division of Archaeology (225-342-8170) of the finding. FEMA will assist, as requested, the Louisiana Division of Archaeology and other interested parties, as necessary, to ensure compliance with the Louisiana Unmarked Human Burial Sites Preservation Act (R.S. 8:671 et seq.) and other applicable laws. In addition, the applicant must afford FEMA the opportunity to comply with the "Human Remains Policy" set forth by the ACHP.

CONCLUSIONS

Based upon the incorporated EA, and in accordance with Presidential Executive Orders 12898 (Environmental Justice), 11988 (Floodplain Management), and 11990 (Wetland Protection), FEMA has determined that the proposed action implemented with the conditions and mitigation measures outlined above and in the EA will not have any significant adverse effects on the quality of the natural and human environment. As a result of this FONSI, an Environmental Impact Statement will not be prepared (44 CFR Part 10.8) and the proposed action alternative as described in the EA may proceed.

APPROVALS

6/30/15

Kevin Jaynes — Date
Regional Environmental Officer
Region VI

Digitally signed by THOMAS M WOMACK
DN: c=US, o=U.S. Government, ou=Department of Homeland Security, ou=FEMA, ou=People, cn=THOMAS M WOMACK, 0.9.2342.19200300.100.1.1=0001134728.FEMA.1
Date: 2015.07.01 07:51:46 -05'00'

Thomas "Mike" Womack — Date
Director of the Louisiana Recovery Office
FEMA 1603-1607-DR-LA