

Draft Environmental Assessment

New Orleans Redevelopment Authority

HMGP Pontilly Water Mitigation

Orleans Parish, Louisiana

Hazard Mitigation Grant Program

Project Number 1603-0178

December 2015



FEMA

U.S. Department of Homeland Security
Federal Emergency Management Agency, Region VI
Louisiana Recovery Office
Baton Rouge, Louisiana

This page was intentionally left blank.

TABLE OF CONTENTS

SECTION	PAGE
1.0 INTRODUCTION	1
1.1 Project Authority	1
1.2 Project Location	2
1.3 Background	4
2.0 PURPOSE AND NEED	5
2.1 Purpose	5
2.2 Need	6
3.0 ALTERNATIVES	6
3.1 No Action Alternative	6
3.2 Alternative Proposal: Installation of Stormwater Lots/Parks, Street Basins and Urban Bioswales; Widen Dwyer Canal	6
3.3 Alternative 2 Considered: Upgrade and Improve the Existing Underground Pipe Collection System	11
4.0 AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS	11
4.1 Geology And Soils	11
4.1.1 Regulatory Setting	11
4.1.2 Existing Conditions	12
4.1.3 Environmental Impacts	12
4.2 Air Quality	12
4.2.1 Regulatory Setting	12
4.2.2 Existing Conditions	13
4.2.3 Environmental Impacts	13
4.3 Climate Change Executive Orders (EO) 13514 and 13653	14
4.3.1 Regulatory Setting	14
4.3.2 Existing Conditions	15
4.3.3 Environmental Consequences	15
4.4 Water Resources	16
4.4.1 Groundwater	16
4.4.2 Waters of the United States and Wetlands	17
4.4.3 Floodplains	22
4.5 Coastal Resources	26
4.5.1 Regulatory Setting	26
4.5.2 Existing Conditions	27
4.5.3 Environmental Impacts	27
4.6 Biological Resources	28

	4.6.1	Regulatory Authority	28
	4.6.2	Existing Conditions.....	29
	4.6.3	Environmental Impacts	29
4.7		Cultural Resources	30
	4.7.1	Regulatory Setting	30
	4.7.2	Existing Conditions.....	31
	4.7.3	Environmental Impacts	32
4.8		Environmental Justice.....	33
	4.8.1	Regulatory Authority	33
	4.8.2	Existing Conditions.....	33
	4.8.3	Environmental Impacts	34
4.9		Additional Considerations	34
	4.9.1	Hazardous Material.....	34
	4.9.2	Noise	36
	4.9.3	Traffic	37
	4.9.4	Public Service and Utilities.....	38
	4.9.5	Public Health and Safety.....	39
4.10		Summary Table.....	40
5.0		CUMULATIVE IMPACTS.....	42
6.0		MITIGATION	45
7.0		AGENCY COORDINATION, PUBLIC INVOLVEMENT AND PERMITS.....	48
	7.1	Agency Coordination	48
	7.2	Local/City Permits	49
	7.3	Public Involvement	49
8.0		LIST OF PREPARERS.....	50
9.0		REFERENCES	50

LIST OF FIGURES

Figure 1: State of Louisiana, Orleans Parish highlighted	2
Figure 2: Pontilly Study Area	3
Figure 3: Vacant Lots, Pontchartrain Park.....	7
Figure 4: Vacant Lots, Gentilly Woods	8
Figure 5: Proposed conceptual drawing of stormwater lots.....	9
Figure 6: Proposed Street Basins and Urban Bioswales	9
Figure 7: Proposed Urban Bioswale	10
Figure 8: Proposed Improvements to Dwyer Canal.....	10
Figure 9: USFWS National Wetlands Inventory Map.....	19
Figure 10: Preliminary DFRIM Map of Pontilly	24
Figure 11: NEPAssist- RCRA and TRI Sites within and near the project area.....	35
Figure 12: FEMA- funded projects within the 1-mile buffer of the project area.	44

LIST OF TABLES

Table 1. Proposed Project Alternative Impact to Floodplain.....	25
Table 2. Protected Species That Could Inhabit the Pontilly area	29
Table 3. Summary of Potential Impacts and Mitigation Measures.....	40

APPENDICES

Appendix A	Proposed Alternative Conceptual Designs and Construction Plans
Appendix B	Agency Coordination Correspondence
Appendix C	Hydrology and Hydraulic Study Report by CDM Smith
Appendix D:	Preliminary EER Report by CDM Smith and EDR Database Report by Environmental Data Resources, Inc.
Appendix F	8-Step, Public Notice, and Draft FONSI

LIST OF ACRONYMS AND ABBREVIATIONS

ABFE	Advisory Base Flood Elevation
ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effect
BFE	Base Flood Elevation
BMP	Best Management Practice
CAA	Clean Air Act
CBRA	Coastal Barrier Resources Act
CBRS	Coastal Barrier Resource System
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH ₄	Methane
CIA	Community Improvement Agency
CO ₂	Carbon Dioxide
CPRA	Office of Coastal Protection and Restoration Authority
CUP	Coastal Use Permit
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	decibel
DFIRM	Digital Flood Insurance Rate Map
DNL	Day-Night Average Sound Level
EA	Environmental Assessment
ECD	Erosion Control Devices
EHP	Environmental Historic Preservation
EIS	Environmental Impact Statement
EL	elevation
EO	Executive Order
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
GCR	General Conformity Rule
GHG	Greenhouse Gases
GNO	Greater New Orleans
GOHSEP	Governor's Office of Homeland Security and Emergency Preparedness
HEAG	Highest Existing Adjacent Grade
H&H	Hydrology and Hydraulic Study
HFC	hydrofluorocarbons
HMGP	Hazard Mitigation Grant Program
HSDRRS	Hurricane & Storm Damage Risk Reduction System
HUD	Department of Housing and Urban Development
LAC	Louisiana Administrative Code
LDEQ	Louisiana Department of Environmental Quality
LDWF	Louisiana Department of Wildlife and Fisheries

LDNR	Louisiana Department of Natural Resources
LSB	Louisiana State Brownfield
LUST	Leaking Underground Storage Tank
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NMFS	National Marine Fisheries Service
NHPA	National Historic Preservation Act
NO2	Nitrogen Dioxide
N2O	Nitrous Oxide
NORA	New Orleans Redevelopment Authority
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
O3	Ozone
OCM	Office of Coastal Management
OPA	Other Protected Area
OSHA	Occupational Safety and Health Administration
PA	Programmatic Agreement
Pb	lead
PFC	Perfluorocarbons
PM	Particulate Matter
RCRA	Resource Conservation and Recovery Act
RHA	River Harbors Act
SHPO	State Historic Preservation Office
SF6	Sulfur Hexafluoride
SO2	Sulfur Dioxide
SOV	Solicitation of Views
SPOC	Single Point of Contact
SUNO	Southern University of New Orleans
SWPPP	Stormwater Pollution Prevention Plan
S&WB	Sewerage & Water Board of New Orleans
THPO	Tribal Historic Preservation Office
TRI	Toxic Release Inventory Site
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
VOC	Volatile organic compounds

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. President George W. Bush declared a major disaster for the State of Louisiana due to damages from Hurricane Katrina and signed a disaster declaration (FEMA-1603-DR-LA) 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.

The New Orleans Redevelopment Authority (NORA), the applicant, through the State of Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP), applied for funding under FEMA's HMGP for a storm water mitigation project in the Pontilly neighborhood of New Orleans. NORA is a City Board group that works with public and private partners to redevelop and revitalize New Orleans neighborhoods.

This Draft Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, the President's Council on Environmental Quality (CEQ) regulations to implement NEPA (40 Code of Federal Regulations Parts 1500-1508), and FEMA's regulations implementing NEPA (44 CFR Part 10). Before FEMA can fund or implement an action that may affect the environment, agency decision-makers must study the potential impacts that the proposed action and alternatives will have on the human and natural environment, and make that information available to the public. The purpose of this Draft EA is to analyze the potential environmental impacts of the proposed HMGP Pontilly stormwater mitigation project. FEMA will use the findings in this EA to determine whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

1.2 Project Location

Orleans Parish, which is comprised of the city of New Orleans, is located in southeast Louisiana. It is approximately 350 square miles, of which approximately 180 square miles (approximately 51.5 percent) is land, the remainder is open water. Orleans Parish is bordered to the east by Lake Borgne, St. Bernard Parish, and Plaquemines Parish, to the south by the Mississippi River, Plaquemines Parish, and Jefferson Parish, to the west by Jefferson Parish, and to the north by Lake Pontchartrain and St. Tammany Parish (Figure 1). Orleans Parish has approximately 343,829 residents according to 2010 census figures. New Orleans is located approximately 70 miles from Baton Rouge, the state capital of Louisiana, and approximately 105 miles upriver from the Gulf of Mexico.



Figure 1: State of Louisiana, Orleans Parish highlighted

The Pontilly Study Area is 856 acres, which includes both Pontchartrain Park and Gentilly Wood neighborhoods (Figure 2), and is bounded by Norfolk Southern Railroad to the west and north, the Inner Harbor Navigational Canal levee to the east, and Chef Menteur (Highway 90) to the south. The area is mostly single family residential with approximately 40 acres of commercial property along Chef Menteur Hwy. The area also contains many amenities including the following schools: Southern University of New Orleans, New Orleans Baptist Seminary, Mary D. Coghill Elementary School, St. Benedict the Moor Catholic School, and Parkview Fundamental Magnet School; the following churches: Holy Cross Lutheran Church, St. Gabriel the Archangel Catholic Church, Bethany United Methodist Church, and Morning Star Missionary Baptist Church; and three parks including: Joseph Bartholomew Golf Course, Harris Playground, and Morrison Play spot (H&H study,2012).

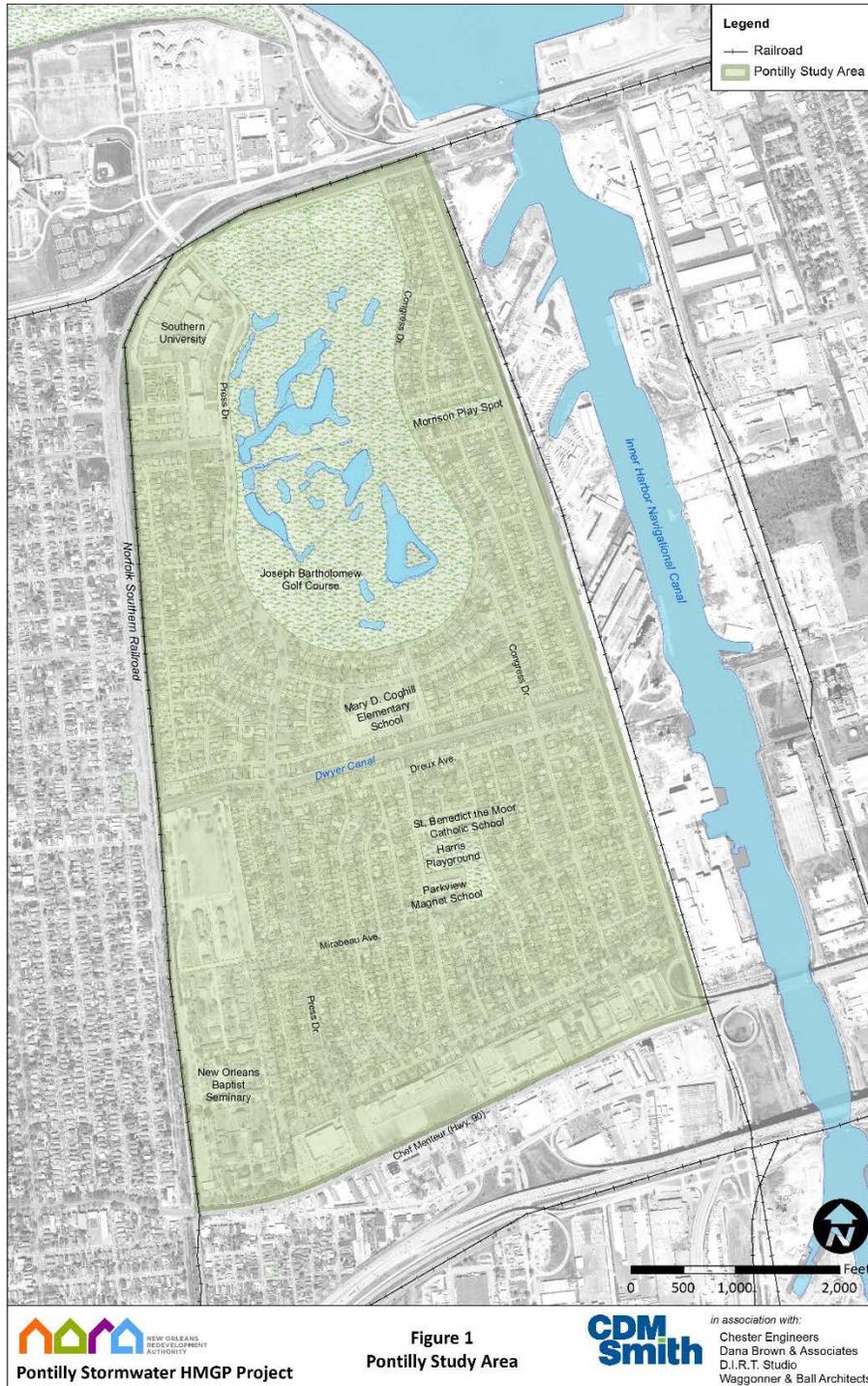


Figure 2: Pontilly Study Area

1.3 Background

New Orleans Redevelopment Authority (NORA), created by the State of Louisiana in 1968 as the Community Improvement Agency (CIA), is a public agency charged with revitalization of underinvested areas in the City of New Orleans. In the 1970s, the Agency was charged with implementing federal Urban Renewal programs, which focused on the elimination of physical blight. Toward the end of the 1970s, the CIA was completing its urban renewal phase and began to focus on citywide housing improvements utilizing the Department of Housing and Urban Development (HUD) funds. In 1994, the activities of the CIA reconstituted itself as NORA, and consolidated its resources to focus on neighborhood revitalization. In late 2006, as a result of the catastrophic damage caused by Hurricane Katrina in 2005, a consensus developed that NORA's revitalization tools and powers made it the ideal entity to help implement citywide recovery initiatives. This transformation extended to the agency's mission as well. Rather than one-off blight expropriations, NORA became focused on comprehensive, data-driven neighborhood redevelopment. To that end, NORA was charged with the disposition of nearly 5,000 properties acquired by the state following Katrina (former Road Home Properties), and tasked with implementing the Lot Next Door ordinance. The result was that NORA's activities became more strategically focused and designed to support holistic neighborhood recovery. NORA also functions as the City's landbank, managing a large portfolio of vacant properties across the city. As responsible stewards of this vacant land, NORA utilizes local labor to keep properties maintained, and explores creative ways to use these properties to revitalize neighborhoods (NORAworks.org, 2015)

Pontchartrain Park was one of the first neighborhoods in New Orleans to provide home ownership opportunities to middle and upper class African Americans. It is a suburban style neighborhood characterized by its curvilinear streets. The first phase of construction of homes in Pontchartrain Park was in 1957. Gentilly Woods was also established in the 1950's in a similar manner as the Pontchartrain Park Neighborhood, at that time the homes were concentrated to the east of Pontchartrain Park.

Based on flood claim information through the National Flood Insurance Program (NFIP), there have been numerous rainfall events, which caused flooding of property (structures and vehicles), and forced temporary road closures. According to NFIP flood claim information, the most significant flood claims were filed for the rainfall events listed below:

- May 1978: A line of rainstorms stalled had a peak intensity of 2 inches with a 1.36 inches and 1.69 inches falling in the two subsequent hours. This event resulted in more than \$44K in flood insurance claims throughout the Pontilly Area.

-
- April 1980: This rain event included two peak hours in excess of 1.5 inches, each preceded of followed by an additional 0.74 inches of rain, and a total of 8.5 inches over a period of 24 hours. This event resulted in more than \$58K in flood insurance claims throughout the Pontilly Area.
 - April 1983: More than 7.5 inches of rain fell over a period of 21 hours, resulting in more than \$240K in flood insurance claims throughout the Pontilly Area.
 - April 1988: A series of squall lines passed through the New Orleans Area dropping nearly 9 inches of rain across the area, including three peak hours of at least 1.2 inches of rainfall. This event resulted in more than \$40K in flood insurance claims throughout the Pontilly Area.
 - May 1995: Between May 8th and May 11th, 1995, the New Orleans Area was hit with nearly 15.5 inches of rainfall in closely spaced bands of rain. In one four hour period on May 8th, over 12 inches of rain fell on the city. This event resulted in more than \$6.5M of flood insurance claims throughout the Pontilly Area.
 - May 2001: A rain event dropped over 5 inches of rain within a 9 hour period, with more than two-thirds of the rain falling in two back-to-back hours. This event resulted in more than \$82K of flood insurance claims throughout the Pontilly Area.
 - September 2002: Tropical Storm Isidore produced heavy rainfall in a wide area before and shortly after landfall. Four to eight inches of rainfall occurred within six hours. The storm's total rainfall measured from 10 to 15 inches across southeast Louisiana. This event resulted in more than \$431K of flood insurance claims throughout the Pontilly Area.

2.0 Purpose and Need

2.1 Purpose

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 in the Pontilly community. The drainage infrastructure servicing the Pontilly Study Area is over 50-years-old and was designed for significantly different conditions than currently exist. The level of development that has occurred in the study area has overstressed the storage and conveyance capacity of the existing stormwater infrastructure. The purpose of the proposed Pontilly Stormwater Mitigation Project is to mitigate the impacts of flooding in the Pontilly Area through stormwater management.

2.2 Need

The Pontilly neighborhood in New Orleans has been subject to repetitive, significant flood events causing damage to residential and commercial properties. The extensive history of rain related flood property damages demonstrates a need to effectively reduce the risk of future flooding within the area.

3.0 Alternatives

The three alternatives considered in this Draft EA are the No Action Alternative, the Proposed Project Alternative, and the Considered Alternative as described below.

3.1 No Action Alternative

With no improvements, the area would continue to flood every time there is a storm greater than a 2-year flood storm and the \$70 million investment made into the neighborhoods by public and private agencies and individuals would be compromised.

The flood problems experienced with a no action alternative are well documented and consist of the problems associated with an underground piping network that was originally designed for a 2-year frequency flood event. The pipe collection system degradation has reduced the system's capacity to protect even to the 2-year level. Depending on the particular storm event, both localized street flooding and property damage were recurring neighborhood problems prior to the hurricanes of 2005. After Hurricanes Katrina and Rita, the past flooding issues now receive higher scrutiny as neighborhood redevelopment is being encouraged and small recurring flood problems are now seen in a much different context.

Implementation of the No Action Alternative would entail no hazard mitigation measures for the Pontilly Area. Under this alternative, flood damage would likely continue to occur and both insured and uninsured losses would be experienced at its current frequency. This alternative would perpetuate the "damage-repair-damage" cycle thus requiring additional funding to be drawn from the NFIP as well as depleting local and National disaster funds.

3.2 Alternative Proposal: Installation of Stormwater Lots/Parks, Street Basins and Urban Bioswales; Widen Dwyer Canal

The Pontilly Stormwater Mitigation Project has two components which work collectively to reduce the risk of local flooding by providing short term runoff storage and implementing the use of stormwater Best Management Practices (BMP's).

The first component would utilize detention strategies, porous paving, and best management practices (BMP) to alleviate the demand placed on the existing drainage systems that are undersized and unable to function properly during 1-3 year flood events.

The project would incorporate empty lots as temporary detention areas to reduce the peak runoff discharge by allowing the stormwater to infiltrate into the ground rather than immediately going into the undersized drainage system. The parcels proposed for this work are scattered vacant lots where private residences existed prior to Hurricane Katrina (Figures 3 and 4- larger image available in Appendix A).

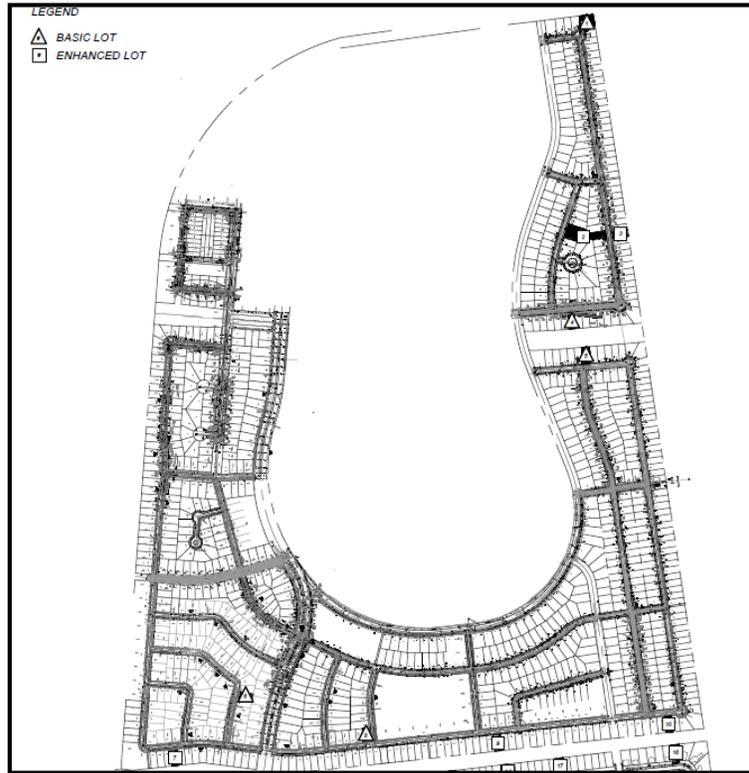


Figure 3: Vacant Lots, Pontchartrain Park (Construction Plans, CDM Smith)

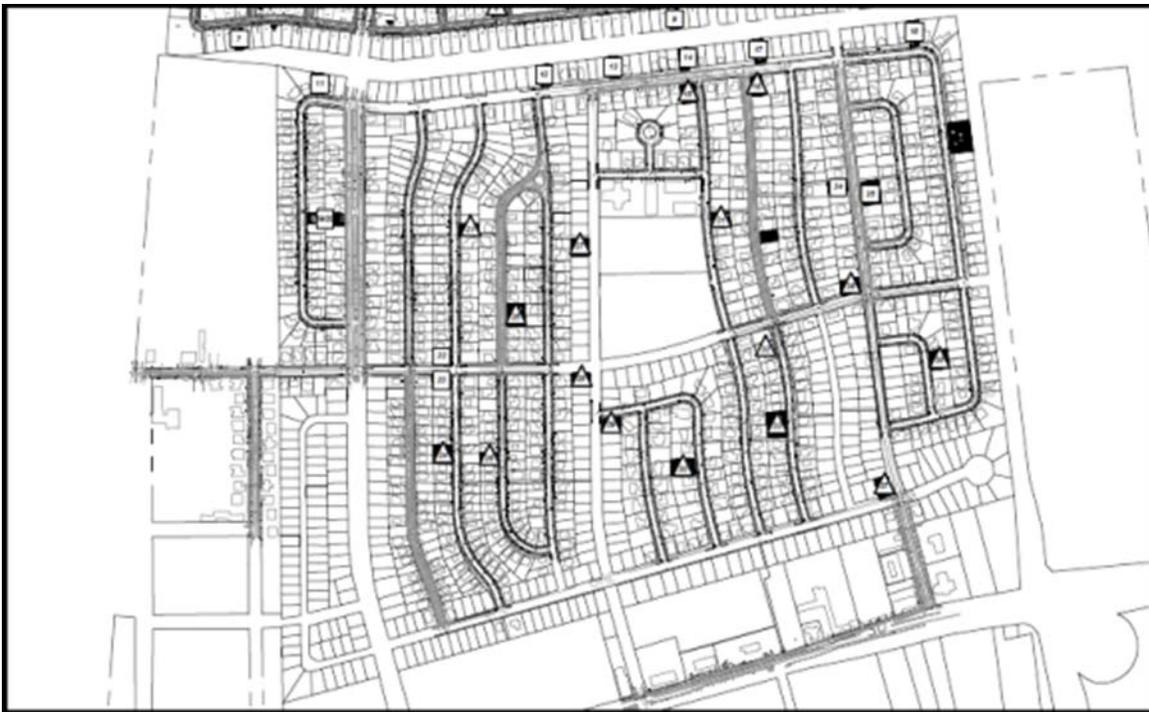


Figure 4: Vacant Lots, Gentilly Woods (Construction Plans, CDM Smith)

As a result of Hurricane Katrina and subsequent State and Federal programs, these properties have been demolished and are now under the jurisdiction of NORA. These proposed stormwater lots and stormwater parks (multiple contiguous lots) would incorporate the planting of native vegetation to help clean stormwater and would be classed into either a dry stormwater lot or wetland stormwater lot (Figure 5).



Figure 5: Proposed conceptual drawing of stormwater lots (CDM Smith)

In addition to the stormwater lots and parks, the second component involves utilizing street basins and urban bioswales. These structures would be installed and also planted with native vegetation to catch runoff flowing along street curbs and gutters. Midblock street basins would take the place of two on-street parking places and the corner street basins would require one on-street parking places on each street (Figure 6). Urban bioswales are proposed along Stephen Girard Avenue where the existing 42 foot wide street would be reduced in size to an overall width of 37 feet. These “road diets” would allow the installation of both corner and mid-block street basins.

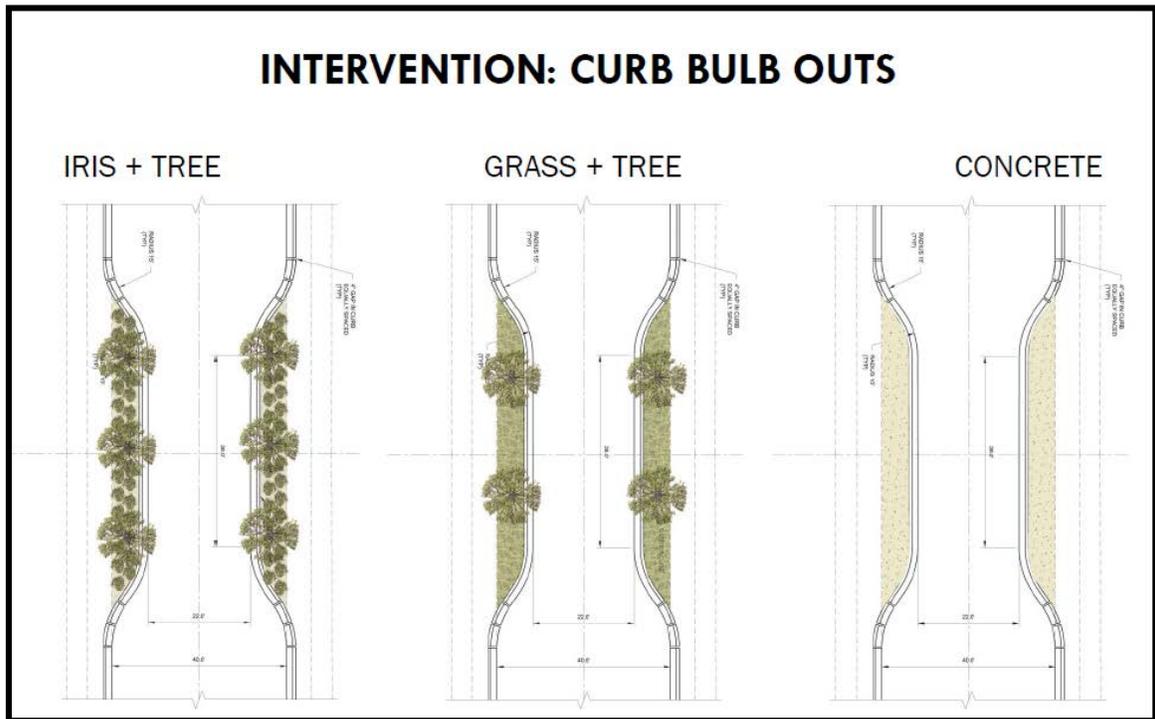


Figure 6: Proposed Street Basins and Urban Bioswales (CDM Smith)

An urban bioswale is also proposed at the southern perimeter of the Joseph Bartholomew Sr. Golf Course inside the Pontchartrain Park Neighborhood. The bioswale would be installed between the existing golf cart path and the street and would not impede play at the golf course or alter any character defining landscape features such as mature trees. Additional bioswales would be installed along the rear private property lines for parcels abutting railroad right of way along Peoples Avenue. These bioswales would reduce flooding in the rear yards by rerouting floodwater to planned stormwater lot locations (Figure 7).

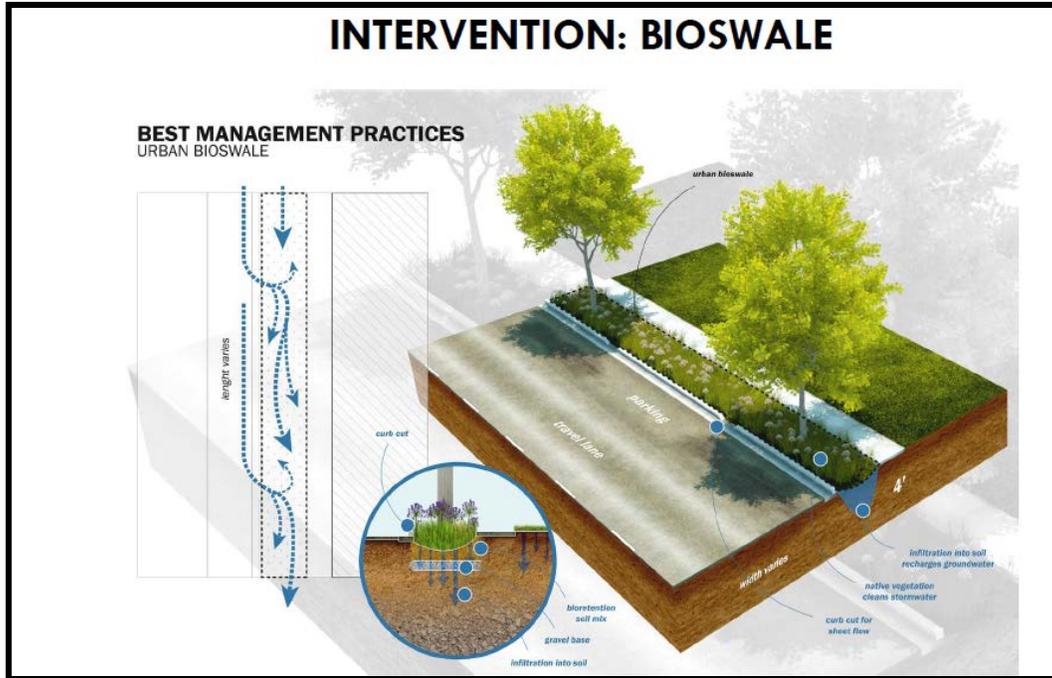


Figure 7: Proposed Urban Bioswale (CDM Smith)

The Undertaking also proposes to widen the existing Dwyer Canal because it is located at a low point between the two neighborhoods and is currently underutilized. The widening would occur within previously disturbed right-of-way and the banks of the canal would be stabilized to prevent erosion (Figure 8).



Figure 8: Proposed Improvements to Dwyer Canal (CDM Smith)

3.3 Alternative 2 Considered: Upgrade and Improve the Existing Underground Pipe Collection System

This alternative would consist of upgrading the neighborhood’s underground pipe collection system from its current state of a 2-year flooding event to the City criterion of a 10-year level of protection. To accomplish this, the scope of work would entail removing and replacing more than 60,000 linear feet of pipe network in the Pontilly neighborhood. The applicant would excavate and remove existing pipe; install new, larger pipes and reconnect them to existing basins; and then back fill and asphalt repair the area. Collector streets are assumed to receive 48 inch pipes, while minor streets would receive 36 inch pipes to achieve positive drainage for the 10-year storm event. Collector streets receiving the 48 inch pipes would be Press Drive 9,000 LF; Louisa Drive 3,200 LF; Congress Drive 8,500 LF; Mirabeau Ave. 3,600 LF; Prentiss Ave. 1,000 LF; and Bashful Blvd. 850 LF. All other streets in the Pontilly area would be minor streets.

4.0 Affected Environment and Potential Impacts

The approach used in the identification and examination of environmental constraints and issues in the Pontilly area relied on a review of existing planning efforts and consultation with Federal and State agencies including the U.S. Environmental Protection Agency (USEPA), the U.S. Fish and Wildlife Service (USFWS), the U.S. Army Corps of Engineers (USACE) New Orleans District, the U.S. Department of Agriculture (USDA), the Federal Emergency Management Agency (FEMA), the Louisiana Department of Natural Resources (LDNR) Office of Coastal Management, the Louisiana Department of Environmental Quality (LDEQ), the Louisiana Department of Cultural Development Division of Historic Preservation, and the Louisiana Department of Cultural Development Division of Archaeology. Coastal Management Plans, NEPA documentation and guidance, and Comprehensive Land Management Plans were also reviewed to identify and analyze important environmental resources, known sensitive areas, and environmental issues.

The following individual sections outlining affected environmental and potential impacts are followed by a summary table of potential impacts and recommended mitigation measures.

4.1 Geology And Soils

4.1.1 Regulatory Setting

The Farmland Protection Policy Act (FPPA) (7 U.S. Code 4201, et seq.) states that federal agencies must “minimize the extent to which federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses...” The Act requires federal agencies to evaluate the adverse effects of their activities on prime and unique farmland.

The Act requires federal agencies to consult with the Natural Resources Conservation Service (NRCS) regarding impacts to prime and unique farmland, and farmland of statewide importance.

4.1.2 Existing Conditions

The proposed project is “land already in or committed to urban development” within the meaning of 7 CFR 658.2(a), and are therefore not farmland for purposes of the FPPA.

The proposed project location lies within the inter-distributary basins of the delta plain, the low-lying land between the higher-elevation natural levee deposits of the distributaries, consisting of clay, organic-rich soils and sediments (Louisiana Geological Survey 2006). These sediments typically consist of soft to very soft gray clays with thin layers of silt and silty-sand. Beds of black peat and thin layers of organic debris are interlayered within these clay deposits. The deposits underlying the inter-distributary basins consist primarily of fine-grained sediment, which was washed into them by floodwaters. Organic matter found in these deposits was produced in place by the marsh vegetation and preserved by the waterlogged nature of the inter-distributary basins.

4.1.3 Environmental Impacts

No Action Alternative– Under the No Action Alternative, there would be no impact to prime and unique farmland. The continuance of frequent local flooding could further erode soils within the project area.

Alternative 1: Proposed Action– Under the Proposed Action Alternative, there would be no impact to prime and unique farmland. Temporary surface soil disturbances are anticipated during construction activities. BMP’s such as installing silt fences and re-vegetating bare soils with native vegetation would minimize runoff and erosion. If fill is stored on site as part of unit installation or removal, the contractor would be required to appropriately cover it.

Alternative 2: Considered Action- Under the Considered Action Alternative, there would be no impact to prime and unique farmland. Temporary surface soil disturbances are anticipated during construction activities. BMP’s such as installing silt fences and re-vegetating bare soils with native vegetation would minimize runoff and erosion.

4.2 Air Quality

4.2.1 Regulatory Setting

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 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 (O₃), particulate matter (PM_{2.5}, PM₁₀), nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), 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. 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).

4.2.2 Existing Conditions

According to the USEPA, Orleans Parish is currently an attainment area (EPA, 2015) and has no general conformity determination obligations. FEMA-Environmental Historic Preservation (EHP) submitted solicitation of Views (SOVs) to LEDQ and USEPA on November 2, 2015 (Appendix B).

4.2.3 Environmental Impacts

No Action Alternative– Under the No Action Alternative, there are no anticipated impacts to air quality.

Alternative 1: Proposed Action– Under the Proposed Action Alternative, impacts to air quality are anticipated to be minimal and temporary in the Pontilly area. LEDQ responded to the applicant’s consultation on August 22, 2013 stating the agency did not have any objections to the project.

LDEQ did not respond to FEMA-EHP's SOV within the 30 day timeframe; therefore, it is assumed the LDEQ does not have any objections to the project. Minor short-term impacts to air quality could occur during construction from fuel combustion equipment and vehicles involved in construction. To reduce the emission of air quality pollution from these sources, fuel-burning equipment times would be kept to a minimum and engines would be properly maintained. Dust minimization measures, such as covering and/or wetting should be implemented during construction as well.

Alternative 2: Considered Action- Under the Considered Action Alternative, impacts to air quality are anticipated to be minimal and temporary in the Pontilly area. Minor short-term impacts to air quality could occur during construction from fuel combustion equipment and vehicles involved in construction. To reduce the emission of air quality pollution from these sources, fuel-burning equipment times would be kept to a minimum and engines would be properly maintained. Dust minimization measures, such as covering and/or wetting should be implemented during construction as well.

4.3 Climate Change Executive Orders (EO) 13514 and 13653

4.3.1 Regulatory Setting

A handful of important, non-condensable gases, plus water vapor, significantly contribute to the currently observed warming trend in world climate through the trapping of outbound radiation within the lower atmosphere (troposphere), a phenomenon commonly called the "greenhouse effect." An increase in the atmospheric concentration of these greenhouse gases (GHGs), beginning with the onset of the Industrial Revolution, has resulted in a global temperature increase of approximately 1.5 °F since 1880. E.O. 13514, Federal Leadership in Environmental, Energy, and Economic Performance, signed on 5 October 2009, directs federal agencies to reduce GHG emissions and address climate change in NEPA analyses. It expands upon the energy reduction and environmental performance requirements of E.O. 13423, Strengthening Federal Environmental, Energy, and Transportation Management. E.O. 13514 identifies numerous energy goals in several areas, including GHG management, management of sustainable buildings and communities, and fleet and transportation management. The GHGs covered by this E.O. are: CO₂, methane (CH₄), N₂O, sulfur hexafluoride (SF₆), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs). These GHGs have varying heat-trapping abilities and atmospheric lifetimes (U.S. President 2009). Recent guidance by CEQ also addresses climate change considerations in NEPA evaluations (CEQ 2014).

On 23 January 2012, FEMA issued a written statement, FEMA Climate Change Adaptation Policy Statement (2011-OPPA-01), affirming the directive of E.O. 13514 and enacting as policy measures to "integrate climate change adaptation considerations" into its programs and operations (DHS 2012a).

E.O. 13653, Preparing the United States for the Impacts of Climate Change, was signed November 2013 (U.S. President 2013). This Order was issued with the purpose of preparing “the Nation for the impacts of climate change by undertaking actions to enhance climate preparedness and resilience.” Its main focus is the fostering of cooperation among the federal government and other groups, including state and local governments, as well as tribal, private-sector, and non-profit entities, in order to achieve the Order’s stated purpose. Cooperation is to be facilitated through coordinated planning and the adaptation of federal programs to “help safeguard our economy, infrastructure, environment, and natural resources,” in addition to improving climate preparedness and resilience.

One of the specific requirements of E.O. 13653 is that all federal agencies “reform policies and Federal funding programs that may, perhaps unintentionally, increase the vulnerability of natural or built systems, economic sectors, natural resources, or communities to climate change related risks.” In response to this directive, FEMA has begun augmenting its flood risk information to reflect potential sea level rise, considering climate change in hazard mitigation planning, and affording grantees the opportunity to incorporate climate resilience measures in alternate projects (DHS 2013, 2014).

4.3.2 Existing Conditions

According to The Green Book Nonattainment Areas for Criteria Pollutants (USEPA 2015d), the Parish of Orleans is considered to be an “attainment area” for the criteria pollutant, ozone, based upon the 2008 8-hour standard (Implementation of the 2008 National Ambient Air Quality Standards for Ozone 2015).

4.3.3 Environmental Consequences

No Action Alternative– The “No Action” alternative would involve no undertaking and, therefore, would cause no short- or long- term impacts to air quality.

Alternative 1: Proposed Action– This alternative potentially includes short-term impacts to air quality resulting from construction activities. Particulate emissions from the generation of fugitive dust during project construction would likely be increased temporarily in the immediate project vicinity. Other emission sources on site could include internal combustion engines from work vehicles, air compressors, or other types of construction equipment. These effects would be localized and of short duration. Orleans is not an attainment area under the CAA and has no General Conformity obligations. Only short term, temporary GHG emissions are expected during construction.

To reduce potential short term effects to air quality from construction-related activities, the contractor would be responsible for using BMPs to reduce fugitive dust generation and diesel emissions.

Emissions from the burning of fuel by internal combustion engines would temporarily increase the levels of some of the criteria pollutants, including CO, NO_x, O₃, and PM₁₀, and non-criteria pollutants such as Volatile Organic Compounds (VOCs). To reduce these emissions, running times for fuel-burning equipment should be kept to a minimum and engines should be properly maintained.

Alternative 2: Considered Action- Under the Considered Action Alternative, potential short-term impacts to air quality resulting from construction activities would be included. Particulate emissions from the generation of fugitive dust during project construction would likely be increased temporarily in the immediate project vicinity. Other emission sources on site could include internal combustion engines from work vehicles, air compressors, or other types of construction equipment. These effects would be localized and of short duration. Because this alternative would only enhance the capacity within the existing footprint no significant post-construction change in GHG emissions would be expected.

4.4 Water Resources

4.4.1 Groundwater

4.4.1.1 Regulatory Setting

The USEPA defines a sole source aquifer as an underground water source that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas have no alternative drinking water source(s) that could physically, legally, and economically supply all those who depend upon the aquifer for drinking water.

The **Sole Source Aquifer Program** is authorized by Section 1424(e) of the Safe Drinking Water Act of 1974. Designation of an aquifer as a sole source aquifer provides EPA with the authority to review federally funded projects planned for the area to determine their potential for contaminating the aquifer.

4.4.1.2 Existing Conditions

The Southern Hills Regional Aquifer System is under Lake Pontchartrain in the vicinity of the project site; however, the Pontilly area is not located within an USEPA designated sole source aquifer watershed area per the USEPA groundwater office (EPA Region 6, Sole Source Aquifers).

According to the Hydrologic & Hydraulic Study (H&H) Technical Memorandum conducted by CDM Smith on May 2012 (Appendix C), New Orleans aquifer system includes the shallow aquifers, the Mississippi River alluvial, Gramercy aquifer, Norco aquifer, Gonzales-New Orleans aquifer, and the “1,200-foot” sand aquifer. This system of aquifers supplies freshwater along the Mississippi River corridor for industrial and public use. The shallow aquifers are found no more than 200 feet below sea level and are discontinuous and local.

Aquifers near the Lake Pontchartrain shoreline do not contain freshwater. Approximately 300 feet below sea level at the Industrial Canal is the Norco Aquifer. This aquifer is approximately 50 feet thick and is separated from the Gonzales-New Orleans Aquifer by a 200 foot clay bed. The Gonzales-New Orleans Aquifer is found approximately 400 feet below sea level and is 250 feet deep. Its base is underlain by saltwater. It supplies freshwater to the greater New Orleans area, beginning at Lake Pontchartrain and extending southward toward the Industrial Canal.

FEMA-EHP submitted SOVs to LEDQ and USPEA on November 2, 2015.

4.4.1.3 Environmental Impacts

No Action Alternative– There are no impacts to groundwater under the No Action Alternative.

Alternative 1: Proposed Action– Under the Proposed Action Alternative, there are no anticipated impacts to a sole source aquifer. Per the H&H Technical Memorandum conducted by CDM Smith on May 2012, the construction of BMPs, (i.e. bioswales, detention ponds, infiltration basins, wetlands, bio-retention cells, and pervious pavement) would require the removal of soil to varying depths of, on average, three feet below grade for temporary storage and transport of stormwater. Groundwater depths vary throughout the project area; therefore, site-specific seasonal high-groundwater levels will need to be taken into account during the design of infiltration BMPs in order to accurately determine the effective volume of water storage, as well as mitigating the unintentional creation of intermittent retaining ponds that hold groundwater from the shallower aquifers.

The applicant submitted a consultation letter to the USEPA on July 17, 2013. Per response, dated July 26, 2013, the project does not overly a Sole Source Aquifer and is not eligible for review under the Sole Source Aquifer program. LDEQ did not respond FEMA-EHP's SOV within the 30 day timeframe; therefore, it is assumed the LDEQ does not have any objections to the project.

The contractor should observe all precautions to protect the groundwater of the region.

Alternative 2: Considered Action- Under the Considered Action Alternative, there are no anticipated impacts to a sole source aquifer. However, similar impacts to the local groundwater as described above would be anticipated under this alternative. The contractor should observe all precautions to protect the groundwater of the region.

4.4.2 Waters of the United States and Wetlands

4.4.2.1 Regulatory Authority

The USACE regulates the discharge of dredged or fill material into waters of the U.S., including wetlands, pursuant to §§ 401 and 404 of the Clean Water Act (CWA) (33 U.S.C. § 1344).

Section 402 of the CWA, entitled National Pollutant Discharge Elimination System (NPDES), authorizes and sets forth standards for state administered permitting programs regulating the discharge of pollutants into navigable waters within the state's jurisdiction (33 U.S.C. § 1342). The USACE also regulates the building of structures in waters of the U.S. pursuant to §§ 9 and 10 of the Rivers and Harbors Act (RHA) (33 U.S.C. § 403). Executive Order (E.O.) 11990, Protection of Wetlands, directs Federal agencies to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the values of wetlands for federally funded projects (42 F.R. 26961, May 25, 1977). 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 (E.O. 11990, § 7[c]). FEMA regulations for complying with E.O. 11990 are found at 44 CFR Part 9, Floodplain Management and Protection of Wetlands.

The USEPA enforces the CWA and regulates discharges to waters of the United States through permits issued under the NPDES permitting program. On August 27, 1996, Louisiana assumed the NPDES from EPA Region VI, thus becoming a state delegated to administer the NPDES Program (EPA 2013, LDEQ 2011). Having assumed NPDES responsibilities, Louisiana may directly issue NPDES permits and has primary enforcement responsibility for facilities in this state, with certain exceptions such as Indian Country Lands (EPA 2013, LDEQ 2011). Louisiana administers the NPDES Program and surface water discharge permitting system under the Louisiana Pollutant Discharge Elimination System (LPDES) program (LDEQ 2011). LPDES requires permits for the discharge of pollutants/wastewater from any point source into waters of the state (LAC 33:IX). The term "point source" is defined as "any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, ... vessel, or other floating craft from which pollutants are or may be discharged" (40 C.F.R. § 122.2; LAC 33:IX, Chapter 23, §2313). Prior to assumption of the program, permittees were required to hold both a valid state and federal permit. Today, all point source discharges of pollutants to waters of the state of Louisiana are required to hold an LPDES permit issued by the Louisiana Department of Environmental Quality (LDEQ, 2011).

4.4.2.2 Existing Conditions

Several waterways and water bodies are found within a 0.5 mile area around Pontilly. The Inner Harbor Navigation Canal begins less than 0.25 miles north of Pontchartrain Park at Lake Pontchartrain and flows south along the eastern border of Pontilly. The Metairie Canal No 2 is located North of Pontilly and flows east and turns south running parallel to the Inner Harbor Navigation Canal. Joseph Bartholomew Golf Course, within Pontchartrain Park, contains 13 ponds. The Dwyer Canal is a 0.8 mile long canal which runs from east to west, bisecting Pontilly area with Pontchartrain Park neighborhood to the north and the Gentilly Woods neighborhood to the south.

Per USFWS National Wetlands Inventory (NWI) Wetlands Map, there are three wetlands within 0.5 miles of the project area (Figure 9): the Inner Harbor Navigation Canal is classified as an Estuarine and Marine Deepwater wetland, and the Joseph M. Bartholomew Golf Course ponds are presented as three separate sites and account for 14.5 acres of Freshwater ponds.

FEMA-EHP submitted SOVs to USACE and USPEA on November 2, 2015.

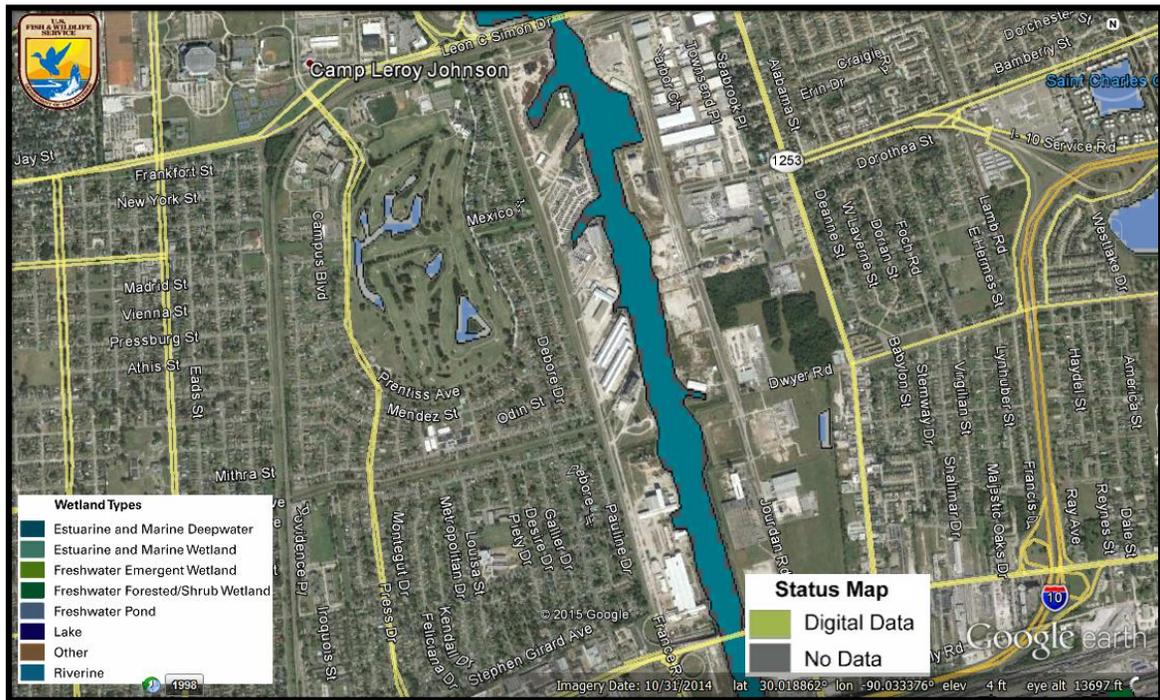


Figure 9: USFWS National Wetlands Inventory Map

4.4.2.3 Environmental Impacts

No Action Alternative– No impacts are anticipated to U.S. Waters or wetlands under the No Action Alternative.

Alternative 1: Proposed Action– The proposed project is not anticipated to have long-term adverse effects on any waters near the proposed project area. However, based on the proposed flood mitigation alternatives, stormwater runoff from construction activities could have a short-term adverse impact on waters near the proposed project area during the construction period if specific mitigation measures are not followed by the contractor. According to the designs, the proposed project would create wetlands within the project area. Creating these wetlands would not only provide a natural space to hold stormwater runoff, but the wetlands would provide a natural purifier, removing pollutants from the water column and would add aesthetic value to the area.

USACE did not respond FEMA-EHP’s SOV within the 30 day timeframe; therefore, it is assumed the USACE does not have any objections to the project.

Per USACE response dated 12/21/15, “Our preliminary review revealed that jurisdictional waters of the U.S. may occur on the proposed sites. At this time, the EPA supports implementation of proposed Alternative 1 and recommends coordination with the U.S. Army Corps of Engineers at the New Orleans District Office to verify if jurisdictional waters of the U.S. do occur on site and which permits, if any, are needed.”

The applicant submitted a consultation letter to USACE July 17, 2013. Per USACE response dated September 26, 2013, the applicant must obtain a permit from the Orleans Levee District for any work within 300 feet of a federal flood control structure. Performance of all subsurface work within this area is usually restricted when the stage of the Mississippi River is above elevation +11.0 feet on the Carrollton gage, at New Orleans, Louisiana. As a consequence, subsurface work should be scheduled for performance during the low-water period (typically June through November) to avoid delays in performance of the proposed work. The applicant must apply by letter to the Orleans Levee District including full-size construction plans, cross sections, and details of the proposed work. Concurrently with the application to the Orleans Levee District, the applicant must also forward a copy of the letter and plans to Operations Division, Operations Manager for Completed Works of the Corps of Engineers and to the Office of Coastal Protection and Restoration Authority (CPRA) in Baton Rouge for their review and comments concerning the proposed work.

According to the USACE response letter, the project is not in wetlands subject to Corps’ jurisdiction and a Department of the Army permit under Section 404 of the Clean Water Act would not be required. Offsite location 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.

LEDQ responded to the applicant’s consultation on August 22, 2013 stating the agency did not have any objections to the project. LDEQ did provide the following comments/conditions:

A stormwater pollution prevention plan (SWPPP) utilizing BMPs should be developed once a detailed flood mitigation alternative is selected in order to mitigate any adverse impact that the stormwater runoff from the construction activities would have on the waters surrounding the Pontilly area.

The project results in a discharge to waters of the State; submittal of a Louisiana Pollutant Discharge Elimination System LPDES application is necessary.

All precautions must be observed to control nonpoint source pollution from construction activities. LDEQ has stormwater general permits for construction areas equal to or greater than one (1) acre. The applicant must contact the LDEQ Water Permits Division at (225) 219-9371 to determine if the proposed project requires a permit.

Additional information may be obtained on the LDEQ website at <http://www.deq.louisiana.gov/portal/tabid/2296/Default.aspx> or by contacting the LDEQ Water Permits Division at (225) 219- 9371.

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 must be taken to protect workers from these hazardous constituents

Erosion Control Devices (ECD's) must be used and maintained extensively to prevent any potential direct or indirect adverse impacts to nearby wetland areas per the CWA and EO 11990. Any adverse impacts to adjacent wetlands resulting from the construction of this project will jeopardize receipt of federal funding.

Alternative 2: Considered Action- No waters of the U.S. including wetlands are expected to be affected under the Considered Action Alternative. However, based on the proposed flood mitigation alternatives, stormwater runoff from construction activities could have a short-term adverse impact on waters near the proposed project area during the construction period if specific mitigation measures are not followed by the contractor. A stormwater pollution prevention plan (SWPPP) utilizing BMPs should be developed once a detailed flood mitigation alternative is selected in order to mitigate any adverse impact that the stormwater runoff from the construction activities would have on the waters surrounding the Pontilly area.

Applicant must coordinate with USACE prior to the start of construction to acquire any necessary permits.

The project results in a discharge to waters of the State; submittal of a Louisiana Pollutant Discharge Elimination System LPDES application is necessary.

All precautions must be observed to control nonpoint source pollution from construction activities. LDEQ has stormwater general permits for construction areas equal to or greater than one (1) acre. The applicant must contact the LDEQ Water Permits Division at (225) 219-9371 to determine if the proposed project requires a permit.

Additional information may be obtained on the LDEQ website at <http://www.deq.louisiana.gov/portal/tabid/2296/Default.aspx> or by contacting the LDEQ Water Permits Division at (225) 219- 9371.

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 must be taken to protect workers from these hazardous constituents

Erosion Control Devices (ECD's) must be used and maintained extensively to prevent any potential direct or indirect adverse impacts to nearby wetland areas per the CWA and EO 11990. Any adverse impacts to adjacent wetlands resulting from the construction of this project will jeopardize receipt of federal funding.

4.4.3 Floodplains

4.4.3.1 Regulatory Authority

Executive Order 11988, 46 FR 26951 (Floodplain Management) requires Federal agencies avoid direct or indirect support or development within the 100-year floodplain whenever there is a practicable alternative. FEMA's E.O. 11988 compliance regulations are found at 44 CFR Part 9.

4.4.3.2 Existing Conditions

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 National Flood Insurance Fund. These studies were necessary because the flood hazard and risk information shown on many Flood Insurance Rate Maps (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 (LaMP 2007).

During an initial post-hurricane analysis, FEMA determined that the "100-Year" or 1% 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 Hurricanes Katrina's and Rita's surge, as well as information on other storms over the past 25 years (Lamp 2007). 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 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 (LaMP 2007).

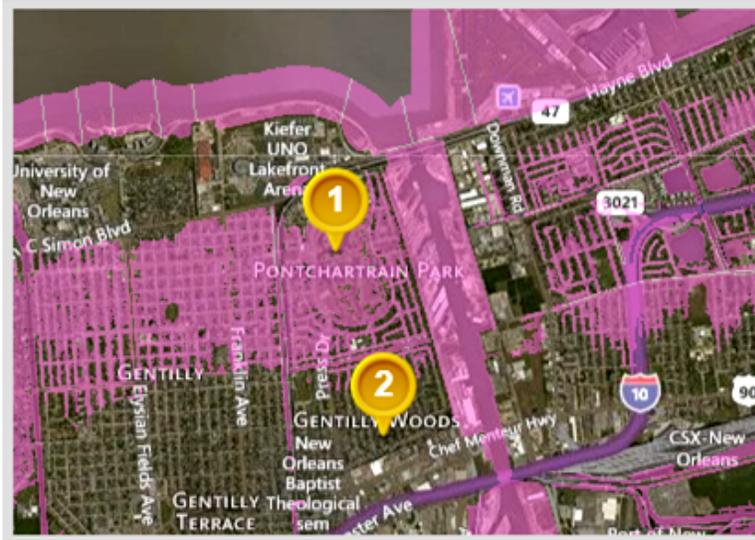
Updated preliminary flood hazard maps from an intensive five-year mapping project guided by FEMA were provided to all Louisiana coastal parishes. The maps released in early 2008, known as Preliminary Digital Flood Insurance Rate Maps (DFIRMs), were based on the most technically advanced flood insurance studies ever performed for Louisiana, followed by multiple levels of review. The DFIRMs provided communities with a more scientific approach to economic development, hazard mitigation planning, emergency response and post-flood recovery (LaMP 2007).

The USACE has completed work on a 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 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 revised the preliminary DFIRMS within the HSDRRS to incorporate the reduced flood risk associated with the system improvements.

In November 2012, FEMA revised the 2008 preliminary DFIRMS within the HSDRRS to incorporate the reduced flood risk associated with the system improvements. Where released and available, the 2012 Revised Preliminary DFIRMS are viewed as the best available flood risk data for FEMA's own grant programs in its implementation of E.O. 11988; however, no project should be built to a floodplain management standard that is less protective than what the community has adopted in local ordinances through their participation in the National Flood Insurance Program (Miller 2011).

Orleans Parish enrolled in the NFIP as of 08/03/1970. Orleans Parish Advisory Base Flood Elevation Maps (ABFEs) were issued June 2006 (FEMA, 2006), and are currently adopted by the Orleans Parish NFIP community for floodplain management purposes. The proposed site is shown on ABFE Map OR-LA-EE32 (Figure 6), Elevation (EL) -1 ft. or a BFE elevation of 3 ft. above the Highest Existing Adjacent Grade (HEAG). Per Revised Preliminary DFIRM panel number 22071C0118F, dated 12/01/2014 (Figure 10), the proposed site is located within a AE, EL-5, an area of 0.1% annual chance flood (100-year floodplain); base flood elevation determined, and Shaded X area of the 0.2% annual chance flood (100-year floodplain) with average depths of less than 1 ft. or with drainage areas less than 1 square mile; and areas protected by levees from the 1% annual chance flood (100-year).

Louisiana Flood Map Pontilly Drainage Project



Visible Layers

Preliminary FIRM
(12/01/2014)

Bing Hybrid

Point Coordinates

Point #	Lat., Long.
1	30.0234, -90.0416
2	30.0085, -90.0372

Flood information in this table is from the: Preliminary FIRM (12/01/2014)

Point	Panel ID	Flood Zone	BFE	Ground Elevation	BWS('13)*
1	22071C0118F 12/01/2014	AE, EL -5	-5	-9.5	110-119 mph
2	22071C0118F 12/01/2014	0.2 PCT ANNUAL CHANCE FLOOD HAZARD	out	-2.0	110-119 mph

1. *Ground Elevation* is provided by USGS's elevation web service which provides the best available data for the specified point. If unable to find elevation at the specified point, the service returns an extremely large, negative value (-1.79769313486231E+305).
2. *BWS* is provided by the LSU AgCenter's basic wind speed web service developed for the 2012 IRC building codes.

Figure 10: Preliminary DFRIM Map of Pontilly

4.4.3.3 Environmental Impacts

No Action Alternative— With no action taken, the impacts of inadequate drainage in the project area would continue to rise as the existing system ages and development increases.

Alternative 1: Proposed Action– Although the Proposed Project Alternative is located within the floodplain, its purpose is to lower the floodplain and reduce impacts from regular and frequent flooding events. Per the H&H study (Appendix C), the proposed project would effectively lower the floodplain elevation and allow the floodplain to function more efficiently. Statistical 1-, 2-, 5, and 10-year, 24-hour storms were run and analyzed using H&H models of the existing and proposed project area to identify structures and roadways flooded during each event. Modeled flood elevations were compared to first floor elevations of structures. Table 1 summarizes the comparison. Appendix F includes the narrative discussion of the 8-step process addressing EO 11988 and 44 CFR, Part 9 to assure that alternatives to the proposed action have been considered.

The applicant must coordinate with the floodplain administrator prior to the start of construction.

The project area must be kept cleared so as not to interfere with floodplain functions.

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

The applicant is required to coordinate with the local floodplain administrator regarding floodplain permit(s) prior to the start of any activities. All correspondence must be submitted to FEMA and FEMA-EHP for inclusion in the project files. Should the site plans (including drainage design) change the applicant must submit changes to FEMA-EHP for review and approval prior to the start of construction.

Table 1. Proposed Project Alternative Impact to Floodplain

Statistical Storm	Existing-# Flooded Structures	Existing-Estimated Damage	Proposed-# Flooded Structures	Proposed-Estimated Damage	Proposed Impact-# Flooded Structures	Proposed Impact-Estimated Damage
1-year	456	\$4,116,000	315	\$2,554,000	(141)	(\$1,562,000)
2-year	869	\$9,417,000	685	\$6,637,000	(184)	(\$2,780,000)
5-year	1077	\$15,511,000	1002	\$11,747,000	(75)	(\$3,764,000)
10-year	1091	\$20,308,000	1079	\$16,796,000	(12)	(\$3,512,000)

Alternative 2: Considered Action- The considered action alternative would reduce flooding within the project area by increasing the effectiveness of the existing drainage system. All work would be underground; therefore, would not affect the floodplain.

The project area must be kept cleared so as not to interfere with floodplain functions.

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

The applicant is required to coordinate with the local floodplain administrator regarding floodplain permit(s) prior to the start of any activities. All correspondence must be submitted to FEMA and FEMA-EHP for inclusion in the project files. Should the site plans (including drainage design) change the applicant must submit changes to FEMA-EHP for review and approval prior to the start of construction.

4.5 Coastal Resources

4.5.1 Regulatory Setting

The Coastal Zone Management Act of 1972 (CZMA, or the Act, 16 U.S.C., Ch. 33) 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 (16 U.S.C. §§ 1451 and 1452).

The Act'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, salt marshes, and wetlands (16 U.S.C. § 1453[1]). 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 (16 U.S.C. § 1456[c][1][A]). On September 28, 2012, the LDNR, Office of Coastal Management (OCM), issued a letter of general consistency concurrence, "serv[ing] as formal notification that, as of October 1, 2012, the granting of any financial assistance as defined in 15 CFR § 930.91, is fully consistent with the Louisiana Coastal Resources Program." LDNR also regulates development in Louisiana's designated coastal zone through the Coastal Use Permit (CUP) Program (LDNR, 2013).

The USFWS regulates federal funding in Coastal Barrier Resource System (CBRS) units under the Coastal Barrier Resources Act (CBRA, 16 U.S.C., Ch. 55). This Act protects undeveloped coastal barriers and related areas (i.e., Otherwise Protected Areas [OPAs]) by prohibiting direct or indirect Federal funding of projects that support development in these areas (16 U.S.C. §§ 3501, 3504, and 3505). The Act promotes appropriate use and conservation of coastal barriers along the Gulf of Mexico.

4.5.2 Existing Conditions

Coastal Management Plans have been developed for many communities in the southern Louisiana area. The Pontilly area is located within the Louisiana Coastal Zone as defined by the Louisiana Coastal Zone Boundary Map provided by the LDNR. The proposed project area is not within the boundary of a Coastal Barrier Resource System.

4.5.3 Environmental Impacts

No Action Alternative– The No Action Alternative would have no effect on the Louisiana Coastal Zone. No permit would be required

Alternative 1: Proposed Action– Although no impacts are anticipated either direct or indirect to the coastal waters, Coastal Use permitting may be required in compliance with the LDNR requirements prior to construction. Per LDNR response dated September 27, 2013, the applicant was issued a Coastal Use Permit. A requirement of the permit is the applicant must contact the office prior to the commencement of the project.

The proposed Dwyer Canal portion of the project may require a CUP from the LDNR. The applicant is required to complete a CUP Application and submit the packet to LDNR in order to make this determination. The submission should include locality maps, construction plats and plans with cross section views, etc., along with the appropriate application fee.

The applicant shall comply with all conditions of the required permit. 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.

Alternative 2: Considered Action- Under the Considered Action Alternative, no impacts are anticipated to coastal waters; however, coastal use permitting may be required.

The proposed project may require a CUP from the LDNR. The applicant is required to complete a CUP Application and submit the packet to LDNR in order to make this determination. The submission should include locality maps, construction plats and plans with cross section views, etc., along with the appropriate application fee.

The applicant shall comply with all conditions of the required permit. 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.

4.6 Biological Resources

4.6.1 Regulatory Authority

The Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531-1543) prohibits the taking of listed, threatened, and endangered species unless specifically authorized by permit from the USFWS or the 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 C.F.R. § 17.3) (Endangered and Threatened Wildlife and Plants 1975).

An “endangered species” is defined as one that is in danger of extinction throughout all or a significant portion of its range. A “threatened species” is defined as one that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. “Candidate species” are those species for which the USFWS has sufficient information on the species’ biological vulnerability and threats to support issuance of a proposed rule to list the species under the ESA. “Species of concern” refers to species for which a listing of threatened or endangered may be appropriate but which the USFWS has insufficient information to support their listing.

Section 7(a)(2) of the ESA requires the lead federal agency to consult with either the USFWS or the National Marine Fisheries Service (NMFS), depending which agency has jurisdiction over the federally listed species in question, when a federally funded project either 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 lead agency must consult with the USFWS, the NMFS, or both (Agencies) as appropriate and will determine if a biological assessment is necessary to identify potentially adverse effects to federally listed species, their critical habitat, or both. If a biological assessment is required, it will be followed by a biological opinion from the USFWS, the NMFS, or both depending on the jurisdiction of the federally listed species identified in the biological assessment. If the impacts of a proposed federal project are considered negligible to federally listed species, the lead agency may instead prepare a letter to the Agencies with a “May Affect, but Not Likely to Adversely Affect” determination requesting the relevant agency’s concurrence. This EA serves to identify potential impacts and meet the ESA § 7 requirement by ascertaining the risks of the proposed action and alternatives to known federally listed species and their critical habitat, as well as providing a means for consultation with the Agencies.

4.6.2 Existing Conditions

Federally protected species under the ESA which could inhabit the region around the Pontilly area were identified through a review of the endangered, threatened and candidate species lists maintained by the USFWS and the NMFS. Sensitive plant species lists are maintained by the U.S. Forest Service. The table below lists the protected species that could inhabit the Pontilly area.

Table 2. Protected Species that could inhabit the Pontilly area

Name	Group	Status
Brown pelican (<i>Pelecanus occidentalis</i>)	Bird	Recovery
Sprague's pipit (<i>Anthus spragueii</i>)	Bird	Candidate
Gulf sturgeon (<i>Acipenser oxyrinchus desotoi</i>)	Fish	Threatened
Pallid sturgeon (<i>Scaphirhynchus albus</i>)	Fish	Endangered
West Indian manatee (<i>Trichechus manatus</i>)	Mammal	Endangered
Louisiana black bear (<i>Ursus americanus luteolus</i>)	Mammal	Threatened

FEMA-EHP submitted SOVs to LDWF on November 2, 2015. As previously directed by USFWS, FEMA utilized the self-screening website www.fws.gov/lafayette . Results and responses are discussed below.

4.6.3 Environmental Impacts

No Action Alternative– Under the No Action Alternative, no impacts are anticipated to threatened or endangered species.

Alternative 1: Proposed Action- Per USFWS ESA Technical Assistance Form dated November 2, 2015, the proposed project activities are not anticipated to adversely affect any federally protected, threatened, or endangered species. No further ESA coordination with the USFWS is necessary for the proposed action, unless there are changes in the scope or location of the proposed project or the project has not been initiated one year from the date of this letter.

If the proposed project has not been initiated within one year, follow-up coordination via this website should be accomplished prior to making expenditures because our threatened and endangered species information is updated annually. If the scope or location of the proposed project is changed, coordination via this website should occur as soon as such changes are made.

LDWF did not respond FEMA-EHP's SOV within the 30 day timeframe; therefore, it is assumed the LDWF does not have any objections to the project.

The applicant submitted a consultation letter to LDWF on July 17, 2013. Per response dated July 26, 2013, there are no anticipated impacts to rare, threatened, or endangered species, or critical habitat. No state or federal parks, wildlife refuges, scenic streams, or wildlife management areas known within or around the project site

To provide the most biologically diverse and supportive habitat for urban biological resources, any new vegetation plantings should be native to the area, and non-invasive. Any created habitat would be a net positive to the urban environment.

Alternative 2: Considered Action- Per USFWS ESA Technical Assistance Form dated November 2, 2015, the Considered Action Alternative activities are not anticipated to adversely affect any federally protected, threatened, or endangered species. No further ESA coordination with the USFWS is necessary for the proposed action, unless there are changes in the scope or location of the proposed project or the project has not been initiated one year from the date of this letter. If the proposed project has not been initiated within one year, follow-up coordination via this website should be accomplished prior to making expenditures because our threatened and endangered species information is updated annually. If the scope or location of the proposed project is changed, coordination via this website should occur as soon as such changes are made.

4.7 Cultural Resources

4.7.1 Regulatory Setting

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) and its implementing regulations (36 CFR 800) outline the procedures for Federal agencies to follow to take into account the effect of their actions on historic properties. The Section 106 process applies to any Federal undertaking that has the potential to affect historic properties, defined in the NHPA as those properties (archaeological sites, standing structures, or other cultural resources) that are listed in or eligible for listing in the NRHP. Although buildings and archaeological sites are most readily recognizable as historic properties, a diverse range of resources are listed in the NRHP, including roads, landscapes, and vehicles.

Under Section 106, Federal agencies are responsible for identifying historic properties within the Area of Potential Effects (APE) for an undertaking, assessing the effects of the undertaking on those historic properties, if present, and considering ways to avoid, minimize, and mitigate any adverse effects. Because Section 106 of the NHPA is a process by which the Federal government assesses the effects of its undertakings on historic properties, it is the primary regulatory framework that is used in the NEPA process to determine impacts on cultural resources.

Alternatives for this project were reviewed in accordance with the Louisiana State-Specific Programmatic Agreement among FEMA, 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 (ACTT), the Chitimacha Tribe of Louisiana (CTL), the Choctaw Nation of Oklahoma (CNO), the Jena Band of Choctaw Indians (JBCI), the Mississippi Band of Choctaw Indians (MBCI), the Seminole Tribe of Florida (STF), and the Advisory Council on Historic Preservation (ACHP) regarding FEMA's HMGP dated January 31st, 2011, (2011 LA HMGP PA).

4.7.2 Existing Conditions

The APE encompasses approximately 733 acres, including both the Ponchartrain Park and Gentilly Woods neighborhoods. The boundaries are defined by Norfolk Southern Railroad to the north; the Inner Harbor Navigational Canal levee to the east, Stephen Girard Ave. to the south, and the Norfolk Southern Railroad and Seminary Pl. to the west. This APE encompasses the area that will benefit from the proposed drainage interventions and also accounts for the view shed considerations for standing structures and areas of ground disturbance for potential archaeological deposits.

The Louisiana Office of Cultural Development's Cultural Resources Map and FEMA's previous standing structure surveys and Section 106 consultation documents were consulted in order to identify historic properties.

According to the Louisiana Cultural Resources Map, no archaeological sites are recorded within the APE and only two sites are recorded within .5 miles of the APE. The majority of the proposed APE is within the low probability zone for archaeological deposits. Portions of the high probability areas of the APE have been previously surveyed for cultural resources with negative results: the Morrison Playspot green space (LDOA report 22-4313) and NORA lot at 5037 Columbia Street (LDOA report 22-3804). Historic maps, including Hardee's 1878 map, the 1937-51 Sanborn Fire Insurance Map, and the 1953 U.S.G.S. Spanish Fort quadrangle, show the APE as swampy and undeveloped until the mid-twentieth century. Between 1955 and 1957, aerial photographs show the Barrow Stadium baseball field being constructed, with the remainder of the project area surrounded by undeveloped land or recently leveled or graded land. The area within the APE has been extensively disturbed by construction starting from the mid-twentieth century.

The APE exhibits a low potential for intact archaeological deposits based on the late date of development, the extensive construction disturbance, previous investigations with negative results, and the lack of archaeological resources recorded within or adjacent to the APE.

A comprehensive standing structure survey of the APE was not conducted for this Undertaking. FEMA and SHPO surveyed the APE in the fall of 2005, as part of an effort to identify historic properties following hurricane Katrina. FEMA determined that a portion of the Ponchartrain Park neighborhood is eligible for the NRHP under Criterion A for its significance related to African-American community development within the City of New Orleans from 1955 through 1957. SHPO concurred with this finding in a letter dated December 8, 2005. No other historic districts were identified within the APE at the time of the survey. FEMA has re-evaluated the Ponchartrain Park historic district several times since 2005 in order to facilitate the Section 106 review for Undertakings within the area. The Southern University (SUNO) campus is also located within the APE. One building, the Administration building, has been determined by FEMA to be eligible for listing in the NRHP.

4.7.3 Environmental Impacts

No Action Alternative- Under the no action alternative, no construction would occur and no cultural resources or historic properties would be affected.

Alternative 1: Proposed Action- The interventions proposed are designed to be low impact and they are proposed for areas of existing green spaces and asphalt. The character of the existing landscape will remain much the same and the drainage will have a positive effect on the function of the neighborhood. Additionally, most of the interventions will occur outside the boundaries of the Ponchartrain Park Historic District. FEMA has determined they will not alter the characteristics of the Ponchartrain Historic District that qualify it for listing in the NRHP. The district is defined by the park and golf courses, curvilinear streets, and post WWII housing. The green spaces within the district and the lots left vacant following the Road Home demolition program leave ample space for the installation of the proposed mitigation measures. The introduction of additional vegetation and trees will not adversely affect the integrity of location, setting, materials, workmanship, design, feeling or association.

A consultation with SHPO and interested Tribes was conducted in accordance with the LA HMGP PA. SHPO concurred with the determination of no adverse effect to historic properties in a letter dated, August 6, 2014. The Choctaw Nation of Oklahoma also concurred with the determination of no adverse effect to historic properties, in an email dated August 5, 2014. No other Tribal responses were received.

In accordance with the LA HMGP PA and the conditions set forth by the Choctaw Nation of Oklahoma, compliance with requirements regarding unanticipated archaeological discoveries and with the Louisiana Unmarked Human Burial Sites Preservation Act (R.S. 8:671 et seq.) will be a condition of the grant.

Alternative 2: Considered Action- A review of this alternative was conducted in accordance with the LA HMGP PA. Based on research using the NRHP database and the Louisiana Cultural Resources Map on the Louisiana Division of Historic Preservation’s website, FEMA has determined that the Ponchartrain Park National Register Historic District is located within the project area. Upon consultation of data provided by the SHPO, FEMA has determined that there are no known archaeological sites within the project area. All work will occur within previously disturbed roadways and utility rights-of-way; excavating and removing existing pipes and replacing with larger pipes (either 36 inch or 48 inch pipes). Due to the inclusion of Ponchartrain Park Historic District within the project area, this alternative would require a review under the NHPA Section 106 process prior to its implementation.

4.8 Environmental Justice

4.8.1 Regulatory Authority

EO 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 and/or low-income populations.

4.8.2 Existing Conditions

The Pontilly neighborhood is historically a minority middle-class neighborhood, although the demographics may have shifted since Hurricane Katrina. Pontchartrain Park was one of the first areas in New Orleans designed to provide home ownership to middle and upper income African Americans and at a time when other developments specifically excluded black people (City of New Orleans 2006). It is a suburban-style neighborhood characterized by curvilinear streets. According to the U.S. Census, the City of New Orleans population is largely minority (60% African American alone) with 25.7% of persons living below the poverty level, as compared to 18% for the State of Louisiana (U.S. Census 2010).

4.8.3 Environmental Impacts

No Action Alternative– The No Action Alternative would not involve the implementation of a federal program, policy or activity. Therefore, there would be no disproportionate adverse impacts to low-income or minority populations.

Alternative 1: Proposed Action – The proposed action would not have disproportionate adverse human health, economic, or social effects on minority or low income populations. Currently the lots which are in the proposed action have been abandoned since Hurricane Katrina and were legally acquired by the applicant. Utilizing the vacant lots as stormwater storage areas should have a beneficial impact on the project area in alleviating street flooding and property damage from rain events. In addition, the project could be considered a community beautification project and would increase property values.

Alternative 2: Considered Action- The Considered Action Alternative would not have a disproportionate adverse human health, economic, or social effects on minority or low income populations. The project would reduce flooding in the area, thus providing a beneficial effect to the project area.

4.9 Additional Considerations

4.9.1 Hazardous Material

An EDR database report was conducted by Environmental Data Resources, Inc. on the subject project area on June 8, 2012. A copy of this report and the associated map are attached as Appendix D. The report found the following records for the following institutions within the Pontilly project limits.

Southern University at New Orleans (SUNO)

- Resource Conservation and Recovery Act (RCRA) – Small Quantity Generator (SQG)
- Historical (HIST) – Leaking Underground Storage Tank (LUST)
- Underground Storage Tanks (UST)

Per NEPAssist Report, reviewed on October 26, 2015, there are four Toxic Release Inventory sites (TRI) within 0.5 miles of the project boundaries, and one site within the project boundaries. There are 66 Hazardous Wastes (RCRA) sites within 0.5 miles of the project boundaries, and 13 sites within the project area (Figure 10). There are no Louisiana State Brownfield (LSB) sites, or Superfund sites in or around the project area.

Pontilly Drainage Project

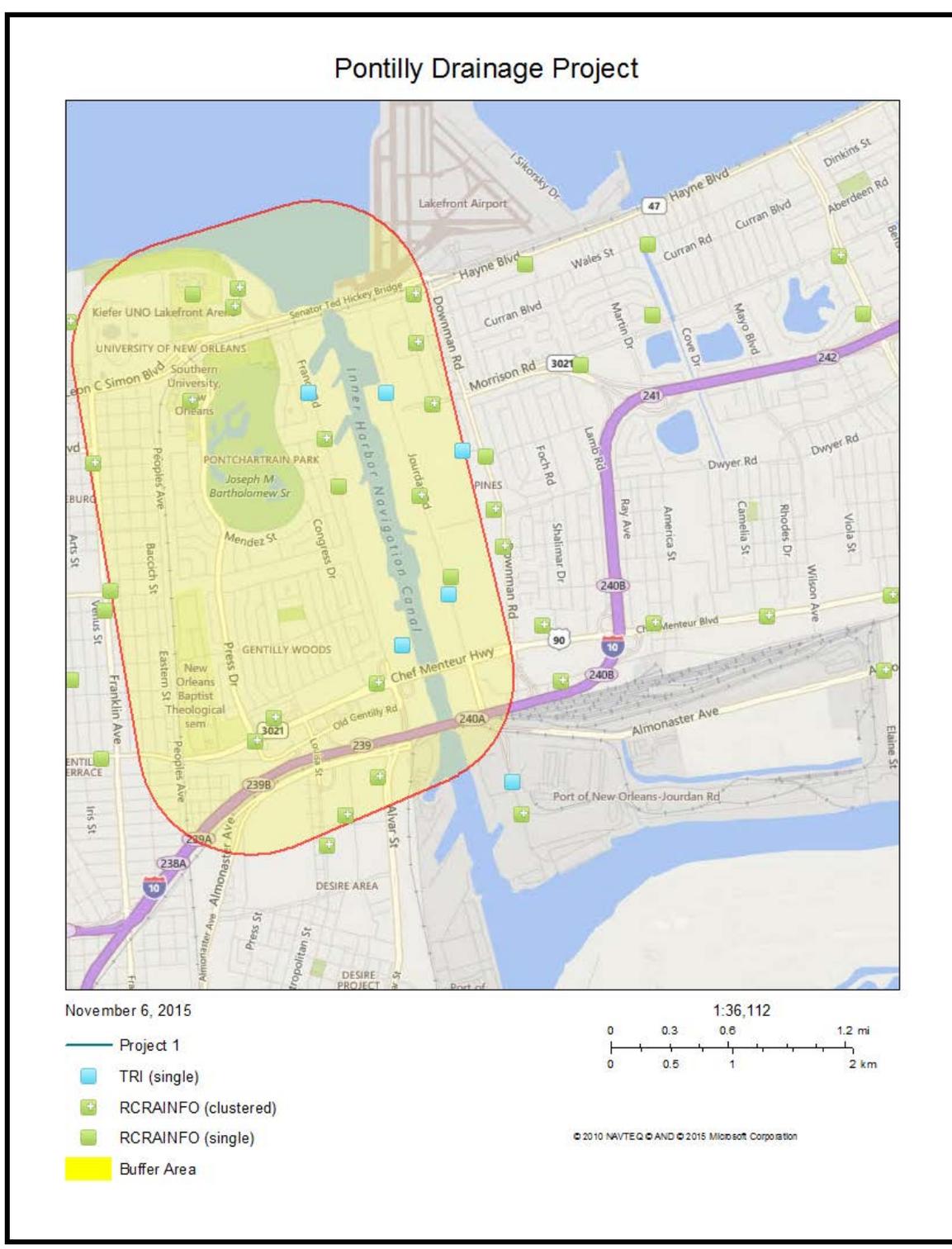


Figure 11: NEPAAssist- RCRA and TRI Sites within and near the project area. The 0.5 mile buffer is shown

No Action Alternative– Under the No Action Alternative, no hazardous materials impacts are anticipated.

Alternative 1: Proposed Action– Under the Proposed Action Alternative, no impacts to the project from these items are anticipated. LEDQ responded to the applicant’s consultation on August 22, 2013 stating the agency did not have any objections to the project. The only TRI site within the drainage area is M-I Drilling Fluids Co. New Orleans. According to the TRI facility report, there has been no release of reportable quantities since 1992. RCRA sites located within the proposed area are businesses that commonly utilize chemicals which are regulated by RCRA on a daily basis. This project would not disturb any of these nearby facilities. All lots which are being converted from residential land use to stormwater detention use have had Phase I Environmental Assessments conducted, of which no hazardous materials were discovered on the sites. If hazardous materials are unexpectedly encountered in the project area during the proposed construction operations, appropriate measures for the proper assessment, remediation, management and disposal of the contamination would be initiated in accordance with applicable federal, state, and local regulations. The contractor would be required to take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction area.

Alternative 2: Considered Action- Under the Considered Action Alternative, no impacts to the project from these items are anticipated. If hazardous materials are unexpectedly encountered in the project area during the proposed construction operations, appropriate measures for the proper assessment, remediation, management and disposal of the contamination would be initiated in accordance with applicable federal, state, and local regulations. The contractor would be required to take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction area.

4.9.2 Noise

Noise 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. EPA guidelines, and those of many other federal agencies, state that outdoor sound levels in excess of 55 dB DNL are “normally unacceptable” for noise-sensitive land uses including residences, schools, or hospitals (EPA, 1974).

No Action Alternative – Under the No Action Alternative, there would be no short- or long-term impact to noise levels because no construction would occur.

Alternative 1: Proposed Action– Under the Proposed Action Alternative, increased noise levels associated with the flood mitigation alternatives would depend on the quantity and type of improvements and construction proposed for the project area. Increased noise levels should only occur temporarily during heavy construction activities if applicable. Mitigation of increased noise levels would include limited construction time periods, proper maintenance of construction equipment, and the selection of noise-dampening construction techniques.

The contractor must comply with all local noise ordinances.

Alternative 2: Considered Action- Under the Considered Action Alternative, increased noise levels associated with the flood mitigation alternatives would depend on the quantity and type of improvements and construction proposed for the project area. Increased noise levels should only occur temporarily during heavy construction activities if applicable. Mitigation of increased noise levels would include limited construction time periods, proper maintenance of construction equipment, and the selection of noise-dampening construction techniques.

The contractor must comply with all local noise ordinances

4.9.3 Traffic

The general boundaries of the new Pontilly neighborhood are Leon C. Simon to the north, Chef Menteur Highway to the south, the Industrial Canal to the east, and Peoples Avenue to the west. The neighborhood is isolated from the rest of Planning District 6 by railroad tracks located on the eastern side of Peoples Avenue and from its neighbors to the east by the Industrial Canal. The two neighborhoods, Pontchartrain Park and Gentilly Woods, are further bisected by the Dreux Canal right-of-way (City of New Orleans 2006). The Pontilly area is a suburban-style neighborhood characterized by curvilinear streets.

No Action Alternative – Under the No Action Alternative, the existing flooding of the roadways within the project area during heavy rains would continue, resulting in closure of one or more means of ingress and egress to the Pontilly Neighborhood. When these roadways are closed as a result of flooding, residents of the area would be trapped in and first responders would be prevented from accessing the area to provide emergency services. Additionally, the standing flood waters cause advanced degradation of the existing asphaltic roadways within the project area.

Alternative 1: Proposed Action– Under the Proposed Project Alternative, impacts on ingress and egress would be minor. A short-term increase in construction traffic on roadways in the project area would result in slower traffic flow during construction activities. Short term traffic impacts would be mitigated through controlling construction times to minimize construction activities during the morning and evening high traffic periods.

Additionally, the construction contractor(s) would be required to provide appropriate signage and placement of barriers, in accordance with the Manual of Uniform Traffic Control Devices to alert pedestrians and motorists of ongoing activities.

Alternative 2: Considered Action- Under the Considered Action Alternative, a short-term increase in construction traffic on roadways in the project area would result in slower traffic flow during construction activities and temporary detours. Short term traffic impacts would be mitigated through controlling construction times to minimize construction activities during the morning and evening high traffic periods. Additionally, the construction contractor(s) would be required to provide appropriate signage and placement of barriers, in accordance with the Manual of Uniform Traffic Control Devices to alert pedestrians and motorists of ongoing activities.

4.9.4 Public Service and Utilities

Public utility services within the project area are provided by several agencies. Electricity and natural gas services are provided by Entergy New Orleans, Inc. Water, Sewer, and major drainage services are provided by the S&WB. The City of New Orleans is responsible for the collection and conveyance of stormwater to the Sewage & Water Board system. Telecommunications services are provided by a variety of private agencies, but the infrastructure is owned and maintained by a combination of Cox Communications and AT&T.

No Action Alternative- Under the No Action Alternative, the existing flooding will continue to overwhelm the existing drainage infrastructure. Flood waters that do not enter the drainage system will continue to enter the sanitary sewer system as rainfall dependent inflow and infiltration causing the sanitary sewer system to function less efficiently and limit the available capacity for to convey sewage to the higher cost to the Sewerage & Water Board of New Orleans.

Alternative 1: Proposed Action- Under the Proposed Project Alternative, flooding within the project area would be reduced significantly and stormwater detention would occur in locations where there is no potential for impact to existing utilities.

Alternative 2: Considered Action- Under the Considered Action Alternative, there would be a temporary impact to some existing utilities as the right of ways would be excavated to complete the upgrades. Utility companies would be responsible for relocating any affected utilities. Exact impacts were not explored for this alternative at this time.

4.9.5 Public Health and Safety

EO 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 and the public at-large, and the protection of personnel involved in the activities related to the proposed construction of the project. The project area consists of residential dwellings and their associated private lots with interspersed clusters of trees.

No Action Alternative – Under the No Action Alternative, no construction would occur. Dangerous flooding of residences and roadways would continue to occur during heavy rain events. Flooding poses risks to motorists (potential entrapment in flood waters), residents (flooding homes and limiting access), and emergency responders. Flood waters that stand for more than forty-eight hours can become breeding grounds for mosquitoes and other pests which can carry blood-borne diseases.

Alternative 1: Proposed Action– Under the Proposed Project Alternative, construction activities could present safety risks to those performing the activities and to the general public, including children living in adjacent residences. Risks could occur if residents wander onto the construction site and gain access to operating machinery or onsite materials. To minimize risks to local residents and the public, appropriate safety BMPs such as signage and barriers would be placed around the individual work sites to prohibit public access to the construction/demolition area. All construction activities would be performed by qualified personnel trained in the proper use of the appropriate equipment, including all appropriate safety precautions. All activities would be conducted in a safe manner in accordance with the standards specified in the Occupational Safety and Health Administration (OSHA) regulations. The construction contractor would be responsible for adhering to the Louisiana One-Call Law. Stormwater detention areas will be designed to limit detention time to significantly less than forty-eight hours during heavy rain events.

Other potential safety risks analyzed part of this review was the potential for lead contamination and mosquito control. Although neither NORA nor the applicant has conducted an analysis of lead contamination, the Louisiana Land Trust conducted a Tier 1 Environmental Assessment on all vacant lots prior to transferring them to NORA. Per the applicant, City Mosquito Control has been involved in this project since its inception and has closely monitoring NORA’s existing pilot stormwater retention lots since early 2014. All other lots have been draining as designed and Mosquito Control has not expressed any concerns for the projects. Based on these results it is determined that neither lead nor mosquitos would propose a danger to the health and safety of the public.

Alternative 2: Considered Action- Under the Considered Action Alternative, construction activities could present safety risks to those performing the activities and to the general public, including children living in adjacent residences. Risks could occur if residents wander onto the construction site and gain access to operating machinery or onsite materials. To minimize risks to local residents and the public, appropriate safety BMPs such as signage and barriers would be placed around the individual work sites to prohibit public access to the construction/demolition area. All construction activities would be performed by qualified personnel trained in the proper use of the appropriate equipment, including all appropriate safety precautions. All activities would be conducted in a safe manner in accordance with the standards specified in the OSHA regulations. The construction contractor would be responsible for adhering to the Louisiana One-Call Law.

4.10 Summary Table

In summary, considering that the proposed project alternative would be implemented in an already developed urban area and that the proposed improvements would only help to reduce flooding of the area, the proposed stormwater mitigation alternatives should have an overall positive impact on the project area.

Table 3. Summary of Potential Impacts and Mitigation Measures

Affected Environment/ Resource Area	Potential Impact Summary	Recommended Mitigation Measures
Geology and Soils	No impacts to geology are anticipated. Short-term minor impacts to soils may occur during construction. No conversion of farmland would occur.	Appropriate BMPs, such as installing silt fences and re-vegetating bare soils, would minimize runoff during construction.
Air Quality	No long-term impacts to air quality are anticipated. Minimal potential for short-term minor impacts during construction from fuel combustion equipment.	Fuel-burning equipment times would be kept to a minimum and engines would be properly maintained. Dust minimization measures should be implemented during construction as well.
Groundwater	No impacts to groundwater are anticipated.	None.
Waters of the U.S. including Wetlands	No long-term impacts to waters of the U.S., including wetlands, are anticipated. Short-term impacts from stormwater runoff during construction could occur if contractor does not follow best practices and mitigation measures.	A SWPPP utilizing BMPs should be developed.

Affected Environment/ Resource Area	Potential Impact Summary	Recommended Mitigation Measures
Floodplains	No negative impacts to floodplains will occur. The project would provide open space to hold storm water and reduce the flooding in the area.	None.
Coastal Resources	No impacts to coastal resources are anticipated.	None.
Biological Resources	No impacts to threatened or endangered species are anticipated.	All new plantings should be native and non-invasive.
Cultural Resources	No impacts to cultural or historic resources are anticipated.	None.
Environmental Justice	No disproportionately high or adverse effect on minority or low-income populations is anticipated.	None.
Hazardous Materials	No hazardous materials or waste impacts are anticipated.	Any hazardous materials discovered, generated, or used during construction would be disposed and handled in accordance with applicable local, state, and federal regulations.
Noise	Short-term noise impacts could occur at the proposed project sites during the construction period.	Mitigation of increased noise levels would include limited construction time periods, proper maintenance of construction equipment, and the selection of noise-dampening construction techniques.
Traffic	A short-term, minor increase in construction traffic on roadways in the project area could result in slower traffic flow during construction activities.	Short term traffic impacts will be mitigated through controlling construction times to minimize construction activities and requiring contractors to post appropriate signage and placement of barriers, in accordance with the Manual of Uniform Traffic Control Devices to alert pedestrians and motorists of ongoing activities.
Public Services and Utilities	No negative impacts to public services or utilities are anticipated.	None.

Affected Environment/ Resource Area	Potential Impact Summary	Recommended Mitigation Measures
Public Health and Safety	Construction activities could present safety risks to those performing the activities and to the general public.	All construction activities would be performed using qualified personnel and in accordance with OSHA regulations. Appropriate signage and barriers would be in place prior to construction activities to alert pedestrians and motorists of project activities. Stormwater detention areas will be designed to limit detention time to significantly less than forty-eight hours during heavy rain events.

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 C.F.R. § 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 C.F.R. § 1508.25[a][3]; see also 40 C.F.R. §§ 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 the alternative, 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 is within the Pontilly are and includes Pontchartrain Park and Gentilly. FEMA has determined that the area within one mile from the project area constitutes an appropriate project impact zone, and the larger geographic area consisting of the 70126, 70122 and 70148 zip codes constitutes an appropriate boundary for a cumulative impact analysis of the proposed action and the 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 November 2015, within the project area and one mile buffer, 286 FEMA-funded projects have occurred or are occurring inside the buffer – two HMGP and 284 PA projects (Figure 12).

In addition 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.

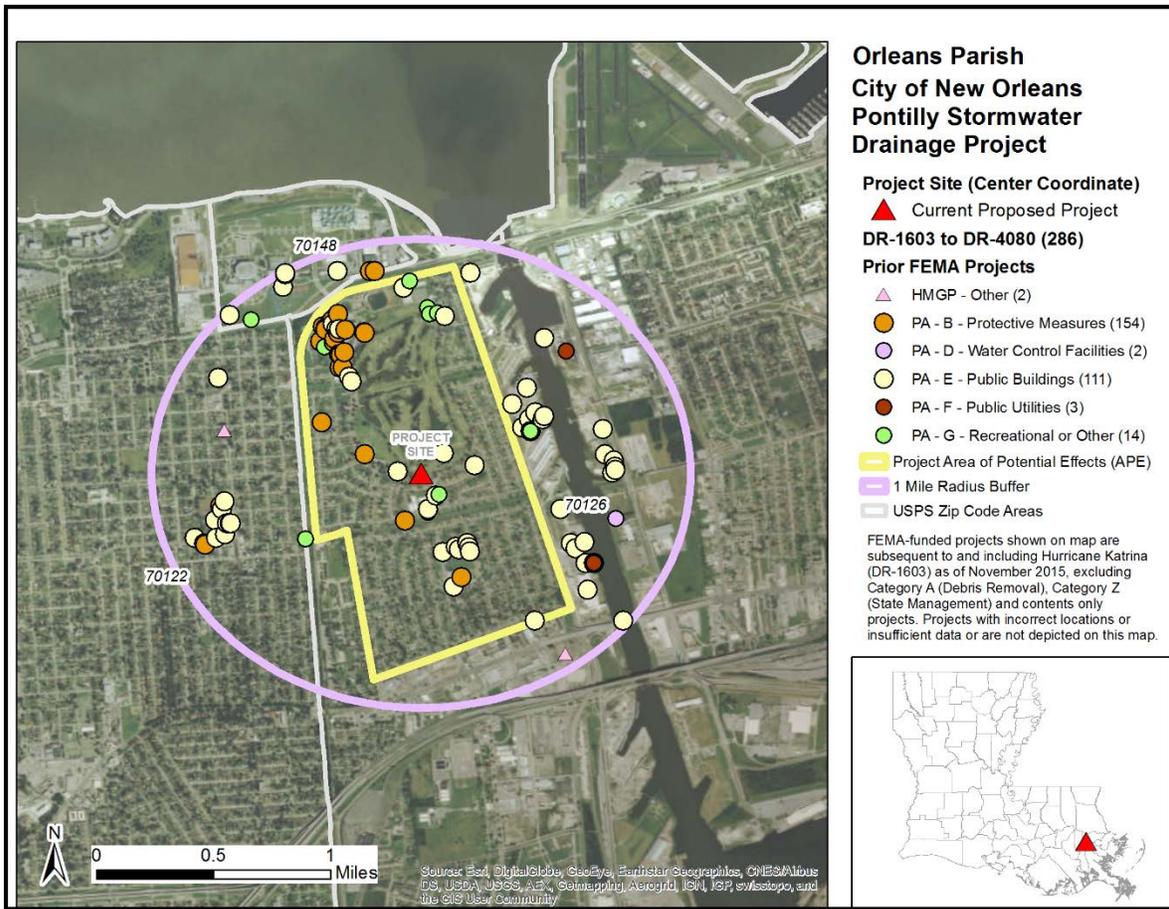


Figure 12: FEMA- funded projects within the 1-mile buffer of the project area.

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. 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, beneficial rather than detrimental, and is not expected to contribute to any adverse effects or to otherwise significantly affect the human environment.

6.0 Mitigation

According to the research and agency consultations completed in this EA, several conditions and mitigations measures must be met and taken by the applicant prior to and during project implementation:

- The applicant is required to comply with all federal, state, and local laws, EOs, and regulations. Failure to do so will jeopardize federal funding.
- 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.
- BMPs during construction such as installing silt fences and re-vegetating bare soils with native vegetation should be implemented to minimize runoff and erosion.
- To reduce the emission of air quality pollution from equipment during construction, fuel-burning equipment times should be kept to a minimum and engines should be properly maintained. Dust minimization measures should be implemented during construction as well.
- A SWPPP utilizing BMPs should be developed once a detailed flood mitigation alternative is selected in order to mitigate any adverse impact that the stormwater runoff from the construction activities would have on the waters surrounding the Pontilly area.
- Construction contractor is required to obtain applicable Louisiana Pollutant Discharge Elimination System (LPDES) permit, and implement stormwater pollution prevention plan.
- Any new vegetation plantings should be native to the area, and non-invasive.
- The applicant is required to coordinate with the local floodplain administrator regarding floodplain permit(s) prior to the start of any activities.
- Any hazardous materials discovered, generated, or used during construction should be disposed and handled in accordance with applicable local, state, and federal regulations.

-
- In the event that archaeological deposits (soils, features, artifacts, other remnants of human activity) are uncovered during the project the applicant shall stop all work immediately in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. The applicant will inform the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) immediately and will secure all archeological findings and restrict access to the area. GOHSEP shall notify FEMA and FEMA will consult with THPO or Tribal representatives. Work in sensitive areas cannot resume until consultations are completed or until an archeologist who meets Secretary of the Interior (SOI) Professional Qualifications determines the extent of the discovery. Work may not resume at or around the delineated archeological deposit until the applicant is notified by GOHSEP.
 - 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.
 - Mitigation of increased, short-term noise levels during construction should include limited construction time periods, proper maintenance of construction equipment, and the selection of noise-dampening construction techniques.
 - Short term traffic impacts will be mitigated through controlling construction times to minimize construction activities during the morning and evening high traffic periods. Additionally, the construction contractor(s) will be required to provide appropriate signage and placement of barriers, in accordance with the Manual of Uniform Traffic Control Devices to alert pedestrians and motorists of ongoing activities.
 - All construction activities should be performed using qualified personnel and in accordance with OSHA regulations. Appropriate signage and barriers should be in place prior to construction activities to alert pedestrians and motorists of project activities. Stormwater detention areas will be designed to limit detention time to significantly less than forty-eight hours during heavy rain events.
 - Offsite location 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.
 - The project results in a discharge to waters of the State; submittal of a Louisiana Pollutant Discharge Elimination System LPDES application is necessary.

-
- All precautions must be observed to control nonpoint source pollution from construction activities. LDEQ has stormwater general permits for construction areas equal to or greater than one (1) acre. The applicant must contact the LDEQ Water Permits Division at (225) 219-9371 to determine if the proposed project requires a permit.
 - The applicant must obtain a permit from the Orleans Levee District for any work within 300 feet of a federal flood control structure. Performance of all subsurface work within this area is usually restricted when the stage of the Mississippi River is above elevation +11.0 feet on the Carrollton gage, at New Orleans, Louisiana. As a consequence, subsurface work should be scheduled for performance during the low-water period (typically June through November) to avoid delays in performance of the proposed work. The applicant must apply by letter to the Orleans Levee District including full-size construction plans, cross sections, and details of the proposed work. Concurrently with the application to the Orleans Levee District, the applicant must also forward a copy of the letter and plans to Operations Division, Operations Manager for Completed Works of the Corps of Engineers and to the Office of Coastal Protection and Restoration Authority (CPRA) in Baton Rouge for their review and comments concerning the proposed work.
 - Additional information may be obtained on the LDEQ website at <http://www.deq.louisiana.gov/portal/tabid/2296/Default.aspx> or by contacting the LDEQ Water Permits Division at (225) 219- 9371.
 - 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 must be taken to protect workers from these hazardous constituents.
 - Erosion Control Devices (ECD's) must be used and maintained extensively to prevent any potential direct or indirect adverse impacts to nearby wetland areas per the CWA and EO 11990. Any adverse impacts to adjacent wetlands resulting from the construction of this project will jeopardize receipt of federal funding.
 - The applicant is responsible for coordinating with and obtaining any required permit(s) from the LDNR Coastal Management Division prior to initiating work. The applicant shall comply with all conditions of the required permit. 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 LDNR Office of Conservation should be contacted at (225) 342-5540 if any unregistered wells of any type are encountered during construction work.
 - For pipelines and other underground hazards, Louisiana One Call should be contacted at 800-272-3020 prior to commencing operations.

- 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 vector control becomes a problem, the applicant is required to coordinate with LDEQ and the City of New Orleans and take the appropriate measures to control any vector control issues.
- To reduce potential short term effects to air quality from construction-related activities, the contractor would be responsible for using BMPs to reduce fugitive dust generation and diesel emissions. Emissions from the burning of fuel by internal combustion engines would temporarily increase the levels of some of the criteria pollutants, including CO, NOx, O3, and PM10, and non-criteria pollutants such as Volatile Organic Compounds (VOCs). To reduce these emissions, running times for fuel-burning equipment should be kept to a minimum and engines should be properly maintained.

7.0 Agency Coordination, Public Involvement and Permits

7.1 Agency Coordination

The following agencies were consulted in the preparation of this EA. Certified letters requesting project review were mailed to these agency offices in July 2013. FEMA-EHP initiated consultation with resource agencies on November 2, 1015. Any mitigation measures or other conditions provided by the agencies listed below will be incorporated into this EA.

Table 4. Government Agency Consultations

Agency	Office	Address
U.S. Environmental Protection Agency	Region 6 Ground Water Center	1445 Ross Avenue, 6WQ-SG, Dallas, Texas 75202
U.S. Fish & Wildlife Service	Louisiana Field Office	646 Cajun Dome Blvd., Ste 400, Lafayette, LA 70506
U.S. Army Corps of Engineers	New Orleans District, Operations Division	PO Box 60267, New Orleans, LA 70160
Louisiana State Historic Preservation Office	Department of Culture, Recreation & Tourism	P.O. Box 44247 Baton Rouge LA 70804

Agency	Office	Address
Louisiana Department of Environmental Quality	LDEQ/Business and Community Outreach Division	P.O. Box 4301, Baton Rouge, LA 70821-4301
Louisiana Department of Natural Resources	Coastal Management	PO Box 44487, Baton Rouge, LA 70804
Louisiana Department of Wildlife and Fisheries	Natural Heritage Program	P.O. Box 98000, Baton Rouge, LA 70898-9000
Local Floodplain Administrator	Safety and Permits	1300 Perdido Street, 7th Floor, New Orleans, LA 70112

7.2 Local/City Permits

Under the Proposed Project Alternative, the contractor would have to obtain two permits from the City of New Orleans. The first permit is the Curb Cut Permit. This permit allows the contractor to cut and/or modify existing curbs to allow stormwater runoff to flow into areas designated for stormwater detention. The second permit is the Service Cut Permit. This permit allows the contractor to cut and remove portions of roadway and/or sidewalk surfaces within the public rights-of-way. These permits are obtained from the City of New Orleans Department of Public Works. Additionally, because the Proposed Action Alternative encompasses more than five Acres of land, a National Pollutant Discharge Elimination System (NPDES) Permit will be required.

7.3 Public Involvement

Throughout development of the proposed project, NORA has engaged in public meetings to seek the involvement of the residents and businesses within the project area. Meetings have been held with members of the two homeowners associations of the neighborhoods that make up the project area.

The Draft EA was made available for public review and comment for a period of 15 days. Per FEMA requirements, a public notice was published in *The Times Picayune*, Sunday, December 20; Wednesday, December 23, 2015; and Friday, December 25, 2015, Sunday, December 27, 2015. This public notice also ran in *The Advocate- New Orleans* edition Monday, December, 21 2015 through Sunday, December 27, 2015 to alert the public that the Draft EA was available for review. There was a 15 day comment period which began on December 28, 2015 and concluded on January 12, 2016 at 4 p.m.

Additionally, the Environmental Assessment was made available at the Norman Mayer Library. The Environmental Assessment was published on FEMA's website. A copy of the Public Notice is attached in Appendix F.

Once the public comment period for the Draft EA ended, comments were addressed and incorporated into the Final EA as an appendix. If no comments were received, revisions to finalize the EA include updating the date of the Final EA and updating the Public Involvement section of the EA.

8.0 List of Preparers

Tiffany Winfield, Acting Environmental Liaison Officer, FEMA

Adam Borden, Environmental Advisor, FEMA

Melanie Pitts, Lead Environmental Preservation Specialist, FEMA

Louis Jackson, P.E., CDM Smith

Amelia Pellegrin, AICP, LEED AP, CDM Smith

Roger Menendez, AICP, CDM Smith

9.0 References

City of New Orleans. 2006. Pontilly Neighborhood Planning District 6 Rebuilding Plan [Online] Available:

http://www.nolaplans.com/plans/Lambert%20Final/District_6_Final_Pontilly.pdf

Environmental Protection Agency. Air Programs, Region 6. [Online] Available:

<http://www.epa.gov/region06/air/index.htm>

Environmental Protection Agency. Envirofacts. [Online] Available:

<http://www.epa.gov/enviro/>

Environmental Protection Agency. 1974. EPA Identifies Noise Levels Affecting Health and Welfare. <http://www.epa.gov/history/topics/noise/01.html>

Environmental Protection Agency. NEPAssist. [Online] Available:

<http://nepassisttool.epa.gov/nepassist/entry.aspx>

Environmental Protection Agency. Sole Source Aquifers, Region 6. [Online] Available:

<http://www.epa.gov/earth1r6/water/swp/ssa/index.htm>

Louisiana Department of Environmental Quality. Air quality data . [Online] Available:

<http://www.deq.louisiana.gov/portal/tabid/37/Default.aspx?Search=nonattainment+areas>

Louisiana Department of Environmental Quality. Electronic Document Management

System. [Online] Available: <http://www.deq.louisiana.gov/portal/tabid/2604/Default.aspx>

Louisiana Department of Environmental Quality. Volunteer Remedial Program List. [Online]

Available: <http://www.deq.louisiana.gov/portal/PROGRAMS/BrownfieldsandVoluntaryRemediationProgram.aspx>

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. Leaking Underground Storage Tank list. [Online] Available: <http://www.deq.louisiana.gov/portal/>

Louisiana Department of Natural Resources. Office of Coastal Management. [Online] Available: <http://dnr.louisiana.gov/index.cfm?md=pagebuilder&tmp=home&pid=93>

Louisiana Geologic Survey. Geology and Hurricane-Protection Strategies in the Greater New Orleans Area, Public Information Series No. 11, Summer 2006. Available: <http://www.lgs.lsu.edu/deploy/uploads/11strategies.pdf>

National Resources Conservation Services. Web Soil Survey. [Online] Available: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

New Orleans Redevelopment Authority, HMGP Grant Application for Pontilly Stormwater Mitigation Project November 2008

U.S. Census Bureau. 2010 Census Data. [Online] Available: <http://quickfacts.census.gov/qfd/states/22/2255000.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 Maps. <http://www.fws.gov/wetlands/Data/mapper.html>

Appendix A

Proposed Alternative Conceptual Designs and Construction Plans

Excerpted. For a full version of the September 2015 Construction Plans prepared by CDM Smith, the general public can send a request to FEMANOMA@dhs.gov, tel: 504-427-8000, fax: 225-346-5848 or by mail to: Department of Homeland Security-FEMA, Louisiana Recovery Office, Attn: EHP-Pontilly Stormwater Drainage, 1500 Main Street, Baton Rouge, LA 70802.

REVISED DESIGN



KEY INTERVENTIONS

1. NORA Lots
2. Dwyer Canal
3. Bioswales
4. Curb Bulb-Out
5. Alleyways
6. Public Green Space (Robert E Lee Right of Way)



INTERVENTION: NORA LOT



INTERVENTION: NORA LOT

EXISTING CONDITION



INTERVENTION: NORA LOT

PROPOSED CONDITION



INTERVENTION: DWYER CANAL



INTERVENTION: DWYER CANAL

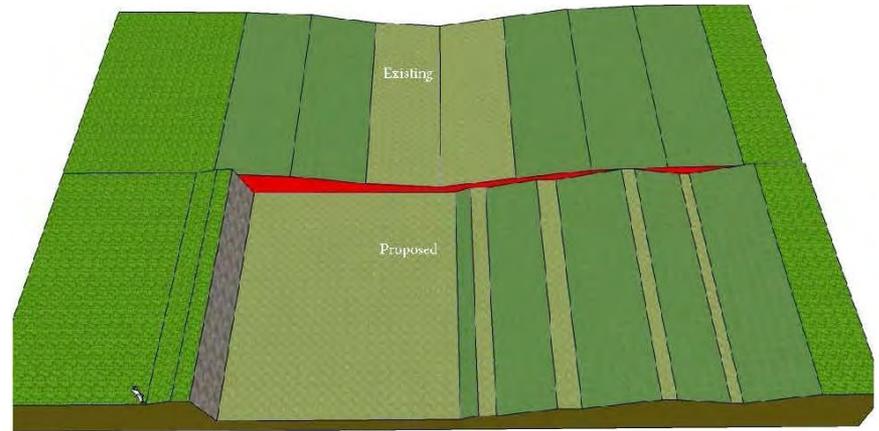
MODERATE



Location of Dwyer Canal Transect



Dwyer Canal - CentJal Reach 2



INTERVENTION: DWYER CANAL

EXISTING CONDITION



INTERVENTION: DWYER CANAL

PROPOSED CONDITION



INTERVENTION: BIOSWALE

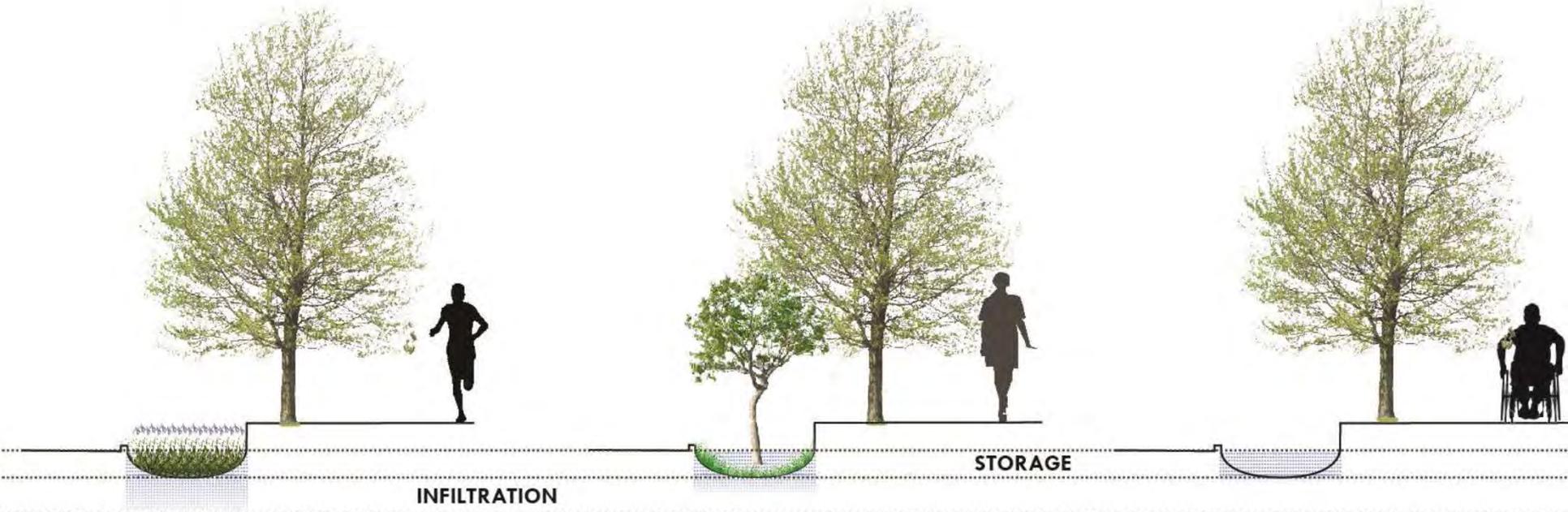


INTERVENTION: BIOSWALE

IRIS

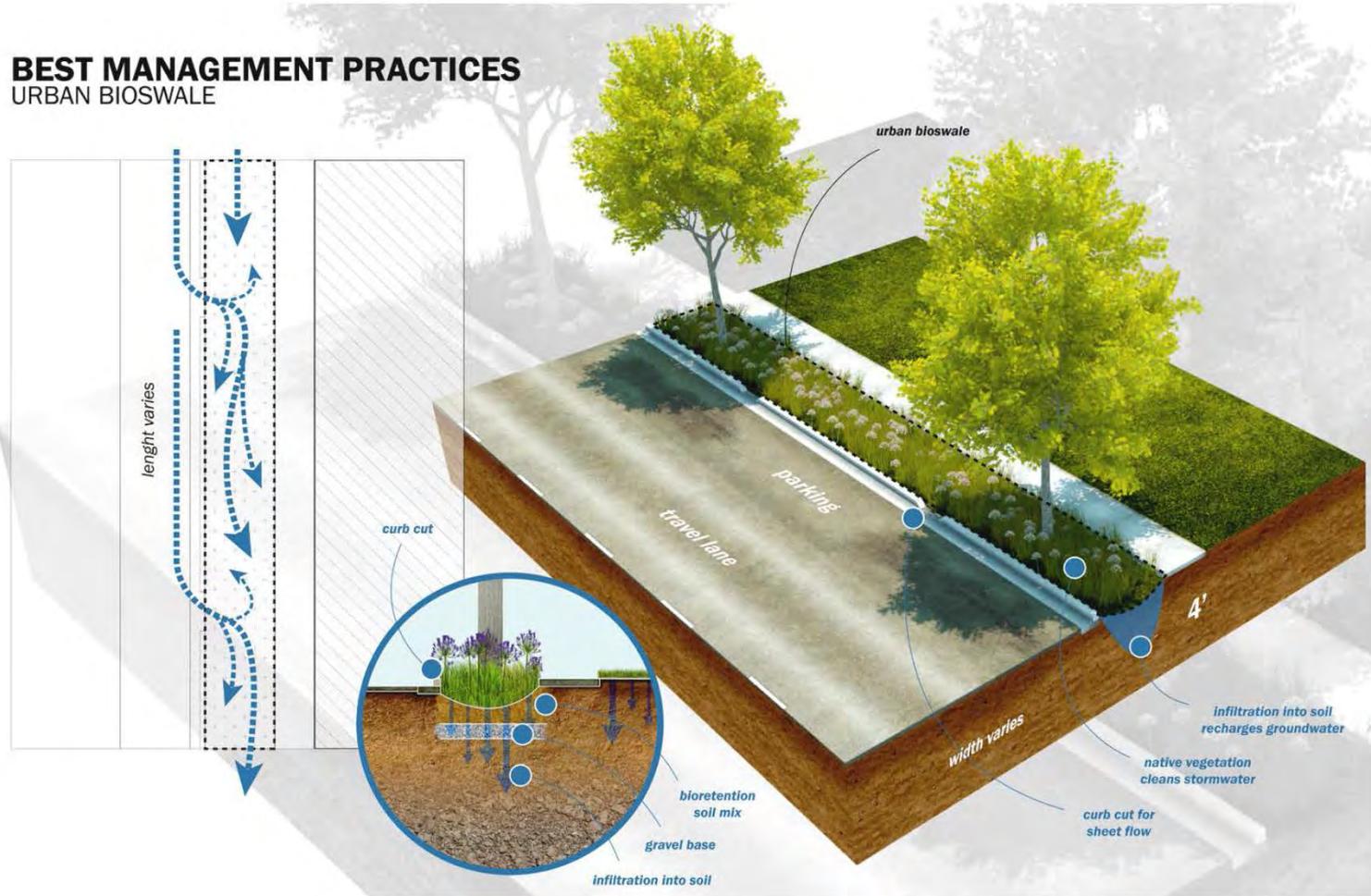
GRASS + TREE

CONCRETE



INTERVENTION: BIOSWALE

BEST MANAGEMENT PRACTICES URBAN BIOSWALE

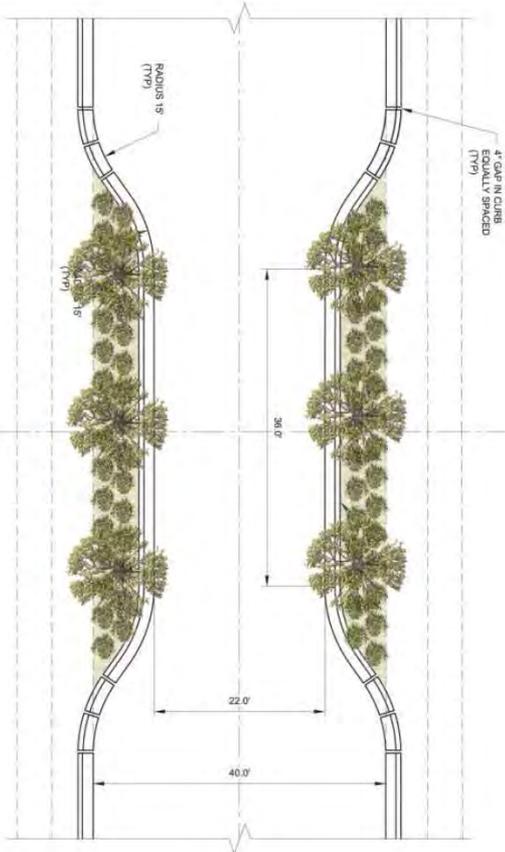


INTERVENTION: CURB BULB OUTS

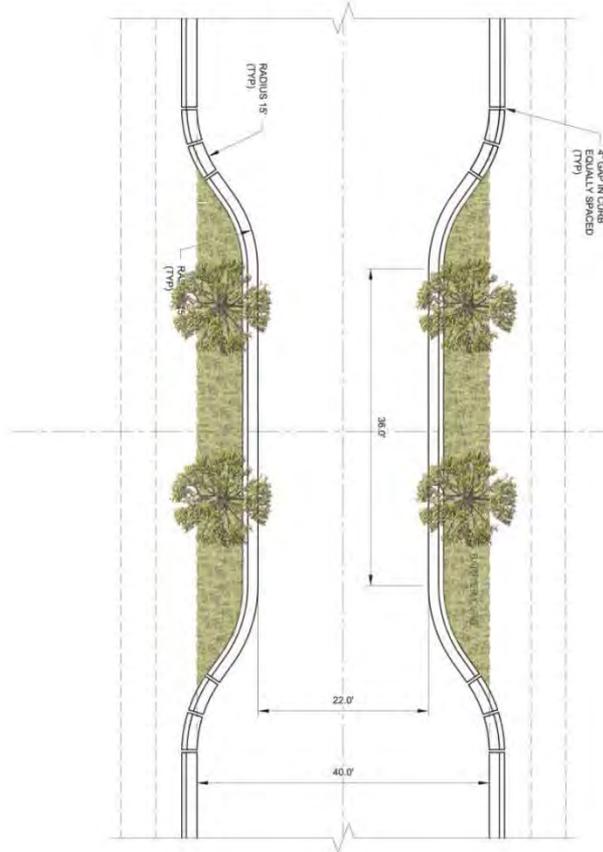


INTERVENTION: CURB BULB OUTS

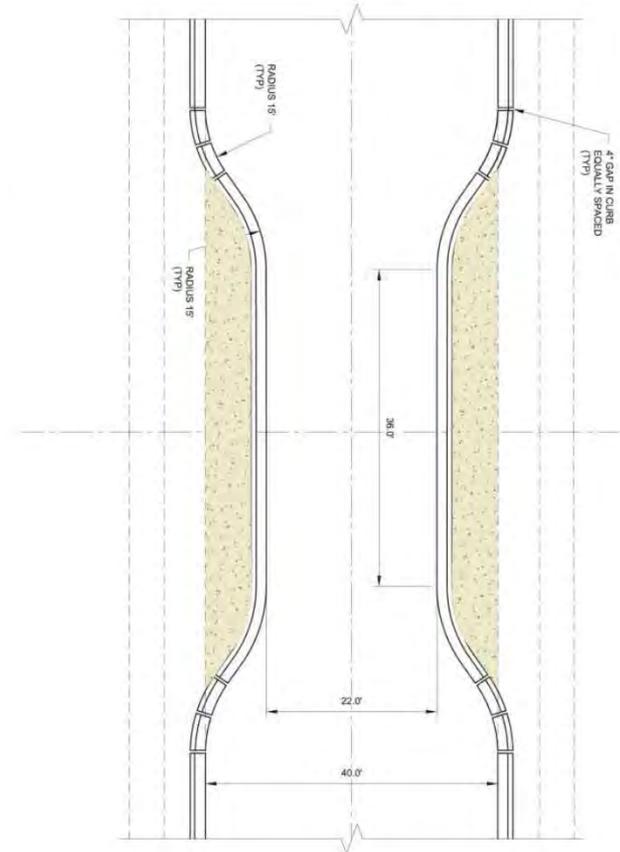
IRIS + TREE



GRASS + TREE



CONCRETE



INTERVENTION: CURB BULB OUTS



INTERVENTION: CURB BULB OUTS



INTERVENTION: CURB BULB OUTS



INTERVENTION: CURB BULB OUTS



INTERVENTION: ALLEYWAYS

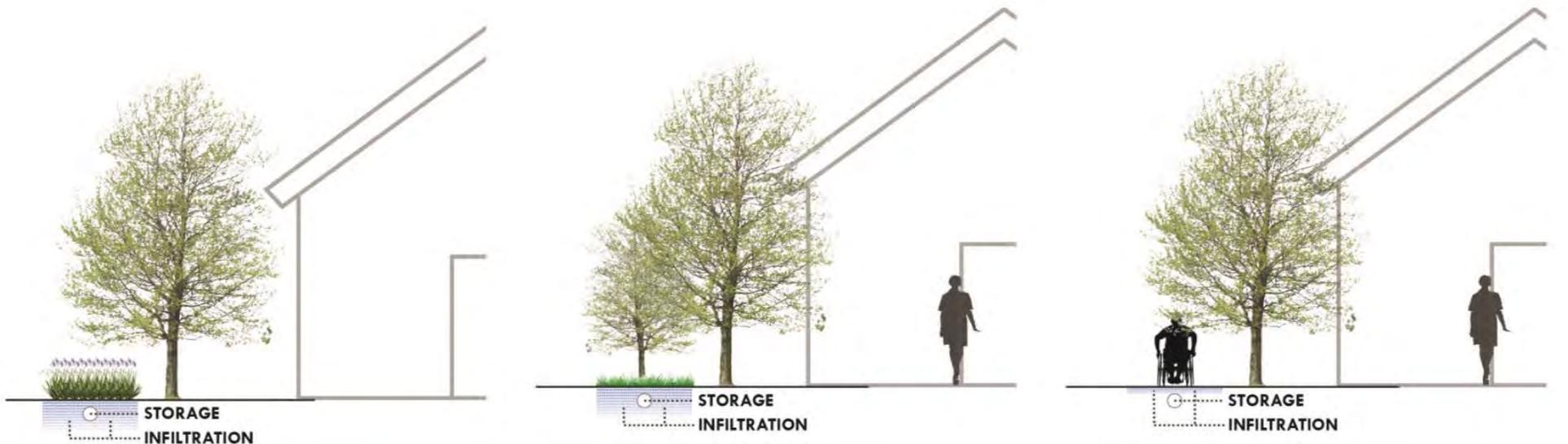


INTERVENTION: ALLEYWAYS

IRIS

GRASS + TREE

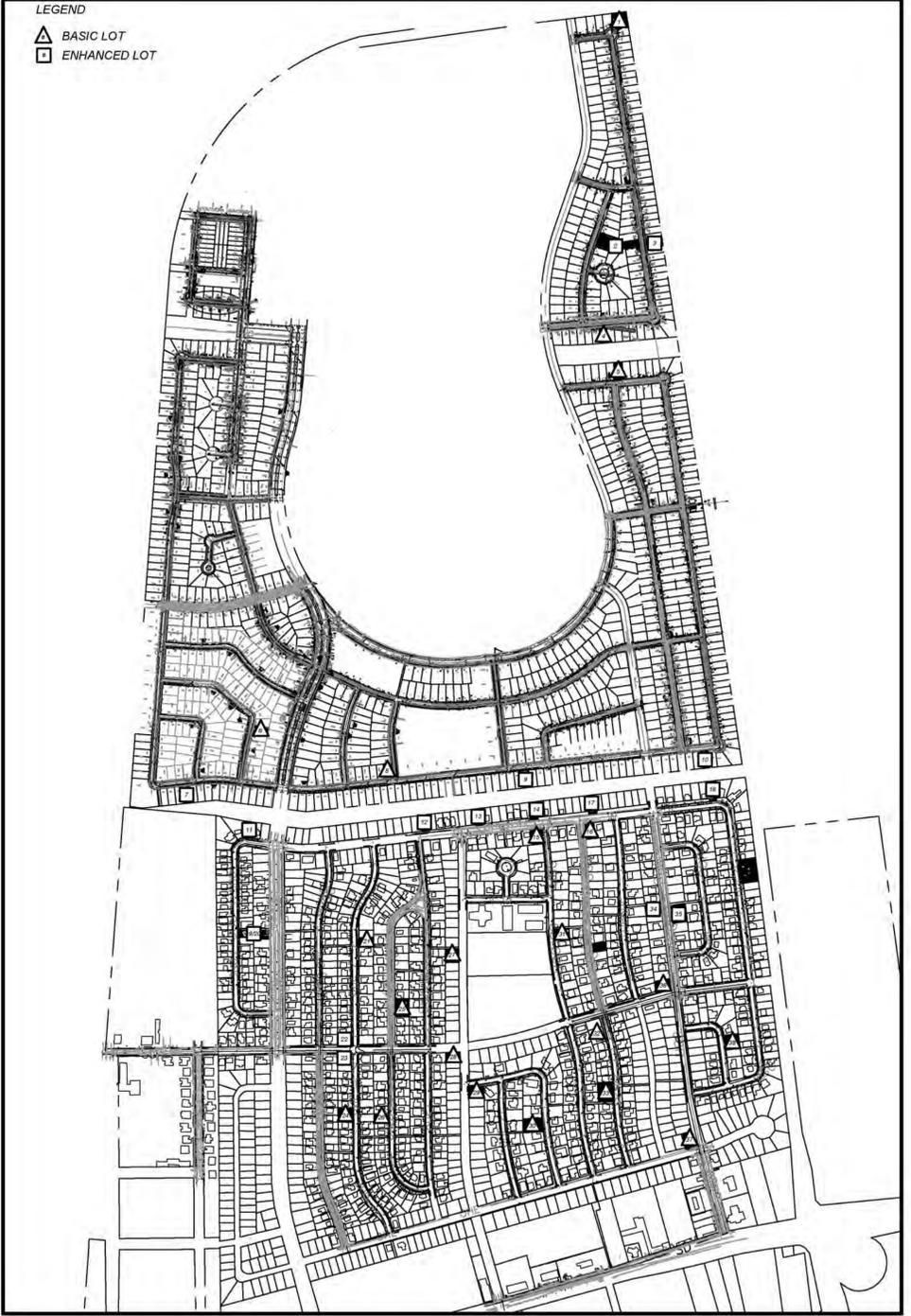
CONCRETE



INTERVENTION: ROBERT E LEE RIGHT OF WAY



XREFs: [C:\P00001, CDMS_2234] Inquest: []
 Last saved by: ALCINA Time: 8/12/2015 10:58:16 AM
 PW: \\dcpwpp1\FW_XM1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\SWL00000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



SWL LOT LOCATIONS
PLAN

SWL - STORAGE VOLUME
TABLE

PLANT SCHEDULE						
TREES	COMMON NAME	BOTANICAL NAME	CONT	CAL	QTY	REMARKS
	Swamp Red Maple	Acer rubrum var. drummondii		2"Cal	51	
	Pond Cypress	Taxodium ascendens		2"Cal	49	
	Bald Cypress	Taxodium distichum		2"Cal	35	
SHRUBS	COMMON NAME	BOTANICAL NAME	CONT		QTY	REMARKS
	Native Crinum Lily	Crinum americanum	3 gal		237	plant specimens, at installation, to meet XX" (height, width) standards for designated pot size
	Katrina African Iris	Diets x 'Nola alba'	3 gal		196	plant specimens, at installation, to meet XX" (height, width) standards for designated pot size
	Spider Lily	Hymenocallis liriosme	3 gal		325	plant specimens, at installation, to meet XX" (height, width) standards for designated pot size
	Yellow Flag	Iris pseudacorus 'Flore Plens'	3 gal		407	plant specimens, at installation, to meet XX" (height, width) standards for designated pot size
	Pink Muhly Grass	Muhlenbergia capillaris	3 gal		348	plant specimens, at installation, to meet XX" (height, width) standards for designated pot size
	White Muhly Grass	Muhlenbergia capillaris 'White Cloud'	3 gal		267	plant specimens, at installation, to meet XX" (height, width) standards for designated pot size
	Dwarf Palmetto	Sabal minor	3 gal		266	plant specimens, at installation, to meet XX" (height, width) standards for designated pot size
GROUND COVERS	COMMON NAME	BOTANICAL NAME	CONT	SPACING	QTY	REMARKS
	Bermuda Grass	Cynodon dactylon	seed		298,486 sf	
	Pine Needle Mulch	Pine Mulch	Mulch		25,224 sf	

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 759-1100

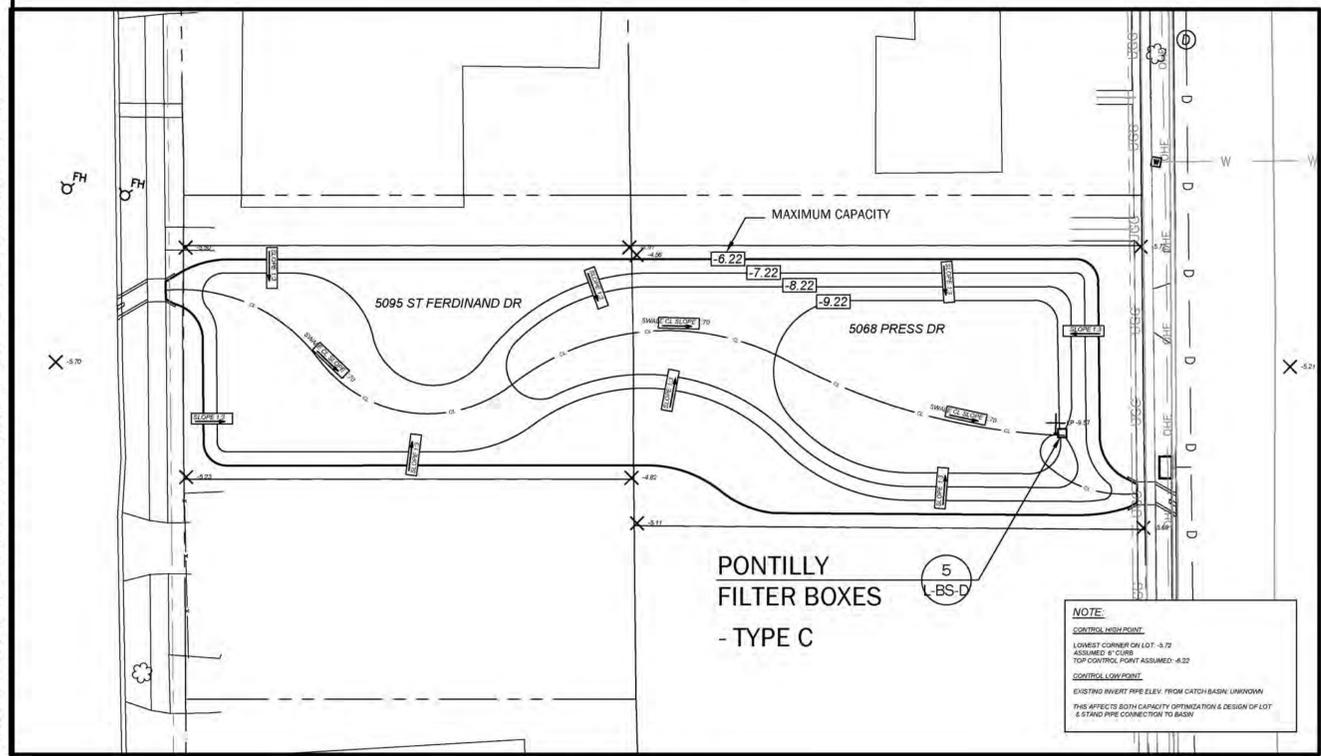
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

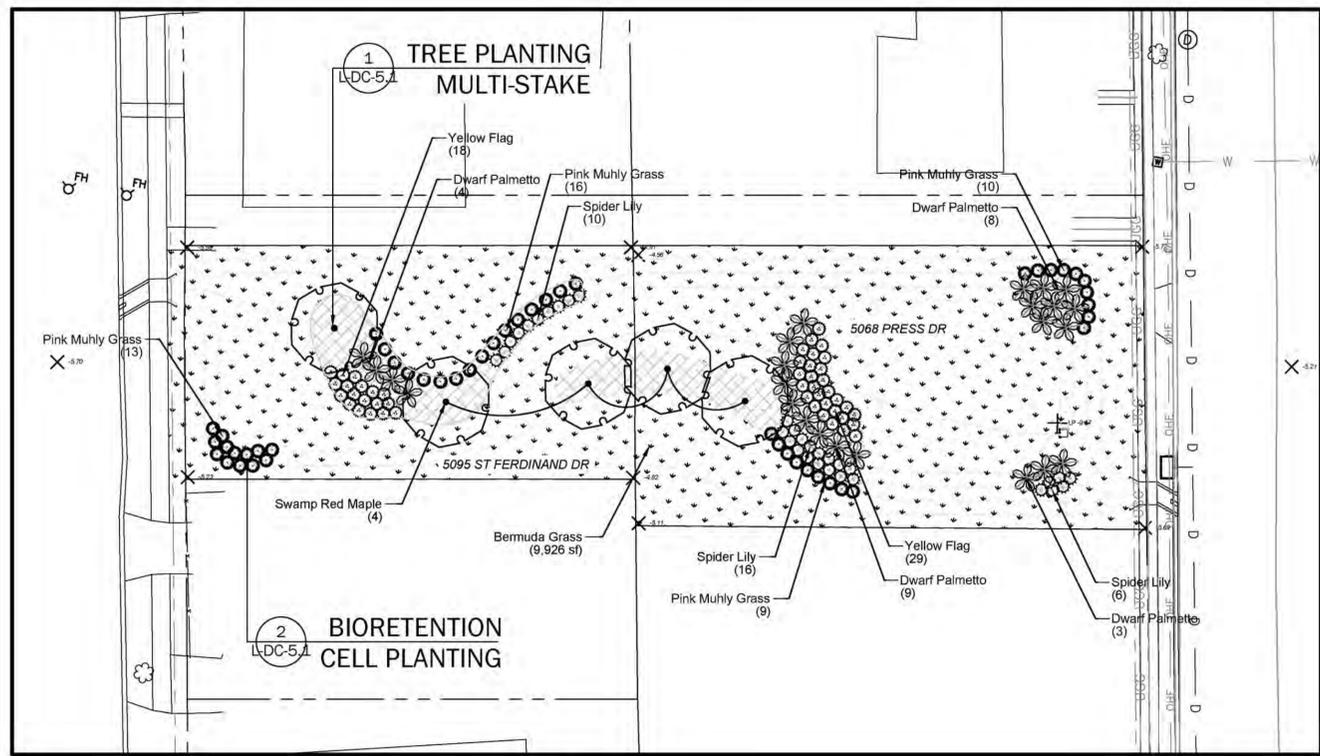
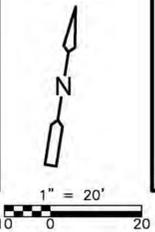
STORMWATER LOTS
 SHEET NO.
L-SWL-0

PROJECT NO. 122322-90818
 FILE NAME: SWL00000
 SHEET NO.
L-SWL-0

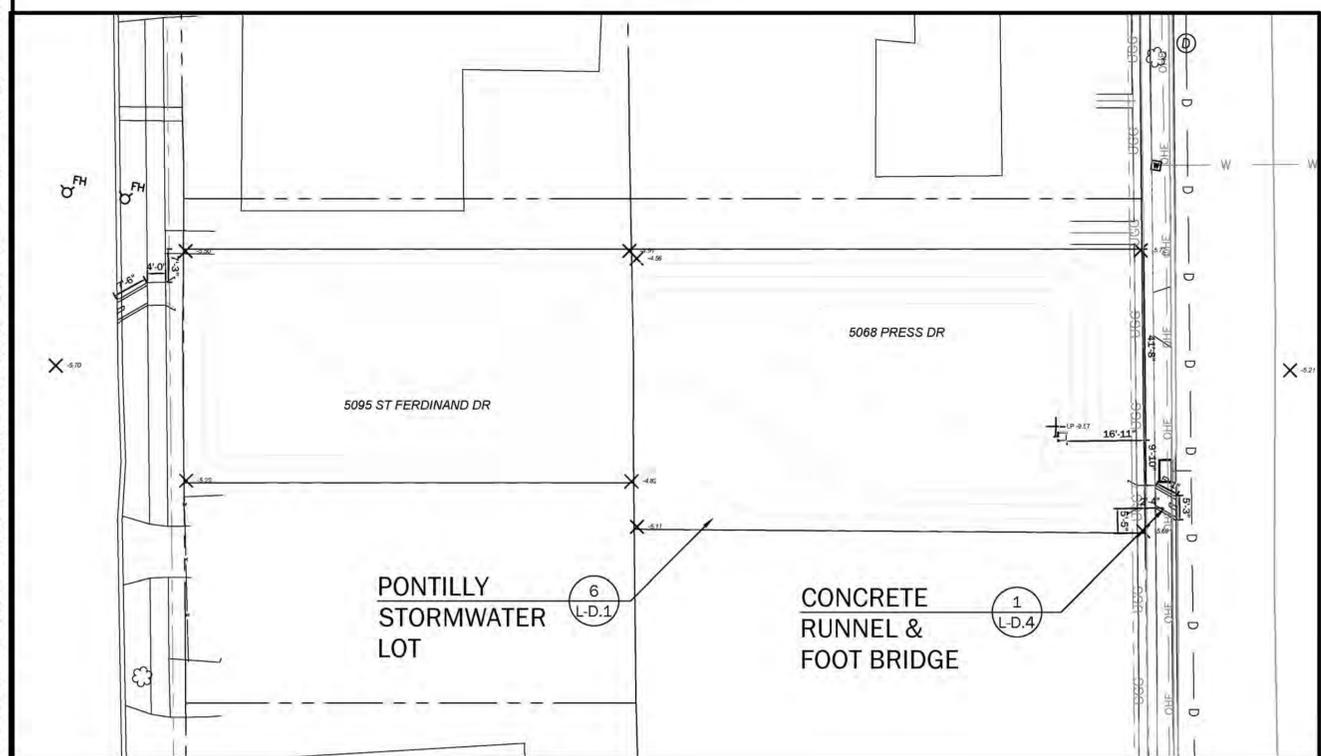
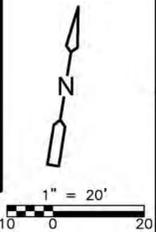
XREFS: [C:\P00001_CDM_S_2234] Inprocess: []
 Last saved by: ALCINA Time: 8/12/2015 10:58:16 AM
 PW: \\dcpwpp1\FW_XM1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\SWL00000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



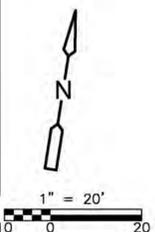
LOT EXCAVATION PLAN



PLANTING PLAN



LAYOUT PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____	X
DRAWN BY: J. ALCINA	
SHEET CHK'D BY: _____	X
CROSS CHK'D BY: _____	X
APPROVED BY: _____	X
DATE: AUGUST 2015	

NEW ORLEANS REDEVELOPMENT AUTHORITY

PONTILLY STORMWATER HAZARD MITIGATION PROJECT

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

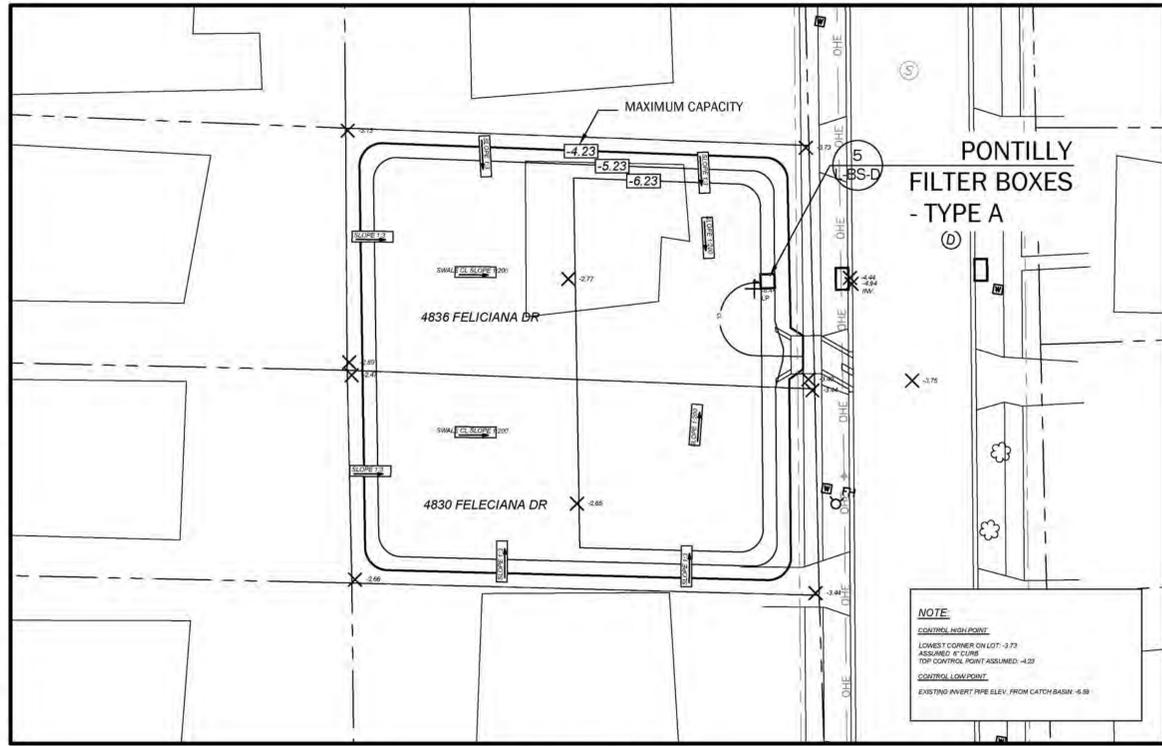
CHESTER ENGINEERS
 DANA BROWN & Associates

STORMWATER LOTS

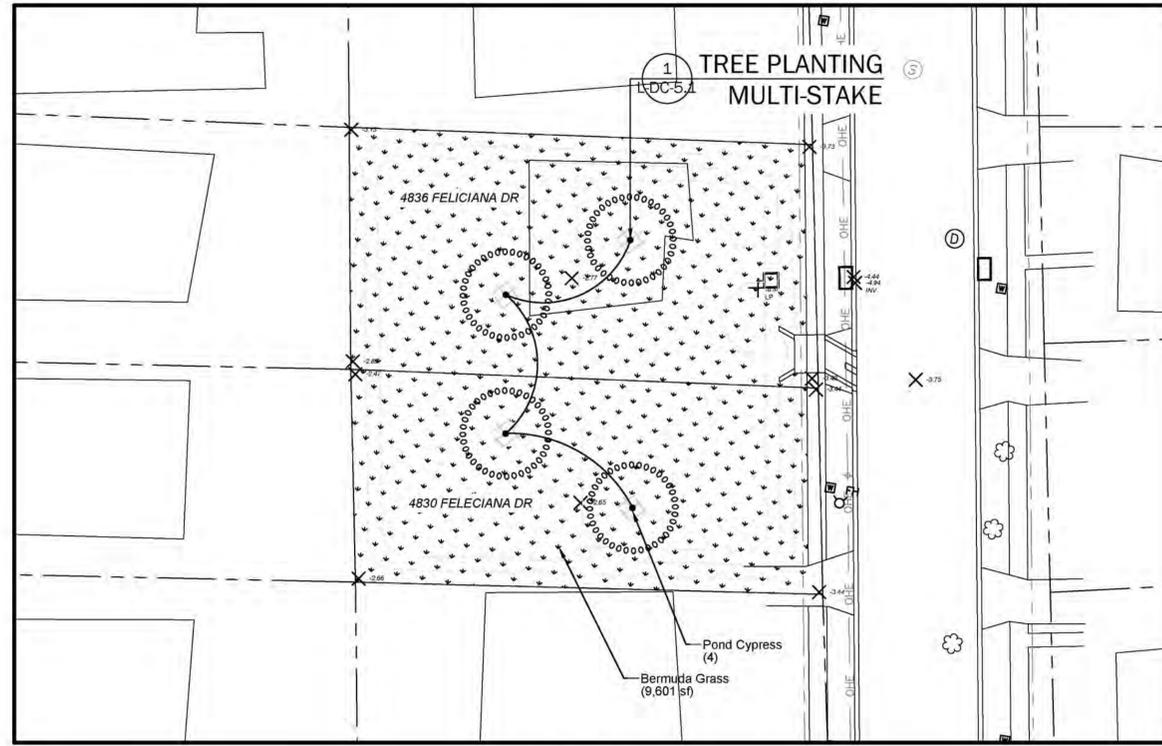
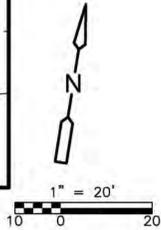
SHEET NO. L-SWL-1

PROJECT NO. 122322-90818
FILE NAME: SWL00000
SHEET NO. L-SWL-1

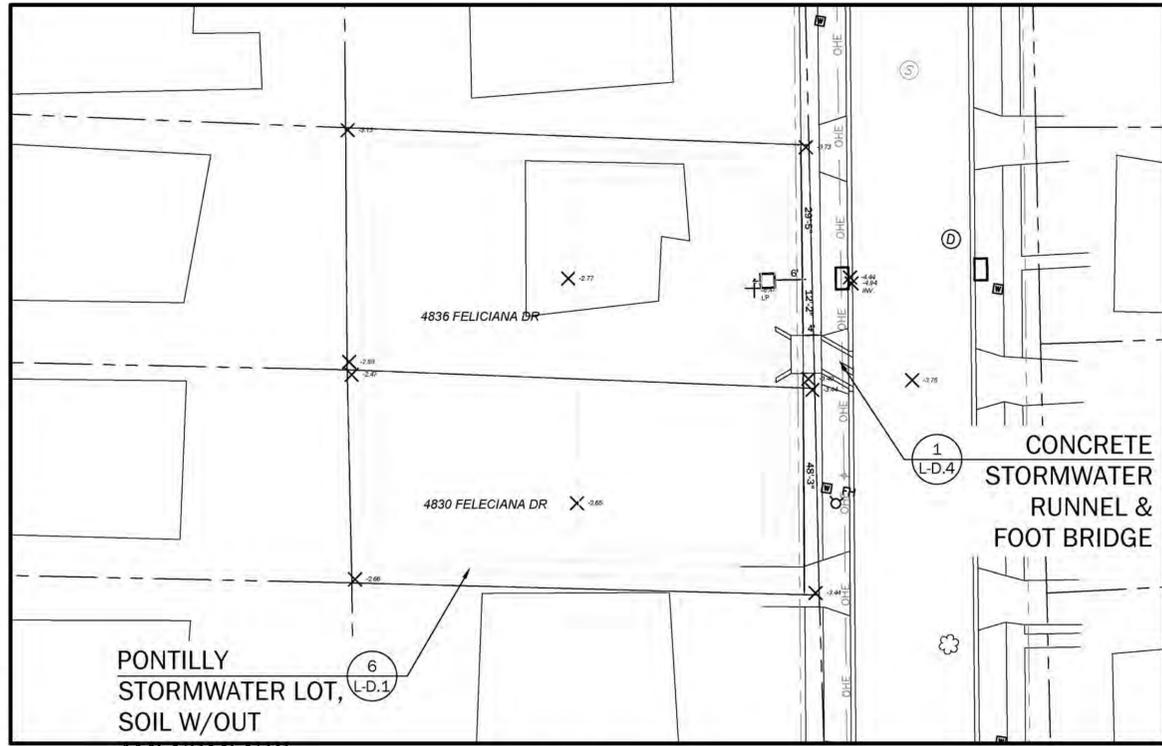
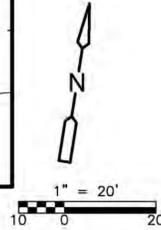
XREFS: [C:\PEP00001_CDM_S_2234] Ingress: []
 Last saved by: ALCIANA Time: 8/11/2015 1:46:45 PM
 PW: \\dcpwpp1\pw_xm1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\SWL00000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



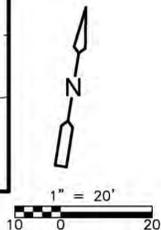
LOT EXCAVATION PLAN



PLANTING PLAN



LAYOUT PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

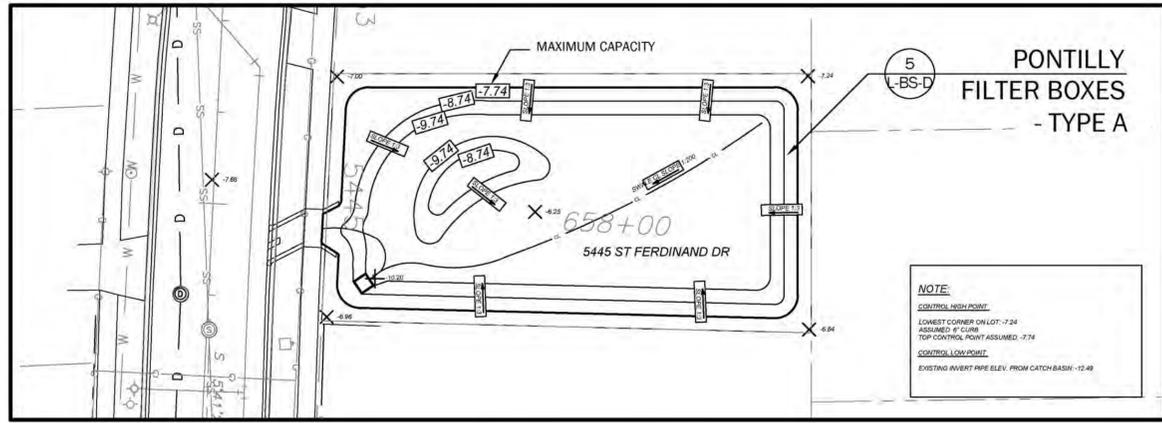
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

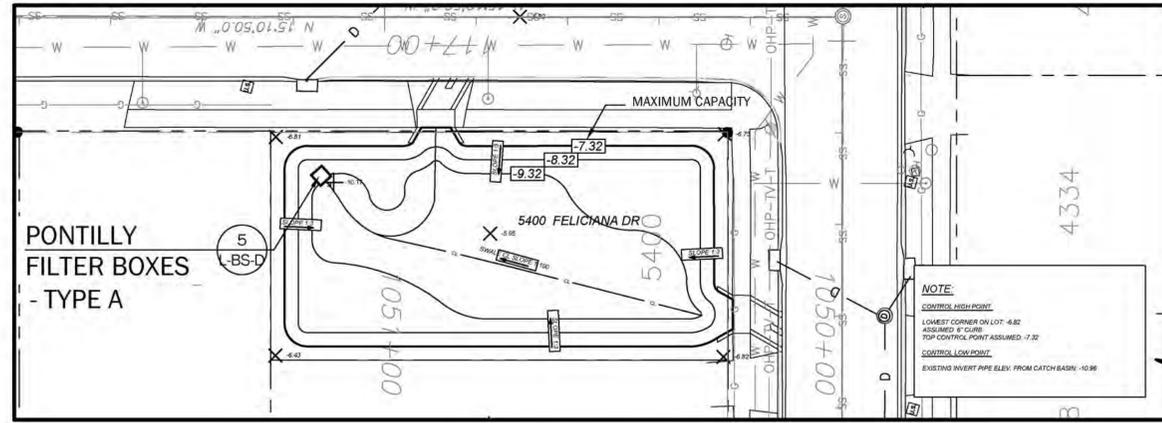
STORMWATER LOTS
 SHEET NO.
L-SWL-3

PROJECT NO. 122322-90818
 FILE NAME: SWL00000
 SHEET NO.
L-SWL-3

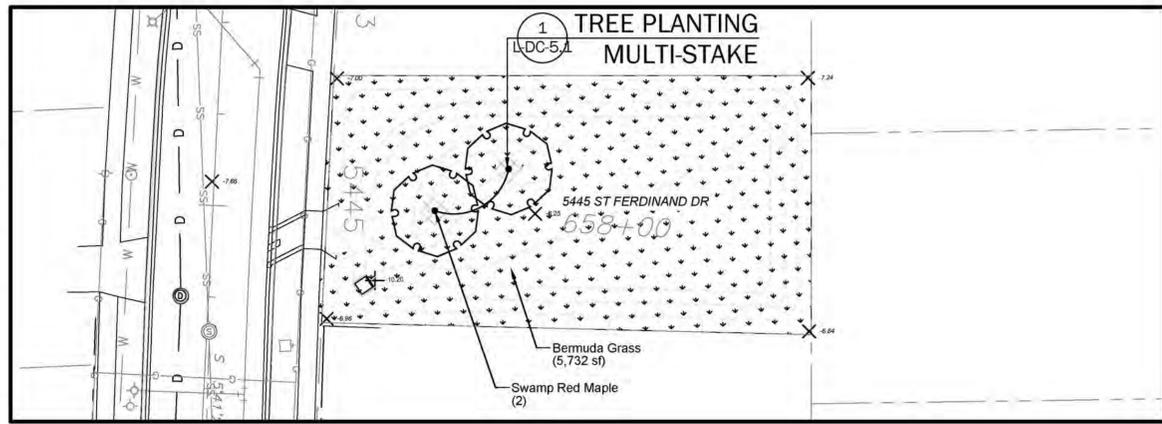
XREFS: [C:\PE\00001_CDM_S_2234] Ingress: []
 Last saved by: ALCINA Time: 8/11/2015 2:18:23 PM
 PW: \\dpcpwp\p1\pw_xm1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\SWL00000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



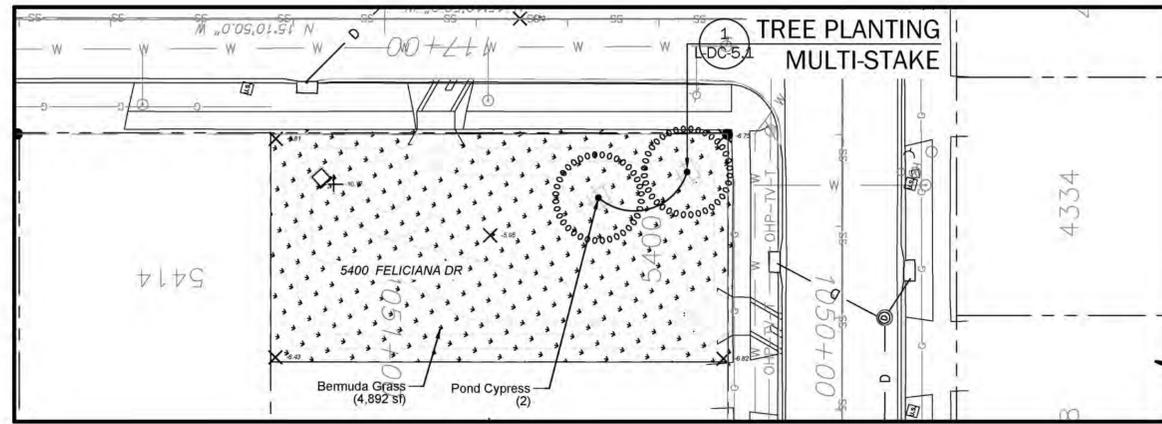
LOT EXCAVATION PLAN



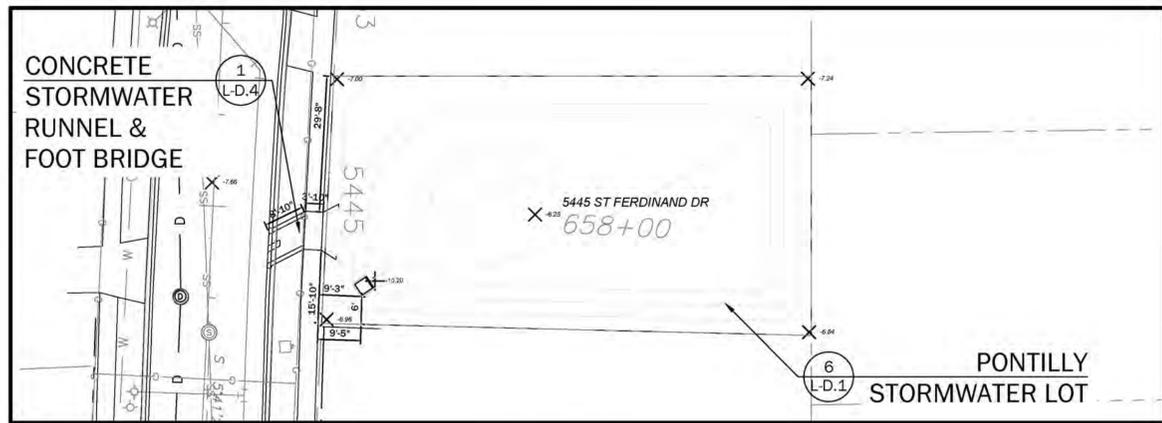
LOT EXCAVATION PLAN



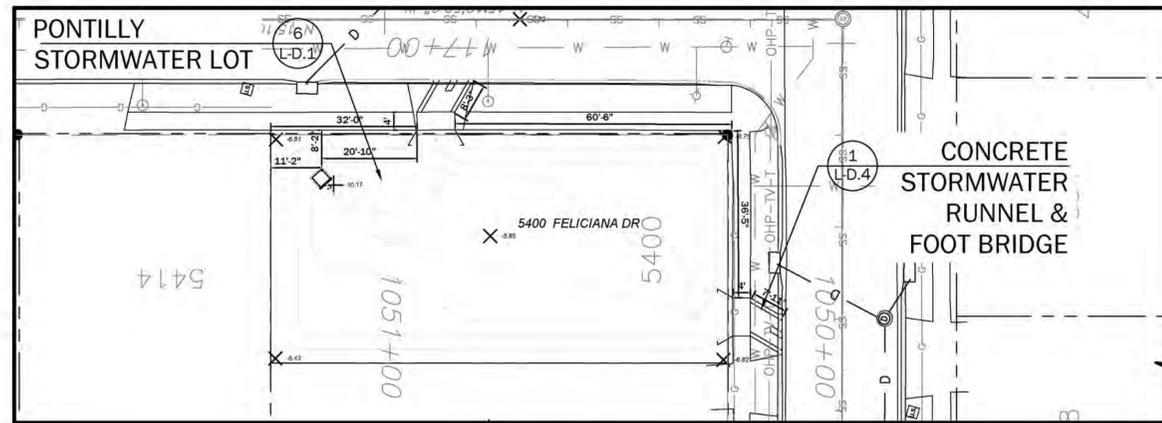
PLANTING PLAN



PLANTING PLAN



LAYOUT PLAN



LAYOUT PLAN

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

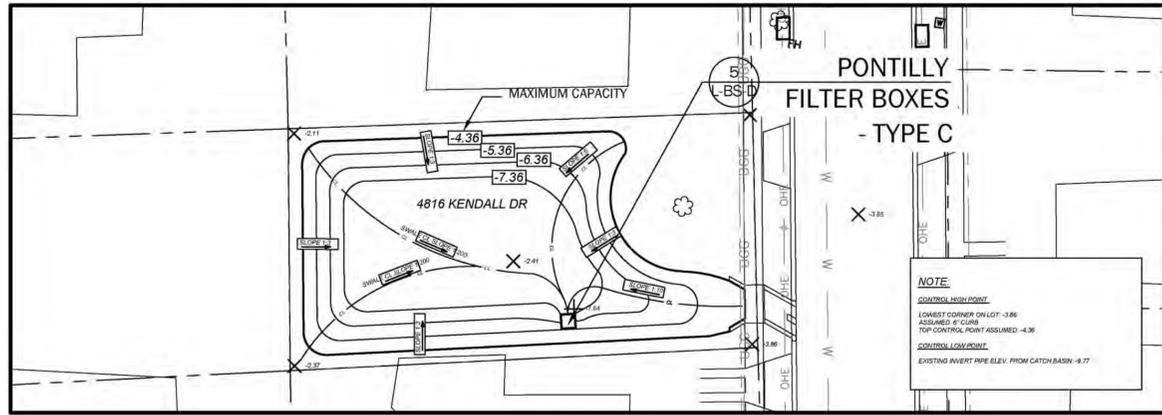
NO RA
 NEW ORLEANS REDEVELOPMENT AUTHORITY
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

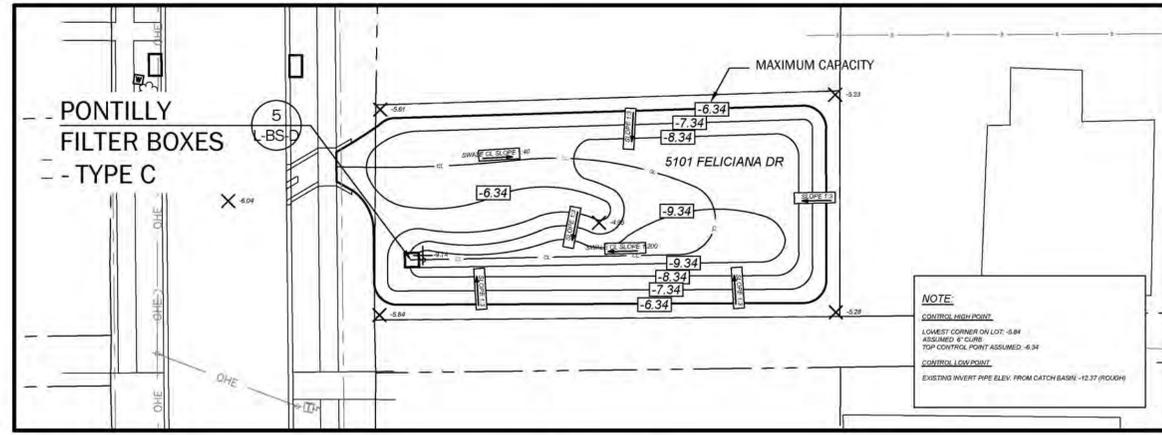
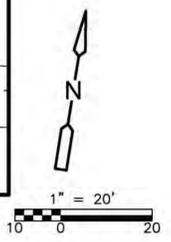
STORMWATER LOTS
 SHEET NO.
L-SWL-5

PROJECT NO. 122322-90818
 FILE NAME: SWL00000
 SHEET NO.
L-SWL-5

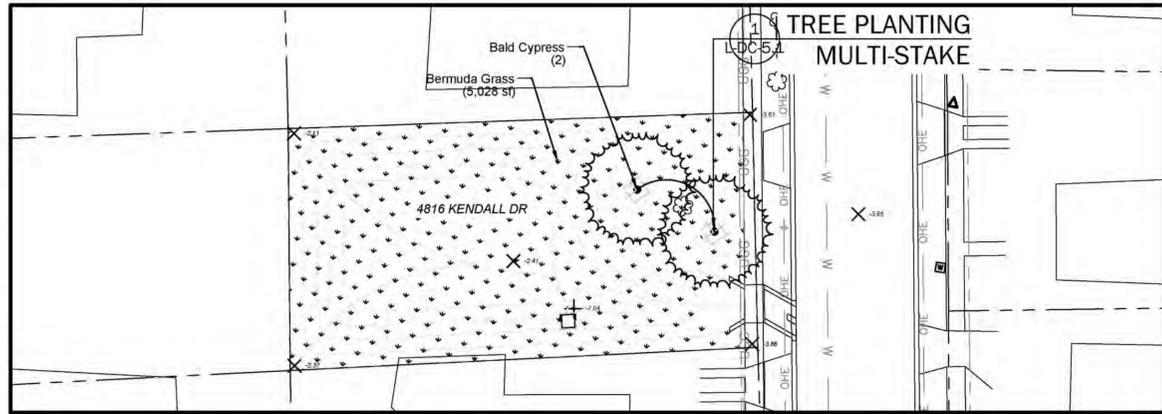
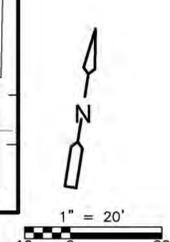
XREFS: [C:\PEP00001_CDM_S_2234] Inprocess: []
 Last saved by: ALCINA Time: 8/12/2015 10:46:25 AM
 PW: \\dcpwpp1\pw_xm1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\SWL00000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



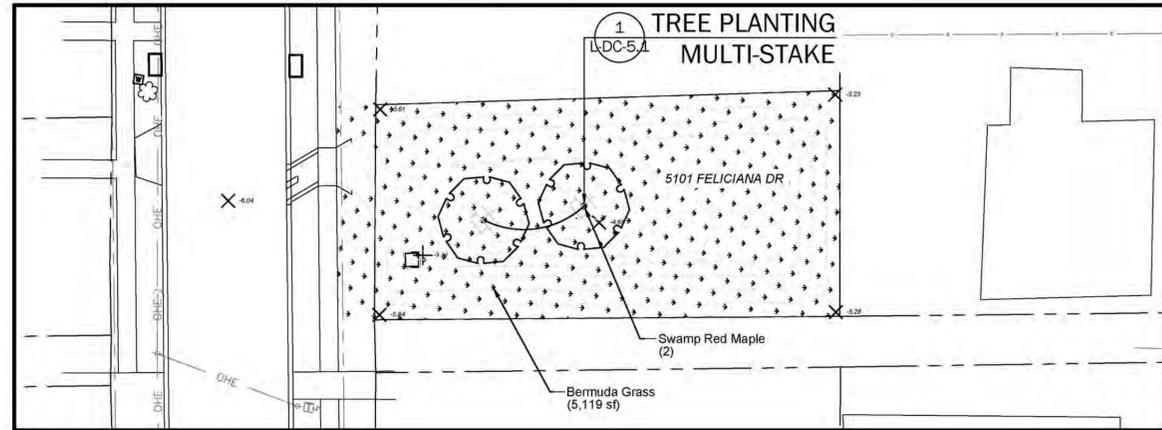
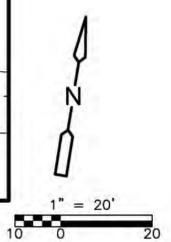
LOT EXCAVATION PLAN



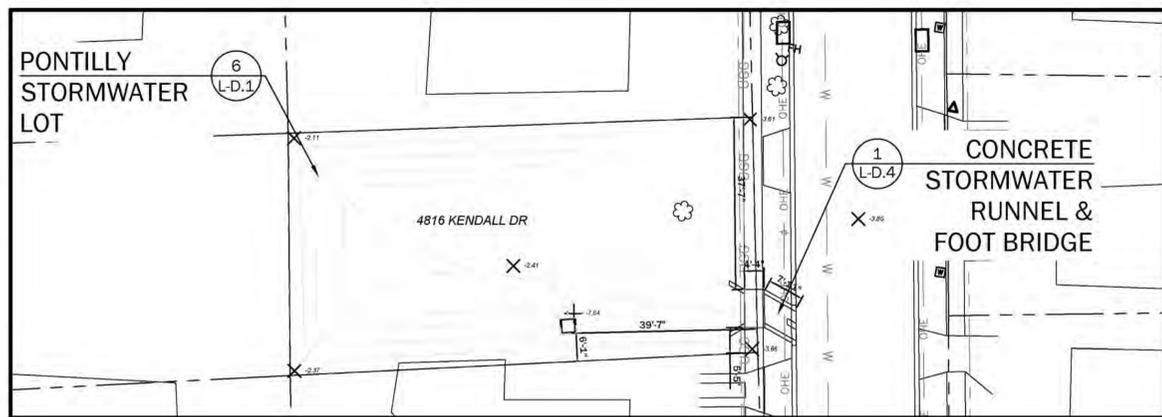
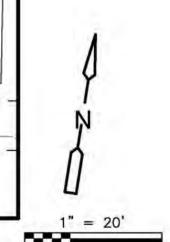
LOT EXCAVATION PLAN



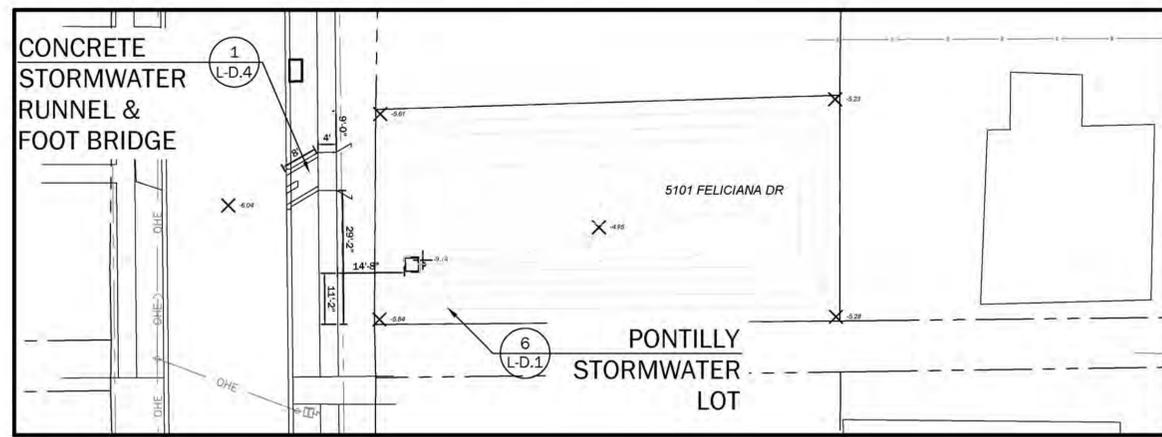
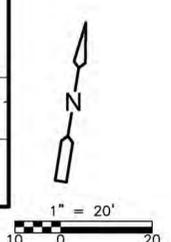
PLANTING PLAN



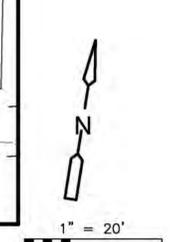
PLANTING PLAN



LAYOUT PLAN



LAYOUT PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

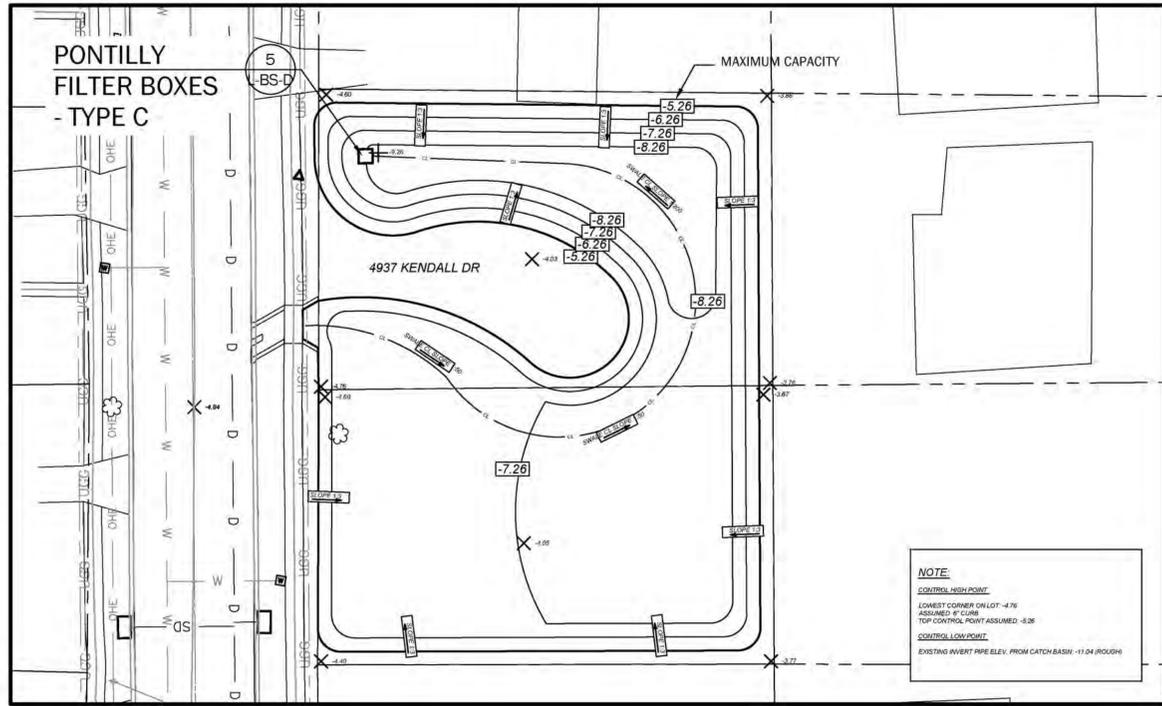
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

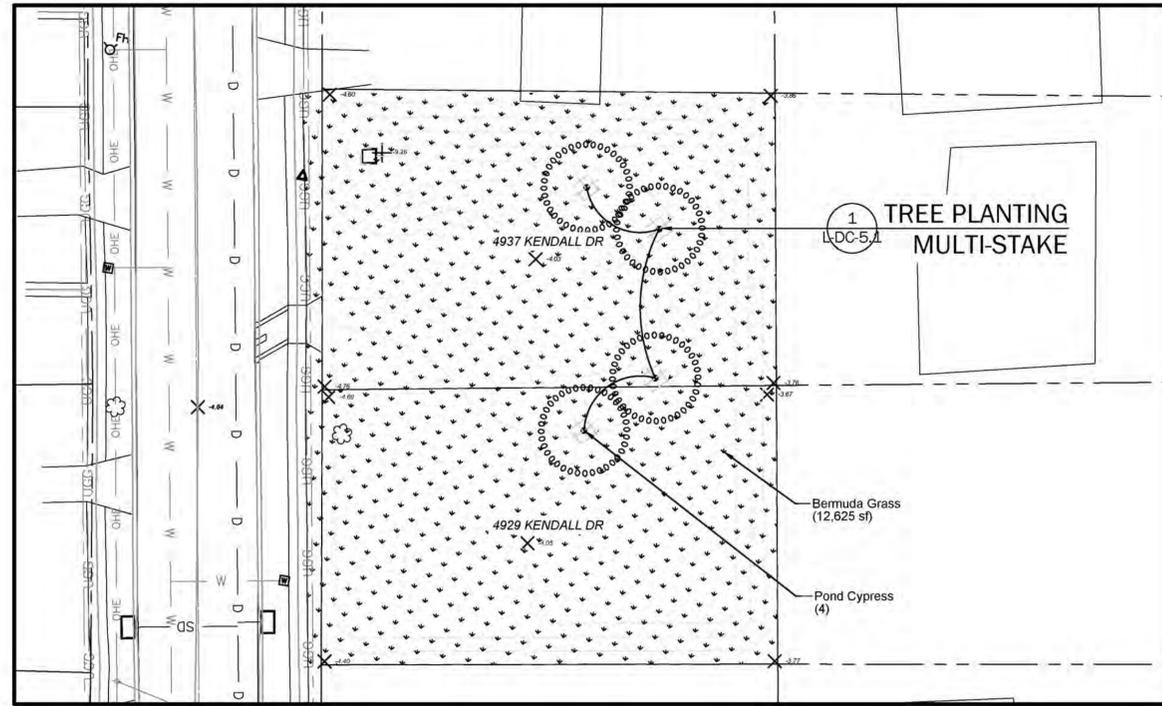
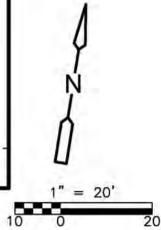
STORMWATER LOTS
 SHEET NO.
L-SWL-6

PROJECT NO. 122322-90818
 FILE NAME: SWL00000
 SHEET NO.
L-SWL-6

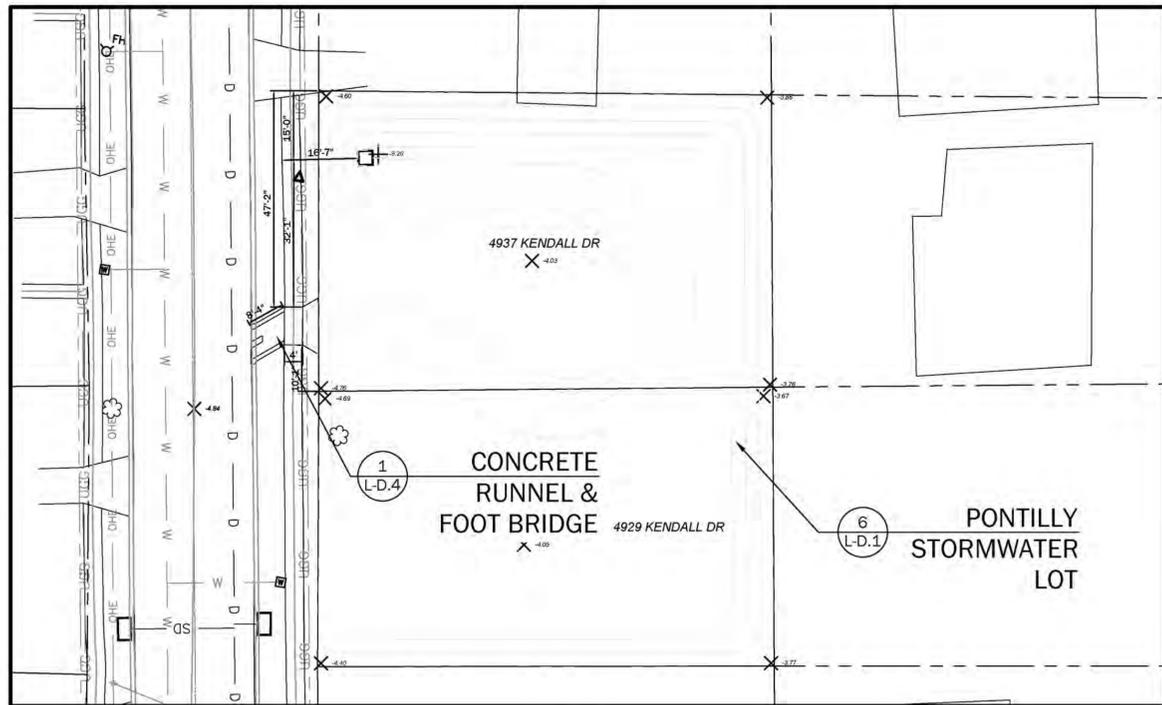
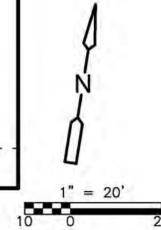
XREFS: [C:\P00001_CDM_S_2234] Inprocess: []
 Last saved by: ALCINA Time: 8/11/2015 2:53:08 PM
 PW: \\dcpwpp1\FW_XM1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\SWL00000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



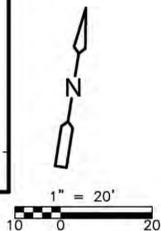
LOT EXCAVATION PLAN



PLANTING PLAN



LAYOUT PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY

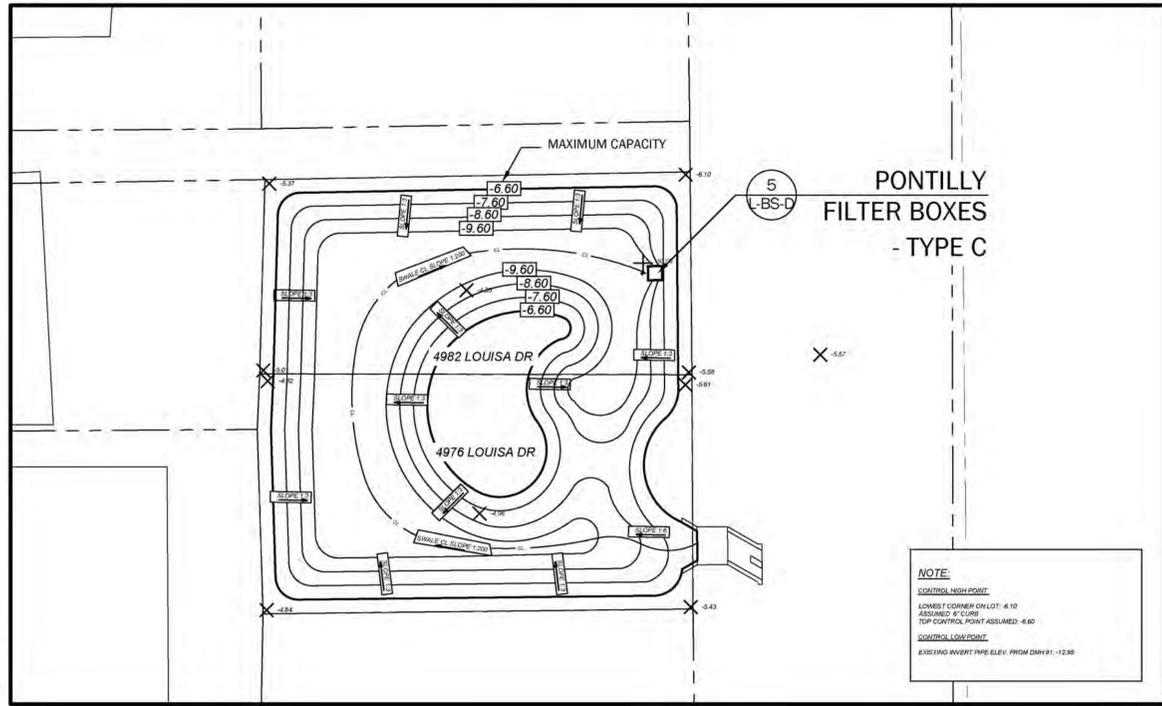
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

STORMWATER LOTS

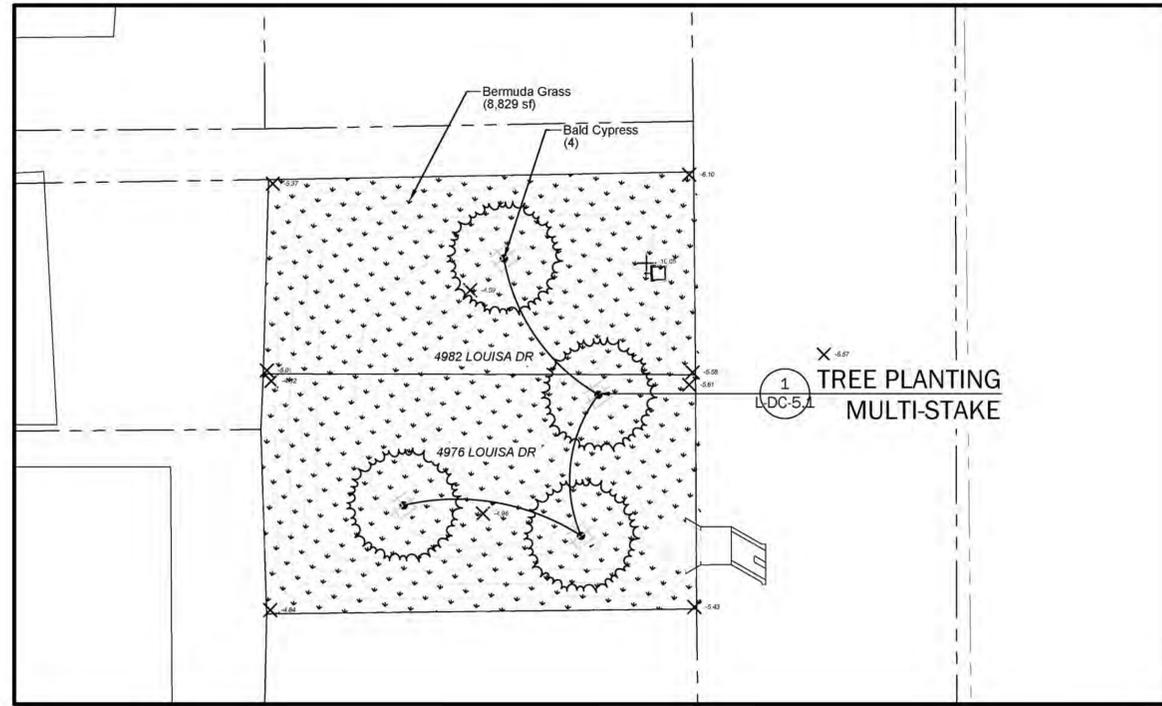
SHEET NO. L-SWL-7

PROJECT NO. 122322-90818
 FILE NAME: SWL00000

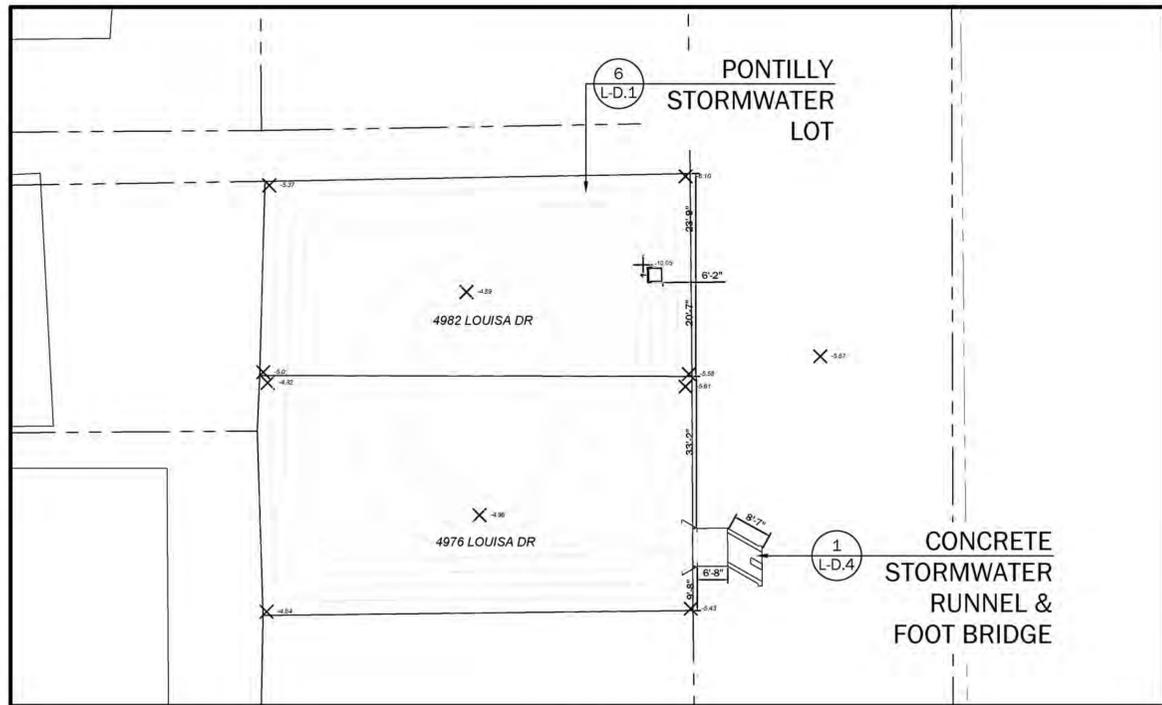
XREFs: [C:\P00001_CDM_S_2234] Ingress: []
 Last saved by: ALCINA Time: 8/11/2015 3:07:38 PM
 PW: \\dcpwpp1\FW_XM1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\SWL00000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



LOT EXCAVATION PLAN



PLANTING PLAN



LAYOUT PLAN

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

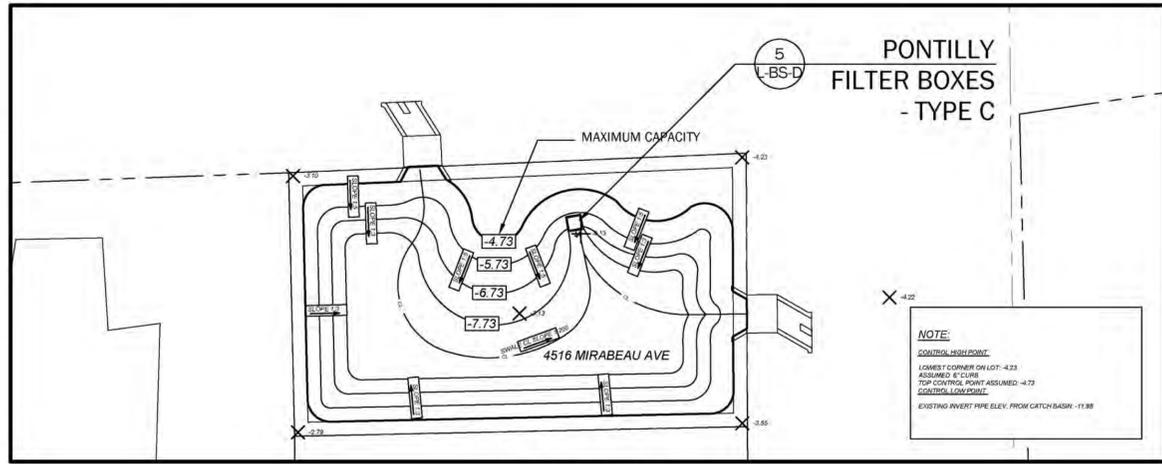
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

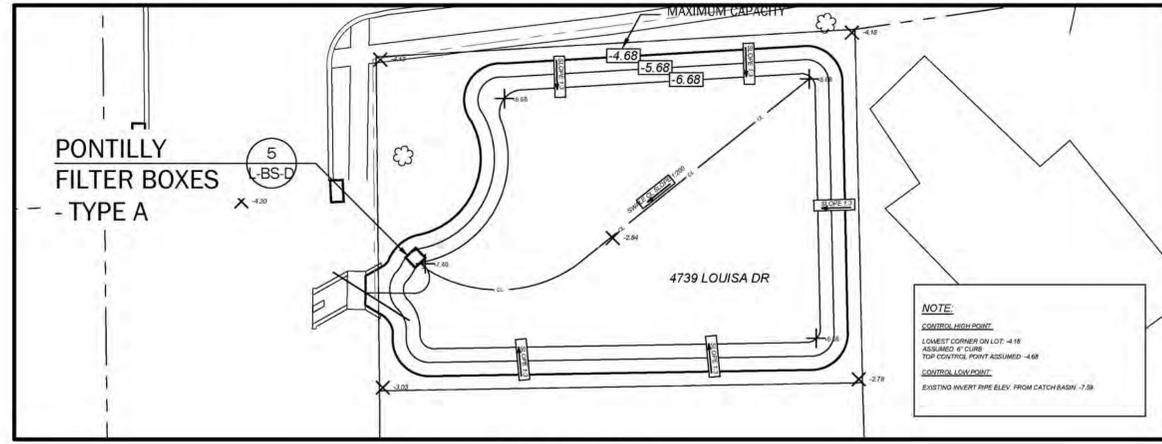
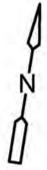
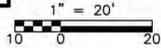
STORMWATER LOTS
 SHEET NO. L-SWL-9

PROJECT NO. 122322-90818
 FILE NAME: SWL00000
 SHEET NO. L-SWL-9

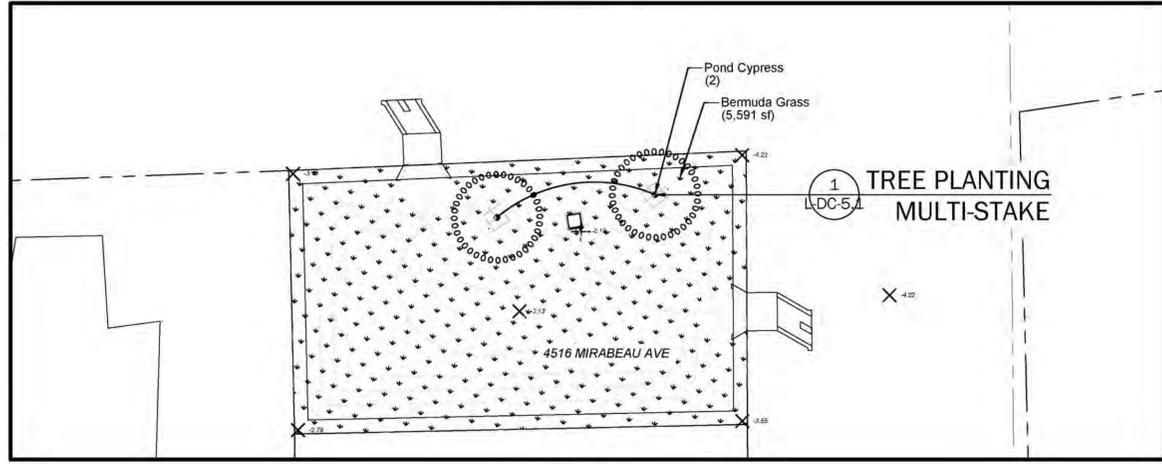
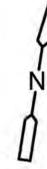
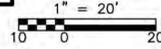
XREFS: [C:\P00001_CDM_S_2234] Ingress: []
 Last saved by: ALCINA Time: 8/11/2015 3:57:16 PM
 PW: \\dcpwpp1\FW_XM1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\SWL00000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



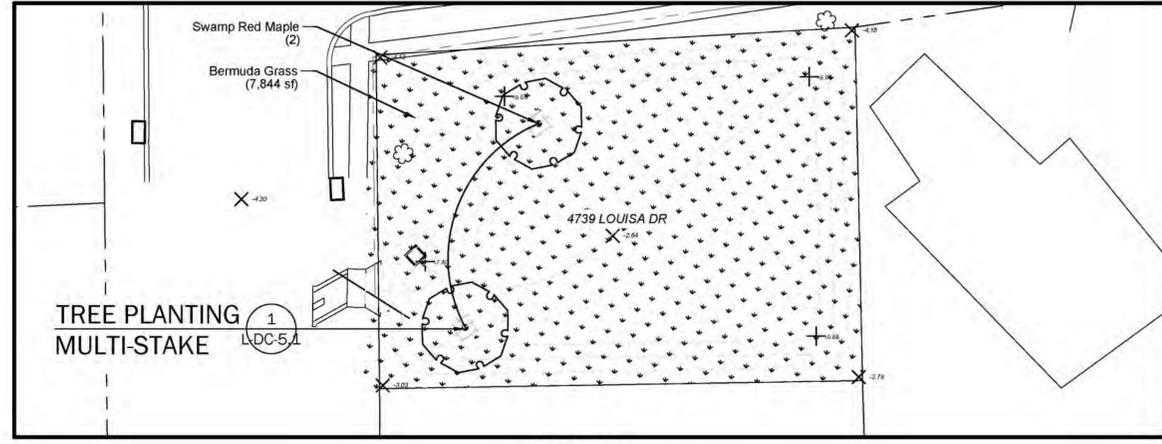
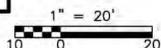
LOT EXCAVATION PLAN



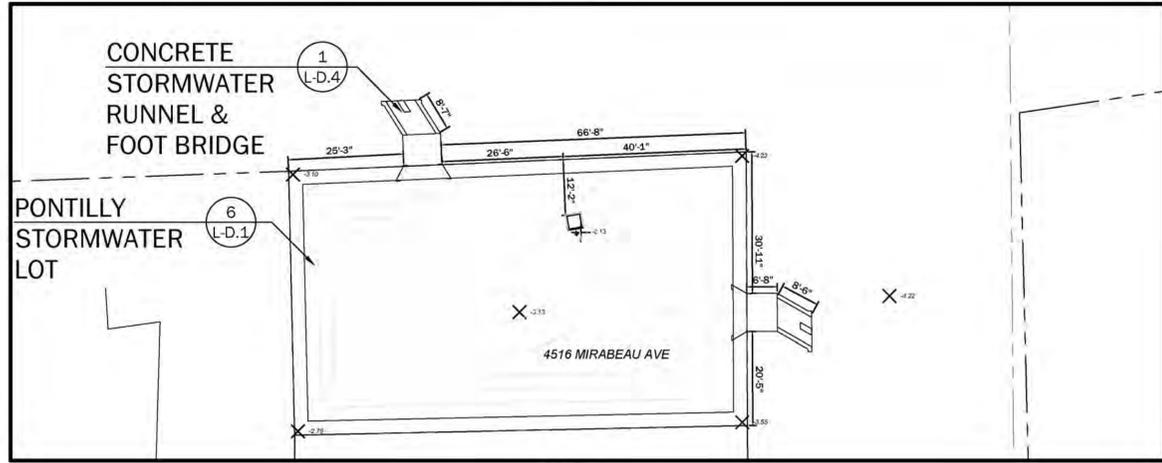
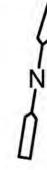
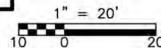
LOT EXCAVATION PLAN



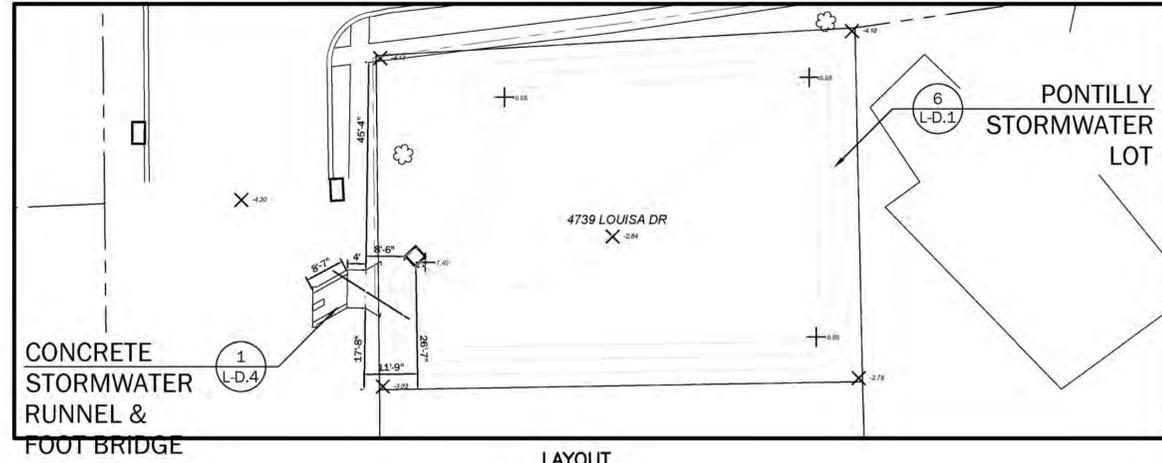
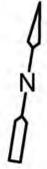
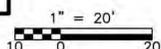
PLANTING PLAN



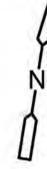
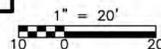
PLANTING PLAN



LAYOUT PLAN



LAYOUT PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

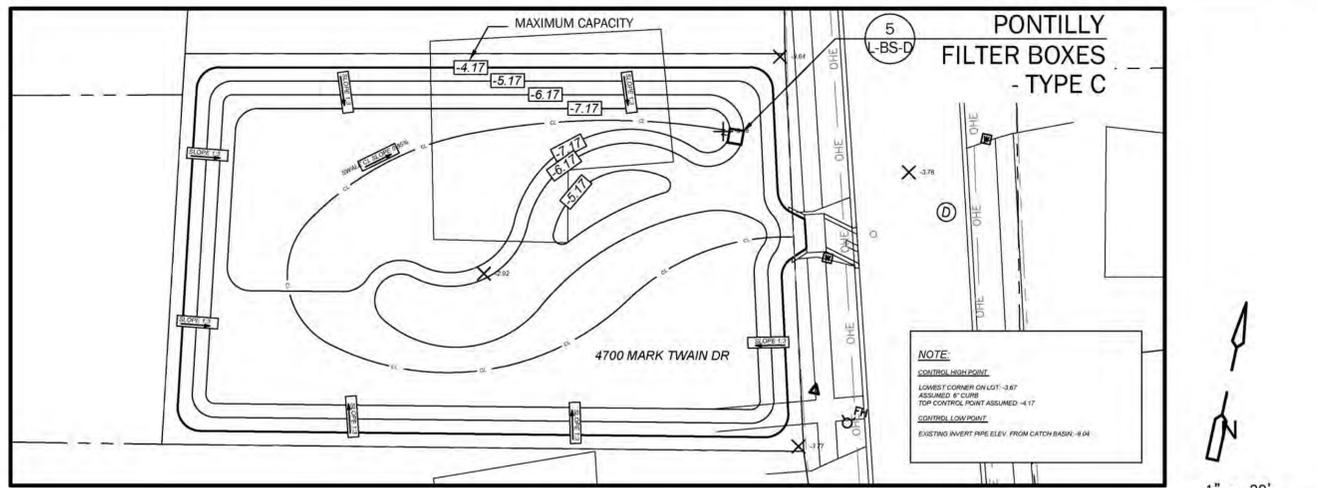


NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

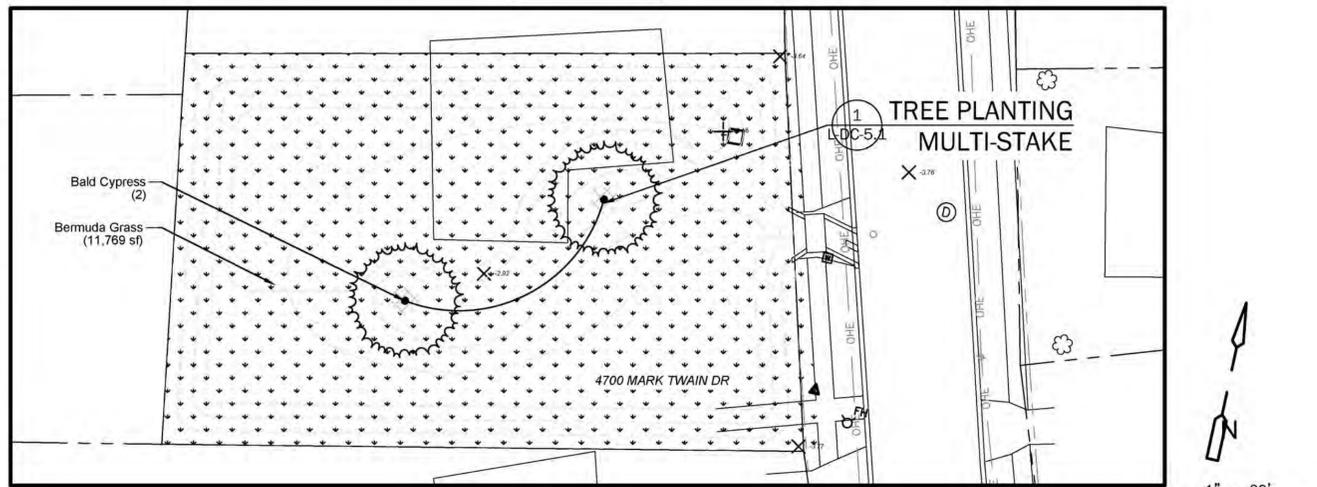
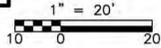
STORMWATER LOTS
 SHEET NO. L-SWL-10

PROJECT NO. 122322-90818
 FILE NAME: SWL00000
 SHEET NO. L-SWL-10

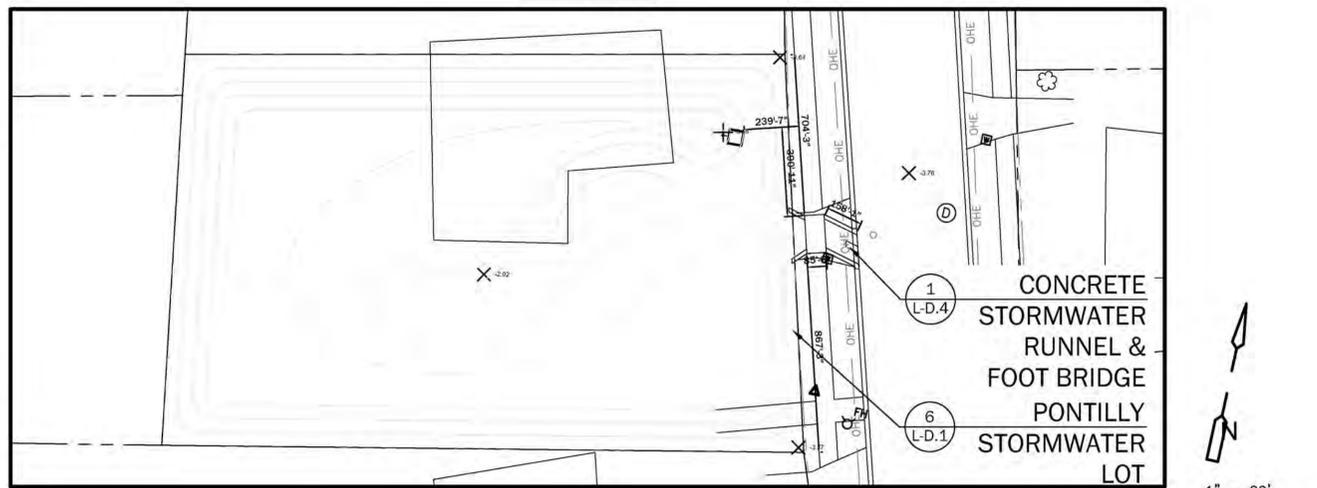
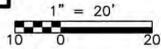
XREF: [C:\P00001_CDM_S_2234] Images: []
 Last saved by: ALCINAA Time: 8/12/2015 7:57:28 AM
 pw:\dpcpapp\1_PW_XM1\122322\90819\04 Design Services NM_10% 02 Civil\10 CAD\SWL00000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



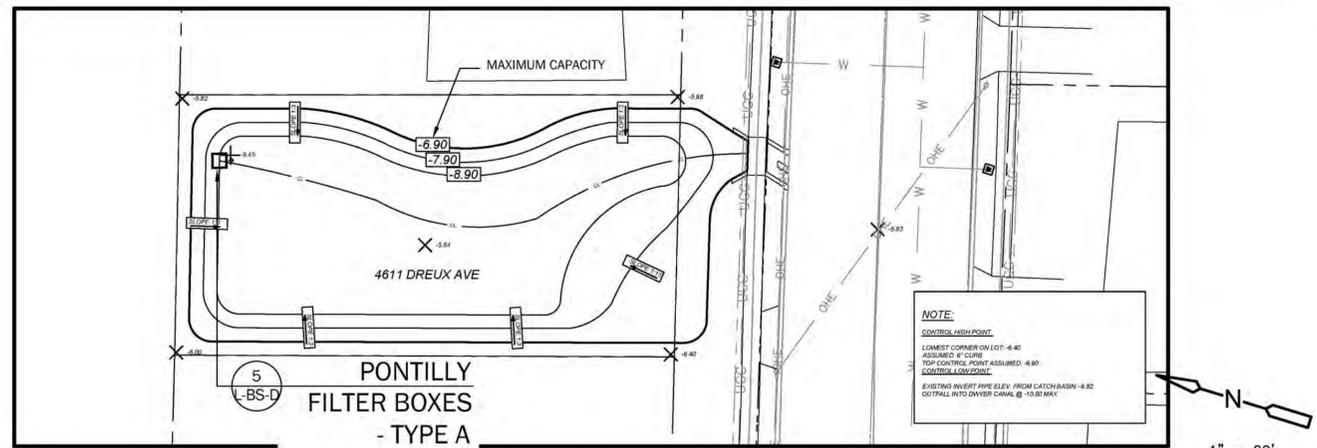
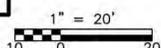
LOT EXCAVATION PLAN



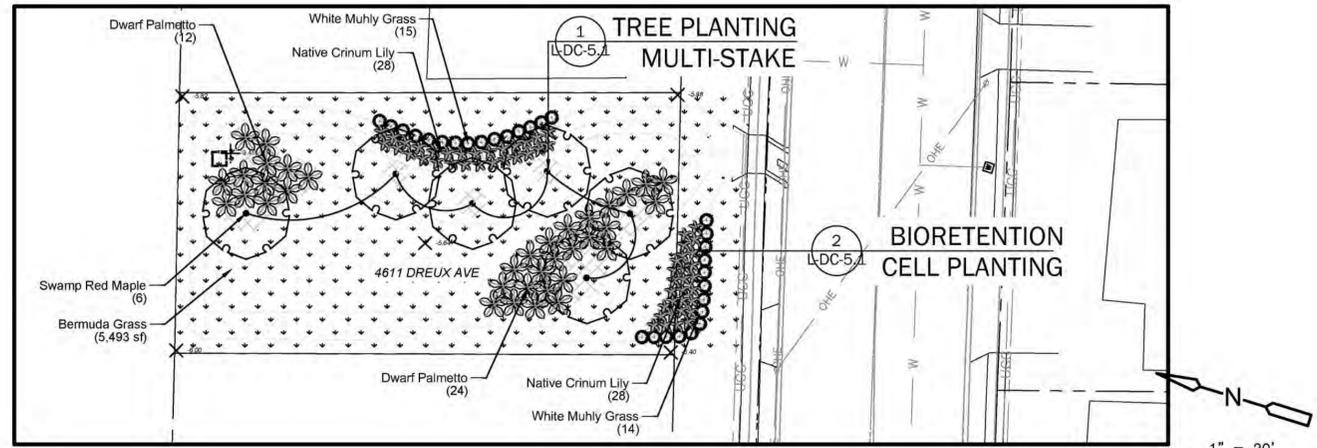
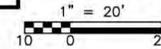
PLANTING PLAN



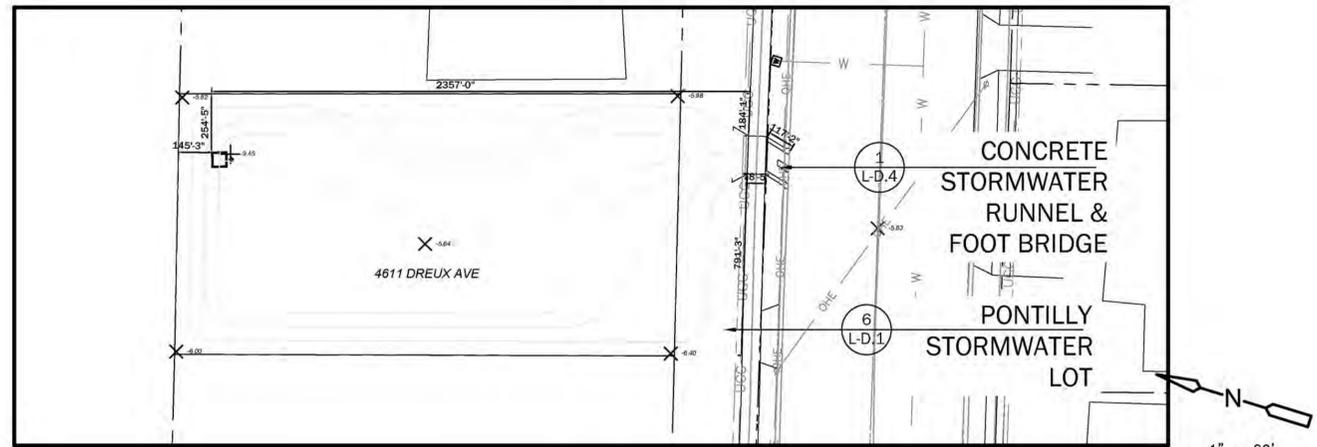
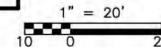
LAYOUT PLAN



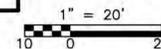
LOT EXCAVATION PLAN



PLANTING PLAN



LAYOUT PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____	X
DRAWN BY: J. ALCINAA	X
SHEET CHK'D BY: _____	X
CROSS CHK'D BY: _____	X
APPROVED BY: _____	X
DATE: AUGUST 2015	

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 759-1100

NOA
 NEW ORLEANS REDEVELOPMENT AUTHORITY

CHESTER ENGINEERS

DANA BROWN & ASSOCIATES

NEW ORLEANS REDEVELOPMENT AUTHORITY

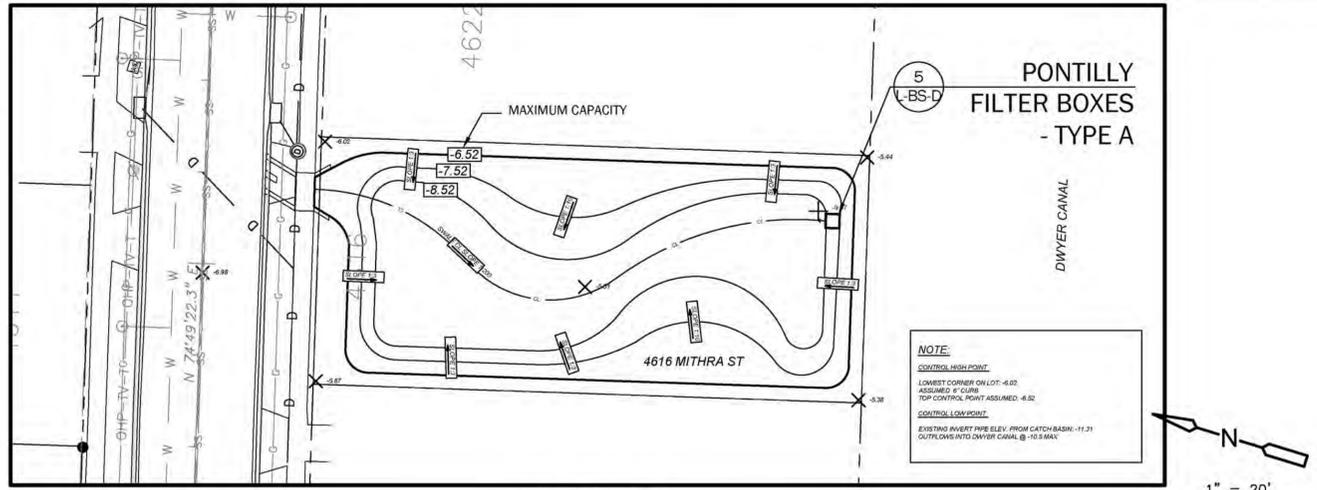
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

STORMWATER LOTS

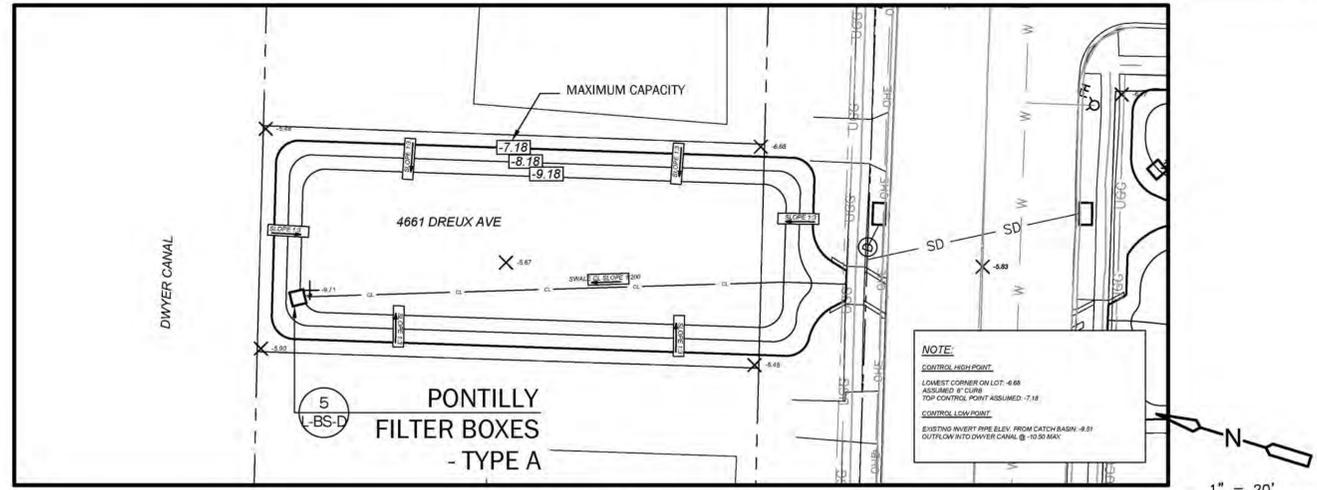
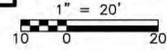
SHEET NO. **L-SWL-11**

PROJECT NO. 122322-90818
FILE NAME: SWL00000
SHEET NO. L-SWL-11

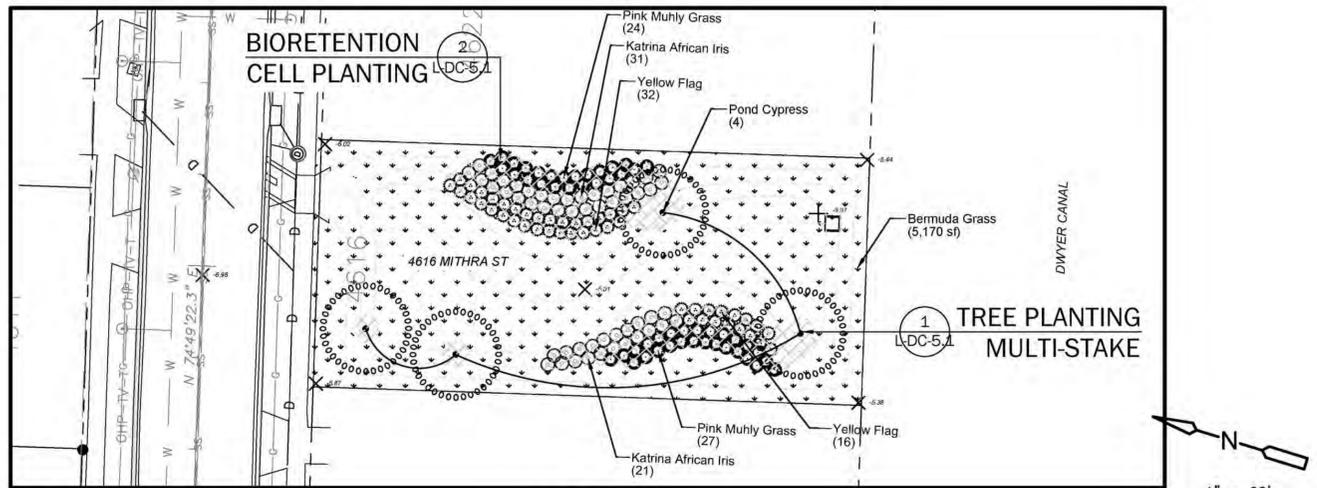
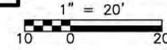
XREFS: [CP00001, CDMS_2234] Inquest: []
 Last saved by: ALCINAWA Time: 8/12/2015 8:06:46 AM
 PW: \\dcpwpp1\1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\1\SWL00000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



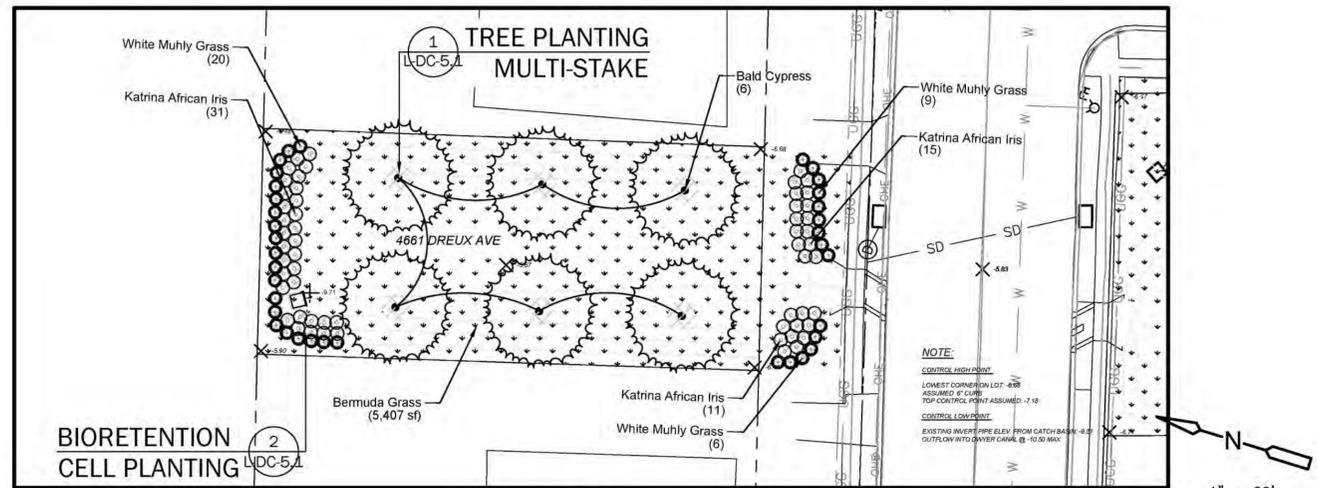
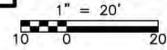
LOT EXCAVATION PLAN



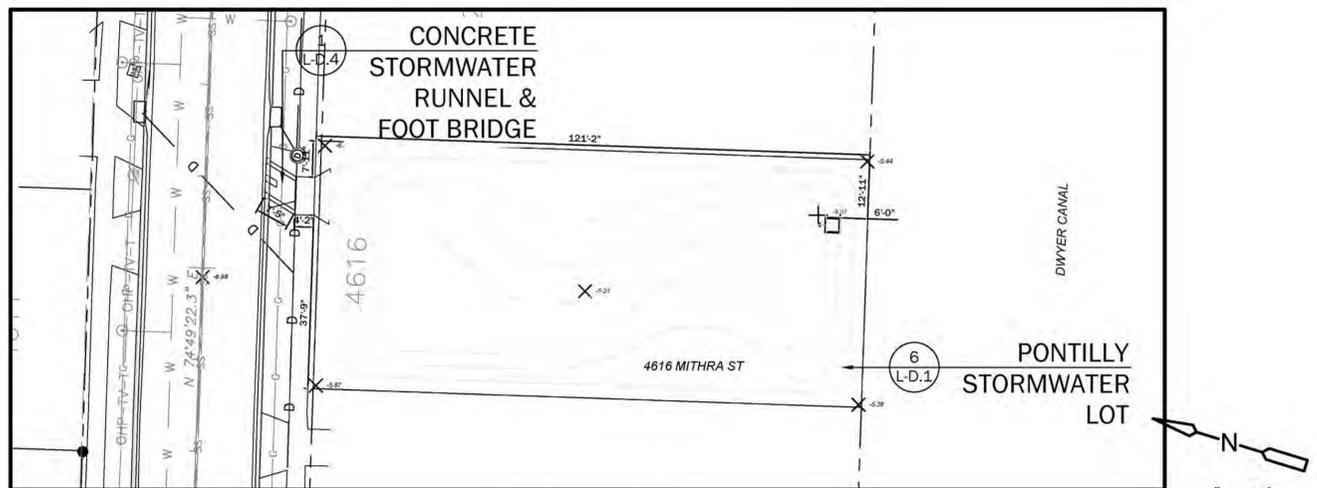
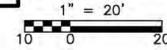
LOT EXCAVATION PLAN



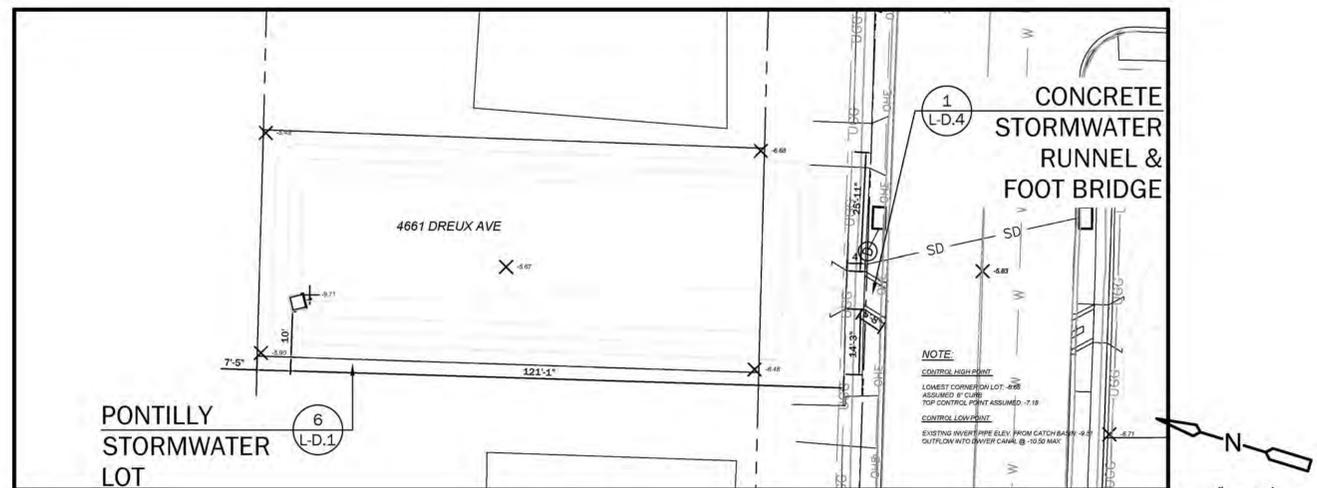
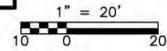
PLANTING PLAN



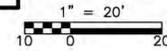
PLANTING PLAN



LOT EXCAVATION PLAN



LAYOUT PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINAWA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

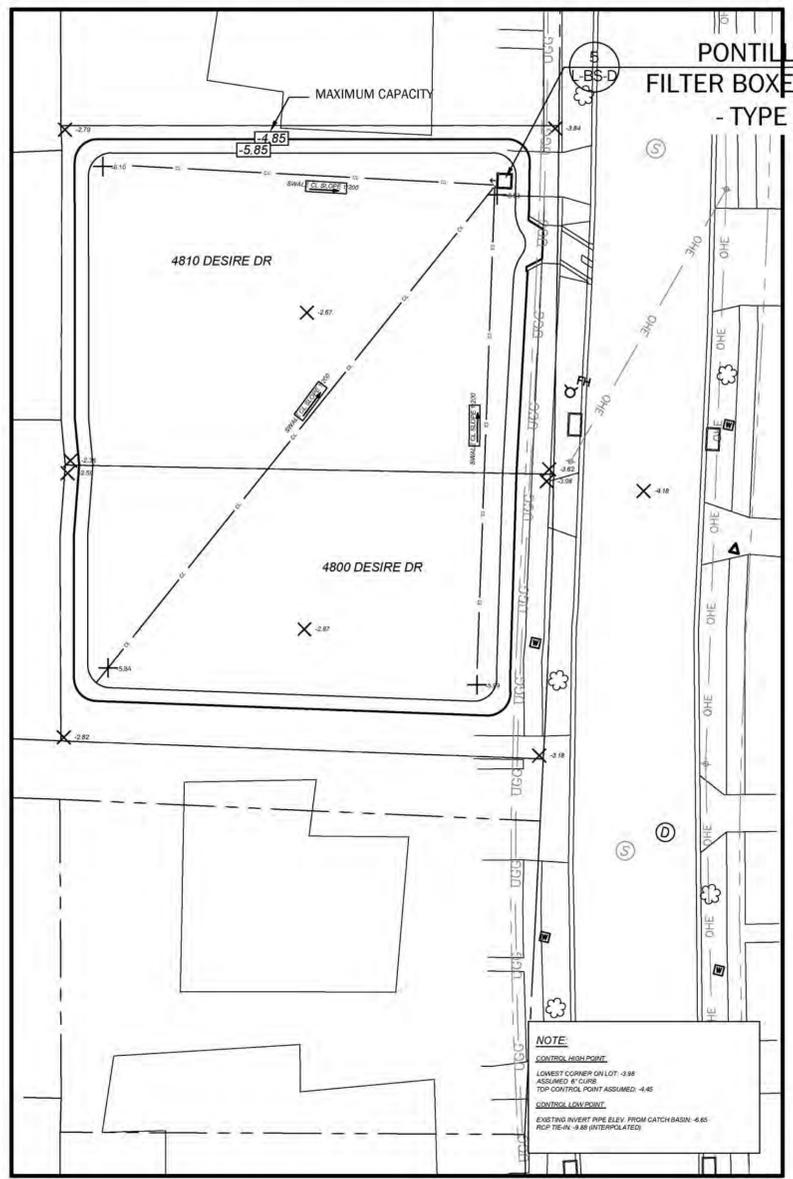
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

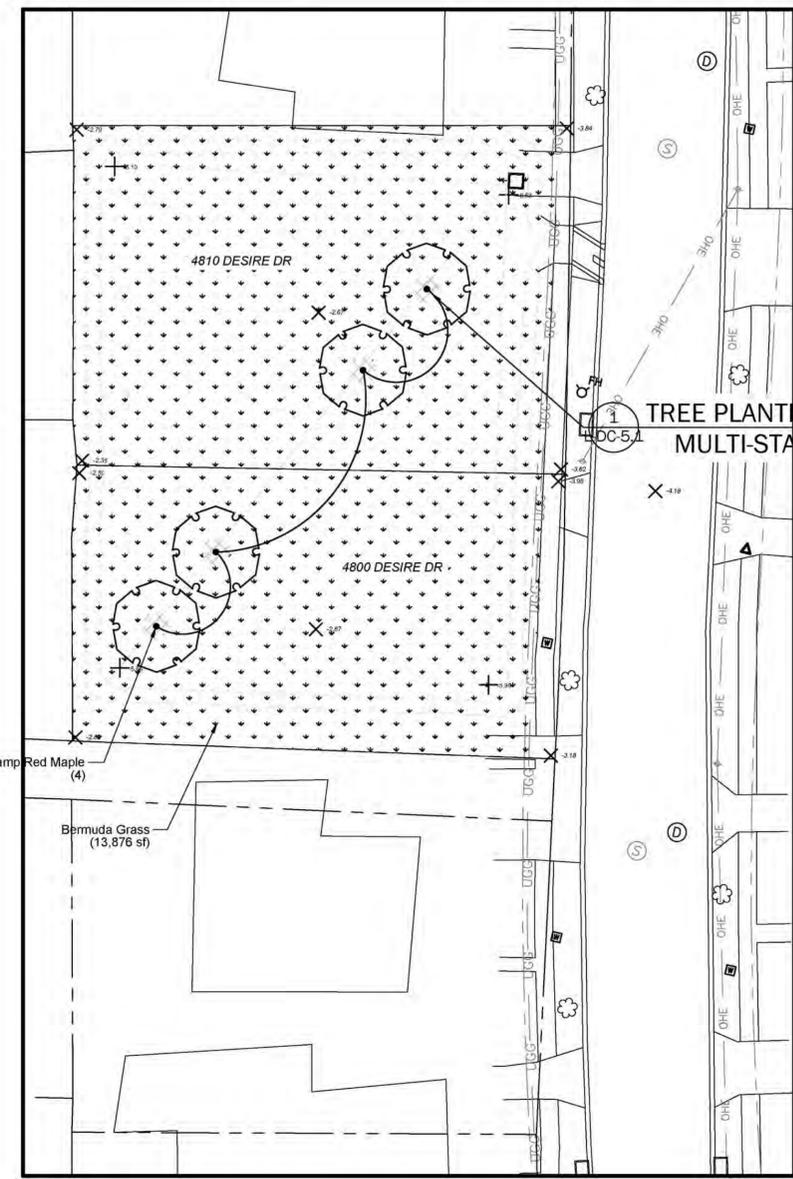
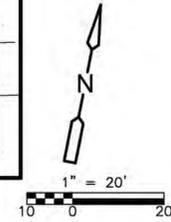
STORMWATER LOTS
 SHEET NO.
L-SWL-12

PROJECT NO. 122322-90818
 FILE NAME: SWL00000
 SHEET NO.
L-SWL-12

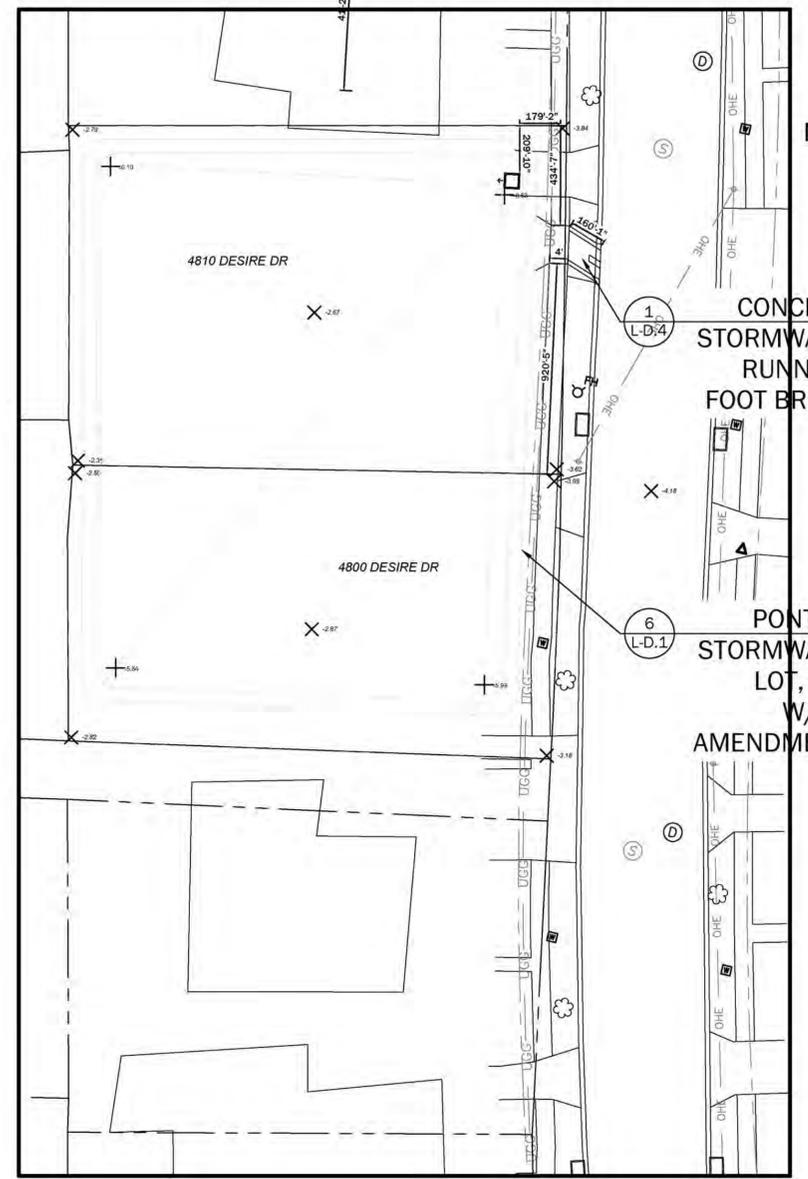
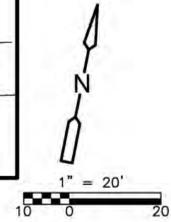
XREFs: [C:\P00001\CDMS_2234] Ingress: []
 Last saved by: ALCINA Time: 8/12/2015 8:46:04 AM
 PW: \\dcpwpp1\pw_xm1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\SWL00000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



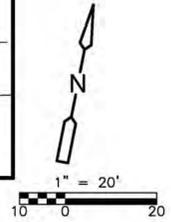
LOT EXCAVATION PLAN



PLANTING PLAN



LAYOUT PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

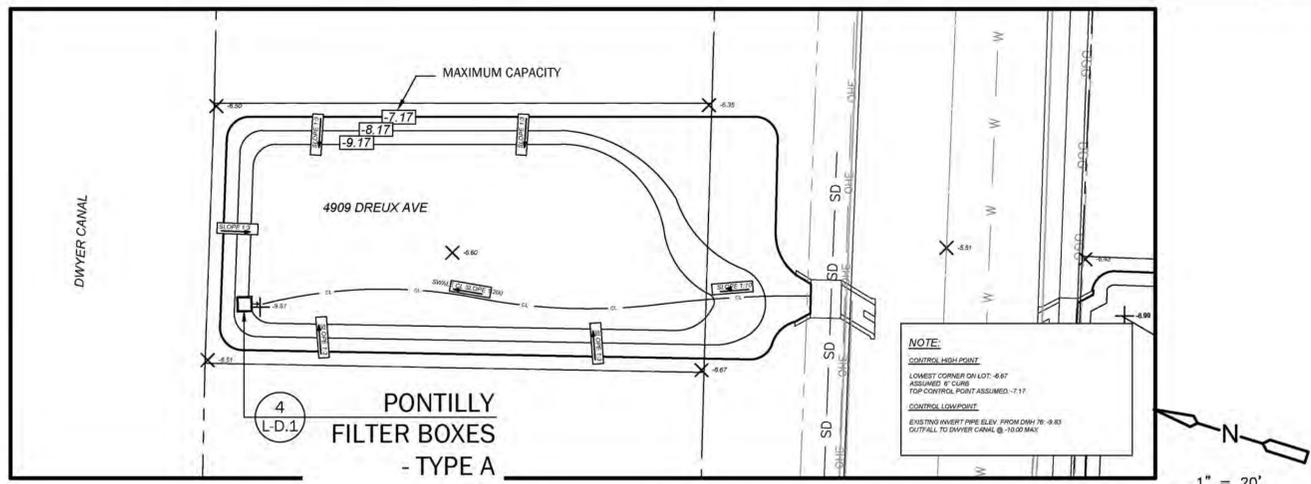
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

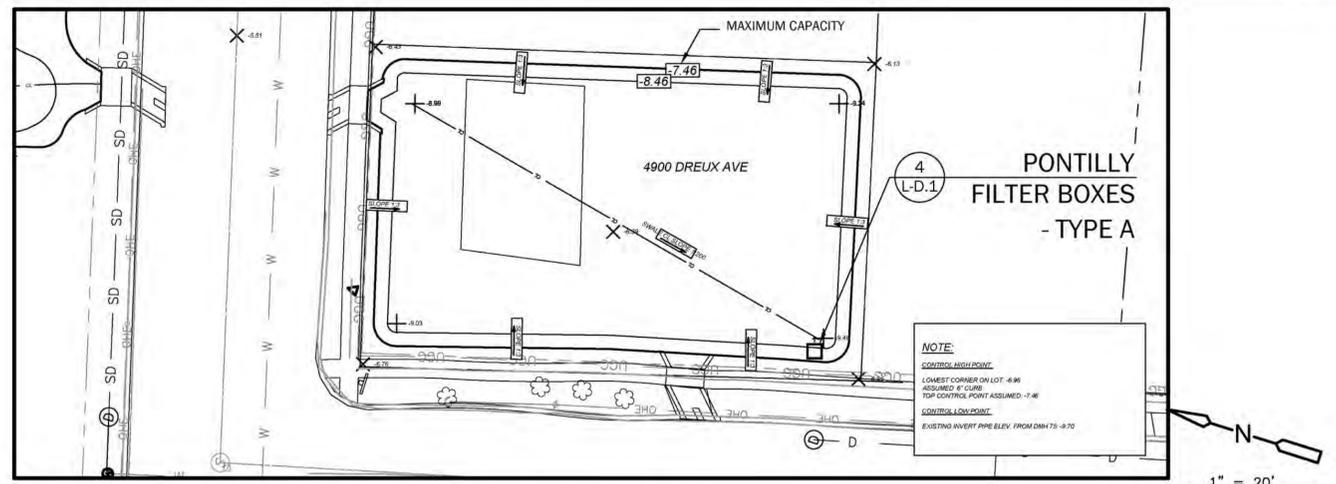
STORMWATER LOTS

PROJECT NO. 122322-90818
 FILE NAME: SWL00000
 SHEET NO.
L-SWL-14

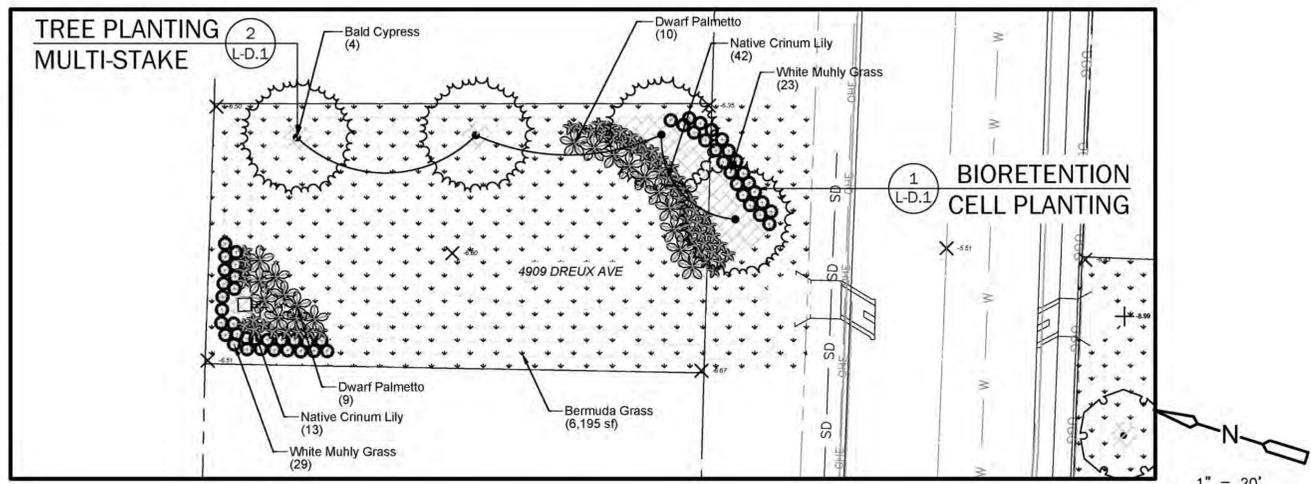
XREFS: [C:\P00001\CDMS_2234] Inprocess: []
 Last saved by: ALCINA Time: 8/12/2015 8:56:16 AM
 PW: \\dcpwpp1\pw_xm1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\SWL00000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



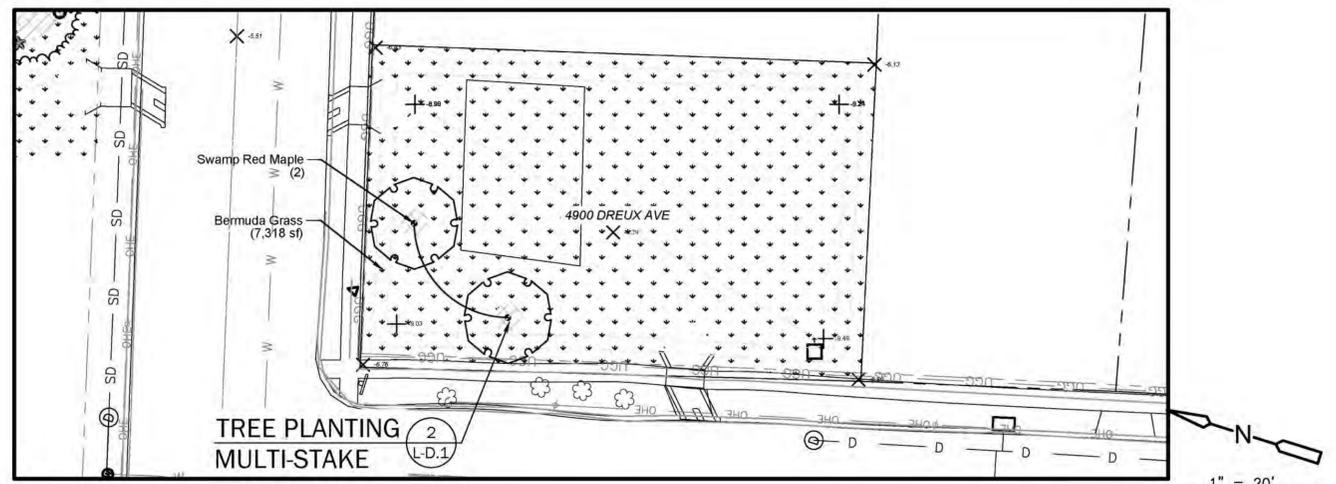
LOT EXCAVATION PLAN



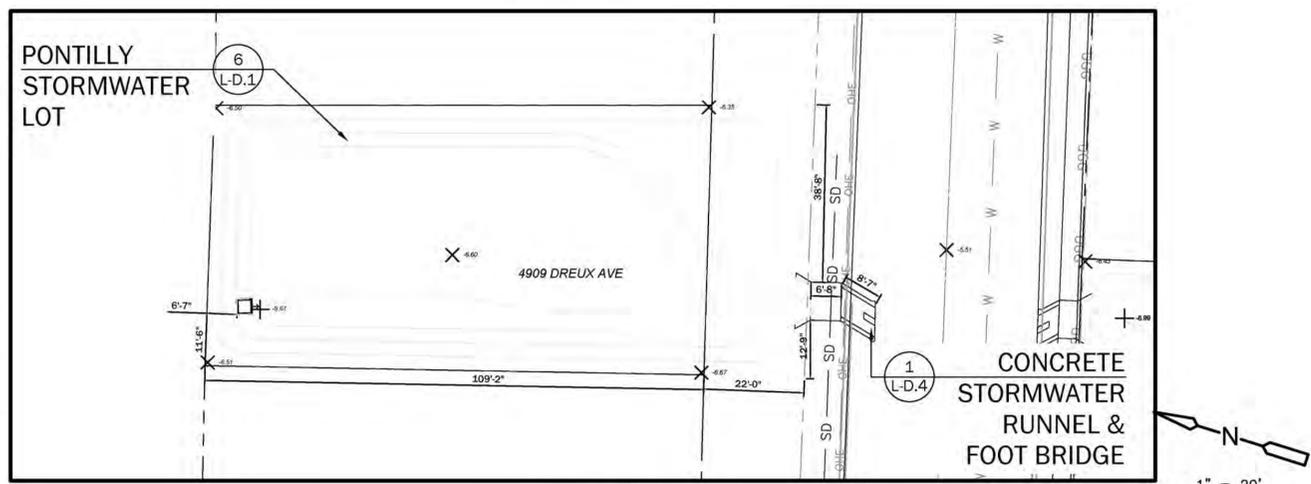
LOT EXCAVATION PLAN



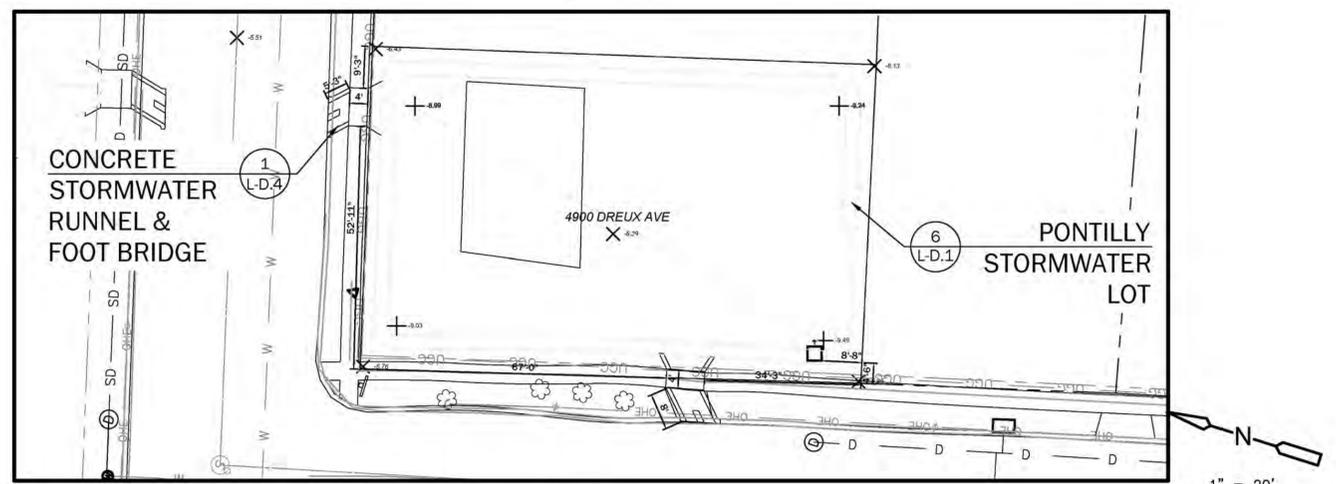
PLANTING PLAN



PLANTING PLAN



LAYOUT PLAN



LAYOUT PLAN

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY:	X
DRAWN BY:	J ALCINA
SHEET CHK'D BY:	X
CROSS CHK'D BY:	X
APPROVED BY:	X
DATE:	AUGUST 2015

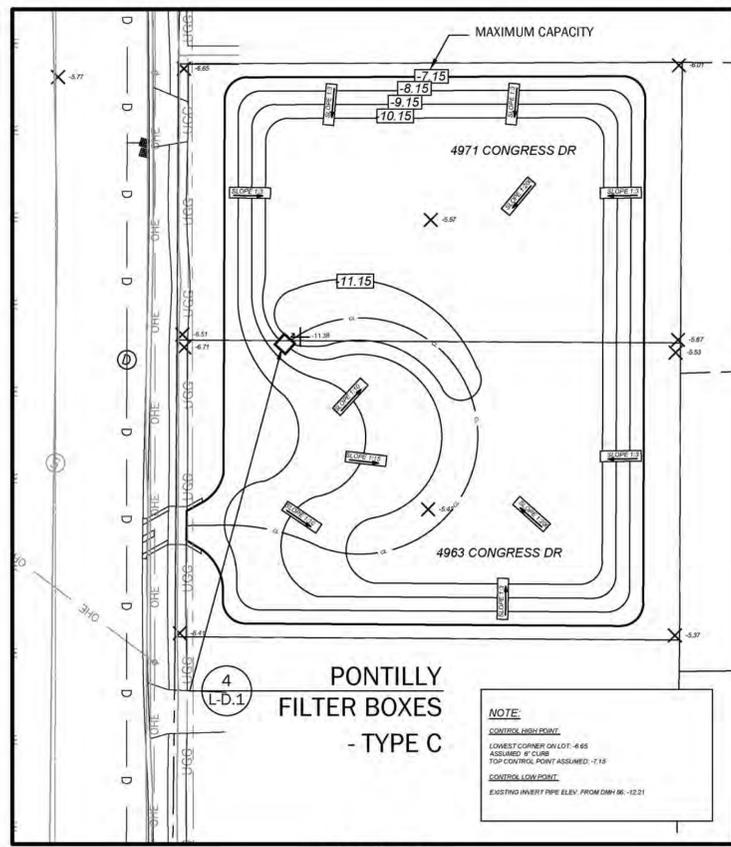


NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

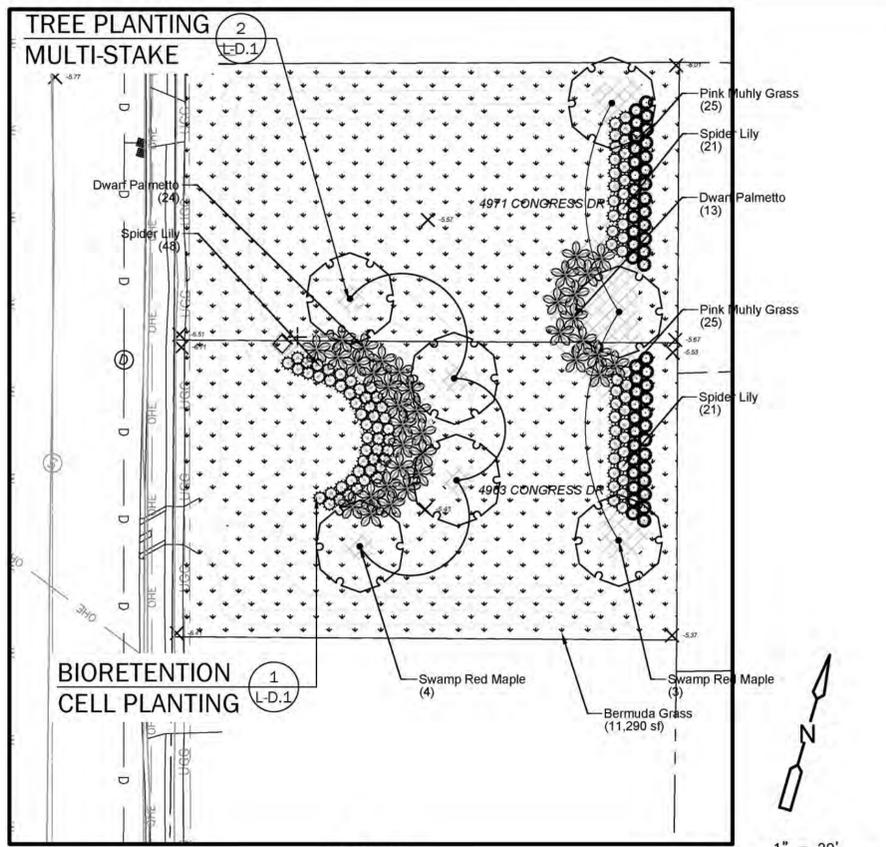
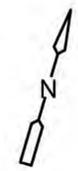
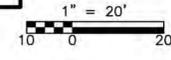
STORMWATER LOTS
 SHEET NO. L-SWL-16

PROJECT NO.	122322-90818
FILE NAME:	SWL00000
SHEET NO.	L-SWL-16

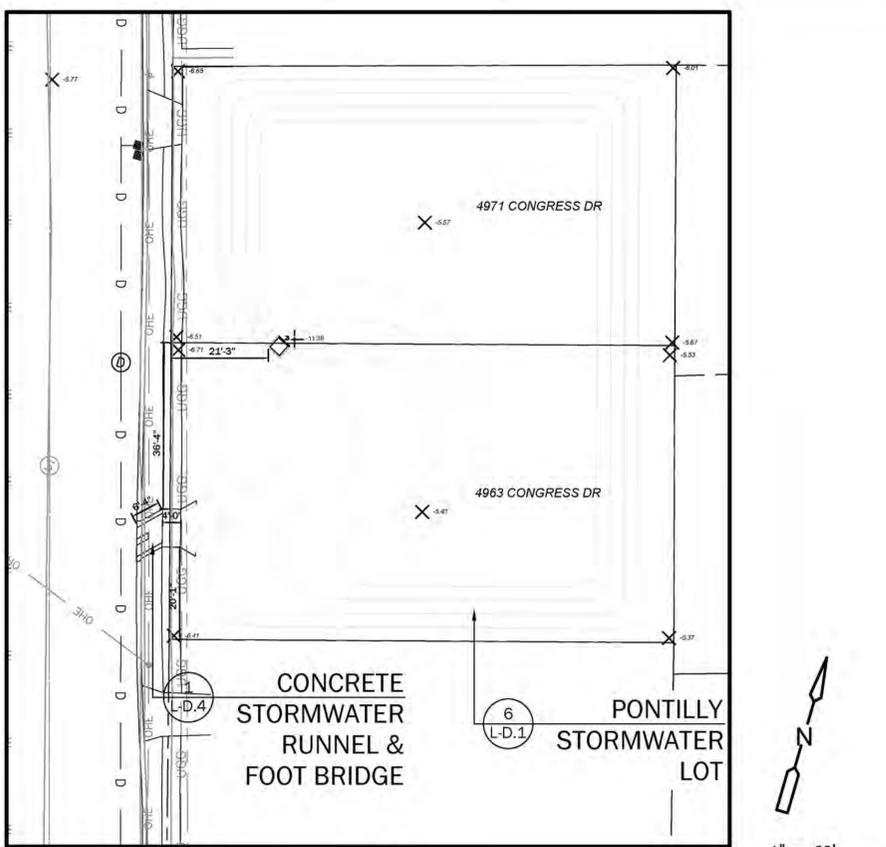
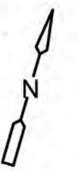
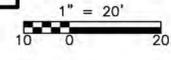
XREFS: [C:\PE\000001_CDM_S_2234] Ingress: []
 Last saved by: ALCINARA Time: 8/12/2015 9:39:58 AM
 PW: \\dcpwpp1\pw_xm1\122322\90819\04 Design Services NM_10%_02_Civil\10 CAD\SWL00000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



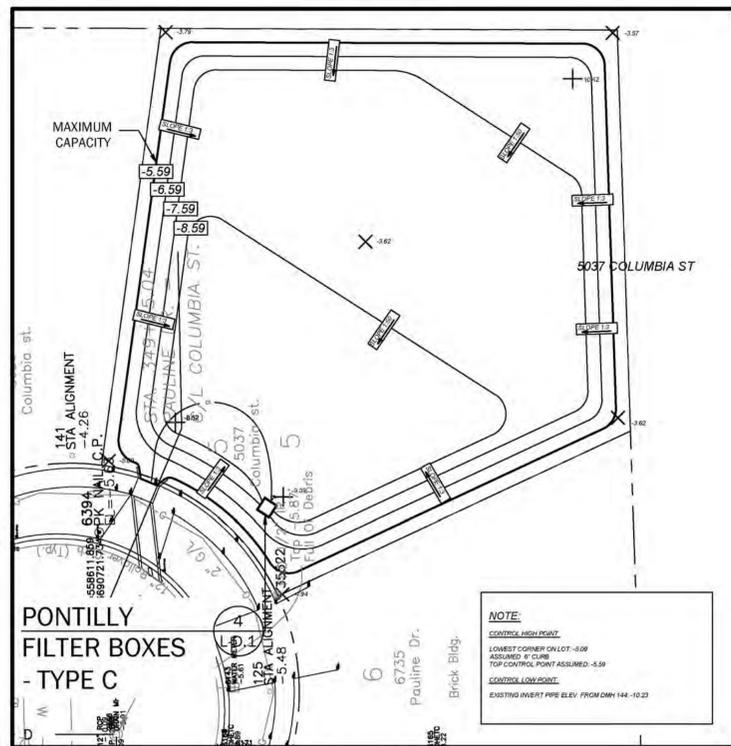
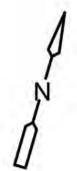
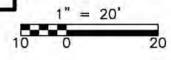
EXCAVATION PLAN



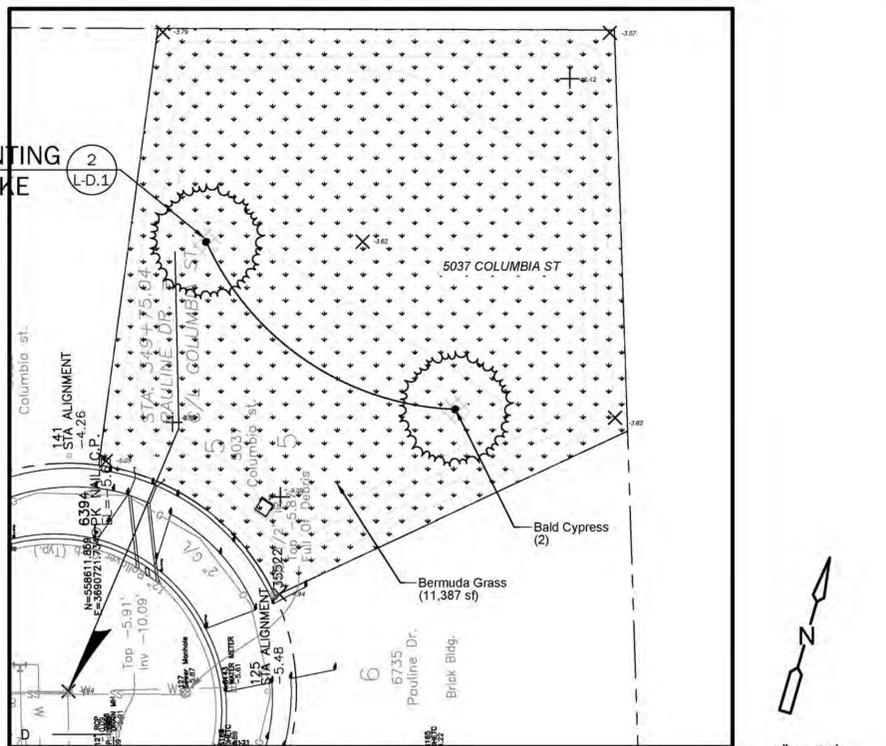
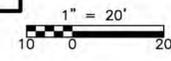
PLANTING PLAN



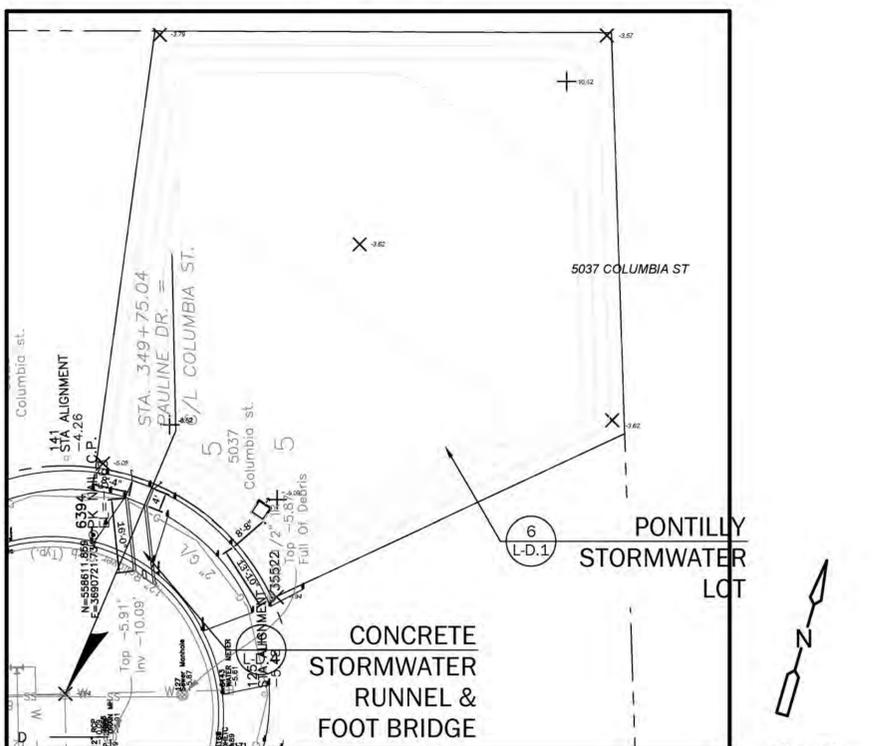
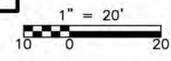
LAYOUT PLAN



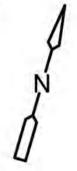
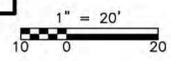
EXCAVATION PLAN



PLANTING PLAN



LAYOUT PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

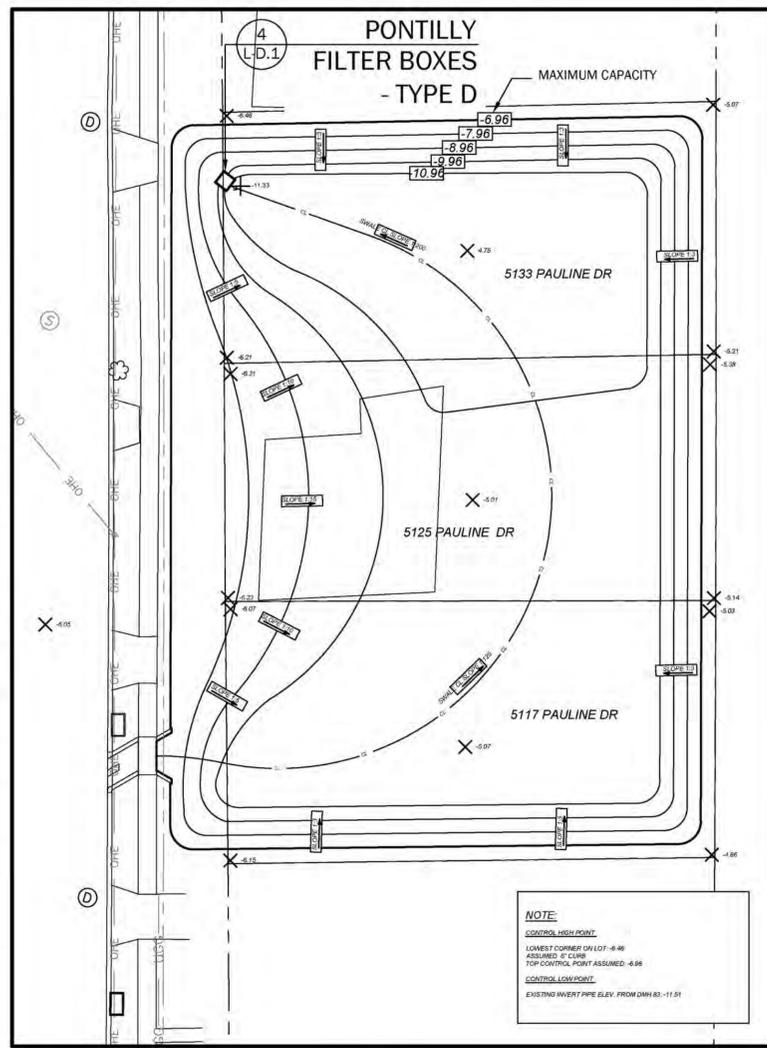
NOA
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

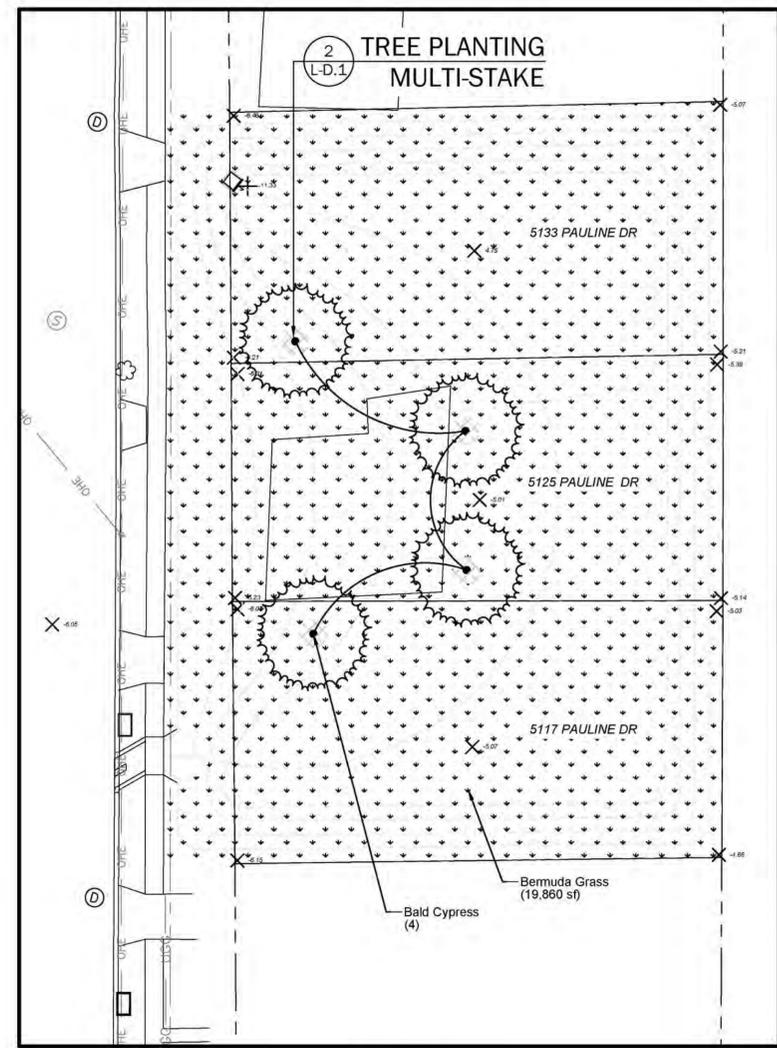
STORMWATER LOTS

PROJECT NO. 122322-90818
 FILE NAME: SWL00000
 SHEET NO.
L-SWL-19

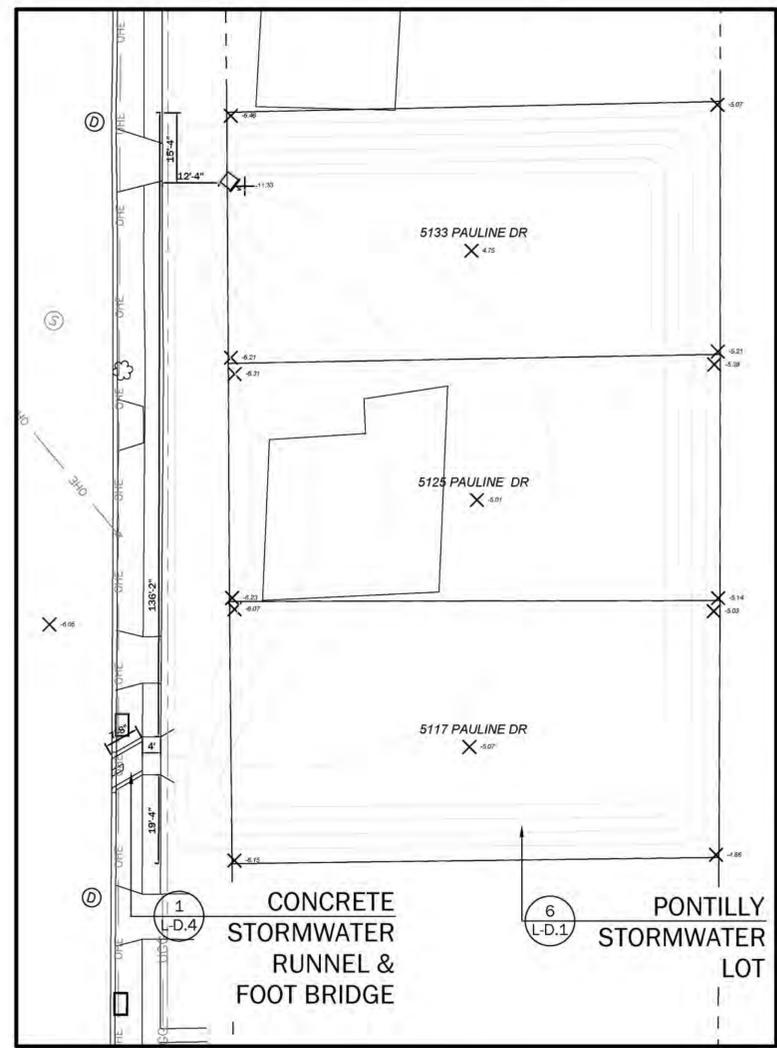
XREFS: [C:\PEP00001_CDM_S_2234] Inprocess: []
 Last saved by: ALCINA Time: 8/12/2015 9:46:02 AM
 PW: \\dcpwpp1\pw_xm1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\SWL00000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



EXCAVATION PLAN



PLANTING PLAN



EXCAVATION PLAN

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

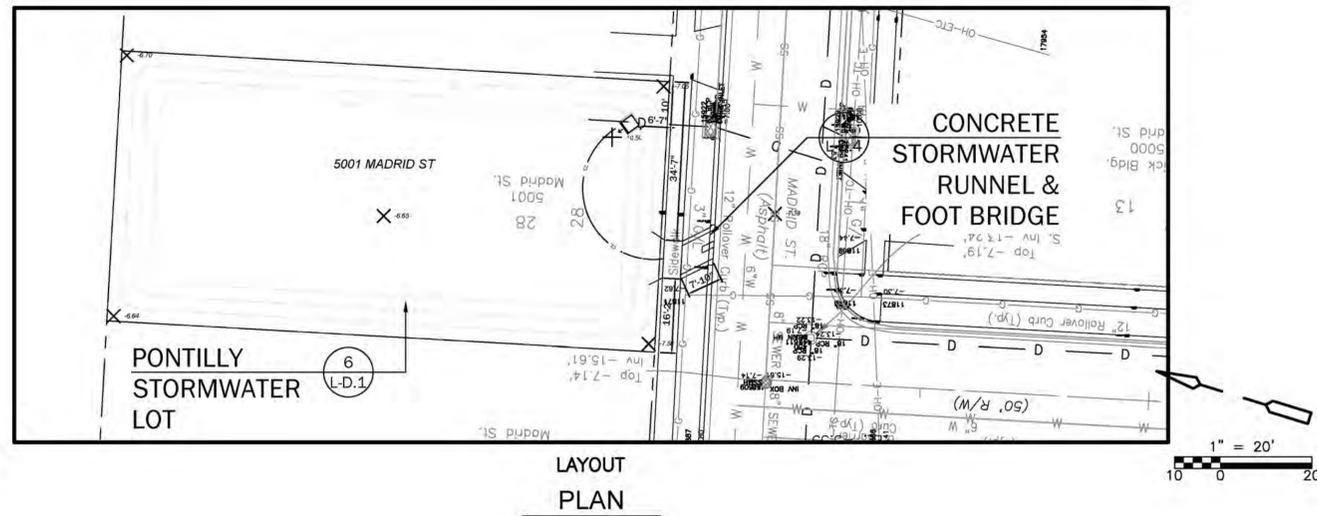
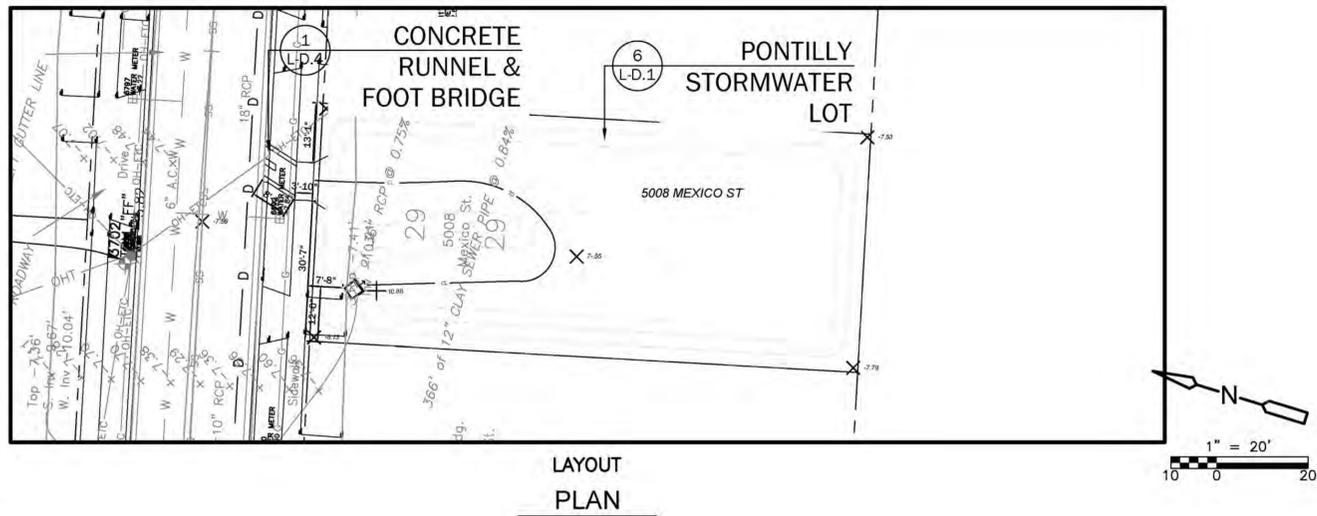
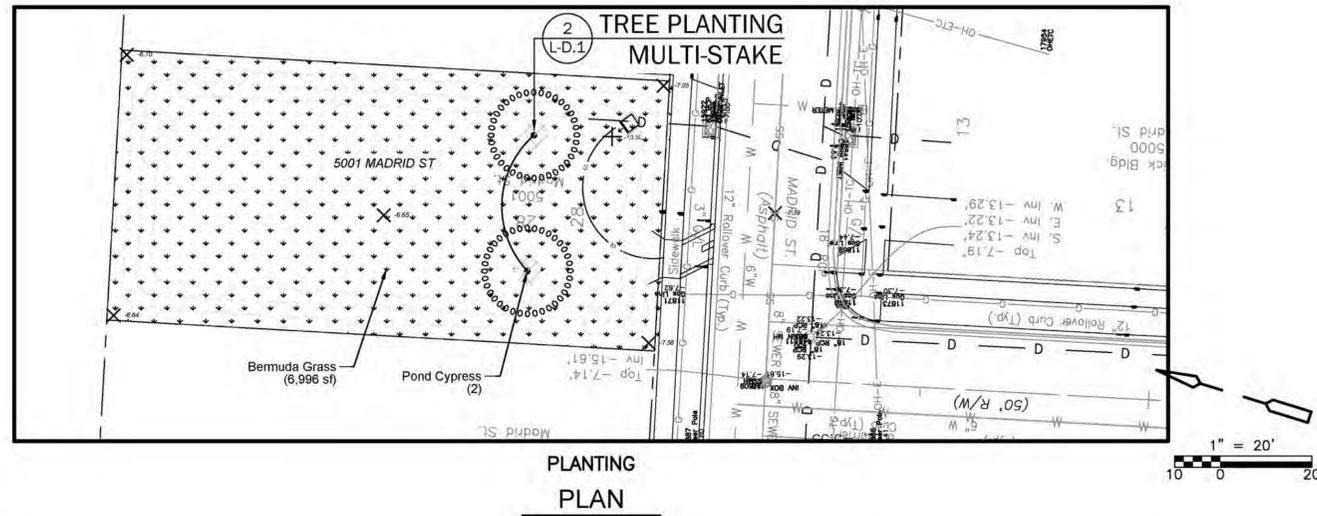
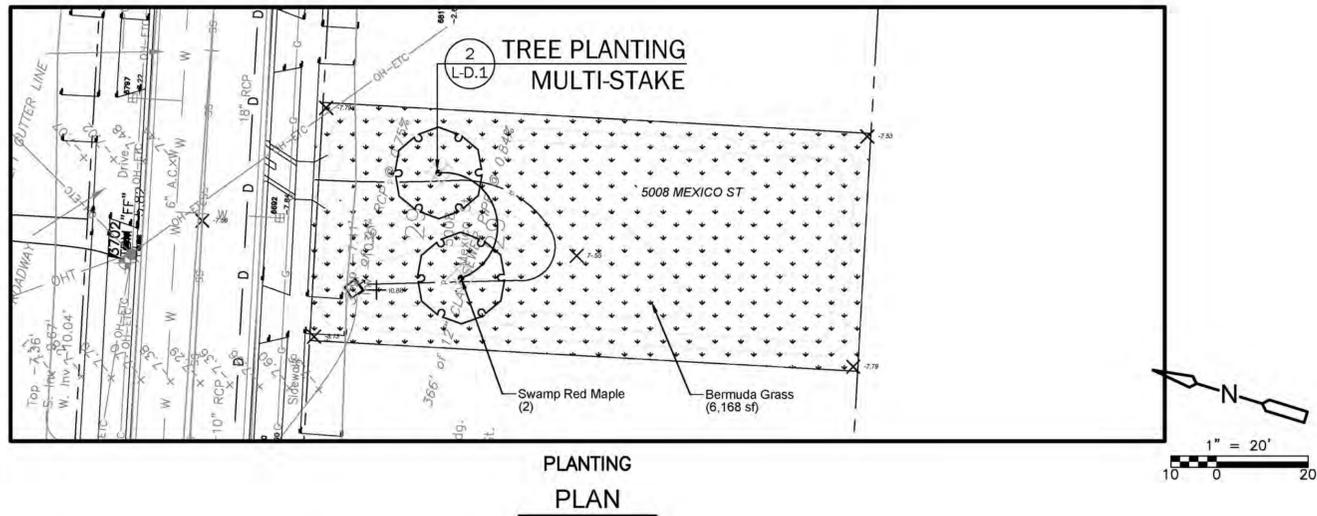
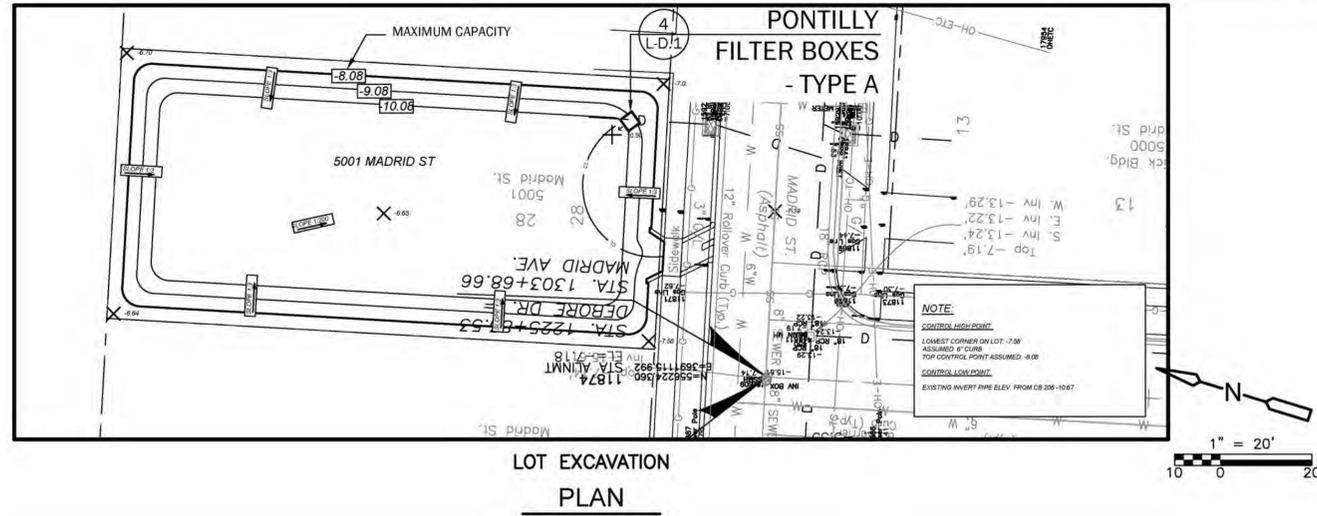
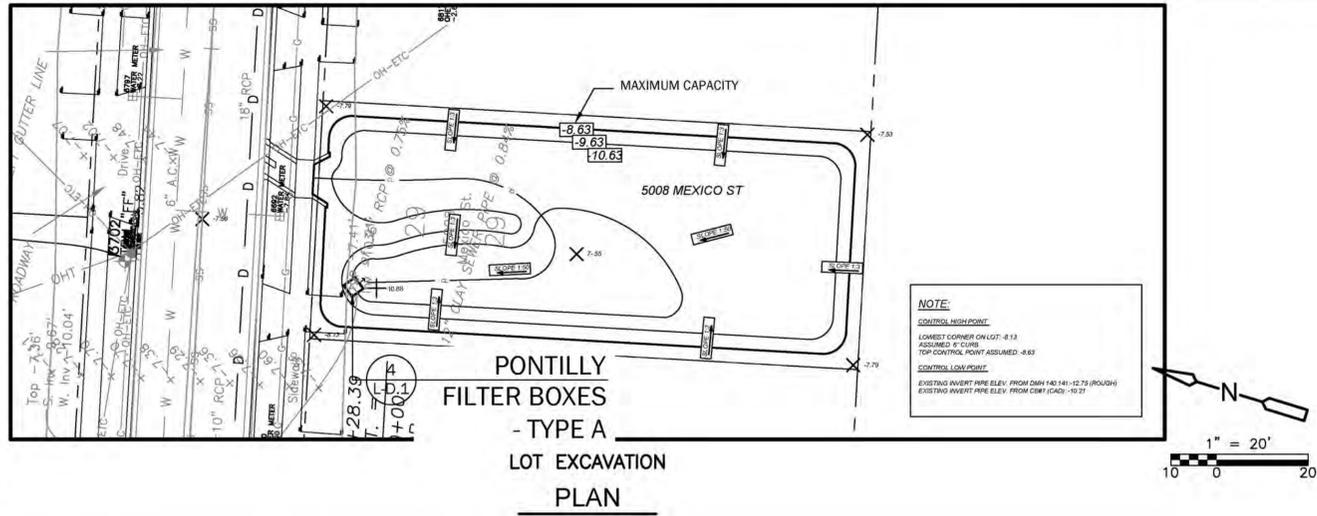
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

STORMWATER LOTS

PROJECT NO. 122322-90818
 FILE NAME: SWL00000
 SHEET NO.
L-SWL-20

XREFS: [C:\PE\000001_CDM_2234] Inquest: []
 Last saved by: ALCINA Time: 8/12/2015 9:58:12 AM
 PW: \\dcpwpp1\pw_xm1\122322\90819\04 Design Services NM_10%_02_Civil\10 CAD\SWL00000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS, THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



REV. NO.	DATE	DRWN	CHKD	REMARKS

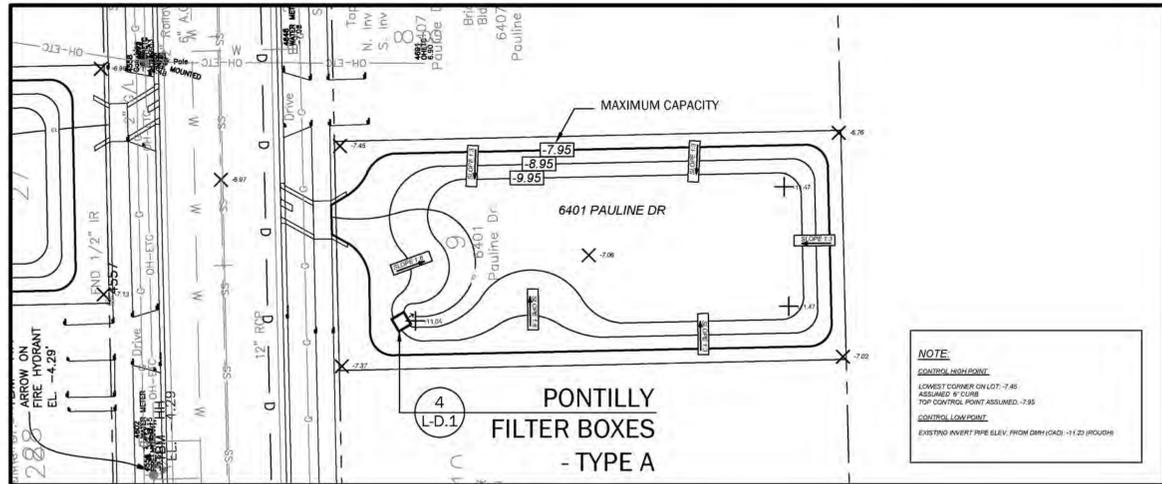
DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015



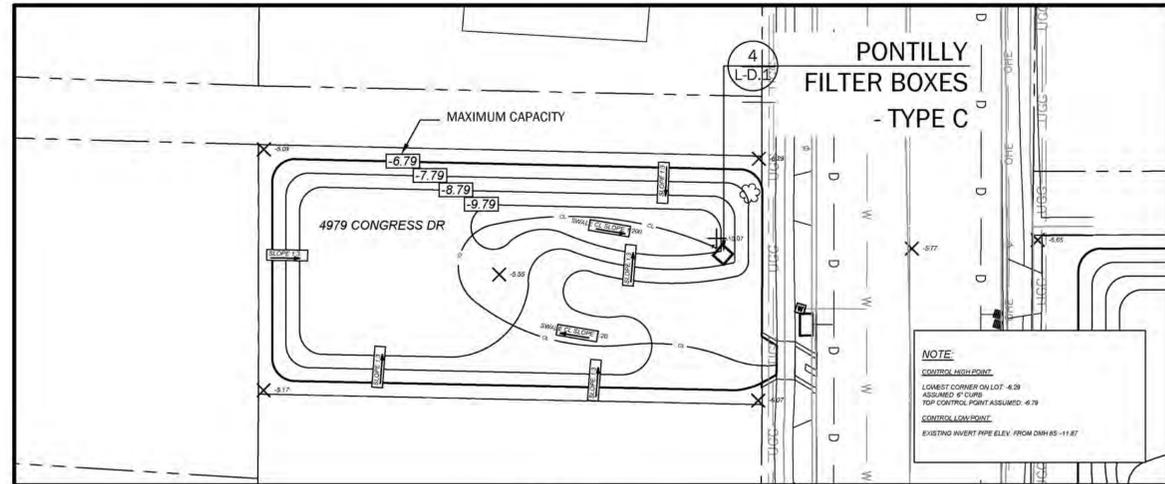
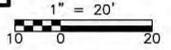
NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

STORMWATER LOTS
 PROJECT NO. 122322-90818
 FILE NAME: SWL00000
 SHEET NO.
L-SWL-22

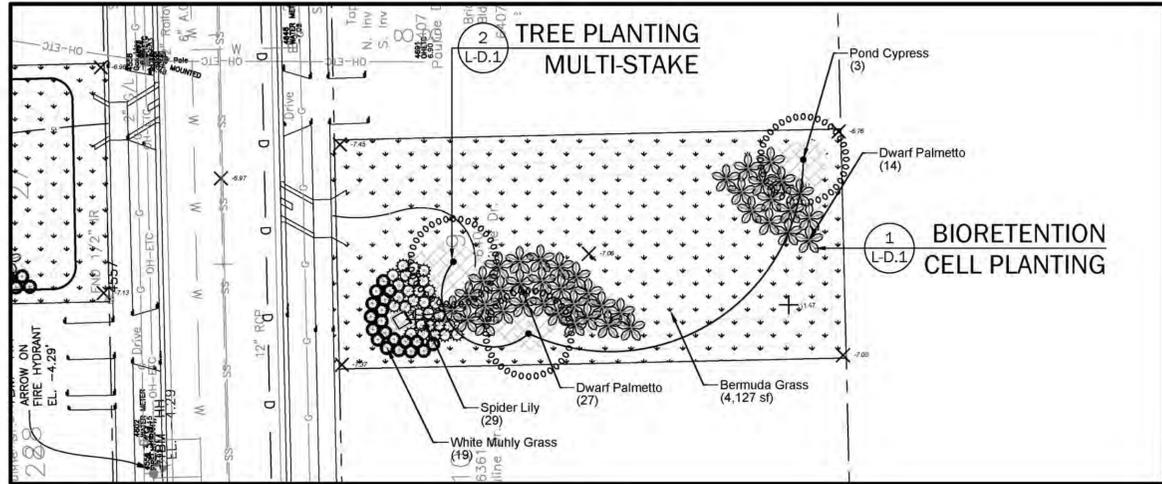
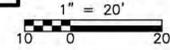
XREFS: [C:\P00001_CDM_S_2234] Inprocess: []
 Last saved by: ALCINAWA Time: 8/12/2015 10:21:40 AM
 PW: \\dcpwpp1\1\122322\90819\04 Design Services_NM_10%_02_Civil\10 CAD\1\SWL00000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



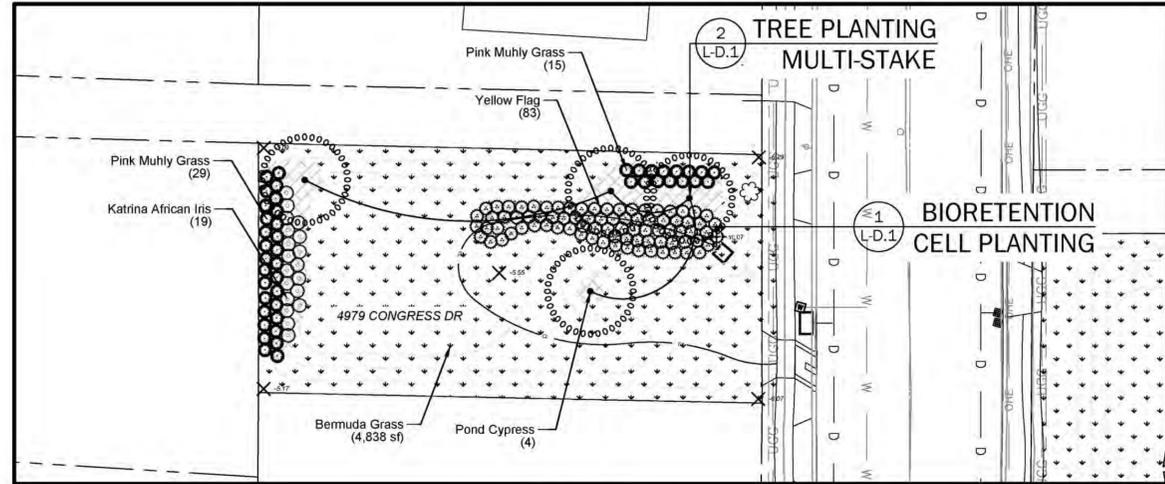
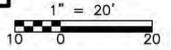
EXCAVATION PLAN



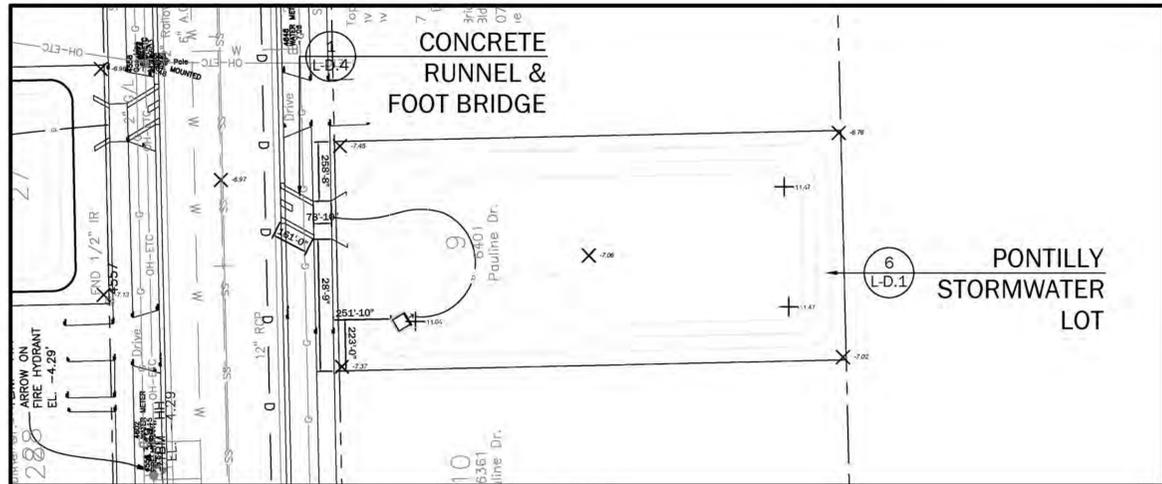
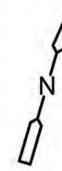
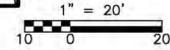
EXCAVATION PLAN



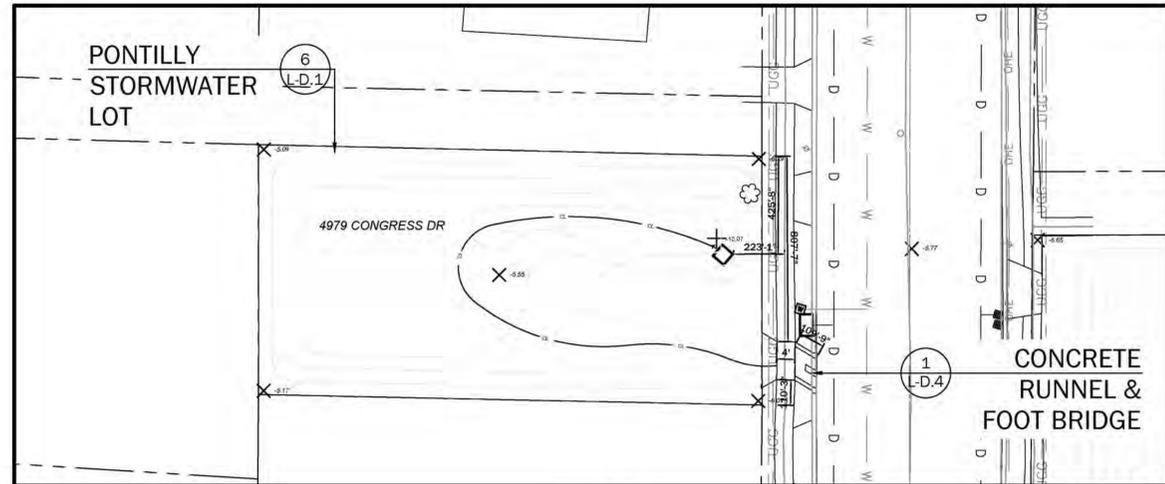
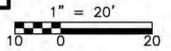
PLANTING PLAN



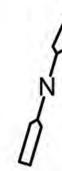
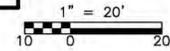
PLANTING PLAN



LAYOUT PLAN



LAYOUT PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY:	X
DRAWN BY:	J ALCINAWA
SHEET CHK'D BY:	X
CROSS CHK'D BY:	X
APPROVED BY:	X
DATE:	AUGUST 2015

1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

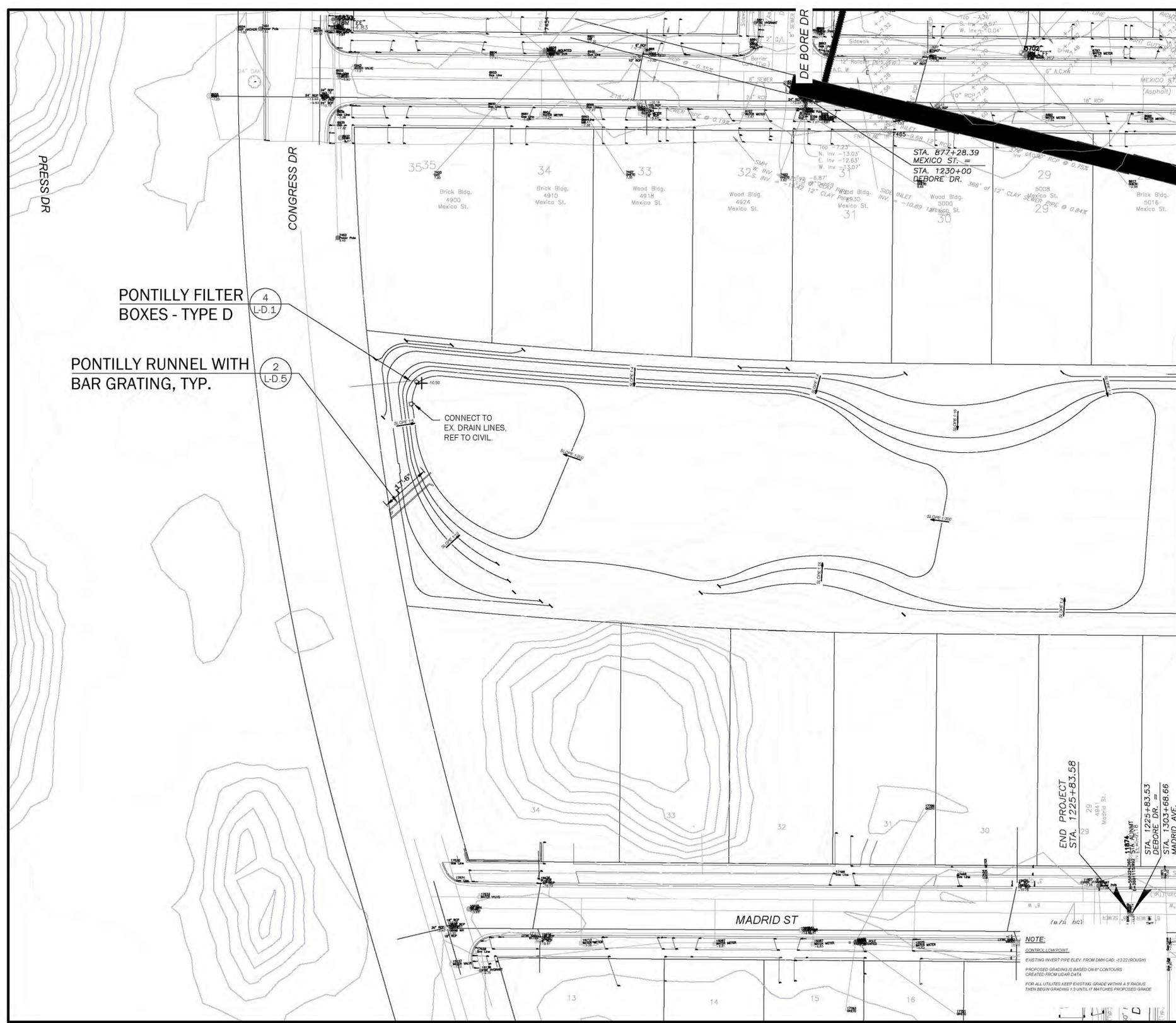
NEW ORLEANS REDEVELOPMENT AUTHORITY

 CHESTER ENGINEERS

 DANA BROWN & ASSOCIATES

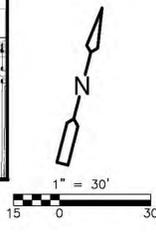
PROJECT NO. 122322-90818
 FILE NAME: SWL00000
 SHEET NO.
L-SWL-24

XREFs: [CEP000ST, CDMS_2234] Images:
 Last saved by: ALCINA Time: 8/11/2015 1:16:21 PM
 p:\1\decwapp1\PM_XM\122322\90819\04 Design Services NM_102\02 Civi\10 CAD\SR000000.dwg
 © 2015 CDM SMITH. ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



FOR CONTINUATION SEE SHEET L-SWP-2

PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

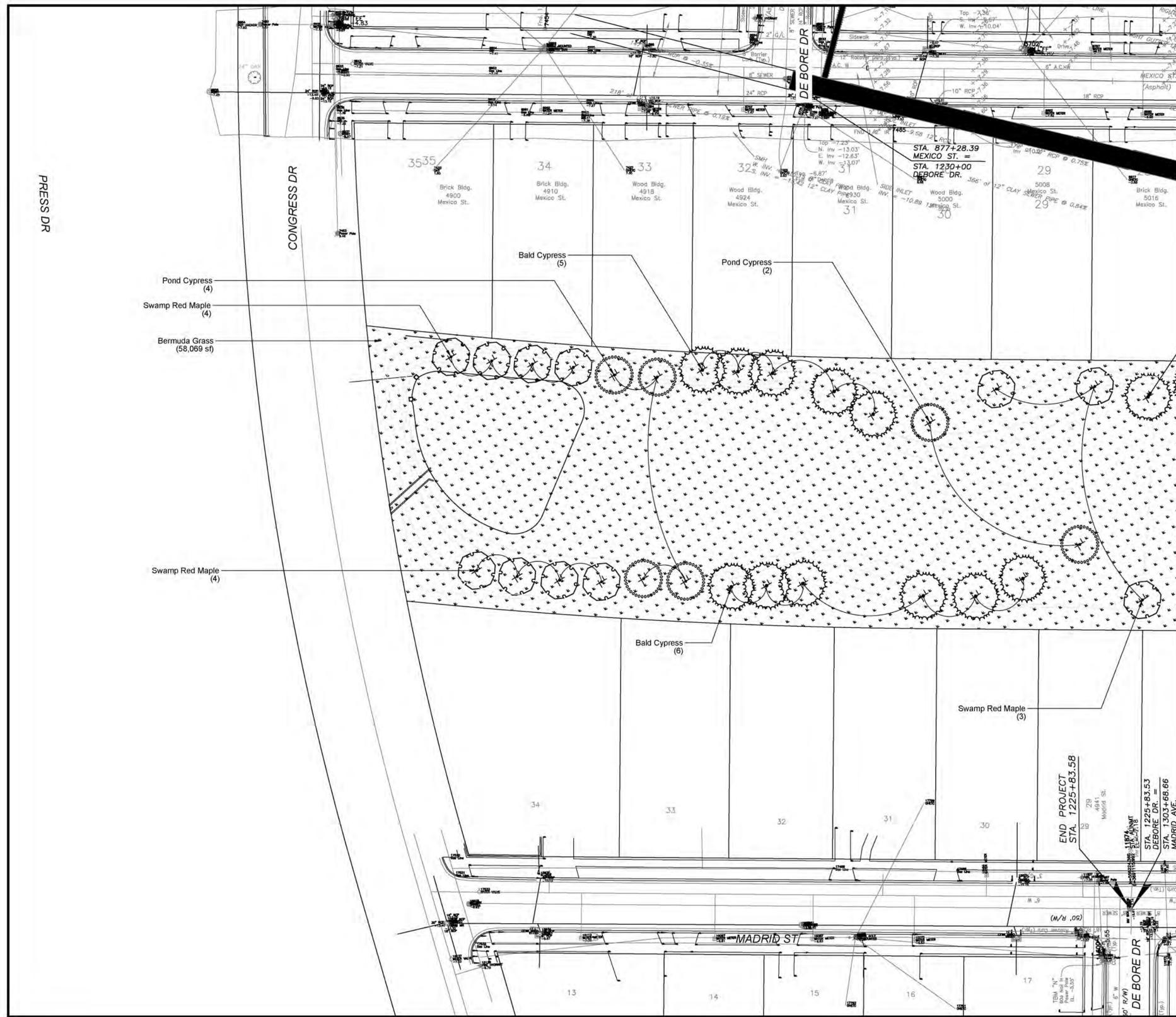
NEW ORLEANS REDEVELOPMENT AUTHORITY
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

STORMWATER PARKS

PROJECT NO. 122322-90818
 FILE NAME: SWP-0000
 SHEET NO.
L-SWP-1

XREFS: [CEP0005], CDM_S_2234] images:
 Last saved by: ALCINAA Time: 8/11/2015 1:16:21 PM
 pw:\decwapp\1\PM_XM\122322\90819\04 Design Services NM_10x\02 Civi\10 CADD\SB0000000.dwg
 © 2015 CDM SMITH. ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.

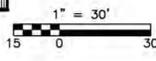


- Pond Cypress (4)
- Swamp Red Maple (4)
- Bermuda Grass (58,069 sf)
- Swamp Red Maple (4)

2 TREE PLANTING MULTI-STAKE L-D.1

FOR CONTINUATION SEE SHEET L-SWP-2.1

PLANTING PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

CHESA
 CHESTER ENGINEERS
 DANA BROWN & ASSOCIATES

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

STORMWATER PARKS
 SHEET NO. L-SWP-1.1

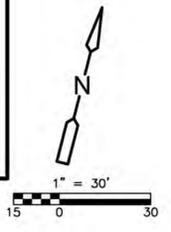
PROJECT NO. 122322-90818
 FILE NAME: SWP-0000
 SHEET NO. L-SWP-1.1

XREFS: [CEP0005]. CDM_S_2234. Images: □
 Last saved by: ALCINAA Time: 8/10/2015 1:02:45 PM
 p:\1\decwapp\1\PM_XM\122322\90819\04 Design Services NM_10%_02 Civil\10 CADD\SWP-0000.dwg
 © 2015 CDM SMITH. ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.

FOR CONTINUATION SEE SHEET L-SWP-1



PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

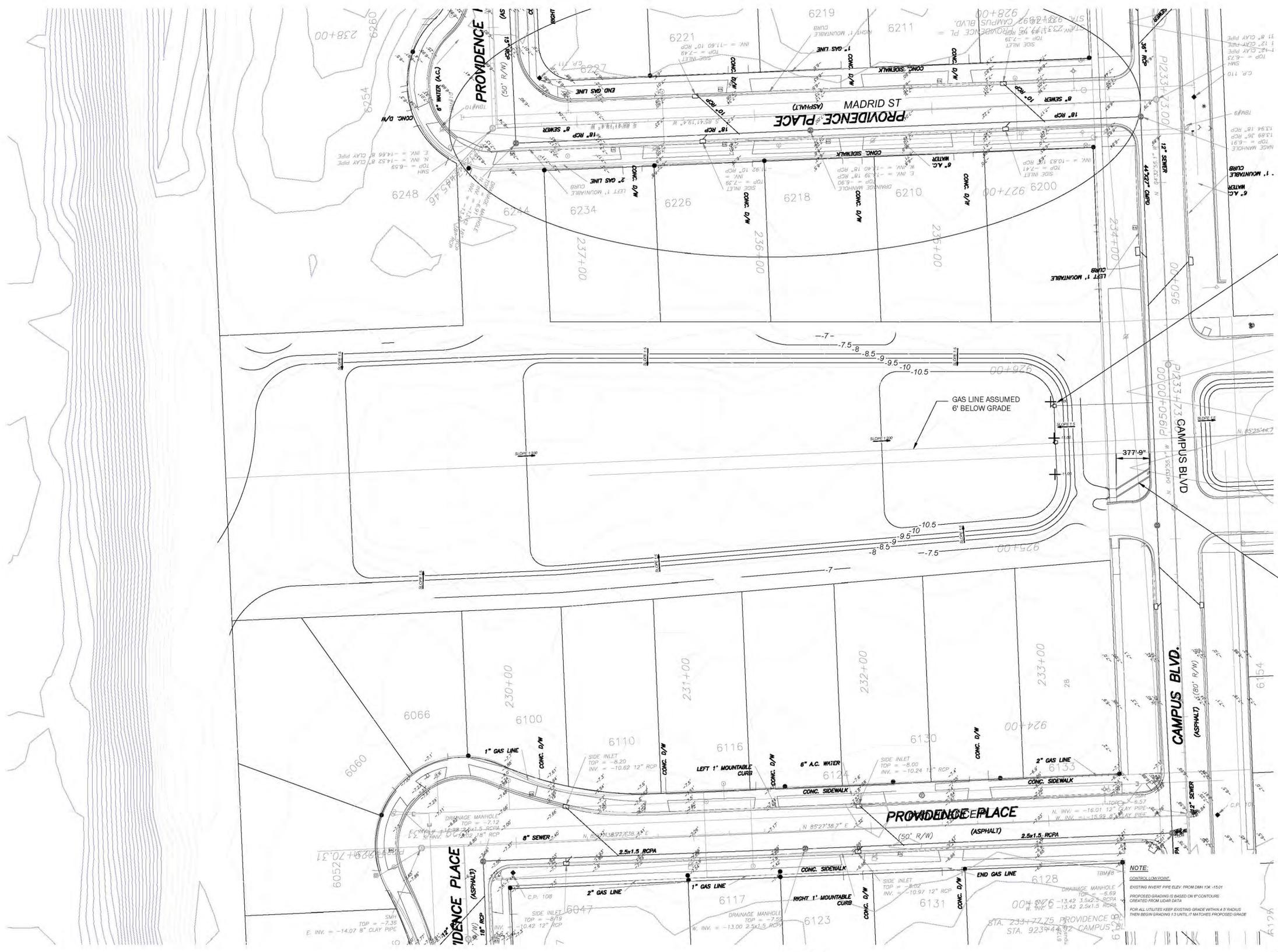
NEW ORLEANS REDEVELOPMENT AUTHORITY
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

STORMWATER PARKS
 SHEET NO.
SWP-2

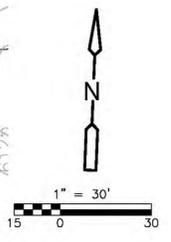
PROJECT NO. 122322-90818
 FILE NAME: SWP-0000
 SHEET NO.
SWP-2

XREFS: [CEP000ST, CDMS_22334] Images: []
 Last saved by: ALCINAA Time: 8/10/2015 1:41:54 PM
 p:\decawapp1\PM_XM\122322\90819\04 Design Services NM_102\02 Civi\10 CAD\SWP-0000.dwg
 © 2015 CDM SMITH. ALL RIGHTS RESERVED.
 RELEASE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



4
L.D.1
PONTILLY FILTER
BOXES - TYPE D

2
L.D.5
PONTILLY RUNNEL WITH
BAR GRATING, TYP.



PLAN

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

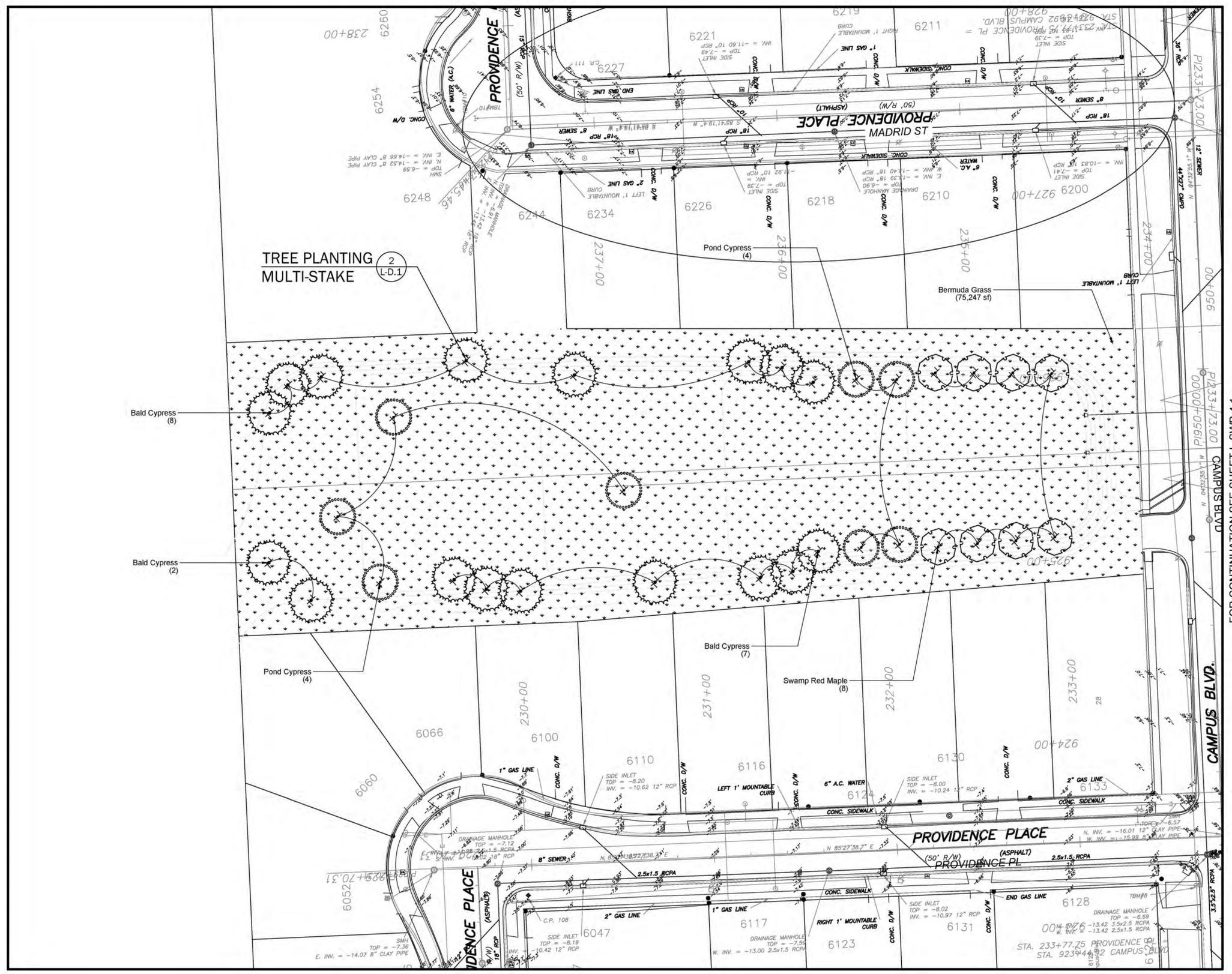
CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

NEW ORLEANS REDEVELOPMENT AUTHORITY
CHESTER ENGINEERS
 DANA BROWN & Associates

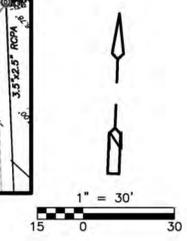
NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT
 STORMWATER PARKS

PROJECT NO. 122322-90818
 FILE NAME: SWP-0000
 SHEET NO.
SWP-3

XREFS: [CEP0005], CDM_S_22334 images:
 Last saved by: ALCINAA Time: 8/10/2015 1:41:54 PM
 p:\c\decwapp\1\PM_XM\122322\90819\04 Design Services NM_10%_02 Civil\10 CADD\SWP-0000.dwg
 © 2015 CDM SMITH. ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



FOR CONTINUATION SEE SHEET L-SWP-4.1



PLANTING PLAN

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY:	X
DRAWN BY:	J. ALCINA
SHEET CHK'D BY:	X
CROSS CHK'D BY:	X
APPROVED BY:	X
DATE:	AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

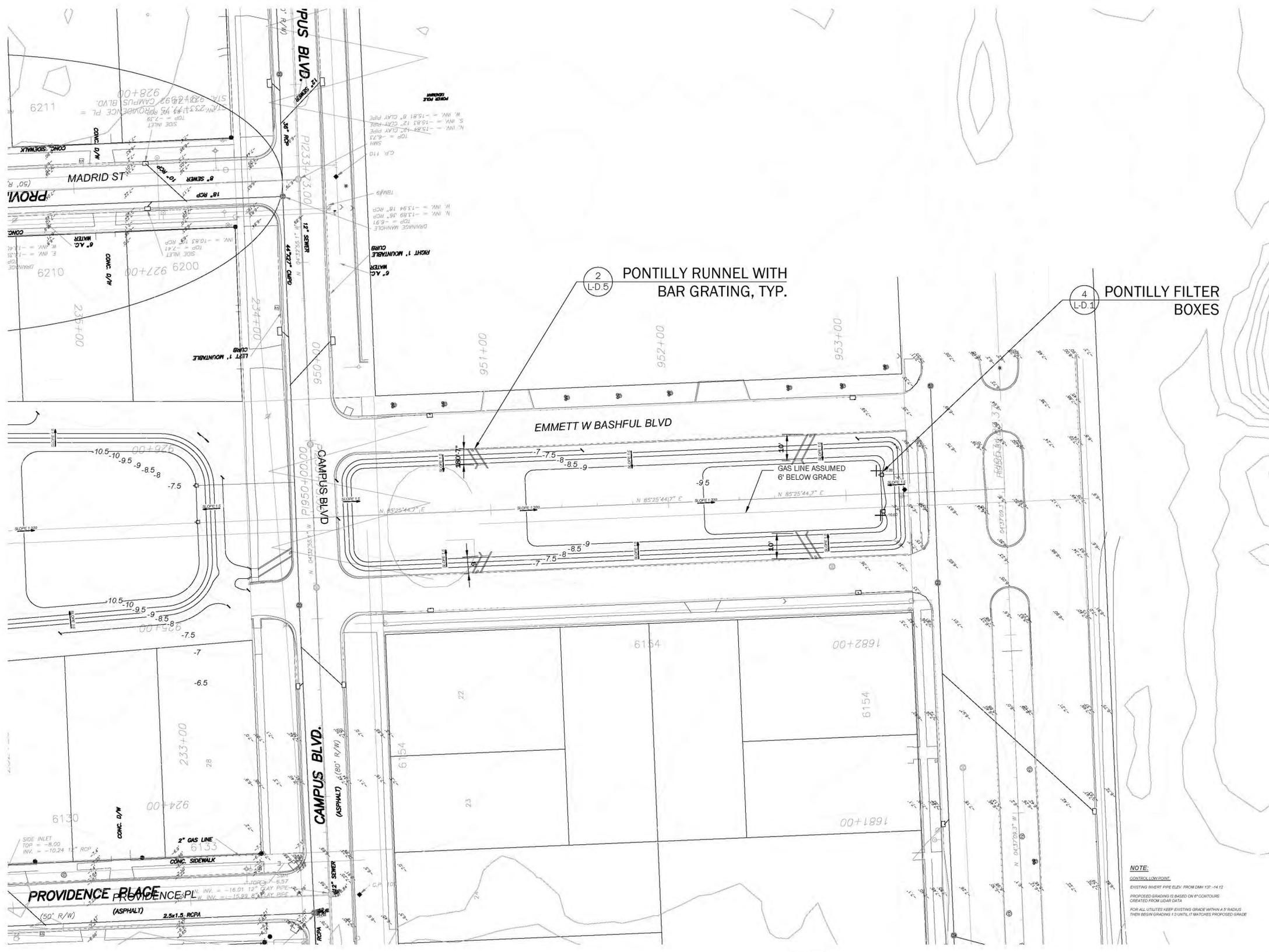
NEW ORLEANS REDEVELOPMENT AUTHORITY
CHESTER ENGINEERS
 DANA BROWN & ASSOCIATES

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

STORMWATER PARKS
 L-SWP-3.1

PROJECT NO.	122322-90818
FILE NAME:	SWP-0000
SHEET NO.	L-SWP-3.1

XREFs: [CEPOOST, CDMS_2234] Images: []
 Last saved by: ALCINA Time: 8/10/2015 1:41:39 PM
 p:\decawapp\pw_xm\122322\90819\04 Design Services NM_102\02 Civi\10 CAD\SWP-0000.dwg
 © 2015 CDM SMITH. ALL RIGHTS RESERVED.
 THESE DOCUMENTS, THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



PLAN

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

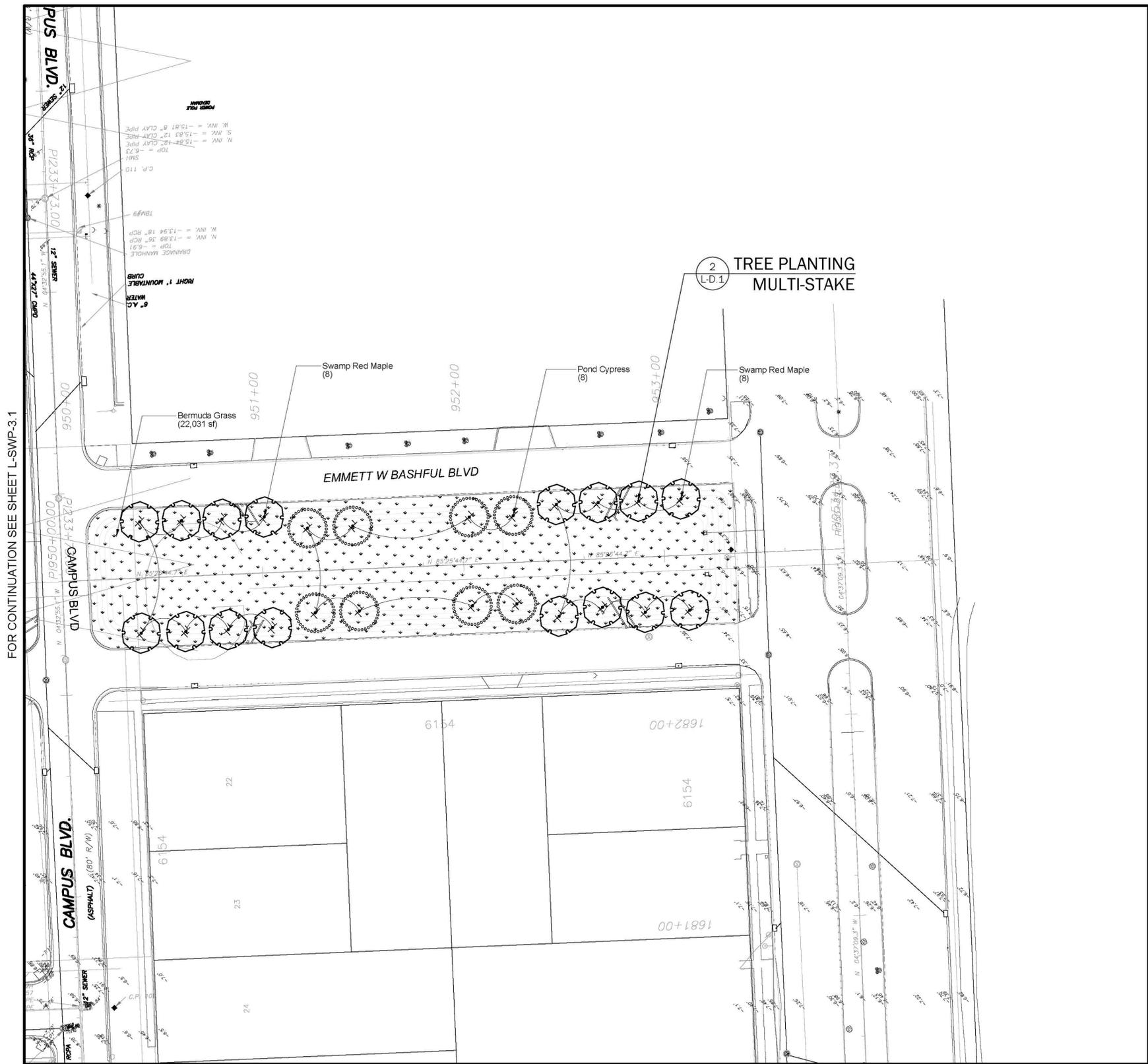
CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

NEW ORLEANS REDEVELOPMENT AUTHORITY
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

PROJECT NO. 122322-90818
 FILE NAME: SWP-0000
 SHEET NO.
L-SWP-4

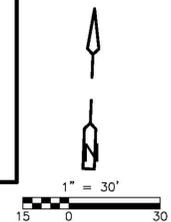
XREFs: [CEP0000], CDMS_2234 Images: []
 Last saved by: ALCINA Time: 8/10/2015 1:41:39 PM
 P:\dpc\pwp\1\FW_XM1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\SWP-0000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



PLANT SCHEDULE

TREES	QTY	COMMON NAME	BOTANICAL NAME	CONT	CAL	REMARKS
	36	Swamp Red Maple	Acer rubrum var. drummondii		2"Cal	
	26	Pond Cypress	Taxodium asoendens		2"Cal	
	50	Bald Cypress	Taxodium distichum		2"Cal	

GROUND COVERS	QTY	COMMON NAME	BOTANICAL NAME	CONT	SPACING	REMARKS
	216,776 sf	Bermuda Grass	Cynodon dactylon	seed		
	3,167 sf	Pine Needle Mulch	Pine Mulch	Mulch		



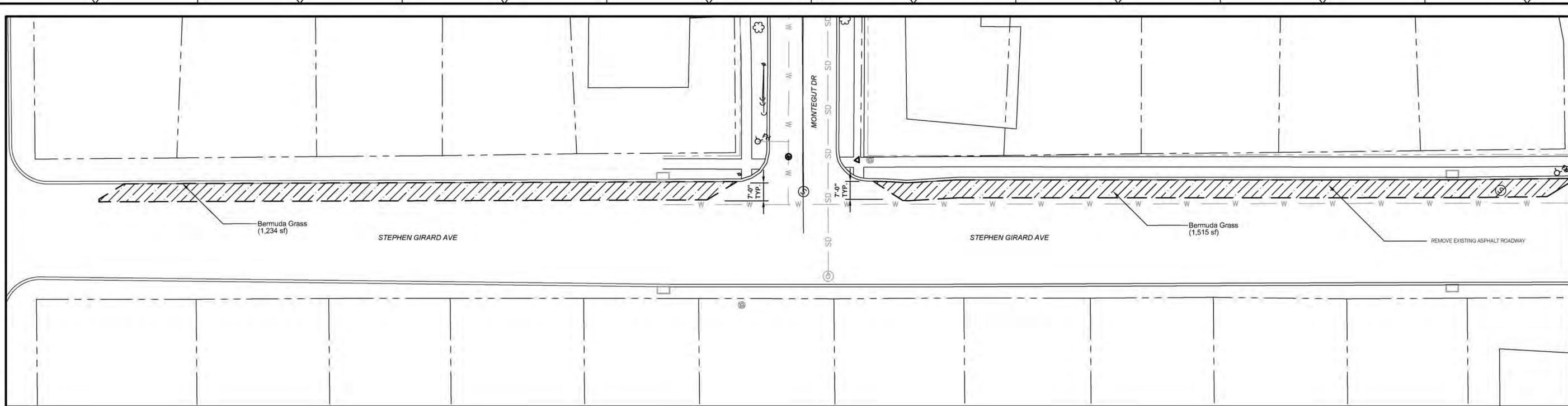
PLANTING PLAN

DESIGNED BY: _____ X	 1515 Poydras Street, Suite 1000 New Orleans, LA 70112 Tel: (504) 799-1100
DRAWN BY: J. ALCINA	
SHEET CHK'D BY: _____ X	
CROSS CHK'D BY: _____ X	
APPROVED BY: _____ X	
DATE: AUGUST 2015	 CHESTER ENGINEERS DANA BROWN Associates

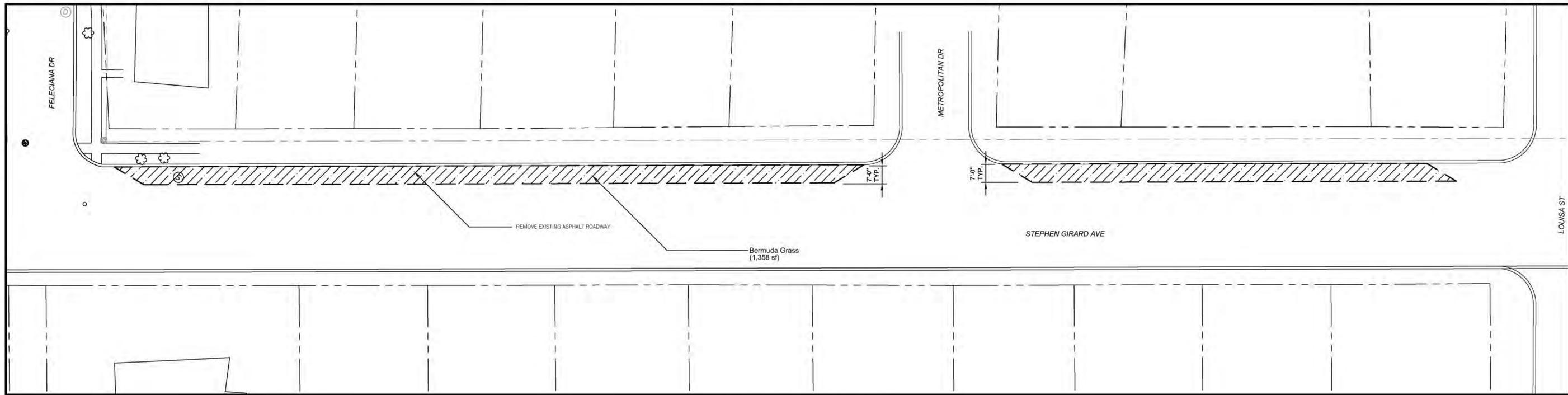
NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

STORMWATER PARKS	PROJECT NO. 122322-90818
	FILE NAME: SWP-0000
	SHEET NO. L-SWP-4.1

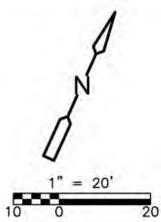
XREFS: [C:\P00001_CDM_S_2234] Ingress: []
 Last saved by: ALCINA Time: 8/11/2015 1:16:37 PM
 PW: \\dcpwpp1\pw_xm1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\UBS00000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



STEPHEN GIRARD AVE - DEMOLITION
PLAN



STEPHEN GIRARD AVE - DEMOLITION
PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

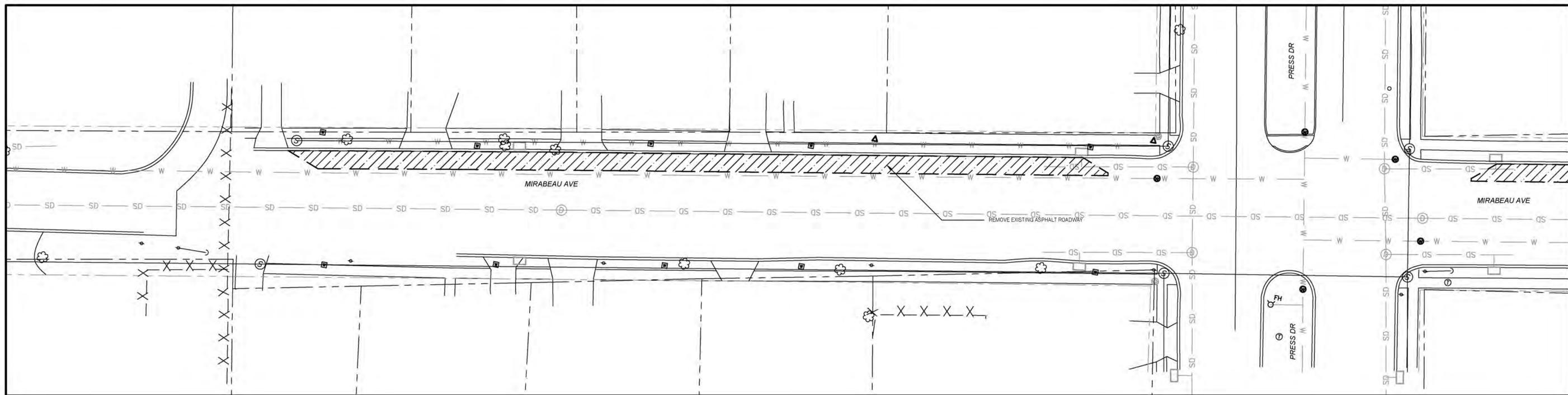


NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

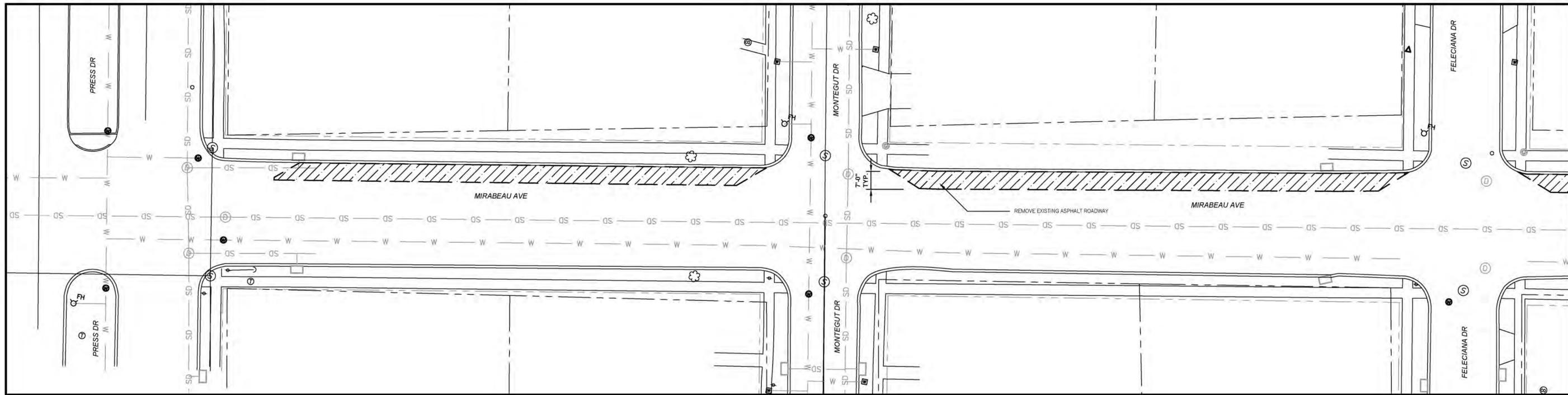
URBAN BIOSWALE ALONG
 STEPHEN GIRARD AVENUE

PROJECT NO. 122322-90818
 FILE NAME: C-UB0000
 SHEET NO.
L-UB-1

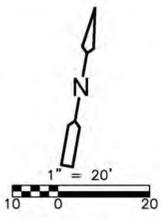
XREFS: [C:\P00001_CDM_S_2234] images: []
 Last saved by: ALCINA Time: 8/7/2015 2:17:34 PM
 pw:\dpc\pwp\1\FW_XM1\122322\90819\04_Design_Services_NM_10%_02_Civil\10_CADD\C-UB0000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



MIRABEAU AVE - DEMOLITION
PLAN



MIRABEAU AVE - DEMOLITION
PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

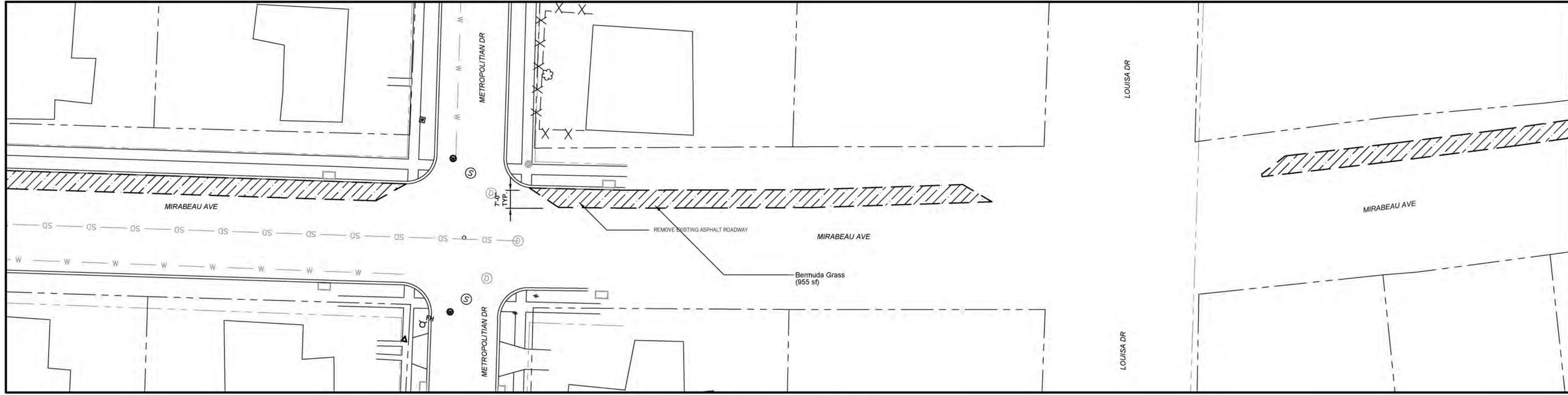
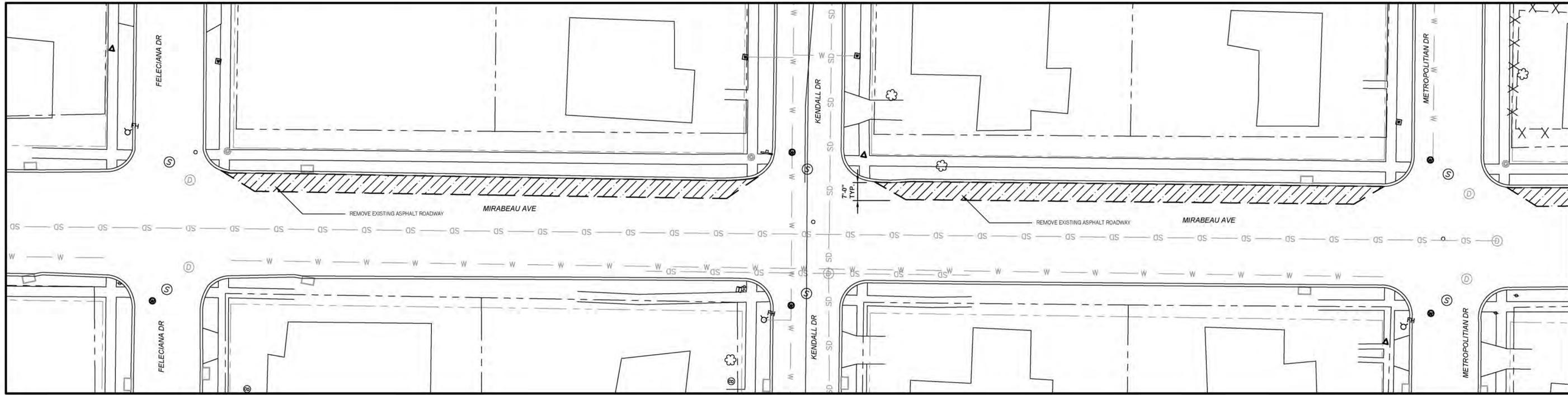
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

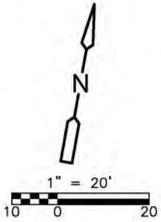
**URBAN BIOSWALE ALONG
MIRABEAU AVENUE**

PROJECT NO. 122322-90818
 FILE NAME: C-UB0000
 SHEET NO.
L-UB-4

XREFS: [CP000001_CDM_S_2234] Inroads: []
 Last saved by: ALCINA Time: 8/7/2015 2:32:49 PM
 PW: \\dcpwpp1\1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\1-C-UB0000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



MIRABEAU AVE - DEMOLITION
PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

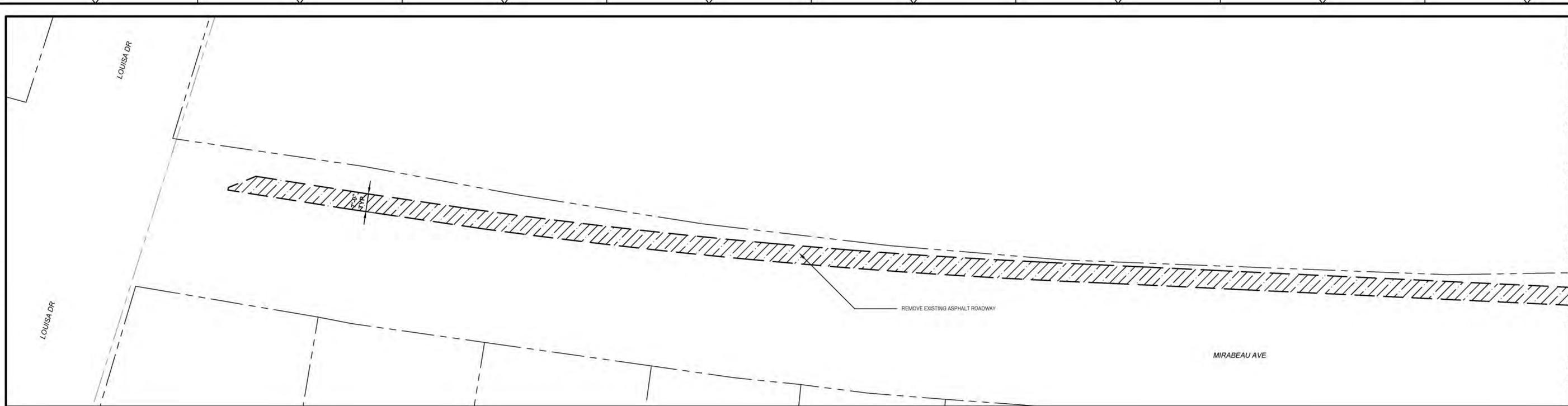
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

URBAN BIOSWALE ALONG
 MIRABEAU AVENUE

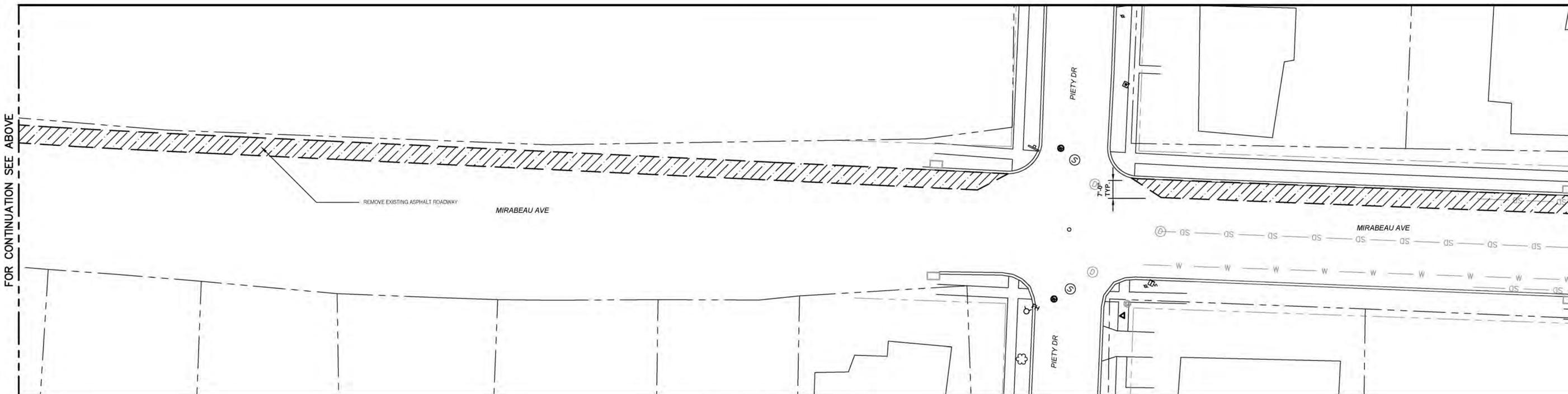
PROJECT NO. 122322-90818
 FILE NAME: C-UB0000
 SHEET NO.
L-UB-5

XREFs: [C:\PEP00001_CDM_S_2234] Inprocess: []
 Last saved by: ALCINA Time: 8/10/2015 7:40:51 AM
 PW: \\dcpwpp1\pw_xm1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\C-UB0000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.

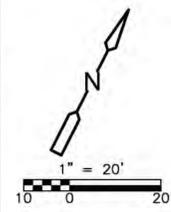


MIRABEAU AVE - DEMOLITION
PLAN

FOR CONTINUATION SEE BELOW



MIRABEAU AVE - DEMOLITION
PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

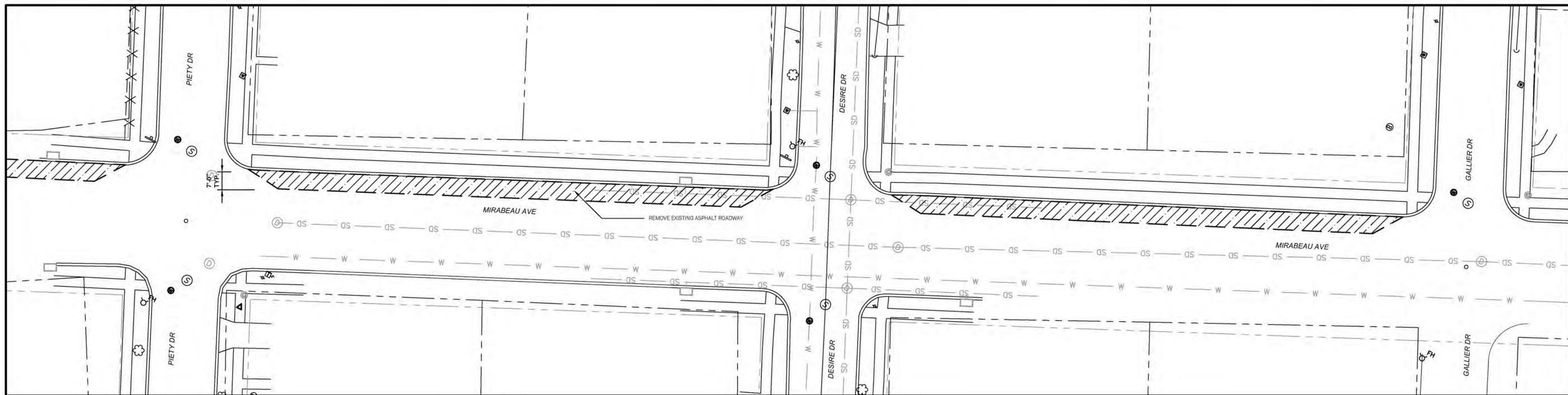
DESIGNED BY: _____ X	 1515 Poydras Street, Suite 1000 New Orleans, LA 70112 Tel: (504) 799-1100
DRAWN BY: J. ALCINA	
SHEET CHK'D BY: _____ X	
CROSS CHK'D BY: _____ X	
APPROVED BY: _____ X	
DATE: AUGUST 2015	 NEW ORLEANS REDEVELOPMENT AUTHORITY CHESTER ENGINEERS DANA BROWN ASSOCIATES

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

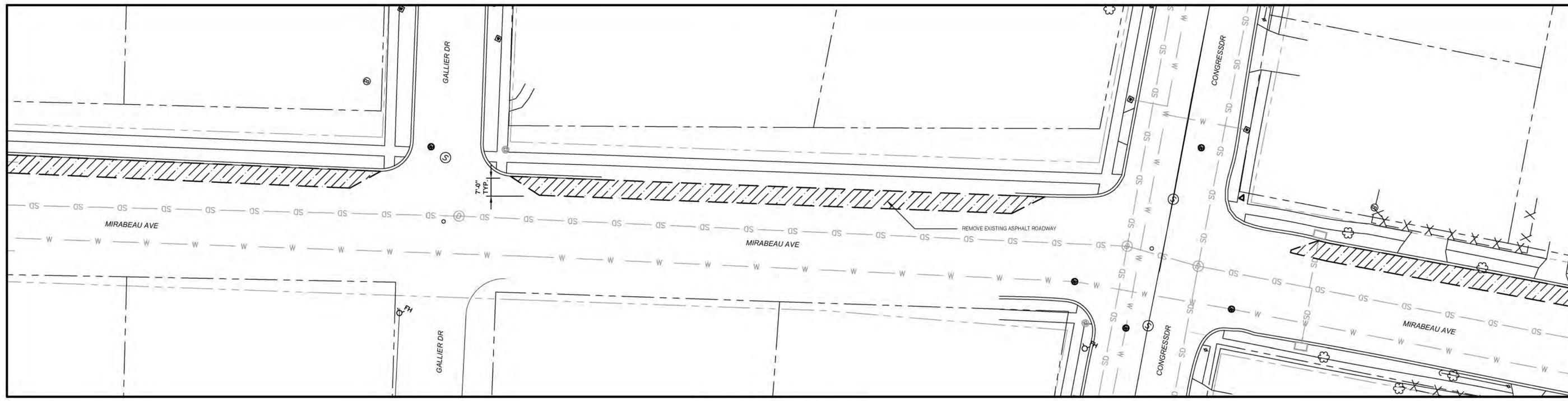
URBAN BIOSWALE ALONG
 MIRABEAU AVENUE

PROJECT NO. 122322-90818
FILE NAME: C-UB0000
SHEET NO.
L-UB-6

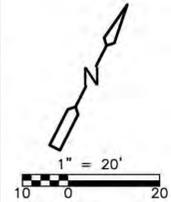
XREFS: [CEP00001, CDMS_2234] Inquest: []
 Last saved by: ALCINA Time: 8/10/2015 8:20:42 AM
 pw:\dpcpwp\1:PW_XM1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\10-UB0000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



MIRABEAU AVE - DEMOLITION
PLAN



MIRABEAU AVE - DEMOLITION
PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

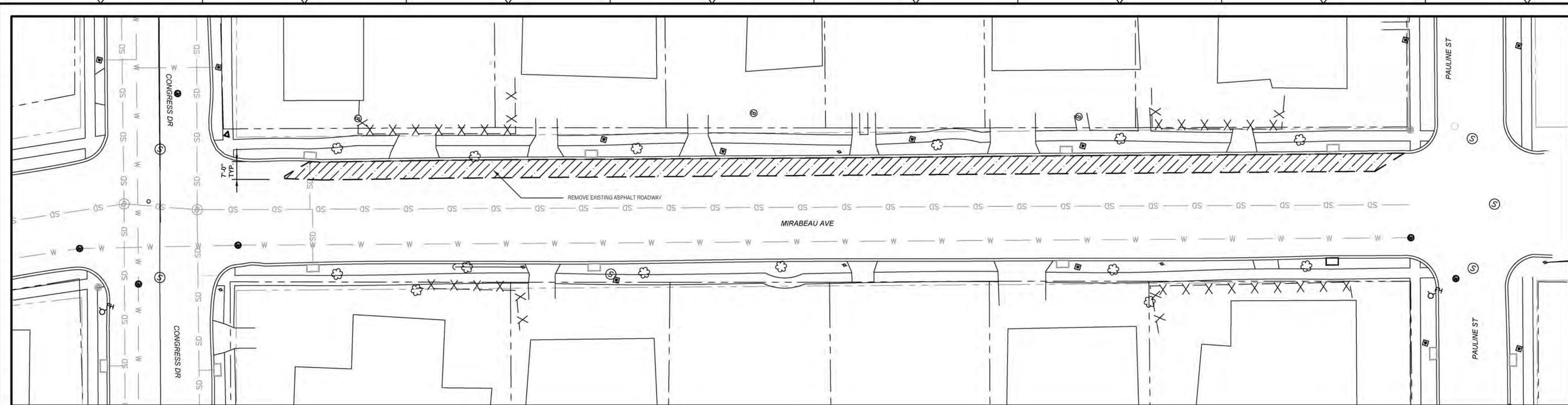


NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

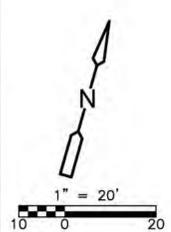
URBAN BIOSWALE ALONG
 MIRABEAU AVENUE

PROJECT NO. 122322-90818
 FILE NAME: C-UB0000
 SHEET NO.
L-UB-7

XREFs: [CEP00001, CDM_S_2234] Inprocess: []
 Last saved by: ALCINA Time: 8/10/2015 8:09:40 AM
 PW: \\dcpwpp1\pw_xm1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\10 CADD\C-UB0000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



**MIRABEAU AVE - DEMOLITION
PLAN**



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____	X
DRAWN BY: J. ALCINA	X
SHEET CHK'D BY: _____	X
CROSS CHK'D BY: _____	X
APPROVED BY: _____	X
DATE: AUGUST 2015	

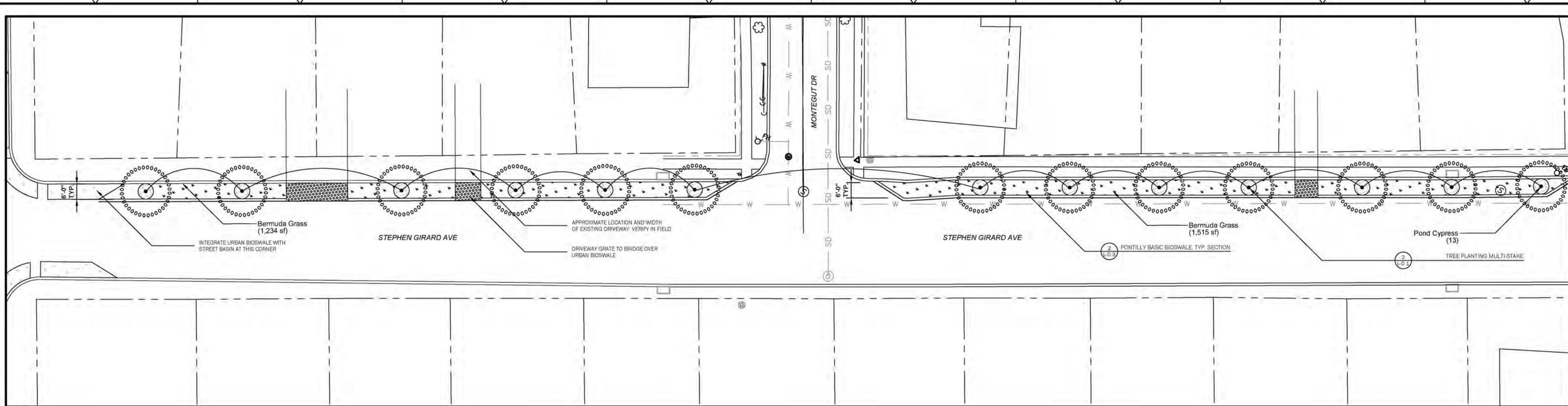
1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

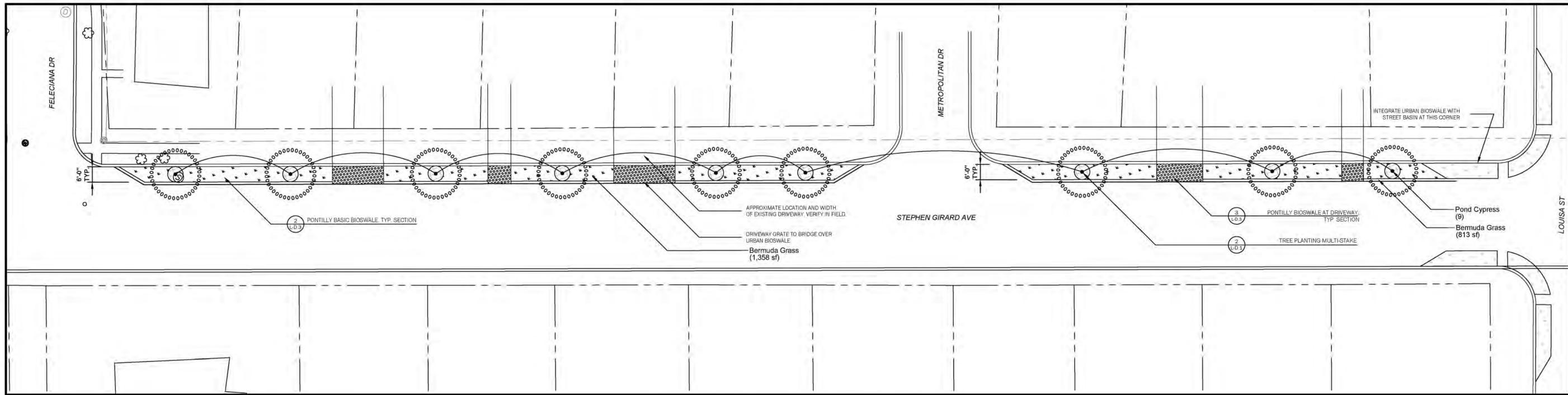
**URBAN BIOSWALE ALONG
MIRABEAU AVENUE**

PROJECT NO. 122322-90818
FILE NAME: C-UB0000
SHEET NO. L-UB-7.1

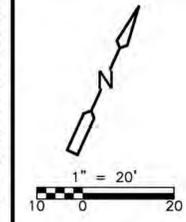
XREFS: [C:\PEP00001_CDM_S_2234] Ingress: []
 Last saved by: ALCINA Time: 8/11/2015 1:16:37 PM
 pw:\dpcpwp\p1\FW_XM1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\UBS000000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



STEPHEN GIRARD AVE - LAYOUT & PLANTING
PLAN



STEPHEN GIRARD AVE - LAYOUT & PLANTING
PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

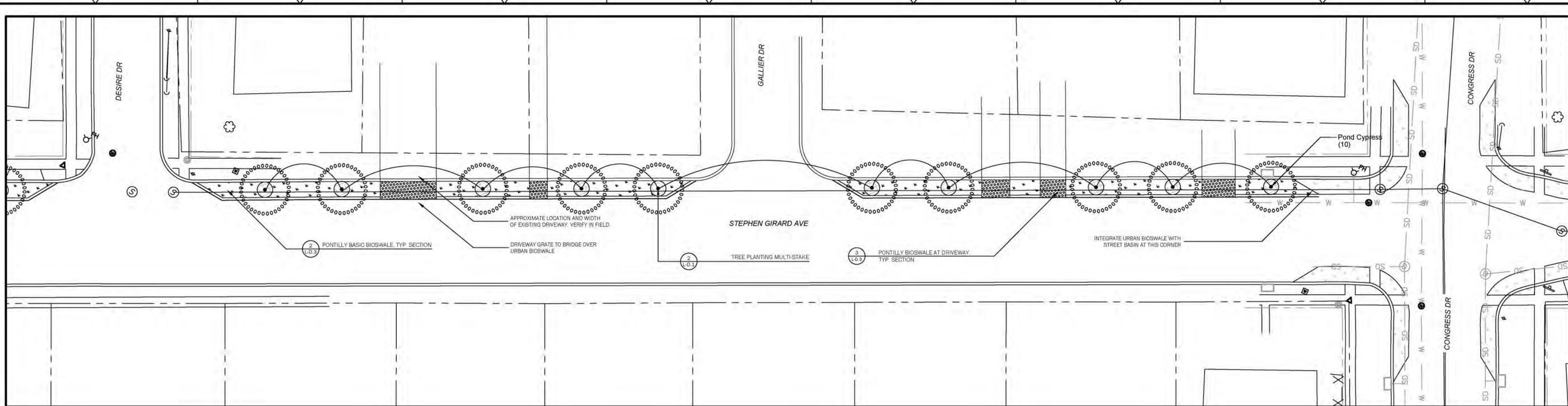
CHESTER ENGINEERS
 DANA BROWN Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

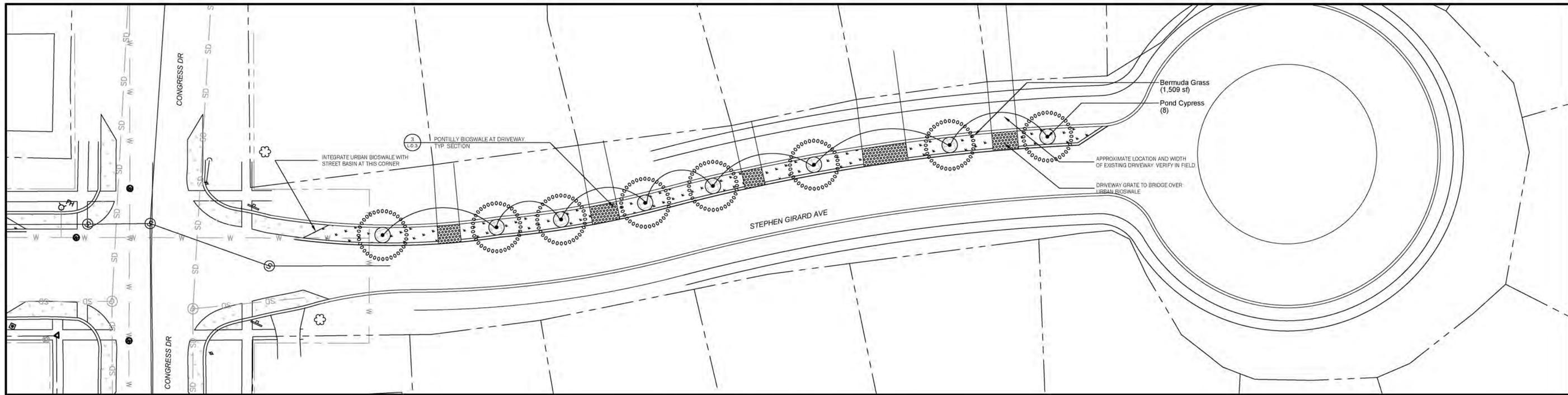
URBAN BIOSWALE ALONG
 STEPHEN GIRARD AVENUE

PROJECT NO. 122322-90818
 FILE NAME: C-UB0000
 SHEET NO.
L-UB-1.1

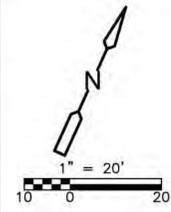
XREFS: [C:\PEP0001_CDM_S_2234] Ingress: []
 Last saved by: ALCINAA Time: 8/10/2015 8:52:59 AM
 PW: \\dcpwpp1\FW_XM1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\1-C-UB0000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



STEPHEN GIRARD AVE - LAYOUT & PLANTING
PLAN



STEPHEN GIRARD AVE - LAYOUT & PLANTING
PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

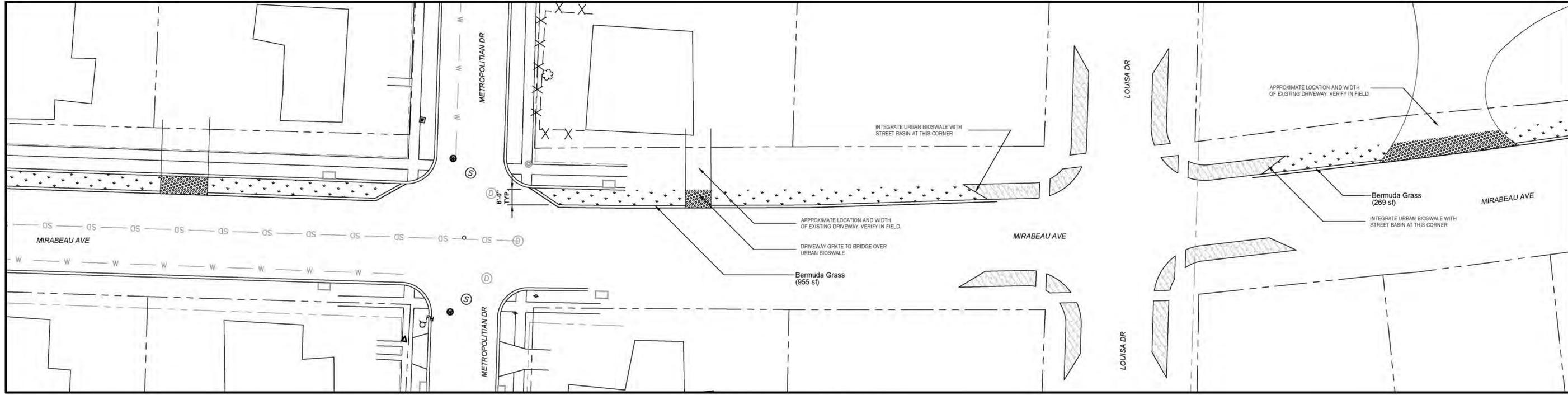
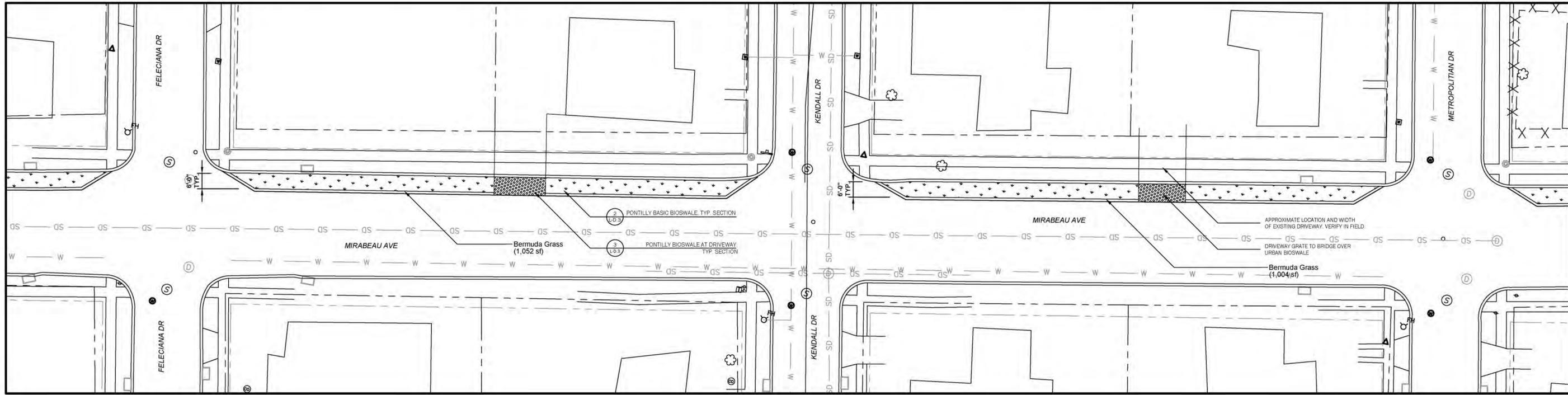


NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

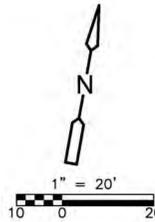
**URBAN BIOSWALE ALONG
STEPHEN GIRARD AVENUE**

PROJECT NO. 122322-90818
 FILE NAME: C-UB0000
 SHEET NO.
L-UB-3.1

XREFS: [C:\P00001_CDM_S_2234] images; []
 Last saved by: ALCINA Time: 8/7/2015 2:32:49 PM
 P:\dcp\p0001\122322\90819\04 Design Services\10 CAD\CAD\UB0000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



MIRABEAU AVE - LAYOUT & PLANTING
PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

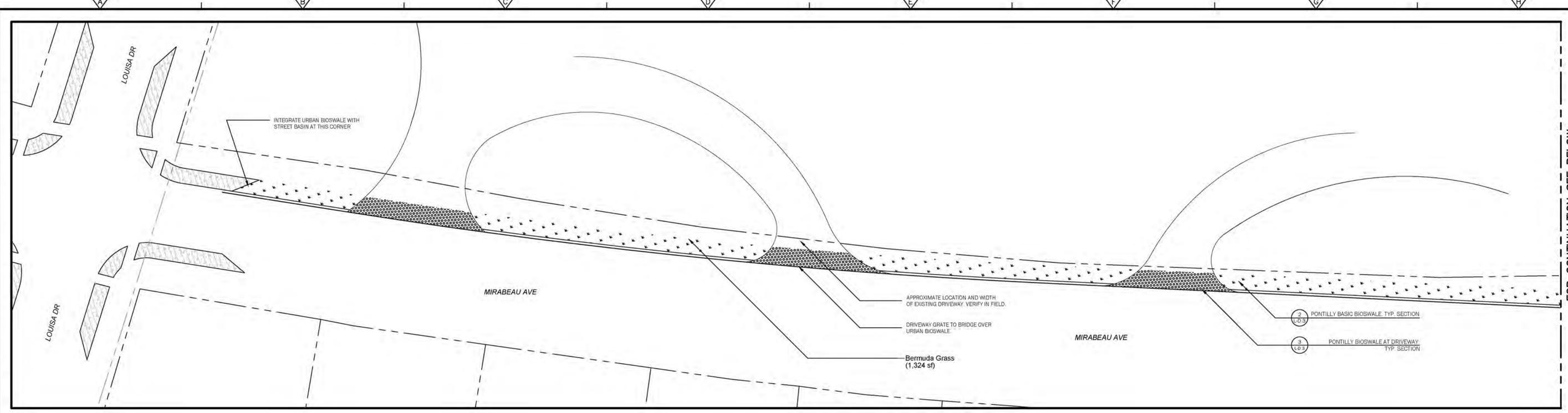
NORA
 NEW ORLEANS REDEVELOPMENT AUTHORITY
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

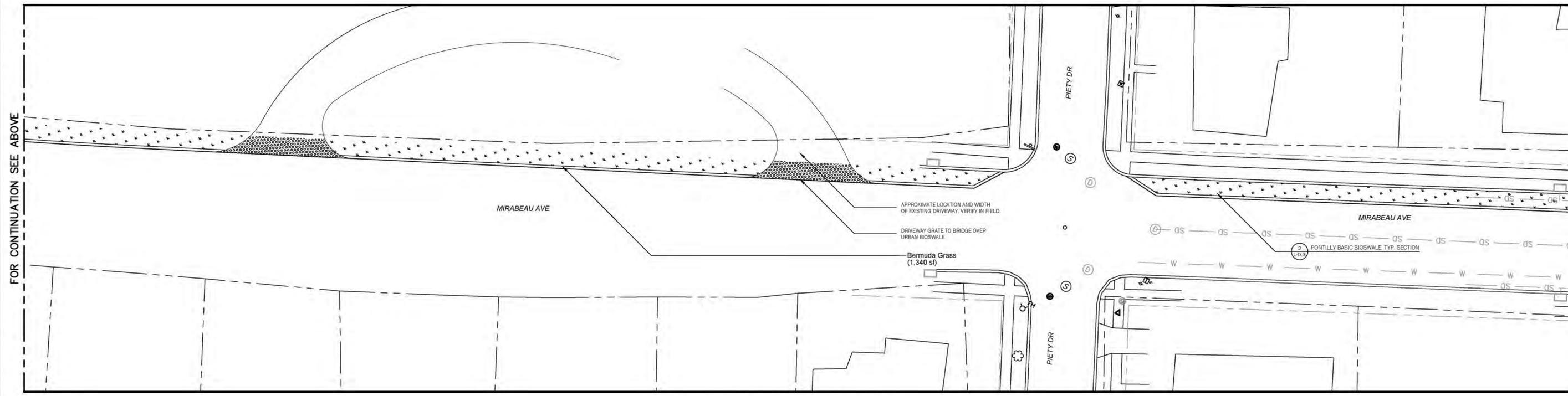
URBAN BIOSWALE ALONG
 MIRABEAU AVENUE

PROJECT NO. 122322-90818
 FILE NAME: C-UB0000
 SHEET NO.
L-UB-5.1

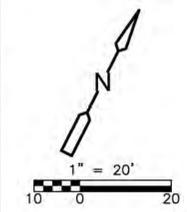
XREFS: [C:\PEP00001_CDM_S_2234] Inprocess: []
 Last saved by: ALCINA Time: 8/10/2015 7:40:51 AM
 PW: \\dcpwpp1\pw_xm1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\C-UB0000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



MIRABEAU AVE - LAYOUT & PLANTING PLAN



MIRABEAU AVE - LAYOUT & PLANTING PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

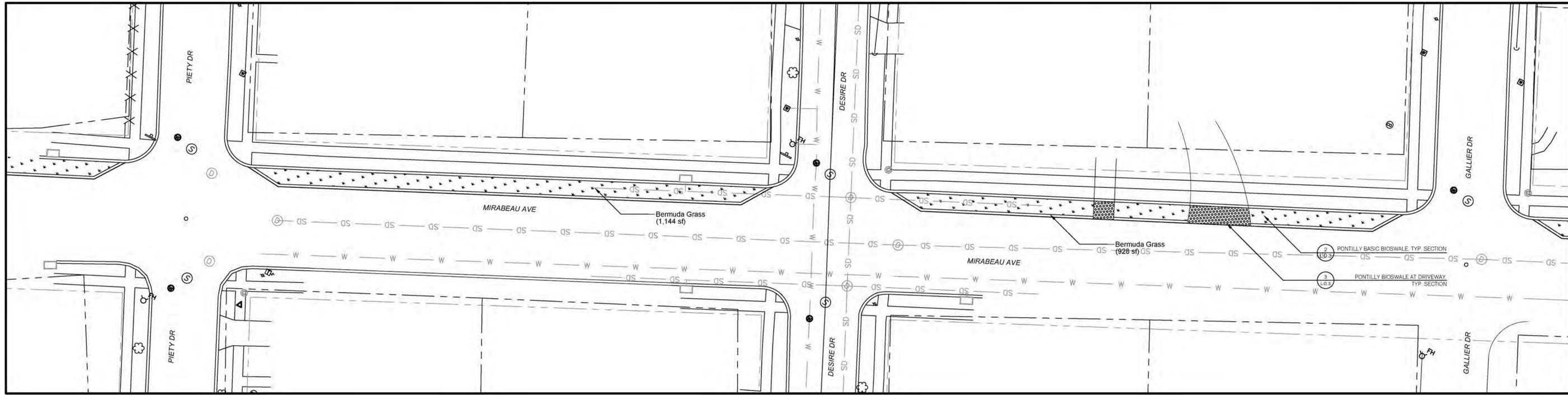
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

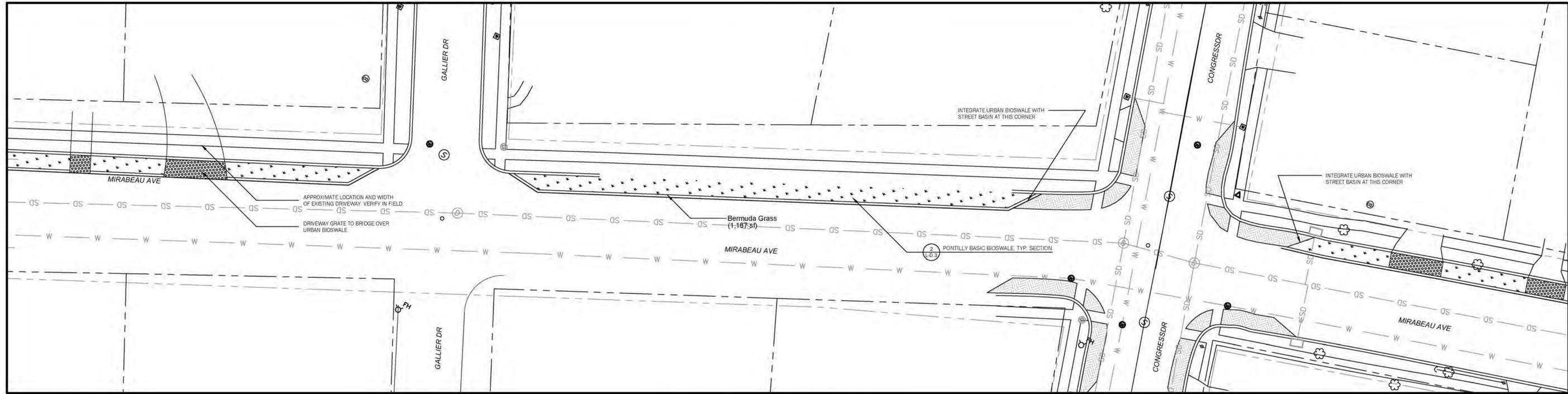
URBAN BIOSWALE ALONG MIRABEAU AVENUE

PROJECT NO. 122322-90818
 FILE NAME: C-UB0000
 SHEET NO.
L-UB-6.1

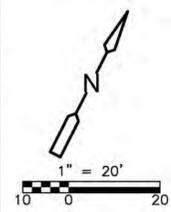
XREFS: [CEP00001, CDMS_2234] Ingress: []
 Last saved by: ALCINA Time: 8/10/2015 8:20:42 AM
 PW: \\dcpwpp1\pw_xm1\122322\90819\04 Design Services NM_10%_02 Civil\10 CADD\C-UB0000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



MIRABEAU AVE - LAYOUT & PLANTING
PLAN



MIRABEAU AVE - LAYOUT & PLANTING
PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

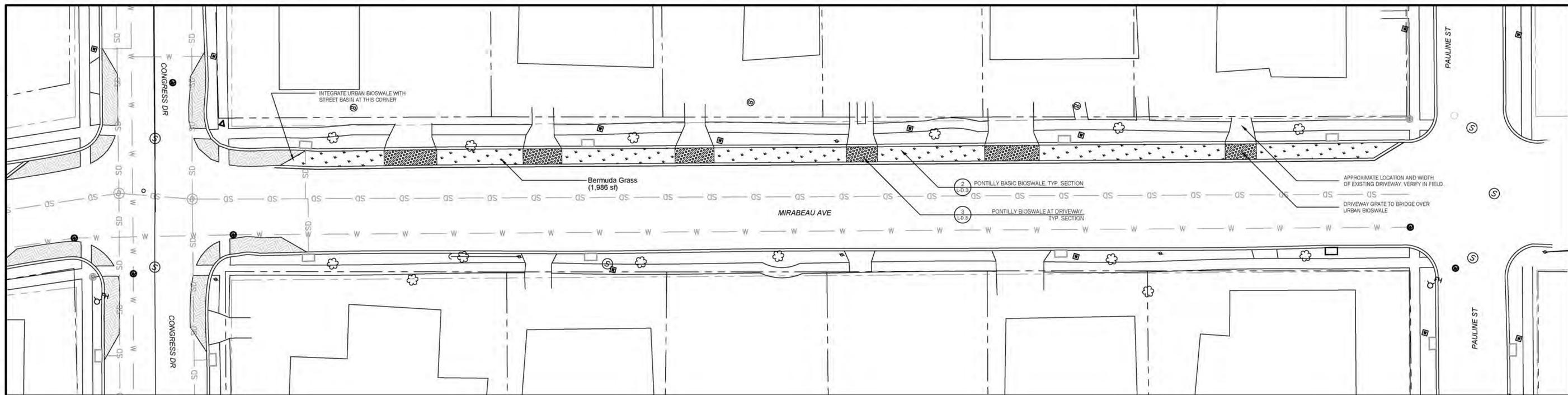
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

URBAN BIOSWALE ALONG
 MIRABEAU AVENUE

PROJECT NO. 122322-90818
 FILE NAME: C-UB0000
 SHEET NO.
L-UB-7.1

XREFs: [C:\PEP00001_CDM_S_2234] Inprocess: []
 Last saved by: ALCINA Time: 8/10/2015 8:09:40 AM
 P:\dpc\pwp\1\FW_XM1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\C-UB0000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.

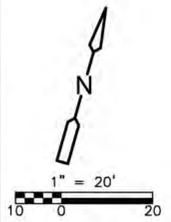


MIRABEAU AVE - LAYOUT & PLANTING
PLAN

PLANT SCHEDULE

TREES	COMMON NAME	BOTANICAL NAME	CONT	CAL	QTY	REMARKS
	Pond Cypress	Taxodium ascendens		2"Cal	62	

GROUND COVERS	COMMON NAME	BOTANICAL NAME	CONT	SPACING	QTY	REMARKS
	Bermuda Grass	Cynodon dactylon	seed		25,475 sf	
	Pine Needle Mulch	Pine Mulch	Mulch		1,752 sf	



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

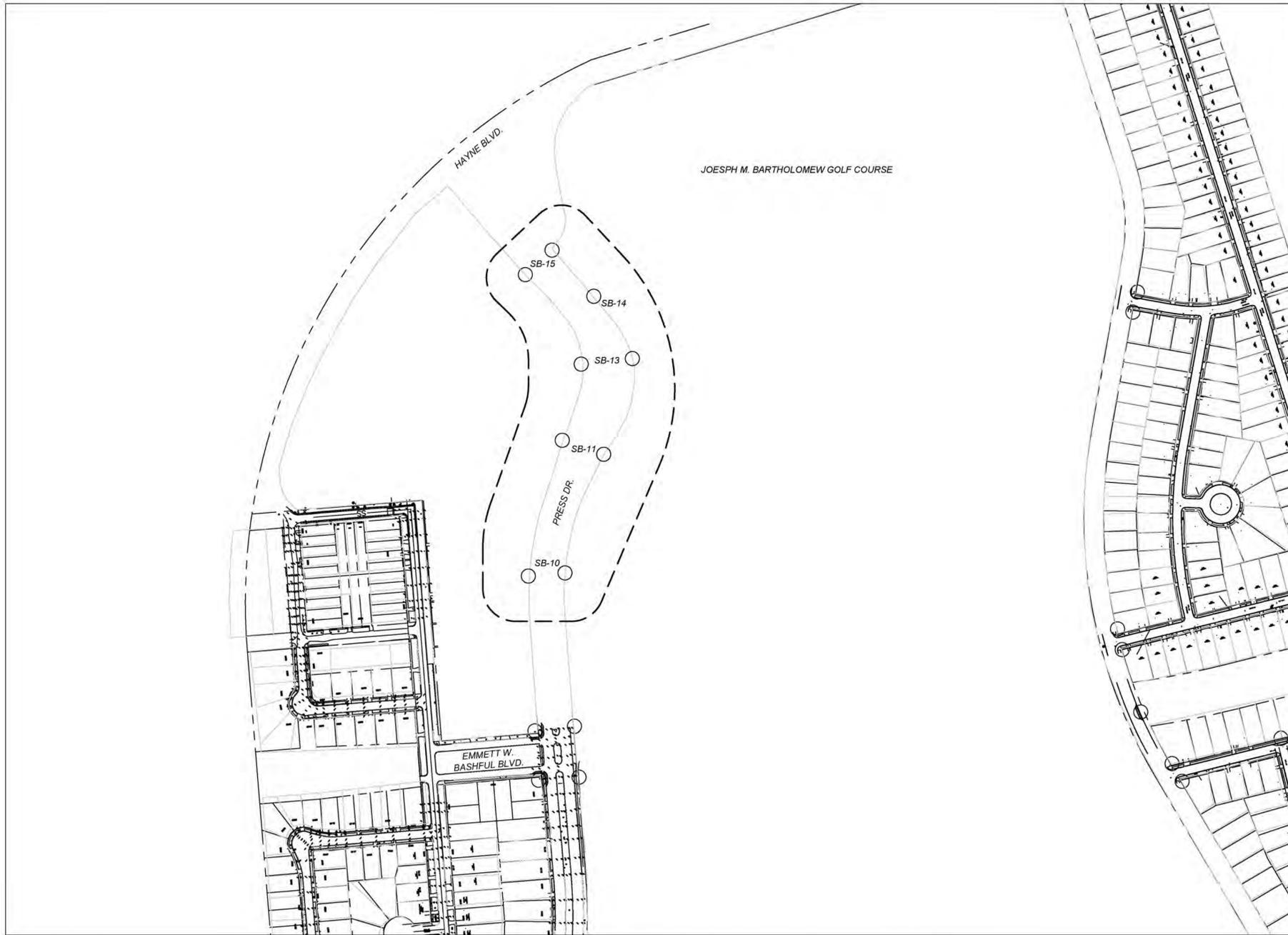
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

**URBAN BIOSWALE ALONG
 MIRABEAU AVENUE**

PROJECT NO. 122322-90818
 FILE NAME: C-UB0000
 SHEET NO.
L-UB-8.1

NOTE: REFER TO ENGINEERING DRAWINGS FOR STREET BASINS SB-10, SB-11, SB-13, SB-14, AND SB-15 BETWEEN HAYNE BLVD. AND EMMETT W. BASHFUL BLVD. ALONG PRESS DRIVE



XREFS: [CEP0008L_CDM_S_2234] Inprogress: []
 Last saved by: ALCINA Time: 8/7/2015 8:32:24 AM
 PW: \\dcpwpp1\FW_XM1\122322\90819\04 Design Services NM_10%_02 Civil\10 CADD\CSB_0000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

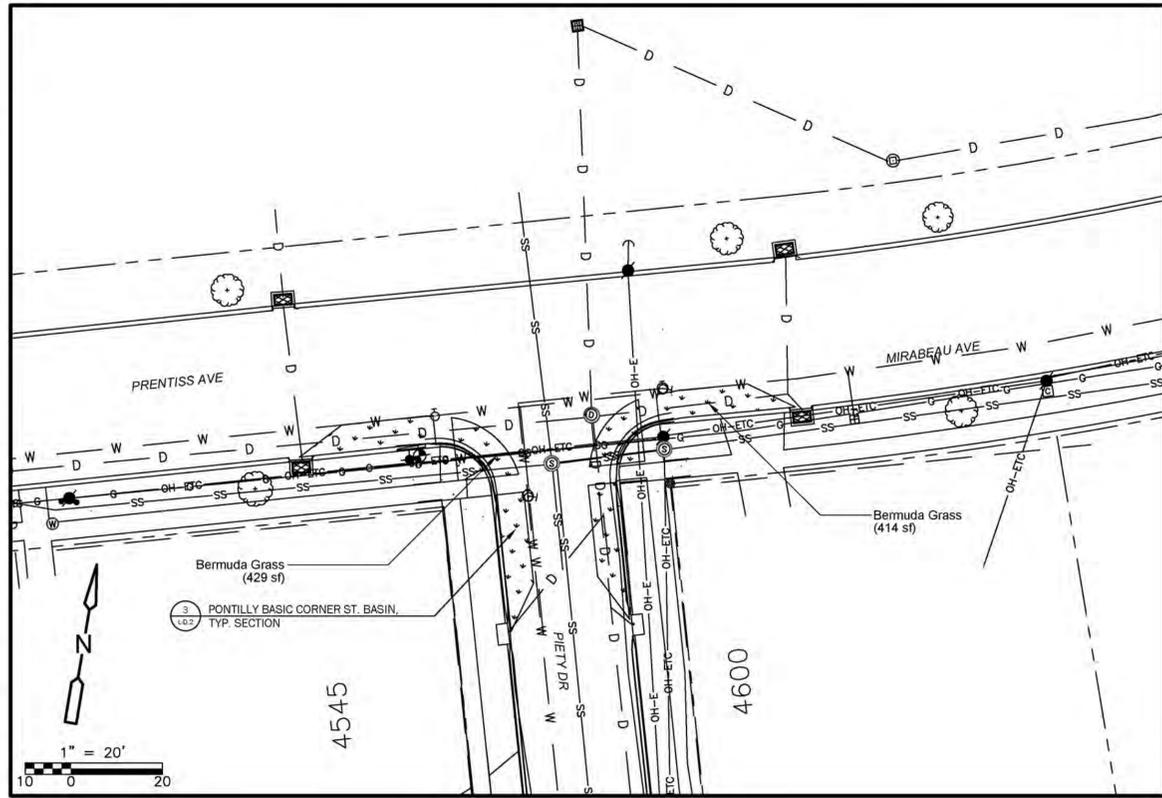
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

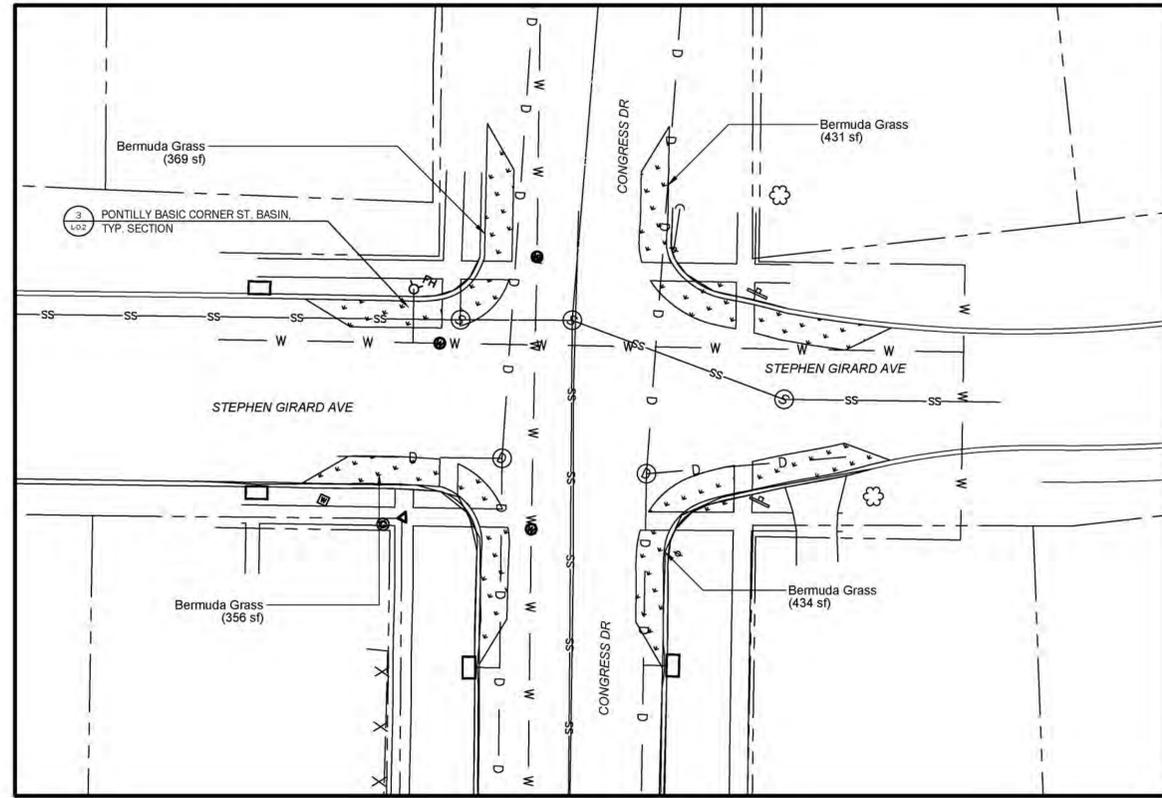
STREET BASINS ALONG
 PRESS DRIVE

PROJECT NO. 122322-90818
 FILE NAME: SBL_0000
 SHEET NO.
L-SB-4

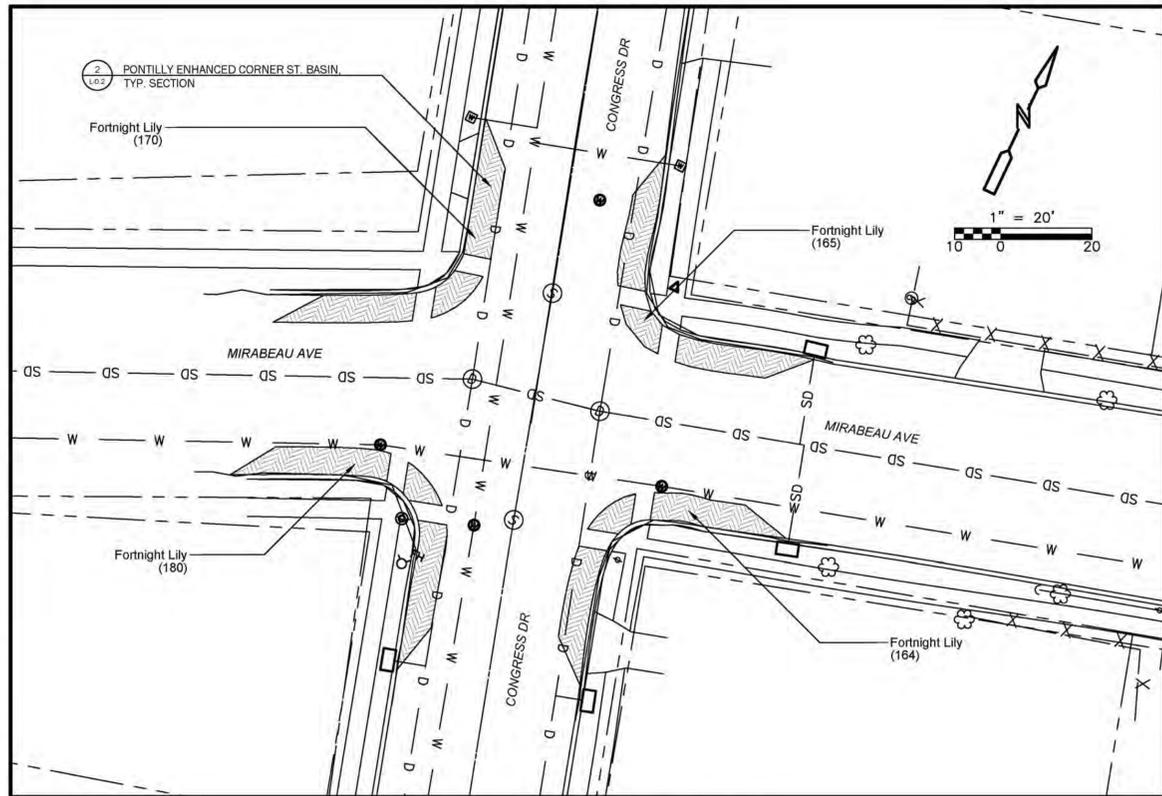
XREFS: [C:\PE\0001\CDMS_2234] images: []
 Last saved by: ALCINA Time: 8/7/2015 8:32:24 AM
 PW: \\dcpwpp1\pw_xm1\122322\90819\04 Design Services NM_10%_02 Civil\10 CAD\CDMS_0000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



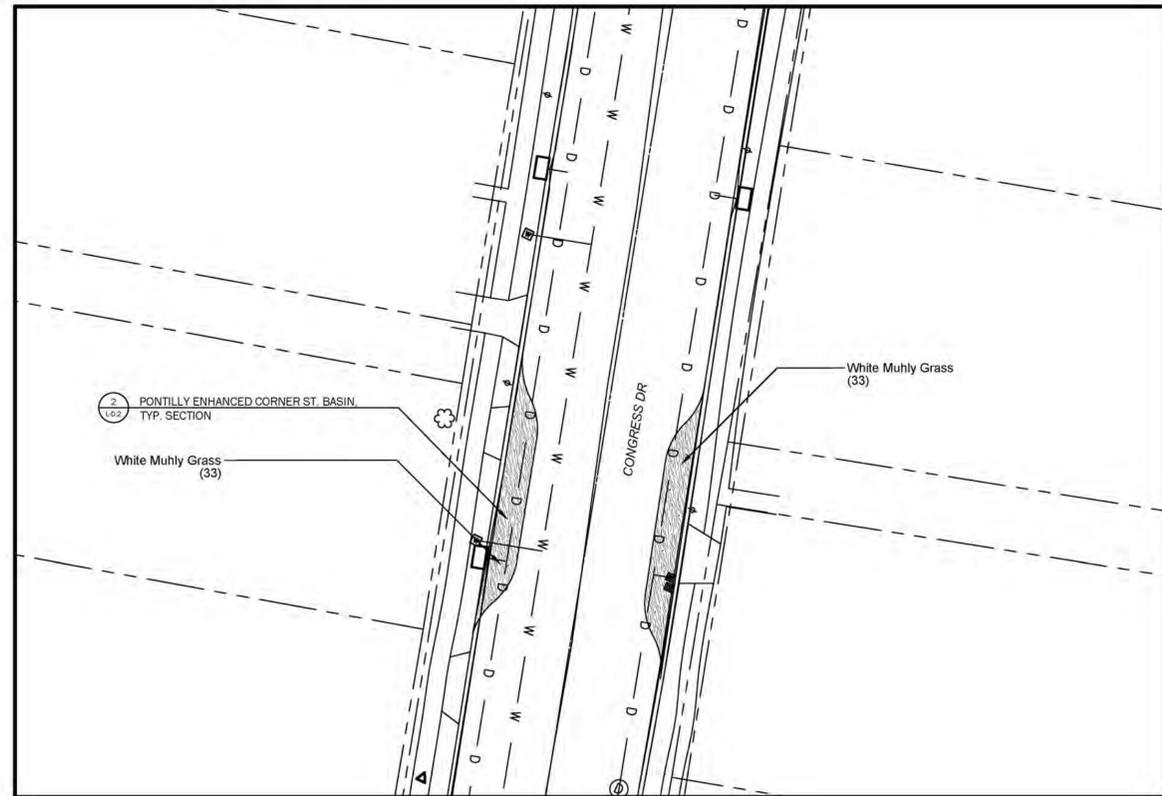
PRENTISS AVE AT PIETY DR
PLAN



CONGRESS DR AT STEPHEN GIRARD AVE
PLAN



CONGRESS DR AT MIRABEAU AVE
PLAN



CONGRESS DR
PLAN

NOTE:
SEE DETAIL #1 OF SHEET L-D.2 FOR ENLARGED PLAN OF BASIC AND ENHANCED STREET CORNER BASINS

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

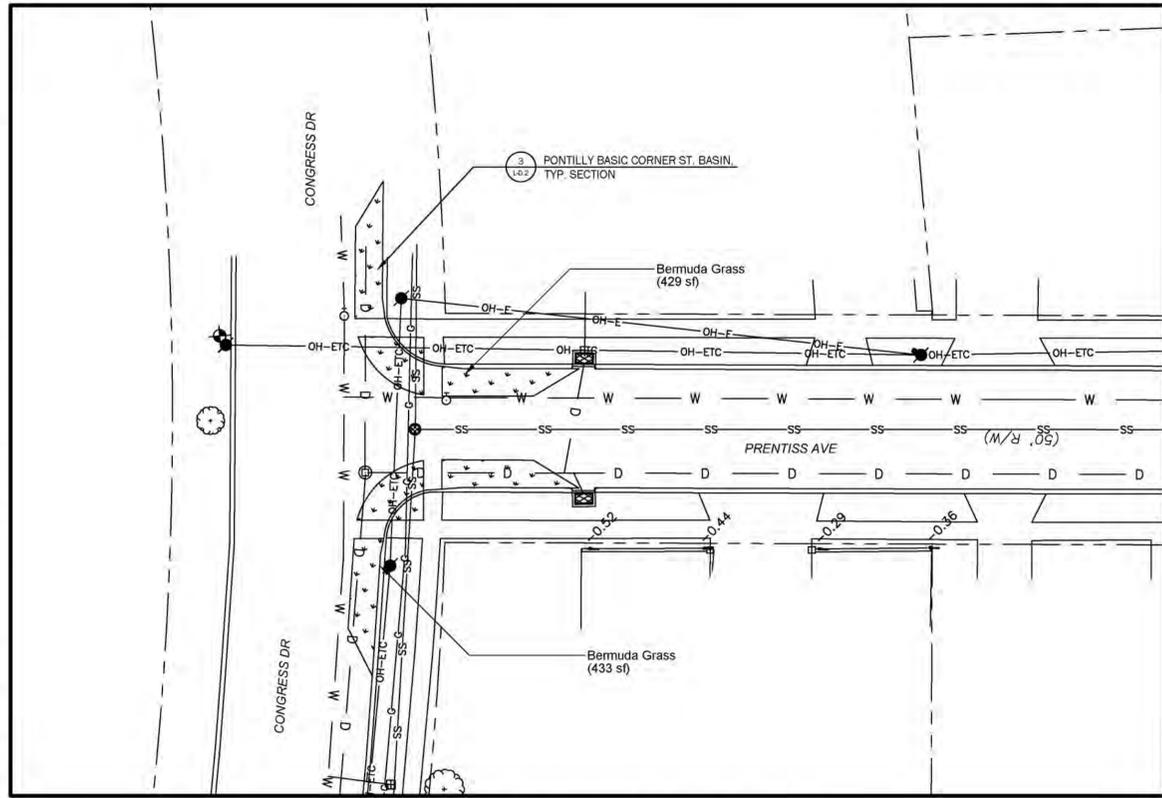
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

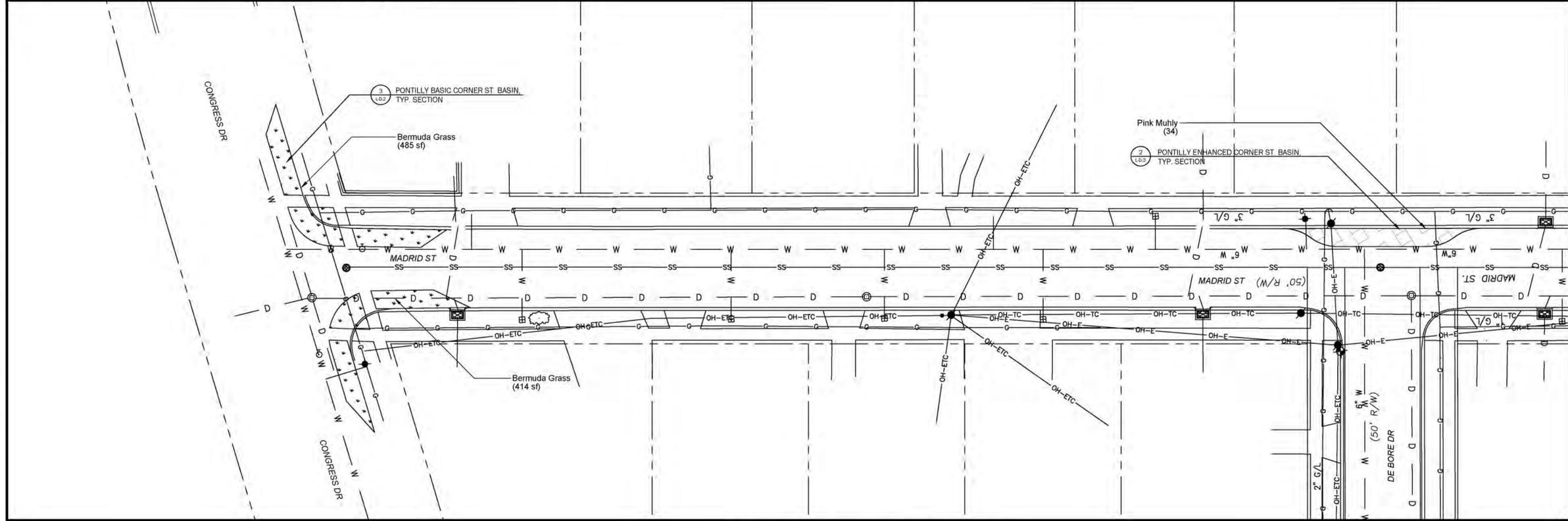
STREET BASINS ALONG
 PRENTISS AVENUE AND CONGRESS DRIVE

PROJECT NO. 122322-90818
 FILE NAME: SBL_0000
 SHEET NO.
L-SB-5

NOTE:
SEE DETAIL #1 OF SHEET L-D.2 FOR ENLARGED PLAN OF BASIC AND ENHANCED STREET CORNER BASINS



CONGRESS DR AT PRENTISS AVE – PLANTING PLAN



CONGRESS DR AT MADRID ST – PLANTING PLAN

XREFS: [C:\P00001_CDM_S_2234] images: []
 Last saved by: ALCINAA Time: 8/7/2015 9:53:49 AM
 PW: \\dcpwpp1\pw_xm1\122322\90819\04 Design Services NM_10%_02 Civil\10 CADD\CSB_0000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

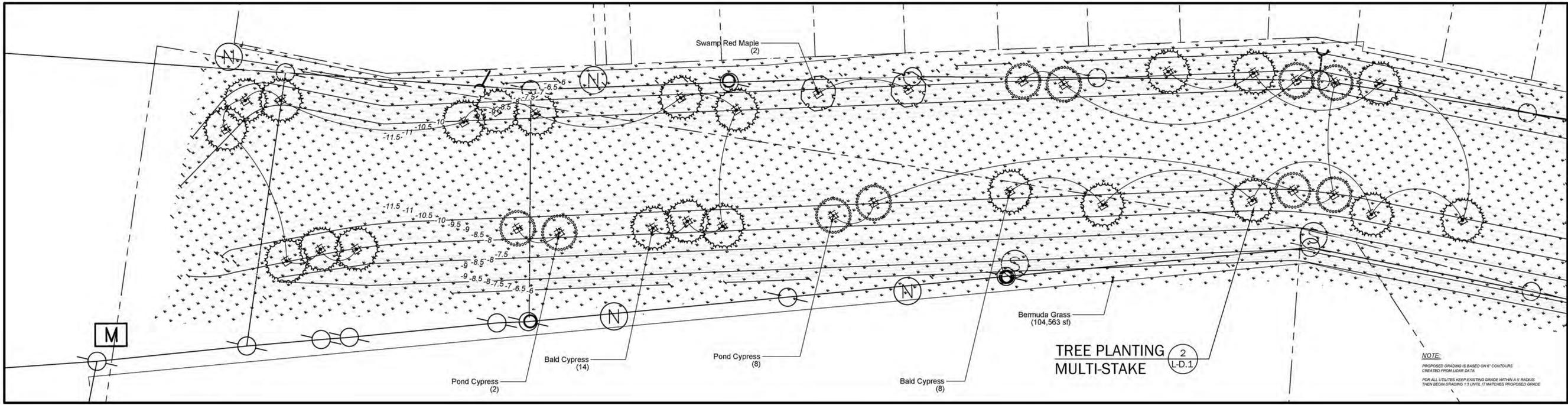


NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

STREET BASINS ALONG CONGRESS DRIVE

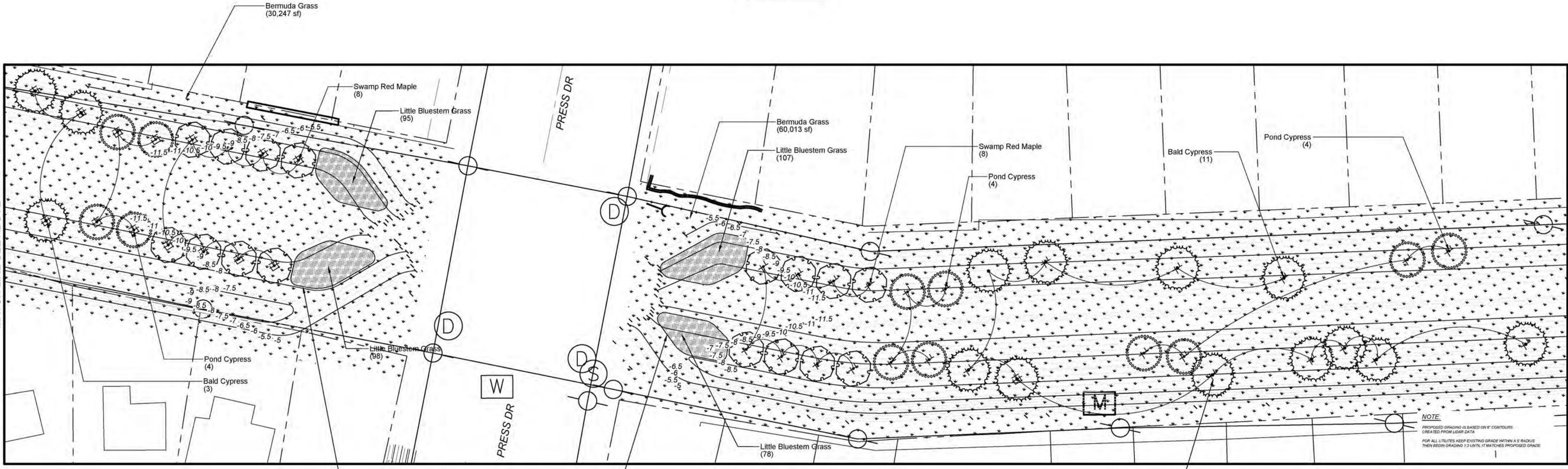
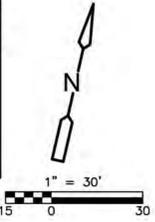
PROJECT NO. 122322-90818
 FILE NAME: SBL_0000
 SHEET NO.
L-SB-7

XREFS: [C:\P00001.CADMS_2234] Ingress: []
 Last saved by: ALCINA Time: 8/11/2015 11:26:34 AM
 PW: \\dcpwpp1\FW_XM1\22322\90819\04 Design Services NM_10%_02 Civil\10 CAD\DC000000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



PLANTING PLAN

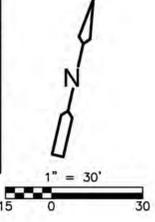
MATCH LINE SEE BELOW



PLANTING PLAN

MATCH LINE SEE ABOVE

MATCH LINE SEE SHEET L-DC-2.1



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

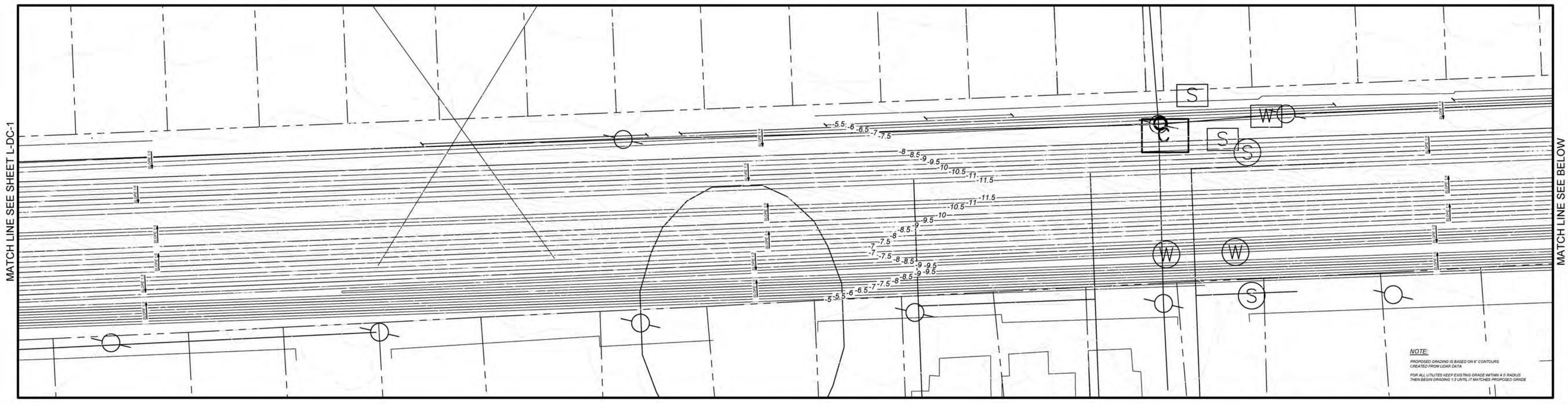
NOAA
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

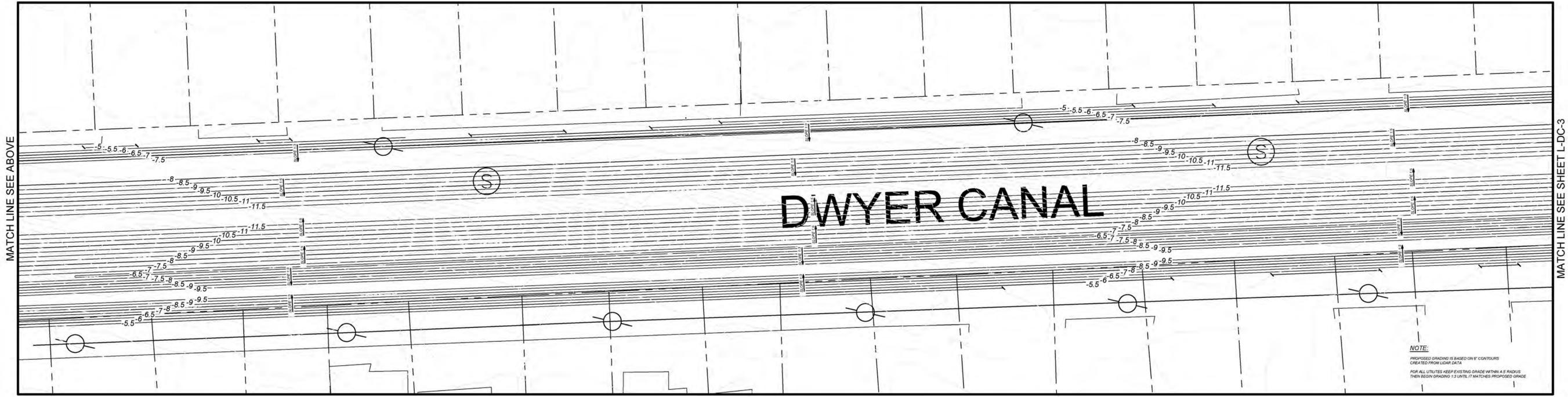
DWYER CANAL

PROJECT NO. 122322-90818
 FILE NAME: DC000000
 SHEET NO.
L-DC-1.1

XREFS: [C:\PEP0001\CDMS_2234] Inquest: []
 Last saved by: ALCINA Time: 8/11/2015 11:17:35 AM
 PW: \\dcpwpp1\pw_xm1\22322\90819\04 Design Services NM_10%_02 Civil\10 CAD\DC000000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



DWYER CANAL
PLAN



DWYER CANAL
PLAN

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

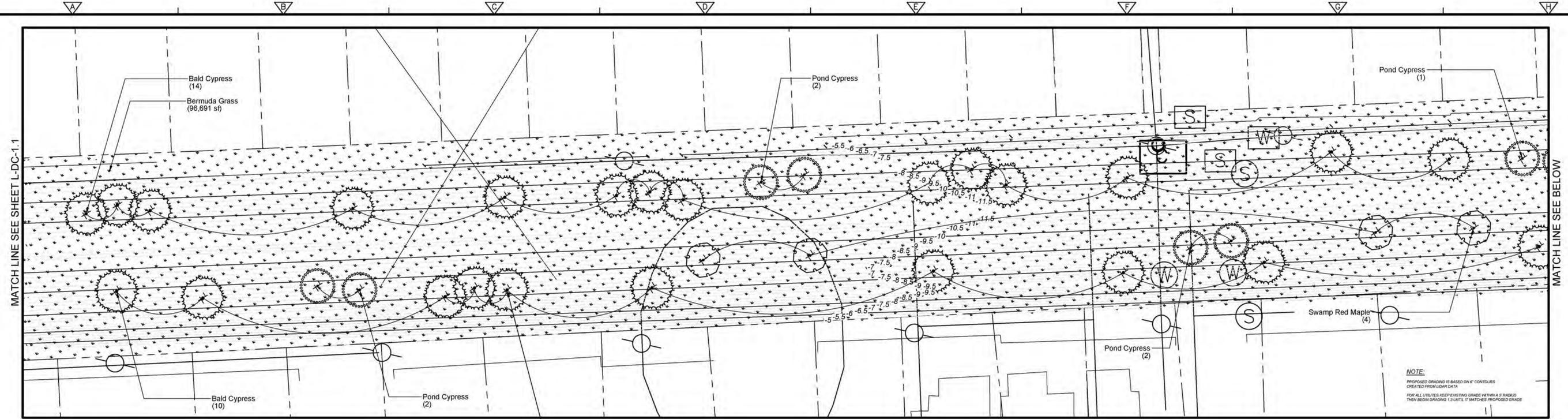
NOA NEW ORLEANS REDEVELOPMENT AUTHORITY
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

DWYER CANAL

PROJECT NO. 122322-90818
 FILE NAME: DC000000
 SHEET NO.
L-DC-2

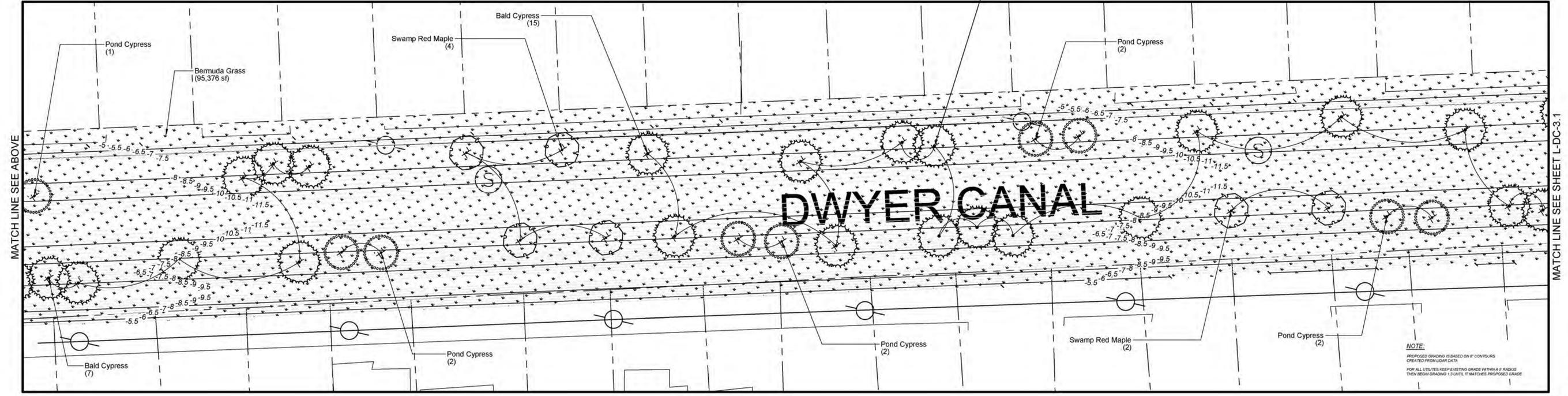
XREFS: [CEP0005]. CDM_S_2234. Images: []
 Last saved by: ALCINAA Time: 8/11/2015 11:17:35 AM
 p:\2015 CDM Smith\15122322\90819\04 Design Services NM_10x\02 Civi\10 CADD\DC000000.dwg
 © 2015 CDM Smith. All rights reserved.
 RELEASE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



PLANTING PLAN

2 TREE PLANTING MULTI-STAKE L-D.1

2 TREE PLANTING MULTI-STAKE L-D.1



PLANTING PLAN

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

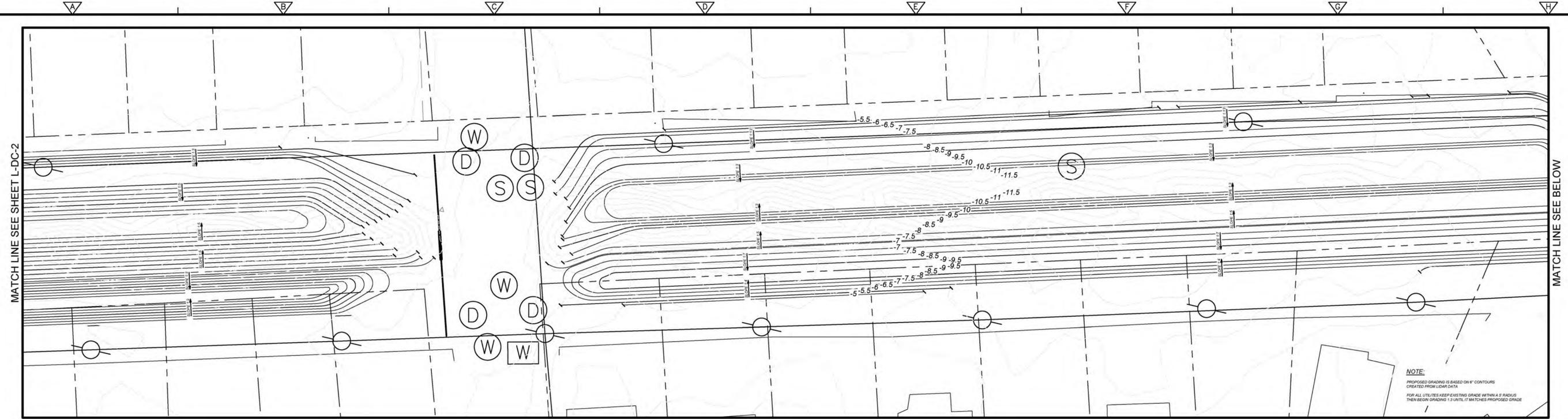
NEW ORLEANS REDEVELOPMENT AUTHORITY
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

DWYER CANAL
 SHEET NO. L-DC-2.1

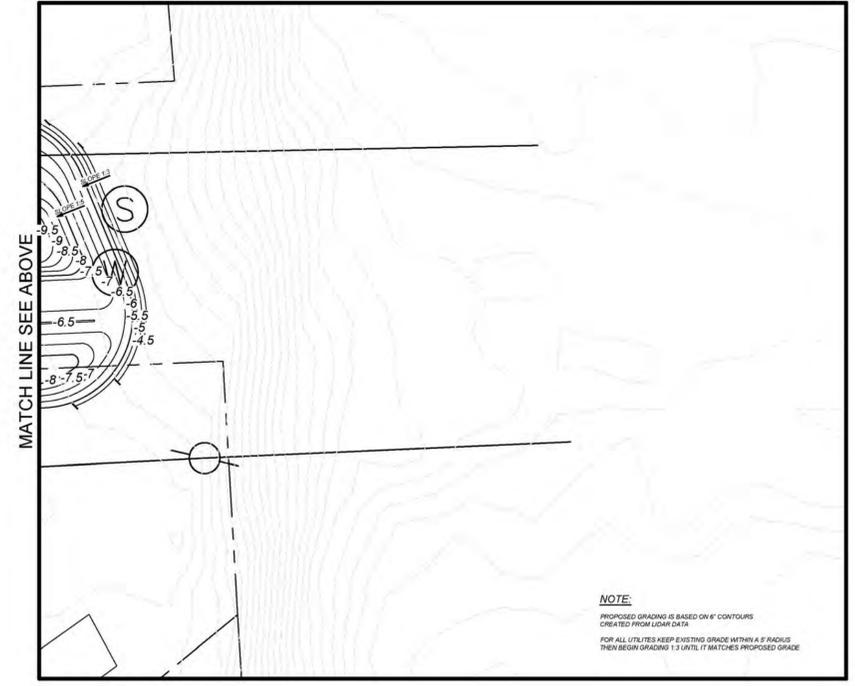
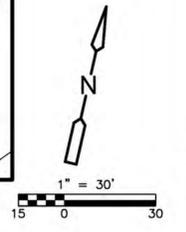
PROJECT NO. 122322-90818
 FILE NAME: DC000000
 SHEET NO. L-DC-2.1

XREFs: [CEP00051, CDMs_2234] Images: []
 Last saved by: ALCINA Time: 8/11/2015 11:21:45 AM
 p:\122322\122322\90819\04 Design Services NM_10x\02 Civi\10 CADD\DC000000.dwg
 © 2015 CDM SMITH. ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



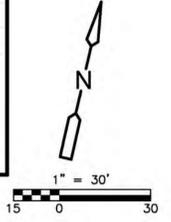
DWYER CANAL
PLAN

NOTE:
 PROPOSED GRADING IS BASED ON 6" CONTOURS
 CREATED FROM LDM DATA
 FOR ALL UTILITIES KEEP EXISTING GRADE WITHIN A 5' RADIUS
 THEN BEGIN GRADING 1.3' UNTIL IT MATCHES PROPOSED GRADE



DWYER CANAL
PLAN

NOTE:
 PROPOSED GRADING IS BASED ON 6" CONTOURS
 CREATED FROM LDM DATA
 FOR ALL UTILITIES KEEP EXISTING GRADE WITHIN A 5' RADIUS
 THEN BEGIN GRADING 1.3' UNTIL IT MATCHES PROPOSED GRADE



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

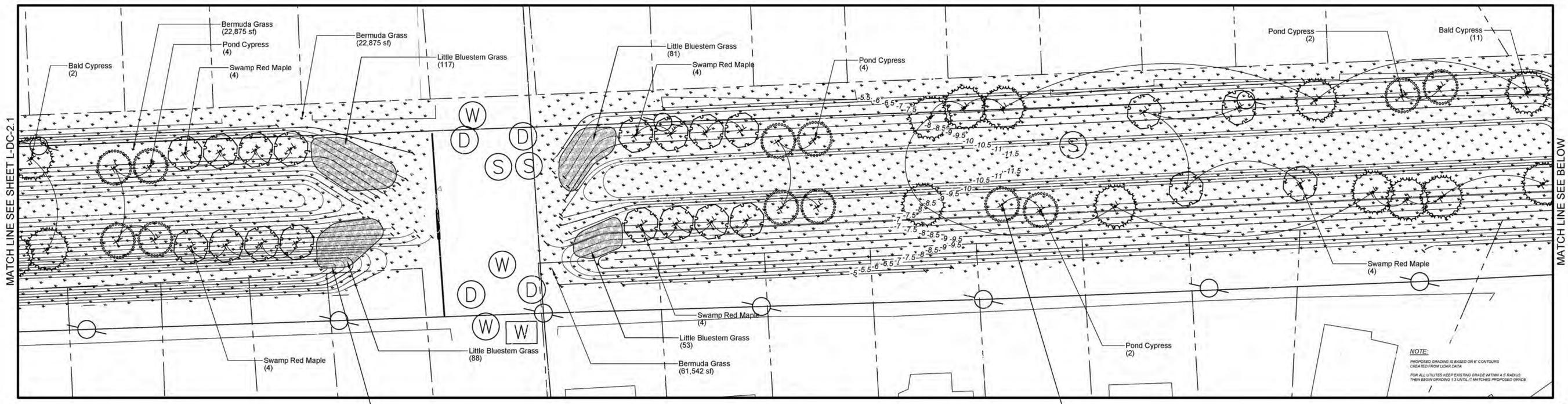
NEW ORLEANS REDEVELOPMENT AUTHORITY
CHESTER ENGINEERS
 DANA BROWN & Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

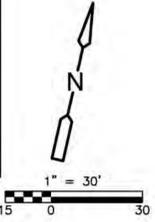
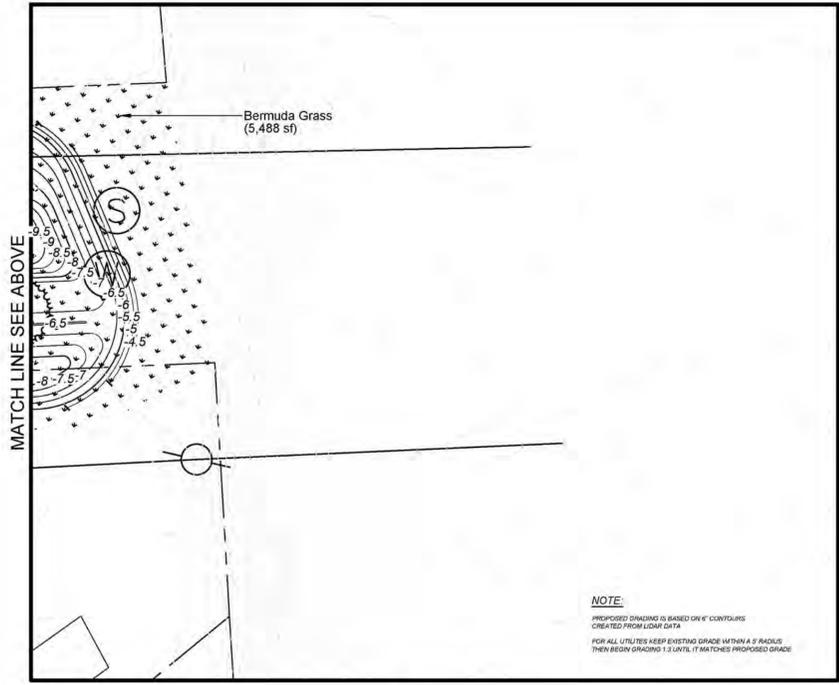
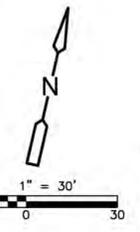
DWYER CANAL
 SHEET NO.
L-DC-3

PROJECT NO. 122322-90818
 FILE NAME: DC000000
 SHEET NO.
L-DC-3

XREFS: [C:\P00001_CDM_S_2234] Ingress: []
 Last saved by: ALCINA Time: 8/11/2015 11:21:45 AM
 P:\DCP\p0001_P0001\122322_90819\04_Design_Services_NM_10%_02_Civil\10_CADD\DC000000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



MATCH LINE SEE BELOW



PLANT SCHEDULE

TREES	COMMON NAME	BOTANICAL NAME	CONT	CAL	QTY	REMARKS
	Swamp Red Maple	Acer rubrum var. drummondii		2" Cal	48	
	Pond Cypress	Taxodium ascendens		2" Cal	50	
	Bald Cypress	Taxodium distichum		2" Cal	95	
SHRUB AREAS	COMMON NAME	BOTANICAL NAME	CONT	SPACING	QTY	REMARKS
	Little Bluestem Grass	Schizachyrium scoparium 'Prairie Blues'	3 gal	36" o.c.	717	plant specimens, at installation, to meet XX" (height, width) standards for designated pot size
GROUND COVERS	COMMON NAME	BOTANICAL NAME	CONT	SPACING	QTY	REMARKS
	Bermuda Grass	Cynodon dactylon	seed		475,831 sf	
	Pine Needle Mulch	Pine Mulch	Mulch		11,501 sf	

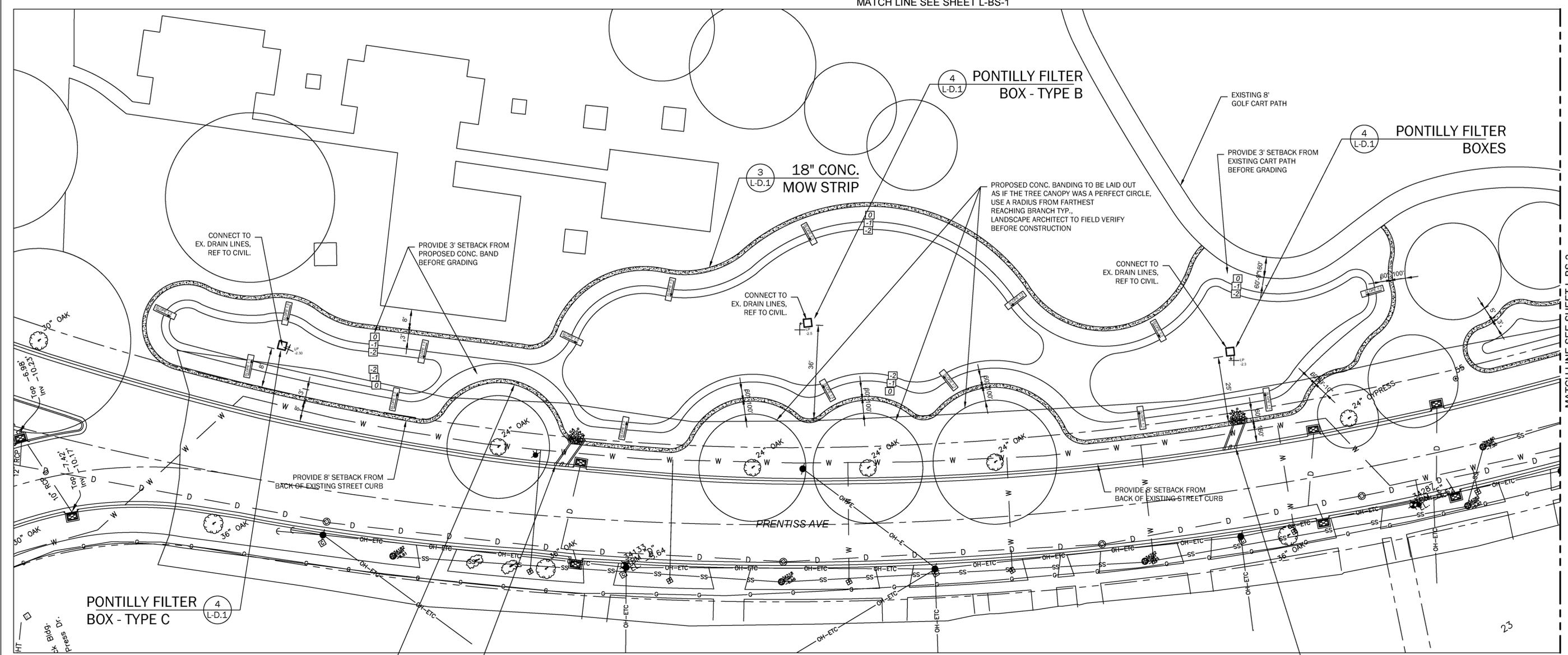
REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

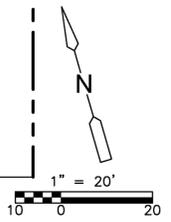


NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

DWYER CANAL
 PROJECT NO. 122322-90818
 FILE NAME: DC000000
 SHEET NO.
L-DC-3.1



GRADING & LAYOUT PLAN



XREFs: [CEP0005], CDMs_2234] Images: []
 Last saved by: ALCINAJA Time: 8/12/2015 1:35:31 PM
 pw:\decwp\pp1\FW_XM1\122322\90819\04 Design Services NM_10%_02 Civil\10 CADD\BS000000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

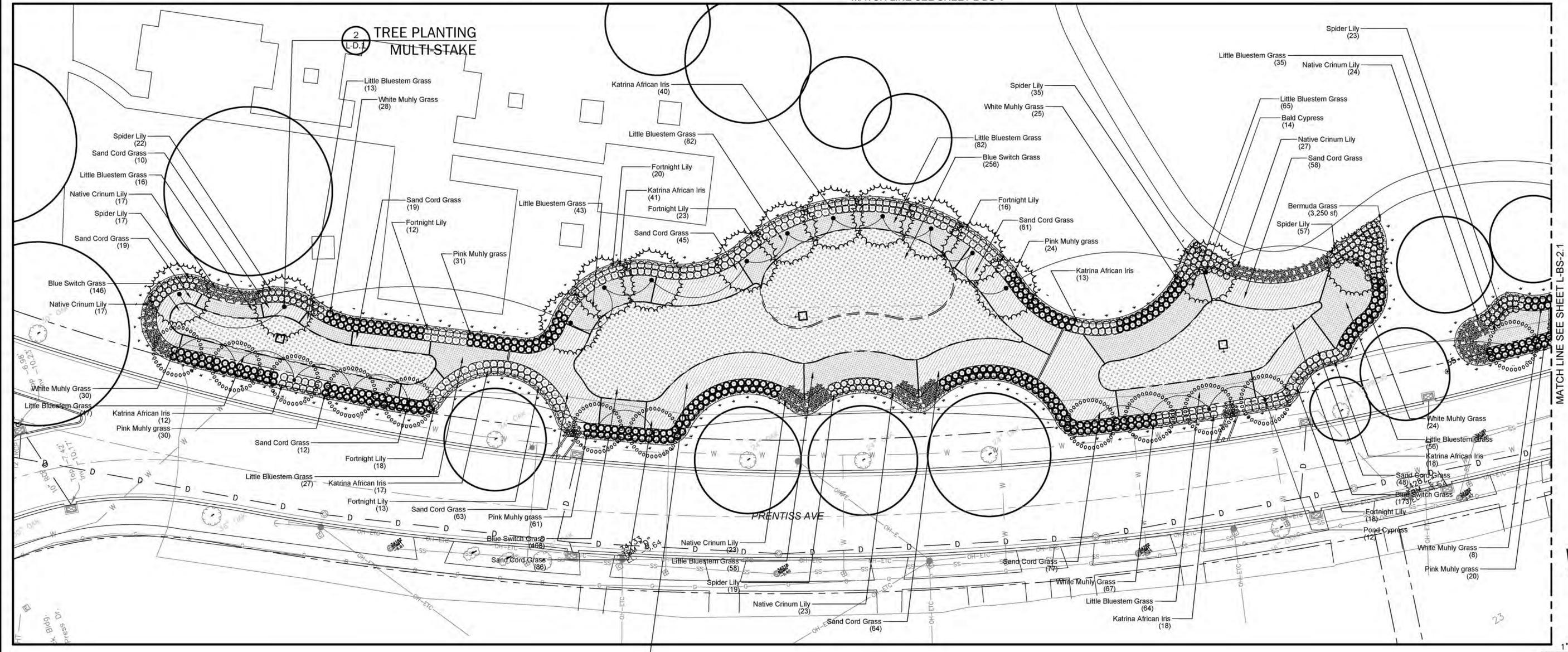
CHESTER ENGINEERS
 DANA BROWN ASSOCIATES

NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

BIOSWALE

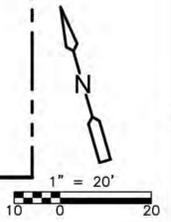
PROJECT NO. 122322-90818
FILE NAME: BS000000
SHEET NO. L-BS-1

2 TREE PLANTING MULTI-STAKE



1 BIORETENTION CELL L-D.1

PLANTING PLAN



Vertical text on the left side containing project metadata, file names, and dates.

Table with columns for revision number, date, drawn by, checked by, and remarks.

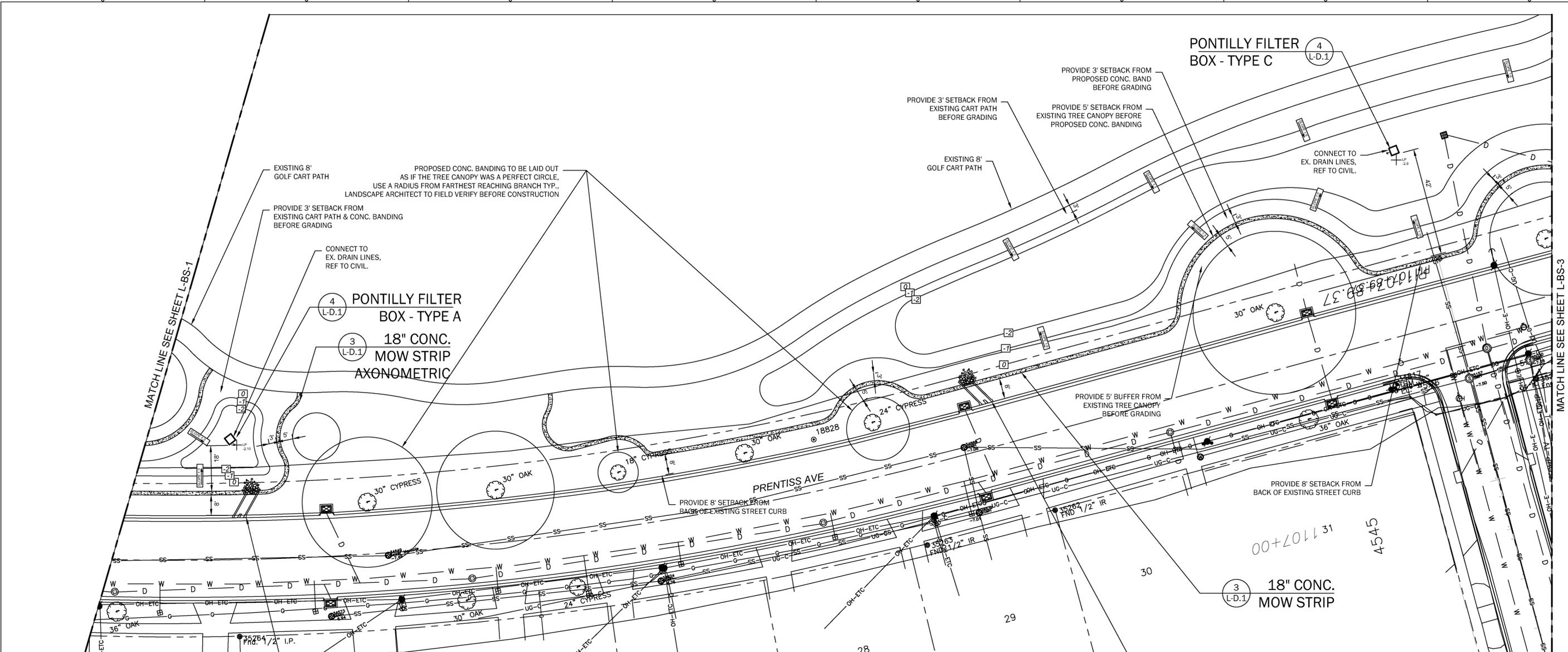
Professional stamps for CDM Smith and Chester Engineers, including contact information and design dates.

NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

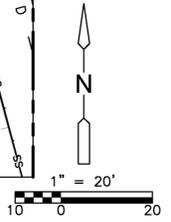
BIOSWALE

PROJECT NO. 122322-90818
FILE NAME: BS000000
SHEET NO. L-BS-1.1

XREFs: [CEP0005], CDMs_2234 [Images:]
 Last saved by: ALCINAA Time: 8/12/2015 1:35:31 PM
 pw:\dcpwppp1\pw_xm1\122322\90819\04 Design Services NM_10%_02 Civil\10 CADD\BS000000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



LAYOUT & GRADING PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY:	J ALCINA	X
DRAWN BY:	J ALCINA	X
SHEET CHK'D BY:		X
CROSS CHK'D BY:		X
APPROVED BY:		X
DATE:	AUGUST 2015	

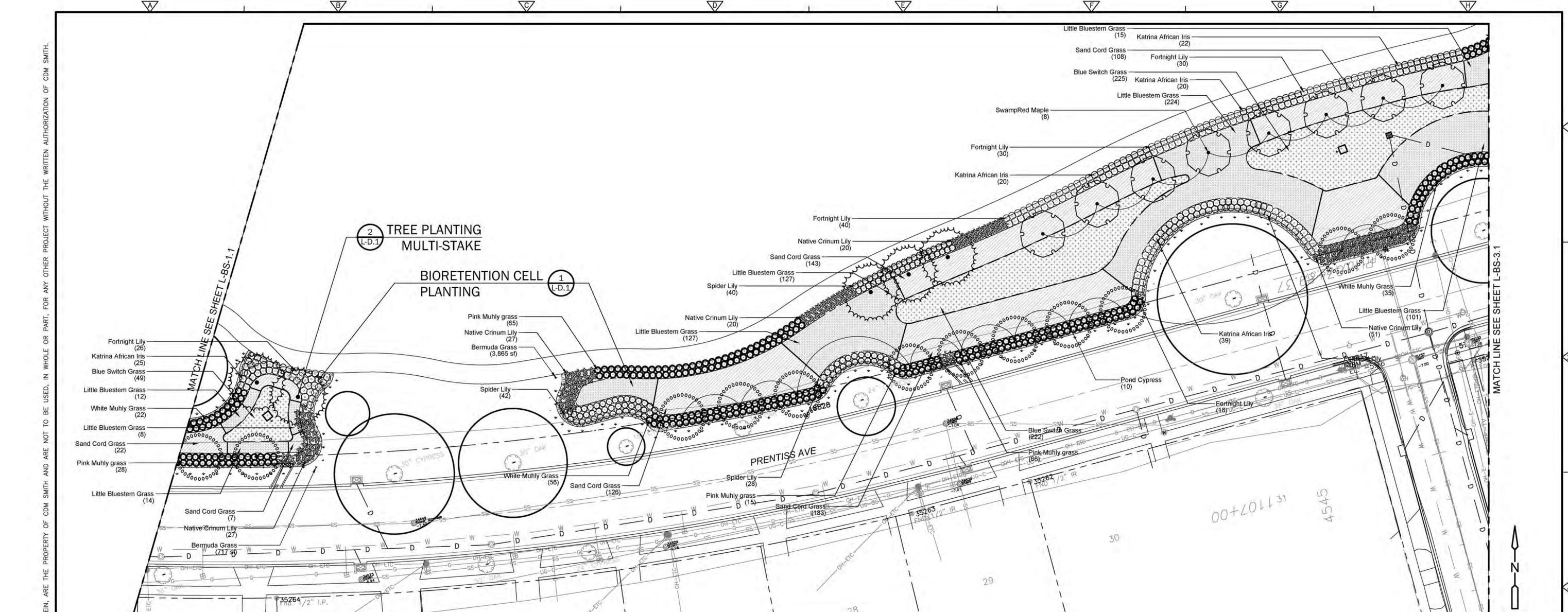
CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

CHESTER ENGINEERS
 DANA BROWN & ASSOCIATES

NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

BIOSWALE
 SHEET NO. **L-BS-2**

PROJECT NO.	122322-90818
FILE NAME:	BS000000
SHEET NO.	L-BS-2



PLANTING PLAN

XREFS: [CEP00001, CDM_S_2234] Images: []
 Last saved by: ALCINA Time: 8/12/2015 1:35:31 PM
 pw:\dcpwpp\1:PW_XM1\22322\90819\04 Design Services NM_10%_02 Civil\10 CADD\BS000000.dwg
 © 2015 CDM SMITH. ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

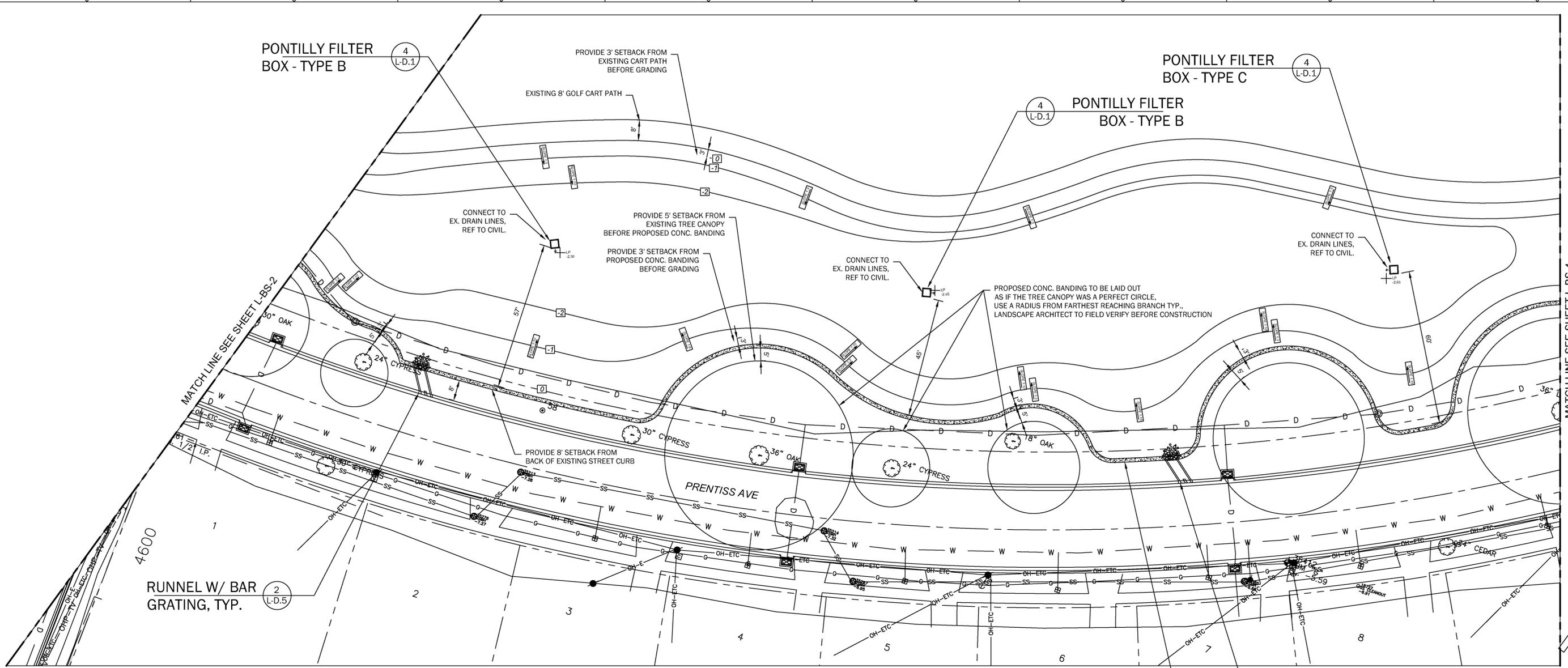
CHESTER ENGINEERS
 DANA BROWN & ASSOCIATES

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

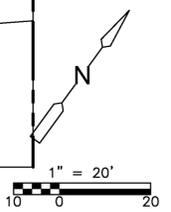
BIOSWALE
 SHEET NO.
L-BS-2.1

PROJECT NO.	122322-90818
FILE NAME:	BS000000
SHEET NO.	L-BS-2.1

XREFS: [CEP0005], CDM_S_22334 Images: []
 Last saved by: ALCINAA Time: 8/12/2015 2:24:35 PM
 pw:\dcpwppp1\FW_XM1\122322\90819\04 Design Services NM_10%_02 Civil\10 CADD\BS000000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



LAYOUT & GRADING PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

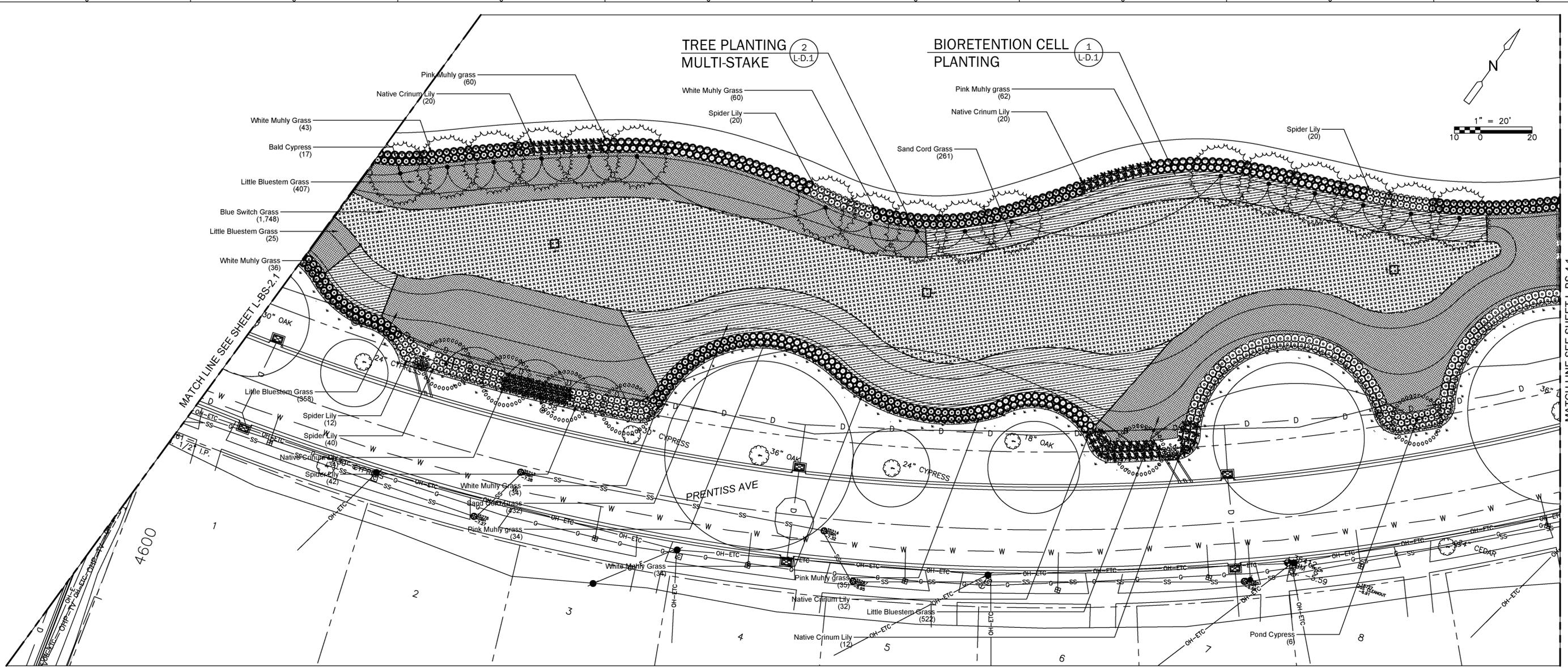
CHESTER ENGINEERS
 DANA BROWN & ASSOCIATES

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

BIOSWALE
 SHEET NO.
L-BS-3

PROJECT NO.	122322-90818
FILE NAME:	BS000000
SHEET NO.	L-BS-3

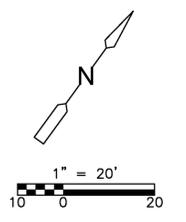
XREFS: [CEP00001, CDM_S_22334] Images: []
 Last saved by: ALCINAA Time: 8/12/2015 2:24:35 PM
 pw:\dcpwppp1\pw_xm1\122322\90819\04 Design Services NM_10%_02 Civil\10 CADD\BS0000000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



**TREE PLANTING
MULTI-STAKE**

**BIORETENTION CELL
PLANTING**

PLANTING
PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

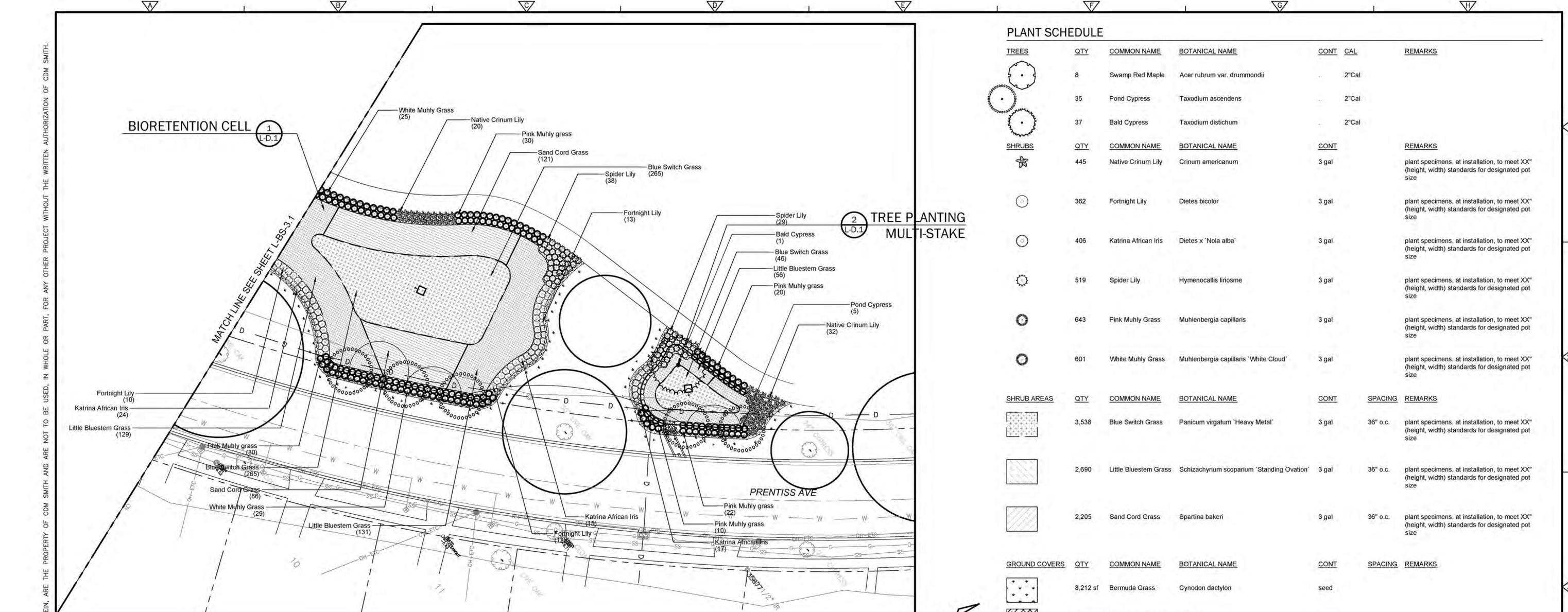
CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

CHESTER ENGINEERS
 DANA BROWN & ASSOCIATES

NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

BIOSWALE
 SHEET NO.
L-BS-3.1

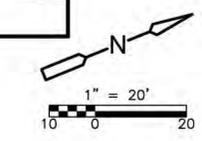
PROJECT NO. 122322-90818
 FILE NAME: BS000000
 SHEET NO.
L-BS-3.1



PLANT SCHEDULE

TREES	QTY	COMMON NAME	BOTANICAL NAME	CONT	CAL	REMARKS
	8	Swamp Red Maple	Acer rubrum var. drummondii		2"Cal	
	35	Pond Cypress	Taxodium ascendens		2"Cal	
	37	Bald Cypress	Taxodium distichum		2"Cal	
SHRUBS	QTY	COMMON NAME	BOTANICAL NAME	CONT	REMARKS	
	445	Native Crinum Lily	Crinum americanum	3 gal	plant specimens, at installation, to meet XX" (height, width) standards for designated pot size	
	362	Fortnight Lily	Diets bicolor	3 gal	plant specimens, at installation, to meet XX" (height, width) standards for designated pot size	
	406	Katrina African Iris	Diets x 'Nola alba'	3 gal	plant specimens, at installation, to meet XX" (height, width) standards for designated pot size	
	519	Spider Lily	Hymenocallis liriosme	3 gal	plant specimens, at installation, to meet XX" (height, width) standards for designated pot size	
	643	Pink Muhly Grass	Muhlenbergia capillaris	3 gal	plant specimens, at installation, to meet XX" (height, width) standards for designated pot size	
	601	White Muhly Grass	Muhlenbergia capillaris 'White Cloud'	3 gal	plant specimens, at installation, to meet XX" (height, width) standards for designated pot size	
SHRUB AREAS	QTY	COMMON NAME	BOTANICAL NAME	CONT	SPACING	REMARKS
	3,538	Blue Switch Grass	Panicum virgatum 'Heavy Metal'	3 gal	36" o.c.	plant specimens, at installation, to meet XX" (height, width) standards for designated pot size
	2,690	Little Bluestem Grass	Schizachyrium scoparium 'Standing Ovation'	3 gal	36" o.c.	plant specimens, at installation, to meet XX" (height, width) standards for designated pot size
	2,205	Sand Cord Grass	Spartina bakeri	3 gal	36" o.c.	plant specimens, at installation, to meet XX" (height, width) standards for designated pot size
GROUND COVERS	QTY	COMMON NAME	BOTANICAL NAME	CONT	SPACING	REMARKS
	8,212 sf	Bermuda Grass	Cynodon dactylon	seed		
	89,274 sf	Pine Needle Mulch	Pine Mulch	Mulch		

PLANTING PLAN



XREFS: [CEP0005], CDMs_2234] Images: []
 Last saved by: ALCINA Time: 8/12/2015 3:15:47 PM
 pw:\dcpwpp1:PW_XMT\22322\90819\04 Design Services NM_10%_02 Civil\10 CADD\BS000000.dwg
 © 2015 CDM SMITH. ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

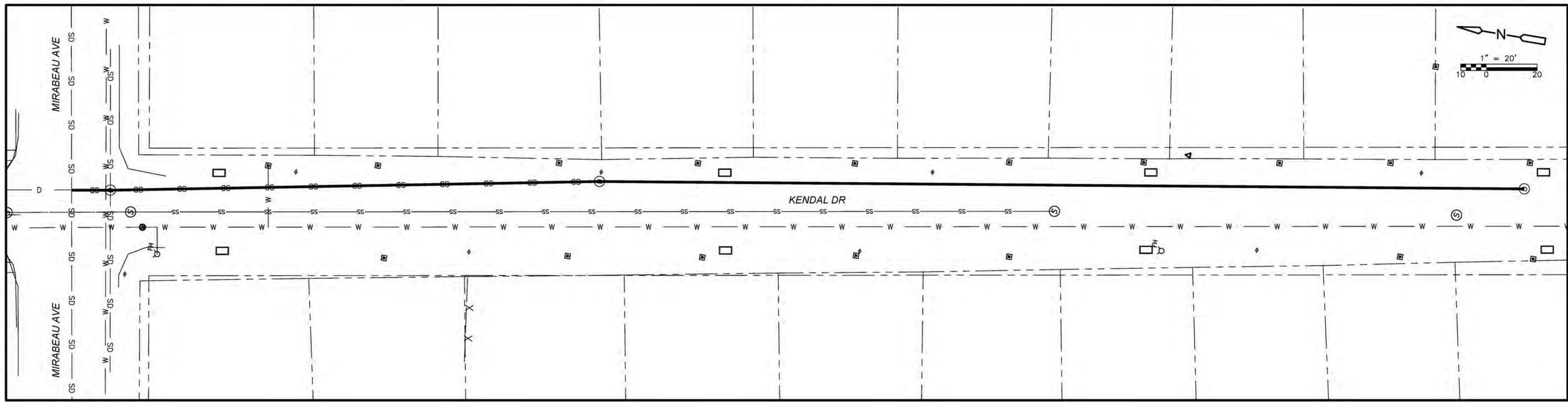
CHESTER ENGINEERS
 DANA BROWN & ASSOCIATES

NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

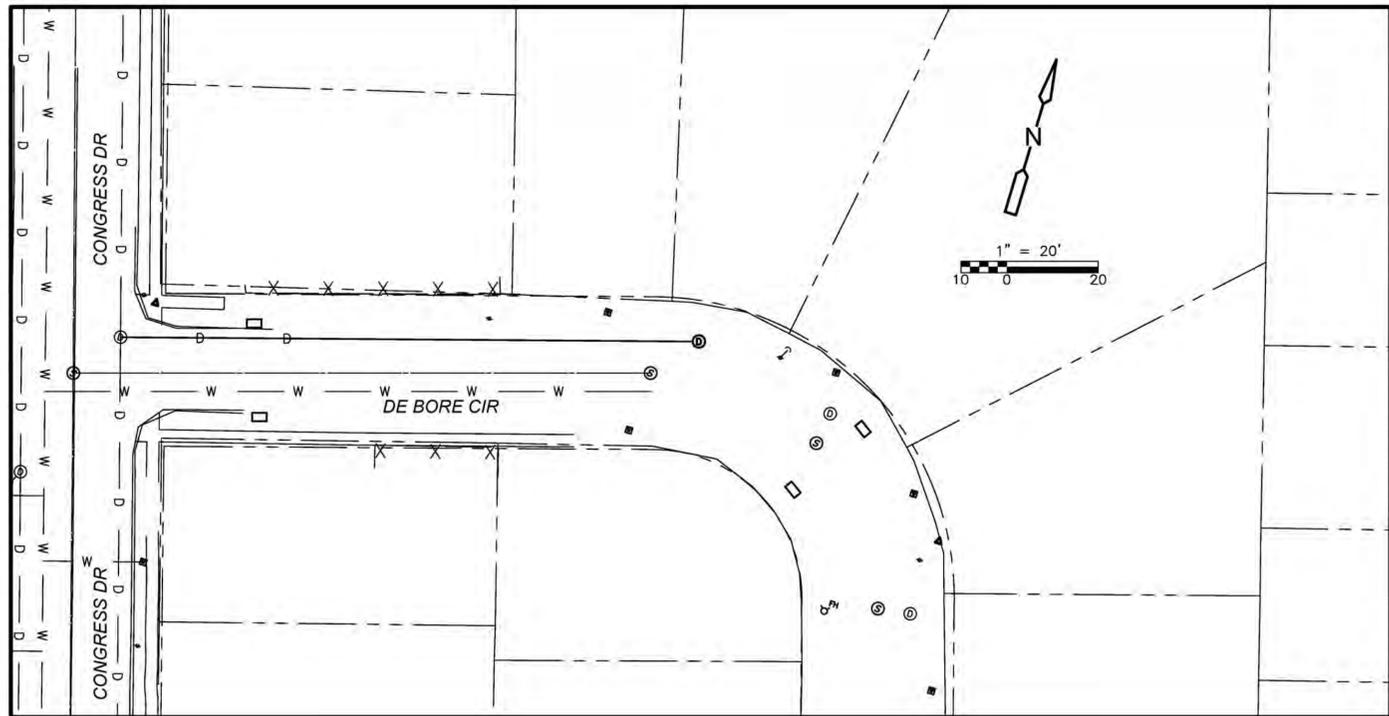
BIOSWALE

PROJECT NO. 122322-90818
FILE NAME: BS000000
SHEET NO. L-BS-4.1

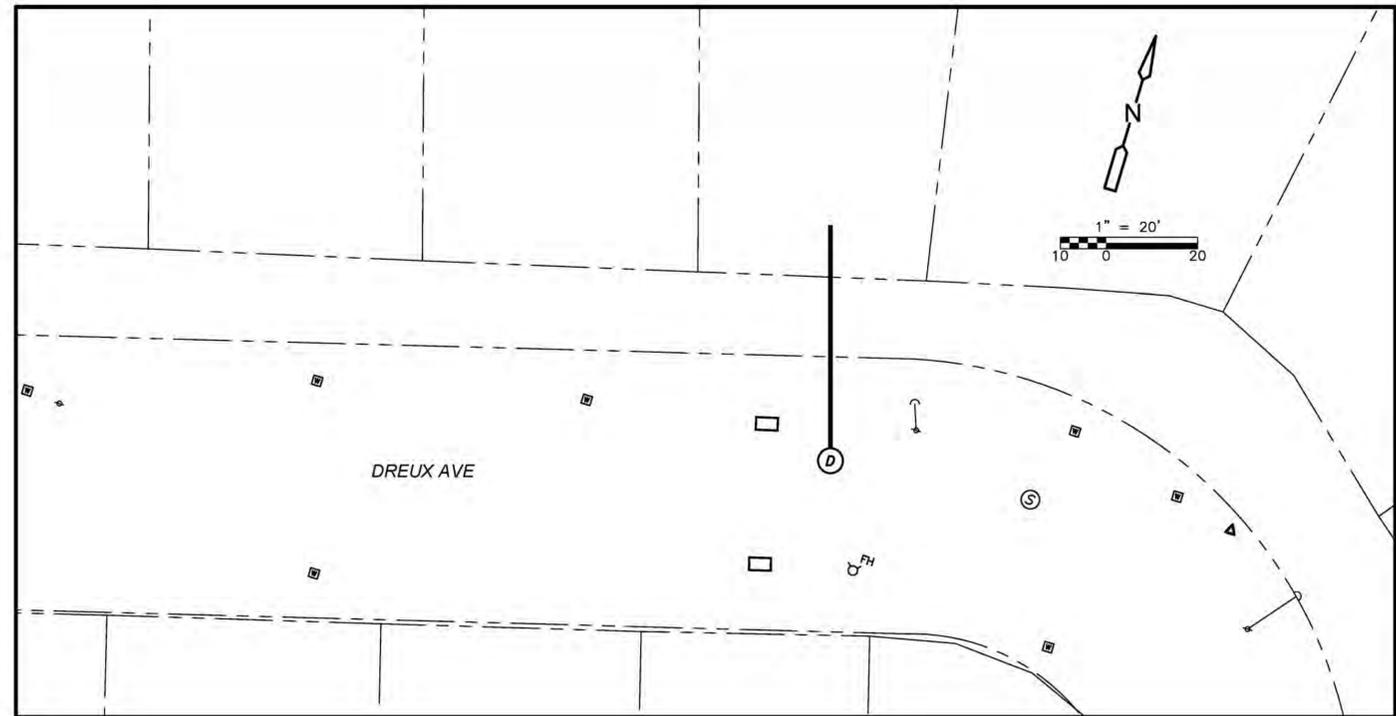
XREFs: [CEP00001, CDMS_2234] Images: []
 Last saved by: ALCINAA Time: 8/31/2015 2:53:35 PM
 pw:\dpcpwp\1\FW_XM1\122322\90819\04_Design Services NM_60% 02 Civil\10 CAD\DL000000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



PLAN



PLAN



PLAN

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____	X
DRAWN BY: J ALCINA	X
SHEET CHK'D BY: _____	X
CROSS CHK'D BY: _____	X
APPROVED BY: _____	X
DATE: AUGUST 2015	

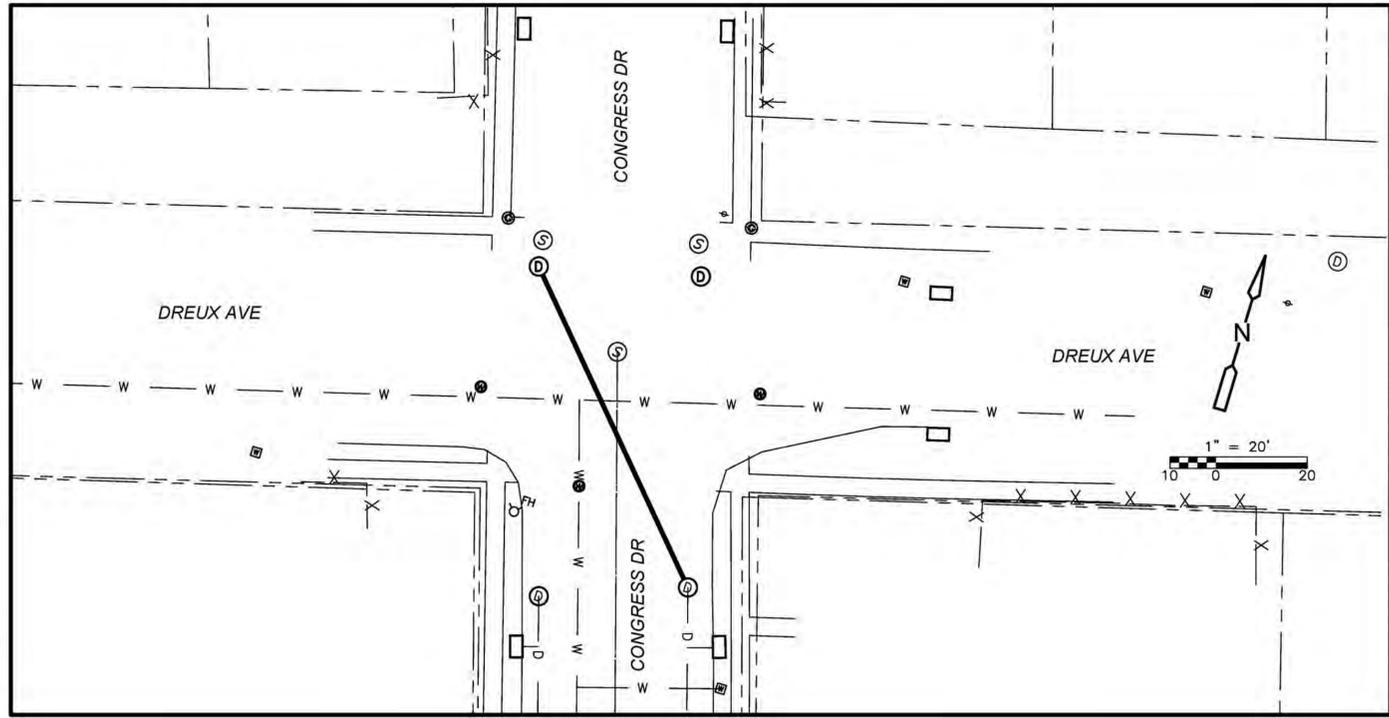


NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

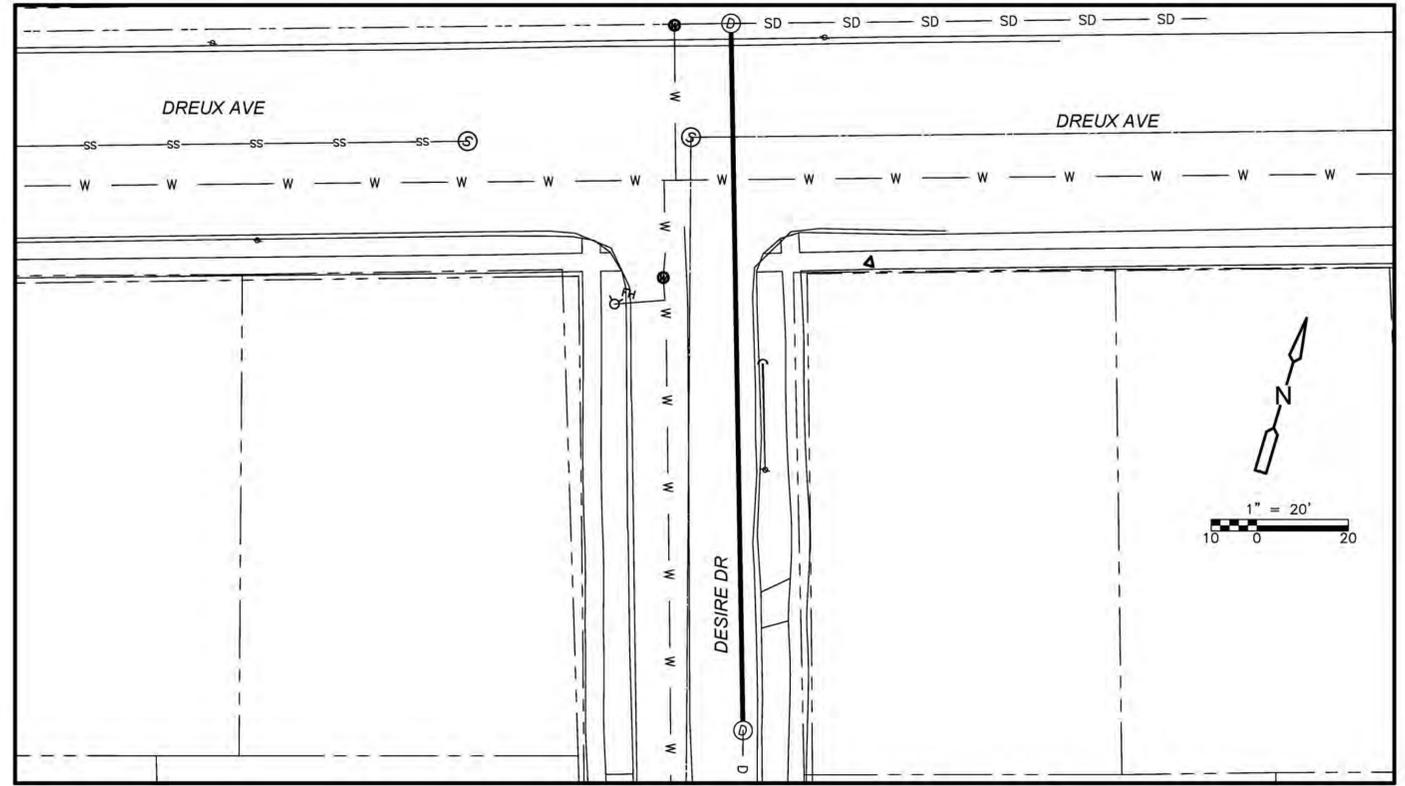
DRAIN LINES

PROJECT NO. 122322-90818
FILE NAME: DL00000
SHEET NO. DL-1

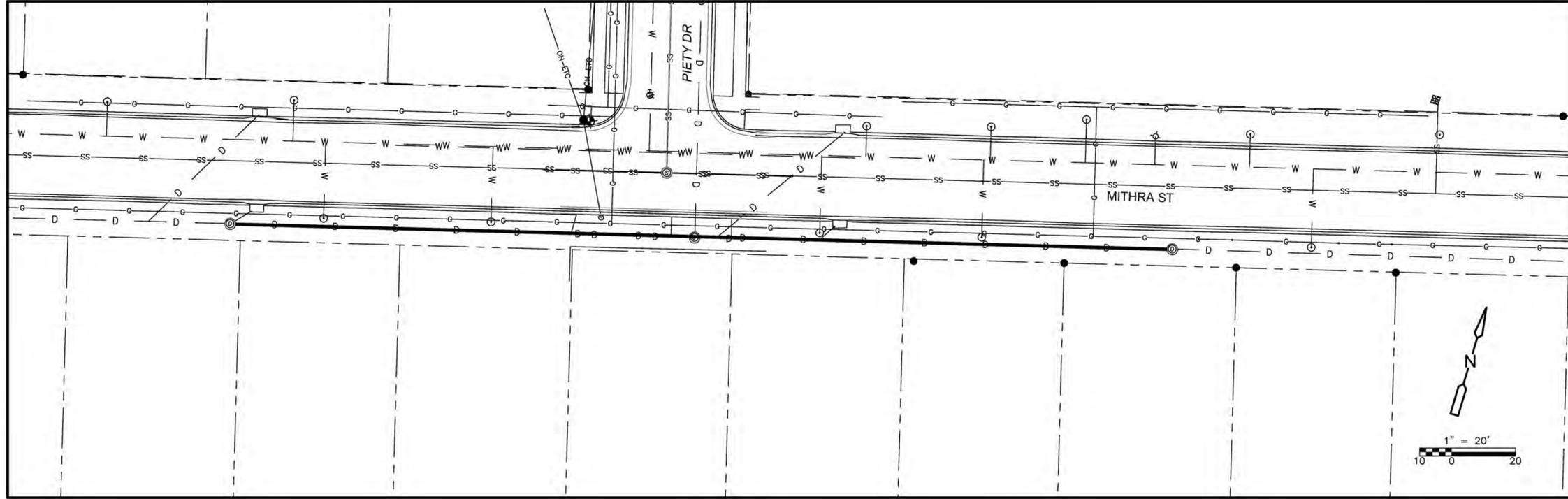
XREFs: [CEP00001, CDMS_2234] Images: []
 Last saved by: ALCINAA Time: 8/31/2015 3:26:16 PM
 pw:\dpcpwp\1\FW_XM1\122322\90819\04_Design Services NM_60% 02 Civil\10 CAD\DL000000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



PLAN



PLAN



PLAN

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

CDM Smith
 1515 Poydras Street, Suite 1000
 New Orleans, LA 70112
 Tel: (504) 799-1100

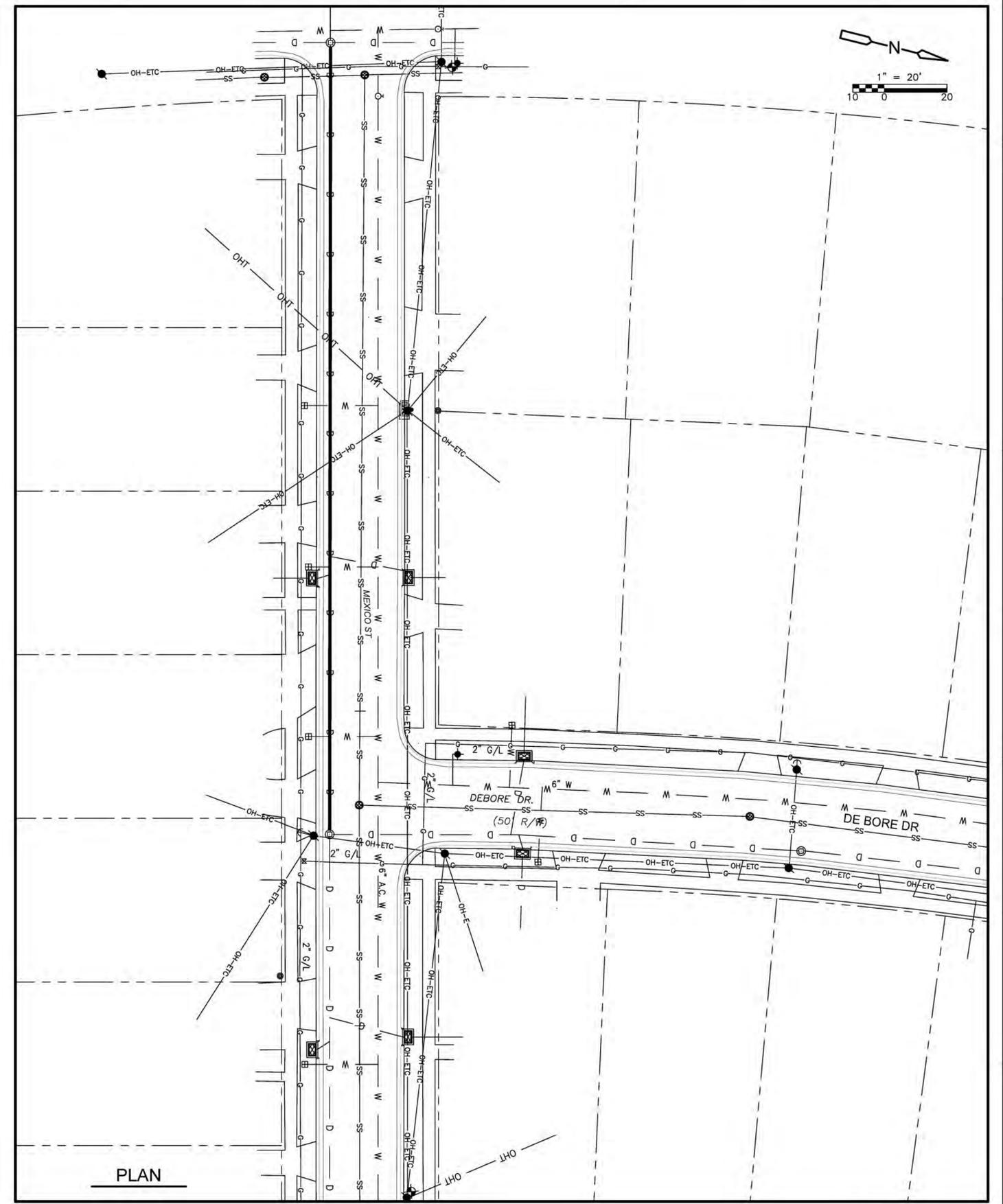
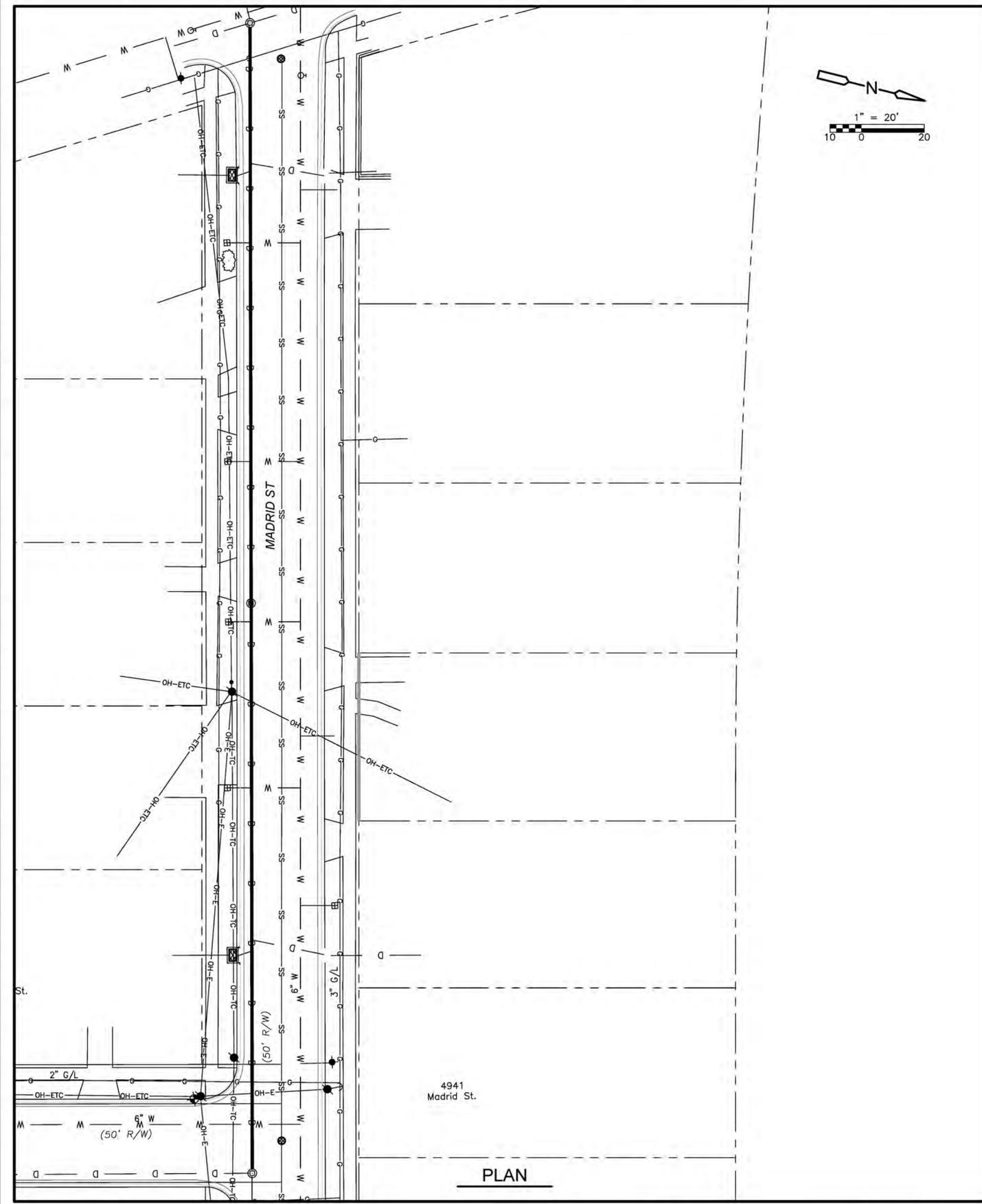
CHESTER ENGINEERS
 DANA BROWN Associates

NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

DRAIN LINES

PROJECT NO. 122322-90818
 FILE NAME: DL00000
 SHEET NO.
DL-2

XREFs: [CEP000SL_CDM_2234] Images: []
 Last saved by: ALCINAA Time: 8/31/2015 3:12:56 PM
 PW: \\dcpwpp1\FW_XM1\122322\90819\04 Design Services NM_60%_02 Civi\10 CAD\DL000000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINAA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015

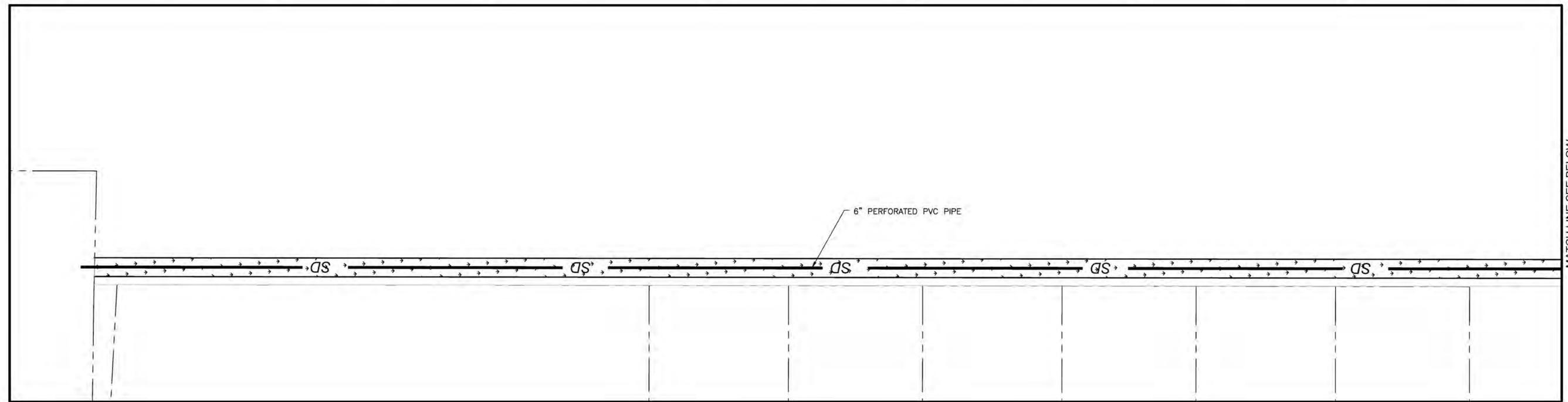


NEW ORLEANS REDEVELOPMENT AUTHORITY
PONTILLY STORMWATER HAZARD MITIGATION PROJECT

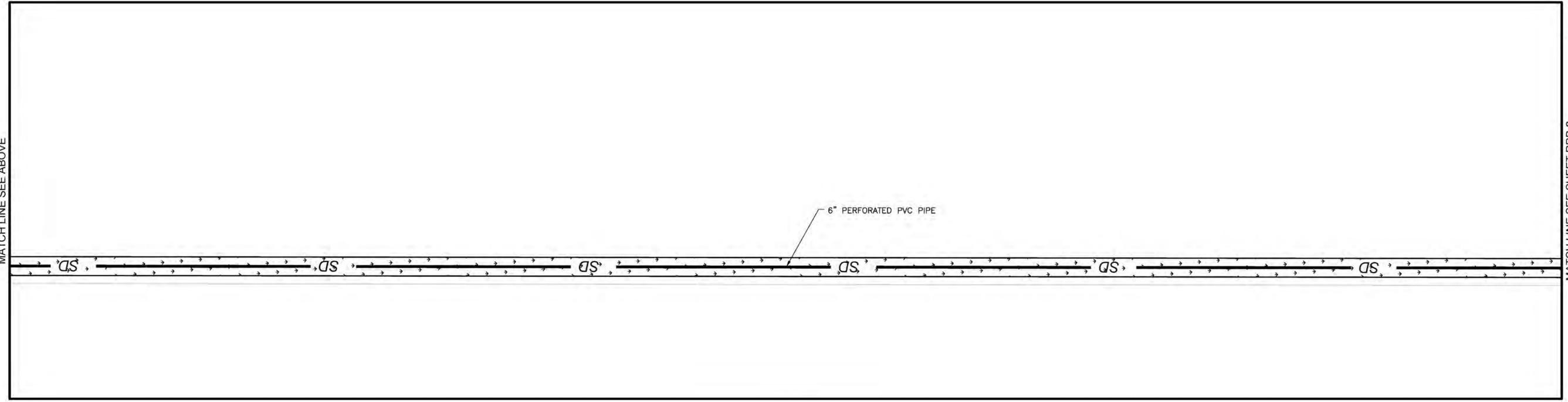
DRAIN LINES

PROJECT NO. 122322-90818
 FILE NAME: DL00000
 SHEET NO.
DL-3

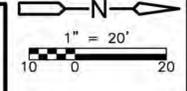
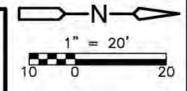
XREFs: [C:\PE00001_CDMs_2234\images:]
 Last saved by: ALCINAA Time: 8/11/2015 11:28:48 AM
 PW:\dpcp\ppl\FW_XM1\122322\90819\04 Design Services NM_10%_02.civil\10 CAD\RRB00000.dwg
 © 2015 CDM SMITH ALL RIGHTS RESERVED.
 REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



RAILROAD
PLAN



RAILROAD
PLAN



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____ X
 DRAWN BY: J. ALCINA
 SHEET CHK'D BY: _____ X
 CROSS CHK'D BY: _____ X
 APPROVED BY: _____ X
 DATE: AUGUST 2015



NEW ORLEANS REDEVELOPMENT AUTHORITY
 PONTILLY STORMWATER HAZARD MITIGATION PROJECT

RAILROAD BIOSWALE
 SHEET NO. RRB-1

PROJECT NO. 122322-90818
 FILE NAME: RRB00000.DWG
 SHEET NO. RRB-1

Appendix B
Agency Coordination Correspondence

From: Pitts, Melanie
To: "Linda.Hardy@la.gov"; "Amy.E.Powell@usace.army.mil"; "gutierrez.raul@epa.gov"; "Lennox.Ursula@epa.gov"; "cmichon@wf.la.gov"
Cc: [Spann, Tiffany](mailto:Spann.Tiffany)
Subject: Scoping Notification/Solicitation of Views 1603-0178 Pontilly Drainage
Date: Monday, November 02, 2015 15:01:00
Attachments: [image001.png](#)
[Scope_of_work.docx](#)
[Pontilly-Design-Development-49315-93991.pdf](#)
Importance: High



U.S. Department of Homeland Security
Federal Emergency Management Agency

FEMA-DR 1603 LA

1500
Main St.

Baton
Rouge, LA
70802

November 2, 2015

MEMORANDUM TO: See Distribution

SUBJECT: Scoping Notification/Solicitation of Views

To Whom It May Concern:

The Department of Homeland Security's Federal Emergency Management Agency (FEMA) is mandated by the U.S. Congress to administer Federal disaster assistance pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), PL 93-288, as amended. FEMA's Hazard Mitigation Program to provide funds to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. FEMA is considering providing Hazard Mitigation Grant Program funding for the attached project in relation to Hurricanes Katrina and Rita (FEMA-1603/1607-DR-LA).

The Pontilly Study Area is 856 acres which includes both Pontchartrain Park and Gentilly Wood neighborhoods. The existing drainage infrastructure servicing the Pontilly Study Area is over 50 years old and was designed for significantly different conditions than currently exist. The level of

development that has occurred in the study area has overstressed the storage and conveyance capacity of the existing stormwater infrastructure. The Pontilly neighborhood in New Orleans has been subject to repetitive, significant flood events causing damage to residential and commercial properties. The purpose of the proposed Pontilly Stormwater Mitigation Project is to mitigate the impacts of flooding in the Pontilly Area through stormwater management.

The purpose of the draft EA is to analyze the potential human health and environmental impacts associated with the preferred action and the alternatives to improve drainage and provide safe road passage. The draft EA evaluates a No Action Alternative; the Preferred Action Alternative: Installation of Stormwater Lots/Parks, Street Basins and Urban Bioswales; and the Considered Action Alternative: Upgrade and Improve the Existing Underground Pipe Collection System.

The proposed project scope of work (SOW) can be seen in the attached description and drawings.

To ensure compliance with the National Environmental Policy Act (NEPA), Executive Orders (EOs), and other applicable Federal regulations, FEMA EHP will be preparing an Environmental Assessment (EA). To assist us in preparation of the EA, we request that your office review the attached documents for a determination as to the requirements of any formal consultations, regulatory permits, determinations, or authorizations.

Please respond within 30 calendar days of the date of this scoping notification. If our office receives no comments at the close of this period, we will assume that your agency does not object to the project as proposed.

Comments may be faxed to 225-346-5848 emailed to melanie.pitts@fema.dhs.gov or mailed to the attention of Melanie Pitts, Environmental Department, at the address above.

For questions regarding this matter, please contact Melanie Pitts, Lead Environmental Protection Specialist at (504) 427-8000.

Thanks,

Tiffany Spann-Winnfield
Deputy Environmental Liaison Officer

Distribution: USACE, USEPA, LDWF, LDEQ

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

Alternative 1 Proposed: Installation of Stormwater Lots/Parks, Street Basins and Urban Bioswales :

The Pontilly Stormwater Mitigation Project has two components which work collectively to reduce the risk of local flooding by providing short term runoff storage and implementing the use of stormwater BMP's.

The first component would utilize detention strategies, porous paving, and best management practices (BMP) to alleviate the demand placed on the existing drainage systems that are undersized and unable to function properly during 1-3 year flood events. The project would incorporate empty lots as temporary detention areas to reduce the peak runoff discharge by allowing the stormwater to infiltrate into the ground rather than immediately going into the undersized drainage system. The parcels proposed for this work are scattered vacant lots where private residences existed prior to Hurricane Katrina. As a result of Hurricane Katrina and subsequent State and Federal programs, these properties have been demolished and are now under the jurisdiction of NORA. These stormwater lots and stormwater parks (multiple contiguous lots) would incorporate the planting of native vegetation to help clean stormwater and would be classed into either a dry stormwater lot or wetland stormwater lot (See attachments).

In addition to the stormwater lots and parks, the second component involves utilizing street basins and urban bioswales. These structures would be installed and also planted with native vegetation to catch runoff flowing along street curbs and gutters. Midblock street basins would take the place of two on-street parking places and the corner street basins would require one on-street parking places on each street (See attached). Urban bioswales are proposed along Stephen Girard Avenue where the existing 42 foot wide street would be reduced in size to an overall width of 37 feet. These "road diets" would allow the installation of both corner and mid-block street basins.

An urban bioswale is also proposed at the southern perimeter of the Joseph Bartholomew Sr. Golf Course inside the Pontchartrain Park Neighborhood. The bioswale would be installed between the existing golf cart path and the street and would not impede play at the golf course or alter any character defining landscape features such as mature trees. Additional bioswales would be installed along the rear private property lines for parcels abutting railroad right of way along Peoples Avenue. These bioswales would reduce flooding in the rear yards by rerouting floodwater to planned stormwater lot locations. The Undertaking also proposes to widen the existing Dwyer Canal because it is located at a low point between the two neighborhoods and is currently underutilized. The widening would occur within previously disturbed right-of-way and the banks of the canal would be stabilized to prevent erosion.

Alternative 2 Considered: Upgrade and Improve the Existing Underground Pipe Collection System :

The upgrading the neighborhood's underground pipe collection system from its current state of a 2-year flooding event to the City criterion of a 10-year level of protection would entail removing and replacing more than 60,000 linear feet of pipe network in the Pontilly neighborhood. The applicant would excavate and remove existing pipe; install new pipe and reconnect it to existing basins; and then back fill

and asphalt repair the area. Collector streets are assumed to receive 48 inch pipes, while minor streets would receive 36 inch pipes to achieve positive drainage for the 10-year storm event. Collector streets receiving the 48 inch pipes would be Press Drive 9,000 LF; Louisa Drive 3,200 LF; Congress Drive 8,500 LF; Mirabeau Ave. 3,600 LF; Prentiss Ave. 1,000 LF; and Bashful Blvd. 850 LF. All other streets in the Pontilly area would be minor streets.

From: [Gutierrez, Raul](#)
To: [Pitts, Melanie](#)
Subject: RE: Scoping Notification/Solicitation of Views 1603-0178 Pontilly Drainage
Date: Monday, December 21, 2015 13:53:50
Attachments: [image001.png](#)

The U.S. Environmental Protection Agency (EPA) has completed your request for a solicitation of views concerning the Pontilly Drainage in New Orleans, Louisiana. The comments that follow are being provided relative to the EPA's *404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (40 CFR Part 230)* and *Executive Order 11990*.

Our preliminary review revealed that jurisdictional waters of the U.S. may occur on the proposed sites. At this time, the EPA supports implementation of proposed Alternative 1 and recommends coordination with the U.S. Army Corps of Engineers at the New Orleans District Office to verify if jurisdictional waters of the U.S. do occur on site and which permits, if any, are needed. Thanks for the opportunity to review the proposed project.

Raul Gutierrez, Ph.D.
Wetlands Section (6WQ-EM)
US EPA Region 6
(504) 862-2371

Office:
US Army Corps of Engineers
New Orleans District
CEMVN-OD-SC
Post Office Box 60267
New Orleans, Louisiana 70160-0267

From: Pitts, Melanie [mailto:melanie.pitts@fema.dhs.gov]
Sent: Thursday, December 17, 2015 1:12 PM
To: Linda.Hardy@la.gov; Amy.E.Powell@usace.army.mil; Gutierrez, Raul; Lennox, Ursula; cmichon@wlf.la.gov
Subject: RE: Scoping Notification/Solicitation of Views 1603-0178 Pontilly Drainage

To Whom it May Concern:

Please see below and attached documents. To date, FEMA-EHP has not received a response from your office regarding the Hazard Mitigation Grant Program (HMGP) Pontilly Drainage project. We have surpassed the thirty (30) day deadline, however, FEMA-EHP would like to receive your comments/conditions regarding this project by the Monday December 21, 2015. If further information is needed or if there are any questions/issues, please let us know. Otherwise, there is a tight timeline on this Hazard Mitigation Grant Program and your assistance is greatly appreciated.

Thanks,

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



Louisiana Ecological Services Office

ESA Technical Assistance Form

General Information

Name: FEMA

Point of Contact: Melanie Pitts

Address: 1500 Main St

City: Baton Rouge

State: Louisiana

Zip Code: 70802

Phone Number 1: 504-427-8000

Phone Number 2: _____

Email Address: melanie.pitts@fema.dhs.gov

Proposed Project Information

Project Reference ID: 5956

Project Latitude: 30.023192 **Project Longitude:** -90.039671

Project Parish(es): Orleans

Project Description: The upgrading the neighborhood's underground pipe collection system from its current state of a 2-year flooding event to the City criterion of a 10-year level of protection would entail removing and replacing more than 60,000 linear feet of pipe network in the Pontilly neighborhood. The applicant would excavate and remove existing pipe; install new pipe and reconnect it to existing basins; and then back fill and asphalt repair the area. Collector streets are assumed to receive 48 inch pipes, while minor streets would receive 36 inch pipes to achieve positive drainage for the 10-year storm event. Collector streets receiving the 48 inch pipes would be Press Drive 9,000 LF; Louisa Drive 3,200 LF; Congress Drive 8,500 LF; Mirabeau Ave. 3,600 LF; Prentiss Ave. 1,000 LF; and Bashful Blvd. 850 LF. All other streets in the Pontilly area would be minor streets.

Based on the information provided, the proposed project is not an activity that would affect a federally listed threatened or endangered species; nor is there proposed or designated critical habitat present within this Parish.

Therefore, a "no effect" conclusion is appropriate. No further ESA coordination with the Service is necessary for the proposed action, unless there are changes in the scope or location of the proposed project or the project has not been initiated one year from the date of this letter.

If the proposed project has not been initiated within one year, follow-up coordination via this website should be accomplished prior to making expenditures because our threatened and endangered species information is updated annually. If the scope or location of the proposed project is changed, coordination via this website should occur as soon as such changes are made.

This finding completes project review by the Service for effects to Federal trust resources under our jurisdiction and currently protected by the ESA.

Please keep a copy of this pre-development coordination for your records. Do not send it to the Lafayette ES



Louisiana Ecological Services Office

ESA Technical Assistance Form

Project Type: Non-Emergency FEMA Project

Does the project propose to obtain, remodel, refurbish, or rehabilitate existing structures in such a way that does not significantly alter the present capacity or use, and does not alter surrounding land areas that were previously undisturbed? **Yes**

**Louisiana Ecological Services Office****ESA Technical Assistance Form**General Information**Name:** FEMA**Point of Contact:** Melanie Pitts**Address:** 1500 Main St**City:** Baton Rouge**State:** Louisiana**Zip Code:** 70802**Phone Number 1:** 504-427-8000**Phone Number 2:** _____**Email Address:** melanie.pitts@fema.dhs.govProposed Project Information**Project Reference ID:** 5954**Project Latitude:** 30.023192 **Project Longitude:** -90.039671**Project Parish(es):** Orleans

Project Description: The Pontilly Stormwater Mitigation Project has two components which work collectively to reduce the risk of local flooding by providing short term runoff storage and implementing the use of stormwater BMP's.

The first component would utilize detention strategies, porous paving, and best management practices (BMP) to alleviate the demand placed on the existing drainage systems that are undersized and unable to function properly during 1-3 year flood events. The project would incorporate empty lots as temporary detention areas to reduce the peak runoff discharge by allowing the stormwater to infiltrate into the ground rather than immediately going into the undersized drainage system. The parcels proposed for this work are scattered vacant lots where private residences existed prior to Hurricane Katrina. As a result of Hurricane Katrina and subsequent State and Federal programs, these properties have been demolished and are now under the jurisdiction of NORA. These stormwater lots and stormwater parks (multiple contiguous lots) would incorporate the planting of native vegetation to help clean stormwater and would be classed into either a dry stormwater lot or wetland stormwater lot.

In addition to the stormwater lots and parks, the second component involves utilizing street basins and urban bioswales. These structures would be installed and also planted with native vegetation to catch runoff flowing along street curbs and gutters. Midblock



Louisiana Ecological Services Office

ESA Technical Assistance Form

street basins would take the place of two on-street parking places and the corner street basins would require one on-street parking places on each street. Urban bioswales are proposed along Stephen Girard Avenue where the existing 42 foot wide street would be reduced in size to an overall width of 37 feet. These "road diets" would allow the installation of both corner and mid-block street basins.

An urban bioswale is also proposed at the southern perimeter of the Joseph Bartholomew Sr. Golf Course inside the Pontchartrain Park Neighborhood. The bioswale would be installed between the existing golf cart path and the street and would not impede play at the golf course or alter any character defining landscape features such as mature trees. Additional bioswales would be installed along the rear private property lines for parcels abutting railroad right of way along Peoples Avenue. These bioswales would reduce flooding in the rear yards by rerouting floodwater to planned stormwater lot locations. The Undertaking also proposes to widen the existing Dwyer Canal because it is located at a low point between the two neighborhoods and is currently underutilized. The widening would occur within previously disturbed right-of-way and the banks of the canal would be stabilized to prevent erosion.

Based on the information provided, the proposed project is not an activity that would affect a federally listed threatened or endangered species; nor is there proposed or designated critical habitat present within this Parish.

Therefore, a "no effect" conclusion is appropriate. No further ESA coordination with the Service is necessary for the proposed action, unless there are changes in the scope or location of the proposed project or the project has not been initiated one year from the date of this letter.

If the proposed project has not been initiated within one year, follow-up coordination via this website should be accomplished prior to making expenditures because our threatened and endangered species information is updated annually. If the scope or location of the proposed project is changed, coordination via this website should occur as soon as such changes are made.

This finding completes project review by the Service for effects to Federal trust resources under our jurisdiction and currently protected by the ESA.

Please keep a copy of this pre-development coordination for your records. Do not send it to the Lafayette ES Office.

If you have additional questions, please contact Louisiana ES Office Biological Science Technician at 337/291-3100 for further assistance.



Louisiana Ecological Services Office

ESA Technical Assistance Form

Project Type: **Non-Emergency FEMA Project**

Does the project propose to obtain, remodel, refurbish, or rehabilitate existing structures in such a way that does not significantly alter the present capacity or use, and does not alter surrounding land areas that were previously undisturbed? **No**

Does the project propose to reconstruct, resurface, or enhance infrastructure and/or cityscape (e.g. streets, sewers, sidewalks, etc.) within the current footprint of the infrastructure and in a manner that does not disturb previously undisturbed ground? **Yes**



FEMA

RECEIVED

JUL 15 2014

ARCHAEOLOGY

July 15, 2014

The proposed undertaking will have no adverse effect on historic properties. This effect determination could change should new information come to our attention.

Pam Breaux 8-6-14
Pam Breaux Date
State Historic Preservation Officer

Ms. 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, HMGP 1603-0178

Applicant: New Orleans Redevelopment Authority (NORA)

Undertaking: Pontilly Stormwater Mitigation Project, (HMGP Project #1603-0178)

Determination: No Adverse Effect to Historic Properties

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 Declaration:

FEMA-1603-DR-LA, dated August 29, 2005, as amended

FEMA, through its 404 Hazard Mitigation Grant Program (HMGP), proposes to fund the above referenced Undertaking as requested by the Applicant. FEMA is initiating Section 106 review, in accordance with the Louisiana State-Specific Programmatic Agreement among FEMA, 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 (ACTT), the Chitimacha Tribe of Louisiana (CTL), the Choctaw Nation of Oklahoma (CNO), the Jena Band of Choctaw Indians (JBCI), the Mississippi Band of Choctaw Indians (MBCI), the Seminole Tribe of Florida (STF), and the Advisory Council on Historic Preservation (ACHP) regarding FEMA's HMGP dated January 31, 2011, (2011 LA HMGP PA) and providing the SHPO and Tribes with the opportunity to consult on the proposed Undertaking.

The New Orleans Redevelopment Authority (NORA), in cooperation with the City of New Orleans, is proposing a HMGP funded stormwater mitigation project in the Pontchartrain Park and Gentilly Woods neighborhoods (Pontilly) that will reduce losses related to repetitive flooding. The proposed Undertaking was developed following a Hydrologic & Hydraulic Study conducted by CDM Smith, on behalf of the applicant, in 2012. The Undertaking proposed will utilize low impact development techniques to redirect rainwater into the canal. The six techniques (interventions) proposed include

the conversion of approximately sixty-seven vacant lots into rain garden parks, reshaping of Dwyer canal, construction of bioswales, curb bulb outs and catch basins, and the reshaping of the green spaces on Robert E. Lee right of way and Morrison Playspot. Renderings and maps and a spreadsheet of the interventions are attached.

The area of potential effect (APE) encompasses approximately 733 acres, including both the Ponchartrain Park and Gentilly Woods neighborhoods. The boundaries are defined by Norfolk Southern Railroad to the north; the Inner Harbor Navigational Canal levee to the east, Stephen Girard Ave. to the south, and the Norfolk Southern Railroad and Seminary Pl. to the west. This APE encompasses the area that will benefit from the proposed drainage interventions and also accounts for the view shed considerations for standing structures and areas of ground disturbance for potential archaeological deposits.

FEMA conducted background research using the Louisiana Office of Cultural Development's Cultural Resources Map and FEMA's previous surveys and Section 106 consultations within the APE in order to identify properties listed in or eligible for listing in the National Register of Historic Places (NRHP). Portions of the APE were included in previous APEs identified for several FEMA funded projects. SHPO and Tribal consultation was conducted for these projects. A synopsis of some of those projects and their respective determinations are identified in the table below.

Undertaking	Determination	SHPO concurrence	Tribal concurrence
Renovation of Ponchartrain Park Golf Course	No adverse effect	12/01/2009	ACCT-12/17/2009
Demolition and reconstruction of Joe Bartholomew clubhouse and golf card storage	No adverse effect	07/17/2012	No responses
Demolition and reconstruction of Wesley Borrow Stadium	Adverse effect to historic properties (standing structures)	MOA effective 8/03/2011	No tribal participation

According to the La Cultural Resources Map, no archaeological sites are recorded within the APE. Only two sites, 16OR219 and 16OR324, are recorded within .5 miles of the APE. The majority of the proposed APE is within the low probability zone for archaeological deposits. Portions of the north and south ends of the APE are within the high probability zone for archaeological deposits (see attached map). Two areas within the high probability areas of the APE have been previously surveyed for cultural resources with negative results: the Morrison Playspot green space (LDOA report 22-4313) and NORA lot at 5037 Columbia Street (LDOA report 22-3804). Soils in the area mostly consist of drained Allemands muck and Schriever clay, formed in marshes and backswamps. Historically, the area within the APE is shown as swampy and undeveloped until the mid-twentieth century. Hardee's 1878 map, entitled New Orleans, shows this general area as swamp. No improvements are shown in the project area on the 1937-1951 Sanborn Fire Insurance Map. The 1953 U.S.G.S. Spanish Fort quadrangle also depicts the project area as unimproved or undeveloped. Between 1955 and 1957, aerial photographs show the Barrow Stadium baseball field being constructed, with the remainder of the project area surrounded by undeveloped land or recently leveled or graded land. The area within the APE has been extensively disturbed by construction starting from the mid-twentieth century. The APE exhibits a low potential for intact archaeological

A comprehensive standing structure survey of the APE was not conducted for this Undertaking. FEMA and SHPO surveyed the APE in the fall of 2005, as part of an effort to identify historic properties following hurricane Katrina. FEMA determined that a portion of the Ponchartrain Park neighborhood is eligible for the NRHP under Criterion A for its significance related to African-American community development within the City of New Orleans from 1955 through 1957. SHPO concurred with this finding in a letter dated December 8, 2005. No other historic districts were identified within the APE at the time of the survey (see attached memo from Coastal Environmental Inc.). FEMA has reevaluated the Ponchartrain Park historic district several times since 2005 in order to facilitate the Section 106 review for Undertakings within the area (See above referenced consultations). FEMA has also funded multiple Undertakings within the APE including private property demolitions (2005-2010) and rebuilding of Coghill Elementary School (2007). The Southern University (SUNO) campus is also located within the APE. One building, the Administration building, has been determined by FEMA to be eligible for listing in the APE. The Undertaking does not have the potential to visually affect the SUNO campus or Administration building.

The interventions proposed are designed to be low impact and they are proposed for areas of existing green spaces and asphalt. The character of the existing landscape will remain much the same and the drainage will have a positive effect on the function of the neighborhood. Additionally, most of the interventions will occur outside the boundaries of the Ponchartrain Park Historic District. FEMA has determined they will not alter the characteristics of the Ponchartrain Historic District that qualify it for listing in the NRHP. The district is defined by the park and golf courses, curvilinear streets, and post WWII housing. The green spaces within the district and the lots left vacant following the Road Home demolition program leave ample space for the installation of the proposed mitigation measures. The introduction of additional vegetation and trees will not adversely affect the integrity of location, setting, materials, workmanship, design, feeling or association.

We look forward to your concurrence with this determination. Should you have any questions or need additional information regarding this Undertaking, please contact Brandon Badinger at Brandon.badinger@fema.dhs.gov or 225-267-2744 or Amber Martinez at amber.martinez2@fema.dhs.gov or 504-256-3801.

Sincerely,



Linda L. Depa, REM, CESCO
Environmental Historic Preservation Team Lead
Baton Rouge Processing Center

Enclosures

**U.S. Department of Homeland Security
Federal Emergency Management Agency
Photos of proposed area Robert E. Lee right of way green space intervention**



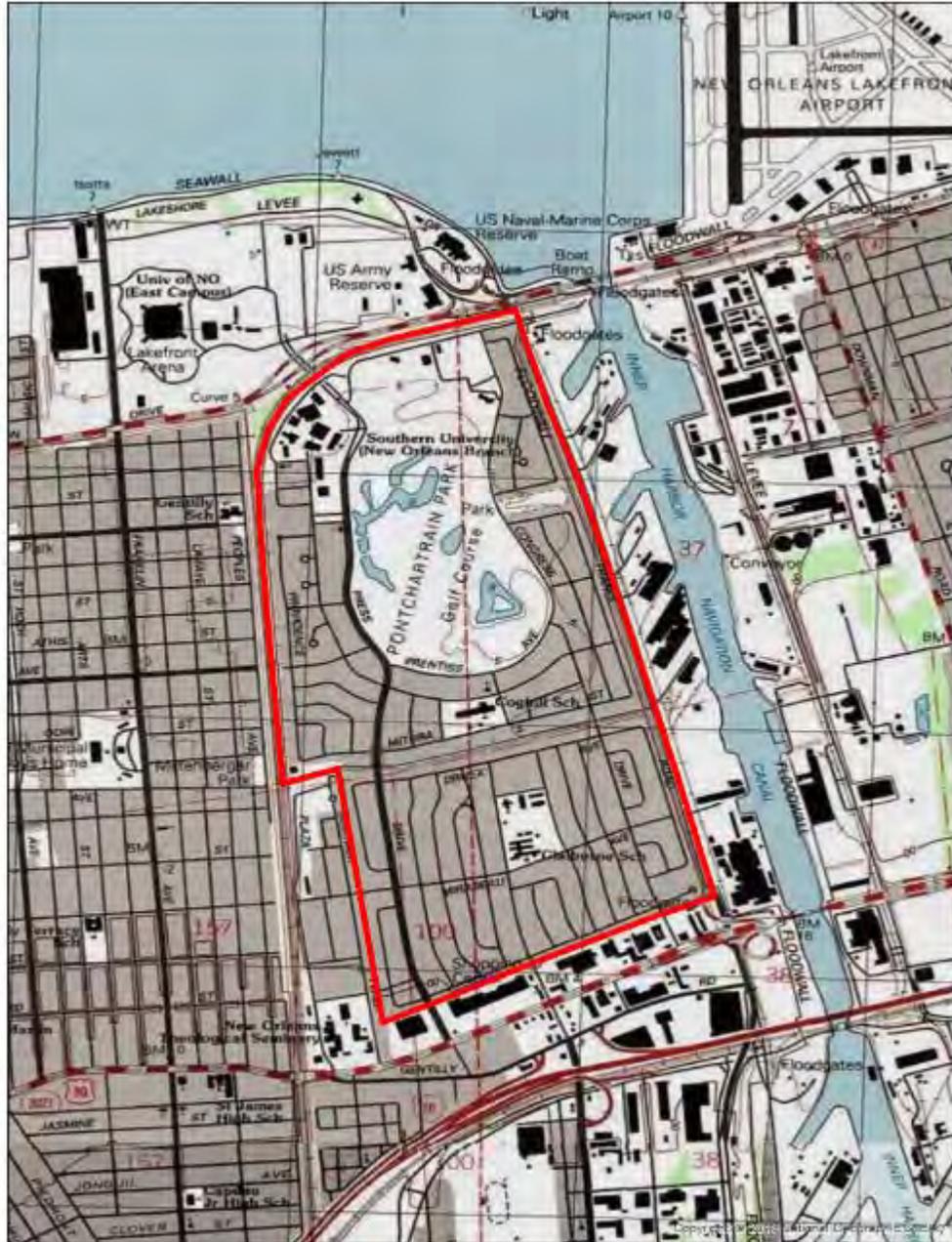
Above is the area proposed for Robert E. Lee greenspace intervention on the west side of the golf course (camera facing east). Below is the area proposed for the Robert E. Lee Greenspace on the east side of the golf course (camera facing east). Images from Google maps.





Historic aerial photograph of Pontchartrain Park, 1957 (New Orleans Public Library)

**U.S. Department of Homeland Security
Federal Emergency Management Agency
Section 106 Review: APE Map**



**U.S. Department of Homeland Security
Federal Emergency Management Agency
Section 106 Review: Archaeological Probability Map**



Legend

-  APE
-  Alleyway
-  Bioswale
-  Curb Bulb-Out
-  Green Space
-  Dwyer Canal
-  NORA Lot
-  High Prob - Arch

Intervention	Address/Location	Archaeology Probability	Historic District
Greenspace	Morrison Playspot	High Prob, previously surveyed and no historic properties found	Within Pontchartrain Park
Greenspace	Robert E Lee ROW	High Prob	None
Dwyer Canal	E/W from Railroad to France Road	Low Prob	None
Bioswale	Along Prentiss Ave	Low Prob	Within Pontchartrain Park
Bioswale	Along Railroad	High Prob	None
Bioswale	Along Mirabeau Ave	Low Prob	None
Bioswale	Along Stephen Girard Ave	Low Prob	None
Alleyway	Between St. Ferdinand Dr and Press Dr, North of Mirabeau	Low Prob	None
Alleyway	Between Press Dr and Montegut Dr, North of Mirabeau	Low Prob	None
Alleyway	Between Montegut Dr and Feliciana Dr, North of Mirabeau	Low Prob	None
Alleyway	Between Feliciana Dr and Kendall Dr, North of Mirabeau	Low Prob	None
Alleyway	Between Kendall Dr and Metropolitan Dr, North of Mirabeau	Low Prob	None
Alleyway	Between Metropolitan Dr and Louisa Dr, North of Mirabeau	Low Prob	None
Alleyway	Between Piety Dr and Desire Dr, North of Mirabeau	Low Prob	None
Alleyway	Between Gallier Dr and Congress Dr, North of Mirabeau	Low Prob	None
Alleyway	Between Congress Dr and DeBore Dr, North of Mirabeau	Low Prob	None
Alleyway	Between DeBore Dr and Pauline Dr, North of Mirabeau	Low Prob	None
Alleyway	Between Press Dr and Montegut Dr, South of Mirabeau	Low Prob	None
Alleyway	Between Montegut Dr and Feliciana Dr, South of Mirabeau	Low Prob	None
Alleyway	Between Feliciana Dr and Kendall Dr, South of Mirabeau	Low Prob	None
Alleyway	Between General Early Dr and Mark Twain Dr, South of Mirabeau	Low Prob	None
Alleyway	Between Desire Dr and Gallier Dr, South of Mirabeau	Low Prob	None
Alleyway	Between Gallier Dr and Congress Dr, South of Mirabeau	Low Prob	None
NORA Lot	5157 DESIRE DR	Low Prob	None
NORA Lot	4976 LOUISA DR	Low Prob	None
NORA Lot	4982 LOUISA DR	Low Prob	None
NORA Lot	4937 KENDALL DR	Low Prob	None
NORA Lot	5169 METROPOLITAN DR	Low Prob	None
NORA Lot	5178 METROPOLITAN DR	Low Prob	None
NORA Lot	4408 MITHRA ST	Low Prob	None
NORA Lot	4616 MITHRA ST	Low Prob	None
NORA Lot	5016 MITHRA ST	Low Prob	None
NORA Lot	5117 PAULINE DR	Low Prob	None
NORA Lot	5125 PAULINE DR	Low Prob	None
NORA Lot	5133 PAULINE DR	Low Prob	None
NORA Lot	6401 PAULINE DR	High Prob	None
NORA Lot	6533 PAULINE DR	High Prob	None
NORA Lot	4975 PIETY DR	Low Prob	None
NORA Lot	5121 PIETY DR	Low Prob	None
NORA Lot	5131 PIETY DR	Low Prob	None
NORA Lot	5142 PIETY DR	Low Prob	None
NORA Lot	5008 MEXICO ST	High Prob	Within Pontchartrain Park
NORA Lot	5037 COLUMBIA ST	High Prob	None
NORA Lot	4900 CONGRESS DR	Low Prob	None
NORA Lot	4963 CONGRESS DR	Low Prob	None
NORA Lot	4971 CONGRESS DR	Low Prob	None
NORA Lot	4974 CONGRESS DR	Low Prob	None
NORA Lot	4965 DEBORE CIR	Low Prob	None
NORA Lot	5067 DEBORE CIR	Low Prob	None
NORA Lot	6421 DEBORE DR	High Prob	Within Pontchartrain Park
NORA Lot	4952 DESIRE DR	Low Prob	None
NORA Lot	4953 DESIRE DR	Low Prob	None
NORA Lot	4501 DREUX AVE	Low Prob	None
NORA Lot	4611 DREUX AVE	Low Prob	None
NORA Lot	4661 DREUX AVE	Low Prob	None
NORA Lot	4662 DREUX AVE	Low Prob	None
NORA Lot	4900 DREUX AVE	Low Prob	None
NORA Lot	4909 DREUX AVE	Low Prob	None
NORA Lot	5049 DREUX AVE	Low Prob	None
NORA Lot	4900 FELICIANA DR	Low Prob	None
NORA Lot	5101 FELICIANA DR	Low Prob	None
NORA Lot	6429 DEBORE DR	High Prob	Within Pontchartrain Park
NORA Lot	4929 KENDALL DR	Low Prob	None
NORA Lot	5001 MADRID ST	Low Prob	None
NORA Lot	5400 FELICIANA DR	Low Prob	None
NORA Lot	5445 ST FERDINAND DR	Low Prob	None
NORA Lot	5034 MIRABEAU AVE	Low Prob	None
NORA Lot	4551 MONTEGUT DR	Low Prob	None
NORA Lot	4611 METROPOLITAN DR	Low Prob	None
NORA Lot	4318 MIRABEAU AVE	Low Prob	None
NORA Lot	4516 MIRABEAU AVE	Low Prob	None
NORA Lot	4723 PLAUCHE CIR	Low Prob	None
NORA Lot	4733 PLAUCHE CIR	Low Prob	None

Proposed Interventions
Address list

Intervention	Address/Location	Archaeology Probability	Historic District
NORA Lot	4738 PLAUCHE CIR	Low Prob	None
NORA Lot	4739 PLAUCHE CIR	Low Prob	None
NORA Lot	4830 FELICIANA DR	Low Prob	None
NORA Lot	4836 FELICIANA DR	Low Prob	None
NORA Lot	4868 FELICIANA DR	Low Prob	None
NORA Lot	4816 KENDALL DR	Low Prob	None
NORA Lot	4739 LOUISA DR	Low Prob	None
NORA Lot	4700 MARK TWAIN DR	Low Prob	None
NORA Lot	4955 STEPHEN GIRARD AVE	High Prob	None
NORA Lot	4109 DREUX AVE	Low Prob	None
NORA Lot	6400 PAULINE DR	High Prob	Within Pontchartrain Park
NORA Lot	3930 MITHRA ST	Low Prob	None
NORA Lot	5068 PRESS DR	Low Prob	None
NORA Lot	5095 ST FERDINAND DR	Low Prob	None
NORA Lot	4864 DESIRE DR	Low Prob	None
NORA Lot	4810 DESIRE DR	Low Prob	None
NORA Lot	4800 DESIRE DR	Low Prob	None
Curb Bulb-out	Intersection of Campus Blvd and Emmett W Bashful Blvd, NW Corner	High Prob	None
Curb Bulb-out	Intersection of Campus Blvd and Emmett W Bashful Blvd, SW Corner	High Prob	None
Curb Bulb-out	Intersection of Press Dr and Emmett W Bashful Blvd, NW Corner	High Prob	None
Curb Bulb-out	Intersection of Press Dr and Emmett W Bashful Blvd, NE Corner	High Prob	Within Pontchartrain Park
Curb Bulb-out	Intersection of Press Dr and Emmett W Bashful Blvd, SE Corner	High Prob	Within Pontchartrain Park
Curb Bulb-out	Intersection of Debore Dr and Frankfort St, N Corner	High Prob	None
Curb Bulb-out	Intersection of Debore Dr and Frankfort St, SW Corner	High Prob	Within Pontchartrain Park
Curb Bulb-out	Intersection of Debore Dr and Frankfort St, SE Corner	High Prob	Within Pontchartrain Park
Curb Bulb-out	Intersection of Debore Dr and Mexico St, NW Corner	High Prob	Within Pontchartrain Park
Curb Bulb-out	Intersection of Debore Dr and Mexico St, NE Corner	High Prob	Within Pontchartrain Park
Curb Bulb-out	Intersection of De Bore Dr and Madrid St, N Corner	Low Prob	None
Curb Bulb-out	Intersection of De Bore Dr and Madrid St, SW Corner	Low Prob	Within Pontchartrain Park
Curb Bulb-out	Intersection of De Bore Dr and Madrid St, SE Corner	Low Prob	Within Pontchartrain Park
Curb Bulb-out	Intersection of De Bore Dr and Prentiss Ave, NW Corner	Low Prob	Within Pontchartrain Park
Curb Bulb-out	Intersection of De Bore Dr and Prentiss Ave, NE Corner	Low Prob	Within Pontchartrain Park
Curb Bulb-out	Intersection of De Bore Dr and Prentiss Ave, SW Corner	Low Prob	Within Pontchartrain Park
Curb Bulb-out	Intersection of De Bore Dr and Prentiss Ave, SE Corner	Low Prob	Within Pontchartrain Park
Curb Bulb-out	Intersection of Congress Dr and Mendez St, NW Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Mendez St, NE Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Mendez St, SW Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Mithra St, NE Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Mithra St, NW Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Mithra St, SE Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Mithra St, SW Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Mendez St, SE Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Dreux Ave, NW Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Dreux Ave, NE Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Dreux Ave, SW Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Dreux Ave, SE Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and DeBore Cir N, NE Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and DeBore Cir N, SE Corner	Low Prob	None
Curb Bulb-out	Intersection of Piety Dr and Pineda St, NW Corner	Low Prob	None
Curb Bulb-out	Intersection of Piety Dr and Pineda St, SW Corner	Low Prob	None
Curb Bulb-out	Intersection of Louisa Dr and Pineda St, NE Corner	Low Prob	None
Curb Bulb-out	Intersection of Louisa Dr and Pineda St, SE Corner	Low Prob	None
Curb Bulb-out	Intersection of Louisa Dr and Mirabeau Ave, NW Corner	Low Prob	None
Curb Bulb-out	Intersection of Louisa Dr and Mirabeau Ave, NE Corner	Low Prob	None
Curb Bulb-out	Intersection of Louisa Dr and Mirabeau Ave, SW Corner	Low Prob	None
Curb Bulb-out	Intersection of Louisa Dr and Mirabeau Ave, SE Corner	Low Prob	None
Curb Bulb-out	Intersection of Piety Dr and Mirabeau Ave, NW Corner	Low Prob	None
Curb Bulb-out	Intersection of Piety Dr and Mirabeau Ave, NE Corner	Low Prob	None
Curb Bulb-out	Intersection of Piety Dr and Mirabeau Ave, SE Corner	Low Prob	None
Curb Bulb-out	Intersection of Piety Dr and Mirabeau Ave, SW Corner	Low Prob	None
Curb Bulb-out	Intersection of Mirabeau Ave and Gaines St, NE Corner	Low Prob	None
Curb Bulb-out	Intersection of Mirabeau Ave and Gaines St, SE Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and DeBore Cir S, NE Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and DeBore Cir S, SE Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Mirabeau Ave, NW Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Mirabeau Ave, NE Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Mirabeau Ave, SW Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Mirabeau Ave, SE Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Plauche Cir, NE Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Plauche Cir, SE Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Plauche Cir, W Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Pauline Dr, NE Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Pauline Dr, SE Corner	Low Prob	None
Curb Bulb-out	Intersection of Congress Dr and Stephen Girard Ave, NW Corner	High Prob	None
Curb Bulb-out	Intersection of Congress Dr and Stephen Girard Ave, NE Corner	High Prob	None
Curb Bulb-out	Intersection of Congress Dr and Stephen Girard Ave, SW Corner	High Prob	None

Intervention	Address/Location	Archaeology Probability	Historic District
Curb Bulb-out	Intersection of Congress Dr and Stephen Girard Ave, SE Corner	High Prob	None
Curb Bulb-out	Intersection of Press Dr and St. Ferdinand Dr, NW Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and St. Ferdinand Dr, SW Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and Mirabeau Ave, NE Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and Mirabeau Ave, SE Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and Mirabeau Ave, NW Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and Mirabeau Ave, SW Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and St. Ferdinand Dr S, NW Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and St. Ferdinand Dr S, SW Corner	Low Prob	None
Curb Bulb-out	Intersection of Louisa Dr and Stephen Girard Ave, NW Corner	High Prob	None
Curb Bulb-out	Intersection of Louisa Dr and Stephen Girard Ave, NE Corner	High Prob	None
Curb Bulb-out	Intersection of Louisa Dr and Stephen Girard Ave, SE Corner	High Prob	None
Curb Bulb-out	Intersection of Louisa Dr and Stephen Girard Ave, SW Corner	High Prob	None
Curb Bulb-out	Intersection of Press Dr and Stephen Girard Ave, NE Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and Stephen Girard Ave, SE Corner	High Prob	None
Curb Bulb-out	Intersection of Press Dr and Stephen Girard Ave, SW Corner	High Prob	None
Curb Bulb-out	Intersection of Press Dr and Stephen Girard Ave, NW Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and Dreux Ave, SE Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and Dreux Ave, NE Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and Dreux Ave, SW Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and Dreux Ave, NW Corner	Low Prob	None
Curb Bulb-out	Intersection of Feliciana Dr and Mithra St, SE Corner	Low Prob	None
Curb Bulb-out	Intersection of Feliciana Dr and Mithra St, NW Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and Mithra St, SE Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and Mithra St, NE Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and Mithra St, SW Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and Mithra St, NW Corner	Low Prob	None
Curb Bulb-out	Intersection of Providence Pl and St. Ferdinand Dr, W Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and Prentiss Ave, SW Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and Prentiss Ave, NE Corner	Low Prob	Within Pontchartrain Park
Curb Bulb-out	Intersection of Press Dr and Prentiss Ave, NW Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and Pressburg St, NE Corner	Low Prob	Within Pontchartrain Park
Curb Bulb-out	Intersection of Press Dr and Pressburg St, SE Corner	Low Prob	Within Pontchartrain Park
Curb Bulb-out	Intersection of Press Dr and Pressburg St, NW Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and Pressburg St, SW Corner	Low Prob	None
Curb Bulb-out	Intersection of Campus Blvd and Pressburg St, NE Corner	Low Prob	None
Curb Bulb-out	Intersection of Press Dr and Emmett W Bashful Blvd, SW Corner	High Prob	None
Curb Bulb-out	Intersection of Campus Blvd and Pressburg St, NW Corner	Low Prob	None
Curb Bulb-out	Intersection of Campus Blvd and Pressburg St, SE Corner	Low Prob	None
Curb Bulb-out	Intersection of Campus Blvd and Pressburg St, SW Corner	Low Prob	None

Response to List of Potentially Eligible National Register Historic Districts in New Orleans, Louisiana

List provided to FEMA by Earth Search, Inc. 11/7/05

Potential Districts

Country Club (A)

Boundaries: Metarie Road, I-10, Country Club Drive, Fleur de Lis drive

Period of Construction: 1940-1960

This area had previously been evaluated by a FEMA and SHPO representative, both of whom meet or exceed the 36 CFR 61 SOI Professional Qualification Standards for architectural history. During that windshield survey, it was determined that the Colonial Revival-style dwellings did not appear to meet the threshold of architectural or historical significance necessary to be considered eligible for listing in the National Register of Historic Places. Additionally, there were too many non-contributing elements, mainly in the form of modern intrusions, in the area to allow it to meet one or more of the National Register eligibility criteria, as they are applied to districts.

Derby Club (B)

Boundaries: Belfort Avenue, N. Rendon Street, DeSaix Boulevard, Gentilly Boulevard

Period of Construction: 1900-1950

This area had previously been evaluated by a FEMA and SHPO representative, both of whom meet or exceed the 36 CFR 61 SOI Professional Qualification Standards for architectural history. During that windshield survey, it was determined that the residences in this neighborhood did not appear to meet the threshold of architectural or historic significance necessary to be considered eligible for listing in the National Register of Historic Places. Additionally, the area did not appear to convey the distinct character necessary to be considered eligible for listing in the National Register as an historic district.

Dwyer/Crowder (C)

Boundaries: Dwyer Canal, Bundy Road, Grant Street, Crowder Boulevard

Period of Construction: 1940-1950

This neighborhood is located in New Orleans East, and from its dates appears to be a very early subdivision for that part of the city. It may meet the threshold of significance necessary for listing in the National Register as an historic district, if in addition to its physical integrity, supporting documentation can be located to support its eligibility under Criterion A for such things as community planning, its importance and place at the beginning of the rapid WWII/post-WWII-era expansion of the city boundaries, etc.

Edgewood Park (D)

Boundaries: Gentilly Boulevard, Clematis Street, Peoples Avenue, I-10

Period of Construction: 1920-1950

This area had previously been evaluated by a FEMA and SHPO representative, both of whom meet or exceed the 36 CFR 61 SOI Professional Qualification Standards for

architectural history. It was determined that the area described above, as well as part of the area designated in this list as Lower Gentilly (O), presented a cohesive district that includes all of Edgewood Park, and extends as far west into Lower Gentilly as Fairmont Drive. The area west of Fairmont Drive in Lower Gentilly was felt to be less cohesive and have some visual gaps. So, based upon those observations, FEMA has determined that the area bounded by Peoples Avenue, I-10, I-610, Fairmont Drive, and Gentilly Boulevard, due to its visual cohesiveness, and fine representative examples of cottages with English, Tudor, Spanish, and Mediterranean Revival detail that were so prevalent in New Orleans during the period of the city's development, the area FEMA has designated as Edgewood Park is eligible for listing in the National Register as an historic district.

Fillmore (E)

Boundaries: Robert E. Lee Boulevard, Vermillion Street, Fillmore Avenue, Wilton Street, and the London Avenue Canal

Period of Construction: 1940-1960

This area had previously been evaluated by a FEMA and SHPO representative, both of whom meet or exceed the 36 CFR 61 SOI Professional Qualification Standards for architectural history. It was determined that this area's architectural stock did not appear to have the architectural or historical significance necessary to be eligible for listing in the National Register as an historic district.

Fountainebleu (F)

Boundaries: Carrollton Avenue, Walmsey Street, S. Claiborne Avenue, Broadway

Period of Construction: 1920-1930

This area had previously been evaluated by a FEMA and SHPO representative, both of whom meet or exceed the 36 CFR 61 SOI Professional Qualification Standards for architectural history. It was determined that an area with similar boundaries to those described above was eligible for listing in the National Register, as an extension of the Carrollton Historic District.

The expanded Carrollton boundaries would extend southeast of the existing historic district from Lowerline Street, be bounded to the southwest by Claiborne Avenue, which also constitutes the northern boundary of the Uptown Historic District, be roughly bounded to the southeast by Versailles Boulevard, and roughly bounded to the northeast by the southwest side of Pritchard. The neighborhood is significant for its collection of modest to higher-end residences with exotic revival details. Although this area does have a somewhat distinct character, it was felt that its character was closer to that of the Carrollton Historic District, rather than that of the Uptown or Broadmoor historic districts. Certainly, if at some point in the future someone should wish to redefine Fountainebleau as an individual historic district and can support that assertion, they are free to work with the SHPO.

Gentilly Heights (G)

Boundaries: Elysian Fields Avenue, Gentilly Boulevard, St. Anthony Street, Mirabeau Avenue

Period of Construction: 1930-50

This area had previously been evaluated by a FEMA and SHPO representative, both of whom meet or exceed the 36 CFR 61 SOI Professional Qualification Standards for architectural history. It was determined that this area's architectural stock did not appear to have the architectural or historical significance necessary to be eligible for listing in the National Register as an historic district.

Gentilly Sugar Hill (H)

Boundaries: Elysian Fields Avenue, Gentilly Boulevard, St. Anthony Street, Mirabeau Avenue

Period of Construction: 1920-1950

It was determined at that time that the presence of I-610, a major highway which bisects this neighborhood from east to west, constituted too large an intrusion for Gentilly Sugar Hill to be eligible for listing in the National Register as an historic district.

Gentilly Woods (I)

Boundaries: Pauline Street, Stephen Giraud, St. Ferdinand Street, Dreux Avenue

Period of Construction: 1950-1960

This area had previously been evaluated by a FEMA and SHPO representative, both of whom meet or exceed the 36 CFR 61 SOI Professional Qualification Standards for architectural history. Based on evaluation under Criterion C, it was determined that the Gentilly Woods neighborhood did not have the significance necessary for listing in the National Register of Historic Places. If supporting documentation can be identified to support its significance under Criterion A, it could be determined to be eligible for listing as a counterpoint to Pontchartrain Park in the areas of community planning and racial history in the City of New Orleans.

Holly Grove (J)

Boundaries: I-10, Tulane Avenue (Highway 61), New Orleans Country Club, Jefferson Parrish Line

Period of Construction: 1890-1930

This area had previously been evaluated by a FEMA and SHPO representative, both of whom meet or exceed the 36 CFR 61 SOI Professional Qualification Standards for architectural history. It was determined that this area's architectural stock did not appear to have the architectural or historical significance necessary to be eligible for listing in the National Register as an historic district.

Lake View (K)

Boundaries: I-610, West End Boulevard, Robert E. Lee Boulevard, Orleans Avenue

Period of Construction: 1930-1960

This area had previously been evaluated by a FEMA and SHPO representative, both of whom meet or exceed the 36 CFR 61 SOI Professional Qualification Standards for architectural history. This area was one of the most severely damaged in the City of New Orleans as a result of flooding after Hurricane Katrina. As a result, it was determined at the time of the survey that the area did not retain the physical integrity necessary to be eligible for listing in the National Register as an historic district.

Lake Vista (L)

Boundaries: Robert E. Lee Boulevard, Orleans Outfall Canal, Lakeshore Drive, Beauregard Avenue

Period of Construction: 1930-1950

This area had previously been evaluated by a FEMA and SHPO representative, both of whom meet or exceed the 36 CFR 61 SOI Professional Qualification Standards for architectural history. At that time, it was determined that while the unique layout of the neighborhood was still intact, very few original structures remained, due to numerous teardowns and the reconstruction of McMansions on the lots. Of the very few original neighborhood residences that could be identified as dating to the 1930-1950 period, most had been significantly altered. Thus, it was determined that while the Lake Vista neighborhood was almost unique in the City of New Orleans with regard to its street layout, the alteration undergone by the rest of its built environment had compromised its ability to convey integrity of place, workmanship, and time too severely for it to be eligible for listing in the National Register as an historic district.

London Avenue (M)

Boundaries: St. Bernard Avenue, I-10, Frenchman Street, Florida Avenue, Agriculture Street, North Broad Avenue

Period of Construction: 1900-1940

This area had previously been evaluated by a FEMA and SHPO representative, both of whom meet or exceed the 36 CFR 61 SOI Professional Qualification Standards for architectural history. It was determined that this area's architectural stock did not appear to have the architectural or historical significance necessary to be eligible for listing in the National Register as an historic district. However, buildings within the neighborhood such as the St. Augustine High School and Nora Navra Library will be evaluated for individual eligibility for listing in the National Register, should a FEMA-funded undertaking with the potential to affect these properties come about.

Louisiana Avenue Parkway (N)

Boundaries: S. Broad Street, Toledano Street, S. Claiborne Avenue, Broadmoor Historic District Northern Boundary

Period of Construction: 1910-1940

This area had previously been evaluated by a FEMA and SHPO representative, both of whom meet or exceed the 36 CFR 61 SOI Professional Qualification Standards for architectural history. It was determined that this area's architectural stock did not appear to have the architectural or historical significance necessary to be eligible for listing in the National Register as an historic district.

Lower Gentilly (O)

Boundaries: Clematis Street, Gentilly Boulevard, I-610, Elysian Fields

Period of Construction: 1930-1950

This area had previously been evaluated by a FEMA and SHPO representative, both of whom meet or exceed the 36 CFR 61 SOI Professional Qualification Standards for architectural history. It was determined that this area's architectural stock did not appear

to have the architectural or historical significance necessary to be eligible for listing in the National Register as an historic district.

Pontchartrain Park (P)

Boundaries: Providence Place, Mithra Street, Pauline Drive

Period of Construction: 1950-1960

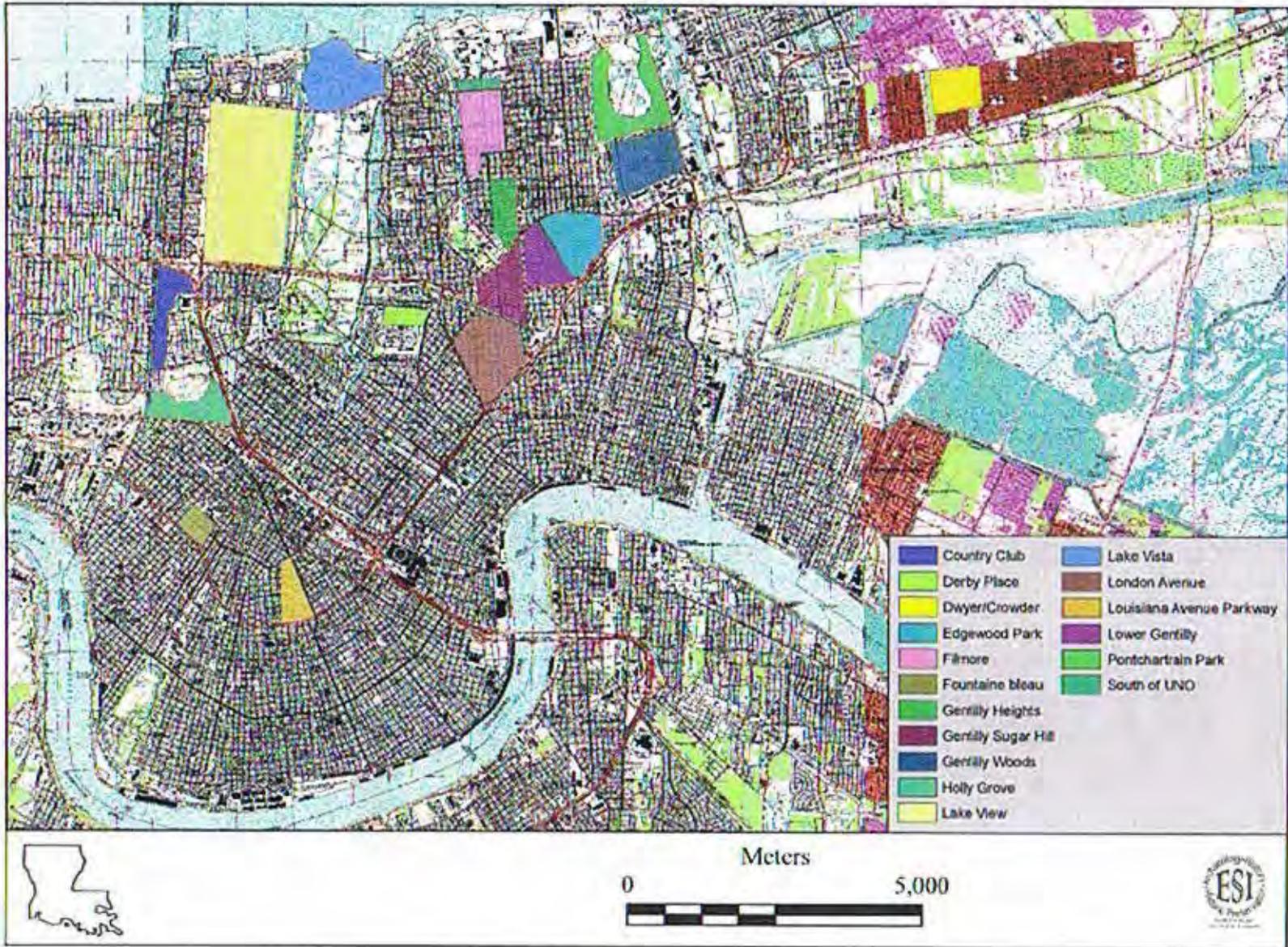
This area had previously been evaluated by a FEMA and SHPO representative, both of whom meet or exceed the 36 CFR 61 SOI Professional Qualification Standards for architectural history. It was determined that a portion of the Pontchartrain Park neighborhood was eligible for listing in the National Register as an historic district under Criterion A, for its significance in the history of community development and racial relations in the City of New Orleans. The suggested boundary for the historic district, however, is fairly small, due to the amount of alteration most of the neighborhood's residences have undergone. Historic district boundaries which include the golf course and some of the neighborhood on the east side of the golf course were determined to be the most visually intact, and thus best able to communicate a sense of time and place for the historic district.

South of UNO (Q)

Boundaries: New York Street (Leon C. Simon Drive), Vermillion Street, Robert E. Lee Boulevard, London Avenue Canal

Period of Construction:

This area had previously been evaluated by a FEMA and SHPO representative, both of whom meet or exceed the 36 CFR 61 SOI Professional Qualification Standards for architectural history. It was determined that this area's architectural stock did not appear to have the architectural or historical significance necessary to be eligible for listing in the National Register as an historic district. Additionally, it is felt that if the residences in this area were originally constructed as military housing, their historic context has been irrevocably lost through the disappearance of the military complex with which they were originally associated.



New Orleans Districts

RECEIVED
SEP 30 2013



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

SEP 26 2013

REPLY TO
ATTENTION OF

Operations Division
Operations Manager,
Completed Works

Mr. Louis Jackson
COM Smith Inc.
1515 Poydras Street, Suite 1350
New Orleans, Louisiana 70112

Dear Mr. Jackson:

This is in response to the Solicitation of Views request dated July 17, 2013, on behalf of the New Orleans Redevelopment Authority, concerning the Pontilly Stormwater Mitigation Project, at New Orleans, Louisiana, in Orleans Parish.

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.

You are advised that you must obtain a permit from the Orleans Levee District for any work within 300 feet of a federal flood control structure such as a floodwall. Performance of all subsurface work within this area is usually restricted when the stage of the Mississippi River is above elevation +11.0 feet on the Carrollton gage, at New Orleans, Louisiana. As a consequence, subsurface work should be scheduled for performance during the low-water period (typically June through November) to avoid delays in performance of the proposed work. You must apply by letter to the Orleans Levee District including full-size construction plans, cross sections, and details of the proposed work. Concurrently with your application to the Orleans Levee District, you must also forward a copy of your letter and plans to Operations Division, Operations Manager for Completed Works of the Corps of Engineers and to the Office of Coastal Protection and Restoration Authority (CPRA) in Baton Rouge for their review and comments concerning the proposed work.

Based on review of recent maps, aerial photography, and soils data, we have determined that these properties are not in wetlands 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 these sites.

You are advised that this approved 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 2013-02169-SQ. This will allow us to more easily locate records of previous correspondence, and thus provide a quicker response.

Sincerely,



Karen L. Clement
Solicitation of Views Manager

•
" **Pellegrin, Amelia (Ravin)**

From: Jackson, Louis L. (New Orleans)
Sent: Thursday, August 22, 2013 8:40 AM
To: Pellegrin, Amelia (Ravin)
Subject: FW: DEQ SOV 130807/1495 Pontilly Stormwater Mitigation Project

Additional response

Louis L. Jackson, P.E. | Senior Project Manager | CDM Smith
1515 Poydras Street, Suite 1350 | New Orleans, Louisiana 70112 | Tel: 504-799-1100 | Nassau County: 516-535-5703
Cell: 504-202-8701 | Fax: 504-799-1111 | jacksonll@cdmsmith.com | www.cdmsmith.com

From: Linda (Brown) Hardy [mailto:Linda.Hardy@la.gov]
Sent: Thursday, August 22, 2013 9:35 AM
To: Jackson, Louis L. (New Orleans)
Cc: Lynn Wilbanks
Subject: DEQ SOY 130807/1495 Pontilly Stormwater Mitigation Project

August 22, 2013

Louis L. Jackson, P.E., Senior Project
Manager
CDM Smith Inc.
1515 Poydras Street, Suite 1350
New Orleans, LA 70112
jacksonll@cdmsmith.com

RE: 130807/1495 Pontilly Stormwater Mitigation Project
Hazard Mitigation Grant
Orleans Parish

Dear Mr. Jackson:

The Department of Environmental Quality (LDEQ), Business and Community Outreach Division has received your request for comments on the above referenced project.

After reviewing your request, the Department has no objections based on the information provided in your submittal. However, for your information, the following general comments have been included. Please be advised that if you should encounter a problem during the implementation of this project, you should immediately notify LDEQ's Single-Point-of-contact (SPOC) at (225) 219-3640.

- Please take any necessary steps to obtain and/or update all necessary approvals and environmental permits regarding this proposed project.
- If your project results in a discharge to waters of the state, submittal of a Louisiana Pollutant Discharge Elimination System (LPDES) application may be necessary.
- If the project results in a discharge of wastewater to an existing wastewater treatment system, that wastewater treatment system may need to modify its LPDES permit before accepting the additional wastewater.

- All precautions should be observed to control nonpoint source pollution from construction activities. LDEQ has stormwater general permits for construction areas equal to or greater than one acre. It is recommended that you contact the LDEQ Water Permits Division at (225) 219-9371 to determine if your proposed project requires a permit.
- If your project will include a sanitary wastewater treatment facility, a Sewage Sludge and Biosolids Use or Disposal Permit application or Notice of Intent must be submitted no later than January 1, 2013. Additional information may be obtained on the LDEQ website at <http://www.deg.louisiana.gov/portal/tabid/2296/Default.aspx> or by contacting the LDEQ Water Permits Division at (225) 219- 9371.
- If any of the proposed work is located in wetlands or other areas subject to the jurisdiction of the U.S. Army Corps of Engineers, you should contact the Corps directly regarding permitting issues. If a Corps permit is required, part of the application process may involve a water quality certification from LDEQ.
- All precautions should be observed to protect the groundwater of the region.
- Please be advised that water softeners generate wastewaters that may require special limitations depending on local water quality considerations. Therefore if your water system improvements include water softeners, you are advised to contact the LDEQ Water Permits to determine if special water quality-based limitations will be necessary.
- Any renovation or remodeling must comply with LAC 33:111.Chapter 28, Lead-Based Paint Activities; LAC 33:111.Chapter 27, Asbestos-Containing Materials in Schools and State Buildings (includes all training and accreditation); and LAC 33:111.5151, Emission Standard for Asbestos for any renovations or demolitions.
- 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.

Currently, Orleans Parish is classified as attainment with the National Ambient Air Quality Standards and has no general conformity determination obligations.

Please send all future requests to my attention. If you have any questions, please feel free to contact me at (225) 219-3954 or by email at linda.hardy@la.gov.

Sincerely,



Technical Assistant to the Deputy Secretary
Louisiana Department of Environmental Quality
Office of the Secretary
P.1. Box 4301
Baton Rouge, LA 70821-4301
Ph: (225) 219-3954
Fax: (225) 219-3971
Email: linda.hardy@la.gov

BOBBY JINDAL
GOVERNOR



STEPHEN CHUSTZ
SECRETARY

State of Louisiana
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF COASTAL MANAGEMENT

RECEIVED
SEP 30 2013

September 27, 2013

CDM SMITH
1515 POYDRAS ST SUITE 1350
NEW ORLEANS, LA 70112
Attn: Louis Jackson

RE: Coastal Use Permit P20131352

Dear Mr Jackson:

You were recently issued Coastal Use Permit Number P20131352. A requirement of this permit is that this office be notified of the commencement date of work on this project. Enclosed is a postage paid business reply card with the permit number written on the card. Upon commencement of the project, simply write the date of commencement on the card, sign it and drop it in the mail. If you are an agent and not responsible for this notification, please ensure the proper individual is given this correspondence.

Alternately, you can transmit the information through the commencement notification feature of the online permit system or simply notify Ms. Jessica Diez at (800) 267-4019 or (225) 342-7268, email jessica.diez@la.gov. Please be prepared to provide an exact or approximate date construction began when you call.

If you have any questions please do not hesitate to contact this office. Thank you for your cooperation in this matter.

Very Truly Yours,

A handwritten signature in cursive script, appearing to read "Christine Charrier".

Christine Charrier
Program Manager

Enclosure

Pellegrin, Amelia (Ravin)

From: Jackson, Louis L. (New Orleans)
Sent: Wednesday, July 24, 2013 4:32 PM
To: Pellegrin, Amelia (Ravin)
Subject: FW: Coastal Zone Inquiry
Attachments: C20120326 rev 111412.pdf

DNR Documentation.

Louis L. Jackson, P.E. | Senior Project Manager | CDM Smith
1515 Poydras Street, Suite 1350 | New Orleans, Louisiana 70112 | Tel: 504-799-1100 | Nassau County: 516-535-5703
Cell: 504-202-8701 | Fax: 504-799-1111 | jacksonll@cdmsmith.com | www.cdmsmith.com

From: Jeff Harris [mailto:Jeff.Harris@LA.GOV]
Sent: Tuesday, July 23, 2013 2:42 PM
To: Jackson, Louis L. (New Orleans)
Subject: Coastal Zone Inquiry

Mr. Jackson--

The Louisiana Department of Natural Resources, Office of Coastal Management has received your letter of July 17, 2013, regarding the City of New Orleans Hazard Mitigation Grant for the Pontilly Area.

Effective October 1, 2012, the Office of Coastal Management has determined that any and all federal financial assistance is consistent with the Louisiana Coastal Resources Program. If this inquiry is in regard to the receipt of federal financial assistance for the project, please see the attached letter. Coordination with OCM on the matter of financial assistance for this or any future project is not necessary. A copy of the attached letter should satisfy the requirements of federal awarding agencies. Please retain a copy for future projects.

If your inquiry concerns environmental clearance, the need for a Coastal Use Permit or other CZM authorization, or other review by this Office for the implementation or construction of a project, please follow the procedures for Solicitations of Views or Requests for Determinations outlined in the letter.

Thanks,

--Jeff

Jeff Harris
Consistency Section
Office of Coastal Management
Louisiana Department of Natural Resources
(225) 342-7949



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 e. 10th Floor o Suite 1078 o Baton Rouge, Louisiana 70802
(225) 342-7591 o Fax (225) 342-9439 o <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.

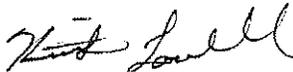
Outside of the Coastal Zone

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=O&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, *PIM* Division
Consistency file C20120326
rev 11114/2012



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

July 26, 2013

Mr. Louis L. Jackson, P.E.
Senior Project Manager
CDM Smith Inc.
1515 Poydras St., Suite 1350
New Orleans, LA 70112

Dear Mr. Jackson:

We have received your July 17, 2013, letter requesting our evaluation of the potential environmental impacts that might result from the following project:

**Pontilly Stormwater Mitigation Project
Pontchartrain Park & Gentilly Woods Neighborhoods
Orleans Parish
New Orleans, Louisiana**

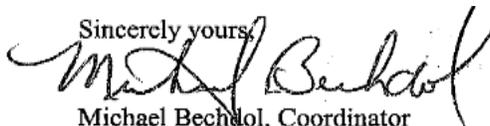
In administering the sole source aquifer (SSA) program under Section 1424 of the Safe Drinking Water Act our Office performs evaluations of projects with federal financial assistance which are located over a designated sole source aquifer.

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,

Sincerely yours,

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

cc: Jesse Means, LDEQ



BOBBY JINDAL
GOVERNOR

State of Louisiana
DEPARTMENT OF WILDLIFE AND FISHERIES
OFFICE OF WILDLIFE

ROBERT J. BARHAM
SECRETARY
JIMMY L. ANTHONY
ASSISTANT SECRETARY

Date July 26, 2013
Name Louis L. Jackson
Company CDM Smith Inc.
Street Address 1515 Poydras Street, Suite 1350
City, State, Zip New Orleans, LA 70112
Project New Orleans Redevelopment Authority
Pontilly Stormwater Mitigation Project
Project ID
Invoice Number 13072605

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,

Amity Bass, Coordinator
Natural Heritage Program

**Louisiana Ecological Services Office****ESA Technical Assistance Form**General Information**Name:** CDM Smith Inc.**Point of Contact:** Louis Jackson**Address:** 1515 Poydras Street, Suite 1000**City:** New Orleans**State:** Louisiana**Zip Code:** 70112**Phone Number 1:** 504-799-1100**Phone Number 2:** 504-202-8701**Email Address:** jacksonll@cdmsmith.comProposed Project Information**Project Reference ID:** 5957**Project Latitude:** 30° 1' 24.28" North **Project Longitude:** 90° 2' 32.99" West**Project Parish(es):** Orleans**Project Description:** Regrading of existing residential properties and other City of New Orleans owned property for temporary stormwater runoff detention.

Based on the information provided, the proposed project is not an activity that would affect a federally listed threatened or endangered species; nor is there proposed or designated critical habitat present within this Parish.

Therefore, a "no effect" conclusion is appropriate. No further ESA coordination with the Service is necessary for the proposed action, unless there are changes in the scope or location of the proposed project or the project has not been initiated one year from the date of this letter.

If the proposed project has not been initiated within one year, follow-up coordination via this website should be accomplished prior to making expenditures because our threatened and endangered species information is updated annually. If the scope or location of the proposed project is changed, coordination via this website should occur as soon as such changes are made.

This finding completes project review by the Service for effects to Federal trust resources under our jurisdiction and currently protected by the ESA.

Please keep a copy of this pre-development coordination for your records. Do not send it to the Lafayette ES Office.

If you have additional questions, please contact Louisiana ES Office Biological Science Technician at 337/291-3100 for further assistance.



Louisiana Ecological Services Office

ESA Technical Assistance Form

Project Type: Non-Emergency FEMA Project

Does the project propose to obtain, remodel, refurbish, or rehabilitate existing structures in such a way that does not significantly alter the present capacity or use, and does not alter surrounding land areas that were previously undisturbed? **Yes**



United States Department of the Interior

FISH AND WILDLIFE SERVICE

646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506

. July 29, 2013

To Whom It May Concern,

The Louisiana Ecological Services Office of the Fish and Wildlife Service is pleased to announce the activation of our new online pre-development self-assessment tool. This tool allows project proponents/representatives the ability to self-assess their projects for potential impacts to federally listed threatened and endangered species. This online tool will provide instant feedback on whether a project does, or does not, have a potential to affect federally listed species. We believe that you will find this online tool helpful in meeting your environmental clearance needs. Our office is no longer able to dedicate staff and time to provide individual review and response to all project proposals sent to us. Therefore, we encourage you to take advantage of this online tool to determine potential effects to our trust resources. If, through this online process, you are instructed to continue to consult with us, please then provide us with the necessary information for our review.

In order to access this tool, you will need to go to the following website address: <http://www.fws.gov/lafayette>. The environmental clearance application can be accessed by clicking on the yellow button entitled "Endangered Species Act (BSA) and Migratory Birds Treaty Act (MBTA) Project Review". This tool will query certain aspects of your proposed project so that you, acting as the representative for a Federal action agency, or in some other capacity, can render a decision on whether the project will result in a "no effect" determination under the BSA or whether you will need to consult further with our office. If you determine through this process that the project has no effect on federally listed species, no further coordination with this office is necessary, and you will be given the option to generate a pre-development report form that documents this determination for your records.

In addition to providing guidance on BSA coordination, the self-assessment tool provides MBTA guidance for cell tower projects. Because of the ephemeral nature of colonial nesting wading birds and shorebirds, we are not able to provide online clearance on those taxa. However, our website does provide suggested buffer distances should nesting colonies be encountered in the vicinity of the project area. A link is also provided to offer additional instructions in determining disturbance to nesting bald eagles. That information is found on our Webpage under Migratory Birds or through the environmental clearance application.

We hope that you find this online guidance helpful with your project planning and permitting needs. If you have any questions or comments regarding our website features, please contact Amy Trahan of this office (337-291-3126).

Sincerely,

A handwritten signature in black ink, appearing to read 'J. Weller', with a long horizontal flourish extending to the right.

Jeffrey D. Weller
Supervisor
Louisiana Ecological Services Office

Appendix C

Hydrology and Hydraulic Study Report by CDM Smith

Excerpted. For a full version of the September 2015 Construction Plans prepared by CDM Smith, the general public can send a request to FEMANOMA@dhs.gov, tel: 504-427-8000, fax: 225-346-5848 or by mail to: Department of Homeland Security-FEMA, Louisiana Recovery Office, Attn: EHP-Pontilly Stormwater Drainage, 1500 Main Street, Baton Rouge, LA 70802.



Pontilly Stormwater Hazard Mitigation Grant Program (HMGP) Project



Hydrologic & Hydraulic Study Technical Memorandum

May 25, 2012

In association with
Dana Brown & Associates, Inc. | Chester Engineers |
Waggoner & Ball Architects, APC

In cooperation with
D.I.R.T. Studio, LLC | GOTECH, Inc. | ILSI Engineering |
Infinity Engineering Consultants, LLC | TMG

CDM Smith

Hydrologic & Hydraulic Study Technical Memorandum Table of Contents

1.0 Introduction	1
2.0 Purpose	2
3.0 Data Collection	3
Field Data Collection.....	3
Manhole Depth	3
Dwyer Canal	3
Property Survey	4
GIS Data Collection.....	4
Topography	4
Soils	5
Sewerage & Water Board of New Orleans Infrastructure Data	5
Stage/Water Level Records	5
Pumping Stations.....	6
Drainage Maps	6
Plan and Report Collection	7
Joseph Bartholomew Golf Course.....	7
Dwyer Canal	7
US Army Corps of Engineers IHNC Data and Report	7
4.0 Rainfall Evaluation.....	9
Background	9
Rainfall Statistics	9
Historic Events.....	10
Rain Events	10
Hurricanes	10
Historic Event Analysis	11
Rainfall Intensity Distribution.....	12
Analysis of Historic Low Frequency Storms.....	13
Design Rainfall.....	14
Design Storm Hyetographs.....	14

5.0 Evapotranspiration Evaluation	17
Evaporation.....	17
Experimental Methods and Analysis.....	17
Factors Affecting Evaporation	18
Evapotranspiration.....	20
Results and Discussion	20
6.0 Soil Characteristic and Groundwater Data Analysis.....	21
General Surface Soil Characteristics Overview.....	21
Allemands Muck	21
Aquents	21
Shriever Clay	22
USACE Soil Characteristic Analysis.....	22
The Friction-Cone Penetration Test (CPT)	22
Atterberg Limit Test	25
Data and Discussion	25
U.S. Army Corps of Engineers’ Relief Wells	25
U.S. Geological Survey’s Analysis of Boring Logs	27
Design Incorporation.....	29
Infiltration BMPs.....	29
7.0 Model Development.....	31
Hydrology	31
Hydrologic Units	31
Area	31
Imperviousness	31
Width	31
Slope	32
Evaporation	32
Overland Roughness and Depression Storage.....	32
Infiltration	32
Hydraulics	33
Model Resolution.....	33
Model Nodes	33
Model Links	34
Surface Flow and Above Ground Hydraulic Elements.....	35
Model Outfalls	35
Boundary Conditions.....	35
Model Validation.....	36
Validation Storm (May 1995).....	36

8.0 Existing System Level of Service 39

Flooding Assessment39

 1-Year Rainfall Event..... 39

 2-Year Rainfall Event..... 39

 5-Year Rainfall Event..... 40

 10-Year Rainfall Event..... 40

 25-Year Rainfall Event..... 41

 100-Year Rainfall Event..... 41

 Summary 41

9.0 References 43

Figures

Attachments

- A – Survey Nodes Mapbook
- B – Property Acquisition Priorities
- C – Joseph Bartholomew Golf Course Plans
- D – Existing Dwyer Canal Plans
- E – USACE IHNC, West Reach III Selected Information
- F – Peak Stage Depth Tables for Model Nodes and Streets

Hydrologic & Hydraulic Study Technical Memorandum

The Hydrologic & Hydraulic (H&H) Study Technical Memorandum (TM) was prepared for the New Orleans Redevelopment Authority (NORA) by the CDM Smith Team with the task lead by CDM Smith in cooperation with Chester Engineers, Dana Brown & Associates, and ILSI.

The intent of this TM is to describe the characteristics of the existing stormwater management system and the stormwater model representation of the system serving the Pontchartrain Park and Gentilly Woods neighborhoods, collectively known as the Pontilly Study Area (**Figure 1**). Potential benefits and impacts of various stormwater Best Management Practice (BMP) strategies anticipated for implementation in the Pontilly Study Area will be discussed in future TMs.

1.0 Introduction

Stormwater management systems collect, store, infiltrate, treat, and convey runoff to protect public safety and environmental health. A properly sized and functioning stormwater management system is essential to the protection of public, property, and infrastructure of any metropolitan area. This is especially true in the City of New Orleans where the low and flat topography presents a unique challenge for stormwater management and drainage.

Of the three places in the United States at elevations below sea level, the City of New Orleans is the only one with significant population and industry.

The over 50-year-old drainage infrastructure servicing the Pontilly Study Area was designed for significantly different conditions than currently exist. The level of development that has occurred in the study area has overstressed the storage and conveyance capacity of the existing stormwater infrastructure. Restoration initiatives, post Hurricane Katrina, have resulted in the removal of a significant portion of the impervious area through structure acquisition and demolition. The vacant property resulting from the removal of these structures has created an opportunity for stormwater retrofit using BMPs that provide a favorable cost to benefit ratio. Several of these BMP strategies are described in the TM, entitled, *Stormwater BMP Modules* (CDM Smith, May 2012). In order to understand and quantify existing conditions and the effects of these BMPs on the existing system, the US EPA StormWater Management Model (SWMM) created for the Stormwater Management Capital Improvement Plan (SMCIP) will be applied at an increased level of detail to guide the alternatives analyses and design, document the benefits, and support cost estimates. This TM presents the various data to understand and describe the H&H characteristics of the existing system and evaluate the performance of the system for flood control, and potential water quality and stormwater reuse benefits.

The Pontilly Study Area is 856 acres which includes both Pontchartrain Park and Gentilly Wood neighborhoods and is bounded by Norfolk Southern (NFS) Railroad to the west and north, the Inner Harbor Navigational Canal (IHNC) levee to the east, and Chef Menteur (Highway 90) to the south. The area is mostly single family residential with approximately 40 acres of commercial property along

Chef Menteur Hwy. The area also contains many amenities including the following schools: Southern University of New Orleans, New Orleans Baptist Seminary, Mary D. Coghill Elementary School, St. Benedict the Moor Catholic School, and Parkview Fundamental Magnet School; the following churches: Holy Cross Lutheran Church, St. Gabriel the Archangel Catholic Church, Bethany United Methodist Church, and Morning Star Missionary Baptist Church; and three parks including: Joseph Bartholomew Golf Course, Harris Playground, and Morrison Play spot.

2.0 Purpose

In order to address stormwater challenges of the Pontilly Study Area, the City of New Orleans, acting through NORA, commissioned the Pontilly Stormwater Hazard Mitigation Grant Program (HMGP) project for the following purposes:

1. Develop an understanding of the existing stormwater management system level of service (LOS);
2. Identify opportunities to improve the stormwater management system LOS and functionality of the system;
3. Recommend projects to meet the desired LOS and Benefit Cost Ratio of, at least, one; and
4. Provide models, reports, plans, and specifications to support implementation of the Pontilly Study Area stormwater management improvements.

3.0 Data Collection

Field Data Collection

Manhole Depth

The CDM Smith team collected additional field data to supplement the existing SWMM representation of the Pontilly Study Area developed by CDM Smith for the SMCIP for the City of New Orleans. The purpose of this effort was to refine the depth of manhole and slope of pipe data within the existing subsurface drainage system. CDM Smith identified three hundred seventy (370) manholes for depth of pipe measurements within the Study Area.

Candidates for data collection were selected strategically: at the start, end, and other strategic points along the major drain lines in the Pontilly Study Area. Additionally, some inlets and culverts in the Dwyer Canal were also included in this field investigation. Maps were produced from the available GIS data sets along with a form for capturing the data and a spreadsheet for data entry. Having this information allows the SWMM H&H Model to more accurately determine the rate at which stormwater passes through the piped network.

The mapbook of the candidates for data collection are included in **Attachment A**.

Of the 370 manholes identified for the depth survey, approximately seven percent of them were not located or measured. In some cases, it appeared that a manhole existed, but was covered with pavement. In other cases, the manhole was visible, but could not be opened using standard methods. Additionally, there were several observations of manhole or catch basins that appear to be in urgent need of repair. These locations will be communicated to the City of New Orleans Department of Public Works separately.

Dwyer Canal

The Dwyer Canal runs from east to west, bisecting the Pontilly Study Area with the Pontchartrain Park neighborhood to the north and the Gentilly Woods neighborhood to the south. The canal is approximately 0.8 miles long. Field measurements were obtained of the Dwyer Canal for use in the SWMM representation of the Pontilly Study Area.

For modeling purposes, the canal was divided into three separate reaches. The Eastern Reach runs from the east levee wall near the IHNC to the Congress Drive culvert. The Central Reach runs from Congress Drive to Press Drive. The Western Reach runs from Press Drive to the NFS Railroad. Cross-section Information was measured for each of the three reaches of the Dwyer Canal (see **Table 1**).

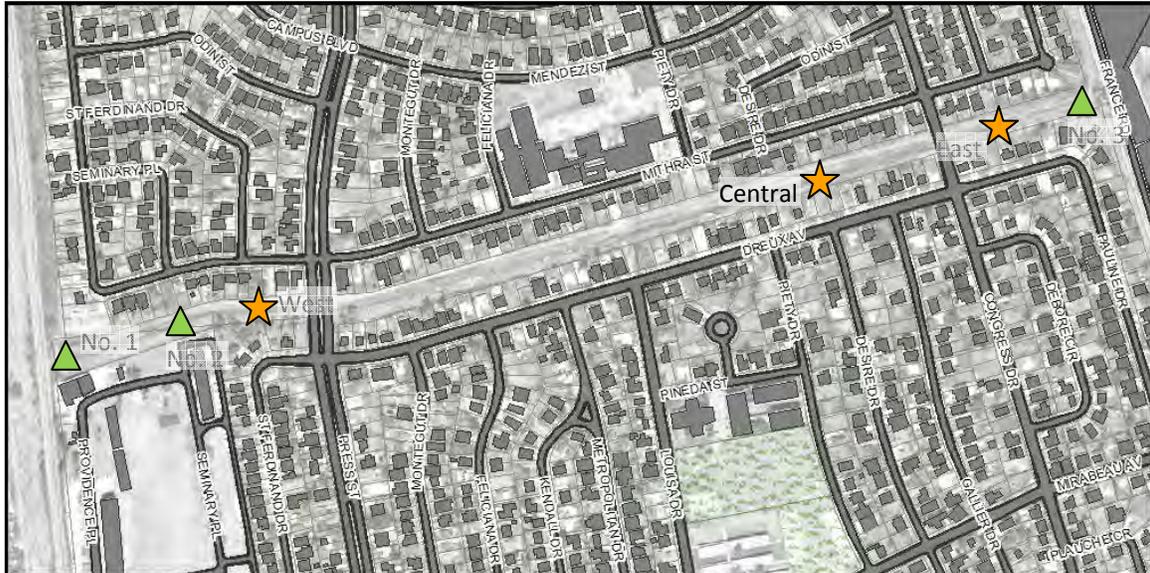
Table 1: Dwyer Canal Reach Cross-Section Information

Reach	Top Width (feet)	Bottom Width (feet)	Depth (feet)
West	47	13	6
Central	31	9	4
East	25	6	4

During this field investigation, multiple lateral drainage structures were noticed within the different reaches of the Dwyer Canal, which were not included in the primary drainage information provided by the City of New Orleans. These structures included two concrete culverts and a drainage manhole along the western reach and a concrete culvert along the eastern reach near the France Road levee. **Figure 2** displays the location of the identified drainage structures. GPS coordinates and culvert diameters were gathered for each structure.

Culvert No. 1 is a 3-foot diameter concrete pipe with a wing wall outfall structure. Culvert No. 2 is a 2.5-foot diameter concrete pipe with a wing wall outfall structure. Culvert No. 3 is a 1-foot diameter concrete pipe with a wing wall outfall structure.

Figure 2: Dwyer Canal Cross-Section Data Collection



Property Survey

A “windshield survey” of the Pontilly Study Area was conducted as it pertains to undeveloped and/or apparently blighted property for the purpose of future consideration of BMP implementation strategy. Notations were made, for non-NORA owned property, on whether the house looks un-restored or the property was currently undeveloped. The collected information is summarized in **Figure 3**.

This information was analyzed against the latest NORA owned property GIS data and urban redevelopment patterns were determined. This determination influenced the selection of properties to be utilized for the Pontilly Stormwater HMGP project. Priorities levels were assigned to the lots as pertains to their usefulness for stormwater collection and urban community continuity. The determined property acquisition priorities are presented in **Figure 4** and itemized in **Attachment B**, and will be incorporated into the three conceptual design plans.

GIS Data Collection

Topography

The topography for the Pontilly Study Area was defined using the Light Detection and Ranging (LiDAR) data obtained from the Louisiana Statewide LiDAR project. These topographic data are accurate to 15 – 30 centimeters (six – 12 inches) root mean square error (RMSE), which will support contours of 1-foot to 2-foot vertical map accuracy standards. The data are geo-referenced to the UTM Zone 15 – Meters and converted to the (North American Datum 1983) NAD 83 and (North American Vertical Datum 1988) NAVD 88 datum.

The information was obtained in quarter quadrangle sections as edited points from Atlas: The Louisiana Statewide GIS (atlas.lsu.edu). These points were then converted into a Triangulated Irregular Network (TIN) in GIS.

The topography of the Pontilly Study Area is displayed in **Figure 5**.

The topography data were used primarily for dividing the watershed into individual SWMM hydrologic units (HUs). It was also used in determining approximate road elevations, inlet elevations, adjacent land elevations, and slope within individual HUs. The topography was also used to determine stage-area relationships above inlets and other above ground elements to allow for measuring and calibrating the depth of flooding.

Soils

The national soils mapping completed by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) was used to create the Soil Survey Geographic (SSURGO) database for the study area. SSURGO soil maps are compiled at scales from 1:12,000 to 1:63,360. Digital versions of SSURGO are available from the NRCS Soil Data Mart (SoilDataMart.nrcs.usda.gov). SSURGO data include soil polygons and extensive attribute data that define soil characteristics, properties, and potential uses.

The soil information was analyzed against the HU shapefile to get the percentages of each soil type within each HU. Values of infiltration and soil storage are assigned to each soil type (see **Table 17** in the Model section, below) and area weighted aggregates were determined for each HU using the assigned percentages.

Sewerage & Water Board of New Orleans Infrastructure Data

This section describes information obtained from the Sewerage and Water Board of New Orleans' (S&WB) drainage infrastructure inventory within the Pontilly Study Area. Information gathered included historic stage/water levels records within the canals, historic rainfall records, Press Drive Drainage Underpass Pumping Station operational records, and available drainage maps. The data contained herein was obtained from the S&WB and also Brown, Cunningham, and Gannuch Engineering (BCG), who previously performed a hydraulic study sponsored by the S&WB within the study area and published in 2002. The information obtained enables the validation of the parameters integrated into the Pontilly SWMM hydraulic model and confirm the results relative to the performance capabilities of the existing drainage infrastructure.

Stage/Water Level Records

Measured Stages for the box culvert under Prentiss Avenue, which conveys stormwater runoff to Drainage Pump Station (DPS) No. 4 were obtained for two rainfall events (April 12-13, 1980 and May 8-9, 1995). Storage nodes 1F and 1A observed a maximum stage of 16.52 feet Cairo Datum (CD) and 15.48 feet CD, respectively, during the event that occurred May 1995. During the April 1980 event, storage node 1F observed a range of 14.2 to 16.2 feet CD and storage node 1C observed a range of 14.6 to 16.6 feet CD (S&WB, BCG, pg. C-20).

The average depth of rainfall observed from the two events dating April 12-13, 1980 and May 8-9, 1995 were measured to be 8.53 inches and 13.62 inches, respectively, for areas north of Gentilly Boulevard (S&WB, BCG, pg. C-9).

Incremental raw stage data for drainage canals within the Pontilly Study Area are not available. The S&WB indicated that the canals remain dry or experience low flow during periods with no rainfall, and during heavy rain events they are at maximum capacity, in which the excess water is discharged into the adjacent neighborhood.

Figure 6: Peoples Avenue Subbasin, 10-Yr Overflow Base Conditions (S&WB, BCG 2000)



Pumping Stations

The current pumping capacity of DPS No. 4 is 3,720 cubic feet per second (CFS).

The Press Drive Drainage Underpass Pumping Station (UPS) services the northern side of the study area. This station requires a significant amount of service and repairs due to detrimental effects from flooding that occurred subsequent to Hurricane Katrina. However, prior to being damaged, the pump operated with a maximum capacity of 33 CFS.

Pumping Station locations are shown in **Figure 12**.

Drainage Maps

Digitized drainage maps for the Pontilly Area were obtained from the S&WB to compare to the drainage GIS information obtained from the City of New Orleans and incorporated into the SWMM hydraulic model. These maps contain stormwater flow direction, catch basin locations, and pipeline, box culvert or open channel sizes.

Plan and Report Collection

Joseph Bartholomew Golf Course

The Joseph Bartholomew Golf Course was recently renovated at the end of 2011. The course has 13 interconnecting ponds designed to capture most of the stormwater that falls within the limits of the golf course. These ponds have outfall structures release collected stormwater into the subsurface drainage system at the designed control elevation. These subsurface drainage pipes traverse the golf course and convey stormwater runoff from Congress Street, east of the golf course, to Prentiss Avenue, west of the golf course.

The plans are included in **Attachment C**.

Dwyer Canal

Plans of the Dwyer Canal were obtained from the S&WB, *S&WB Contract 4137, Dwyer Canal Improvements, Peoples Ave. to France Rd.*, 1990.

The plans are included in **Attachment D**.

U.S. Army Corps of Engineers IHNC Data and Report

Data in the form of reports, plans, specifications, and boring logs which include soil and water table data was obtained from the U.S. Army Corps of Engineers (USACE) for the IHNC, West Reach III, which is the area bordering the Pontilly Study Area to the east. These data include information on the soil and water table for the north-south transect along the eastern portion of the Pontilly Study Area. The information was reviewed and is summarized in the **Soil Characteristic and Groundwater Data Analysis** section, below.

This Page Intentionally Left Blank

4.0 Rainfall Evaluation

Background

Historic New Orleans storm event records from Louis Armstrong New Orleans International Airport (National Weather Service (NWS) COOP 166660) for the time period from 1954-present day were compiled. The historic rainfall data was compared against frequency statistics from publications such as Technical Paper No. 40 (TP-40), *Rainfall Frequency Atlas of the United States for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years* (1961), Office of Hydrology Technical Memorandum 35 (HYDRO-35), *Five to 60-minute Precipitation Frequency for the Eastern United States* (1977), and Southern Regional Climate Center Technical Report 91-1 (SRCC TR 97-1), *Rainfall Frequency/Magnitude Atlas for the South-Central United States* (1997), to validate storm events and identify site-specific rainfall recurrence frequency estimates for modeling and design purposes. Analysis of the historic rainfall data was completed using the Networked Storage, Treatment, Overflow, Runoff Model (NetSTORM) a computer program, developed by CDM Smith that determines rainfall statistics based on long-term precipitation datasets.

Rainfall Statistics

The precipitation results determined by NetSTORM are lower than those interpreted from TP-40 and SRCC TR 97-1. **Table 2** lists the determined precipitation for a range of return intervals across both studies and the NetSTORM evaluation. The rainfall statistics are based on historic rainfall; therefore, potential climatic changes for rainfall patterns are not considered.

Table 2: 24-Hour Precipitation Frequency Estimates

Return Interval (Yrs)	Precipitation (In)		
	NetSTORM	TP-40	SRCC TR 97-1
1-Year	4.2	4.8	--
2-Year	5.3	6.1	5.5
5-Year	6.7	7.7	7.5
10-Year	7.9	9.1	8.5

Given that TP-40 was conducted over 50 years ago and had a much smaller dataset for analysis and given the more recent 1997 study shows a decreasing trend as well, an evaluation of regional extreme precipitation was conducted using US Historical Climatology Network (USHCN) data for Louisiana and Mississippi. The dataset included 18 long term daily precipitation records for Louisiana and 32 for Mississippi, with a median record length of 100 years. The following adjusted 24-hour statistics for New Orleans were reported:

Table 3: Adjusted New Orleans Design Storm

Return Interval (Yrs)	Precipitation (In)		
	NetSTORM	TP-40	SRCC TR 97-1
1-Year	4.2	4.8	--
2-Year	5.4	6.1	5.5
5-Year	7.0	7.7	7.5
10-Year	8.5	9.1	8.5
25-Year	10.9	10.4	10.0
100-Year	16.2	13.2	13

Historic Events

Rain Events

April 1927

Rainfall for this event is approximated to be 14 inches in a 24-hour period. Streets in the Uptown area were flooded, with the Broadmoor and Mid-City areas inundated with approximately six feet of water. The French Quarter had approximately two feet of flooding (Rogers 2008).

May 1978

A line of rainstorms stalled over New Orleans and dropped ten inches of rain over 12 hours. The storm had a peak intensity of two inches per hour. Flooding from this storm lasted almost 24 hours (Rogers 2008).

April 1988

This flood was associated with squall lines ahead of a slow-moving cold front during early April. Storm totals were over ten inches at numerous area stations. Most of the rain fell within a 12-hour period, with nearly nine inches recorded across the area. Storm precipitation totals were over 13 inches in some areas of the city (USACE).

November 1989

A prolonged storm event triggered flash floods throughout the New Orleans area. Rainfall amounts from eight to 12 inches were recorded during a 9-hour span. Total storm 2-day totals ranged from 12 to over 17 inches in some locations (USACE).

May 1995

Widespread rainfall with peak three-hour depths ranging from four to 12 inches caused most of the city to be temporarily flooded, including portions of Interstate 10. The New Orleans International Airport recorded 9.7 inches in the 3-hour period between 7:00 p.m. and 10:00 p.m. Audubon Park rain gage measured five inches over the same time period, with 12 inches within nine hours, and totals for the 24-hour storm measuring over 20 inches of rainfall. This storm lasted 40 hours and damaged 44,500 homes and businesses causing 3.1 billion in reported damages. This was the costliest single non-tropical weather related event to ever affect the United States (NOAA: NCD 2006 and Rogers 2008).

April 2004

Thunderstorms dumped up to 12 inches of rain during the afternoon and evening hours. Six and one-half inches of rain were recorded at the New Orleans International Airport (NOAA: NCD 2006).

Hurricanes

Hurricanes strike the Louisiana Coast with a mean frequency of two every three years (Kolb and Saucier 1982). Between 1559 and 2000, 172 hurricanes have struck southern Louisiana (Shallat 2000).

October 1985 - Hurricane Juan

Most of the flooding from this hurricane was associated with storm surge and backwater flooding produced by strong prolonged winds. Backwater and surge flooding was intensified by heavy rainfall in the first 24 hours of the hurricane. The 3-day storm totals range from 5- to 10-inches across the area (USACE).

September 1998 - Tropical Storm Frances

Significant tidal flooding occurred during this event with tides averaging 2- to 4-feet above normal along the southeast Louisiana coastline and in Lakes Pontchartrain and Maurepas. In addition to the storm surge, very

heavy rainfall occurred with some areas south of Lake Pontchartrain receiving 15 to 30 inches of rain. This heavy rainfall resulted in widespread flash flooding in the area south of Lake Pontchartrain. Rainfall runoff overwhelmed drainage pumping capacity, producing widespread and deep flooding in the streets of the New Orleans metropolitan area (NOAA: NCD 2006).

September 2002 - Tropical Storm Isidore

Tropical Storm Isidore had tide levels across Lake Pontchartrain and Lake Maurepas of 4- to 5-feet above normal. Low-lying areas, roadways, and some non-elevated structures in parishes surrounding Lake Pontchartrain and Maurepas were flooded. Rain bands associated with Tropical Storm Isidore produced heavy rainfall in a wide area before and shortly after landfall. Four to eight inches of rainfall occurred within six hours. Drainage systems were overwhelmed by the heavy rain and numerous streets were flooded, automobiles were flooded, and water entered some homes. The storm’s total rainfall measured from ten to 15 inches across southeast Louisiana (NOAA: NCD 2006).

August 2005 - Hurricane Katrina

Hurricane Katrina was one of the strongest and most destructive hurricanes on record to impact the United States. It is the worst natural disaster in the history of the United States to date resulting in catastrophic damage and numerous casualties in the southeast Louisiana areas and along the Mississippi coast. Damage in southeast Louisiana, especially in the coastal parishes, was catastrophic. Storm total rainfall amounts generally ranged from seven to 14 inches (NOAA: NCD 2006).

Historic Event Analysis

The collected precipitation data were also used to identify historic storms that fit precipitation intensities similar to statistical storms for 1, 2, 5, and 10-year recurrence intervals. For each of these recurrence intervals historic events were selected to represent three distinct storm durations:

1. Short event, with a duration of up to four hours with the 1-Hour rainfall intensity corresponding to the pertinent statistical determination;
2. Intermediate event, with durations lasting between six and 12 hours with the 3-Hour rainfall intensity corresponding to the statistical determination
3. Long event, with durations lasting between 12 and 24 hours with the 12-hour rainfall intensity corresponding to the statistical determination.

Table 4: New Orleans Design Storms

Recurrence Interval	Classification	Date	Duration (Hrs)	Cumulative Rainfall (In) at interval				
				1-Hr	3-Hr	6-Hr	12-Hr	24-Hr
1-Year	Short	10/9/2004	3	2.0	2.7			
	Intermediate	1/6/1964	12	1.3	2.7	3.6	3.9	
	Long	10/27/1985	22	1.0	2.0	2.8	3.6	4.4
2-Year	Short	9/10/1960	4	2.2	3.0	3.0		
	Intermediate	11/23/1992	12	1.8	3.1	3.4	3.8	
	Long	2/20/1961	22	1.7	2.7	3.6	4.4	5.6
5-Year	Short	9/4/1955	4	2.8	3.8	3.8		
	Intermediate	12/27/1983	7	2.4	4.0	5.4	5.4	
	Long	12/27/1983	7	2.4	4.0	5.4	5.4	5.4
10-Year	Short	7/11/1978	3	3.2	3.7			
	Intermediate	5/3/1978	12	2.0	5.2	6.0	6.3	
	Long	4/1/1988	24	2.2	3.2	4.8	7.4	8.1

Rainfall Intensity Distribution

A rainfall intensity analysis was completed to determine the most effective flood producing storm events for the Pontilly Study Area. Statistically, the shorter the duration of the storm, the higher the peak, with the peak increasing significantly for lower frequency storms.

Local flooding occurs when the rainfall rate, or intensity, surpasses the soil infiltration rate and drainage system storage capacity and conveyance rate. Infiltration rate depends on the existing saturation and porosity of the soil. Considering the prevailing clayey topsoil and high water table, the soil provides very little infiltration capacity, and therefore the drainage conveyance rate is the primary method of managing rainfall runoff in the Pontilly Study Area. The storage capacity and conveyance rate depends on both hydrologic and hydraulic systems, and their representative characteristics. Hydrologic characteristics include topography, soil infiltration capacity, and land cover; and hydraulic conveyance characteristics include pipe size, shape, and material, and downstream pumping capacity. Of all of these influencing factors for a fixed amount of available storage, the drainage conveyance in New Orleans is predominantly controlled by the drainage pumping stations capacity because the stormwater can only flow as fast as they can pump. The S&WB regularly states that the capacity of their drainage system is one inch of rain during the first hour of a storm event and a half an inch per hour for the remainder of a storm event.

The historic and statistical storms were compared to the stated system capability to determine the effective rainfall during a given event. The effective rainfall is the difference between the reported rainfall and the system capacity reported by the S&WB. **Table 5** shows the maximum rainfall intensity rate, in inches per hour, for the multiple historic and statistical storms considered. **Table 6** shows the total rainfall depth, in inches, during the storm event. **Table 7** shows the effective rainfall depth considering the stated system capability.

Table 5: Maximum Rainfall Intensity (In/Hr)

Return Interval	Storm Duration			
	Short	Intermediate	Long	SCS
1-Year	2.0	1.3	1.0	1.8
2-Year	2.2	1.8	1.7	2.3
5-Year	2.8	2.4	2.4	2.2
10-Year	3.2	2.0	2.2	3.3

Table 6: Total Rainfall Depth (In)

Return Interval	Storm Duration			
	Short	Intermediate	Long	SCS
1-Year	2.7	3.9	4.4	4.4
2-Year	3.0	3.8	5.6	5.6
5-Year	3.8	5.4	5.4	5.4
10-Year	3.7	6.3	8.1	8.1

Table 7: Effective Rainfall Depth (In) – considering the pump station pumping rate

Return Interval	Storm Duration			
	Short	Intermediate	Long	SCS
1-Year	1.4	1.4	0.8	1.3
2-Year	1.9	1.8	2.0	1.8
5-Year	2.6	3.0	3.0	1.8
10-Year	2.7	4.0	4.3	3.2

The optimal flood producing storm will produce a peak discharge greater than the drainage conveyance rate for the longest duration. **Figures 7 and 8**, below are the intensity curves and the effective rainfall curves for the five and ten year storm events, respectively.

Figure 7: Five Year Storm Rainfall Intensity versus Pump Rate

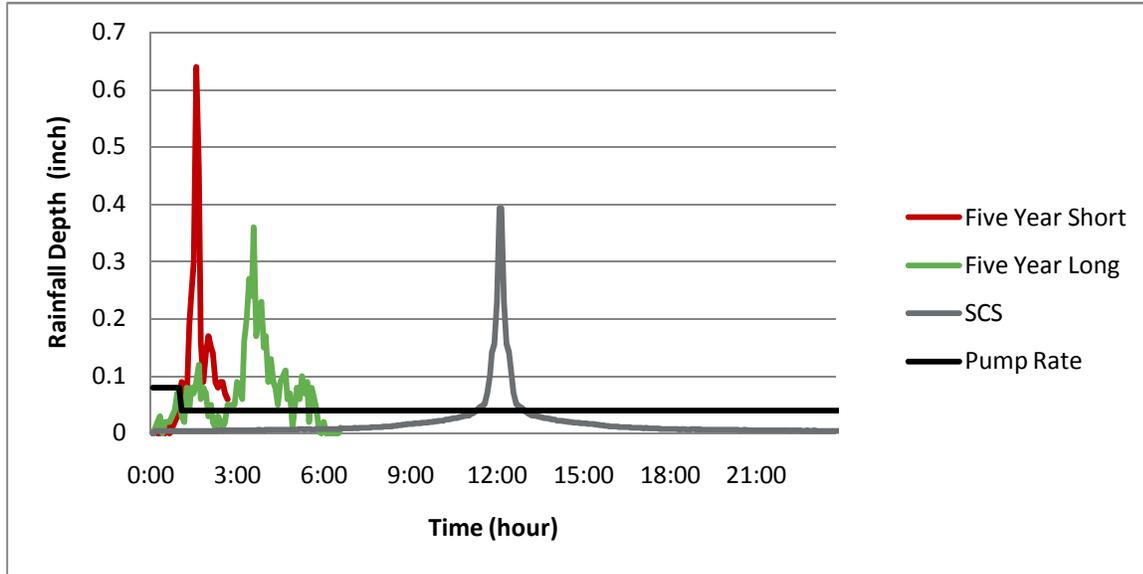
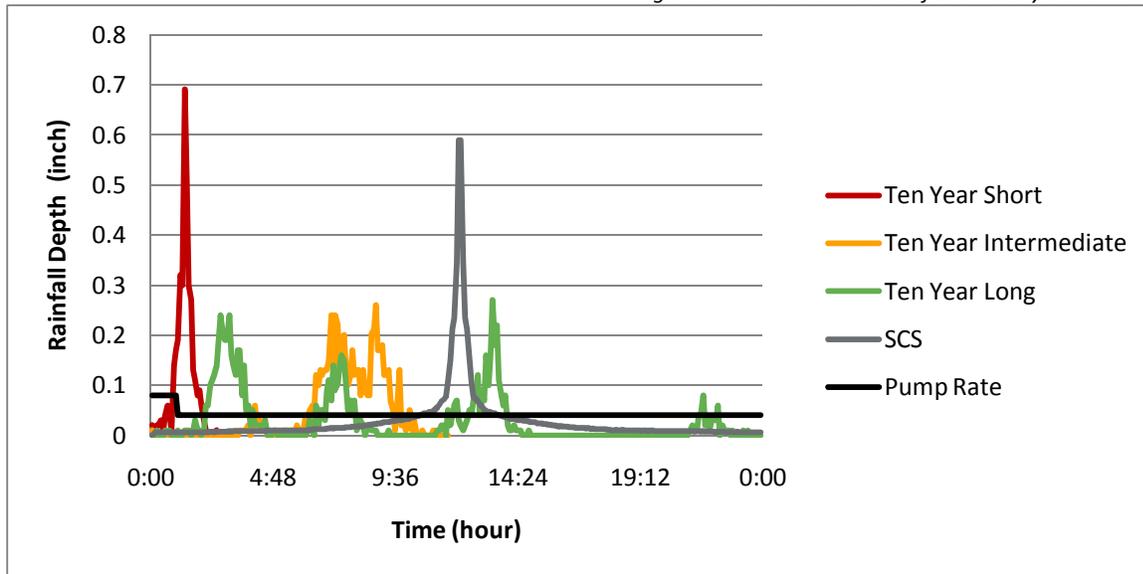


Figure 8: Ten Year Storm Rainfall Intensity versus Pump Rate



Analysis of Historic Low Frequency Storms

For the purposes of this TM an intense storm will be any rain event producing a rainfall depth greater than the adjusted ten year design storm depth of 8.5 inches. Three intense storm events occurred during the last 54 years: May 8, 1995, November 7, 1989, and May 5, 1959.

The May 8, 1995 storm produced a rainfall depth of 12.23 inches over seven hours. The storm had a peak hour intensity of 3.75 inches and an average intensity of 1.75 inches/hour. Comparing the storm depth with the storm

depths indicated in **Table 3** the storm is between the 25-year and 50 year storm event. Linearly interpolating between return periods indicates the storm is a 39 year storm with a return probability of 2.6 percent.

The November 7, 1989 storm produced a rainfall depth of 10.92 inches over 15 hours. The storm had a peak hour intensity of 2.56 inch/hour and an average intensity of 0.73 inch/hour. Comparing the storm depth with the storm depths indicated in **Table 3** the storm is approximately equal to the 25-year storm event. The storm has a return probability of 4.0 percent.

The May 5, 1959 storm produced a rainfall depth of 9.86 inches over 20 hours. The storm had a peak hour intensity of 1.97 inch/hour and an average intensity of 0.47 inch/hour. Comparing the storm depth with the storm depths indicated in **Table 3** the storm is between the 10-year and 25-year storm event. Linearly interpolating between return periods indicates the storm is a 19 year storm with a return probability of 5.3 percent.

Table 8 summarizes the storm data below:

Table 8: Summary of Historic Low Frequency Storms

Date	Depth (In)	Duration (Hr)	Maximum Intensity (In/Hr)	Average Intensity (In/Hr)	Return Interval (Year)	Effective Rainfall (In)
May 8, 1995	12.23	7	3.8	1.75	39	8.83
Nov. 7, 1989	10.92	15	2.56	0.73	25	6.48
May 5, 1959	9.86	20	1.97	0.47	19	4.15

Design Rainfall

Analysis of the rainfall data of the rainfall records from the Louis Armstrong New Orleans International Airport (National Weather Service (NWS) COOP 166660) for the time period from 1954-present day includes the following results:

- Longest drought = 92 days (preceding the storm event on July 1, 2002)
- Mean event depth = 0.75 inches
- Annual event depth = 60.25 inches
- Mean event duration = 7.75 hours

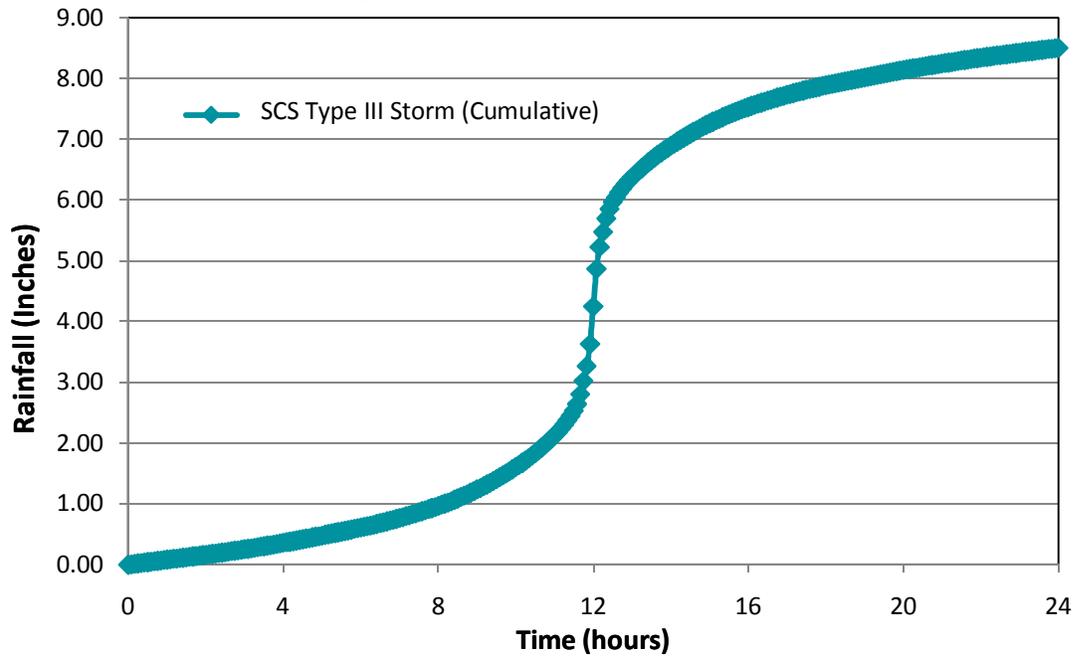
Design Storm Hyetographs

Precipitation information for the New Orleans area is presented above. **Table 3** presents depth-duration-frequency statistics for the greater New Orleans regional area as computed using NetSTORM. This analysis determined the 10-year, 24-hour storm for the area is approximately 8.5 inches.

For the model analysis, the depth of the 10-year, 24-hour storm was distributed over the 24 hours using a Type III SCS distribution. **Figure 9** shows the cumulative distribution of the 8.5 inch 10-year, 24-hour storm over 24 hours.

Despite a mean event duration of 7.75 hours for the New Orleans area, for the Pontilly Stormwater HMGP project it is suggested that a Type III SCS distribution of a statistical storm event with a duration of 24 hours be used to simulate rainfall event for the project because when typical design storms are spoken of it is almost always assumed that the storm is of a 24-hour duration.

Figure 9: SCS Type III Cumulative Distribution of the 10-year, 24-hour storm over 24 hours



This Page Intentionally Left Blank

5.0 Evapotranspiration Evaluation

Evapotranspiration (ET) is a term used to describe the sum of evaporation and plant transpiration from the Earth's land surface to the atmosphere. This loss occurs as water vapor through water and soil surface evaporation and plant transpiration. Many factors affect the rate of ET, such as temperature, wind speed, humidity, solar radiation, soil water capacity, plant age, plant species, and plant height.

The purpose of this analysis is to provide and analyze evapotranspiration data for the New Orleans area; and then extrapolate in order to determine its specific effects to the Pontilly Study Area. Evapotranspiration can be an important part of reducing effects of standing water from higher frequency storms. Certain native species are exceptionally good at uptake and transpiration of water. Incorporation of the higher transpiring plants in the Pontilly Study Area BMP design may assist in alleviating higher frequency storm flooding effects.

The data presented in the following sections comprises at least 15 years of pre-Katrina pan evaporation data. The data, methods of evaluation, and evaporation estimates for hydraulic modeling will be presented below.

Evaporation

Experimental Methods and Analysis

There are several methodologies that are used to estimate evaporation rates; however the “pan” method is most commonly utilized for evaporation estimates with similar site characteristics as the study area. The “pan” evaporation method is derived from the Penman equations and determines the amount of evaporation for an area using meteorological data. Then the Free Water Surface Evaporation method is utilized to determine evaporation rates of bodies of water.

The “Pan” Evaporation Method using the Penman Equations

The Penman equations allow for the computation of “pan” evaporation using meteorological data for an area where no pan is available. Two equations are used to compute the estimated daily “pan” evaporation:

$$E_p = \frac{Q_n \Delta + E_a \gamma_p}{\Delta + \gamma_p}$$

$$E_a = (e_s - e_a)^{0.88} [0.37 + 0.0041U_p]$$

Computing the “pan” evaporation can be performed for any location using the above equations; however, a constant (γ_p) of 0.025 inches of Hg/oF for a pan, total wind movement two feet above the ground surface (U_p), mean air temperature ($e_s - e_a$), mean dew point (Δ), and the estimated daily solar radiation (Q_n) are needed.

The average evaporation rates of the New Orleans were previously calculated using the Penman equations. The results were featured in the National Oceanic and Atmospheric Administration (NOAA) Technical Report NWS 34 for the period between January 1956 and December 1970. The data was collected at New Orleans WB Moisant (29° 58', -90° 15') which is located in Westwego and is presented in **Table 9**. No post-Katrina “pan” evaporation data for this site is available.

Table 9: Mean Monthly Estimated “Pan” Evaporation at New Orleans WB Moisant
 Modified from Table II – Monthly Means of Estimated “Pan Evaporation” computed from Meteorological Measurements
 using a form of the Penman Equation, NOAA Technical Report NWS 34, “Mean Monthly, Seasonal, and Annual Pan
 Evaporation for the United States” (Farnsworth and Thompson).

Month	Mean Evaporation (in inches)	Number of years of records per month	Standard Deviation (in percent)
January	2.47	15	18
February	2.97	15	14
March	4.42	15	11
April	5.42	15	11
May	6.86	15	8
June	6.92	15	14
July	6.56	15	11
August	6.14	15	11
September	5.56	15	12
October	4.91	15	6
November	3.22	15	11
December	2.52	15	12
Total	57.97	-	5

Free Water Surface (FWS) Evaporation

After the “pan” evaporation estimates are determined, the FWS evaporation method is utilized to ascertain evaporation amounts from bodies of water. The FWS evaporation is estimated by multiplying the pan coefficient (0.76 for New Orleans) by the computed monthly “pan” evaporation rates derived from the Penman equation, **Table 10**. Since the FWS evaporation is dependent on the computed “pan” evaporation for pre-Katrina New Orleans (period between January 1956 and December 1970), no post-Katrina data is available.

Table 10: Free Water Surface (FWS) Evaporation for pre-Katrina New Orleans using the Pan Coefficient of 0.76

Month	Estimated “Pan” Evaporation at pre-Katrina New Orleans WB Moisant from Table 9 (in inches)	Computed Free Water Surface (FWS) Evaporation in pre-Katrina New Orleans (in inches)
January	2.47	1.88
February	2.97	2.26
March	4.42	3.36
April	5.42	4.12
May	6.86	5.21
June	6.92	5.26
July	6.56	4.99
August	6.14	4.67
September	5.56	4.23
October	4.91	3.72
November	3.22	2.45
December	2.52	1.92
Total	57.97	44.07

Factors Affecting Evaporation

Humidity

Humidity is the actual amount of moisture in a certain volume of air. There are three types of humidity: absolute, specific, and relative. Absolute humidity is a measure of the concentration of water vapor (evaporated water) in a given volume of air. Specific humidity is the ratio of the mass of water vapor in air to the total mass

of the mixture of dry air and water vapor. Relative humidity is a ratio of the actual water vapor content of the air to the amount of water vapor needed to reach saturation.

Since relative humidity is the most relevant to this study, this type of humidity is the focus of this report. The New Orleans area has a high rate of relative humidity that must be considered when evaluating the potential amount of water to be absorbed by the atmosphere. **Table 11** indicates the average monthly relative humidity for both the morning and the afternoon. (Morning hours begin at six a.m. and afternoon hours begin at noon.) The data presented was collected for 63 years through 2011.

*Table 11: Average Relative Humidity
Modified from Table I.K – Ave. Relative Humidity (%), NOAA Comparative Climate Data for the U.S. through 2011.*

Month	Average Relative Humidity (in percent)	
	Morning	Afternoon
January	83	69
February	82	67
March	83	66
April	85	65
May	87	65
June	88	67
July	89	70
August	90	70
September	87	69
October	85	64
November	84	66
December	84	69
Annual Average	86	68

Temperature

A second factor that can affect the amount of water evaporated from a water body is temperature. Higher temperatures increase the rate at which water changes from a liquid state to a vapor. The higher temperatures also enable the air to absorb more water before becoming fully saturated.

Average atmospheric temperatures were collected monthly between 1971 and 2000 and are presented below. On average, January was the coldest month while July was the warmest month.

*Table 12: Average Temperature
Modified from Table II.B – Normal Daily Mean Temperature, ° F, NOAA Comparative Climate Data for the U.S. through 2011.*

Month	Average Temperature (in °F)
January	52.6
February	55.7
March	62.4
April	68.2
May	75.6
June	80.7
July	82.7
August	82.5
September	78.9
October	70.0
November	61.4
December	55.1
Average Annual	68.8

Evapotranspiration

Due to such a wide range of variables, experts have come up with numerous formulas to estimate ET. Different formulas assume different constants. The most common formulas used in estimating ET assume a single plant species, usually turf or alfalfa, at an assumed coverage with climactic conditions being the only variables.

Evapotranspiration rates for the climactic, plant, and soil conditions of Louisiana have not been studied in depth and as such no standard ET rates are available for the region. Rates calculated as shown in **Table 9**, were compared to three different sources which utilize different formulas:

1. Louisiana Agrilimatic Information System Reference ET Data averaged from three locations (Houma, Hammond, and Franklinton, LA). The data utilize the Penman-Monteith equation to determine ET. The Penman-Monteith equation uses readily available climactic (wind speed, humidity, solar radiation, and temperature) to determine ET rates. ET rates are an average from the three locations between 2002 and 2010.
2. Toro Irrigation “Toro Rainfall and Evapotranspiration Data Book – Form No. 490-1358.” The data are derived from a modified Penman-Monteith equation that uses climactic averages spanning a 30 year period.
3. US Weather Bureau Estimated Class A Pan Evaporation rates. ET can be estimated from pan evaporation rates by multiplying pan evaporation by a pan coefficient. Pan coefficients are influenced by wind speed, humidity, and wind fetch distances. For the purpose of this report, 0.75 is used as the pan coefficient as that is the average pan coefficient for a Class A pan.

Table 13: Evapotranspiration Rate Comparison

Month	Calc. Free Water Surface (FWS) Evaporation (In)	LSU Mean ET (In)	Toro Mean ET (In)	US Weather Bureau Mean ET (In)	Average Mean ET (In)	% Difference Mean ET vs. Calc. FWS
January	1.88	2.17	1.29	1.85	1.77	94
February	2.26	2.48	1.60	2.23	2.10	93
March	3.36	3.10	2.89	3.32	3.10	92
April	4.12	2.87	4.48	4.07	3.81	92
May	5.21	2.30	6.37	5.15	4.61	88
June	5.26	1.66	7.68	5.19	4.84	92
July	4.99	1.45	8.09	4.92	4.82	97
August	4.67	1.39	7.65	4.61	4.55	97
September	4.23	1.95	6.05	4.17	4.06	96
October	3.72	2.25	4.26	3.68	3.40	91
November	2.45	2.30	2.25	2.42	2.32	95
December	1.92	2.47	1.50	1.89	1.95	102
Total	44.07	26.39	54.11	43.50	41.33	94

Results and Discussion

Fifteen years of data were available for each computed monthly “pan” evaporation station, see **Table 9**. The standard deviation throughout the year ranged from six to 18 percent. The average standard deviation for the warmer months was three percent; while the cooler months experienced variations averaging 13 percent. The average annual variation was five percent.

The computed “pan” evaporation is used to determine the potential amount of water that evaporates from a water body. The amount of water that evaporates from a free water body within the New Orleans area is estimated to be 76 percent as that from a Class A pan. The average water body in the New Orleans area is computed to release as many as 44 inches (3.7 feet) of water into the atmosphere through evaporation per year.

Evaporation is greatest in June and least in January. Approximately 65 percent (28.48 inches) of the FWS evaporation occurs between April and September of each year. Evaporation tends to occur at greater amounts when the relative humidity is lower. Generally, relative humidity in New Orleans varies by 18 percent from the morning to afternoon hours. Therefore, water will have a propensity to evaporate at greater amounts in the afternoon. Typically, the amount of relative humidity in the New Orleans area is higher during the warmer months, and therefore, the amount of evaporation tends to be less.

Precipitation is greatest during the warmer months. It is during these times that the benefits of engineering the natural landscape features will have the most dramatic impact on stormwater management while reducing the stress on the aging drainage infrastructure. The ability to detain stormwater allowing it to evapotranspire into the atmosphere provides an important mechanism of removing the stormwater from the Pontilly study area.

This Page Intentionally Left Blank

6.0 Soil Characteristic and Groundwater Data Analysis

The purpose of this section is to present soil characteristic and groundwater well data analysis. Soil characteristic information was obtained from the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) was used to create the Soil Survey Geographic (SSURGO) database and the IHNC, West Reach III data and report, provided by the U.S. Army Corps of Engineers (USACE) for the Pontilly study area

Three basic soil analyses of the Pontilly Study Area are included in this section: surface soil characteristics, water table depth information, and sand layer depth information. Soil characteristics, especially infiltration rates, storage capacity, and water table depth, are very important in infiltration and storage BMP design. The surface soil type defines the existing Pontilly Study Area's ability to infiltrate stormwater. The shallow water table elevation delineates the depth to which storage BMPs can be easily developed. The infiltration BMP option of a drainage column, which is used to infiltrate water into lower aquifers, in essence removing stormwater from the subsurface drainage system, is being evaluated. In order for the drainage column option to be feasible the characteristics of the lower soil strata need to be analyzed for their ability to accept the water and their piezometric head. Knowing the depth of different sand strata is an important first step in analyzing this option.

General Surface Soil Characteristic Overview

The predominant surface soil type in Pontilly is "D" class soils. Class D soils allow little infiltration due to both low rates of infiltrations and lack of soil storage. Therefore, most precipitation will become surface runoff that must be conveyed by either overland flow or subsurface drainage, unless BMPs are designed and it is permitted to transmit to a deeper more permeable soil.

Soils within the Pontilly Study Area primarily consist of Allemands Muck and Schriever Clay. The surface soil distribution for the Pontilly Study Area is displayed in **Figure 10**. The properties of each of the above soils are itemized below:

Allemands Muck

- Parent Material: Decomposed organic material overlaying clayey back swamp deposits
- Drainage Class: Poorly drained
- Capacity of the most limiting layer to transmit water: Very low to moderately low (0.00 to 0.06 in/hr)
- Depth of water table: six to 48 inches
- Available water capacity: Very high (about 15.1 inches)
- Typical profile:
 - 0 to 30 inches: Muck
 - 30 to 60 inches: Clay

Aquents

- Parent Material: Alluvium
- Drainage Class: Very poorly drained
- Depth of water table: More than 80 inches

Shriever Clay

- Drainage Class: Poorly drained
- Capacity of the most limiting layer to transmit water: Very low to moderately low (0.00 to 0.06 in/hr)
- Depth of water table: 0 to 24 inches
- Available water capacity: Moderate (about 7.1 inches)
- Typical profile:
 - 0 to 80 inches: Clay

USACE Soil Characteristic Analysis

The data provided by the USACE details the soil composition for a significant portion of the north-south eastern boundary of the Pontilly study area. Two methods were employed to determine the soil strata along France Road: the friction-cone penetration test, commonly referred to as the cone penetration test (CPT), and the Atterberg Limit test. Each testing method used will be briefly discussed below, and data gathered as a result of each testing method will then be presented.

The Friction-Cone Penetration Test (CPT)

The USACE utilized the friction-cone penetration test at 26 of the relief wells along France Road to measure the resistance of soils. A CPT is an in situ investigation method that pushes a cone penetrometer through soil to a predetermined depth or to the deepest level possible for the instrument. Friction-cone penetration test readings can be used to determine the soil strata before construction planning begins as well as determining the groundwater level at the time of testing.

When used in soft ground, cone penetration tests can be very accurate in classifying sands and clays. The CPT provides a continuous record of soil resistance readings throughout the depth of the bore. Accuracy of the CPT declines as the instrumentation is used in harder soil types such as gravel.

While the friction-cone penetration test is performed, force resistances are measured producing several readings/graphs indicating:

- Measured Tip Resistance, q_c
- Sleeve Friction, f_s
- Pore (Water) Pressure, u_2 and u_0
- Pore (Water) Pressure behind the Cone, u_2
 - Equilibrium/Hydrostatic Pore (Water) Pressure, u_0
 - Friction Ratio, R_f
- Undrained Shear Strength, S_u
- Soil Behavior Type, SBT_{FR}

Since information on the tip resistance and the pore pressure is more easily attainable, these graphs were used to determine groundwater and sand levels. Soil samples are not normally taken while conducting a cone penetration test. As a result, soil types must be deduced or inferred from the measured readings, by utilizing historic data obtained from past analyses. The measured cone tip resistance, q_c , will measure at least 50 tsf (5MPa) in sands whereas the readings are much lower in clays, $q_c < 50$ tsf or 5 MPa.

The cone penetrometer contains a pore pressure channel that can be used to determine the depth to the water table as well as pore pressure data which can be used to identify soil types. If the rate of pore pressure dissipates rapidly, the soil is sandy. The soil is clay where dissipation rates are very slow. Knowing this allows the classification of soil layers as either aquifers or aquitards, water bound by impermeable soil.

Atterberg Limit Test

The Atterberg Limits define the four states of consistency for cohesive soils: liquid, plastic, semi-solid, and solid (Liu and Evett, 1998). For 11 of the soil borings, test data was found to indicate the water content, shear strength, wet density, and normal stress. The soil's behavior is dependent on its water content and it is classified by the plastic limit test and the liquid limit test.

The plastic limit is the water content in the soil as it transitions between the semi-solid and the plastic states. Sands and most silts have no plastic limit. The plastic limit of clays is usually less than 40 but can range between 0 and 100 or more (Lindeburg, 2003). The liquid limit is the water content in the soil as it transitions between the plastic and liquid states. Sands have low liquid limits while silts and clays have high liquid limits. The difference between the liquid limit and the plastic limit determines the plasticity index, the amount of water that can be added to a soil before it becomes liquid.

Data and Discussion

U.S. Army Corps of Engineers' Relief Wells

Determining Levels of Groundwater using the Cone Penetration Test Data

As indicated previously, groundwater levels can be approximated using the tip resistance readings. The measured cone tip resistance, q_c , will measure at least 50 tsf (5MPa) in sands whereas the readings are much lower in clays, $q_c < 50$ tsf or 5 MPa (Mayne, 2007).

The USACE report graphs were used to estimate locations of sand layers at each test point, see **Attachment E, Section 3** and **Table 14**. Knowing the location of each sand layer, one can estimate the depth of groundwater. It is important to note that not all test depths were equal. The depths of tests IHNC-07-3-CC, IHNC-07-4CC, IHNC-07-5CC, and IHNC-07-6CC extended to 90 feet or more below surface level. The remaining tests extended to depths of, at most, 30.5 feet below grade. The location of each test point is indicated on the maps in **Attachment E, Section 1**.

Cone Penetration Test Results

Only four wells' strata, annotated with a * in **Table 14**, were recorded for depths greater than 30 feet below grade. This data presented the opportunity to detect more sand layers at these test points. All of the test points have at least four layers of sand; therefore, the first four layers will be discussed in this text. The first sand layer begins approximately a foot below grade and extends down four feet. The second sand layer begins at an average depth of 11 feet below grade. The thickness of the second layer ranges from 1.5 feet to almost 33 feet. The top of the third sand layer varies widely from 12 feet to almost 44 feet below surface. Like sand Layer 3, the top of Layer 4 varies widely, from approximately 21 feet to 63 feet below grade. The average depth of Layer 4 is 25 feet.

The remaining test points, those with a + designation in **Table 14**, were much shallower. These test points use designations of "ACC" and "APC". Test points ending with "ACC" are located closer to the Inner Harbor Navigation Canal, within 30 feet east of the levee separating the Inner Harbor Navigation Channel (IHNC)/France Road and the Pontilly Study Area, and were tested up to a depth of 30.5 feet. These wells consistently maintained initial groundwater levels at or near three feet below grade. The thickness of this groundwater layer

decreased from Madrid Street to Mithra Street. The next groundwater layer began near ten feet below ground surface near Mithra Street and near 15 feet below grade further north at Madrid Street.

“ACC” and “APC” wells are separated by a levee that extends ten feet below ground. As evidenced by the groundwater levels in the “APC” wells, the presence of the levee has a significant impact. Test points ending with “APC” are located west of the levee closer to the Pontilly Study Area and were tested up to 25 feet below grade. “APC” wells are located in the slope between the levee and the Pontilly Study Area right of way. Their distance from the levee varies. Generally, “APC” wells’ groundwater levels begin closer to the surface than “ACC” wells. Their first groundwater layer is, on average, much shallower with an average depth of three feet. The second groundwater layer begins at an average depth of six feet and extends to a depth of 20 feet.

Table 14: Location of Sand Layers at Each Test Location (using Cone Penetration Test data)

Test Number	Depth of Sand below Ground Surface (Ft)					
	Layer 1 Top/Bottom	Layer 2 Top/Bottom	Layer 3 Top/Bottom	Layer 4 Top/Bottom	Layer 5 Top/Bottom	Layer 6 Top/Bottom
IHNC-07-3-CC*	1.0/5.0	9.25/12.5	17.0/18.0	20.75/46.0	58.5/60.25	61.25/87
IHNC-07-4CC*	1.25/3.0	8.5/10.0	12.0/43.25	62.25/101.0	-	-
IHNC-07-5CC*	1.25/4.5	10.0/42.75	43.75/45.0	46.25/51.5	74.75/100.5	-
IHNC-07-6CC*	0.5/3.0	17.25/35.5	38.75/43.5	62.5/95.0	-	-
IHNC-6ACC ⁺	3.0/8.0	16.0/-	-	-	-	-
IHNC-6APC ⁺	11.0/12.0	13.0/15.0	-	-	-	-
IHNC-7ACC ⁺	3.0/4.5	5.0/7.5	10.0/17.0	20.5/27.0	-	-
IHNC-7APC ⁺	3.5/11.5	14.5/22.0	23.5/-	-	-	-
IHNC-8ACC ⁺	2.5/5.0	6.0/9.0	12.5/17.5	23.5/29.0	-	-
IHNC-8APC ⁺	1.0/2.5	7.5/17.5	-	-	-	-
IHNC-9ACC ⁺	2.5/5.0	10.0/25.5	29.0/-	-	-	-
IHNC-9APC ⁺	1.0/2.5	5.0/19.0	-	-	-	-
IHNC-10ACC ⁺	2.5/3.5	4.5/7.5	14.0/17.5	19.5/-	-	-
IHNC-10APC ⁺	1.5/3.0	6.5/18.5	21.5/-	-	-	-
IHNC-11ACC ⁺	2.5/6.0	15.0/21.5	24.0/-	-	-	-
IHNC-11APC ⁺	1.5/2.0	5.5/16.0	18.0/-	-	-	-
IHNC-12ACC ⁺	2.5/10.5	14.0/20.5	24.0/-	-	-	-
IHNC-12APC ⁺	1.5/5.0	6.5/14.5	19.0/-	-	-	-
IHNC-13ACC ⁺	3.0/9.5	14.0/21.0	23.0/-	-	-	-
IHNC-13APC ⁺	1.5/3.0	5.5/15.0	18.0/-	-	-	-
IHNC-14ACC ⁺	3.0/10.0	14.0/-	-	-	-	-
IHNC-14APC ⁺	1.0/4.0	7.0/12.5	15.0/22.5	-	-	-
IHNC-15ACC ⁺	3.0/11.0	14.5/-	-	-	-	-
IHNC-15APC ⁺	1.0/4.0	7.5/15.0	17.5/-	-	-	-
IHNC-16ACC ⁺	3.0/9.5	17.0/19.0	20.5/22.0	23.5/30	-	-
IHNC-16APC ⁺	0.5/5.0	5.5/13.0	14.0/-	-	-	-

*Tests with depths extending to depths of 90 feet or more. Location information was not given to plot on map. Tip resistance graphs were used in determining sand locations.

+ Test depths extending at most 30.5 feet. Pore pressure graphs were used in determining sand locations.

Determining Levels of Groundwater using the Atterberg Limit Test Data

The Atterberg Limit Test data illustrated in **Attachment E, Section 4** included graphs indicating water content (percent water per dry weight), shear strength, wet density, and normal stress. The water content graph was used to indicate elevations of groundwater. The Atterberg Limit Test was performed on at least three soil samples per bore. Most samples were taken at or near 50 feet below grade. **Table 15** indicates levels of

groundwater based on increased water content levels, saturated sand levels of at least 100 percent. The location of each test point is indicated on the maps in **Attachment E, Section 1**.

Wells with a “CU” or “FU” designation are located east of the levee while those with a “PU” designation are located west of the levee. A plot of the borings on cross sections in **Attachment E, Section 2** indicates results consistent with wells with “ACC” and “APC” endings. These plots indicate that the bore results are within three feet of the well data.

Table 15: Location of Water at each Bore based on Sand Layers with at least 100% Saturation

Bore Number	Depth of Water below Ground Surface (ft)		Thickness (ft)
	Top of Water	Bottom of Water	
IHNC-07-4CU	3.5	11.5	8.0
IHNC-07-4PU	4.0	9.0	5.0
IHNC-07-5CU	4.0	9.0	5.0
IHNC-07-5PU	-	-	-
IHNC-07-6CU	-	-	-
IHNC-07-06PU	-	-	-
IHNC-07-7CU	3.0	14.0	11.0
IHNC-07-7PU	9.5	12.0	2.5
IHNC-10-60-PU	-	-	-
IHNC-10-61-FU	6.5	10.0	3.5
IHNC-10-62-PU	-	-	-

No relief well data along France Street between Hayne Boulevard and Mexico Street were available.

U.S. Geological Survey’s Analysis of Boring Logs

In 2003, the USGS performed a study of the New Orleans aquifer system. The New Orleans aquifer system supplies freshwater along the Mississippi River corridor for industrial and public use. This aquifer system includes the shallow aquifers, the Mississippi River alluvial, Gramercy aquifer, Norco aquifer, Gonzales-New Orleans aquifer, and the “1,200-foot” sand aquifer. A section of the study covered the aquifer system below the Pontilly Study Area.

As shown in **Table 16**, the New Orleans aquifer system consists of alternating sand and clay beds from the surface to the base of the “1,200-foot” aquifer (Tomaszewski, 2003). This section will review the shallow aquifer, the Norco aquifer, and the Gonzales-New Orleans aquifer, the three aquifers are directly below the study area, see **Attachment E, Section 5**.

Table 16: Hydrogeologic Summary of Aquifers, Lower Mississippi River area in Southeastern Louisiana (Tomaszewski, 2003)

System	Series	Aquifer or Aquifer System ¹		Thickness	Description and Remarks	Water Quality	
Quaternary	Holocene	Shallow sands (aquifers)	Point-bar deposits	Varies. May exceed 100 feet	Fine to very fine sand and silt. Bars accumulate on inside of river bends.	Generally very hard ² with high iron ³ concentrations.	
			Distributary-channel deposits	Generally 50 feet or less	Fine sand. May contain organic debris.	Generally very hard with high iron concentrations.	
			Discontinuous near-surface sands	Varies	Lithology varies. Sand occur locally and pinch out within short distances.	Varies depending on location. Generally contains very had saltwater.	
	Pleistocene		New Orleans aquifer system	Mississippi River alluvial aquifer ⁴	Varies 20 to 250 feet	Fine to medium sand at top; grading to coarse sand and gravel in lower part. Hydraulically connected with the Mississippi River.	Hard to very hard with high iron concentrations.
				Gramercy aquifer ("200-foot" sand)	20 to 200 feet	Fine to coarse sand. May contain gravel. Discontinuous with varying thickness. Hydraulically connected with the Mississippi River.	Generally saltwater ⁵ . Freshwater is available in parts of St. James, St. John the Baptist, and St. Charles parishes. Freshwater is generally a calcium-magnesium bicarbonate type.
				Norco aquifer ("400-foot" sand)	50 to greater than 250 feet. Generally about 150 feet.	Fine to coarse sand. May contain fine gravel.	Generally saltwater except in Ascension Parish, northern Jefferson Parish, and along the border between St, Charles and St. John the Baptist parishes, where freshwater has low hardness and pH between 7.5 and 8.0 standard units.
				Gonzales-New Orleans aquifer ("700-foot" sand)	Generally 150 to 300 feet	Very fine to medium sand.	Contains saltwater in part of area. Freshwater is soft and low in iron and manganese ⁶ concentrations; pH averages about 8.0 standard units.
				"1,200-foot" sand (aquifer)	Not determined	Fine to medium sand.	Contains saltwater except in northeast corner of Orleans Parish.

¹Clay units separating aquifers in southeastern Louisiana are discontinuous and unnamed.

²The U.S. Geological Survey (Hem, 1985, p. 159) classifies hardness as calcium carbonate as follows: Water having a hardness of 0-60 mg/L (milligrams per liter) is considered soft; 61 to 120 mg/L, moderately hard; 121 to 180 mg/L, hard; and more than 180 mg/L, very hard.

³Iron concentration equal to or greater than 0.3 mg/L is considered high; concentration less than 0.3 mg/L is considered low.

⁴The Mississippi River alluvial aquifer is considered part of the New Orleans aquifer system locally, in parts of Ascension, St. James, and St. John the Baptist Parishes.

⁵In this report, saltwater is defined as water containing chloride concentrations of 250 mg/L or more. Concentrations of chloride greater than 250 mg/L exceed the National Secondary Drinking Water Regulations (U.S. Environmental Protection Agency, 2002).

⁶Manganese concentration equal to or greater than 0.05 mg/L is considered high; concentration less than 0.05 mg/L is considered low.

The Shallow Aquifers

The shallow aquifers are discontinuous and occur locally. They are generally shallower than 200 feet below sea level. These aquifers contain no freshwater near the Lake Pontchartrain shoreline in Orleans Parish.

The Norco Aquifer

The Norco aquifer is approximately 300 feet below sea level and is present in a very thin layer (approximately 50 feet thick) at the Industrial Canal, see **Attachment E, Section 5**. A clay bed up to 200 feet thick separates the Norco aquifer from the Gonzales-New Orleans aquifer (Dial and Sumner, 1989).

The Gonzales-New Orleans Aquifer

The Gonzales-New Orleans aquifer contains freshwater up to a depth of 250 feet and supplies the Greater New Orleans region. Its base is underlain by saltwater. At Lake Pontchartrain, the aquifer begins at 400 feet below sea level and extends southward toward the Industrial Canal. (The top elevation of this aquifer at the Industrial Canal is at an approximate elevation of 425 feet below sea level.)

Design Incorporation

Preliminary BMPs selected for analysis for incorporation in the Pontilly Study Area design include the use of bio-swales, detention ponds, infiltration basins, wetlands, bio-retention cells, and pervious pavement. The discussion below will only include the BMPs that will interact with groundwater and aquifer levels, Infiltration BMPs: detention ponds, wetlands, bio-retention cells, pervious pavement, and especially infiltration basins.

Infiltration BMPs

The infiltration BMPs will require the removal of soil to varying depths of, on average, three feet below grade for temporary storage and transport of stormwater. Properties along the France Street levee contain groundwater at levels up to only 0.5 foot below grade near Madrid Street and as far below as 11 feet further south, near Mithra Street. Therefore, site-specific seasonal high-groundwater levels will need to be taken into account during the design of infiltration BMPs in order to accurately determine the effective volume of water storage, as well as mitigating the unintentional creation of intermittent retaining ponds that hold groundwater from the shallower aquifers.

Infiltration Basins

The infiltration basins preliminary design has the ground sloping toward a 36-inch PVC pipe that will convey stormwater runoff through various sizes of gravel to an aquifer. If the piezometric head in the aquifer above existing grade of the top of the drainage basin, there will be insufficient head for the stormwater to drain into the aquifer for storage and transport from the area. Also, if the zone is saline, there is a head requirement to overcome the density of the aquifer system as well.

Therefore, determination of groundwater levels, aquifer piezometric elevations, and salinity levels are very important in order to properly design the BMPs.

This Page Intentionally Left Blank

7.0 Model Development

SWMM is a dynamic hydrologic and hydraulic model capable of performing continuous or event simulations of surface runoff and groundwater base flow, and subsequent hydraulic conveyance in open channel and pipe systems.

The hydrologic system operates by applying precipitation across hydrologic units (HUs), and then through overland flow and infiltration, conveying surface runoff to loading points on the user-defined primary stormwater management system (PSMS). Runoff hydrographs for these loading points provide input for hydraulic routing in the downstream system.

The hydraulic flow routing routine of SWMM uses a link-node representation of the PSMS to dynamically route flows by continuously solving the complete one-dimensional Saint-Venant flow equations. The dynamic flow routing allows for representation of channel storage, branched or looped networks, backwater effects, free surface flow, pressure flow, entrance and exit losses, weirs, orifices, pumping facilities, rating curves, and other special structures or links.

The model was created using the vertical datum, North American Vertical Datum of 1988 (NAVD), and the geodetic reference system, Louisiana State Plane (NAD 1983, State Plane, Louisiana, South).

Hydrology

Hydrologic Units

The project watershed was sub-divided into hydrologically distinct subbasins defined as HUs. The divisions were based on a combination of topographic information, existing city stormwater infrastructure information, and aerial photographs. The hydrologic parameters assigned to each HU include area, width, slope, directly connected impervious area (DCIA), surface roughness, initial abstraction, and infiltration parameters.

Area

The tributary areas for each HU were determined directly from GIS mapping.

Imperviousness

Impervious area was incorporated into the model by entering total impervious area as the imperviousness and using the Subarea Routing function to route a given percentage of that to the pervious layer. This percentage represents the runoff from impervious structures onto pervious surfaces, i.e. water running off of a rooftop and onto the yard below. A routing percentage of 33 percent was used in the stormwater model representation of the Pontilly Study Area. Model sensitivity to the Subarea Routing percentage was analyzed by CDM Smith for the City of New Orleans in the 2011 SMCIP. This percentage is similar to the expected ratio between DCIA and Non-DCIA impervious surfaces for residential neighborhoods within the city.

The area of imperviousness for each HU was determined using the impervious area shapefile created for this project and detailed in the technical memorandum, *Increase in Impervious Area Peak Stage Impacts* (May 2012).

Width

The width of each HU was computed by finding twice the square root of the HU area. Smaller scale projects with significantly fewer HUs would likely use a method of measuring multiple flow path lengths per HU and dividing the area by the average length to get width. In urban areas with approximately square HUs surrounding a street with multiple inlets along the length of the street, the flow path is generally from the edge of the HU to the center of the street. Therefore, the flow path length is approximately half the length of the side of the HU,

and the resulting width is double the length of the side of the HU. Flow path length measurements were taken for the HUs within the Joseph Bartholomew Golf Course and other irregularly shaped areas.

Slope

The Slope of each HU was determined using topographic information and finding the average slope across each HU. The average slope for the different HUs ranges from 1.6 to 4.3 percent, with actual slope ranging from one to nine percent. As with Width, the model is less sensitive to this parameter under variations that occur in this relatively flat terrain than to other parameters such as soil storage and percent impervious.

Evaporation

The average evaporation for a year is 41.33 inches – averaged into a daily evaporation rate equals approximately 0.11 inches per day. The evaporation default value of 0.1 inches per day was accepted for these models. The model is not sensitive to evaporation for design storm applications.

Overland Roughness and Depression Storage

The overland Manning’s roughness values were set to 0.015 for impervious areas and 0.3 for pervious areas. The pervious area roughness values are higher than those used for a channel bottom because the depth of flow is much shallower for surface runoff. The model is not sensitive to changes in these values, within ranges that are physically reasonable.

Depression storage, also known as initial abstraction, represents the volume of water that does not flow off the surface into the PSMS due to ponding. The values are set to 0.05 inches over impervious areas and 0.1 inches over pervious areas. Again, the model is not sensitive to changes in these values, within ranges that are physically reasonable.

Infiltration

The SWMM infiltration function uses soil characteristics to define infiltration parameters. The Horton soil infiltration method was selected for this project.

A single set of infiltration characteristics were assigned to each HU based on the predominant soil type in that catchment. The surface soil information was collected from the SSURGO dataset as described in the **Data Collection** section above. The composite soil make-up was then used to determine weighted Horton soil characteristics including maximum (initial) and minimum (final) infiltration rates, and soil storage. Soil storage varies depending on antecedent moisture conditions (AMCs). This model uses average antecedent moisture conditions (AMCII), which may be defined as the soil condition when the previous 5-day rainfall volume totals between 1.4 and 2.1 inches.

Table 17 below displays the soil parameters by soil type for the AMCII conditions.

Table 17: Global Soil Parameters

Soil Type	Max Infiltration Rate (in/hr)	Min Infiltration Rate (in/hr)	Decay Rate (1/sec x 10 ⁻⁴)	Dry Time (days)	Soil Storage (in)
A	12.0	1.00	5.56	1.0	5.4
B	9.0	0.50	5.56	1.0	4.0
C	6.0	0.25	5.56	1.0	3.0
D	4.0	0.10	5.56	1.0	3.0

Hydraulics

In general, a primary stormwater management system PSMS may be comprised of canals, rivers, streams, lakes, bridges, culverts, pipes, pump stations, weirs, and other hydraulic structures.

Most of these types of hydraulic elements are part of the larger drainage system, but are not present within the bounds of the Pontilly Study Area stormwater model. The PSMS is almost entirely made up of pipes, with the notable exception of the Dwyer Canal.

Model Resolution

There are numerous inlets and smaller pipes leading to a main PSMS trunk in the Pontilly Study Area. The inlets and smaller connecting pipes (15-inches and smaller) are considered secondary systems and are rarely explicitly modeled. The local surface runoff is directed to the upstream end of the PSMS. In some areas there are two pipes, one on each side of the street. Where streets such as these intersect, there are likely four manholes at the intersection of these pipes. Surrounding these manholes, there may be up to 12 inlets. In this case, the intersection is modeled with one model junction (node). The surface runoff from the surrounding block (estimated from the hydrologic layer of the model) would load to this single entry point on the hydraulic system. **Figure 11** provides an example of this equivalent representation.

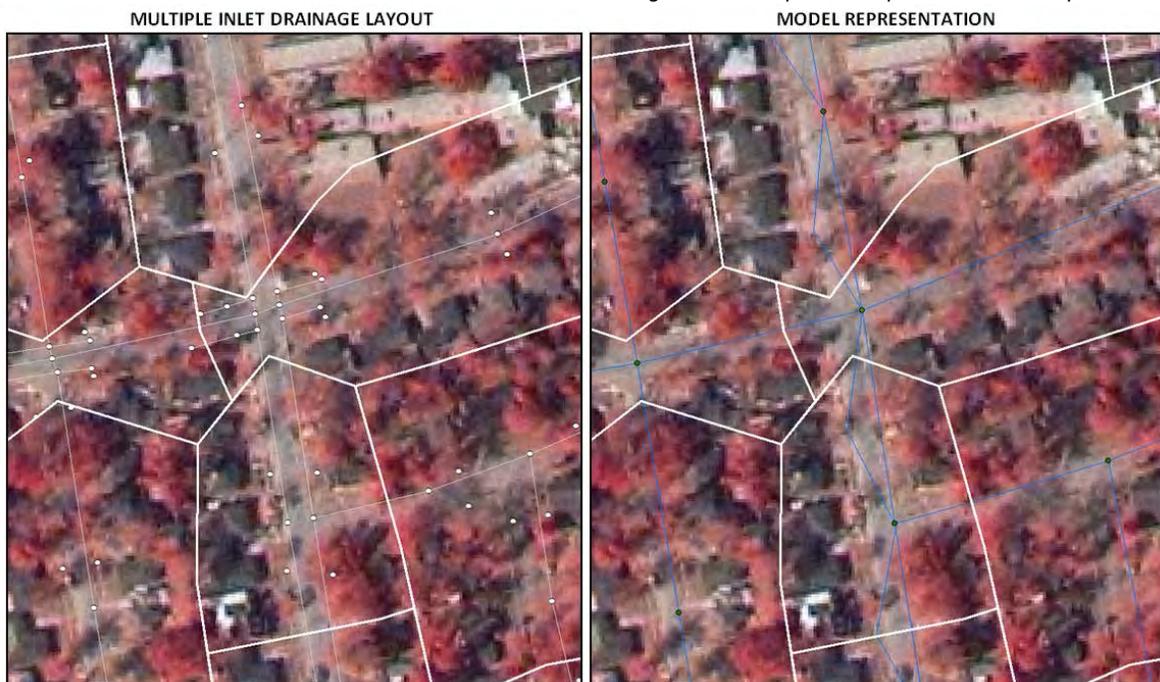


Figure 11: Multiple Inlet Equivalent Model Representation

Model Nodes

Model nodes may be in the form of junctions, storage junctions, or outfalls. Storage junctions are used to define a stage – storage area relationship above the top of an inlet. These help determine depths of flooding and have been used extensively in the calibration model. For the design models, stage-storage relations are confined to areas that include wetlands, ponds, detention areas, or other areas of excessive storage. Outfalls are placed at the boundaries of the model where flow is out of the model space. Outfalls will be discussed in detail in the paragraph on boundary conditions below. All other model nodes are labeled as junctions. Junctions are located at:

1. The ends of pipes which are 15-inches in diameter or greater (secondary systems of lesser diameter are coupled with surface runoff in the hydrologic layer);
2. Intersections of drainage systems;
3. Locations of pipe diameter change; and
4. Points representing the HU low point.

The loading from the hydrologic layer may be input to any node in the PSMS however, all junctions representing the upstream end of a pipe system should have hydrologic loading in order that “dry” pipes not be created. Dry pipes are those pipes that have no flow from an upstream element (either link or loading) and therefore are not useful in the system analysis. Dry pipes may also cause instabilities in this type of model.

Some pipe diameters smaller than 18 inches have been added where necessary to retain continuity of the system, such as where there are larger pipes on either side.

Model node inverts were set to the lowest pipe invert intersecting the given node.

Model Links

Model links may be conduits, pumps, orifices, weirs, or outlets. In this model all of the links are conduits. A conduit may be an irregular channel, a trapezoid, a circular pipe, a box culvert, or of a special shape. With few exceptions, all the conduits in this model are circular pipes or box culverts.

Pipe size and length were determined based upon the GIS information supplied by the NO DPW. Pipe inlet and outlet inverts were determined by using or extrapolating from survey data. Under design storm conditions when pipes are flowing full, minor changes to pipe invert elevations have little effect on model results. It is not expected that the actual pipe inverts would vary significantly from these estimates, such that it would impact model results or findings.

Minor entrance and exit losses were uniformly set to values of 0.2 and 0.3, respectively, for pipes 36 inches in diameter or smaller. Smaller losses were used for larger conduits, especially where they intersect with relatively small conduits, as little head loss would occur. The sensitivity analysis indicated that the model is not very sensitive to minor losses for the intense storms where flooding is prevalent. The losses account for head losses at inlets, pipe diameter changes, intersections, and outfalls.

Pipe roughness (Manning’s n) was uniformly set at 0.013 which corresponds to concrete and is indicative of clean, well-maintained pipes. Maintenance issues are not included in the model. All pipes and inlets were modeled as well maintained, with no siltation included. The sensitivity of the model to a maintenance condition was tested as documented in the Model Calibration, Sensitivity Analysis section, below; however, in general, a routine maintenance program will be required to meet the estimated LOS that the model predicts. Without maintenance, the likelihood of flooding cannot be predicted as any pipe or inlet in the system may act as a constraint.

A portion of the drainage system is comprised of parallel pipes, usually running down opposite sides of the same street. If these pipes are the same size, they were combined into one link with two barrels in the model representation. If they were not the same size, they were represented by two parallel links in the model.

Surface Flow and Above Ground Hydraulic Elements

As discussed above, the model has above ground elements in order to accurately estimate flood depths and to hydraulically connect road flooding between nodes. These elements include road conduits, equalizer conduits, and storage junctions.

For large events that cause significant ponding and flooding on roads, the overland flow along the road is modeled as an irregular conduit representing the road above each pipe. Road conduits allow for a hydraulic connection along the road surface when pipes are surcharged. In flat areas, where adjacent nodes are surcharging, the volume in the link also provides above ground storage at these locations. The Manning's n value of the road was estimated to be 0.015, which represents the asphalt or concrete in a road section. The Manning's n value of the side slopes beyond the road's curbs was estimated to be 0.03, which represents a combination of grass and concrete sidewalk. The inverts of these conduits were estimated from the LiDAR topographic surface. The lengths were measured from GIS. Since road conduits are parallel to all pipes in the system, they cover nearly all of the model area. In some areas, there are roads without underground pipes, where flooding is likely to occur. These areas were connected with road conduits, as appropriate, to connect adjacent systems above ground. The conduit is represented by an irregular cross-section which has been built using a cross-section of the LiDAR topographic surface and an estimate of curb/gutter profile.

An equalizer conduit is another above ground irregular conduit, but one that does not include significant storage and is used to "equalize" the above ground HGL (or stage) between two nodes. This is often used where there is no pipe connection across an intersection between two neighboring systems. Without equalization, one side of the system could potentially surcharge to a higher level than the other. The equalizer acts as a weir from one side to the other, with the weir crest at the crown of the roadway or peak of the yard area.

Storage junctions were used to account for all above ground storage not already being modeled with the road and equalizer conduits. This was performed using GIS to "remove" the footprint of the road conduits and building footprints from the topography, and then calculating the remaining storage. Storage junctions were also used to estimate storage in the Joseph Bartholomew Golf Course.

Model Outfalls

Outfall nodes are used to represent connections to boundary conditions. SWMM has a limitation that only one link may be connected to each outfall. Because multiple drainage systems often intersect at a single location, it was necessary to create an outfall where multiple links connect to a node, then use a "virtual" conduit from this node to the outfall. This virtual conduit is a large, short box culvert that has no effect on the results.

Boundary Conditions

The boundary conditions established for the stormwater model representation of the Pontilly Study Area were developed from the Drainage Pump Stations (DPS) No. 3 and No. 4 (DPS0304) DPS0304 model for the 1-year, 2-year, 5-year, 10-year, 25-year, and 100-year 24-hour design storms. The Pontilly Study Area is hydrologically separated from the rest of the DPS No.3 and DPS No.4 service areas by the Norfolk Southern Railroad on the north and west, by the Industrial Canal Levee on the East, and by Interstate 610 to the South. Note that the model extends south of Chef Menteur Highway because a hydraulic system south of the highway merges with one from the Pontilly Study Area.

Figure 11 displays the Regional Area.

The model area hydraulically connects to the larger DPS No. 3 and DPS No. 4 service area at eight locations (under the railroad) model nodes:

- | | | |
|----------------|----------------|----------------|
| 1. DPS04_23978 | 4. DPS04_34708 | 7. DPS04_36297 |
| 2. DPS04_32462 | 5. DPS04_35226 | 8. PUB04_01 |
| 3. DPS04_34536 | 6. DPS04_36191 | |

For these eight locations, time series hydrographs of flood elevation were obtained from the DPS0304 model and input to the stormwater model for this project as outfall node boundary conditions, for each storm. Additionally, there are three outfalls that connect directly to the People's Avenue Canal, for which there are fixed stage boundary conditions as in the DPS0304 model. The Pontilly Study Area stormwater model was run with these boundary conditions and compared to the larger model's results. By isolating the Pontilly Study Area from the larger model using these boundary conditions, the team will be better able to analyze multiple alternatives. The final alternatives will be adapted in the larger DPS0304 model to show that no adverse offsite impacts are expected to occur.

Model Validation

Validation Storm (May 1995)

The May 1995 storm was chosen for model validation because high water marks were available in the DPS 04 service area, adjacent to the Pontilly Study Area stormwater model (see **Data Collection, Sewerage and Water Board of New Orleans Infrastructure Data** section).

Hourly rainfall data was collected from the National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center (NCDC) for the Audubon Park gage, which recorded 12.6 inches of precipitation for the 24-hour period beginning at 17:00 hours on May 8, 1995 (the total volume was higher over the extended period of the storm). Due to the relatively small resolution of this model, it was determined that a one-hour time step would be too large compared for the travel time within each hydrologic unit. NetSTORM was used to disaggregate the data from one-hour to 15-minute time steps. Instead of simply dividing the hourly volume by four, NetSTORM reviews preceding and trailing volumes for trends and disaggregates accordingly. **Figure 13** shows the rainfall hyetograph of this storm.

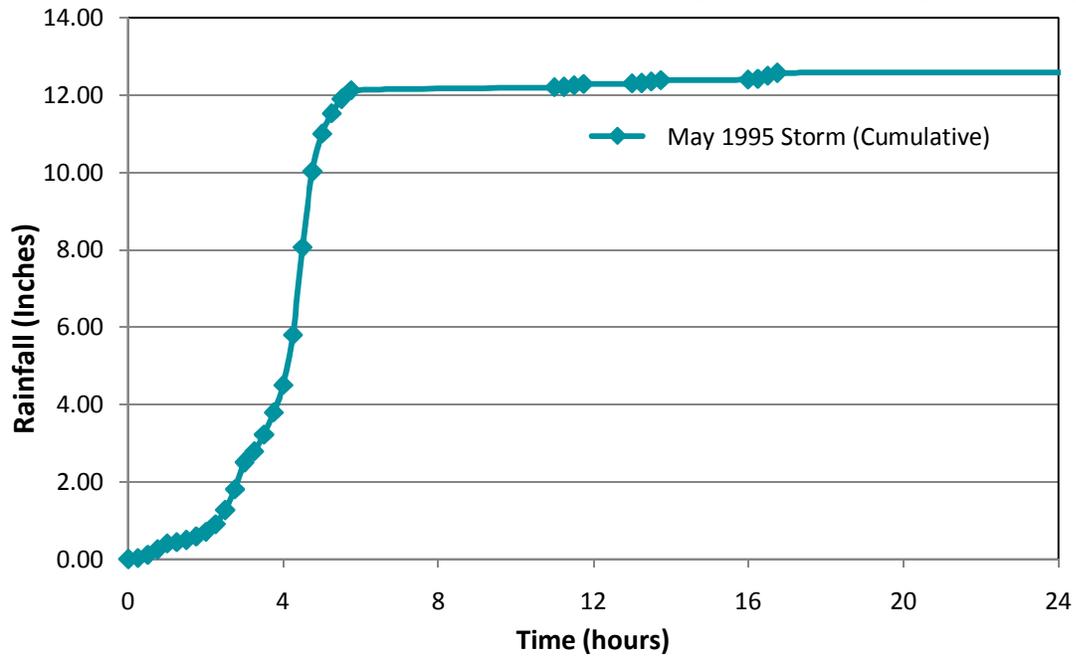
The average depth of rainfall observed from the May 8-9, 1995 event was measured to be 13.6 inches for areas north of Gentilly Boulevard (S&WB, BCG, pg. C-9); therefore, the Audubon Park distribution was used with a 13.6 inch volume for this validation

Peak Stage Data

As described above in the **Data Collection, Sewerage and Water Board of New Orleans Infrastructure Data** section, S&WB data shows storage nodes 1F and 1A observed a maximum stage of 16.52 feet Cairo Datum (CD) and 15.48 feet CD, respectively, during the event that occurred May 1995. Since these locations are outside of the Pontilly Study Area, the Pontilly Study Area stormwater model could not be validated with this data.

However, the larger DPS0304 model from the City of New Orleans Stormwater Management Capital Improvements Plan is used to create boundary conditions for the Pontilly Study Area stormwater model, and this model could be validated in these locations. The DPS0304 model covers the entire Pump Station DPS No.3 service area and DPS No.4 service area. With only two locations of high water marks, the model was only validated for the area near DPS No.4 and the large box culverts along Prentiss Boulevard. Minor revisions were made to the DPS0304 model to improve the validation, including adding storage at locations not already covered by the overland road conduits. After these revisions, the difference between the peak measured stages and the peak model stages at the two locations was less than three inches.

Figure 13: Rainfall Hyetograph of the May 1995 Storm



This Page Intentionally Left Blank

8.0 Existing System Level of Service

A hydrologic and hydraulic model of existing conditions was created of the Pontilly study area using SWMM to facilitate analysis of the storage and conveyance capacity and associated LOS for the project area. A detailed discussion of model creation, parameters, assumptions, and methodology is provided above in the **Model Development** section of this technical memorandum.

Stormwater runoff was modeled using the SWMM rainfall-runoff module (i.e., RUNOFF). The tributary areas for each HU were determined directly from GIS mapping of topography and inlet locations. The Pontilly Study Area stormwater model has a total tributary area of 1,036 acres that were subdivided into 351 HUs for stormwater modeling purposes. The average HU area is 3.0 acres. The minimum and maximum HU areas delineated for this model are 0.2 and 31.7 acres, respectively.

The stormwater runoff, received as hydrograph input to specific nodal locations on the PSMS, was hydraulically routed using the SWMM EXTRAN module. The modeled drainage system is 23.3 miles of pipes and contains 461 subsurface conduits, 529 overland conduits, 407 junctions, 12 outfalls, and 34 storage units.

Figure 14 shows a schematic of the sub-catchments, nodes, and conduits included in the model for the Pontilly service area.

Flooding Assessment

The existing conditions model simulations represent the subsurface drainage system throughout the study area. The stormwater management system was simulated for the following events:

1. 1-year, 24-hour storm (100 percent exceedance frequency event)
2. 2-year, 24-hour storm (50 percent exceedance frequency event)
3. 5-year, 24-hour storm (20 percent exceedance frequency event)
4. 10-year, 24-hour storm (Ten percent exceedance frequency event)
5. 25-year, 24-hour storm (Four percent exceedance frequency event)
6. 100-year, 24-hour storm (One percent exceedance frequency event)

The results of the existing conditions simulation illustrate that the subsurface drainage system is inadequate for storage and conveyance for the probable design event, a 10-year, 24-hour storm.

Attachment F, Section 1 includes a table of the peak stages for each model node for each of the existing conditions events.

1-Year Rainfall Event

For this storm, 125 of 407 model nodes are simulated to be flooded six inches or greater above estimated ground surface elevation. **Figure 15** shows an estimated flood map of the existing conditions model built using the predicted peak flood stages and the LiDAR topography.

2-Year Rainfall Event

For this storm, 238 of 407 model nodes are simulated to be flooded six inches or greater above estimated ground surface elevation. **Figure 16** shows an estimated flood map of the existing conditions model built using

the predicted peak flood stages and the corrected LiDAR topography. This map, in conjunction with the aerial photography, has been used to estimate that 3.9 miles of streets are flooded in the Pontilly study area during the 2-year rainfall event. For this estimate, a street is considered flooded if at least 50 linear feet of the street is covered by at least six inches of water.

5-Year Rainfall Event

For this storm, 296 of 407 model nodes are simulated to be flooded six inches or greater above estimated ground surface elevation. **Figure 17** shows an estimated flood map of the existing conditions model built using the predicted peak flood stages and LiDAR topography. This map, in conjunction with the aerial photography, has been used to estimate that 7.6 miles of streets are flooded in the Pontilly study area during the 5-year rainfall event. For this estimate, a street is considered flooded if at least 50 linear feet of the street is covered by at least six inches of water.

10-Year Rainfall Event

For this storm, 331 of 347 model nodes are simulated to be flooded six inches or greater above estimated ground surface elevation. **Table 20** shows a summary of the ten nodes and intersections with the deepest flooding as estimated by the model.

Table 20: Summary of locations of deepest flooding

Rank	Model Node Number	Location	Depth of Flooding (feet)
1	DPS04_34632, DPS04_34633, & DPS04_34602	5000 Metropolitan Dr.	3.2
2	DPS04_34841	5200 Congress	3.0
3	RR_Ease9 & RR_Ease10	Behind houses near 5900 Providence Pl.	2.5
4	DPS04_34623	Corner of Dreux Ave. & Feliciana Dr.	2.2
5	DPS04_35392 & DPS04_34943	4900 Gallier Dr.	2.2
6	DPS04_34754	Corner of Press St. & Mendez St.	2.2
7	DPS04_34686	Corner of Press St. & Odin St.	2.0
8	DPS04_34947	4900 Desire Dr.	2.0
9	DPS04_34561	Corner of Dreux Ave. & Montegut Dr.	2.0
10	DPS04_35416	4900 DeBore Cir.	1.9

Figure 18 shows an estimated flood map of the existing conditions model built using the predicted peak flood stages and LiDAR topography. This map, in conjunction with the aerial photography, has been used to estimate that 9.5 miles of streets are flooded in the Pontilly study area during the 10-year rainfall event. For this estimate, a street is considered flooded if at least 50 linear feet of the street is covered by at least six inches of water. **Table 21** also provides a summary of the five longest segments of flooded streets as determined by predicted peak flood stages and LiDAR topography.

Table 21: Summary of longest segments street flooding

Rank	Block	Street	Length of Flooding (Mi)	Average Depth of Flooding (Ft)	Peak Depth of Flooding (Ft)
1	4200 to 5000	Stephen Girard Ave.	0.35	0.7	1.3
2	4700 to 5000	Dreux Avenue	0.34	1.1	2
3	4700 to 5100	Congress Drive	0.32	1.1	2.1
4	6000 to 6300	Providence Place	0.30	0.8	1.3
5	6400	Press Drive	0.28	0.7	1

25-Year Rainfall Event

For this storm, 363 of 407 model nodes are simulated to be flooded six inches or greater above estimated ground surface elevation. **Figure 19** shows an estimated flood map of the existing conditions model built using the predicted peak flood stages and LiDAR topography.

100-Year Rainfall Event

For this storm, 367 of 407 model nodes are simulated to be flooded six inches or greater above estimated ground surface elevation. **Figure 20** shows an estimated flood map of the existing conditions model built using the predicted peak flood stages and the corrected LiDAR topography. This map, in conjunction with the aerial photography, has been used to estimate that 15.8 miles of streets are flooded in the Pontilly study area during the 100-year rainfall event. For this estimate, a street is considered flooded if at least 50 linear feet of the street is covered by at least six inches of water.

Attachment F, Section 2 provides a summary of the flooded streets.

Summary

Using GIS Spatial Analyst to determine peak stage flooding volumes the following was determined:

Table 22: Event peak stage flooding volumes above given LOS.

Event	Level of Service	Volume (cu.ft.)	Volume (ac-ft)
1-Year, 24-hour storm	No Flooding	1,938,890	45
2-Year, 24-hour storm	No Flooding	4,314,185	99
5-Year, 24-hour storm	3 Inches of Flooding	5,009,303	115
10-Year, 24-hour storm	6 Inches of Flooding	4,829,303	110

The above peak stage flood volumes do not include volumes above the golf course or the modeled area outside of the Pontilly Study Area. There is not a significant difference in volumes between the 2-year, 5-year, and 10-year events due to the changes in specified LOS (allowed peak stage flooding depths).

This Page Intentionally Left Blank

9.0 References

CDM Smith (CDM), 2008 NetSTORM Users Manual.

Faiers, G.E., Keim, B.D., and Muller, R.A. (1997) SRCC Technical Report 97-1: Rainfall Frequency/Magnitude Atlas for the South-Central United States. Southern Regional Climate Center, Department of Geography and Anthropology, Louisiana State University, Baton Rouge, LA. 1997.

Farnsworth, R.K. and Thompson, E.S., 1982, Mean Monthly, Seasonal, and Annual Pan Evaporation for the United States: U.S. Department of Commerce, National Oceanic and Atmospheric Administration NOAA Technical Report NWS 34, 91 p.

Farnsworth, R.K., Thompson, E.S., and Peck, E.L., 1982, Evaporation Atlas for the Contiguous 48 United States: U.S. Department of Commerce, National Oceanic and Atmospheric Administration NOAA Technical Report NWS 33, 37 p.

Frederick, Ralph and Eugene Auciello. (1977) NOAA Technical Memorandum NWS HYDRO-35: Five- to 60-Minute Precipitation Frequency for the Eastern and Central United States. National Oceanic and Atmospheric Administration. Silver Springs, MD. June 1977.

Hershfield, David. (1961) Technical Paper No. 40: Rainfall Frequency Atlas of the United States for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years. Cooperative Studies Section, Hydrologic Services Division for Engineering Division, Soil Conservation Service, U.S. Department of Agriculture, Department of Commerce. Washington D.C. May 1961.

Lindeburg, M.R. (2003). Civil Engineering Reference Manual. Belmont, CA: Professional Publications, Inc.

Liu, C. and Evett, J.B. (1998). Soils and Foundations (4th ed.). Upper Saddle River, NJ: Prentice-Hall, Inc.

Louisiana Statewide LiDAR Project (2004) Data Downloaded from Atlas: The Louisiana Statewide GIS <http://atlas.lsu.edu/>

Mayne, P.W. (2007). Cone Penetration Testing: A Synthesis of Highway Practice. National Cooperative Highway Research Program. Washington, D.C.: Transportation Research Board.

National Oceanic and Atmospheric Administration, National Environmental Satellite Data and Information Service, 2012, Comparative Climate Data for the United States through 2011, 152 p.

NOAA: National Climatic Data Center (NCDC). Extreme Weather and Climate Events. <http://lwf.ncdc.noaa.gov/oa/climate/severeweather/extremes.html> . (accessed June 19, 2006).

NOAA: NCDC. Get/View Online Climate Data, Surface Data. <http://www.ncdc.noaa.gov/oa/climate/climatedata.html#surface>. (accessed June 19, 2006)

Robertson, P.K. and Cabal, K.L. (2010). Guide to Cone Penetration Testing for Geo-Environmental Engineering (2nd ed.). Signal Hill, CA: Gregg Drilling & Testing, Inc.

Robertson, P.K. and Campanella, R.G. (1983). Interpretation of Cone Penetration Tests Part I (Sand) and Part II (Clay) (Vol. 20, No. 4). Ottawa, ON, CA: Canadian Geotechnical Journal.

- Rogers, J.D. (2004, Spring). Notes on the Cone Penetrometer Test. GE 441-Engineering Geology and Geotechnics. Retrieved May 2012, from <http://web.mst.edu/~rogersda/umrcourses/ge441/Cone%20Penetrometer%20Test.pdf>.
- Rogers, J. D. (2008) "Development of the New Orleans Flood Protection System prior to Hurricane Katrina." Journal of Geotechnical and Geoenvironmental Engineering, 2008: 602-617.
- Shallat, T. "In the Wake of Hurricane Betsy." In Transforming New Orleans and Its Environs: Centuries of Change, edited by C.E. Colten, 121-137. Pittsburgh: University of Pittsburgh Press, 2000
- Soil Conservation Service (SCS). Soil Survey of Orleans Parish, Louisiana. United States Department of Agriculture (USDA), 1989.
- Southeast Louisiana Urban Flood Control Project Orleans Parish, Louisiana, Peoples Subbasin Section 533 (d) Report, US Army Corps of Engineers®, New Orleans District, Mississippi Valley Division.
- Springston, P.E., Ann L., Brown, Cunningham, and Gannuch Engineering.
- Spooner, P.E., M. Ron, Utility Services Administrator, Network/Drainage Engineering, Sewerage and Water Board of New Orleans.
- Tomaszewski, D.J. (2003). Ground-Water Resources along the Lower Mississippi River, Southeastern Louisiana, U.S. Department of the Interior, U.S. Geological Survey and the Louisiana Department of Transportation and Development, 23 p.
- U.S. Corps of Engineers (USACE). "Engineering Investigation Appendix: Section 1 – Hydrology and Hydraulics" in Southeast Louisiana Urban Flood Control Project, Jefferson Parish, Louisiana.
- USACE. "Engineering Investigation Appendix: Section 1 – Hydrology and Hydraulics" in Southeast Louisiana Project, Orleans Parish Feasibility Study, Orleans Avenue Area & London Avenue Area Basins.
- USACE. "Engineering Investigation Appendix: Section 1 – Hydrology and Hydraulics" in Southeast Louisiana Project, Orleans Parish Feasibility Study, Uptown Area Subbasins.
- U.S. EPA (2011) Storm Water Management Model (SWMM). Available for download at: <http://www.epa.gov/nrmrl/wswrd/wg/models/swmm/>
- Woolhiser, D.A. and Wallace, D.E., 1984, Mapping Average Daily Pan Evaporation: Journal of Irrigation and Drainage Engineering, 5 p.

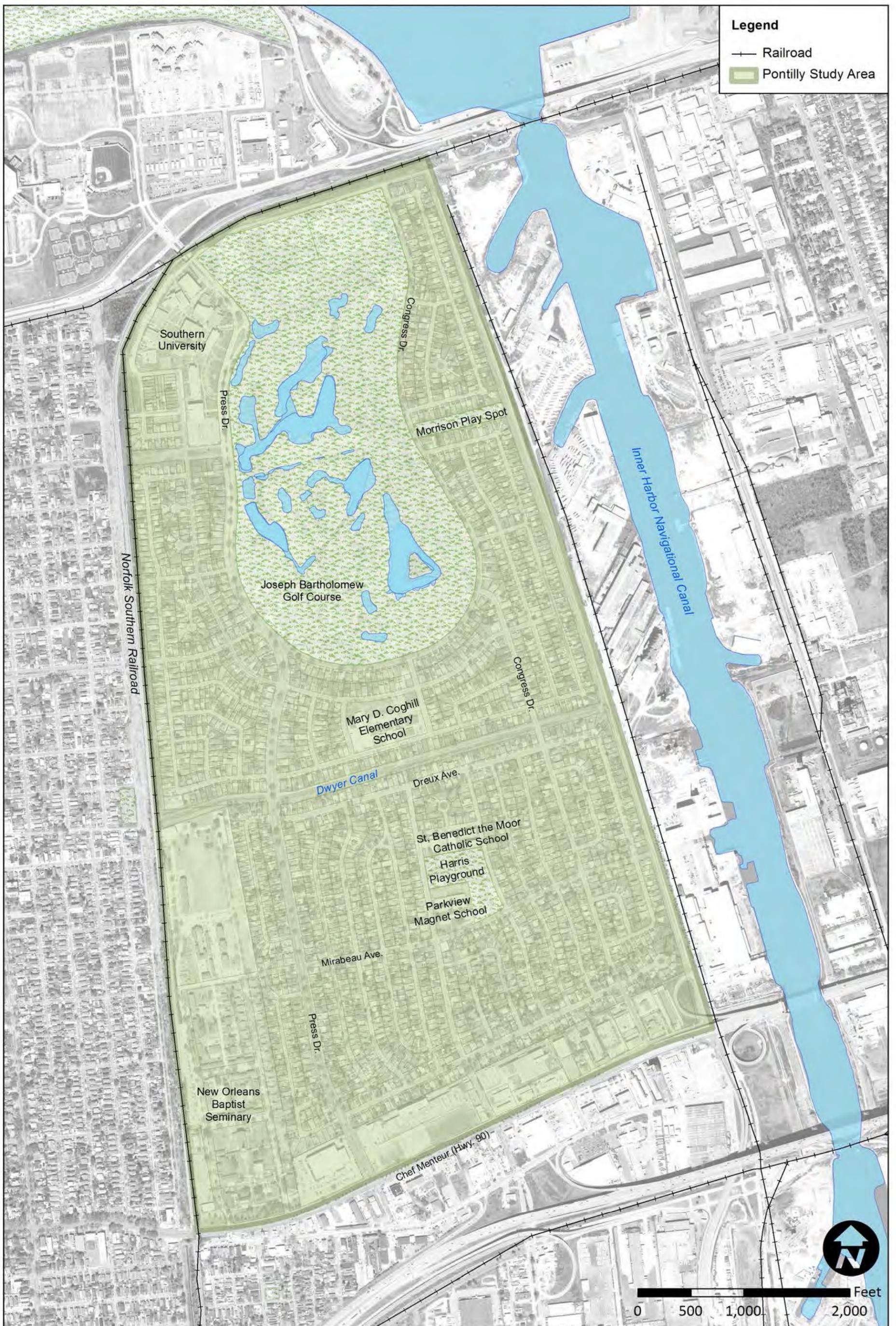


Figure 1
Pontilly Study Area

Appendix D

Preliminary EER Report by CDM Smith and EDR Database Report by Environmental Data Resources, Inc.

Excerpted. For a full version of these reports, the general public can send a request to FEMANOMA@dhs.gov, tel: 504-427-8000, fax: 225-346-5848 or by mail to: Department of Homeland Security-FEMA, Louisiana Recovery Office, Attn: EHP-Pontilly Stormwater Drainage, 1500 Main Street, Baton Rouge, LA 70802.

Preliminary Environmental Review Technical Memorandum

The Preliminary Environmental Review Technical Memorandum (TM) was prepared for the New Orleans Redevelopment Authority (NORA) by the CDM Smith Team with Integrated Logistical Support, Inc.(ILSI) taking the task lead.

Purpose

The purpose of this memorandum is to identify and analyze relevant environmental issues and constraints that may affect the selection and implementation of proposed stormwater or flood mitigation alternatives under consideration in the Pontchartrain Park and Gentilly Woods neighborhoods, known collectively as the Pontilly area. The intent of this memorandum is to locate those places within the Pontilly area which are already experiencing impacts or are particularly sensitive to impacts and to identify important environmental resources, known sensitive areas, management issues and associated limitations. To some degree, the implications of these issues cannot be fully determined until specific stormwater or flood mitigation alternatives are developed. However, during the alternatives identification and evaluation portion of the planning effort, this memorandum will be used to help assess the implications of each flood mitigation alternative for natural resources, sensitive areas, and land management issues.

Conducted as a desktop exercise, this technical memorandum is not a substitute for project-specific issue identification, which will be accomplished through evaluation of specific project alternatives and through coordination with public agencies. However, flood mitigation alternatives that exacerbate impacts in the areas already experiencing impacts, or which introduce new impacts to the areas identified in this memorandum, are likely to be given more intense scrutiny by the public regulatory and land management agencies.

Methodology

The approach used in the identification and examination of environmental constraints and issues in the Pontilly area relied on a review of existing planning efforts conducted by the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers New Orleans District, the U.S. Department of Agriculture, the U.S Federal Emergency Management Agency (FEMA), the Louisiana Department of Natural Resources Office of Coastal Management, the Louisiana Department of Environmental Quality, the Louisiana Department of Cultural Development Division of Historic Preservation, and the Louisiana Department of Cultural Development Division of Archaeology. Coastal Management Plans, National Environmental Policy Act (NEPA) documentation, and Comprehensive Land Management Plans were also reviewed to identify and analyze important environmental resources, known sensitive areas, and environmental issues.

POTENTIAL ENVIRONMENTAL ISSUES AND CONSTRAINTS

Cultural Resources (Historic & Archaeological)

Projects that affect historic or archaeological sites are subject to Section 106 of the National Historic Preservation Act. The Act requires that federal agencies identify and assess the effects of expenditures of federal funds to maintain the integrity of historic and archaeological sites. The Act requires agencies to provide the Advisory Council on Historic Preservation an opportunity to comment on activities with the potential to impact historic properties. In addition, to the extent possible, impacts on the properties must be mitigated. Properties subject to the act are those on or eligible for the National Register of Historic Places. The State Historic Preservation Officer (SHPO) is the person designated to implement the federal law that protects historic sites.

The proposed flood mitigation alternatives for the Pontilly area would be implemented in previously developed areas, and interference with historic sites is unlikely. Based on information provided by the Louisiana Department of Cultural Development Division of Historic Preservation and the Division of Archaeology, there appear to be no known historic structures or archaeologically sensitive sites located in the Pontilly area, as shown on the map attached in Appendix A.

Floodplain Management

According to the FEMA Flood Insurance Rate Maps (FIRMs) for the Pontilly area, the majority of the subject site is in Flood Zone A7. The area of the subject site located within the first 500 to 1,500 feet north of Chef Menteur Highway, which defines the southern boundary of the Pontilly area, is in Flood Zone B. According to the FIRMs, "Zone A7 is defined as an area of 100-year flood with base flood elevations and flood hazard factors determined." "Zone B is defined as an area between the limits of the 100-year flood and the 500-year flood; or certain areas subject to 100-year flooding with average depths less than one foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood." These maps were last updated in 1984. Portions of the FIRMs ("FIRMettes") are attached in Appendix B.

In 2005, Hurricane Katrina inundated most of the New Orleans area with flood waters, and in response FEMA developed a Hurricane Katrina Surge Inundation and Advisory Base Flood Elevation Map to guide reconstruction in the previously inundated areas. This map shows that most of the subject area from Chef Menteur Highway north to Dreux Avenue, as well as a small area on the northern end of Pontchartrain Park are located in the area where FEMA recommends that the first floor of the buildings be elevated three (3) feet above the Highest Existing Adjacent Grade (HEAG) at the building site. The remainder of the subject site from Dreux Avenue north toward Hayne Boulevard is located in the area where FEMA recommends that the first floor of the building be elevated at or above the Base Flood Elevation (BFE) shown on the communities FIRM. The project area extends to the west side of the levee along the Inner Harbor Navigation Canal. This map is also attached in Appendix B.

Wetlands Protection

Executive Order 11990, Protection of Wetlands, requires federal agencies to avoid direct or indirect support of projects that involve new construction in wetlands when there is a practicable alternative. The U.S. Army Corps of Engineers (USACE) has primary responsibility for issuing permits for the discharge of fill material in wetlands. In Section 320.4(b) *Effect on Wetlands*, of the USACE's regulatory policy states that wetlands "constitute a productive and valuable public resource, the unnecessary alteration or destruction of which should be discouraged as contrary to the public interest." The USACE regulations also require selecting the least damaging practicable alternative (33 CFR 320.2(f), 40 CFR 230.10(a)). When the Section 404 process is done in conjunction with a NEPA evaluation this can influence design, routing, and alternative selection. Proposals for fill placement

in wetlands require authorization from the USACE, with concurrence of other federal and state agencies such as the U.S. Fish and Wildlife Service and the U.S. Environmental Protection Agency.

Based on information provided by the U.S. Fish and Wildlife Service, there are no wetlands or waterbodies within the Pontilly project area. There are three small freshwater ponds located in Pontchartrain Park. These ponds appear to be man-made, and could potentially be affected by the flood mitigation alternatives. Attached in Appendix C is the U.S. Fish and Wildlife Service National Wetlands Inventory Wetlands Map of the Pontilly area.

Coastal Zone Management

Coastal Management Plans have been developed for many communities in the southern Louisiana area. The Pontilly area is located within the Louisiana Coastal Zone as defined by the Louisiana Coastal Zone Boundary Map provided by the USACE. This map is attached in Appendix D.

In June 2009, the Louisiana Legislature directed the Coastal Protection and Restoration Authority to begin a study and comprehensive review of the state's Coastal Zone Boundary (CZB). Since that time, the Department of Natural Resources' Office of Coastal Management has taken the lead in this effort and has joined with other government agencies in conducting a science-based study of the adequacy of the inland boundary of the coastal zone. The Pontilly area is located within the Coastal Use Permit Area, the Intergovernmental Coordination Area, and the Watershed Planning Area as defined by the Louisiana Department of Natural Resources' Office of Coastal Management. A copy of the map showing this is also attached in Appendix D.

Based on this information, permitting may be required in compliance with the USACE and the Louisiana Department of Natural Resources requirements once an alternative is selected and prior to construction.

Sole Source Aquifers

The Environmental Protection Agency (EPA) defines a sole source aquifer as an underground water source that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas have no alternative drinking water source(s) that could physically, legally, and economically supply all those who depend upon the aquifer for drinking water.

The Sole Source Aquifer Program is authorized by Section 1424(e) of the Safe Drinking Water Act of 1974. Designation of an aquifer as a sole source aquifer provides EPA with the authority to review federally funded projects planned for the area to determine their potential for contaminating the aquifer.

EPA has designated six sole source aquifers that are entirely or partially within region VI:

- Arbuckle-Simpson Aquifer in Oklahoma
- Espanola Basin Aquifer System in New Mexico
- Edwards Aquifer I & II in Texas
- Chicot Aquifer System in central and south western Louisiana
- Southern Hills Regional Aquifer System in eastern Louisiana and southwestern mississippi

The Southern Hills Regional Aquifer System is under Lake Pontchartrain in the vicinity of the project site; however, the Pontilly area is not located within an EPA designated sole source aquifer watershed area per the

EPA groundwater office. The map attached in Appendix E shows that Orleans Parish is not included in the Southern Hills Regional Aquifer System.

Biological Resources

Section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531) requires consultation with the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) to ensure that projects do not jeopardize the continued existence of any federally threatened or endangered species or result in the destruction or adverse modification of habitat critical to their survival. Generally, marine species are under the jurisdiction of the NMFS. Other species are under the jurisdiction of the USFWS. The protection afforded to protected species or their habitat can constrain projects and should be a consideration in the project development phase.

There are several categories of protected species relevant to the Pontilly area. An “endangered species” is defined as one that is in danger of extinction throughout all or a significant portion of its range. A “threatened species” is defined as one that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. “Candidate species” are those species for which the USFWS has sufficient information on the specie’s biological vulnerability and threats to support issuance of a proposed rule to list the species under the Endangered Species Act. “Species of concern” refers to species for which a listing of threatened or endangered may be appropriate but which the USFWS has insufficient information to support their listing.

Federally protected species which could inhabit the region around the Pontilly area were identified through a review of the endangered, threatened and candidate species lists maintained by the USFWS and the NMFS. Sensitive plant species lists are maintained by the U.S. Forest Service. The table below lists the protected species that could inhabit the Pontilly area.

Table 1: Protected Species That Could Inhabit the Pontilly area

Group	Name	Status
Birds	Brown pelican (<i>Pelecanus occidentalis</i>)	Recovery
Birds	Sprague's pipit (<i>Anthus spragueii</i>)	Candidate
Fishes	Gulf sturgeon (<i>Acipenser oxyrinchus desotoi</i>)	Threatened
Fishes	Pallid sturgeon (<i>Scaphirhynchus albus</i>)	Endangered
Mammals	West Indian manatee (<i>Trichechus manatus</i>)	Endangered
Mammals	Louisiana black bear (<i>Ursus americanus luteolus</i>)	Threatened

The proposed flood mitigation alternatives are not likely to adversely affect any federally protected, threatened, or endangered species.

Wild and Scenic Rivers Act

The Wild and Scenic Rivers Act of 1968 provides a means for identifying and protecting outstandingly remarkable scenic, recreational, geologic, historic, cultural, ecological, and other values of the nation’s rivers. The intent of the act is to preserve the free-flowing condition of the rivers and the characteristics of the river’s immediate environment. There are three classes of rivers established by the Act: wild, scenic, and recreational. The following definitions are used by the Act to specify the classification of rivers subject to the Act. Wild rivers are described as “those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive”. Scenic rivers are “those rivers or section of

rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.” Recreational rivers are “those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past”. in the only designated wild and scenic river in Louisiana is Saline Bayou which is more than 200 miles away from the project area. The closest designated wild and scenic river to the project area is Black Creek in Central Mississippi. The proposed flood mitigation alternatives would cause no adverse impact to any rivers protected under the Wild and Scenic Rivers Act.

Air Quality

No part of the State of Louisiana is listed as a nonattainment area for any National Ambient Air Quality Standard. Impacts to air quality are anticipated to be minimal for the proposed flood mitigation alternatives in the Pontilly area. Demonstration of conformity with the state implementation plan for the Clean Air Act will not be required. Dust minimization measures should be implemented during construction and are applicable to all alternatives. No National Emissions Standards for Hazardous Air Pollutants (NESHAPs) permits or notifications should be required since the project should not produce or release any toxic compounds into the air.

Farmland Protection

The proposed project site does not include any prime or unique farmland or farmland of statewide or local importance as identified by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). The project area is located in an area committed to urban uses.

Environmental Justice

Executive Order 12898 applies to federal actions to address environmental justice in minority and low income populations. This order calls for strategies to identify and address disproportionately high and adverse human health and environmental impacts on low income and minority populations. In this instance, the proposed project would have no significant adverse impacts on people living in the Pontilly area. The existing use of the site would not change and the flood mitigation alternatives selected should have a beneficial impact on the project area.

Water Quality

The proposed project is not anticipated to have long-term adverse effects on any waters near the proposed project area. However, based on the proposed flood mitigation alternatives, stormwater runoff from construction activities could have a short-term adverse impact on waters near the proposed project area during the construction period if specific mitigation measures are not followed by the contractor. A stormwater pollution prevention plan (SWPPP) utilizing best management practices should be developed once a flood mitigation alternative is selected in order to mitigate any adverse impact that the stormwater runoff from the construction activities would have on the waters surrounding the Pontilly area.

Noise

Increased noise levels associated with the flood mitigation alternatives would depend on the quantity and type of improvements and construction proposed for the project area. Increased noise levels should only occur temporarily during heavy construction activities if applicable. Mitigation of increased noise levels could include limited construction time periods, proper maintenance of construction equipment, and the selection of noise-dampening construction techniques.

Hazardous Materials

An EDR database report was conducted by Environmental Data Resources, Inc. on the subject project area on June 8, 2012. A copy of this report and the associated map are attached as Appendix F. The report found the following records for the following institutions within the Pontilly project limits.

- Southern University at New Orleans (SUNO)
 - Resource Conservation and Recovery Act (RCRA) – Small Quantity Generator (SQG)
 - Historical (HIST) – Leaking Underground Storage Tank (LUST)
 - Underground Storage Tanks (UST)

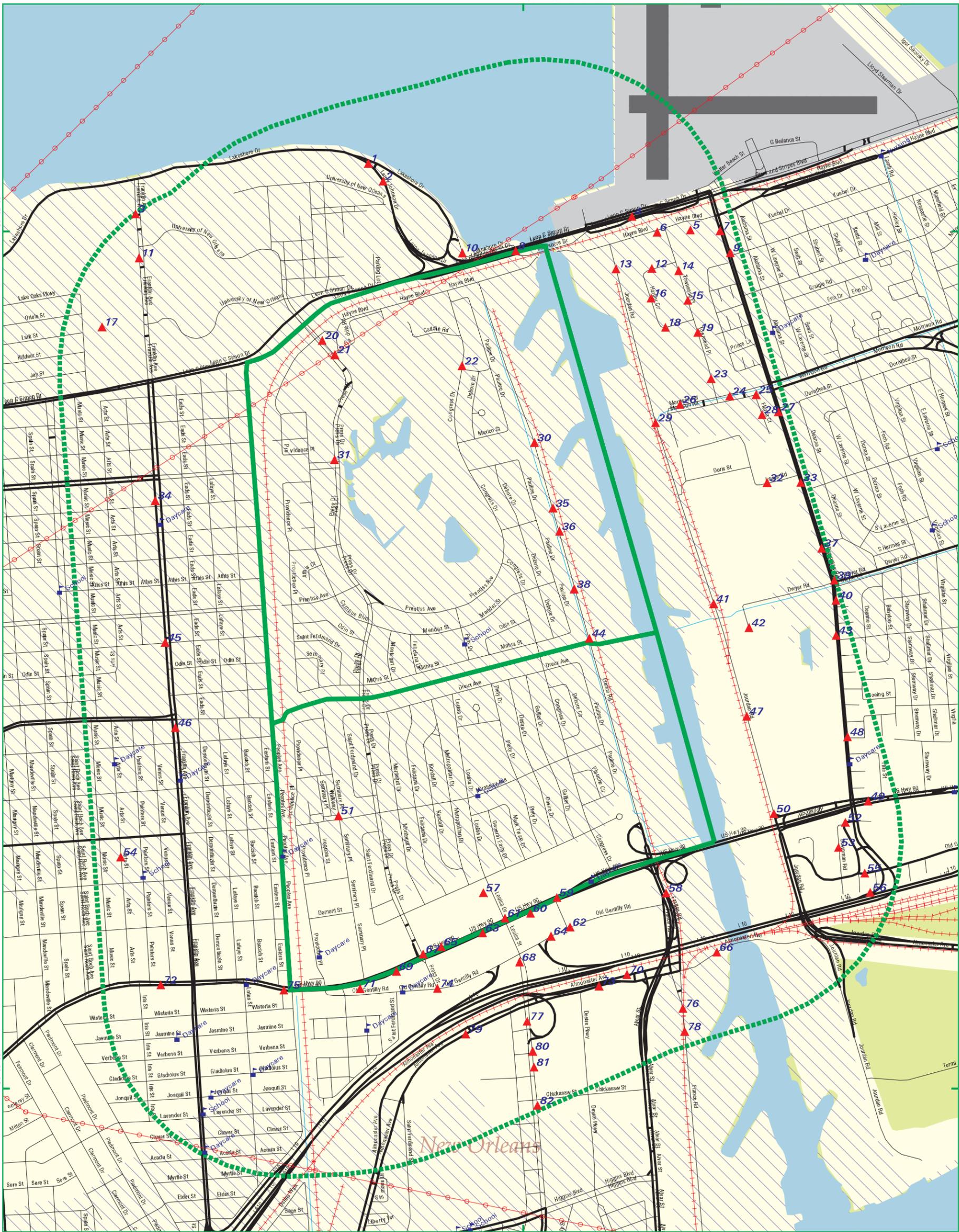
The environmental records listed above will be further investigated in subsequent studies to follow this technical memorandum, however at this time; no impacts to the project from these items are anticipated.

Parks, Recreation, and Conservation Areas

A large portion of the Pontilly area is in Pontchartrain Park. These parklands may be utilized for some of the flood mitigation alternatives; however, the land use will not change and the proposed improvements should have a positive impact on the park.

SUMMARY

In summary, considering that the proposed alternatives would be implemented in an already developed urban area and that the proposed improvements would only help to reduce flooding of the area, the proposed flood mitigation alternatives should have an overall positive impact on the project area. It is strongly recommended that construction specifications are written to require mitigation of potential water quality impacts through preparation and implementation of a robust SWPP. Additionally, construction specifications should also require the contractor to work within defined work hours. A more thorough environmental study will be performed on the selected project alternatives and the project area as the project progresses forward.

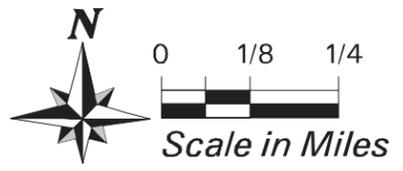


EDR DataMap® - Area Study Pontilly



New Orleans, LA

- | | | | |
|--|---------------|-------------|----------------------------|
| Listed Sites | Major Roads | Pipelines | Superfund Sites |
| Earthquake Epicenters (Richter 5 or greater) | Waterways | Powerlines | 100-Yr Flood Zones |
| Search Boundary | Railroads | Fault Lines | National Wetland Inventory |
| Roads | Contour Lines | Water | |





Pontilly

New Orleans, LA 70126

Inquiry Number: 03338980.1r

June 08, 2012

EDR DataMap™ Area Study

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2006 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

EXECUTIVE SUMMARY

TARGET PROPERTY INFORMATION

ADDRESS

NEW ORLEANS, LA 70126
NEW ORLEANS, LA 70126

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records within the requested search area for the following databases:

FEDERAL RECORDS

NPL..... National Priority List
Proposed NPL..... Proposed National Priority List Sites
Delisted NPL..... National Priority List Deletions
NPL LIENS..... Federal Superfund Liens
CERCLIS..... Comprehensive Environmental Response, Compensation, and Liability Information System
CERC-NFRAP..... CERCLIS No Further Remedial Action Planned
RCRA-TSDF..... RCRA - Treatment, Storage and Disposal
TRIS..... Toxic Chemical Release Inventory System
RADINFO..... Radiation Information Database
FEMA UST..... Underground Storage Tank Listing

STATE AND LOCAL RECORDS

SWF/LF..... Landfill List
LUST..... Leaking Underground Storage Tanks

TRIBAL RECORDS

INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land
INDIAN UST..... Underground Storage Tanks on Indian Land

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified.

Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

FEDERAL RECORDS

RCRA-LQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

A review of the RCRA-LQG list, as provided by EDR, and dated 03/15/2012 has revealed that there are 4 RCRA-LQG sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
ASSOCIATED HOSPITAL SERVICES I	7639 TOWNSEND PL	19	71
US GYPSUM CO	5701 LEWIS ROAD	32	127
STEPHEN H MILLER	6120 FRANKLIN AVE	34	135
TRINITY YACHTS LLC	4325 FRANCE ROAD	58	231

RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

A review of the RCRA-SQG list, as provided by EDR, and dated 03/15/2012 has revealed that there are 24 RCRA-SQG sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
CHEVRON USA INC NO LAKEFRONT A	6301 GUISEPPE BELANCA S	4	9
PROFESSIONAL CONST SVCS INC	5742 HAYNES BLVD	5	12
LEE DINETT	8020 DOWNMAN RD ID526	7	15
ONE HOUR CLEANERS	7907 DOWNMAN RD	9	38
KANSAS PACKING	148 HARBOR CIRCLE	18	70
ETC GULF SOUTH	6801 PRESS DR EAST BUIL	20	80
UNITED PARCEL SVC	5700 MORRISON RD.	24	97
LA POWER HOUSE	7196 FLORITA CT	28	112
HBH INC NEW ORLEANS	6301 FRANCE RD	30	115
SOUTHERN UNIV AT NEW ORLEANS	6400 PRESS DR	31	116
FRANKLIN MED CTR XRAY	6120 FRANKLIN AVE MED S	34	136
STAR ENT	6500 DOWNMAN RD	37	146
SEABROOK MARINE LLC	5801 FRANCE RD	38	162
ENERGY NEW ORLEANS INC - PATE	5400 DWYER RD	42	172
SHELL OIL CO	5300 FRANKLIN	46	180
THE FOLGER COFFEE COMPANY - CH	5500 CHEF MENTEUR HWY	49	191
BANNER CHEVROLET INC	5950 CHEF MENTEUR HWY	49	195
SHELL OIL CO	3901 DOWNMAN RD	49	198
CAPITOL TIRE SYSTEMS	3801 DOWNMAN RD	52	216
ADVANTAGE TIRE SVC	3803 DOWNMAN RD	52	218
NEW ORLEANS REDEVELOPMENT AUTH	4335 CHEF MENTEUR HWY	57	230
SHELL OIL CO MOTIVA ENTERPRISE	4940 CHEF MENTEUR HWY	59	243
STAR ENTERPRISE	4490 CHEF MENTEUR HWY	63	267
INTERNATIONAL PAINT LLC	3915 LOUISA ST	81	336

EXECUTIVE SUMMARY

RCRA-CESQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

A review of the RCRA-CESQG list, as provided by EDR, and dated 03/15/2012 has revealed that there are 59 RCRA-CESQG sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
USARC J DIAMOND	5010 LEROY JOHNSON DR	1	2
USARC R FLEMING JR	5030 LEROY JOHNSON DR	2	4
LA NATL GUARD AASF 1	6401 S SHORE HAVOR B BL	4	7
MILLION AIRE OF NEW ORLEANS	5500 LAKESHORE	8	21
RFB FLYING SVC CAUDLE AVIATION	5500 LAKESHORE DR STE 1	8	32
SOUTHERN HOLDINGS	5500 LAKESHORE DR HANGE	8	34
NAVY & MARINE CORP RESERVE CNT	5020 LAKESHORE DR	10	39
ORLEANS LEVEE DISTRICT	6920 FRANKLIN AVE ID578	11	41
LONG BRANCH PRODUCTIONS LLC	6920 FRANKLIN AVENUE	11	42
HARVEY PRESS	246 HARBOR CIRCLE	12	47
GULF STATES ENG CO INC	252 HARBOR CIRCLE	12	49
RING ELECTRIC CO	264 HARBOR CIRCLE	12	51
HALLIBURTON ENERGY SVCS	8000 JOURDAN RD	13	52
CBS OUTDOOR	8001 TOWNSEND PLACE	14	55
HOUSING AUTHORITY OF NEW ORLEA	7800 TOWNSEND PL	15	61
RYDER TRUCK SCARIONO	7803 TOWNSEND PLACE	15	62
RYDER TRUCK SCARIANOS	7850 TOWNSEND PL SHOP B	15	64
GULF STATES ENGINEERING CO INC	201 HARBOR CIRCLE	16	65
INDUSTRIAL AIR & HYDRAULICS IN	7400 TOWNSEND PL	23	86
FAITH INC COLLISION SERVICE	5800 MORRISON RD	25	105
MD SPECIALTIES	7171 DOWNMAN RD	27	107
PRECISION BODY SHOP INC	6904E DOWNMAN RD	33	130
IMPERIAL AUTOMOTIVE	6904B DOWNMAN RD	33	132
ORLEANS MATERIALS & EQUIPMENT	5501 FRANCE RD	38	155
ATLANTIC TECHNICAL SVCS SHOP 2	5701 FRANCE RD	38	160
SPARKEYS AUTO RPR	4819 DOWNMAN	40	167
TOP QUALITY AUTO SVC	4624 DOWNMAN RD.	43	177
HOLNAM INC	5301 FRANCE RD	44	178
THE VELEZ CORP DBA YOUNGS DRY	5357 FRANKLIN AVE	46	186
VAN AUTO RPR	4101 DOWNMAN RD	48	189
STAN TRANSMISSION	5127 CHEF MENTEUR	49	203
AMERICAN WHOLESALE FENCE CO IN	5501 CHEF MENTEUR HWY	49	204
MIKE & JERRYS PAINT & SUPPLY	3913 DOWNMAN RD	49	209
DUPUY STORAGE & FORWARDING LLC	4300 JOURDAN RD	50	211
DON HINGLES BODY SHOP INC	3718 DOWNMAN RD	53	220
CHUCKS AUTO REPAIR SHOP	3728 DOWNMAN RD	53	222
C & L AUTO REPAIR	3736 DOWNMAN RD	53	223
EBERTS ENGINE SVC INC	5880 OLD GENTILLY RD	55	226
BENSON JEEP EAGLE	10920 I10 E SVC RD	56	228
LEADER BUICK GMC TRUCKS	4600 CHEF MENTEUR HWY	60	250
FIRESTONE STORE 013617	4603 CHEF MENTEUR HWY	61	252
BIG EASY TRAVEL PLAZA	5000 OLD GENTILLY RD	62	259
SPEEDEE OIL CHANGE & TUNE UP	4456 CHEF MENTEUR HWY	63	261
EXXON CO USA # 55511	4500 CHEF MENTEUR HWY	63	265
THE OCCUPATIONAL HEALTHCENTERS	4311 CHEF MENTEUR HWY	65	281
RYDER TRUCK KIRSCHMANS	5050 ALMONASTER	66	282
ALS QUAL CLNRS GENTILLY WDS	P.O. DRAWER 1189	67	285

EXECUTIVE SUMMARY

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
GENTILLY SUPER SVC	4200 LOUISA ST	68	287
GOODYEAR AUTO SVC CNTR	4126 CHEF MENTEUR HWY	69	288
CON WAY SOUTHERN EXP	4801 ALMONASTER	70	292
R & L CARRIERS	4801 ALMONASTER AVE	70	293
TIRE TOWN STORES INC	4020 OLD GENTILLY RD	71	298
CHEVRON SS 108963	4046 CHEF MENTEUR	71	301
BOH BROTHERS CONSTRUCTION CO -	4045 FRANCE RD	76	315
EASTSIDE AUTO & TRUCK RPRS	4000 LOUISA ST	77	317
ORLEANS PARISH SCH BD/CENTRAL	4300 ALAMONASTER AVE	79	326
ABA	3947 LOUISA ST STE B	80	331
QUALITY RECONDITIONING SVC INC	3947 LOUISA ST	80	334
NATIONAL LINEN SVC	3831 LOUISA ST	82	346

RCRA-NonGen: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA-NonGen list, as provided by EDR, and dated 03/15/2012 has revealed that there are 12 RCRA-NonGen sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
CARNESIS GULF SVC	8020 DOWNMAN RD ID558	7	16
BOARD OF COMMISSIONERS ORLEANS	6920 FRANKLIN AVE ID508	11	45
ALEXANDER/RYAN MARINE & SAFETY	7759 TOWNSEND PL	15	59
GLY TECH SERVICES INC	7366 TOWNSEND PLACE STE	23	83
NL PETROLEUM SVC INC	7379 TOWNSEND PLACE	23	84
BUNNY BREAD	5646 LEWIS ROAD	32	122
NEW ORLEANS DRESSER MINERALS	6101 FRANCE ROAD ID792	36	145
RED FOX NEW ORLEANS	5601 FRANCE RD	38	158
TRIPLE E TRANSPORT INC	6000 JOURDAN RD	41	170
CHEVRON USA INC	MISSISSIPPI CANYON BLOC	51	214
HANAN LLC	4756 ARTS ST	54	225
TERREBONNE SANITATION SVCS INC	3650 GENTILLY BLVD	72	305

STATE AND LOCAL RECORDS

HIST LUST: Department of Environmental Quality's Underground Storage Tank Case History Incidents database.

A review of the HIST LUST list, as provided by EDR, and dated 11/01/1999 has revealed that there are 14 HIST LUST sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
SOUTHERN UNIVERSITY OF NEW ORL	6801 PRESS DR	20	73
UNITED PARCEL SERVICE	5700 MORRISON RD	24	92
UNITED PARCEL SERVICE	5641 MORRISON RD	24	101
DOWNMAN CENTER HANIA GROCERY	7200 DOWNMAN ROAD	27	108
US GYPSUM CO	5701 LEWIS RD	32	123

EXECUTIVE SUMMARY

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
PORT OF NEW ORLEANS	6201 FRANCE RD	35	139
M-I DRILLING FLUIDS LLC	6101 FRANCE RD	36	143
TEXACO 44-398-0112	6500 DOWNMAN RD	37	148
GULF OIL CORP.	5855 CHEF & DOWMAN	49	207
ECOL #9061	4500 OLD GENTILLY RD	64	270
STEVE THOMPSON	4801 ALMONASTER AVE	70	289
ALMONASTER FACILITY	4740 ALMONASTER AVE	73	306
DART-IN CAR WASH INC	4201 OLD GENTILLY RD	74	310
FUELMAN \$5	4022 LOUISA ST	77	318

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Environmental Quality's Louisiana Underground Storage Tank Database.

A review of the UST list, as provided by EDR, and dated 04/02/2012 has revealed that there are 65 UST sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
COLEMAN AMERICAN MOVING SERVIC	7020 FRANKLIN AVE	3	6
FOOD FOR FAMILY WAREHOUSE	5600 HAYNE BLVD	6	13
R M WALKER CONSTRUCTION CO	5670 HAYNE BLVD	6	14
COM-PAK DELI INC	8020 DOWNMAN ST	7	18
MILLION AIRE OF NEW ORLEANS	5500 LAKESHORE	8	21
NEW ORLEANS LAKEFRONT AIRPORT	5401 LAKESHORE DR	8	35
BOARD OF COMMISSIONERS ORLEANS	6920 FRANKLIN AVE ID508	11	45
CBS OUTDOOR	8001 TOWNSEND PLACE	14	55
LAKE OAKS STORE 16	6600 FRANKLIN AVE	17	67
ASSOCIATED HOSPITAL SERVICES I	7639 TOWNSEND PL	19	71
SOUTHERN UNIVERSITY OF NEW ORL	6801 PRESS DR	20	73
PONTCHARTRAIN PARK MAINTENANCE	4800 HAYNE BLVD	21	82
JOSEPH M BARTHOLOMEW SR MUNICI	6514 CONGRESS DR	22	83
UNITED PARCEL SERVICE INC (UPS)	5700 MORRISON RD	24	87
UNITED PARCEL SERVICE	5641 MORRISON RD	24	101
RIVERSIDE LUMBER CO	5451 MORRISON RD	26	106
HANIA GROCERY LLC	7200 DOWNMAN RD	27	110
MORRISON YARD	7300 JORDAN RD	29	113
SOUTHERN UNIVERSITY AT NEW ORL	6400 PRESS DR	31	118
US GYPSUM CO	5701 LEWIS RD	32	123
NEW ORLEANS FIRE DEPT #4	6900 DOWNMAN RD	33	129
CIRCLE K #8275	6100 FRANKLIN AVE	34	133
ROGER'S CHEVRON	6132 FRANKLIN AVE	34	137
PORT OF NEW ORLEANS	6201 FRANCE RD	35	139
FORMER MI DRILLING FLUIDS - BU	6101 FRANCE RD	36	142
TEXACO 44-398-0112	6500 DOWNMAN RD	37	150
ORLEANS MATERIALS & EQUIPMENT	5501 FRANCE RD	38	155
WILLIAMS MCWILLIAMS SITE (FORM	5701 FRANCE RD	38	161
DISCOUNT CENTER	4901 DOWNMAN RD	39	164
DOWNMAN RD DISCOUNT MARKET	4827 DOWNMAN RD	40	168
ENTERGY LA INC - EAST ORLEANS	5401 DWYER RD	42	171
ENTERGY NEW ORLEANS INC - PATE	5400 DWYER RD	42	172
NEW ORLEANS FIRE DEPARTMENT #1	5600 FRANKLIN AVE	45	180
FRANKLIN & FILMORE SHELL #1374	5300 FRANKLIN AVE	46	182
HAPPY DISCOUNT	5301 FRANKLIN AVE	46	185

EXECUTIVE SUMMARY

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
MILPARK GRINDING PLANT	5100 JOURDAN RD	47	188
QUINCI'S TIRE & CAR CARE CENTE	5840 CHEF MENTEUR HWY	49	193
BANNER CHEVROLET INC	5950 CHEF MENTEUR HWY	49	195
DOWNMAN SHELL	3901 DOWNMAN RD	49	199
AMERICAN WHOLESALE FENCE CO IN	5501 CHEF MENTEUR HWY	49	204
DUPUY STORAGE & FORWARDING COR	4300 JOURDAN RD	50	211
AA HOME IMPROVEMENT CO	3801-03 DOWMAN RD	52	219
SHELL SERVICE STATION	4940 CHEF MENTEUR HWY	59	244
PHILLIPS 66 CO #012404	4819 CHEF MENTEUR	59	246
FORMER LEADER BUICK GMC INC	4600 CHEF MENTEUR HWY	60	249
FIRESTONE STORE #4347	4601 CHEF MENTUER HWY	61	253
WAGNER'S CHEF LLC	4301 LOUISA ST	61	254
BIG EASY TIRE & LUBE CO	5000 OLD GENTILLY RD	62	255
FUEL ZONE LLC	4500 CHEF MENTEUR HWY	63	262
STAR ENTERPRISE	4490 CHEF MENTEUR HWY	63	267
ECOL #9061	4500 OLD GENTILLY RD	64	270
KIRSCHMAN'S FURNITURE STORE	5050 ALMONASTER RD	66	284
CNF TRANSPORTATION INC - CON-W	4801 ALMONASTER AVE	70	295
PHILLIPS 66 CO #022666	4036 CHEF MENTUER HWY	71	299
GENTILLY GAS INC	4046 CHEF MENTEUR HWY	71	303
ALMONASTER FACILITY	4740 ALMONASTER AVE	73	306
DART-IN CAR WASH INC	4201 OLD GENTILLY RD	74	310
GENTILLY QUICK STOP	3868 GENTILLY BLVD	75	314
FUELMAN #5	4022 LOUISA ST	77	320
DAY & NIGHT DISCOUNT	4039 LOUISA ST	77	323
PUERTO RICO MARINE MANAGEMENT	4000 FRANCE RD BERTH 4	78	326
ORLEANS PARISH SCHOOL BOARD -	4300 ALMONASTER AVE	79	328
QUALITY RECONDITIONING SERVICE	3947 LOUISA ST	80	333
INTERNATIONAL PAINT LLC	3915 LOUISA ST	81	336
NATIONAL LINEN SERVICE	3831 LOUISA ST	82	343

EXECUTIVE SUMMARY

Please refer to the end of the findings report for unmapped orphan sites due to poor or inadequate address information.

Appendix E

Public Notice, 8-Step Process and Draft FONSI

**PUBLIC NOTICE
FEMA NOTICE OF AVAILABILITY
DRAFT ENVIRONMENTAL ASSESSMENT
DRAFT FINDING OF NO SIGNIFICANT IMPACT
MITIGATION PROPOSAL FOR THE
PONTILLY DRAINAGE IMPROVEMENTS
NEW ORLEANS, ORLEANS 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 effects on the human and natural environment for the proposed Pontilly Drainage Project, which consists of two (2) components working collectively to reduce the risk of local flooding by providing short term runoff storage and implementing the use of stormwater BMP's. The first component would utilize detention strategies, porous paving, and best management practices (BMP) to alleviate the demand placed on the existing drainage systems that are undersized and unable to function properly during 1-3 year flood events. The project would incorporate empty lots as temporary detention areas to reduce the peak runoff discharge by allowing the stormwater to infiltrate into the ground rather than immediately going into the undersized drainage system. In addition to the stormwater lots and parks, the second component involves utilizing street basins and urban bioswales. These structures would be installed and also planted with native vegetation to catch runoff flowing along street curbs and gutters.

The purpose of the draft EA is to analyze the potential environmental impacts associated with the preferred action and alternatives. The draft EA evaluates a No Action Alternative; the Preferred Action Alternative, Installation of Stormwater Lots/Parks, Street Basins and Urban Bioswales, and to Widen Dwyer Canal, and a Considered Action Alternative to Upgrade and Improve the Existing Underground Pipe Collection System. 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 Norman Mayer Library, 3001 Gentilly Blvd, New Orleans, LA 70122, Monday-Thursday 10:00 a.m. – 7:00 p.m., Saturday 10:00 a.m. – 5:00 p.m. This public notice will run in the local newspaper, The Times Picayune, on Sunday, December 20; Wednesday, December 23, 2015; and Friday, December 25, 2015, Sunday, December 27, 2015. This public notice will also run in The Advocate-New Orleans Edition Monday, December, 21 2015 through Sunday, December 27, 2015. The documents can also be downloaded from FEMA's website at <http://www.fema.gov/resource-document-library>. There will be a 15 day comment period, beginning on December 28, 2015 and concluding on January 12, 2016 at 4 p.m. Comments may be mailed to: DEPARTMENT OF HOMELAND SECURITY-FEMA EHP-PONTILLY, 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.

Executive Order 11988 Eight-Step Process Narrative

New Orleans Redevelopment Authority Pontilly Stormwater Mitigation Project

Executive Order (EO) 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.” FEMA’s implementing regulations are at 24 CFR Part 9, which includes an eight-step decision making process for compliance with this EO.

This eight-step process is applied to the proposed New Orleans Redevelopment Authority (NORA) Pontilly Stormwater Mitigation Project. A majority of the Project area is within the 100-year floodplain, with a smaller portion within the 500-year floodplain. The following narrative answers the questions in the eight-step process:

Step 1: Determine if the proposed action is located in the Base Floodplain.

Orleans Parish enrolled in the NFIP as of 08/03/1970. Orleans Parish Advisory Base Flood Elevation Maps (ABFEs) were issued June 2006 (FEMA, 2006), and are currently adopted by the Orleans Parish NFIP community for floodplain management purposes. The proposed site is shown on ABFE Map OR-LA-EE32 (Figure 6), Elevation (EL) -1 ft. or a BFE elevation of 3 ft. above the Highest Existing Adjacent Grade (HEAG). Per Revised Preliminary DFIRM panel number 22071C0118F, dated 12/01/2014 (Figure 10), the proposed site is located within a AE, EL-5, an area of 0.1% annual chance flood (100-year floodplain); base flood elevation determined, and Shaded X area of the 0.2% annual chance flood (100-year floodplain) with average depths of less than 1 ft. or with drainage areas less than 1 square mile; and areas protected by levees from the 1% annual chance flood (100-year).

In 2005, Hurricane Katrina inundated most of the New Orleans area with flood waters, and in response FEMA developed a Hurricane Katrina Surge Inundation and Advisory Base Flood Elevation Map to guide reconstruction in the previously inundated areas. This map shows that most of the subject area from Chef Menteur Highway north to Dreux Avenue, as well as a small area on the northern end of Pontchartrain Park are located in the area where FEMA recommends that the first floor of the buildings be elevated three (3) feet above the Highest Existing Adjacent Grade (HEAG) at the building site. The remainder of the subject site from Dreux Avenue north toward Hayne Boulevard is located in the area where FEMA recommends that the first floor of the building be elevated at or above the Base Flood Elevation (BFE) shown on the communities FIRM. The project area extends to the west side of the levee along the Inner Harbor Navigation Canal.

Step 2: Early public notice (Preliminary Notice)

An initial, statewide public notice concerning HMGP funded actions occurring within the floodplains was published September 29, 2005. A 15 day public comment followed.

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

Due to the project’s purpose, it is dependent on being located in the floodplain.

No Action: Implementation of the No Action Alternative would entail no hazard mitigation measures for the Pontilly Area. The flood problems experienced with a no action alternative are well documented and consist of the problems associated with an underground piping network that was originally designed for a 2-year frequency flood event. The pipe collection system degradation has reduced the system’s capacity to protect even to the 2-year level. Depending on the particular storm event, both localized street flooding and property damage were recurring neighborhood problems prior to the hurricanes of 2005. After Hurricanes Katrina and Rita, the past flooding issues now receive higher scrutiny as neighborhood

redevelopment is being encouraged and small recurring flood problems are now seen in a much different context.

Alternative 1 Proposed: Installation of Stormwater Lots/Parks, Street Basins and Urban Bioswales; Widen Dwyer Canal: The Pontilly Stormwater Mitigation Project has two components which work collectively to reduce the risk of local flooding by providing short term runoff storage and implementing the use of stormwater Best Management Practices (BMP's).

The first component would utilize detention strategies, porous paving, and best management practices (BMP) to alleviate the demand placed on the existing drainage systems that are undersized and unable to function properly during 1-3 year flood events. The project would incorporate empty lots as temporary detention areas to reduce the peak runoff discharge by allowing the stormwater to infiltrate into the ground rather than immediately going into the undersized drainage system. The parcels proposed for this work are scattered vacant lots where private residences existed prior to Hurricane Katrina.

The second component involves utilizing street basins and urban bioswales. These structures would be installed and also planted with native vegetation to catch runoff flowing along street curbs and gutters. Midblock street basins would take the place of two on-street parking places and the corner street basins would require one on-street parking places on each street.

The Undertaking also proposes to widen the existing Dwyer Canal because it is located at a low point between the two neighborhoods and is currently underutilized. The widening would occur within previously disturbed right-of-way and the banks of the canal would be stabilized to prevent erosion.

Alternative 2 Considered: Upgrade and Improve the Existing Underground Pipe Collection System: This alternative would consist of upgrading the neighborhood's underground pipe collection system from its current state of a 2-year flooding event to the City criterion of a 10-year level of protection. To accomplish this, the scope of work would entail removing and replacing more than 60,000 linear feet of pipe network in the Pontilly neighborhood. The applicant would excavate and remove existing pipe; install new, larger pipes and reconnect them to existing basins; and then back fill and asphalt repair the area. Collector streets are assumed to receive 48 inch pipes, while minor streets would receive 36 inch pipes to achieve positive drainage for the 10-year storm event. Collector streets receiving the 48 inch pipes would be Press Drive 9,000 LF; Louisa Drive 3,200 LF; Congress Drive 8,500 LF; Mirabeau Ave. 3,600 LF; Prentiss Ave. 1,000 LF; and Bashful Blvd. 850 LF. All other streets in the Pontilly area would be minor streets.

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

The No Action Alternative: Under this alternative, water damage would likely continue to occur and both insured and uninsured losses would be experienced at its current frequency. With no improvements, the area would continue to flood every time there is a storm greater than a 2-year flood storm and the \$70 million investment made into the neighborhoods by public and private agencies and individuals would be compromised.

Alternative 1 Proposed: This alternative is not anticipated to adversely affect the natural function of the floodplain. The Proposed Project Alternative will effectively lower the floodplain elevation and allow the floodplain to function more efficiently. Statistical 1-, 2-, 5, and 10-year, 24-hour storms were run and analyzed using H&H models of the existing and proposed project area to identify structures and roadways flooded during each event. Modeled flood elevations were compared to first floor elevations of structures. Table 1 summarizes the comparison. Attached Figures 1 through 8 provide a graphical representation of the impacts that the proposed project action will have on the existing floodplain.

Although the Proposed Project Alternative could facilitate an increase in population and housing within the project area by reducing flood impacts to the Pontilly neighborhood, any increase must comply with the planned growth identified in the City of New Orleans Master Plan and the Comprehensive Zoning Ordinance. Any new development within floodplains would be required to comply with applicable ordinances and building codes.

Table 1. Proposed Project Alternative Impact to Floodplain

Statistical Storm	Existing Project Area			Proposed Project Area			Proposed Project Impact	
	# Flooded Structures	Estimated Damage		# Flooded Structures	Estimated Damage		# Flooded Structures	Estimated Damage
1-year	456	\$4,116,000		315	\$2,554,000		(141)	(\$1,562,000)
2-year	869	\$9,417,000		685	\$6,637,000		(184)	(\$2,780,000)
5-year	1077	\$15,511,000		1002	\$11,747,000		(75)	(\$3,764,000)
10-year	1091	\$20,308,000		1079	\$16,796,000		(12)	(\$3,512,000)

Alternative 2 Considered: This alternative would adversely affect the natural function of the floodplain. All work would occur under the ground. The project would be designed to accommodate stormwater flows. During construction the project area would be kept clear so as not to interfere with floodplain functions.

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

The Proposed Project Alternative is designed to minimize floodplain impacts. No above ground structures are located within the 100-year floodplain or the 500-year floodplain. The proposed project will utilize vacant lots under NORA's jurisdiction and portions of public rights-of-ways within a developed residential neighborhood with the purpose of reducing threats to life and property, and preserve and improve its natural and beneficial floodplain values.

The applicant must coordinate with the floodplain administrator prior to the start of construction.

The project area must be kept cleared so as not to interfere with floodplain functions.

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

The applicant is required to coordinate with the local floodplain administrator regarding floodplain permit(s) prior to the start of any activities. All correspondence must be submitted to FEMA and FEMA-EHP for inclusion in the project files. Should the site plans (including drainage design) change the applicant must submit changes to FEMA-EHP for review and approval prior to the start of construction.

Step 6 Re-evaluate the proposed action.

The Proposed Project Alternative's purpose is to reduce impact to residential and commercial properties within the floodplain. Therefore, it is still appropriate and practicable to conduct the stormwater mitigation project in the proposed project area within the floodplain. Alternatives consisting of locating the project outside the floodplain are not practicable or functional.

Step 7 Findings and Public Explanation (Final Notification)

After evaluating alternatives, including impacts and mitigation opportunities NORA determined that the Proposed Project Alternative is the most practical alternative.

A “no action” plan would not resolve or improve the existing flooding problems in the Pontilly neighborhood.

The purpose of the proposed project is to reduce flooding impacts within the floodplain by providing stormwater mitigation alternatives on vacant residential lots and within the public rights-of-way.

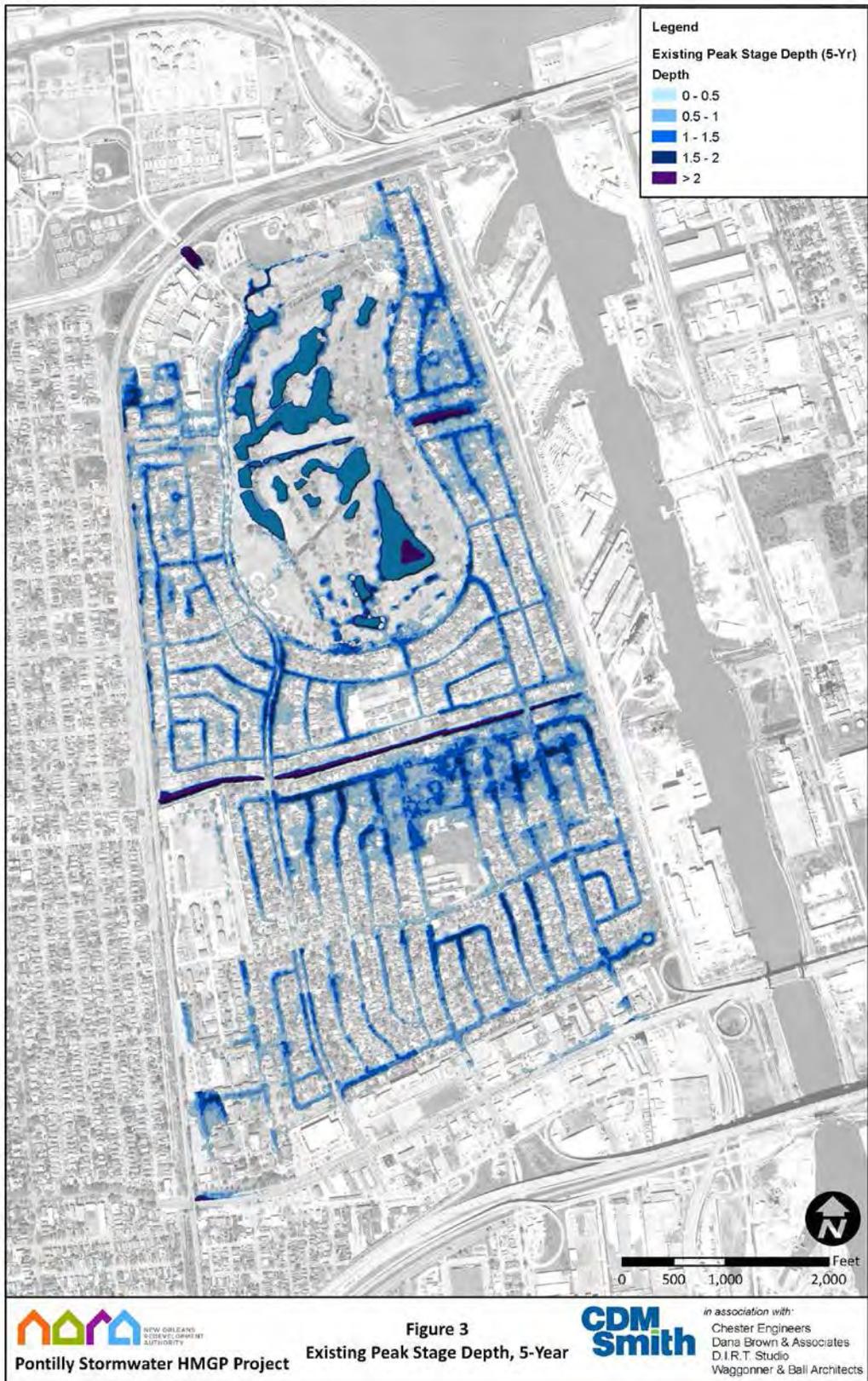
The Draft EA was made available for public review and comment for a period of 15 days. Per FEMA requirements, a public notice was published in The Times Picayune, on Wednesday, November 25, Friday, November 27, 2015, and Sunday, November 22, 2015. This public notice also ran in The Advocate- New Orleans edition Wednesday, November 25, 2015 through Tuesday, December 1, 2015 to alert the public that the Draft EA was available for review. There was a 15 day comment period which began on December 2, 2015 and concluded on December 17, 2015 at 4 p.m.

Step 8 Implement the action

The Proposed Project Alternative will be constructed in accordance with applicable floodplain development requirements and Comprehensive Zoning Ordinance requirements.



















FEMA

U.S. Department of Homeland Security
Louisiana Recovery Office
1500 Main Street
Baton Rouge, LA 70802

**DRAFT FINDING OF NO SIGNIFICANT IMPACT
FOR THE
PONTILLY STORMWATER DRAINAGE IMPROVEMENTS
ORLEANS PARISH, LOUISIANA
HMGP 1603-0178
*FEMA-1603-DR-LA***

BACKGROUND

The New Orleans Redevelopment Authority (NORA), the applicant, through the State of Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP), applied for funding under FEMA's HMGP for a storm water mitigation project in the Pontilly neighborhood of New Orleans. NORA is a City Board group that works with public and private partners to redevelop and revitalize New Orleans neighborhoods.

The Pontilly Study Area is 856 acres, which includes both Pontchartrain Park and Gentilly Wood neighborhoods in New Orleans, LA. The drainage infrastructure servicing the Pontilly Study Area is over 50-years-old and was designed for significantly different conditions than currently exist. The level of development that has occurred in the study area has overstressed the storage and conveyance capacity of the existing stormwater infrastructure. Based on flood claim information through the National Flood Insurance Program (NFIP), there have been numerous rainfall events, which caused flooding of property (structures and vehicles), and forced temporary road closures. The purpose of the proposed Pontilly Stormwater Mitigation Project is to mitigate the impacts of flooding in the Pontilly Area through stormwater management.

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 drainage improvements and determine whether to prepare an Environmental Impact Statement (EIS) or Finding of No Significant Impact (FONSI).

The Pontilly neighborhood in New Orleans has been subject to repetitive, significant flood events causing damage to residential and commercial properties. The extensive history of rain related flood property damages demonstrates a need to effectively reduce the risk of future flooding within the area. The alternatives considered include: 1) No Action, 2) Alternative 1 Proposed: Installation of Stormwater Lots/Parks, Street Basins and Urban Bioswales; Widen Dwyer Canal, and 3) Alternative 2 Considered: Upgrade and Improve the Existing Underground Pipe Collection System.

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.

CONDITIONS

- The applicant is required to comply with all federal, state, and local laws, EOs, and regulations. Failure to do so will jeopardize federal funding.
- 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.
- Best Management Practices (BMP) during construction such as installing silt fences and re-vegetating bare soils with native vegetation should be implemented to minimize runoff and erosion.
- To reduce the emission of air quality pollution from equipment during construction, fuel-burning equipment times should be kept to a minimum and engines should be properly maintained. Dust minimization measures should be implemented during construction as well.
- A Stormwater Pollution Prevention Plan (SWPPP) utilizing BMPs should be developed once a detailed flood mitigation alternative is selected in order to mitigate any adverse impact that the stormwater runoff from the construction activities would have on the waters surrounding the Pontilly area.
- Construction contractor is required to obtain applicable Louisiana Pollutant Discharge Elimination System (LPDES) permit, and implement stormwater pollution prevention plan.
- Any new vegetation plantings should be native to the area, and non-invasive.
- The applicant is required to coordinate with the local floodplain administrator regarding floodplain permit(s) prior to the start of any activities.
- Any hazardous materials discovered, generated, or used during construction should be disposed and handled in accordance with applicable local, state, and federal regulations.

- In the event that archaeological deposits (soils, features, artifacts, other remnants of human activity) are uncovered during the project the applicant shall stop all work immediately in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. The applicant will inform the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) immediately and will secure all archeological findings and restrict access to the area. GOHSEP shall notify FEMA and FEMA will consult with Tribal Historic Preservation Office (THPO) or Tribal representatives. Work in sensitive areas cannot resume until consultations are completed or until an archeologist who meets Secretary of the Interior (SOI) Professional Qualifications determines the extent of the discovery. Work may not resume at or around the delineated archeological deposit until the applicant is notified by GOHSEP.
- 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.
- Mitigation of increased, short-term noise levels during construction should include limited construction time periods, proper maintenance of construction equipment, and the selection of noise-dampening construction techniques.
- Short term traffic impacts will be mitigated through controlling construction times to minimize construction activities during the morning and evening high traffic periods. Additionally, the construction contractor(s) will be required to provide appropriate signage and placement of barriers, in accordance with the Manual of Uniform Traffic Control Devices to alert pedestrians and motorists of ongoing activities.
- All construction activities should be performed using qualified personnel and in accordance with Occupational Safety and Health Administration (OSHA) regulations. Appropriate signage and barriers should be in place prior to construction activities to alert pedestrians and motorists of project activities. Stormwater detention areas will be designed to limit detention time to significantly less than forty-eight hours during heavy rain events.
- Offsite location 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.
- The project results in a discharge to waters of the State; submittal of a Louisiana Pollutant Discharge Elimination System (LPDES) application is necessary.

- The applicant must obtain a permit from the Orleans Levee District for any work within 300 feet of a federal flood control structure. Performance of all subsurface work within this area is usually restricted when the stage of the Mississippi River is above elevation +11.0 feet on the Carrollton gage, at New Orleans, Louisiana. As a consequence, subsurface work should be scheduled for performance during the low-water period (typically June through November) to avoid delays in performance of the proposed work. The applicant must apply by letter to the Orleans Levee District including full-size construction plans, cross sections, and details of the proposed work. Concurrently with the application to the Orleans Levee District, the applicant must also forward a copy of the letter and plans to Operations Division, Operations Manager for Completed Works of the Corps of Engineers and to the Office of Coastal Protection and Restoration Authority (CPRA) in Baton Rouge for their review and comments concerning the proposed work.
- All precautions must be observed to control nonpoint source pollution from construction activities. Louisiana Department of Environmental Quality (LDEQ) has stormwater general permits for construction areas equal to or greater than one (1) acre. The applicant must contact the LDEQ Water Permits Division at (225) 219-9371 to determine if the proposed project requires a permit.
- Additional information may be obtained on the LDEQ website at <http://www.deq.louisiana.gov/portal/tabid/2296/Default.aspx> or by contacting the LDEQ Water Permits Division at (225) 219- 9371.
- 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 must be taken to protect workers from these hazardous constituents.
- Erosion Control Devices (ECD's) must be used and maintained extensively to prevent any potential direct or indirect adverse impacts to nearby wetland areas per the CWA and EO 11990. Any adverse impacts to adjacent wetlands resulting from the construction of this project will jeopardize receipt of federal funding.
- The applicant is responsible for coordinating with and obtaining any required permit(s) from the Louisiana Department of Natural Resources (LDNR) Coastal Management Division prior to initiating work. The applicant shall comply with all conditions of the required permit. 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 LDNR Office of Conservation should be contacted at (225) 342-5540 if any unregistered wells of any type are encountered during construction work.
- For pipelines and other underground hazards, Louisiana One Call should be contacted at 800-272-3020 prior to commencing operations.

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

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 (EIS) will not be prepared (44 CFR Part 10.8) and the proposed action alternative as described in the EA may proceed.

APPROVALS

Kevin Jaynes Regional Environmental Officer Region VI FEMA 1603-1607-DR-LA	Date
---	------

Thomas M. (Mike) Womack Director of the Louisiana Recovery Office Region VI FEMA 1603-1607-DR-LA	Date
---	------