

Draft Environmental Assessment

Bayou Din Detention Basin HMGP-DR-1780-TX Project #20 Beaumont, Jefferson County, Texas

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LIST OF ACRONYMS

ALERT – Automated Local Evaluation in Real Time
APE – Area of Potential Effect
ASTM – American Society for Testing and Materials
BFE – Base Flood Elevation
BMP – Best Management Practice
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS – Comprehensive Environmental Response, Compensation, and Liability Information System
CESQGs – Conditionally Exempt, Small-Quantity Generators
CFR – Code of Federal Regulations
CORRACT – Corrective Action
DRYC – Dry Cleaning
EA – Environmental Assessment
EPA – US Environmental Protection Agency
ERNS – Emergency Response Notification System
ESA – Endangered Species Act
FEMA – Federal Emergency Management Agency
FIRM – Flood Insurance Rate Map
FM – Farm to Market
FONSI – Finding of No Significant Impact
FPPA – Farmland Protection Policy Act
GLO – General Land Office
H&H Study – Hydrology and Hydraulics Study
HEC-1 – Hydrologic Engineering Center – 1 Model
HECRAS – Hydrologic Engineering Center River Analysis System
HECHMS – Hydrologic Engineering Center Hydrologic Modeling System
HMGP – Hazard Mitigation Grant Program
IH – Interstate Highway
JCCAD – Jefferson County Central Appraisal District
JCDD6 – Jefferson County Drainage District No. 6
LFUN – TCEQ Solid Waste Facilities and Unauthorized and Unpermitted Landfill
LOMA – Letter of Map Adjustment
LOMR – Letter of Map Revision
LQGs – Large-Quantity Generators
MSA – Metropolitan Statistical Area
MSL – Mean Sea Level
NDD – Natural Diversity Database
NEPA – National Environmental Policy Act
NFIP – National Flood Insurance Program
NFRAP – No Further Remedial Action Planned
NHPA – National Historic Preservation Act
NOI – Notice of Intent
NOx – nitrogen oxides
NPL – National Priority List
NPS – National Park Service
NRCS – Natural Resources Conservation Service
NRHP – National Register of Historic Places

NWI – National Wetland Inventory
NWS – National Weather Service
PEM1Cd – palustrine, emergent, persistent, seasonally flooded, partly drained/ditched
PFO1Ad – palustrine, forested, broad-leaved deciduous, temporarily flooded, partly drained/ditched
PFO1Cd – palustrine, forested, broad-leaved deciduous, partly drained/ditched
PRPs – Potentially Responsible Parties
PUBHx – palustrine, unconsolidated bottom, permanently flooded, excavated
RCRA – Resource Conservation and Recovery Act
RCRA-G – RCRA Generators
RCRA-TSD – RCRA Treatment, Storage, or Disposal
RCRIS – Resource Conservation and Recovery Information System
RCT – Railroad Commission of Texas
RFI – RCRA Facility Investigation
ROW – right of way
SALs – State Archeological Landmarks
SARA – Superfund Amendments and Reauthorization Act
SH – State Highway
SHPO – State Historic Preservation Office
SQGs – Small-Quantity Generators
SWPPP – Storm Water Pollution Prevention Plan
TAC – Texas Administrative Code
TCEQ – Texas Commission on Environmental Quality
THC – Texas Historical Commission
TMDL – Total Maximum Daily Load
TPDES – Texas Pollutant Discharge Elimination System
TPWD – Texas Parks and Wildlife Department
TSMASS – Texas State Minimum Archeological Survey Standards
TWDB – Texas Water Development Board
TXAST – Texas Aboveground Storage Tank
TXIOP – Texas Innocent Owner/Operator Program
TXLF – TCEQ Solid Waste Facilities
TXLUSTs – Texas Leaking Underground Storage Tanks
TXSPILL – Hazardous or Potentially Hazardous Substances Spills
TXSSF – Texas State Superfund database
TXUSTs – Texas Underground Storage Tanks
TXVCP – Texas Voluntary Cleanup Program
USACE – US Army Corps of Engineers
USDA – US Department of Agriculture
USFWS – US Fish and Wildlife Service
UT-BEG – University of Texas Bureau of Economic Geology
VOC – volatile organic compound

1.0 INTRODUCTION

1.1 PROJECT AUTHORITY

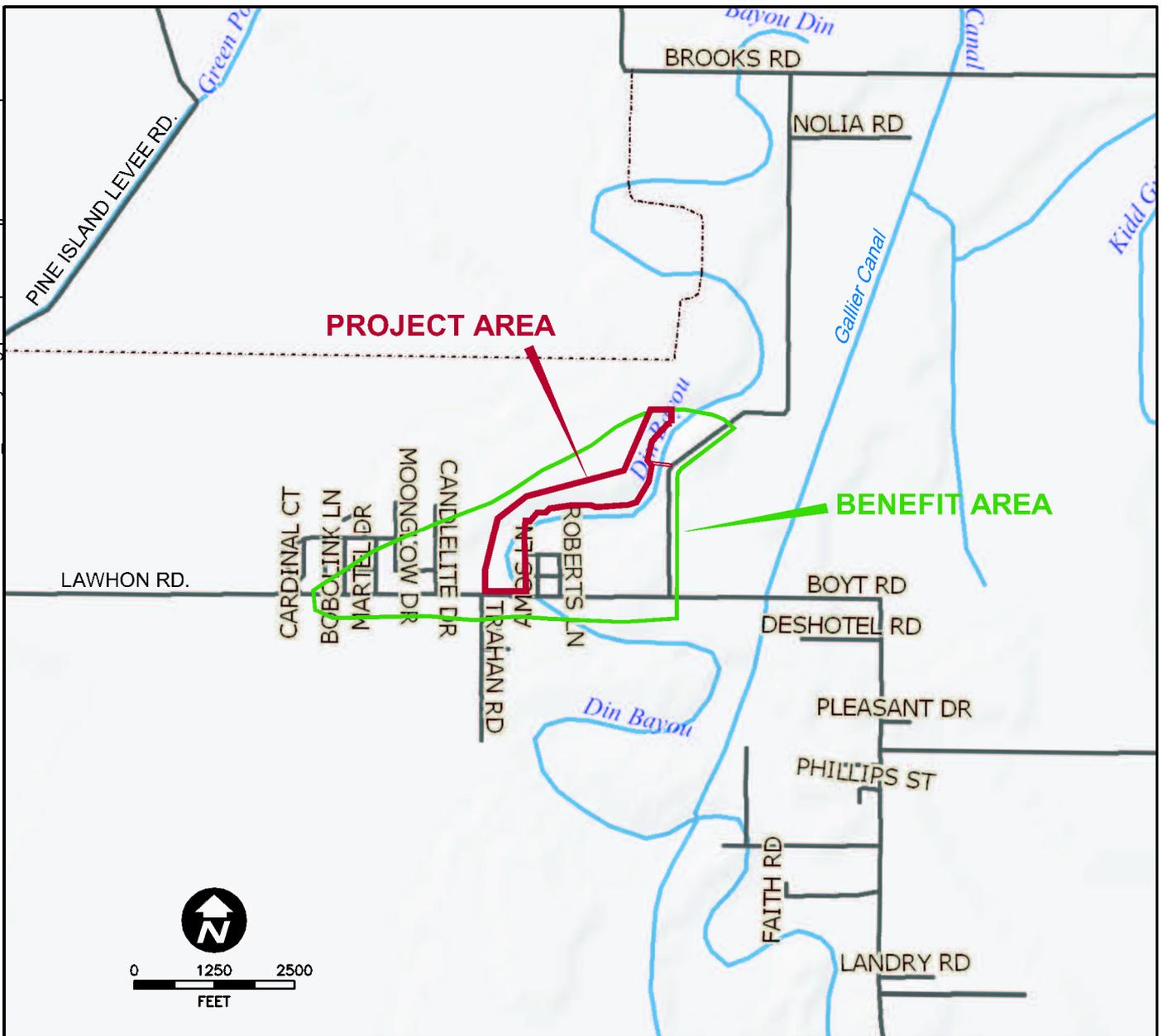
Jefferson County Drainage District No. 6 (JCDD6) (the Applicant) is a conservation and reclamation district and a political subdivision of the State of Texas. JCDD6 was established on 21 January 1920, after a favorable vote by the Texas Legislature on 10 January 1920. The JCDD6 district boundary was extended and enlarged (Vol. 63, P. 478) according to the authority of the 57th Legislature, Chapter 349, and Chapter 7, Title 128, Revised Civil Statutes of Texas, Article 8129. Enlargement came about in 1961 through legislation (HB 1063) that also established JCDD6 as a Conservation and Reclamation District under Section 59, Article XVI, of the Texas Constitution. Containing approximately 450 square miles, JCDD6 lies wholly within Jefferson County, which includes much of the City of Beaumont, and was created primarily to provide drainage for flood-prone areas within the district. JCDD6 is governed by a 5-member Board of Directors appointed by the County Commissioners Court of Jefferson County, Texas (the Commissioners Court).

Funding for the Bayou Din detention basin project is being requested from the Federal Emergency Management Agency (FEMA) under the Hazard Mitigation Grant Program (HMGP). FEMA's project number is HMGP-DR-1780-TX Project #20. The purpose of this Environmental Assessment (EA) is to comply with FEMA's responsibilities under the National Environmental Policy Act (NEPA), Section 7 of the Endangered Species Act (ESA), and Section 106 of the National Historic Preservation Act (NHPA). This EA is required for purposes of evaluating the environmental impacts of a project grant application submitted to FEMA by the Applicant. The environmental reviews are required under FEMA regulations 44 CFR Part 10, and the Council on Environmental Quality guidelines, 40 CFR Parts 1500 to 1508.

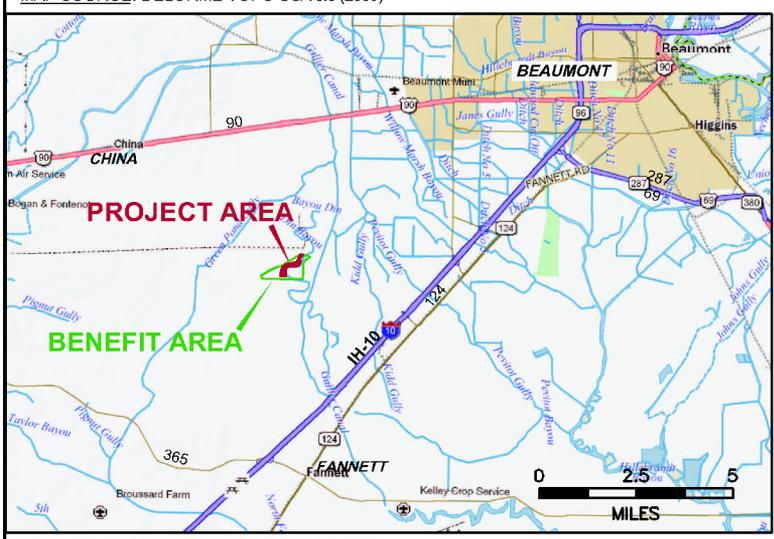
1.2 PROJECT LOCATION

The approximately 41-acre project site is located northeast of the intersection of Lawhon Road and Trahan Road, approximately 3.93 miles south of US Highway (US) 90 and 4.32 miles north of Interstate Highway (IH) 10 in Beaumont, Jefferson County, Texas (Figure 1). Approximate GPS coordinates for the center of the project area are Latitude: 30.00490; Longitude: -94.25931. The adjacent land use surrounding the study area consists of residential development to the south and west and undeveloped properties and farmland to the north and east. One underground pipeline (Sunoco, out of service) and one transmission line Right-of-Way (ROW) bisect the project area.

Major transportation arteries in the area include IH 10, Farm to Market (FM) 365, Boyt Road, and Lawhon Road. Topography is generally flat with elevations ranging from 25 to 29 feet above mean sea level (msl) (Figure 2). Vegetation in the project area is composed of bermudagrass (*Cynodon dactylon*), St. Augustine grass (*Stenotaphrum secundatum*), little bluestem (*Schizachyrium scoparium*), Chinese tallow (*Triadica sebifera*), hackberry (*Celtis laevigata*), yaupon holly (*Ilex vomitoria*), and trumpet creeper (*Campsis radicans*).



MAP SOURCE: DELORME TOPO USA 8.0 (2009)

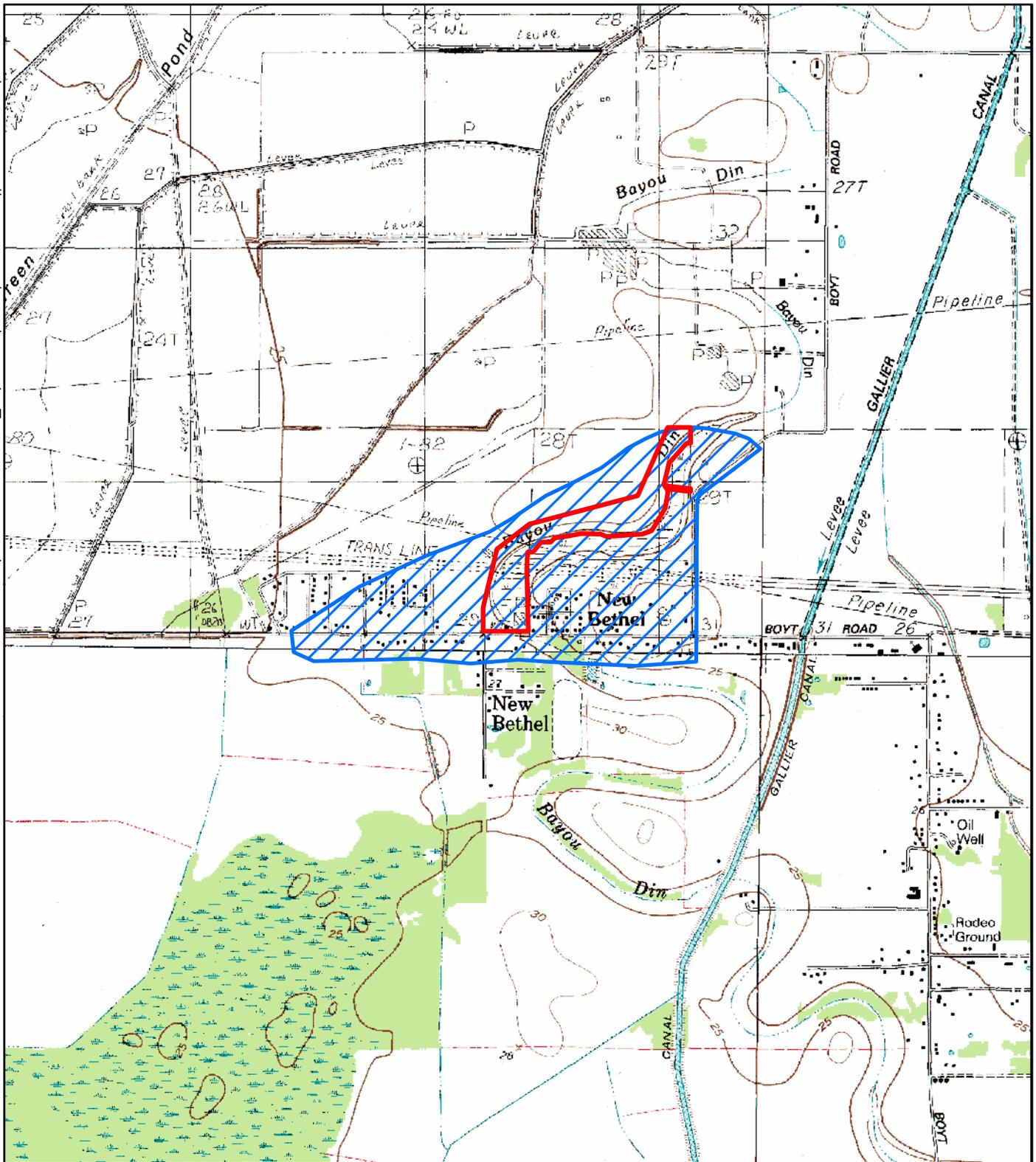


MAP SOURCE: DELORME TOPO USA 8.0 (2009)



FIGURE 1

VICINITY MAP
BAYOU DIN PROJECT AREA
JEFFERSON COUNTY, TEXAS



MAP SOURCE:

USGS 7.5-MINUTE SERIES QUADRANGLE
 BEAUMONT WEST, TEXAS QUADRANGLE (1974)
 CHINA, TEXAS QUADRANGLE (1985)
 FANNETT EAST, TEXAS QUADRANGLE (1994)
 FANNETT WEST, TEXAS QUADRANGLE (1974)

LEGEND

-  PROJECT AREA
-  BENEFITS AREA

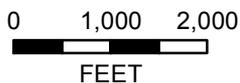


FIGURE 2

**TOPOGRAPHIC MAP
 BAYOU DIN PROJECT AREA
 JEFFERSON COUNTY, TEXAS**

Most drainage is via overland sheet flow to Bayou Din (Ditch 400) which is a very small, approximately 2-to-3-feet-deep by 4-to-8-feet-wide drainage canal. This canal drains the watershed in and around the Benefit Area, then crosses Lawhon road through one 36-inch culvert. Bayou Din then continues to flow southeast, crossing under IH 10 and State Highway (SH) 124 before it flows into Hillebrandt Bayou, approximately 12 miles downstream of the project site.

1.3 PURPOSE AND NEED OF PROJECT

1.3.1 Purpose

The purpose of the project is to provide an adequate amount of detention volume to detain flood waters below ground, thus significantly reducing flooding to structures in the Benefit Area (see Figure 2). Through HMGP, FEMA provides grants to states and local governments to implement long-term hazard mitigation measures. The purpose of 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. HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act

1.3.2 Need

Jefferson County experiences a relatively high level of rainfall. National Weather Service (NWS) statistics currently indicate an average annual rainfall rate at 56 inches. In 2001, Automated Local Evaluation in Real Time (ALERT) stations measured 103 inches of rainfall, and the Applicant's gauges have measured 80 inches of rainfall in various years. The NWS statistics also indicate that a 24-hour rain event with a 100-year recurrence interval is 13 inches, though the highest point rainfall for a 24-hour period recorded by the Applicant is 24 inches, which occurred on 7 June 2001 during Tropical Storm Allison. Other tropical systems have impacted the region in recent years, including Hurricanes Ike, Rita, and Gustav. The local watershed suffers flooding from a rainfall event that may last only 2 hours.

A review of flood insurance records indicates that this area has suffered home and road flooding in April 1979, September 1980, January 1983, June 1987, June 1989, June 2001, September 2002, October 2005, September 2007, 2008, and 2010. The three floods with the largest recorded FEMA claims were Tropical Storm Allison in June 2001, October 2005, and Hurricane Ike in September 2008. This represents 11 floods in 32 years, or approximately 1 every 3 years. Past flood events have caused a great deal of damage to houses in the project area.

The problem to be mitigated in the Bayou Din detention basin watershed is frequent and severe structure flooding. The project area's current outfall system has insufficient capacity to convey the required flood flows at acceptable water surface elevations. The 266-acre Benefit Area is the lowest elevation in this 374-acre watershed. As heavy rain events occur, as described above, storm water drains into the Bayou Din floodplain. This storm water flows downstream through the previously described outfall system but also backs up into the Benefit

Area. Because the Bayou Din channel is so small and the flat topography of the area, it has a relatively large floodplain that acts like a natural detention basin. Unfortunately, many structures were built in the floodplain resulting in repetitive flooding of those structures. Field observations during flood events, as well as surveying of high water marks throughout the area, have confirmed the problem as described.

2.0 ALTERNATIVES ANALYSIS

2.1 ALTERNATIVE 1: NO-ACTION ALTERNATIVE

The no-action alternative would not result in the expenditure of grant funds or the described impacts to the project site but would result in the continued frequent and severe structure flooding in the 266-acre Benefit Area.

2.2 ALTERNATIVE 2: CHANNELIZATION ALTERNATIVE

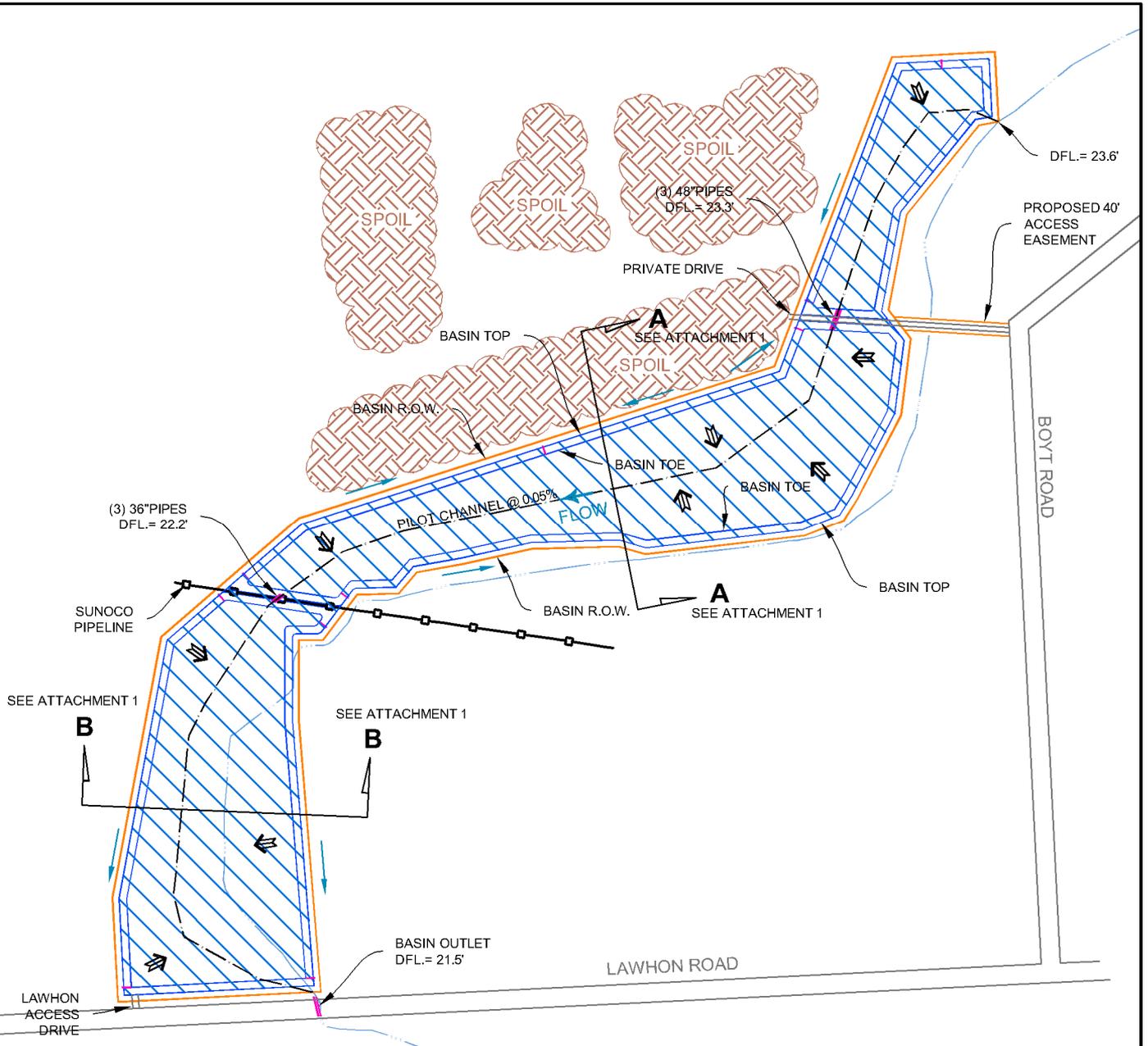
The channelization alternative's cost would significantly exceed the proposed alternative because to accommodate the increase in flow rates that would be caused, the channel would have to be improved for several miles downstream along with all road crossings to include 3 county roads, 17 driveways, and IH 10. This cost paired with the right-of-way acquisitions far exceeds the cost of the proposed detention. Additionally, the right-of-way acquisitions would be an extremely lengthy undertaking involving numerous landowners.

2.3 ALTERNATIVE 3: BUYOUT ALTERNATIVE

This alternative would require the buyout of approximately 47 existing homes and 5 that are on FEMA's repetitive loss list. The existing homes are those discussed above and within the Benefit Area map as shown on Figure 2. Based on JCCAD (Jefferson County Central Appraisal District) values plus ancillary fees, it is estimated that it would cost \$5 million to acquire and demolish the 47 homes for which benefits were calculated. No offer to purchase these homes has been made to date. If this alternative were to be determined the least-damaging practicable alternative and pursued further, it is likely that funding for the buyout would be sought from federal sources and local matches.

2.4 ALTERNATIVE 4: PROPOSED ALTERNATIVE

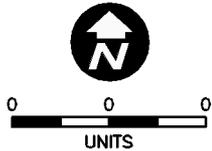
The proposed project includes the construction of a 41-acre floodwater detention basin that will provide detention capacity for the 266-acre Benefit Area. The property will be cleared and then a detention basin excavated between 1 and 9 feet deep, dependant on topography, with 4:1 side slopes and a 20-ft perimeter maintenance area (Figure 3). The natural channel of Bayou Din will be maintained in its existing condition and location in the lower basins by excavating the basins on either side of the natural channel. This will continue to accommodate the natural flow of Bayou Din between flood events. The basins are designed to begin capturing and detaining flood flows when the capacity of the natural channel of Bayou Din



MAP SOURCE:
PROVIDED BY CLIENT (FEBRUARY 2012)

GENERAL NOTES:

1. ALL CONCRETE SHALL BE 3,000 P.S.I. COMPRESSIVE STRENGTH AT 28 DAYS.
2. ALL SLOPE PAVING SHALL BE 6\"/>



LEGEND

- PROJECT AREA
- DETENTION POND
- EXISTING CHANNEL
- NEW CHANNEL
- TYPICAL DOWNSPOUT
- SWALE DITCH FLOW PATTERN
- ⇒ BASIN BOTTOM SLOPE

FIGURE 3

PROPOSED
DRAINAGE IMPROVEMENTS
BAYOU DIN PROJECT AREA
JEFFERSON COUNTY, TEXAS

and adjacent wetlands has been exceeded. The property will be seeded with a native grass mix. Downspouts will be constructed out of 18-inch pipe, which will drain adjacent areas into the detention basin. Concrete erosion control will be constructed along with the downspouts.

The drainage improvements are intended to provide relief of shallow flooding in the Lawhon Road Benefit Area. A map of the Benefit Area is shown in Figure 2. When completed, this project will reduce, and likely eliminate, flooding to the 47 homes. All will be removed above the 100-year event level.

The spoils material disposal sites will be on properties owned by Labelle Properties, Inc. The spoil areas are intended to remain as permanent mounds with 4:1 side slopes and revegetated with native and improved grasses to allow for grazing use by livestock.

2.5 COST COMPARISON OF ALTERNATIVES

No-Action Alternative:

Calculated avoided damages are \$3,674,511. Present value of annual maintenance costs after flooding are \$64,587.

Channelization Alternative:

The channelization alternative is estimated to cost \$4,900,000.

Buyout Alternative:

Buyout of 47 Structures @ \$93,000 each is \$4,400,000.

Proposed Project Alternative:

Project Cost – \$1,712,760. FEMA grant funds will be used in part for acquisition of the easement for the project from LaBelle Properties, Inc. as well as construction costs. No structures will be acquired or demolished as part of this project.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 PHYSICAL ENVIRONMENT

3.1.1 Geology, Seismicity, and Soils

Geologic development of the Texas Coastal Plain began approximately 220 million years ago during the early Mesozoic Era with the separation of the North American and European continental plates (*Handbook*, 2011). This Gulfian cycle consisted of several periods of continental extension (rifting) and compression. During the Triassic Period, discontinuous rift basins were formed that were generally oriented parallel to the edge of the developing ocean

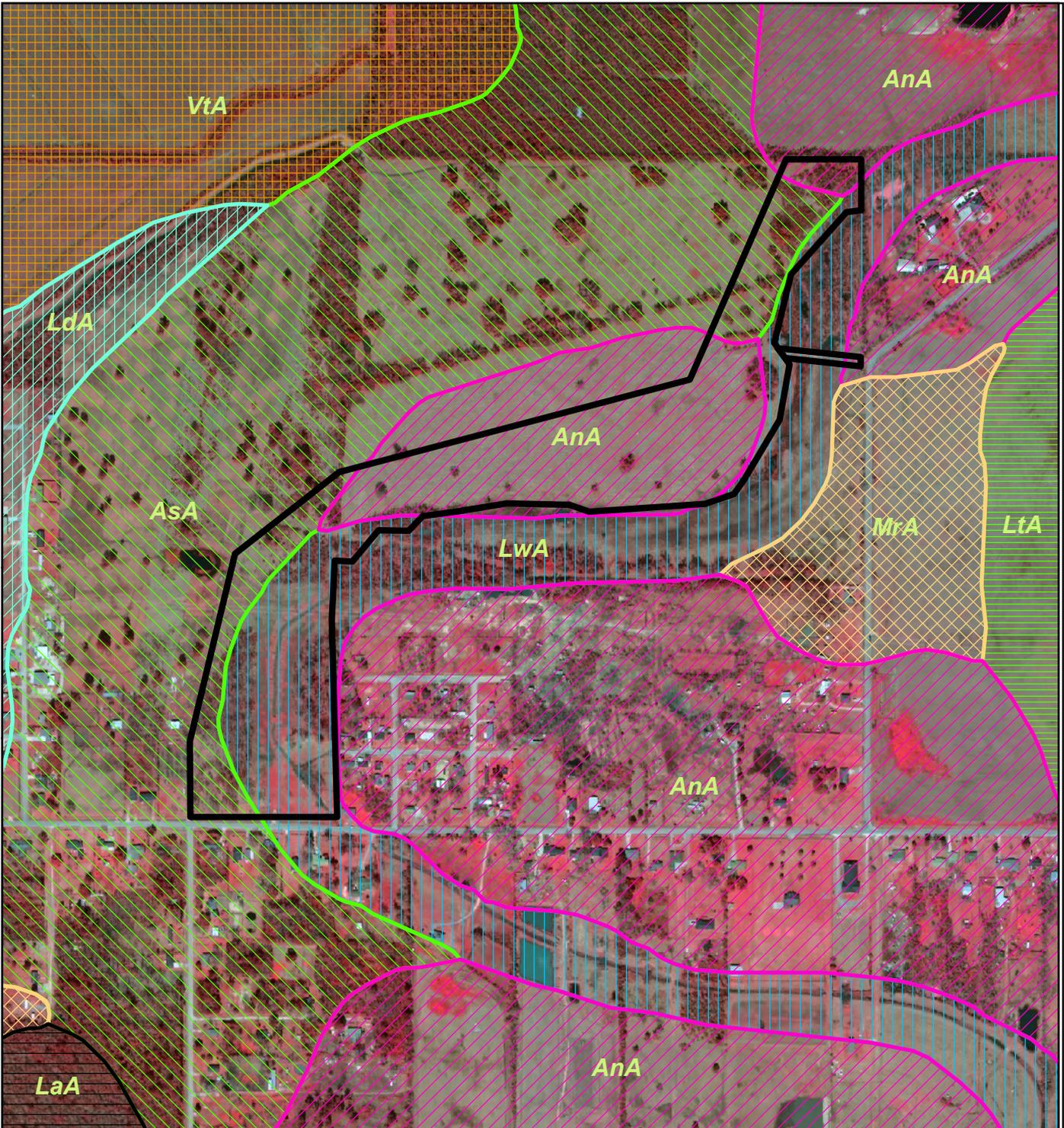
basin and extending from Mexico to Nova Scotia. Later, as continental separation continued, the rift basins in Texas were eventually filled by deposits of marine salt. Subsequent burial by river sediment carried in from the newly emerging Rocky Mountains caused instability and deformation in the buried salt layers. This led to an upward migration of the salt deposits to a lower confining pressure, forming a variety of structures collectively known as salt domes. These structures, which are prominent subsurface features of the Texas Gulf Coast region, formed significant oil and natural gas traps in the sedimentary rocks that immediately surround them. Additionally, rapid deposition of deltaic sands over marine mud resulted in an unstable sediment column, leading to displacement of the sediments by growth faults (large, curved faults that formed during sediment accumulation and continue to grow with increasing depth of burial). Linear zones of growth faults of various ages extend from northeastern Mexico into Louisiana and compose traps for large oil and gas fields.

A review of existing literature indicates that the proposed project is located in an area of outcropping sediments belonging to the Beaumont Formation (UT-BEG, 1992). In the region, the Beaumont Formation consists of varying proportions of clays, silts, and sands originating from primarily stream channel, point-bar, natural levee, backswamp, and, to a lesser extent, coastal marsh and mud-flat depositional systems. Concretions of calcium carbonate, iron oxide, and iron-manganese oxides are common in the weathered zone. The surface topography of the region tends to be characterized by relict river channels shown by meander patterns and pimple mounds on meanderbelt ridges. The majority of the subject site is located within an area of the Beaumont Formation that predominantly consists of clay and mud of low permeability, high water-holding capacity, high compressibility, high to very high shrink-swell potential, poor drainage, level to depressed relief, low shear strength, and high plasticity. Geological units include interdistributary muds, abandoned channel-fill muds, and fluvial overbank muds.

A literature review indicated no known seismic faults on the site or in the nearby area (UT-BEG, 1992). Occasional earthquakes do occur within the Coastal Plain, but these are usually situated between San Antonio and Corpus Christi. Additionally, much seismic activity (earthquakes and subsidence) within the Coastal Plain has been attributed to well injections associated with oil and gas field operations and groundwater pumping. There is a very low probability of structure damage due to the rarity and lack of severity of seismic activity in the project area.

The sediments exposed in Jefferson County are divided into 2 groups: those of Pleistocene origin and those of more recent origin. Recent time began with the withdrawal of large continental ice sheets that were characteristic of Pleistocene times. Generally, soils of the coastal prairie and timberlands are of Pleistocene origin, while those of the floodplains, coastal marshes, and beaches are of more recent origin.

The project area and surrounding vicinity is dominated by the Anahuac very fine sandy loam, Anahuac-Aris complex, and Lenton loam, ponded series soils (NRCS, 2011a, 2011b) (Figure 4). Anahuac very fine sandy loam series soils consist of a parent material of loamy fluviomarine deposits of late Pleistocene age. This series soil is moderately well drained,



MAP SOURCE:

1. NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP); CHINA, TEXAS QUADRANGLE (2008)
2. SSURGO SOIL DATA FOR JEFFERSON COUNTY, TEXAS (1998)

LEGEND

PROJECT AREA

SOIL TYPES

- AnA
- AsA
- LaA
- LdA
- LtA
- LwA
- MrA
- VtA

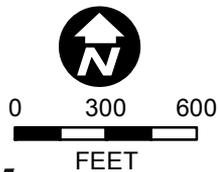


FIGURE 4
SOILS MAP
WETLAND DELINEATION
BAYOU DIN PROJECT AREA
JEFFERSON COUNTY, TEXAS

with a moderate shrink-swell potential, and a fair plant-soil-moisture relationship. The Anahuac very fine sandy loam series soils are not hydric and do not have hydric inclusions. The climax community in this soil series is treeless with dominant vegetation including most species found within the native tall grass prairie (NRCS, 2011a, 2011b).

Anahuac-Aris complex series soils consist of a parent material of loamy fluviomarine deposits of late Pleistocene age. This series soil is moderately well (Anahuac) and poorly (Aris) drained, with a moderate (Anahuac) and high (Aris) shrink-swell potential, and a fair plant-soil-moisture relationship. The Anahuac-Aris complex series soils are (Aris) and are not (Anahuac) hydric. The climax community in the Anahuac portion of this complex is treeless with dominant vegetation including most species found within the native tall grass prairie, while the Aris soil series is indigenously a wet prairie ecosystem (NRCS, 2011a, 2011b).

Lenton loam, ponded series soils is located on open depressions in coastal plains and consists of a parent material of loamy fluviomarine deposits of late Pleistocene age. This series soil is poorly drained, with a moderate shrink-swell potential, and a poor plant-soil-moisture relationship. The Lenton loam, ponded series soils are hydric, and dominant vegetation includes most species found within a wet prairie ecosystem.

3.1.1.1 No-Action Alternative

The no-action alternative would not affect geology, seismicity, or soils.

3.1.1.2 Channelization Alternative

Although the channelization alternative would not affect geology or seismicity, it would cause significant soil disturbance. The channel would require several miles of improvement to obtain the desired reduction in flooding.

3.1.1.3 Buyout Alternative

Since properties that are involved with the buyout alternative are already developed and disturbed, this alternative would not affect geology or seismicity. Minor soil disturbance would likely result from demolition of the structures, but would not be significant.

3.1.1.4 Proposed Alternative

Construction of the drainage improvements will result in the excavation of approximately 250,000 cubic yards of soil. The spoils will be deposited in large mounds on adjacent properties. A 4:1 slope will allow for greater stabilization and less tendency to erode during storm events.

The Anahuac very fine sandy loam and Anahuac-Aris complex series soils on the project area are listed as prime farmland soils (NRCS, 2011a, 2011b). Approximately 18.6 acres of prime farmland soils will be affected. The US Department of Agriculture (USDA)

Natural Resources Conservation Service (NRCS) has been contacted to evaluate the proposed project for impacts to prime farmland soils under requirements of the Farmland Protection Policy Act (FPPA). The correspondence and response from NRCS are included in Attachment 2. The NRCS has rated the farmland soils to be converted at 70 out of a possible 100 points. Combined with a site assessment rating of 72 points, the total score for the site is 142 points on the rating scale (Attachment 2). The FPPA states that sites with a combined rating less than 160 total points are not significant and do not require any further consideration.

3.1.2 Water Resources and Water Quality

The Chicot Aquifer (in Holocene- and Pleistocene-age sediments) and the Evangeline Aquifer (in Pliocene- and Miocene-age sediments) are the 2 primary sources of fresh (less than 1000 milligrams per liter dissolved solids concentration) groundwater in the Beaumont area and are part of the Gulf Coast aquifer system. The hydrogeologic units are laterally discontinuous fluvial-deltaic deposits of gravel, sand, silt, and clay that dip and thicken from northwest to southeast. Recharge to the aquifers generally occurs through the percolation of fresh water (precipitation, stream flow, lakes, etc.) along the aquifers' area of outcrop at the surface. The aquifers crop out in bands inland from and approximately parallel to the coast and become progressively more deeply buried and confined toward the coast. The Chicot, which comprises the youngest sediments, outcrops nearest to the coast, followed farther inland by the Evangeline outcrop. These outcrop areas are located a number of miles north and west of the project area. Groundwater movement is generally from the area of outcrop toward the southeast (down-dip), but may vary in the vicinity of natural discharge points (along stream banks) or artificial discharge points (groundwater wells).

Horizon Environmental Services, Inc. (Horizon) conducted an online search of water well records at both the Texas Water Development Board (TWDB) and the Texas Commission on Environmental Quality (TCEQ) for water wells located on and within a 0.5-mile radius from the subject site. The records indicated the presence of one water well within a 0.5-mile radius of the subject site. Based on water well drillers' records, water wells in the region draw water from the Gulf Coast aquifer system, which yields water at depths greater than 60 feet in the vicinity of the subject site (TWDB, 2011). No evidence of water wells was present on the subject site during the field reconnaissance effort.

The results of this survey do not preclude the existence of an abandoned well. If a water well or casing is encountered during construction, work should be halted near the feature until TCEQ is contacted.

All abandoned wells must be capped or properly abandoned according to the Administrative Rules of the Texas Department of Licensing and Regulation, 16 Texas Administrative Code (TAC), Chapter 76, effective 3 January 1999. A plugging report must be submitted (by a licensed water well driller) to the Texas Department of Licensing and Regulation, Water Well Drillers Program, Austin, Texas. If a well is intended for use, it must comply with rules stipulated in 16 TAC §76.

The receiving stream for the proposed project, Bayou Din, is not an assessed water body; therefore, it is not listed as a Category 5b segment by the Texas Commission on Environmental Quality (TCEQ, 2011). Hillebrandt Bayou, into which Bayou Din flows approximately 12 miles downstream of the project site, is listed as a Category 5b segment. The TCEQ is required, under Section 303(d) of the federal Clean Water Act, to identify water bodies for which effluent limitations are not stringent enough to implement water quality standards. Category 5b segment water bodies do not meet applicable water quality standards or are threatened for one or more designated uses by one or more pollutants, and a review of the water quality standards for this water body is conducted before a Total Maximum Daily Load (TMDL) is scheduled. The TCEQ monitors the condition of the state's surface waters, and assesses the status of water quality every 2 years. The TCEQ also develops a schedule identifying TMDLs that will be initiated in the next 2 years for priority impaired waters. The TCEQ submits this assessment to the US Environmental Protection Agency (EPA). The report is also published on the TCEQ web site as the Texas Water Quality Inventory and 303(d) List (Inventory and List) (TCEQ, 2011). The Inventory assigns each assessed water body to 1 of 5 categories to provide information to the public, EPA, and internal agency programs about water quality status and management activities.

3.1.2.1 No-Action Alternative

The no-action alternative would not be expected to affect water resources or water quality. However, the water-quality benefits of the detention basin would not be realized.

3.1.2.2 Channelization Alternative

The channelization alternative would significantly increase the sediment load and runoff contaminant load during and shortly after construction, due to sediment washing downstream from channel-widening activities and from increased flow rates.

3.1.2.3 Buyout Alternative

The buyout alternative would not be expected to affect water resources or water quality.

3.1.2.4 Proposed Alternative

The proposed project would provide a benefit to all residential areas within the Bayou Din floodplain. The proposed project would not adversely affect freshwater supply canals, sources, or water conservation projects in the region.

The project has been carefully designed so that it will not aggravate any downstream flooding situations, and it also provides the greatest benefit to the most severely flooded areas in the local watershed. The lowering of the water surfaces in these flood-prone areas will allow the Bayou Din floodplain to act more efficiently as a detention basin without flooding nearby structures.

The capacity of the existing and proposed drainage system was analyzed using computer programs based on the Manning Flow Equation for culverts and open channels. The volume of water stored in flooded areas was calculated using a contour map generated from collected field data. Also included was the volume of water stored in ditches and culverts.

The US Army Corps of Engineers' (USACE) program Hydrologic Engineering Center River Analysis System (HEC-RAS) and Hydrologic Engineering Center Hydrologic Modeling System (HEC-HMS) were utilized to calculate flows of various locations in the watershed (Attachment 1). Inputs into the modeling included area, time of concentration, soil properties, amount of impervious cover, storage coefficients, and rainfall distributions. The relationship of each sub-area to the others was also defined, as well as the flood hydrograph routes. The storage, outflow, and elevation relationship was carefully determined by balancing the volume and flows in the HEC-HMS model with the volume and flows in the HEC-RAS model.

The flow rates calculated were compared to the existing capacity, and alternatives were analyzed providing the most practical, economical, and environmentally appropriate solution to the problems. Downstream areas were taken into consideration, and alternatives were chosen that make sense for the entire area. The water surface profiles for the various hypothetical storm events generated by the HEC-RAS model as well as the calculated flow rates from the HEC-HMS model are included as Attachment 1.

The detention basin will result in beneficial effects to downstream water quality by increasing flood storage, reducing velocity of floodwaters, and controlling sedimentation. The detention of floodwaters within a vegetated basin will also allow for increased nutrient and pollutant removal for floodwaters before they are discharged to downstream receiving waters. Impaired water quality in Hillebrandt Bayou will not be worsened by the proposed project and may be slightly improved.

As more than 5 acres of land disturbance will occur, the project will be subject to requirements of the Texas Pollutant Discharge Elimination System (TPDES), Construction Storm Water General Permit (TXR 150000). As such, JCDD6 will prepare a Storm Water Pollution Prevention Plan (SWPPP) and will file a Notice of Intent (NOI) with the TCEQ at least 48 hours prior to start of construction. Monitoring and maintenance of emplaced Best Management Practices (BMPs) for storm water management will be conducted on a regular basis as prescribed by the TPDES General Permit.

3.1.3 Floodplain Management (Executive Order 11988)

Executive Order 11988 mandates that all federal agencies shall provide leadership and take action to reduce the risk of flood loss; to minimize the impact of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains in carrying out their responsibilities for (1) acquiring, managing, and disposing of federal lands and facilities; (2) providing federally undertaken, financed, or assisted construction and improvements; and (3) conducting federal activities and programs affecting land use,

including, but not limited to, water and related land resources planning, regulating, and licensing activities.

Before taking an action, each agency shall determine whether the proposed action will occur in a floodplain. For major federal actions significantly affecting the quality of the human environment, the evaluation would be included in any statement prepared under Section 102(2)(C) of the NEPA. The agency shall make a determination of the location of the floodplain based on the best available information.

There are many flood mitigation activities within areas of Jefferson County. The County of Jefferson has land use, building code, and permit authority over the land within its boundaries, including the authority to regulate development proposed within the special flood hazard areas designated on the county's Flood Insurance Rate Maps (FIRM). The Applicant seeks to obtain a FEMA grant that would help reduce the flooding of existing structures in the Benefit Area.

According to FEMA FIRMs, the proposed Bayou Din detention basin is located in Zone AE, which is an area that is inundated by 100-year flooding and base flood elevations have been determined (Figure 5). The project is located on FIRM panel number 4803850120C, dated 6 August 2002.

Due primarily to diversion projects that were completed after the FIRM was produced, the floodplain in and around the proposed Lawhon Detention Project shown on the FIRM is larger than the actual existing floodplain. The diversion projects which divert flood runoff away from the area, both above and below the benefit area, have lowered the base flood elevation (BFE) from elevation 31.0 to elevation 29.6. As part of the project, up-to-date HEC-HMS and HEC-RAS models were constructed that used the latest LIDAR ground elevation to generate floodwater elevations and floodplain maps. Once the project is complete, the BFE will lower to elevation 28.5. Upon completion of the project, a Letter of Map Revision (LOMR) will be submitted to have the FIRM revised to represent the latest correct information. The flood elevations generated by the latest modeling were used in calculations of the benefit/cost ratio. The proposed spoil placement areas are not, in fact, in the floodplain although they are within the currently mapped AE zone on the FIRM. Included herein (Attachment 1) are modern floodplain maps which show the spoil placement areas out of the floodplain as currently calculated by HEC-HMS and HEC-RAS modeling.

3.1.3.1 No-Action Alternative

The no-action alternative would not adversely affect the Bayou Din floodplain. However, the purpose of the proposed action to relieve flooding for approximately 47 structures would not be realized, and repetitive losses would continue to occur.

3.1.3.2 Channelization Alternative

The channelization alternative would reduce the floodplain to the excavated channel.

3.1.3.3 Buyout Alternative

This alternative would not adversely affect the 100- or 500-year floodplain. The buyout alternative would not significantly restore any natural or beneficial functions of the floodplain. It would only remove potential repetitive loss structures and infrastructure from areas that are subject to flooding.

3.1.3.4 Proposed Alternative

As mentioned previously, the Benefit Area suffers from frequent and severe structure flooding due to ponding of local runoff caused by an inadequate drainage system. The proposed project would not result in any negative impacts to the Bayou Din floodplain. Frequent flooding presently occurs within the mapped 100-year floodplain (see Zone AE, Figure 5). Construction of the detention basin would lower the base flood elevations and relieve the frequent flooding within the Benefit Area. This project will not require a Letter of Map Adjustment (LOMA) or Letter of Map Revision (LOMR). Figure 5 shows the proposed project in relation to the FEMA flood hazard zones. The project is located within the 100-year floodplain but will not have adverse effects on flooding characteristics. The project has been analyzed using the FEMA Eight-Step Planning Process (Attachment 3).

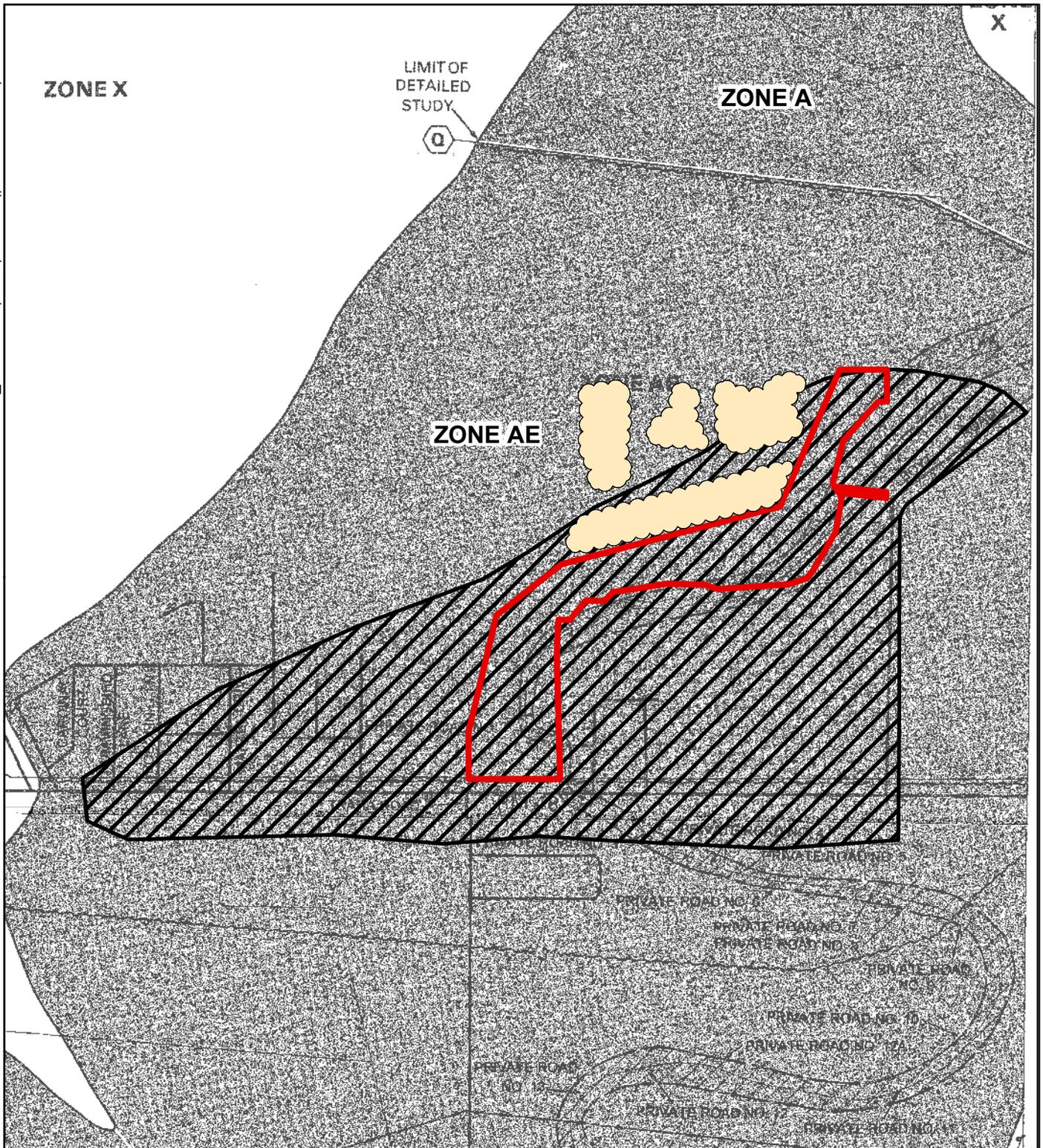
The majority of the Benefit Area is agricultural and residential development. Significant amounts of land transformation have occurred in this area in the past, due to its proximity to the city of Beaumont and to prime fertile soils for agriculture uses. Development has not previously been restricted due to flooding issues. The project is not intended to provide for increased development potential in the area, but to improve flooding hazards that exist for established residential development in the watershed. Therefore, it is not expected that this project will lead to other significant secondary impacts.

The detention basin will effectively result in beneficial effects to the floodplain by increasing flood storage, reducing velocity of floodwaters, and controlling sedimentation. The flood durations and peak elevations will be reduced in downstream areas. Flooding of the basin is event-driven and temporary.

JCDD6 must coordinate with the local floodplain administrator and obtain required permits prior to initiating work. 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. JCDD6 must prepare and provide a public notice issued 15 days prior to the start of construction of any final decision where proposed floodplain or wetland project is the only practicable alternative.

3.1.4 Air Resources and Air Quality

Jefferson County is located in extreme southeastern Texas and exhibits a subtropical climate. Extremely high summer temperatures are rare due to sea breezes from the



MAP SOURCE:
 1. NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP);
 CHINA, TEXAS QUADRANGLE (2008)
 2. FEMA FLOOD HAZARD MAPS (2002)

LEGEND

-  PROJECT AREA
-  BENEFITS AREA
-  SPOIL AREAS

FIGURE 5

FEMA FLOOD MAP
 BAYOU DIN PROJECT AREA
 JEFFERSON COUNTY, TEXAS

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Horizon
 Environmental Services, Inc.

Gulf of Mexico, and winter cold temperatures are generally moderate due to the county's southern location. Average temperatures range from 53.3 degrees Fahrenheit (°F) in January to 82.9°F in August. Relative humidity is high due to the nearby Gulf of Mexico. Yearly rainfall averages 55.21 inches and is distributed unevenly throughout the year. Heavy rains associated with tropical disturbances generally strike the area from June through August. Eighty to 100 inches of precipitation have not been uncommon in certain areas over the past several years.

Jefferson County is currently classified as a maintenance ozone area. The 2 criteria pollutants of concern as precursors to ozone formation are volatile organic compounds (VOCs) and nitrogen oxides (NOx). An increase of 100 tons per year for VOCs or NOx, resulting from the proposed project, could trigger general conformity analysis. However, the proposed project would be expected to be well below the 100 tons per year significance level.

3.1.4.1 No-Action Alternative

This alternative would not be expected to adversely affect ambient air quality.

3.1.4.2 Channelization Alternative

If dry weather conditions prevailed during construction, fugitive dust emissions could occur from equipment movements and earth-moving activities. Additionally, some minor and temporary exhaust emissions from equipment during construction could also occur, but the proposed project would have no long-term adverse effect on air quality.

3.1.4.3 Buyout Alternative

Demolition of the 47 purchased structures would be expected to have the same or potentially greater temporary impacts to air quality from fugitive dust and equipment exhaust. This alternative would not have any expected long-term adverse effects on air quality.

3.1.4.4 Proposed Alternative

During construction, if dry weather conditions prevailed, fugitive dust emissions could occur from equipment movements and earth-moving activities. Additionally, some minor and temporary exhaust emissions from equipment during construction could also occur, but the proposed project would have no long-term adverse effect on air quality.

To reduce the temporary impacts, contractors will be required to water down construction areas as needed in order to mitigate excess dust. To reduce emissions, vehicle running times on site will be kept to a minimum and engines will be properly maintained.

3.2 BIOLOGICAL ENVIRONMENT

3.2.1 Terrestrial and Aquatic Environment

The detention basin area includes patches of heavily wooded and herbaceous areas. The dominant species observed include: bermudagrass (*Cynodon dactylon*), St. Augustine grass (*Stenotaphrum secundatum*), little bluestem (*Schizachyrium scoparium*), Chinese tallow (*Triadica sebifera*), hackberry (*Celtis laevigata*), yaupon holly (*Ilex vomitoria*), and trumpet creeper (*Campsis radicans*).

Limited and temporary aquatic habitat (Bayou Din channel) and adjacent wetlands are present within the project area (see Section 3.2.2).

Attachment 5 provides representative on-site photographs of the project area and surrounding Benefit Area.

3.2.1.1 No-Action Alternative

The no-action alternative would not adversely affect terrestrial or aquatic habitats.

3.2.1.2 Channelization Alternative

The channelization alternative would alter several miles of the Bayou Din channel.

3.2.1.3 Buyout Alternative

The buyout of existing structures would not adversely affect terrestrial or aquatic habitats. The buyout alternative would not provide any significant restoration or improvements to the flood plain.

3.2.1.4 Proposed Alternative

The proposed Bayou Din detention basin project would involve ground disturbance totaling approximately 41 acres for the detention basins and 24 acres for spoil disposal area, all of which would involve the permanent clearing of low-quality forested and pasture land. The forested land is dominated by the invasive Chinese tallow. The detention basin will be revegetated with a native grass mix.

The flooding that will be experienced will be of short duration and low frequency. Vegetation within the detention pond is not expected to be adversely affected from minimal levels of flooding.

3.2.2 Wetlands (Executive Order 11990)

Executive Order 11990 provides that, in order to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative, all federal agencies shall provide leadership and shall take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for (1) acquiring, managing, and disposing of federal lands and facilities; (2) providing federally undertaken, financed, or assisted construction and improvements; and (3) conducting federal activities and programs affecting land use, including, but not limited to, water and related land resources planning, regulating, and licensing activities. This Order does not apply to the issuance by federal agencies of permits, licenses, or allocations to private parties for activities involving wetlands on non-federal property.

According to the Beaumont West National Wetland Inventory (NWI) map (USFWS, 2011a), six potential areas of concern were mapped within the proposed work area (Figure 6). The southern portion of the project area is classified as palustrine, unconsolidated bottom, permanently flooded, excavated (PUBHx), palustrine, forested, broad-leaved deciduous, temporarily flooded, partly drained/ditched (PFO1Ad), and palustrine, emergent, persistent, seasonally flooded, partly drained/ditched (PEM1Cd). The eastern boundary of the project area is classified as PEM1Cd and palustrine, forested, broad-leaved deciduous, partly drained/ditched (PFO1Cd).

A jurisdictional determination for the detention basin was conducted by Horizon in March 2009. Approximately 4.2 acres of low-quality forested (Chinese tallow) and herbaceous wetlands were determined to be present along Bayou Din in the vicinity of the detention basins. All wetlands identified within the project area were determined to be jurisdictional "waters of the US" abutting or adjacent to the Bayou Din, a non-relatively permanent to relatively permanent tributary to Hillebrandt Bayou, a traditionally navigable "water of the US" (Figure 7) (Attachment 6).

3.2.2.1 No-Action Alternative

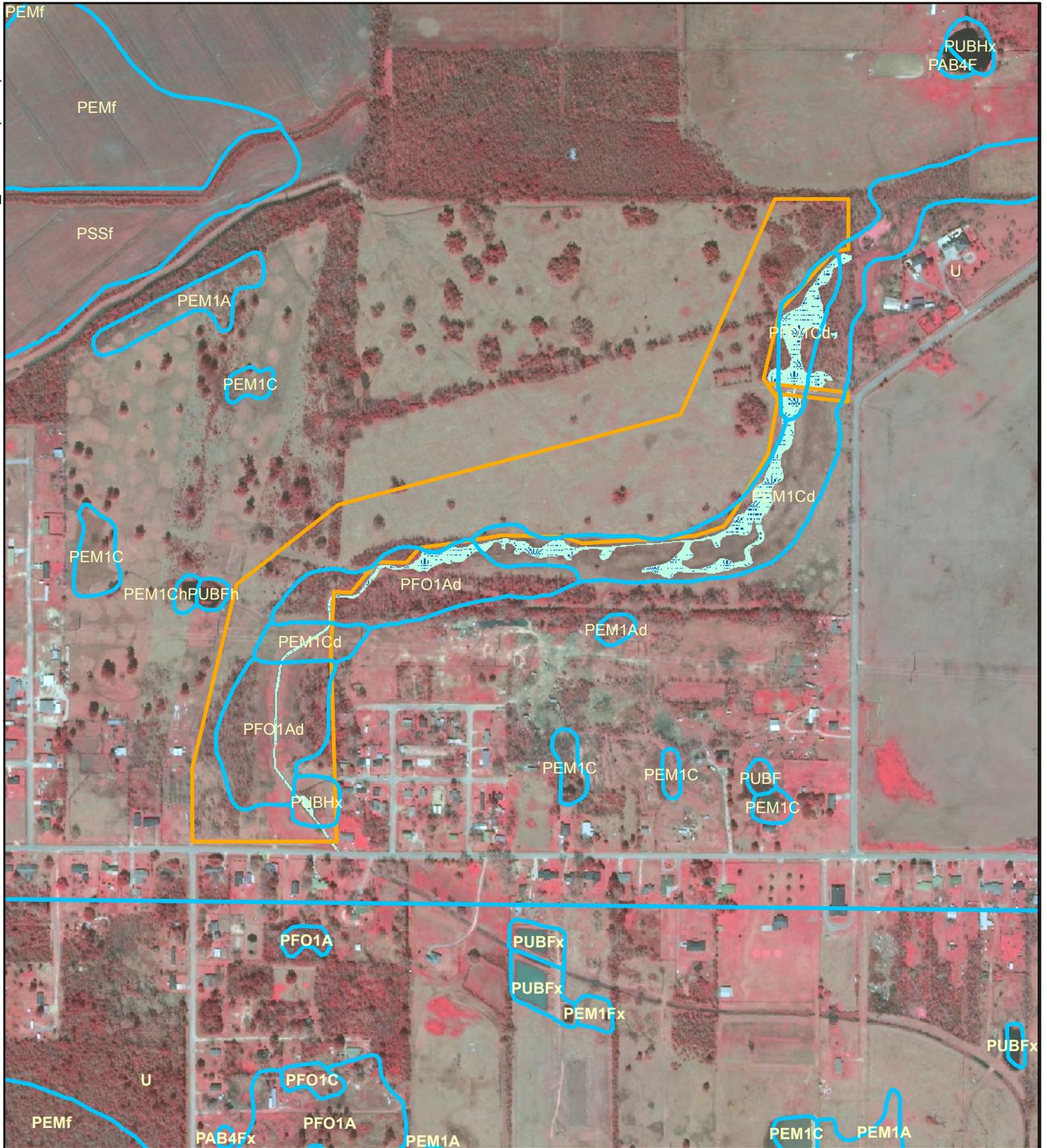
The no-action alternative would not adversely affect jurisdictional wetlands or other "waters of the US."

3.2.2.2 Channelization Alternative

The channelization alternative would alter several miles of the Bayou Din channel.

3.2.2.3 Buyout Alternative

The buyout of existing structures would not adversely affect jurisdictional wetlands or other "waters of the US."



MAP SOURCE:
 1. NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP);
 CHINA, TEXAS QUADRANGLE (2008)
 2. USFWS DIGITAL DATA (2000)



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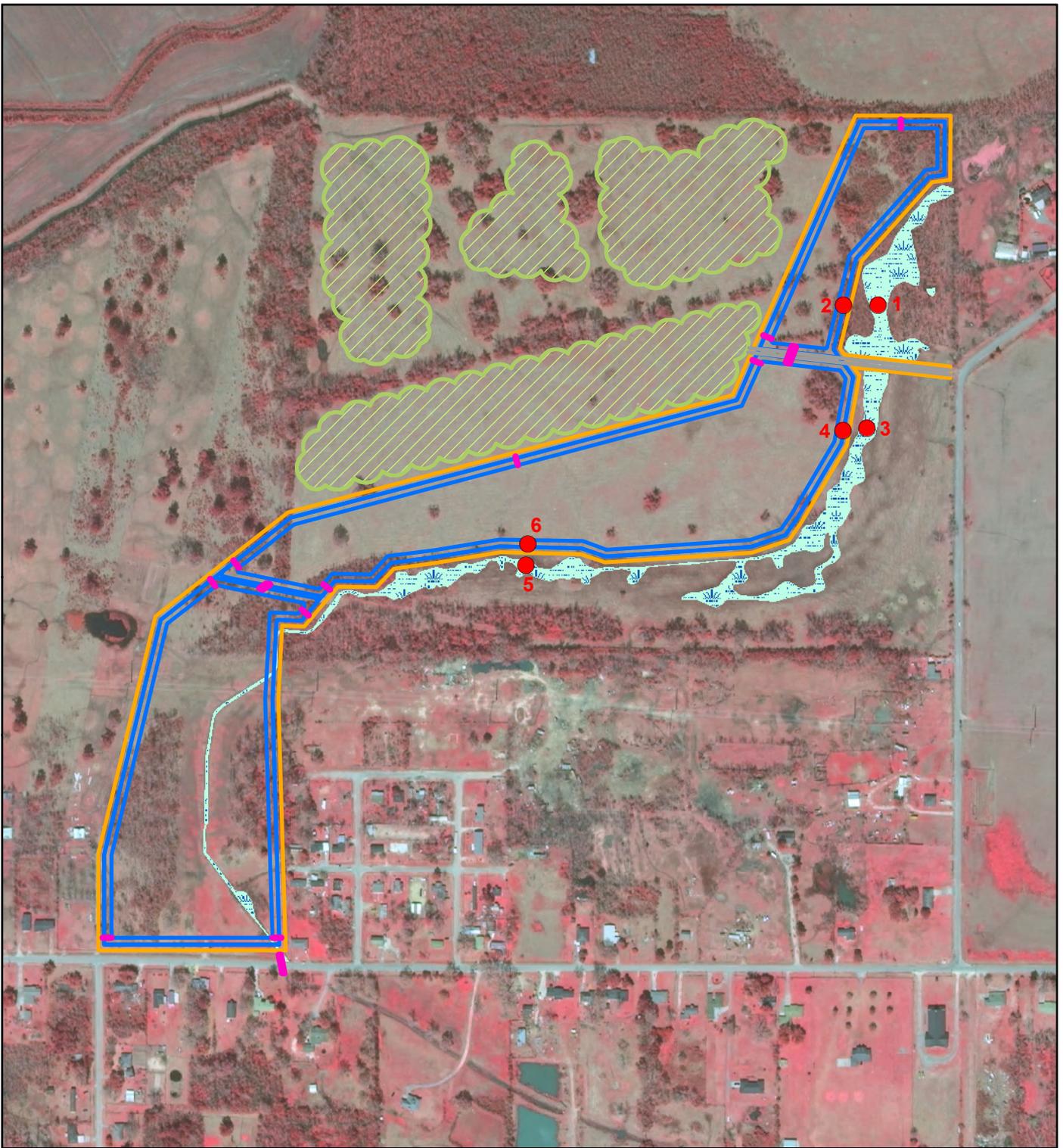


LEGEND

-  PROJECT AREA
-  WATERS OF THE U.S.
-  WETLANDS

FIGURE 6

NWI MAP
 BAYOU DIN PROJECT AREA
 JEFFERSON COUNTY, TEXAS



MAP SOURCE:

- 1. NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP); CHINA, TEXAS QUADRANGLE (2008)
- 2. DETAILS PROVIDED BY CLIENT (2-2012)

LEGEND

- PROJECT AREA
- WATERS OF THE U.S.
- DETENTION POND
- SPOIL
- ROAD
- CULVERTS
- DATA POINTS



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Horizon
Environmental Services, Inc.

FIGURE 7
JURISDICTIONAL
DETERMINATION MAP
BAYOU DIN PROJECT AREA
JEFFERSON COUNTY, TEXAS

3.2.2.4 Proposed Alternative

The proposed detention basins have been designed to avoid all wetlands and “waters of the US.” The detention basin cells will be excavated on either side of the Bayou Din channel. The wetlands and Bayou Din channel will be completely avoided. The Bayou Din channel is an average of 8 feet wide and the corridor of avoidance is 20 feet wide, thus, there is a buffer included on each side between the channel and basin cells. The basins are additionally designed to begin capturing and detaining flood flows when the capacity of the natural channel of Bayou Din and adjacent wetlands has been exceeded, thus the wetlands will not be drained or deprived of necessary water for support. No permit from the U.S. Army Corps of Engineers will be required. JCDD6 will ensure that best management practices are implemented to prevent erosion and sedimentation to surrounding, nearby or adjacent wetlands. This includes equipment storage and staging of construction to prevent erosion and sedimentation to ensure that wetlands are not adversely impacted per the Clean Water Act and Executive Order 11990.

3.2.3 Threatened or Endangered Species and Critical Habitat

Federally listed threatened or endangered (T/E) species known to occur in Jefferson County include the piping plover (*Charadrius melodus*), green sea turtle (*Chelonia mydas*), Atlantic hawksbill sea turtle (*Eretmochelys imbricata*), Kemp’s ridley sea turtle (*Lepidochelys kempi*), leatherback sea turtle (*Dermochelys coriacea*), and loggerhead sea turtle (*Caretta caretta*) (USFWS, 2011b) (Attachment 4). There is no designated critical habitat for any listed species within Jefferson County.

Additionally, the USFWS lists the following migratory bird species as being of potential occurrence in many or all Texas counties: Eskimo curlew (*Numenius borealis*), interior least tern (*Sterna antillarum athalassos*), and whooping crane (*Grus americana*). Examination of the Texas Parks and Wildlife Department (TPWD) Natural Diversity Database (NDD) by the TPWD in Austin indicated no documented occurrences of listed species on or within the immediate vicinity of the subject site (NDD, 2011) (Attachment 4). The TPWD also lists the brown pelican (*Pelecanus occidentalis*) as a potential inhabitant of Jefferson County, although it has been federally delisted. TPWD also notes the Louisiana black bear (*Ursus americanus*) as a possible transient and notes that the red wolf (*Canis rufus*), considered extirpated, formerly occupied the area.

Piping Plover

Piping plover habitat in Texas consists of sandy beaches and lakeshores that provide marine worms, flies, beetles, spiders, crustaceans, mollusks, and other small marine invertebrates during the over-wintering portion of their migration. None have been reported from the project area, and no suitable habitat is present. The project would have no effect on the piping plover.

Sea Turtles

All 5 federally listed sea turtle species are known to occur sporadically along the Texas Coast (NDD, 2011). Since the proposed project features would not be located adjacent to the Gulf of Mexico or Sabine Lake, sea turtles would not be affected.

Migratory Species

No suitable habitat for the whooping crane, Eskimo curlew, or interior least tern is present in or near the project area. These species would not be affected by the proposed project.

3.2.3.1 No-Action Alternative

No listed species or their supporting habitats are present in the project area; therefore, the no-action alternative would not affect listed species.

3.2.3.2 Channelization Alternative

Although the channelization alternative would significantly lengthen the project area, no listed species or their supporting habitats are present near the project area; therefore, the channelization alternative would have no effect on listed species.

3.2.3.3 Buyout Alternative

No listed species or their supporting habitats are present in the project area; therefore, the buyout alternative would have no effect on listed species.

3.2.3.4 Proposed Alternative

Based on a review of the species, habitat requirements, and the scope of the proposed project, FEMA has determined that the proposed alternative will have no effect on listed species. Critical habitat is not present within the project area, therefore the proposed alternative will not adversely modify any critical habitat.

3.3 HAZARDOUS MATERIALS

Horizon commissioned TelALL Phase I Support Services, Inc. (TelALL) to provide an environmental database review of selected state and federal agency records. TelALL conducted the database search for the subject site using minimum search distances outlined in the American Society for Testing and Materials (ASTM) Standards E-1527-05 (ASTM, 2006). Table 1 shows the number of known occurrences for each category as of February 2012 for the proposed Bayou Din drainage improvements project and the minimum search distance for each category.

The details of the agency database search are provided in Attachment 7. Based on the findings more fully discussed below, the Bayou Din drainage improvements project site has a low probability for the occurrence of any contamination or recognized environmental conditions. Any hazardous or potentially hazardous materials discovered, generated, or used during construction/excavation of the project would be disposed of and handled by the Applicant in accordance with applicable local, state, and federal regulations.

3.3.1 National Priority List (NPL) Database

The National Priority List (NPL) is a priority subset of the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) list and contains those CERCLIS facilities or locations evaluated and confirmed as contaminated. The CERCLIS list was created by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in order to fulfill the need to track contaminated sites. The CERCLA was enacted in 1980 and amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. These acts established broad authority for the government to respond to problems posed by the release, or threat of release, of hazardous substances, pollutants, or contaminants. The CERCLA also imposed liability on those responsible for releases and provided the authority for the government to undertake enforcement and abatement action against responsible parties. TelALL identified no NPL facilities on or within a 1.0-mile radius of the subject site.

3.3.2 Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Database

This database lists facilities reported to and identified by the EPA, pursuant to Section 103 of the CERCLA. The CERCLIS database contains sites that are either proposed to be listed or are listed on the NPL and sites that are in the screening and assessment phase for possible inclusion on the NPL. These sites are known to, or have the potential to, release hazardous substances or pollutants into the environment. TelALL identified no CERCLIS hazardous waste sites on or within a 0.5-mile radius of the subject site. TelALL identified no NFRAP sites within a 0.5-mile radius of the subject site.

3.3.3 Resource Conservation and Recovery Information System (RCRIS) Database

TelALL derived the data contained in this list from the Resource Conservation and Recovery Information System (RCRIS) database, which attempts to track the status of those regulated under the Resource Conservation and Recovery Act (RCRA). The RCRA requires generators, transporters, treaters, storers, and disposers of hazardous waste to provide information concerning their activities to state environmental agencies, who, in turn, provide the information to regional and national EPA offices. The RCRA Treatment, Storage, or Disposal (RCRA-TSD) database is a subset of the RCRIS list that tracks facilities that fall under the treatment, storage, or disposal classification. TelALL reviewed the RCRA-TSD database for those facilities where treatment, storage, or disposal of hazardous waste takes place and identified no RCRA-TSD facilities on or within a 1.0-mile radius of the subject site.

TABLE 1
TELALL AGENCY DATABASE REPORT FINDINGS
BAYOU DIN DETENTION BASIN PROJECT

DATABASE	ACRONYM	LAST UPDATED	MINIMUM SEARCH DISTANCE IN MILES	FINDINGS
National Priority List	NPL	12/2011	1.0	0
Comprehensive Environmental Response, Compensation, and Liability Information System	CERCLIS	12/2011	0.5	0
No Further Remedial Action Planned	NFRAP	12/2011	0.5	0
Resource Conservation and Recovery Act Information System - Treatment, Storage, or Disposal	RCRA-TSD	10/2011	1.0	0
Corrective Action	CORRACT	10/2011	1.0	0
Resource Conservation and Recovery Act Information System - Generators	RCRA-G	10/2011	0.25	0
Emergency Response Notification System	ERNS	11/2011	0.25	0
Texas Voluntary Cleanup Program	TXVCP	10/2011	0.5	0
Innocent Owner/Operator Program	TXIOP	10/2011	0.5	0
Texas State Superfund	TXSSF	11/2011	1.0	0
TCEQ Solid Waste Facilities	TXLF	12/2011	1.0	0
Unauthorized and Unpermitted Landfill Sites	LFUN	12/2011	0.5	0
Leaking Underground Storage Tanks	TXLUST	11/2011	0.5	0
Texas Underground Storage Tanks	TXUST	11/2011	0.25	0
Texas Aboveground Storage Tanks	TXAST	11/2011	0.25	0
Texas Spills List	TXSPILL	12/2011	0.25	0
Brownfield	BRNFD	10/2011	0.5	0
Dry Cleaner	DRYC	11/2011	0.5	0
Indian Reservation Underground Storage Tanks	IRUST	11/2011	0.25	0

The Corrective Action (CORRACT) database lists RCRIS sites that are currently subject to or have in the past been subject to corrective action. No CORRACT facilities were identified within a 1.0-mile radius of the subject site.

The RCRA Generators (RCRA-G) database is a subset of the RCRIS list that tracks facilities that generate or transport either small or large quantities of substances regulated under the RCRA. The RCRA classifies 3 generators, including conditionally exempt small-quantity generators (CESQGs); small-quantity generators (SQGs); and large-quantity generators (LQGs). The CESQG produces less than 100 kilograms (kg) per month of hazardous waste; the SQG produces at least 100 kg per month, but less than 1,000 kg per month, of hazardous waste; and the LQG produces at least 1,000 kg per month of hazardous waste. TelALL reviewed the RCRA-G database and found no facilities within a 0.25-mile radius of the subject site.

3.3.4 Emergency Response Notification System (ERNS) Database

The Emergency Response Notification System (ERNS) supports the release of notification requirements of Section 103 of the CERCLA, as amended; Section 311 of the Clean Water Act; and Sections 300.51 and 300.65 of the National Oil and Hazardous Substances Contingency Plan. Additionally, ERNS serves as a mechanism to document and verify incident location information as initially reported, and is utilized as a direct source of easily accessible data needed for analyzing oil and hazardous substances spills. TelALL reviewed the ERNS database and identified no oil or hazardous substance releases within 0.25 miles of the subject site.

3.3.5 Texas Voluntary Cleanup Program (TXVCP) and the Texas Innocent Owner/Operator Program (TXIOP)

The Texas Voluntary Cleanup Program (TXVCP) was established to provide administrative, technical, and legal incentives to encourage the cleanup of contaminated sites in Texas. Since future lenders and landowners receive protection from liability to the State of Texas for cleanup of sites under the TXVCP, most of the constraints for completing real estate transactions at those sites are eliminated. As a result, many unused or under-used properties may be restored to economically productive or community-beneficial uses.

After cleanup, the parties receive a certificate of completion from the TCEQ, which states that all lenders and future landowners who are not potentially responsible parties (PRPs) are released from all liability to the State. TelALL identified no TXVCP participants on or within a 0.5-mile radius of the subject site.

The Texas Innocent Owner/Operator Program (TXIOP) provides a certificate to an innocent owner or operator if his or her property is contaminated as a result of a release or migration of contaminants from a source or sources not located on the subject site and he or she did not cause or contribute to the source or sources of contamination. TelALL identified no TXIOP participants on or within a 0.5-mile radius of the subject site.

3.3.6 Texas State Superfund Database

The Texas State Superfund (TXSSF) database is a list of sites that the State of Texas has identified for investigation or remediation. The TXSSF sites are reviewed for potential upgrading to CERCLIS status by the EPA. TelALL identified no state or federal Superfund sites on or within a 1.0-mile radius of the subject site.

3.3.7 TCEQ Solid Waste Facilities and Unauthorized and Unpermitted Landfill (LFUN) Sites

The TCEQ Solid Waste Facilities (TXLF) listing, derived from the permit files of the TCEQ, contains known active and inactive solid waste disposal, transfer, and processing stations registered within a municipality and/or county. Subchapter R of Chapter 361 of the State of Texas Health and Safety Code regulates land use on sites determined to be, or contain, solid waste landfills. TelALL identified no TCEQ solid waste facilities on or within a 1.0-mile radius of the subject site.

Unauthorized and Unpermitted Landfill (LFUN) sites have no permit and are considered abandoned. All information about these sites was compiled by Texas State University San Marcos (formerly Southwest Texas State University) under contract with the TCEQ. TelALL identified no LFUN sites on or within a 0.5-mile radius of the subject site.

3.3.8 Underground or Aboveground Storage Tanks

TelALL reviewed the TCEQ database listings that contain information on permitted Texas Underground Storage Tanks (TXUSTs), permitted Texas Aboveground Storage Tanks (TXASTs), and known Texas Leaking Underground Storage Tanks (TXLUSTs). According to TCEQ records, no TXAST facilities were identified on or within a 0.25-mile radius of the subject site. No TXLUST facilities were identified on or within a 0.5-mile radius of the subject site. No TXUST facilities were identified within a 0.25-mile radius of the subject site.

3.3.9 TCEQ Spills List

The TCEQ tracks cases where emergency response is needed for cleanup of hazardous or potentially hazardous substances spills (TXSPILL). TelALL identified no TXSPILL cases within 0.25 miles of the subject site.

3.3.10 Brownfields

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. According to TCEQ records, no Brownfields are located within 0.5 miles of the subject site.

3.3.11 Dry Cleaners

House Bill 1366 requires all dry cleaning (DRYC) drop stations and facilities in Texas to register with the TCEQ and implement new performance standards at their facilities as appropriate. It also requires distributors of dry cleaning solvents to collect fees on the sale of dry cleaning solvents at certain facilities. TelALL identified no DRYC facilities within 0.5 miles of the subject site.

3.3.12 Indian Reservation Underground Storage Tanks

Permitted underground storage tanks on Indian land are tracked and maintained by the EPA. TelALL identified no Indian reservation underground storage tank sites on or within a 0.25-mile radius of the subject site.

3.3.13 No-Action Alternative

The no-action alternative would not contribute to potential downstream pollution as a result of any identified sources of pollution in the project area.

3.3.14 Channelization Alternative

The channelization alternative would not contribute to potential downstream pollution as a result of any identified sources of pollution in the project area.

3.3.15 Buyout Alternative

The buyout and demolition of structures in the Benefit Area has the potential to encounter and potentially release asbestos, lead-based paint, and other potentially hazardous household, lawn, or agricultural chemicals that might be stored on these properties into the environment.

3.3.1.6 Proposed Alternative

The proposed alternative would not contribute to potential downstream pollution as a result of any identified sources of pollution in the project area.

3.4 SOCIOECONOMICS

US Census data for 2010 indicate a population of 252,273 for Jefferson County. A demographic profile of the area shows that approximately 52% of the population is reported as white, 34% as black, 10% as Hispanic, and 4% as other. The project is not expected to affect the population of the area. The county population is the reference population for the Environmental Justice analysis below (Section 3.4.6).

Local employment is dominated by manufacturing jobs, with the service industry and agricultural-related occupations also being common. The median household income is reported as \$51,688, and is approximately \$10,675 less than the US average. The project is not expected to significantly affect local employment or income, except for a temporary increase during construction. The project, however, will benefit the local economy by reducing flooding impacts on homes, structures, and infrastructure in the area.

3.4.1 Zoning and Land Use

The project area and surrounding areas are not within the City of Beaumont and are not currently affected by zoning laws. Residential and agricultural land uses are common in the area.

3.4.2 Visual Resources

The current project area is predominantly agricultural land with scattered forest land and sporadic residential development.

3.4.3 Noise

The project location is currently predominantly agricultural land and rural residential. Existing noise is generally generated by traffic on Lawhon Road, Boyt Road, Trahan Road, and developed properties in the area. The noise level is generally low.

3.4.4 Public Services and Utilities

The proposed project is not expected to impede the access of nearby residents to any public services. A review of the Railroad Commission of Texas (RCT) Well Location Database indicated that one out-of-service pipeline traverses the proposed detention basin. Existing detention basin plans do not interfere with the existing pipeline. Coordination with the pipeline company for potential conflicts has been conducted by the applicant. No active gas wells are present within the boundaries of the drainage improvement areas. One transmission line bisects the southern portion of the project site.

3.4.5 Traffic and Circulation

Major transportation arteries in the area include Lawhon Road, Boyt Road, IH 10, and US 90. Temporary traffic diversions or congestion may be necessary during mobilization for the detention basin construction, particularly on Lawhon Road and Boyt Road.

3.4.6 Environmental Justice (Executive Order 12898)

Executive Order 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," mandates that federal agencies identify and address, as appropriate, disproportionately high and adverse human health or environmental

effects of programs on minority and low-income populations. By necessity, the proposed project is located in the vicinity of the area for which it is designed to provide flood protection. There are several low-income residences in the immediate vicinity of the project. However, these properties will benefit from the proposed action. The location of the proposed project is the best available, based on environmental, hydrological, and cost analyses.

3.4.7 Safety and Security

The property within the project area is privately owned, and JCDD6 will obtain an easement for the facilities. Current safety issues in the area include construction traffic entering and exiting the project area on Lawhon Road and Boyt Road during mobilization. Appropriate construction barricades and signage will be utilized during construction.

3.4.8 No-Action Alternative

The no-action alternative will not provide relief of concerns for property, health, and welfare protection during flood events. Continued flooding of structures in the Benefit Area would continue to place a burden on local, state, and federal flood relief resources and would also continue to depress property values. The no-action alternative has a cost of nearly \$4 million in repetitive damages.

3.4.9 Channelization Alternative

The channelization alternative will have no significant adverse effects to socioeconomics. Flood reduction benefits to the Benefit Area would be realized.

3.4.10 Buyout Alternative

The buyout alternative would remove 47 private structures from the local tax rolls with a substantial loss in future tax revenues to local governments and service providers. The buyout alternative would cost an estimated \$4.4 million.

3.4.11 Proposed Alternative

The project yields \$3,674,511 in benefits (avoided damages) (see Bayou Din Detention Benefit Cost Analysis Technical Report, Attachment 1). The proposed project alternative has a total cost of nearly \$1,712,760, which yields a benefit-cost ratio of 2.06.

The proposed project would not significantly affect or change current land uses. Approximately 41 acres of woodlands and pastureland would be converted to a detention basin, and the area would remain as undeveloped open space.

Visual resources (aesthetics) are expected to be slightly changed by the proposed drainage improvement. After construction, the area will have an open space appearance as

compared to the patchy forest land and pasture before construction. The detention basin would be visible from Lawhon and Boyt Roads after construction.

The only anticipated significant noises associated with the project would be due to heavy equipment operation during the construction phase. Following construction activities, there would be no noise-generating activities at the site other than occasional mowing. To reduce noise levels during construction, construction activities will take place during normal business hours. No equipment or machinery will be installed at the proposed project site.

There are no anticipated impediments to traffic due to operation of the proposed drainage improvements. There may be short-term traffic congestion due to movement of construction equipment during mobilization on Lawhon Road and Boyt Road.

The proposed project is not expected to have adverse or disproportionate impacts on minority or low-income populations. The benefits of the proposed project are expected to be proportional to all residents in the benefit area.

No significant safety or security issues are expected with the proposed project. The appropriate signage and barriers will be in place prior to construction activities to alert pedestrians and motorists of project activities.

3.5 CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act of 1966, as amended, requires federal agencies “to take into account” the “effect” that an undertaking would have on historic properties. Historic properties are those included in or eligible for inclusion in the National Register of Historic Places (NRHP) and may include archeological sites, buildings, structures, sites, objects, and districts. In accordance with the Advisory Council on Historic Preservation regulations pertaining to the protection of historic properties (36 CFR 800.4), federal agencies are required to identify and evaluate historic resources for NRHP eligibility and assess the effects that the undertaking would have on historic properties. Additionally, since the proposed improvements would be sponsored by a subdivision of the state, the project is also regulated by the Antiquities Code of Texas.

To assess the potential for intact, significant cultural resources within the Area of Potential Effect (APE) of the proposed Bayou Din Detention Basin Project, Horizon conducted an archival review and a field investigation of the proposed improvements. The archival review consisted of a review of existing maps and records, while the field investigation consisted of an intensive cultural resources survey of the locations of the proposed improvements to determine the degree of prior disturbances in the area, the potential for intact cultural deposits, and the presence or absence of significant cultural resources.

The APE for the Bayou Din detention basin was the entirety of the basin (approximately 41 acres). The APE is shown on Figure 2.

3.5.1 Findings

Archival research conducted via the Internet at the Texas Historical Commission's (THC) *Texas Archeological Sites Atlas* (Atlas) web site indicated that no previously recorded archeological sites have been recorded in the vicinity of the APE (THC, 2009). A review of the National Park Service's (NPS) National Register of Historic Places (NRHP) Google Earth map layer indicated the presence of no historic properties listed on the NRHP within the review perimeter (NPS, 2009). No documented cultural resources, including any listed or considered eligible for listing on the NRHP, are located within or immediately adjacent to the project area. Based on the Atlas data, the project area has not been previously assessed for cultural resources.

In addition to the Atlas and the NPS NRHP Google Earth map layer, Horizon also reviewed historic aerial photography via Google Earth. The earliest image, dating to 1938, showed the entire project area to be cleared pasture and wetlands. Subsequent images, dating between 1989 and 2010, showed the entire project area as heavily wooded along Bayou Din and the remainder persistent as pastureland. Between 1938 and 1989 a small detention pond was constructed in the southeast corner of the project area, but has since been filled.

On March 10, 2009, Horizon archeologists Reign Clark, project archeologist, and Jared Wiersema, archeological field technician, under the overall supervision of Jeffrey D. Owens, Principal Investigator, performed a cultural resource survey of the APE to locate any cultural resource properties that potentially would be impacted by the proposed construction project. The survey was conducted by Horizon under Texas Antiquities Permit No. 5197. The APE was traversed by Horizon's archeologists, the modern ground surface was thoroughly inspected for cultural resources, and a total of 20 shovel tests were excavated during the survey, thereby exceeding the Texas State Minimum Archeological Survey Standards (TSMASS) for a project area of this size.

No cultural resources, historic or prehistoric, were identified within the APE as a result of the survey.

Based on the results of the survey-level investigations documented in this report, no potentially significant cultural resources would be affected by the proposed undertaking. No new cultural resources were identified in the APE as a result of survey activities, and no previously recorded sites occur in the vicinity of the project area. Furthermore, no listed historic properties are present in the vicinity of the project area that would be adversely affected by the proposed undertaking.

In accordance with 36 CFR 800.4, Horizon has made a reasonable and good faith effort to identify historic properties within the APE. No cultural resources were identified that meet the criteria for listing on the NRHP according to 36 CFR 60.4 or for designation as State Archeological Landmarks (SALs) according to 13 TAC 26, and no further archeological work is recommended in connection with the proposed undertaking.

3.5.2 No-Action Alternative

The no-action alternative would result in no cultural resources, including historic properties, being affected.

3.5.3 Channelization Alternative

This alternative would result in several miles of stream bank alteration. It is possible that cultural resources could be present along Bayou Din further downstream.

3.5.4 Buyout Alternative

The buyout alternative would not likely affect historic or prehistoric cultural resources since no significant ground disturbance would be involved in previously undisturbed areas. However, the 47 structures to be bought out have not been evaluated for historic significance.

3.5.5 Proposed Alternative

The proposed project was coordinated with the State Historic Preservation Office (SHPO). Correspondence documenting coordination activities with the SHPO is included in Attachment 8. In a letter dated April 8, 2009, the SHPO concluded that the project would not affect historic properties and that the project could proceed as planned. Based on archival research, the archeological survey, and corresponded with the SHPO, FEMA has made the determination that the proposed project will have no impact to historic properties.

In the event that archeological deposits, including any Native American pottery, stone tools, bones, or human remains, are uncovered, the project shall be halted and the applicant shall stop all work immediately in the vicinity of the discovery and take all reasonable measures to avoid or minimize harm to the finds. All archeological findings will be secured by JCDD6, and access to the sensitive area will be restricted by JCDD6. The Applicant will inform FEMA immediately, and FEMA will consult with the SHPO. Work in sensitive areas shall not resume until consultation is completed and until FEMA determines that the appropriate measures have been taken to ensure complete project compliance with the NHPA and its implementing regulations.

4.0 CUMULATIVE IMPACTS

An assessment of cumulative impacts takes into consideration the consequences that past, present, and reasonably foreseeable future projects have had, have, or will have on an ecosystem. Every project must be considered on its own merits. However, its impacts on the environment must be assessed in light of historical activity, along with anticipated future activities in the area. Although a particular project may constitute a minor impact in itself, the cumulative impacts that result from a large number of such projects could cause significant impairment of natural resources.

Cumulative impacts can result from many different activities, including the introduction of materials into the environment from multiple sources, repeated removal of materials or organisms from the environment, and repeated environmental changes over large areas and long periods. More complicated cumulative effects occur when stresses of different types combine to produce a single effect or accumulation of effects. Large, contiguous habitats can become fragmented, making it difficult for organisms to locate and maintain populations between disjunctive habitat fragments. Cumulative impacts may also occur when the timing of perturbations are so closely spaced that their effects overlap.

4.1 NO-ACTION ALTERNATIVE

The no-action alternative would not have any additive effects to other regional impacts to environmental resources. However, the continued flooding and cost of responses and damages in the Benefit Area would continue to contribute to regional financial and socio-economic impacts.

4.2 CHANNELIZATION ALTERNATIVE

Although this alternative would reduce potential future flood damage to existing structures in the Benefit Area, it would also impact several miles of jurisdictional stream channel.

4.3 BUYOUT ALTERNATIVE

The buyout alternative would not have many additive effects to other regional impacts to environmental resources. However, this alternative would temporarily affect regional air quality due to emissions of fugitive dust and equipment exhaust during demolition of purchased residences and outbuildings. The potential also exists for the encounter and release of toxic or harmful materials during the demolition process that could include asbestos, lead-based paint, and other potentially hazardous household or agricultural chemicals. These materials could temporarily affect air or surface water quality. These impacts would be short-term in nature.

The only long-term effect that would contribute to regional cumulative effects would be the loss of approximately 47 private properties from the local tax rolls, with a substantial loss in future tax revenues to local governments and service providers.

4.4 PROPOSED ALTERNATIVE

The primary purpose of the proposed project is to reduce potential future flood damage to existing structures in the Benefit Area. The project is not intended to provide for increased development potential in the area. Therefore, it is not expected that this project will lead to other significant secondary impacts.

The proposed drainage improvement project will have impacts to natural resources. These impacts include conversion of 41 acres of pasture and forest land to drainage use. The

majority of areas surrounding the project site are agricultural fields or residential properties. There are a few small, fragmented, wooded areas, but they do not constitute significant habitat.

Approximately 18.6 acres of prime farmland soils will be affected. The US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) has been contacted to evaluate the proposed project for impacts to prime farmland soils under requirements of the Farmland Protection Policy Act (FPPA).

The proposed project does not have any other impacts that are of such significance as to add materially to cumulative impacts in the region. Impacts are summarized in Table 2.

5.0 PUBLIC PARTICIPATION

A Notice of Availability of the Draft Environmental Assessment will be published in the *Beaumont Enterprise* (Attachment 9) and on FEMA's website (<<http://www.fema.gov/plan/ehp/envdocuments/ea-region6.shtm>>) requesting public comments. Additionally, the Draft EA will be made available for review for a period of 30 days at a physical location in the project area. FEMA will consider and respond to all public comments in the Final EA. If no substantive comments are received, the Draft EA will become final and a Finding of No Significant Impact (FONSI) will be issued for the project.

6.0 CONSULTATIONS

Consultation letters and responses from resource agencies such as the USFWS, TPWD, TCEQ, TWDB, GLO are provided in Attachment 4, NRCS (Attachment 2), and the THC (Attachment 8). Responses from these agencies will be included in these attachments.

**TABLE 2
SUMMARY OF ENVIRONMENTAL CONSEQUENCES
AND MITIGATION MEASURES FOR THE
PROPOSED BAYOU DIN DRAINAGE IMPROVEMENTS**

RESOURCE	ANTICIPATED EFFECTS	MITIGATION MEASURES
Geology, Seismicity, and Soils	Geology – no impacts. Seismicity – no impacts. Soils – Conversion of prime farmland soils.	No mitigation measures proposed.
Water Resources and Water Quality	Groundwater – no impacts. Surface water quality – minor benefits. Developed water resources – no impacts.	JCDD6 will comply with conditions of Construction Storm Water General Permit TXR 150000, including preparation of SWPPP and implementing BMPs.
Floodplains	No adverse impacts to the 100-year or 500-year floodplain – benefits to the 100-year floodplain and area downstream. The spoils disposal sites were previously removed from the calculated floodplain by prior drainage projects in the watershed, although a LOMR has not yet been filed with FEMA.	JCDD6 must coordinate with the local floodplain administrator and obtain required permits prior to initiating work.
Air Quality	Temporary increase of fugitive dust and exhaust emissions during construction. No post-construction effects.	Contractors will be required to water down construction areas as needed in order to mitigate excess dust. Vehicle running times on site will be kept to a minimum and engines will be properly maintained.
Terrestrial and Aquatic Environment	Approximately 41 acres of pasture and forest lands to be converted to herbaceous vegetation.	No mitigation measures proposed.
Wetlands	No wetlands or "waters of the US" will be adversely affected.	JCDD6 will ensure that best management practices are implemented to prevent erosion and sedimentation to surrounding, nearby or adjacent wetlands. This includes equipment storage and staging of construction to prevent erosion and sedimentation to ensure that wetlands are not adversely impacted per the Clean Water Act and Executive Order 11990.
Threatened or Endangered Species and Critical Habitat	No impacts.	No mitigation measures proposed.
Hazardous Materials	No impacts.	No mitigation measures proposed.
Zoning and Land Use	41 acres of undeveloped pasture and forest land converted to open-space drainage use.	No mitigation measures proposed.

Visual Resources	Pasture and forest lands will be cleared and converted to open grassy basins but will remain as open space.	No mitigation measures proposed.
Noise	Temporary construction equipment noise.	Construction activities will take place during normal business hours. Machinery operating at the proposed project site will meet all local, state, and federal noise regulations.
Public Services/Utilities	Public services – no impacts. Utilities – no impacts. Pipelines – no impacts.	No mitigation measures proposed.
Traffic and Circulation	Possible, short-duration traffic interruptions during construction mobilization.	Implement traffic control procedures as needed.
Environmental Justice	No impacts.	No mitigation measures proposed.
Safety and Security	No impacts.	The appropriate signage and barriers will be in place prior to construction activities to alert pedestrians and motorists of project activities.
Cultural Resources	No impacts.	In the event that archeological deposits, including any Native American pottery, stone tools, bones, or human remains, are uncovered, the project shall be halted and the Applicant shall stop all work immediately in the vicinity of the discovery and take all reasonable measures to avoid or minimize harm to the finds. All archeological findings will be secured by JCDD6, and access to the sensitive area will be restricted by JCDD6. The applicant will inform FEMA immediately, and FEMA will consult with the SHPO. Work in sensitive areas shall not resume until consultation is completed and until FEMA determines that the appropriate measures have been taken to ensure complete project compliance with the NHPA and its implementing regulations.

7.0 LIST OF PREPARERS

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ATTACHMENT 1
PROJECT DESCRIPTION
AND
H&H INFORMATION

ATTACHMENT 2
NRCS PRIME FARMLAND DETERMINATION

ATTACHMENT 3
FEMA 8-STEP PLANNING ANALYSIS

ATTACHMENT 4
AGENCY CONSULTATION/LETTERS OF CONCURRENCE

ATTACHMENT 5
ON-SITE PHOTOGRAPHS

ATTACHMENT 6
SECTION 404 DETERMINATION INFORMATION

ATTACHMENT 7
HAZARDOUS MATERIALS AGENCY DATABASE SEARCH

ATTACHMENT 8

CULTURAL RESOURCES SURVEY AND SHPO CONSULTATION LETTERS

ATTACHMENT 9
DRAFT NOTICE OF AVAILABILITY