Montgomery County, Texas

Prepared for

Tranquility Ranch

Prepared by

SWCA Environmental Consultants

SWCA Project No. 35731

April 2016

PROSPECTUS FOR THE WEST MONTGOMERY MITIGATION BANK MONTGOMERY COUNTY, TEXAS

Prepared for

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1. GENERAL INFORMATION

On behalf of Nathan Ingram (Sponsor), SWCA Environmental Consultants (SWCA) developed this prospectus for consideration by the U.S. Army Corps of Engineers (USACE) Galveston District, members of the Interagency Review Team (IRT), and the public. The proposed bank is within an approximately 1,160-acre tract 5 miles northeast of the city of Magnolia and 1.5 miles northeast of the intersection of Farm to Market Road (FM) 149 and FM 1488 in Montgomery County, Texas (Appendix A, Figure 1). The property primarily consists of bottomland hardwood forest and cleared pasture adjacent to Lake Creek, a tributary of the West Fork San Jacinto River.

1.1. Bank Name and Sponsorship

The mitigation bank will be known as the West Montgomery Mitigation Bank (WMMB) and is intended to be operated as a phased bank, with portions of the overall site added as available. Nathan Ingram is sponsoring the bank and will operate the bank under a wholly-owned limited liability corporation. SWCA will act as the Sponsor's Agent. Contact information for the Sponsor and Agent are as follows:

Sponsor:

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1.2. Sponsor Qualifications

Mr. Ingram has owned the property intended for inclusion in WMMB since 2003 and has actively managed it for wildlife through a white tailed deer management plan since 2005. This wildlife management plan details herd management goals for the property in cooperation with the State of Texas. Therefore, although WMMB represents the Sponsor's first bank, the Sponsor is accustomed to working on ecological projects with agency requirements.

To assist the Sponsor, SWCA has been contracted to be WMMB's environmental consultant. SWCA staff includes professional wetland scientists, certified wildlife biologists, and scientists with extensive wetland and stream mitigation experience. SWCA staff have more than 20 years of experience in wetland and stream mitigation, including the development of multiple USACE approved mitigation banks and permittee-responsible mitigation plans in Galveston and other USACE Districts.

1.3. Location

The proposed site of WMMB is 5 miles northeast of Magnolia, Texas, and 1.5 miles northeast of the intersection of FM 149 and FM 1488 in Montgomery County, Texas. The Bank site is located inside the U.S. Geological Survey (USGS) 7.5-minute quadrangles for Keenan, Texas and Magnolia East, Texas at Latitude 30.255° North and Longitude 95.686° West (Appendix A, Figure 1). The proposed WMMB is located within a 1,160-acre property known as Tranquility Ranch. Although Tranquility Ranch as a whole consists of bottomland hardwood forest and cleared pasture, the initial phase of WMMB (approximately

758.54 acres) will be established in the largely forested western portions of the property adjacent to Lake Creek, a tributary of the West Fork San Jacinto River (Appendix A, Figures 2 and 3). WMMB is situated in the South Central Plains Level III Ecoregion, near the boundary with the Texas Blackland Prairie, offering an important transitional habitat between piney woods, oaks, hardwoods, and post oak savannas not seen in other portions of the watershed (Appendix A, Figure 4).

2. GOALS AND OBJECTIVES

The goals of the WMMB are to preserve and enhance wetland functions within the West Fork San Jacinto River watershed and provide appropriate compensatory mitigation for unavoidable aquatic resource impacts within this and adjoining watersheds.

WMMB will preserve approximately 312.45 acres of high-functioning palustrine forested wetlands, enhance approximately 55.00 acres of partially degraded wetlands, and preserve approximately 391.09 acres of adjacent upland buffer area (approximately 758.54 acres total) to maximize ecosystem functions important to the environment and society. Specifically, WMMB will improve chemical, physical, and biological functions within the West Fork San Jacinto River watershed by implementing a mitigation work plan that focuses on managing previously impacted forested areas (enhancement) and preserving those areas that are currently functioning as native riparian zones adjacent to Lake Creek. Implementation of this plan will result in improved physical structure of the wetlands and will detain storm flows for short periods, thereby reducing flood peaks. This will also improve water quality by trapping or chemically transforming pollutants (e.g., sediments, toxicants, and nutrients) by reducing water velocities allowing for sediment accretion and increased contact time with soil and microbes. Preserved and enhanced wetlands increase floral and faunal biodiversity, overall species richness, and habitat connectivity, while decreasing fragmentation along riparian corridors.

The Sponsor will develop individual measurable objectives for the site through a mitigation site plan that will be appended to the Mitigation Banking Instrument (MBI) for the bank. This plan will stipulate the amount of resources being preserved and restored as well as mechanisms by which the mitigation will be achieved. Furthermore, the MBI will include detailed ecological performance standards and credit calculations. Additionally, the wetlands within the bank will be protected in perpetuity through a conservation easement over the mitigation area.

The objective of this document is to detail mitigation bank prospectus requirements as described by 33 CFR 332.8(d)(2) which include: objectives of the Bank, establishment and operation details, proposed service area, general need and technical feasibility, ownership arrangements, long-term management strategies, Sponsor qualifications, ecological suitability, and water rights assurances.

3. SERVICE AREA

The service area is the designated geographic area for which a mitigation bank may provide compensatory mitigation for unavoidable impacts to wetlands and waters of the United States. Service areas are typically determined based on hydrologic and ecoregion considerations. Watersheds such as the USGS's 8-digit hydrologic unit codes (HUC-8) and ecoregions such as the U.S. Environmental Protection Agency (EPA) Level 3 ecoregions (Griffith et al. 2004) are often used as service area extents to ensure compensatory mitigation is ecologically appropriate.

The Sponsor proposes the primary service area for WMMB to include the West Fork San Jacinto 8-digit HUC (12040101) inside the USACE Galveston District. The proposed secondary service area includes the East Fork San Jacinto (HUC 12040103) and Spring (HUC 12040102) inside the USACE Galveston District, excluding the portion of HUC 12040102 south of US Highway 290 which may overflow into the

Addicks-Barker Reservoir watershed. The service area for WMMB will exclude all U.S. Fish and Wildlife Service (USFWS) and Texas Parks and Wildlife Department (TPWD) properties. Please refer to Figure 5 (Appendix A) for primary and secondary service areas.

4. GENERAL NEED

4.1. Watershed Threats

The USGS defines Lake Creek's watershed as hydrological unit code (HUC) 1204010103. Lake Creek itself winds its way through eastern Grimes County and western Montgomery County before discharging into the West Fork San Jacinto River just south of the city of Conroe, Texas (Appendix A, Figure 6). Lake Creek's watershed measures 213,168 acres and constitutes approximately 31 percent of the West Fork San Jacinto River watershed (692,760 acres). The West Fork San Jacinto River is a significant tributary to Lake Houston, a major water supply servicing the greater Houston area.

The greater Houston area has one of the largest urban and suburban populations in the country. Sustained residential and business growth near Conroe and The Woodlands and the expansion of major roadways in Montgomery County (e.g., Interstate 45, Interstate 69, State Highway 249, and State Highway 105 corridors) have led to increasing development pressure throughout the watershed of West Fork San Jacinto River. The Houston-Galveston Area Council (HGAC 2015) estimates that between 2000 and 2014, population has grown approximately 37.7 percent in the eight counties constituting the Houston metropolitan area. Montgomery County in particular has experienced exceptionally high population growth, increasing by nearly 75 percent during that same timespan.

With the county's population projected to increase by an additional 50 percent in the next 20 years, infrastructure and real estate development projects will likely continue to impact wetlands, streams, and other aquatic resources, especially in undeveloped portions of the county. Typical land uses in Montgomery County include farmland, agriculture, and suburban residential development, though anticipated growth will center around residential subdivisions and associated commercial development (Theis and Pulsinelli 2015). In fact, the properties to the west and south of WMMB are being converted into subdivisions. As development in Montgomery County's watersheds increases, runoff rates to streams are likely to increase dramatically (Paul and Meyer 2001). Considering the Lake Houston system's history of water quality concerns documented in the most recent 303(d) list (Texas Commission on Environmental Quality [TCEQ] 2015), increasing runoff threatens to further degrade turbidity, nutrient loads, bacterial and chemical pollutant discharges, as well as in-stream erosion for the tributaries to the West Fork San Jacinto River, Lake Houston, and Galveston Bay. The West Fork San Jacinto River, in particular, has demonstrated high concentrations of bacteria (TCEQ 2016) and is heavily exploited for sand and gravel used in construction and industrial applications. Approximately 9 miles downstream of WMMB on Lake Creek near the confluence of the West Fork San Jacinto River is a sand mining operation owned by Hunt Global Resources Inc. There are also sand and gravel mines on the outskirts of Conroe near Loop 336.

4.2. Site-specific Threats

There are several property uses that could be realized instead of mitigation banking. Firstly, real estate development pressures in the area make the property attractive for development. Development impacts to wetlands and streams on the property would likely require a Clean Water Act (Section 404) permit from the USACE, and require mitigation. However, forested wetlands within the property could be converted to marketable real estate or storm detention areas. Such a scenario would lead to a marked decrease in the biological value of these wetlands.

A more pressing use of the property is in implementation of silviculture operations or developing the property for agriculture use. Silvicultural practices would cause the reduction in biodiversity of the vegetation as well as the loss of old-growth timber within the wetlands, thereby decreasing their ecological value. Alternatively, as with the adjoining property the Sponsor purchased to the east of WMMB (a potential Phase II), the forested wetlands could be cleared and the land converted to agriculture for hay farming and/or pasture land. Based on previously proffered timber harvest bids, the timber sale of these trees would create a favorable margin and subsequent agricultural use would make the property economically valuable. However, the impact to wetland functions would be extensive and detrimental to the watershed.

Finally, the Sponsor has received an offer from a mining operation that is interested in harvesting sand and gravel from the site. Developing the surface minerals from the property would certainly have a significant impact on the biological, chemical, and physical functions of the wetlands and would be detrimental to Lake Creek and West Fork San Jacinto River. However, extraction of surface minerals would be permissible through an aggregate production operation (APO) registration with the TCEQ. Furthermore, sand and gravel mining operations can be implemented without violation of Section 404 of the Clean Water Act. Therefore, sand and gravel operations may alter wetlands substantially without triggering the need for mitigation.

Although preserving the existing high quality forested wetlands and enhancing the lower quality wetlands might be the highest ecological function of the property, there are several economically viable options for the property owner.

4.3. Watershed Benefits

The Gulf-Houston Regional Conservation Plan is a collection of current and potential environmental and recreation projects in eight counties involving government, private, and non-governmental organizations. The plan involves thousands of acres of land acquisition, restoration, and recreational development divided among ecologically significant areas. Lake Creek is among the waterbodies of the Headwaters to Baywaters Initiative of the plan, which involves land acquisition, land easements and restoration, and development of recreational trail miles. Within this framework, WMMB's objectives are valuable to larger conservation efforts at a regional and watershed scale.

The Lake Creek Greenway Project, a cooperative endeavor between Keep Montgomery County Beautiful, the East 1488 Community Association, Montgomery County Precinct 2, the Lake Creek Greenway Partnership, and collaborators of the Gulf-Houston Regional Conservation Plan aims to create a nature preserve along the Lake Creek riparian corridor for recreational use, flood control, and ecosystem services (e.g., water quality enhancement, climate change). This project is intended to integrate with the watershed protection plan for Lake Creek and the Upper West Fork of the San Jacinto River watersheds (TCEQ 2016). Approximately 620 acres are already preserved under easements or court orders with additional efforts focused on the eastern segment of Lake Creek. The terminus of the intended project is Goodrich Jones State Forest. WMMB is located on the western edge of the potential greenway and would provide a large, valuable, contiguous upstream tract with goals congruent with those of the Lake Creek Greenway project (Appendix A, Figure 7).

Neighboring properties to the north of the proposed WMMB are dominated by conservation areas that are under restrictive easements to that effect; however, residential and commercial developments abut the site to the east, west, and south. The conservation easements adjacent to the north side of Lake Creek comprise 5,650 acres and are owned by Cooks Branch Conservancy, LP and the Cynthia and George Mitchell Foundation (Appendix A, Figure 6). These properties, combined with the proposed WMMB property, represent more than 3 percent of the Lake Creek watershed. Establishment of the WMMB will

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expand the contiguous conservation footprint of these adjacent properties, increasing beneficial watershed functions such as flood flow attenuation, pollutant transformation, sediment trapping, and wildlife habitat.

In addition, the Mitchell family has spent 25 years transforming their properties from clear-cut and overgrazed landscapes to piney wood and bottomland forest dedicated to restoring and conserving natural resources. Furthermore, the foundation has expressed interest in participating in restoration and preservation of the Lake Creek riparian corridor. This foundation may also provide valuable insight into the successful restoration activities which resulted in national and state recognition of conservation of natural resources and establishment of bald eagles (Haliaeetus leucocephalus), red-cockaded woodpeckers (Picoides borealis), eastern turkey (Meleagris gallopavo), and bobwhite quail (Colinus virginianus) populations on their sites. Although not an expressed goal, WMMB may help to expand wildlife habitat for state and federally protected species on the adjacent conservation easements through the preservation of the Lake Creek riparian corridor.

4.4. Current Mitigation Banks

As development continues to progress in the watershed, it is expected that the wetlands and tributaries of West Fork San Jacinto River will require additional mitigation for impacts. Preservation and enhancement activities associated with WMMB are expected to figure significantly in meeting these mitigation needs.

Section 3 described WMMB's proposed primary and secondary service areas (Appendix A, Figure 5). At the time of writing, there are four wetland and three stream mitigation banks operating or proposed to operate with service areas including HUC 12040101 (USACE 2016), WMMB's proposed primary service area. Table 1 provides general information regarding these banks.

Bank	Approval Status	Credit Type	Service Area in 12040101
Cedar Bayou	Pending	Stream	The state of the s
Gin City	Active	Forested Wetlands	Secondary
Greens Bayou	Active	Wetlands	Primary (Harris County only)
Houston-Conroe	Active	Stream	Primary and Secondary
Katy Prairie Stream	Active	Stream	Secondary
Mill Creek	Active	Forested Wetlands and Stream	Secondary
Spellbottom	Active	Forested Wetlands	Primary and Secondary

Table 1. Mitigation banks within the HUC 12040101 service area.

Given predicted population increases and infrastructure development in Montgomery County, particularly in the West Fork San Jacinto watershed, the Sponsor believes that the currently existing and proposed banks will not provide sufficient credits to mitigate unavoidable impacts to aquatic resources. This will lead to a proliferation of smaller, less intensively vetted permittee-responsible mitigation areas throughout the watershed. Therefore, the Sponsor contends that there is sound general mitigation that WMMB will be able to help meet.

4.4.1. Cedar Bayou Mitigation Bank

The pending Cedar Bayou Mitigation Bank (CBMB) may measure up to 1,061 acres and is expected to include both stream and wetland restoration credits. Service areas have yet to be approved but its

proposed primary service area includes North Galveston Bay (HUC 12040203) and East Fork San Jacinto (HUC 12040103), which overlaps with WMMB's proposed secondary service area. Portions of CBMB's secondary service area, the West Fork San Jacinto (HUC 12040101) and Lower Trinity (HUC 12030203), overlap with WMMB's proposed primary service area. Preliminary designs include the restoration of over 900 acres of forested wetlands and over 20,000 linear feet of perennial stream.

4.4.2. Gin City Mitigation Bank

Gin City Mitigation Bank consists of 544 acres of forested wetland mitigation, with the potential to realize up to 514 credits each of biological, chemical, and physical functional capacity units (FCUs). Gin City's primary service area is North Galveston Bay (HUC 12040203) and the secondary service area includes portions of Buffalo-San Jacinto (HUC 12040104), West Fork San Jacinto (HUC 12040101), and East Fork San Jacinto (HUC 12040103). Portions of Gin City's secondary service area overlap with WMMB's proposed primary and secondary service areas.

4.4.3. Greens Bayou Wetland Mitigation Bank

Greens Bayou Wetland Mitigation Bank (GBWMB) was originally approved in 1995 and consists of 1,400 acres of forested wetland and emergent wetland mitigation. The bank recently went through an expansion in which future bank developments will be credited through iHGM credits as opposed to WET 2.0 credits that were previously allotted by the USACE. There are approximately 0.58 WET 2.0 credits remaining that must be sold before iHGM credits may be released by the USACE (Becky Martinez pers. comm.). GBWMB's sponsor believes that future credit releases will be insufficient to meet long-term mitigation needs projected for Harris County public projects. The primary service area includes portions of the Buffalo-San Jacinto (HUC 12040104) and West Fork San Jacinto (HUC 12040101) falling within Harris County. The secondary service area includes the Harris County portions of the Spring (HUC 12040102) and East Fork San Jacinto (HUC 12040103) watersheds (HCFCD 2016).

4.4.4. Houston-Conroe Stream Mitigation Bank

The Houston-Conroe Stream Mitigation Bank (HCMB) was recently authorized for an initial release of 17,402 stream credits, with projections for a total of 109,820 stream credits. HCMB's service area overlaps the entirety of WMMB's proposed service area; both HCMB's primary (East Fork San Jacinto [HUC 12040103] and portions of West Fork San Jacinto [HUC 12040101] and Spring [HUC 12040102]) and secondary (remaining portions of West Fork San Jacinto and Spring as well as Lower Trinity [HUC 12030203]) service areas overlap with WMMB's proposed primary and secondary service areas. Most of WMMB's secondary service area lies within HCMB's primary service area. However, HCMB does not offer wetland mitigation credits.

4.4.5. Katy-Prairie Stream Mitigation Bank

Katy-Prairie Stream Mitigation Bank includes approximately 500 acres of property with the potential to generate up to 19,449 stream credits. The primary service area includes the watersheds of Spring (HUC 12040102) and Buffalo-San Jacinto (HUC 12040104), and the secondary service area includes West Fork San Jacinto (HUC 12040101), Austin-Oyster (HUC 12040205), and West Galveston Bay (HUC 12040204). All available credits for Phase 1 of this bank have been allocated or reserved (Restoration Systems, pers. comm.); therefore, no credits are currently available. Katy-Prairie Stream Mitigation Bank does not offer wetland mitigation credits.

4.4.6. Mill Creek Mitigation Bank

Mill Creek Mitigation Bank is 188 acres of property with the potential to provide both stream and wetland mitigation. The primary service area includes the Lower Brazos (HUC 12070104), San Bernard (HUC 12090401), East Matagorda Bay (HUC 12090402), Austin-Oyster (HUC 12040205), and Lower Brazos-Little Brazos (HUC 12070101) watersheds. The secondary service area includes the Lower Colorado-Cummins (HUC 12090301), Lower Colorado (HUC 12090302), San Bernard (HUC 12090401), East Matagorda Bay (HUC 12090402), West Fork San Jacinto (HUC 12040101), Spring (HUC 12040102), Buffalo-San Jacinto (HUC 12040104), and West Galveston Bay (HUC 12040204) watersheds. The bank is nearly depleted of credits (Larry Gremminger, pers. comm.).

4.4.7. Spellbottom Mitigation Bank

Spellbottom Mitigation Bank is a relatively large (851 acres) mitigation bank offering forested wetland credits. The primary service area is the West Fork San Jacinto (HUC 12040101), with a secondary service area including the Spring (HUC 12040102), Buffalo-San Jacinto (HUC 12040104), and East Fork San Jacinto (HUC 12040103) watersheds. The bank contains a limited amount of remaining forested wetland biological (80.9), chemical (55.6), and physical (44.9) FCUs.

4.4.8. Additional Proposed Banks

The Sponsor is aware of four other pending mitigation banks in the region that could serve portions of the West Fork San Jacinto and neighboring watersheds: Buck Gully, Cow Island Bayou, Tarkington Bayou (immediately adjacent to Houston-Conroe Stream), and Town Creek Stream and Wetland (USACE 2013a, 2015b, 2015a, 2015b). These additional proposed banks are medium-sized or smaller banks and are in the early stages of review.

5. EXISTING CONDITIONS

5.1.1. Vegetation

SWCA conducted an on-site wetland and waterbody delineation September 1 through November 13, 2015, to determine the presence, location, and extent of potential waters of the United States within the Tranquility Ranch property and to assist in determining potential credits for a wetland mitigation bank (Appendix B). During these delineations, biologists demarcated six vegetation communities within the WMMB initial phase area including three palustrine wetland communities totaling approximately 367.45 acres and three upland communities comprising the remaining approximately 391.09 acres. Additional wetland areas were delineated on the adjacent tract to the east, which may serve as a future phase.

Palustrine forested wetlands (PFO) are the most common wetland community on-site comprising approximately 312.44 acres dominated by water hickory (Carya aquatica), sugar-berry (Celtis laevigata), green ash (Fraxinus pennsylvanica), honeylocust (Gleditsia triacanthos), planertree (Planera aquatica), laurel oak (Quercus laurifolia), water oak (Q. nigra), and willow oak (Q. phellos). Palustrine emergent wetlands (PEM) comprise approximately 34.66 acres consisting primarily of fragrant flatsedge (Cyperus odoratus), sand spike-rush (Eleocharis montevidensis), ovate false fiddleleaf (Hydrolea ovata), common rush (Juncus effuses), swamp smartweed (Persicaria hydropiperoides), savannah-panic grass (Phanopyrum gymnocarpon), and short-bristle horned beak sedge (Rhynchospora corniculata). Cherokee sedge (Carex cherokeensis), lizard's-tail (Saururus cernuus), and the aforementioned PEM species are also the dominant herbaceous species in PFO wetlands. Palustrine scrub-shrub (PSS) wetlands are the rarest wetland community comprising approximately 20.34 acres dominated by sapling and shrub species of sugar-berry, common buttonbush (Cephalanthus occidentalis), green ash, dwarf palmetto (Sabal

minor), poison-bean (Sesbania drummondii), and Chinese tallowtree (Triadica sebifera). The herbaceous layer contains the same species seen in the PEM wetlands and the herbaceous layer of PFO wetlands.

Herbaceous uplands contain a variety of forb and grass species including perennial ragweed (Ambrosia psilostachya), Cherokee sedge, longleaf woodoats (Chasmanthium sessiliflorum), Bernuda grass (Cynodon dactylon), hairy crab grass (Digitaria sanguinalis), annual marsh-elder (Iva annua), powderpuff (Mimosa strigillosa), beaked panicgrass (Panicum anceps), Maria feverfew (Parthenium hysterophorus), pull-and-be-damned (Paspalum denticulatum), golden crown grass (P. dilatatum), bahia grass (P. notatum), southern dewberry (Rubus trivialis), smut grass (Sporobolus indicus), St. Augustine grass (Stenotaphrum secundatum), and Brazilian vervain (Verbena brasiliensis). Scrub-shrub and forested upland communities are dominated by trees, saplings, and shrubs of American beautyberry (Callicarpa americana), sugar-berry, deciduous holly (Ilex decidua), American holly (Ilex opaca), yaupon (Ilex vomitoria), sweetgum (Liquidambar styractiflua), winged elm (Ulmus alata), American elm (U. americana), loblolly pine (Pinus taeda), post oak (Quercus stellata), and black oak (Q. velutina). Herbaceous cover in these two communities consist of Cherokee sedge, Indian woodoats (C. latifolium), longleaf woodoats, hogwort (Croton capitatus), and annual marsh-elder. Southern dewberry, roundleaf greenbriar (Smilax rotundifolia), saw greenbriar (S. bona-nox), and eastern poison ivy (Toxicodendron radicans) are the dominant woody vine species.

The forested wetlands within the proposed WMMB appear to reflect the climax wetland vegetation community historically associated with the Lake Creek and West Fork San Jacinto watersheds. The large, old-growth trees in these communities are primarily dominated by trees native to the watershed and ecoregion. Additionally, these trees provide a generally closed canopy and include relatively little of the invasive Chinese tallowtree that pervades many of the wetlands throughout southeast Texas. Therefore, SWCA exerts that the forested wetlands on the property represent historical, native riparian conditions and constitute a rare and significant resource for the watershed.

5.1.2. Soils

WMMB soils vary by topography and proximity to mesic areas. Although hues are typically yellowish red across the site, hillslopes have lighter reddish chromas and values with sand or loam textures whereas low wet areas have darker chromas and values with clay or loam textures. Substrates of this portion of the Gulf Coastal Plain ecoregion are typically sandy or silty. There are six soil map units within the property boundary: Betis fine sand, 0–5 percent slopes (BIC); Betis fine sand, 5–12 percent slopes (BID); Fetzer loamy fine sand, 1–5 percent slopes (WkC); Kaman clay, 0–1 percent slopes, frequently flooded (KanA); Landman fine sand (Ab); and Woodville fine sandy loam, 1–5 percent slopes (SuC) (Appendix A, Figure 8) (NRCS 2015). KanA, which makes up the majority of the property (75 percent), is the only hydric soil according to the National List of Hydric Soils (NRCS 2015). The rest of the soil map units comprise 6 percent or less of the site.

5.1.3. Hydrology

Lake Creek forms the northeastern property boundary and most of the property occurs within the floodway or 100-year floodplain of Lake Creek, with the exception of a hillslope along the western edge (Appendix A, Figure 8). Periodic flooding of Lake Creek influences the hydrology of wetlands, streams and ponds on-site (Appendix A, Figure 9). The topography of the site may also influence the flow of streams on-site, The maximum elevation of the upland hillslope within the bank is approximately 245 feet above mean sea level (amsl), which is 30 to 60 feet lower in elevation than the adjacent hills west of the site. The floodplain gradually dips from approximately 190 to 160 feet amsl across the site from the edge of the uplands eastward to Lake Creek. Lake Creek itself is incised within the valley and has a stream bed approximately 10 to 15 feet below the adjacent floodplain. Thus streams on the western portion of the

property flow inward (east) toward the center of the property inundating the central portion of the site. Most streams in the center and east flow into Lake Creek (Appendix A, Figure 9). Existing waterbody features delineated by SWCA within Tranquility Ranch include 37 streams with hydroperiods varying from perennial to ephemeral, 13 man-made ponds, and 1 beaver pond (Appendix B). Of these, 19 streams and 7 ponds (including the beaver pond) are within the currently proposed bank boundaries (Figure 9). Culverts have been placed parallel to some streams to allow road access across the site. Three streams have been channelized to facilitate drainage of the central portion of the site. Most of the streams' hydrology are dependent upon precipitation and overland sheet flow; however, the northwest portion of the property has a high water table and contains a seep that empties into an intermittent stream. Thus there is likely exchange of surface and ground water discharge, and potential ground water recharge on-site. Some streams with multiple channels currently lack any flow and have transformed into wetlands. A wetland delineation for the property has been completed and will be submitted to the USACE for verification (Appendix B).

5.1.4. Ecological Suitability

The ecological services and values provided by the WMMB site extend beyond compensatory mitigation for unavoidable impacts to waters of the United States. The site would provide important physical, chemical, and biological functions for the West Fork San Jacinto watershed. The heavily forested bottomlands will aid in sequestering sediments, nutrients, and pollutants from upstream impaired waters. Likewise, the forests mitigate flooding events by slowing flood flows and increasing water storage capacity. Biodiversity would be augmented via extension of preserved high-quality wildlife habitat present on adjacent conservation easements. Preservation and restoration of the WMMB site would contribute to the ecological initiatives of the local and regional riparian conservation projects. Given the contamination threats in multiple stream segments of the San Jacinto watershed, it is important to conserve the remaining unimpaired waters and protect them from future development that surrounds the site. The site already supports significant wetland resources of value to the watershed that will be preserved and enhanced to provide on-going ecological value to the West Fork San Jacinto River watershed.

6. ESTABLISHMENT AND OPERATION

6.1. Bank Establishment

The Sponsor will procure the financial resources, planning, and scientific professional services required to successfully enhance and preserve the aquatic resources in the WMMB. The Sponsor will perform all enhancement and preservation activities, provide for financial assurances (per 33 Code of Federal Regulations [CFR] 332.3[n]) and long-term protection mechanisms (per 33 CFR 332.7[a]), administer the sale and accounting of credits, and complete all record-keeping and reporting requirements for the WMMB.

As part of the review process, the Sponsor will draft an MBI for review and approval by the USACE and the IRT in accordance with 33 CFR 332.8(d)(6-8). The MBI shall establish the WMMB and outline its operating agreement. The MBI will detail WMMB's service area, accounting procedures, provisions stating the Sponsor's legal responsibility for providing compensatory mitigation upon secured credits, default and closure provisions, reporting protocols, mitigation plans, credit release schedules, and other information required for inclusion by the USACE.

6.2. Bank Operation

As described in this prospectus, Phase I of WMMB entails the preservation and enhancement of approximately 367.45 acres of palustrine wetlands with the potential to increase mitigation credits through additional mitigation work on the adjoining property (Phase II) at a later date (Appendix A, Figure 1). This two-phased approach will allow the Sponsor to sell FCUs or credits from preservation and enhancement and then re-invest this capital to fund additional work on subsequent phases of restoration and enhancement at a later date.

WMMB will be operated by the Sponsor as a commercial wetlands and stream mitigation bank to offset impacts to aquatic resources associated with USACE Galveston District permits issued under Section 404 of the Clean Water Act (CWA) and/or Section 10 of the Rivers and Harbors Act. Credits will be released, added, or reduced from the ledger pending verification of FCUs from USACE and implementation of the proposed MBI. The number of credits released for different categories of functional capacity will be in accordance with the credit release schedule. Credit sales are restricted to functional category credit pools. Once credits of the most limited functional category are exhausted no other credits from other functional categories will be sold until additional credits for the exhausted category are released by the USACE and added to the account.

6.3. Credit Determination

The objective of the WMMB is to provide mitigation to offset adverse impacts to waters of the United States authorized by USACE permits through preservation and enhancement. Therefore, the Sponsor proposes to establish credits based on the wetland functions that will be preserved or enhanced through implementation of a mitigation work plan and the avoidance of threats that could destroy or adversely modify these wetlands.

Credit determination for existing and future restored wetlands will be based on their functional assessment through the use of the iHGM for Riverine Herbaceous/Shrub and Riverine Forested wetlands. In the iHGM framework, available credits will be determined by calculating the functional capacity of wetlands and multiplying this value by the acreage of a given wetland type. This, in turn, provides the number of FCUs for each of three broad wetland functions: biological, chemical, and physical.

For enhanced wetland areas, the functional increase will be based on the difference between the functional capacity of the wetlands prior to enhancement (e.g., current, baseline conditions) and those verified to be present following enhancement activities. For preserved wetlands, the Sponsor proposes credits to be determined by conducting a threat analysis (i.e., logging, agriculture, residential development, sand/gravel pits) to determine the functional capacity that may be lost if the site is not preserved in perpetuity. Preservation credits will be calculated based on the difference between existing functional capacities of the wetlands and the functional capacity of those wetlands if the most damaging impacts identified in the threat analysis are implemented. Alternate functional assessment methodologies may be employed as agreed upon by the USACE and the Sponsor. Specific credit calculations will be provided in the MBI.

WMMB will provide in-kind mitigation on a 1:1 ratio; however, impacts in the secondary service area will be on a 1.5:1 ratio. Out-of-kind impacts or impacts outside WMMB's service area will be permitted only on a case-by-case basis as approved by the USACE in coordination with the IRT.

Mitigation credits will be released to the bank once the USACE verifies, in coordination with the IRT, the FCUs of the bank as stipulated in the MBI. The Sponsor anticipates developing a credit release schedule tied to defined milestones in the operation, construction, and maintenance of the WMMB during the

review process with the USACE and the IRT. These will be stipulated in the final MBI. Credits applied toward areas that have been created or restored will be available when the established performance standards have been achieved. In addition, the Sponsor proposes that credits applied towards preservation shall be eligible for release following approval of the WMMB MBI. The Sponsor does not anticipate requesting advanced credits from the USACE for future phases involving restoration.

6.4. Easements and Encumbrances

There are no known easements or encumbrances restricting the use of the land. However, should any be found, no credits will be sought for portions of WMMB mitigation sites that are subjected to any easement or encumbrance. Should any easements be relinquished, the Sponsor may seek USACE approval to receive additional credits for restoration of aquatic resources within former rights-of-way.

7. OWNERSHIP AND LONG-TERM MANAGEMENT

As a property owned in fee simple by the Sponsor, the Sponsor intends to own and operate WMMB through a wholly-owned limited liability corporation (LLC). This corporation will operate at the direction of the Sponsor and will be the entity responsible for executing all aspects of the MBI including meeting the performance standards and providing for all financial considerations for maintenance and management of the property.

The WMMB will be self-sustaining with long-term management activities limited primarily to items such as inspections, controlling invasive species, and boundary maintenance. The financial obligations required for the initial implementation and ongoing management of the property will be specified in the MBI.

8. WATER RIGHTS

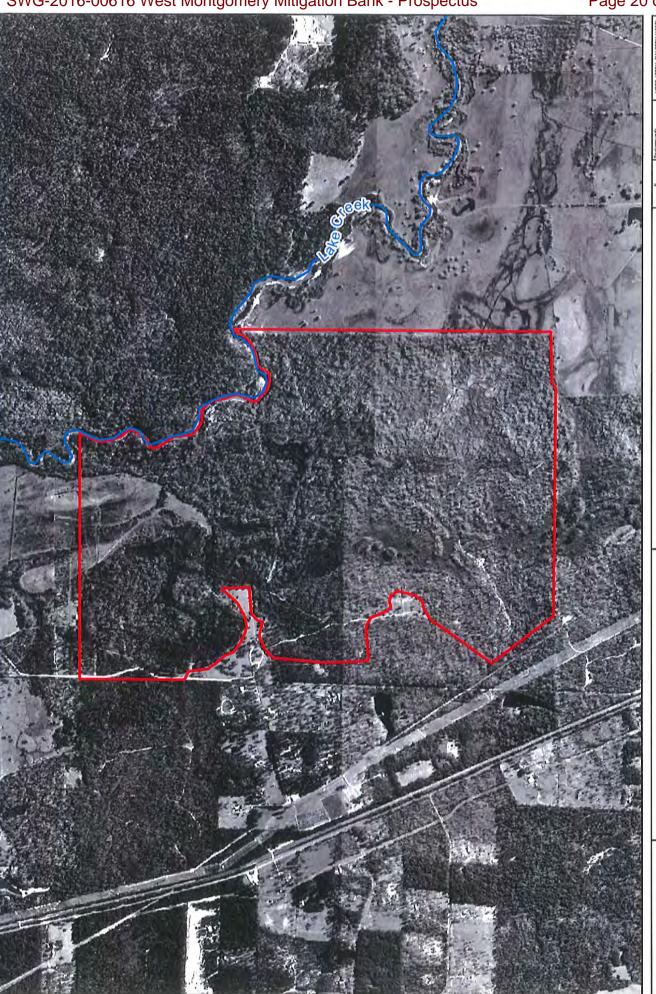
WMMB does not propose restoration activities within any water of the state and will derive all necessary hydrology from precipitation and overbank flooding. Based on previous discussions with TCEQ, water rights do not need to be secured for work completed outside the bounds of a water of the State. Therefore, securing water rights is not a requirement for this bank.

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APPENDIX A

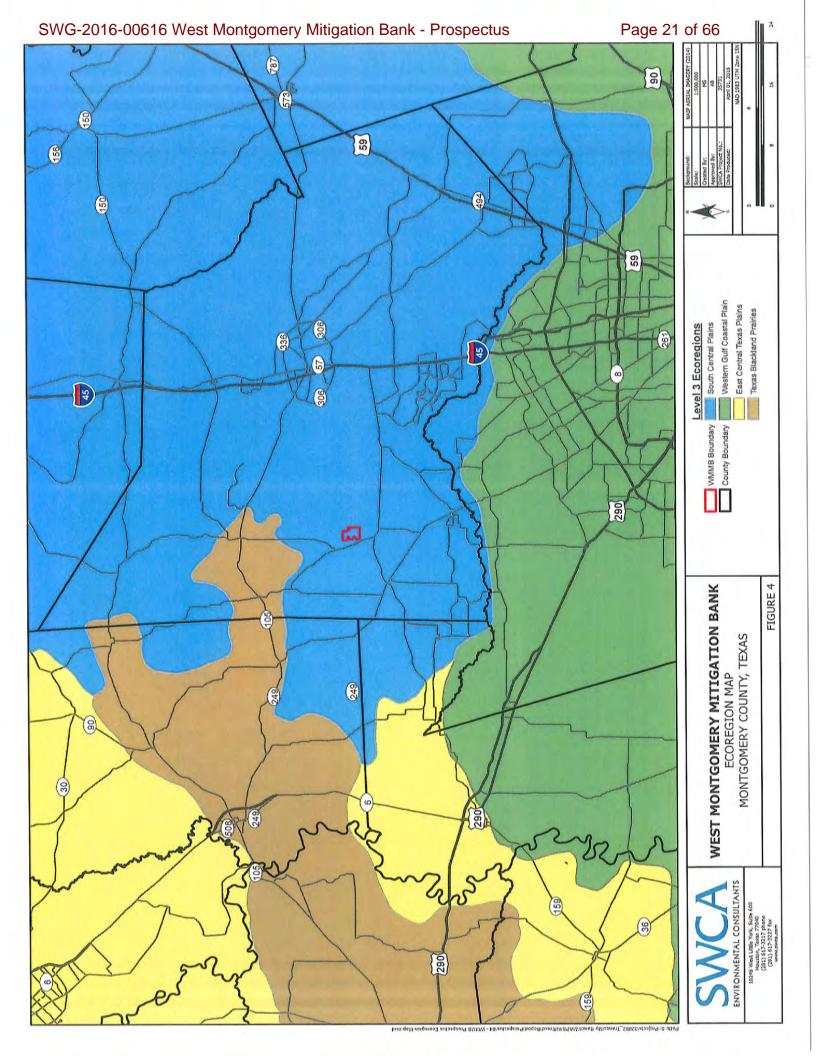
Figures

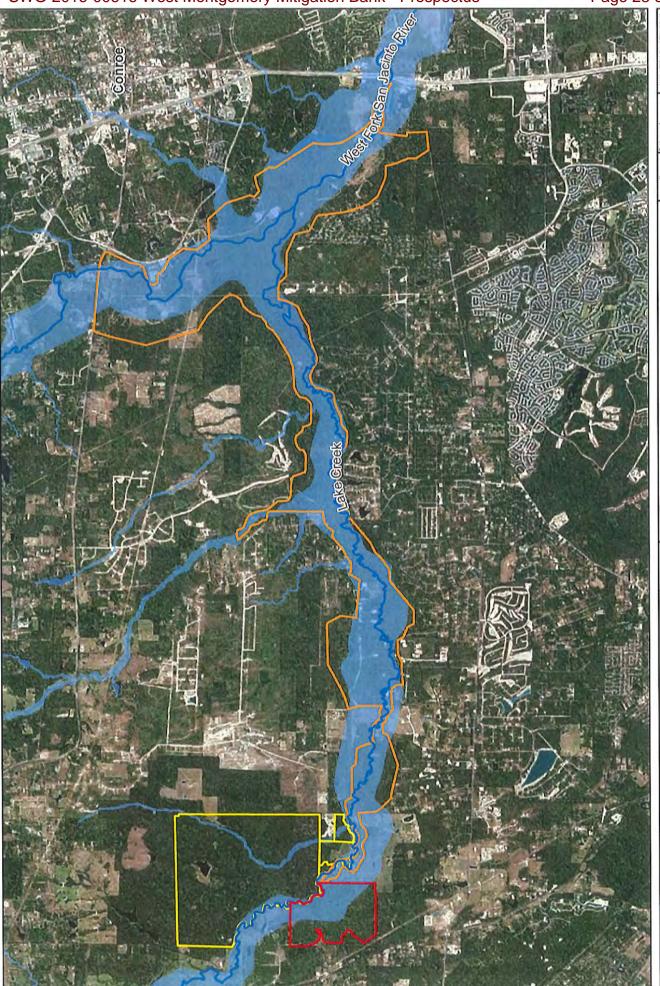


WMMB Boundary



WEST MONTGOMERY MITIGATION BANK 1995 USGS AERIAL MAP MONTGOMERY COUNTY, TEXAS

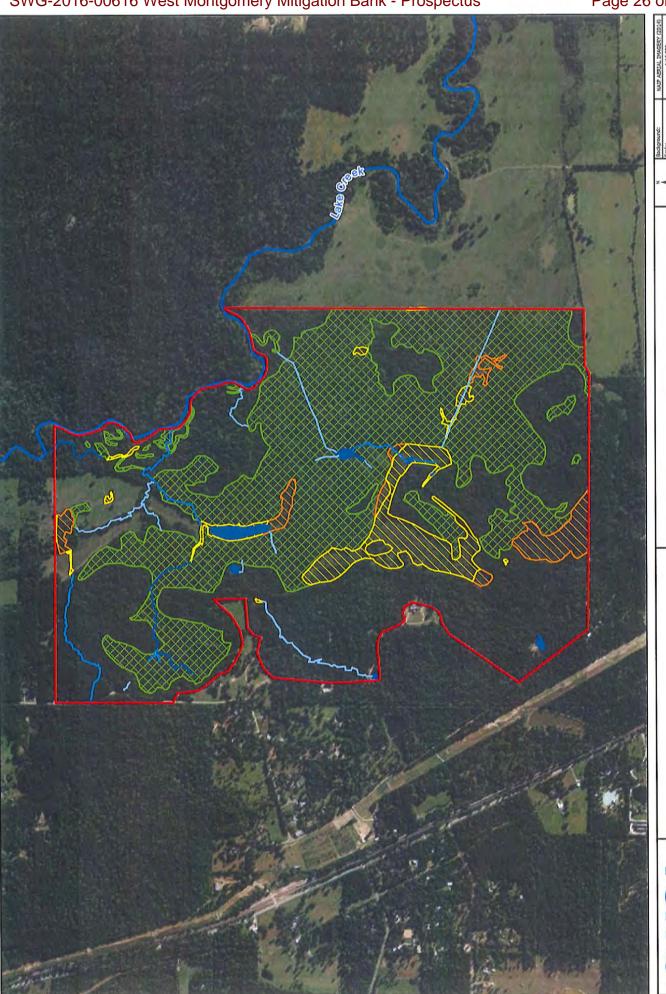






WEST MONTGOMERY MITIGATION BANK
ADJACENT CONSERVATION EFFORTS MAP
MONTGOMERY COUNTY, TEXAS

NVIRONMENTAL CONSULTANTS
10245 WREI LIIIE York, SOITE 6000
HUNDEN, TOERS 70740
(281) 517-3227 bance
(281) 517-3227 bance
(281) 517-3227 bance





WEST MONTGOMERY MITIGATION BANK
WETLAND DELINEATION MAP
MONTGOMERY COUNTY, TEXAS

SVICE AND THE WIND STATE ON SULTANTS

10345 WELLINE VICE, SUITE 600
(201) 517-2127 Face (201) 517-2127 Fac

Pair: 8: Vrojecta/32882_tranquisty RanchMAPB WRINKWAR Report/Prospectus/09 - WMMB Welland Delinesion Map.mxd

APPENDIX B

Draft Wetland Delineation Report

Unverified Draft Wetland Delineation Report for Tranquility Ranch

Prepared for

Nathan Ingram

Prepared by

SWCA Environmental Consultants

SWCA Project No. 34051.02

April 2016

WETLAND DELINEATION REPORT FOR TRANQUILITY RANCH

Prepared for

Nathan Ingram 20917 Karen Switch Rd. Magonlia, Texas 77354

Prepared by

Austin Richards Environmental Specialist

> Lee Forbes Project Manager

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SWCA Project No. 34051.02

April 2016

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1. INTRODUCTION

Mr. Nathan Ingram retained SWCA Environmental Consultants (SWCA) to conduct a delineation of potential waters of the United States, commonly referred to as a wetland delineation, for Tranquility Ranch in Montgomery County, Texas (project area). The project area consists of approximately 1,090 acres of primarily bottomland hardwoods and cleared pastureland 5 miles northeast of Magnolia, Texas, and 1.5 miles northeast of the intersection of Farm to Market Road (FM) 149 and FM 1488 (Appendix A). The purpose of the wetland delineation was to determine the presence, location, and extent of potential waters of the United States within the project area and assist in determining the environmental permitting requirements and/or feasibility of using the project area for a wetland mitigation bank.

According to the U.S. Army Corps of Engineers (USACE), waters of the United States include territorial seas, tidal waters, traditional navigable waters, interstate waters, and the adjacent, contributing, or impoundments of these waterbodies (e.g., rivers, creeks, streams, lakes, reservoirs, etc.). Special aquatic sites associated with these waterbodies are also considered waters of the United States and include sanctuaries and refuges, wetlands, mud flats, vegetated shallows, coral reefs, and riffle and pool complexes.

Wetlands are typically the most common special aquatic sites present and are defined by the USACE as "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" (40 Code of Federal Regulations [CFR] 230.3(t)). Based on this definition, in order for an area to be considered a wetland it must possess the following three parameters under normal circumstances: 1) a predominance of water-loving vegetation (i.e., hydrophytic vegetation), 2) soil characteristics of frequent saturation (i.e., hydric soils), and 3) evidence of regular flooding or ponding (i.e., wetland hydrology).

METHODS

2.1. Resource Review

Prior to performing the delineation, SWCA conducted a resource review of available background information to help identify the portions of the project area most likely to contain wetlands and/or waterbodies. Resources reviewed included historic aerial photography, U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) data, U.S. Geological Survey (USGS) National Hydrography Dataset (NHD) data, historic USGS topographic quadrangles, and the most recently available Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) data.

2.2. Wetlands

SWCA conducted the delineation from September 1 through November 13, 2015, following the routine wetland delineation guidelines provided in both the 1987 Corps of Engineers Wetlands Delineation Manual (Manual) and the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0) (Regional Supplement). As part of SWCA's delineation efforts, in addition to assessing the portions of the project area most likely to contain wetlands and/or waterbodies, eight transects running relatively perpendicular to Lake Creek (i.e., northeast-southwest) were traversed and assessed for the presence or absence of the three wetland parameters (i.e., hydrophytic vegetation, hydric soils, and wetland hydrology) (see Appendix A).

During the delineation, data sheet information was recorded at select locations (i.e., data points) along transects and throughout the project area to document representative areas of uniformity (i.e., similar vegetation, soils, and hydrology) and differentiate wetland and non-wetland areas (Appendix B). Data point locations included wetland/non-wetland boundaries, NWI feature locations and areas suggestive of inundation or saturation identified in aerial imagery during the resource review, and the various non-wetland vegetation community types encountered within the project area. At each data point, SWCA took photographs to support the information recorded on the data sheets and document the general conditions observed in the field. A subset of the photographs are provided in the photographic log in Appendix C.

2.2.1. Vegetation Community Types and Hydrophytic Vegetation

Vegetation community types present within the project area were categorized using the system described in the USFWS Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979). Wetland and non-wetland vegetation communities were differentiated by the presence or absence of hydrophytic vegetation, respectively.

Hydrophytic vegetation refers to a plant community dominated by individuals of species adapted to survive in saturated or inundated soils for at least five percent of the growing season. A given area is said to have hydrophytic vegetation when the prevalence of hydrophytes (water-loving plants) exceeds that of non-hydrophytes based upon species wetland indicator status ratings assigned by the USACE. To assess this parameter consistent with the Regional Supplement, SWCA personnel listed all plants by strata within 30-foot-radius sample plots centered at each data point as well as each plant species' absolute areal cover to derive dominance and prevalence values. Then, based upon the USACE National Wetland Plant List: 2014 Update of Wetland Ratings, SWCA personnel assigned the appropriate wetland indicator status rating to each species and compared the relative proportions of hydrophytes to non-hydrophytes to determine if the assessed plant community met the hydrophytic vegetation parameter (Lichvar et al. 2014).

2.2.2. Hydric Soils

Hydric soils refer to soils that typically have characteristics indicating that they formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Soil Conservation Service [SCS] 1994). Characteristic indicators of hydric soils are described in the 2010 Natural Resources Conservation Service (NRCS) Field Indicators of Hydric Soils in the United States, Version 7.0. Soils that do not match any of the accepted hydric soil indicators are routinely considered non-hydric. To assess this parameter consistent with the Regional Supplement, SWCA personnel extracted soil pedons to a depth of no more than 20 inches at the data points and recorded soil characteristics (e.g., color, texture, and redoximorphic features) necessary for comparison to known indicators. The hydric soil parameter was met when the soil profile matched the description of a regionally-accepted hydric soil indicator.

2.2.3. Wetland Hydrology

Wetland hydrology refers to observable characteristics that confirm recent or continuing inundation and/or soil saturation within an area at some time during the growing season. Direct observation of continuous saturation or inundation within 12 inches of the soil surface for a duration of no less than 14 consecutive days will meet the hydrology standard as specified in the 2005 USACE *Technical Standard for Water Table Measurements of Potential Wetlands* (USACE 2005a). While on-site investigations to accurately determine the presence or absence of this standard are often impractical, the Regional Supplement describes a variety of readily observable primary (more reliable) and secondary (less reliable) hydrologic indicators that serve as sufficient evidence of wetland hydrology when present. To assess this

parameter consistent with the Regional Supplement, all indications of periodic inundation and/or soil saturation within an area were recorded and compared to regionally-accepted wetland hydrology indicators. If the area displayed at least one primary indicator or two secondary indicators, the wetland hydrology parameter was met.

Of the three wetland assessment parameters, wetland hydrology is perhaps the most difficult to accurately assess since it is both transitory and influenced by physical and climatic factors (e.g., precipitation, soil permeability, stratigraphy, and topography). In this region, the normality of precipitation (primarily as rainfall) has a substantial temporal influence on wetland hydrology. This is particularly true for the summer months when evapotranspiration rates are highest and typically result in receding water tables. Therefore, it is essential to assess wetland hydrology with respect to rainfall normality within the project area. This was done by employing the direct antecedent rainfall evaluation method (DAREM; Sprecher and Warne 2000). This method assesses an area's wetland hydrologic condition by comparing prior 3-month precipitation to 30-year norms available from the NRCS in tabular form as Wetlands Evaluation Tables (WETS) (NRCS 1997). Evaluation using DAREM classifies the wetland hydrologic condition of an area into one of three categories — drier than normal, normal, or wetter than normal. The resulting wetland hydrologic condition at the time of the delineation along with any recent rainfall events just prior to or during the delineation were then taken into consideration when determining if wetland hydrology indicators, when present, should be considered normal or a result of wetter than normal hydrologic conditions, or if not present, were abnormally lacking.

2.3. Waterbodies

SWCA delineated all waterbodies within the project area that are tidal or possess an ordinary high water mark (OHWM). At each waterbody, SWCA took photographs and documented its general characteristics (e.g., tidal indicators, OHWM dimensions, flow, substrate, etc.).

Tidal waterbodies, if present, were delineated at the high tide line (HTL) which is defined by the USACE as "the line of intersection of the land with the water's surface at the maximum height reached by a rising tide" (33 CFR 328.3(d)). The HTL includes periodic extreme tides (e.g., spring high tide) while excluding the effects of strong winds and storm surges. The HTL, if present, was determined with actual data, when readily available, or via accepted indicative characteristics such as a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, vegetation lines, tidal gauges, or other suitable means (33 CFR 328.3 (d)).

Non-tidal waterbodies, if present, were delineated at the OHWM using the recommendations of the 2005 USACE Regulatory Guidance Letter (RGL) 05-05: Ordinary High Water Mark Identification (USACE 2005b). An OHWM is a line on the shore established by the fluctuations of water during ordinary high water flows and indicated by physical characteristics such as "a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR 328.3(e)).

2.4. Mapping

SWCA used Trimble Geo 7X global positioning system (GPS) unit to geographically reference features, such as data point locations and wetland/waterbody boundaries, identified during the delineation. Geographic information system (GIS) software was used to differentially correct (i.e., post-process) collected features, calculate areas, and generate the attached wetland delineation map (see Appendix A). The point, line, and polygon data displayed on the attached wetland delineation map, though collected

with a GPS unit capable of submeter accuracy, is for review purposes only and do not represent a professional civil survey. Data points and delineated features are identified by a unique identifier. Wetlands and waterbodies, if present, are identified by "W" (for wetland) with unique identifiers for each vegetation community component and "WB" (for waterbody) as the first character(s), respectively, while data points are identified by either "T" (for transect data points) or "DP" (for non-transect data points) as the first characters.

3. RESULTS

3.1. Resource Review

The resource review found that the project area is located in the western floodplain of Lake Creek and comprises both the floodplain and a portion of the associated western alluvial terrace (see Appendix A). The NHD and 1997 USGS Keenan and Magnolia East, Texas 7.5-minute topographic quadrangles depict seven stream lines (including Lake Creek and unnamed tributaries) within the project area that drain to the northeast and east and a swamp/marsh area in the southern portion of the project area. The NWI depicts a mosaic of termporarily and seasonally flooded palustrine emergent (PEM) wetlands, palustrine scrub-shrub (PSS) wetlands, and palustrine forested (PFO) wetlands, and permanently flooded and excavated ponds in the project area. FEMA FIRM panels 48201C0050L, 48339C0350G, and 48339C0480G depict the majority of the project area within the floodway and 100-year flood zone of Lake Creek.

3.2. Wetlands

SWCA delineated 74 wetlands totaling 409.74 acres within the project area including 39 PEM wetland patches, 9 PSS wetland patches, and 26 PFO wetland patches (Table 1). By vegetation community type, the project area wetlands comprise 52.26 acres of PEM wetland, 26.79 acres of PSS wetland, and 330.69 acres of PFO wetland. The majority of wetland acreage is located within the forested areas in the western portion of the project area. See Appendix A for the location of each wetland and data point within the project area. Photographs of select wetlands as viewed from data points are provided in Appendix C.

Table 1. Project	t area wetla	nd attributes	and	acreages,
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Wetland ID	Patch ID	Patch Community Type	Acreage within Project Area*	Appendix A Map Sheet
W01	01	PFO	300.29	1, 2, 3, 4, 5
W01	02	PEM	1.57	1, 2
W01	03	PSS	2.54	2
W01	04	PEM	30.42	2, 3
W01	05	PSS	0.95	3
W01	06	PFO	5.61	2, 3
W01	07	PSS	0.98	2
W01	08	PSS	0.61	2
W01	09	PEM	0.37	2, 4
W01	10	PEM	1.40	2, 3
W01	11	PSS	1.44	3, 5
W01	12	PSS	11.46	3
W01	13	PEM	0.48	3, 5
-				

Wetland Delineation Report for Tranquility Ranch

Wetland ID	Patch ID	Patch Community Type	Acreage within Project Area*	Appendix A Map Sheet
W01	14	PEM	0.11	4
W01	15	PEM	0.18	4
W01	16	PEM	2.32	5
W01	17	PFO	0.05	5
W01	18	PEM	7.84	5
W01	19	PSS	0.43	5
W01	20	PEM	0.39	5
W01	21	PSS	3.35	5
W01	22	PEM	0.09	5
W01	23	PSS	0,36	5
W01	24	PEM	0.04	5
W01	25	PEM	0.11	5
W01	26	PEM	0.07	5
W01	27	PEM	0.46	5
W01	28	PFO	3.82	5
W01	29	PEM	0.09	5
W01	30	PEM	0.18	5
W01	31	PEM	0.06	5
W01	32	PEM	0.14	5
W01	33	PEM	0.06	5
W01	34	PEM	0.12	5
W01	35	PEM	0.20	5
W01	36	PFO	0.06	5
W01	37	PEM	0.23	5
W01	38	PFO	0.48	5
W01	39	PSS	0.20	5
W01	40	PEM	0.09	5
W02	01	PEM	0.12	1
W02	02	PSS	2.19	1
W02	03	PEM	0.13	1
W02	04	PFO	0.68	1
W03	×	PEM	0.19	1
W04	-	PFO	0.06	1
W05	01	PFO	0.49	1
W05	02	PEM	0.35	1
W05	03	PFO	0.42	1
W06		PFO	0,47	1
W07	. 4	PFO	0.20	1
W08		PFO	0.06	1
W09		PFO	1.46	1

Wetland Delineation Report for Tranquility Ranch

Wetland ID	Patch ID	Patch Community Type	Acreage within Project Area*	Appendix A Map Shee
N10		PFO	0.29	2
W11	×	PFO	0.92	2, 4
W12	5	PEM	0.06	2
W13	- dr	PEM	0.05	3
W14		PFO	0.20	3
W15		PFO	1.31	3
W16	01	PSS	1,83	3, 5
W16	02	PFO	0.09	3
W17	01	PSS	0.42	4
W17	02	PEM	0.15	4
W17	03	PFO	4.28	4
W17	04	PEM	0.04	4
W17	05	PEM	0.21	4
W17	06	PEM	0.05	4
W18		PFO	0.41	4
W19	01	PFO	1.57	4
W19	02	PEM	0.14	4
W19	03	PEM	0.12	4
W19	04	PEM	0,11	4
W19	05	PFO	0.21	4
W20	7	PFO	0.33	4
W21	01	PEM	0.30	4
W21	02	PFO	0.32	4, 5
W22	01	PFO	2.01	4, 5
W22	02	PEM	0.22	4, 5
W23	18	PEM	0.02	5
W24	01	PFO	2.44	5
W24	02	PEM	0.59	5
W25	- 2	PFO	1.01	5
W26	-	PFO	0.70	5
W27	8	PSS	0.02	5
W28	01	PFO	0.38	5
W28	02	PEM	0.07	5
W29	- 1	PEM	0.07	5
W30	01	PEM	0.07	5
W30	02	PFO	0.07	5
W30	03	PEM	0.07	5
W31	13	PEM	0.08	5
W32	12	PEM	0.33	5
W33		PEM	0.47	5

Wetland ID	Patch ID	Patch Community Type	Acreage within Project Area*	Appendix A Map Sheet
W34		PEM	0.06	5
W35		PEM	0,06	5
W36	-	PEM	0.64	5
W37	100	PEM	0.06	5
W38	e	PEM	0.02	5
W39	÷	PEM	0.12	5
W40	÷.	PEM	0.07	5
W41	19	PEM	0.20	5
PEM Subtotal			52,26	
PSS Subtotal			26.79	
PFO Subtotal			330.69	
Total			409.74	

^{*} Acreages were calculated using ESRI ArcMap, and rounded to the nearest 0.01 acre.

3.2.1. Vegetation Communities

SWCA identified six vegetation community types within the project area including three wetland vegetation communities (i.e., PEM wetland, PSS wetland, and PFO wetland) and two non-wetland vegetation communities (i.e., herbaceous upland, scrub-shrub upland, and forested upland). The species identified at each data point along with their areal coverage are recorded on the data sheets in Appendix B. A photographic log, which includes a representative subset of the vegetation community types observed within the project area as viewed from select data points, is provided in Appendix C. The dominant species identified within each vegetation community type are listed in the following paragraphs.

PEM Wetland. The PEM wetland communities consist of a prevalence of hydrophytic non-woody vegetation under 3 feet in height. Dominant herbaceous species include fragrant flatsedge (*Cyperus odoratus*), sand spike-rush (*Eleocharis montevidensis*), ovate false fiddleleaf (*Hydrolea ovata*), common rush (*Juncus effuses*), swamp smartweed (*Persicaria hydropiperoides*), savannah-panic grass (*Phanopyrum gymnocarpon*), and short-bristle horned beak sedge (*Rhynchospora corniculata*). Dominant shrub, sapling, and tree species, when present, include common buttonbush (*Cephalanthus occidentalis*), green ash (*Fraxinus pennsylvanica*), and poison-bean (*Sesbania drummondii*).

PSS Wetland. The PSS wetland communities consist of a prevalence of hydrophytic woody species 3–20 feet in height and less than 3 inches in diameter at breast height. Dominant sapling and shrub species include sugar-berry (*Celtis laevigata*), common buttonbush, green ash, dwarf palmetto (*Sabal minor*), poison-bean, and Chinese tallowtree (*Triadica sebifera*). Scattered trees, when present, include water hickory (*Carya aquatica*), sugar-berry, green ash, water oak (*Quercus nigra*), willow oak (*Q. phellos*), and Chinese tallowtree. Cherokee sedge (*Carex cherokeensis*), common rush, climbing hempvine (*Mikania scandens*), swamp smartweed, savannah-panic grass, and lizard's-tail (*Saururus cernuus*) are the dominant herbaceous species.

PFO Wetland. The PFO wetland communities consist of a prevalence of hydrophytic woody species 20 feet or greater in height and 3 inches or greater in diameter at breast height. Dominant trees include water hickory, sugar-berry, green ash, honeylocust (*Gleditsia triacanthos*), planertree (*Planera aquatica*), laurel oak (*Quercus laurifolia*), water oak, and willow oak. Dominant sapling and shrub species include sugarberry, common buttonbush, eastern swamp-privet (*Forestiera acuminata*), green ash, deciduous holly (*Ilex decidua*), and sweetgum (*Liquidambar styraciflua*). Cherokee sedge, common rush, swamp

smartweed, savannah-panic grass, short-bristle horned beak sedge, and lizard's-tail, are the dominant herbaceous species.

Herbaceous Upland. The herbaceous upland communities consist of non-wetland areas dominated by non-woody vegetation. Dominant herbaceous species include perennial ragweed (Ambrosia psilostachya), Cherokee sedge, longleaf woodoats (Chasmanthium sessiliflorum), Bermuda grass (Cynodon dactylon), hairy crab grass (Digitaria sanguinalis), annual marsh-elder (Iva annua), powderpuff (Mimosa strigillosa), beaked panicgrass (Panicum anceps), Maria feverfew (Parthenium hysterophorus), pull-and-be-damned (Paspalum denticulatum), golden crown grass (P. dilatatum), bahia grass (P. notatum), southern dewberry (Rubus trivialis), smut grass (Sprobolus indicus), St. Augustine grass (Stenotaphrum secundatum), and Brazillian vervain (Verbena brasiliensis). Sugar-berry, common persimmon (Diospyros virginiana), honeylocust, and yaupon (Ilex vomitoria) are the dominant shrub and tree species when present.

Scrub-Shrub Upland. Scrub-shrub upland communities consist of non-wetland areas woody species 3—20 feet in height and less than 3 inches in diameter at breast height. The dominant shrubs include American beautyberry (Callicarpa americana), sugar-berry, deciduous holly, American holly (Ilex opaca), yaupon, sweetgum (Liquidambar styraciflua), winged elm (Ulmus alata), and Amercian elm (U. americana). The dominant herbaceous species include Cherokee sedge, Indian woodoats (Chasmanthium latifolium), longleaf woodoats, hogwort (Croton capitatus), annual marsh-elder, and southern dewberry. Roundleaf greenbriar (Smilax rotundifolia), saw greenbriar (S. bona-nox), and eastern poison ivy (Toxicodendron radicans) are the dominant woody vine species.

Forested Upland. The forested upland communities consist of non-wetland areas dominated by woody species 20 feet or greater in height and 3 inches or greater in diameter at breast height. Dominant trees include American holly, sweetgum, loblolly pine (*Pinus taeda*), post oak (*Quercus stellata*), black oak (*Q. velutina*), and American elm. Dominant sapling and shrub species include similar species as well as American beautyberry, deciduous holly, yaupon, and winged elm. Cherokee sedge, longleaf woodoats, yaupon, southern dewberry, and dwarf palmetto are the dominant herbaceous species. Roundleaf greenbriar, saw greenbriar, and eastern poison ivy are the dominant woody vine species.

3.2.2. Soils

According to the NRCS Soil Survey for Montgomery County, Texas (U.S. Department of Agriculture [USDA] 2015a), eight major soil map units are present within the project area (see Figure 2, Appendix A). Of the eight NRCS soil map units, one soil map unit is listed as a hydric soil or includes components that are listed as hydric (Table 2) (NRCS 2015).

Although a NRCS hydric listing alone is generally insufficient to determine if soils within an area are hydric, it does indicate that suitable soil properties or conditions exist that promote the formation of hydric soil conditions. As a result, the portions of the project area depicted as containing hydric soil map units were subjected to greater scrutiny with respect to the presence of hydric soil indicators.

Direct observations of soil epipedons found that soil matrix and redox components ranged from 5YR to 10YR in hue. Redder hues were associated with soils along hillslope areas and were characterized by a more sandy texture. Darker hues were observed at lower elevations and within wetland depressions. Chromas and values were also variable. Wetland areas typically displayed at least one of the following hydric soil indicators: depleted matrix, redox dark surface, redox depressions, or sandy redox. Nonwetland (i.e., upland) areas either failed to display hydric soil indicators, or they displayed hydric soils but failed to meet vegetation and/or hydrology parameters. See Appendix B for soil data observations specific to data points.

Table 2. Project area NRCS-mapped soils and their hydric characteristics.

	Hydric	Hydric Com	Acreage			
Map Unit Name (Unit Code)	Map Unit (Yes/No)	Name (Unit Percent)	Landform	Hydric Criteria*	within Project Area [†]	
Alaga fine sand (Ch)	No	n/a	n/a	n/a	19.46	
Betis fine sand, 0-5 percent slopes (BIC)	No	n/a	n/a	n/a	35.98	
Betis fine sand, 5–12 percent slopes (BID)	No	n/a	n/a	n/a	69.12	
Fetzer loamy fine sand, 1-5 percent slopes (WkC)	No	n/a	n/a	n/a	2.27	
Kaman clay, 0–1 percent slopes, frequently flooded (KanA)	Yes	Kaman (95) Simelake (3) Cowmarsh (1) Pluck (1)	Flood plains Oxbows	2, 3, 4	850,65	
Kosse soils, frequently flooded (Ks)	No	n/a	n/a	n/a	31.47	
Landman fine sand (Ab)	No	n/a	n/a	n/a	62,54	
Woodville fine sandy loam, 1-5 percent slopes (SuC)	No	n/a	n/a	n/a	17.06	

^{* 2 =} somewhat poorly to very poorly drained soils that have a shallow water table (i.e., at a depth of less than 1 foot) during the growing season; 3 = soils that are frequently ponded (i.e., greater than 50 percent of years) for greater than 7 days duration during the growing season; 4 = soils that are frequently flooded (i.e., greater than 50 percent of years) for greater than 7 days duration during the growing season.

3.2.3. Hydrology

The monthly DAREM wetland hydrologic condition for September through November 2015 were calculated using 30-year normal range data from the Montgomery weather station (TX6024; Global Historical Climatology Network [GHCND] No. USC00416024) located 8.6 miles north of the project area near the intersection of State Highway 105 and FM 149 and precipitation data from the Magnolia 10.6 ENE weather station (GHCND No. US1TXMNG049) located 5.5 miles east of the project area in Montgomery County, Texas (Sprecher and Warne 2000; USDA 2015b). The precipitation and 30-year normal range values used to calculate the monthly wetland hydrologic condition during the delineation are provided in Appendix E. According to the DAREM, the project area was experiencing normal wetland hydrologic conditions during September and November and drier than normal wetland hydrologic conditions during October (Table 3).

Wetland hydrology indicators most commonly observed in the project area included both primary wetland hydrology indicators (i.e., algal mat/crust, drift deposits, oxidized rhizospheres on living roots, sediment deposits, surface water, water marks, and water-stained leaves) and secondary wetland hydrology indicators (i.e., crayfish burrows, a positive FAC-neutral test, geomorphic position, saturation visible on aerial imagery, and surface soil cracks). See Appendix B for data point specific wetland hydrology observations.

Table 3. Project area monthly DAREM wetland hydrologic condition summary table.

DAREM Evaluation Month	DAREM Condition (Score)*	
September 2015	Normal (13)	
October 2015	Drier than normal (9)	
November 2015	Normal (13)	

Acreages were calculated using ESRI ArcMap on January 7, 2016, and rounded to the nearest 0.01 acre.

Data sources: Montgomery weather station (TX6024; Global Historical Climatology Network [GHCND] No. USC00416024) for WETS percentiles and Magnolia 10.6 ENE weather station (GHCND No. US1TXMNG049) for measured rainfall.

*DAREM scores range from 6~18 with 6~9 = drier than normal, 10~14 = normal, and 15~18 = wetter than normal.

3.3. Waterbodies

SWCA delineated 51 waterbodies totaling 19.49 acres within the project area. All waterbodies delineated are non-tidal including 12 ephemeral flow waterbodies, 8 intermittent flow waterbodies, 17 perennial flow waterbodies, and 14 ponded waterbodies within the project area. See Appendix A for the location of each waterbody within the project area. Photographs of select waterbodies are provided in Appendix C.

Some waterbodies had defined OHWM boundaries that became undefined in low lying areas. Several manmade drainage ditches are present within bottomland hardwood lowlands. During the delineation several man-made earthen dams/ponds, which affect natural stream hydrology, were observed immediately offsite along both the eastern and southern project area boundaries.

Table 4. Project area waterbody attributes, lengths, and acreages.

WB01 WB02-01 WB02-02 WB03 WB04 WB05 WB06 WB07		Perennial Perennial Perennial Intermittent Perennial Intermittent	Pond Stream Pond Pond Pond Pond Pond	25 4 25 10 20 40	n/a 221.83 159.73 n/a n/a	0.14 0.02 0.01 0.01 0.02	5 5 5 5
WB02-02 WB03 WB04 WB05 WB06 WB07	- >- -	Perennial Perennial Intermittent Perennial Intermittent	Pond Pond Pond Pond	25 10 20	159.73 n/a	0.01 0.01	5 5
WB03 WB04 WB05 WB06 WB07	- >- -	Perennial Intermittent Perennial Intermittent	Pond Pond Pond	10 20	n/a	0.01	5
WB04 WB05 WB06 WB07	> 	Intermittent Perennial Intermittent	Pond Pond	20	1772		
WB05 WB06 WB07	2	Perennial Intermittent	Pond		n/a	0.02	
WB06 WB07	- - -	Intermittent		40		0.02	5
WB07	+ +		History	1.0	n/a	0.07	5
1,177611	-	Decemental	Pond	30	n/a	0.02	5
WB08	4	Perennial	Pond	150	n/a	1.04	5
		Perennial	Pond	35	n/a	0.07	5
WB09	· -	Ephemeral	Stream	4	134.23	0.01	5
WB10	-	Perennial	Pond	50	n/a	0.01	2
WB11	L.	Perennial	Stream	8	1006.12	0.19	1
WB12	+	Ephemeral	Stream	3	155.65	0.01	1
WB13	¥	Intermittent	Stream	4	267.24	0.02	1
WB14		Intermittent	Stream	2	146.84	0.01	1
WB15		Intermittent	Stream	4	2254.31	0.21	1
WB16	Lake Creek	Perennial	Stream	35	13817.07	12.64	1, 2, 4, 5
WB17	4	Ephemeral	Stream	3	1252.28	0.07	1
WB18	-	Ephemeral	Stream	3	1074.31	0.05	1
WB19	+	Intermittent	Stream	4	2277.28	0.18	1
WB20	-	Perennial	Stream	2	2631,68	0,2	
WB21	-	Perennial	Pond	112	n/a	0.09	2
WB22	-	Ephemeral	Stream	4	2390.36	0.27	2
WB23	-	Perennial	Pond	120	n/a	0.25	2
WB24	-	Ephemeral	Stream	2	210.48	0.01	2
WB25	-	Ephemeral	Stream	6	332.70	0.04	2
WB26	090	Perennial	Pond	125	n/a	0.65	2

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Waterbody ID	Waterbody Name*	Flow/ Permanence	Туре	OHWM Width (Feet)	Length (feet)	Acreage*	Appendix A Map Sheet
WB27	8	Ephemeral	Stream	2	152.96	0.01	2
WB28-01	(H)	Intermittent	Stream	6	906.40	0.08	2
WB28-02	8	Intermittent	Ditch	6	297,28	0,03	2
WB28-03	8,	Ephemeral	Ditch	2	2102.18	0.1	2, 3, 5
WB29	8	Perennial	Pond	60	n/a	0,11	2
WB30	9	Ephemeral	Ditch	3	1682.85	0.12	2, 4
WB31	9	Ephemeral	Stream	2	886.94	0.04	2
WB32	-	Ephemeral	Ditch	4	339.19	0.03	2
WB33	н	Perennial	Pond	105	n/a	0,31	3
WB34	-	Perennial	Pond	163	n/a	2,33	1, 2
Total						19.49	

SUMMARY AND CONCLUSIONS

SWCA performed a wetland delineation of Tranquility Ranch from September through November 2015. The delineation identified 74 wetlands totaling 409.74 acres within the project area. Additionally, SWCA delineated 51 waterbodies totaling 19.49 acres within the project area.

The delineation findings contained within this report represent the professional opinion of SWCA and are not a verification or jurisdictional determination of waters of the United States. Only the USACE is authorized to verify the boundaries and jurisdictional limits of waters of the United States.

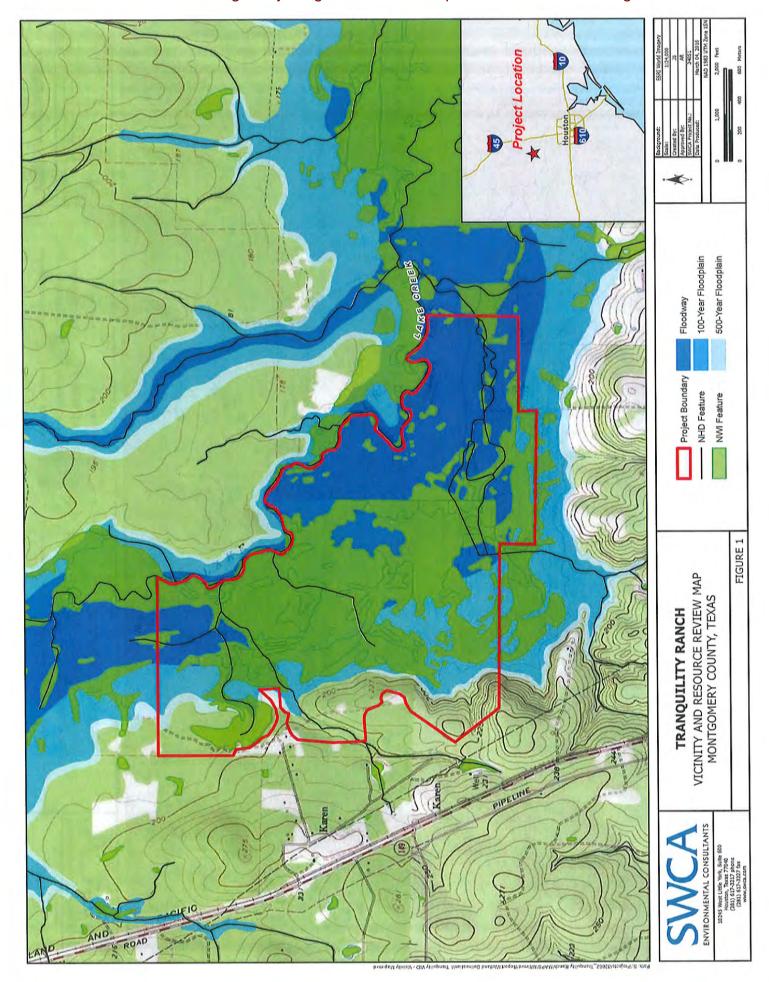
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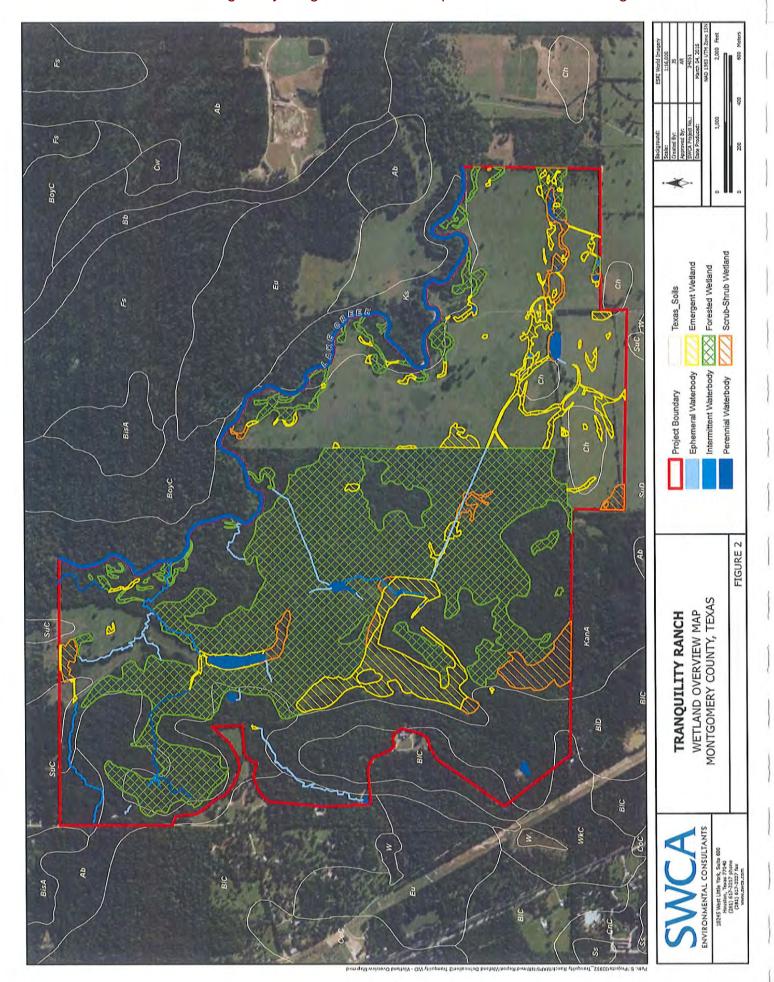
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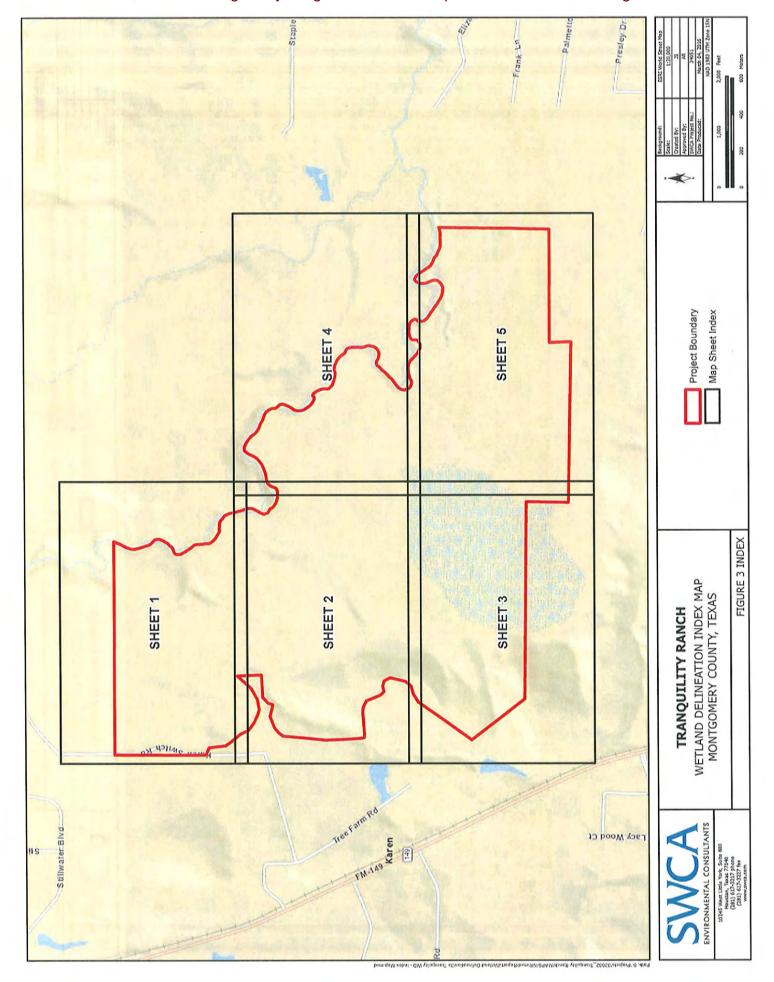
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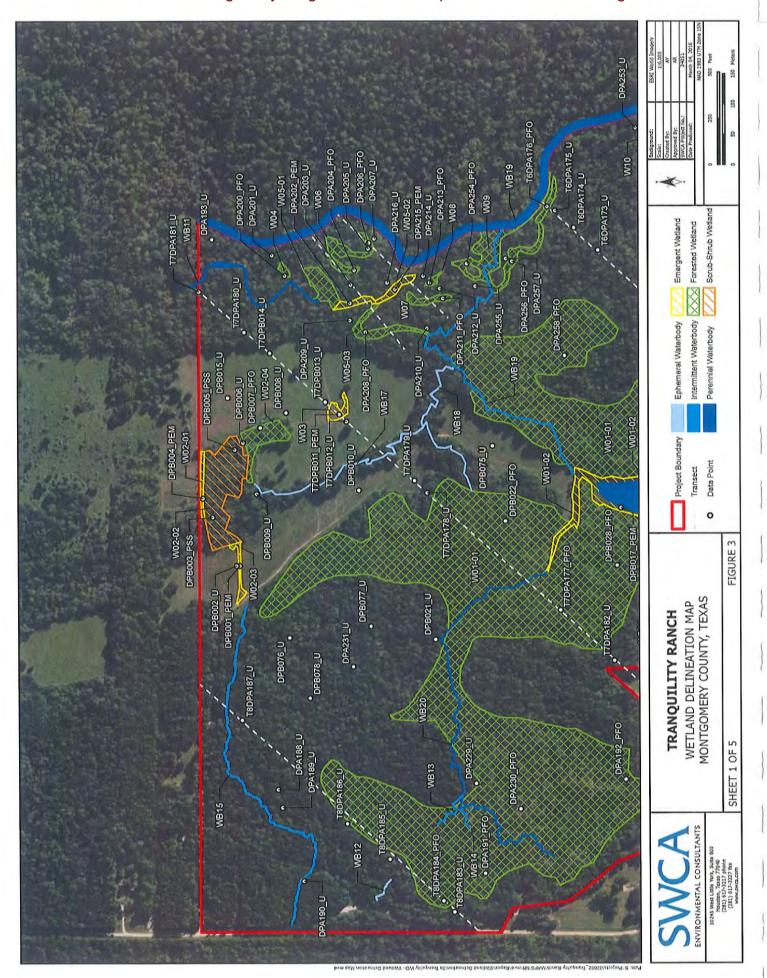
APPENDIX A

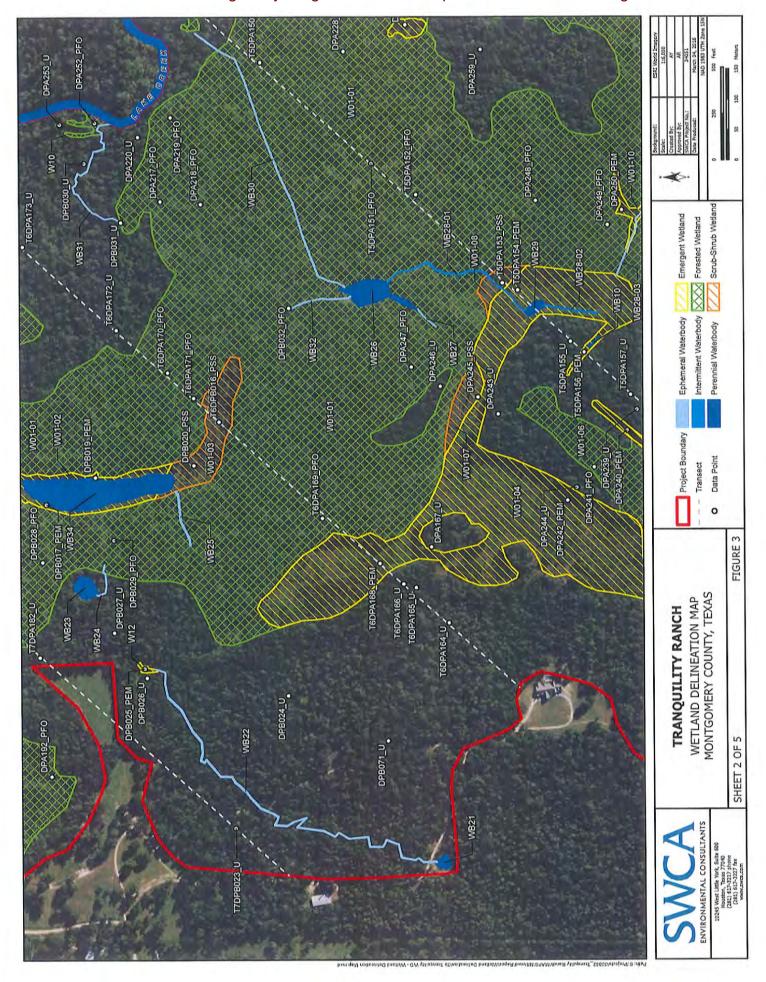
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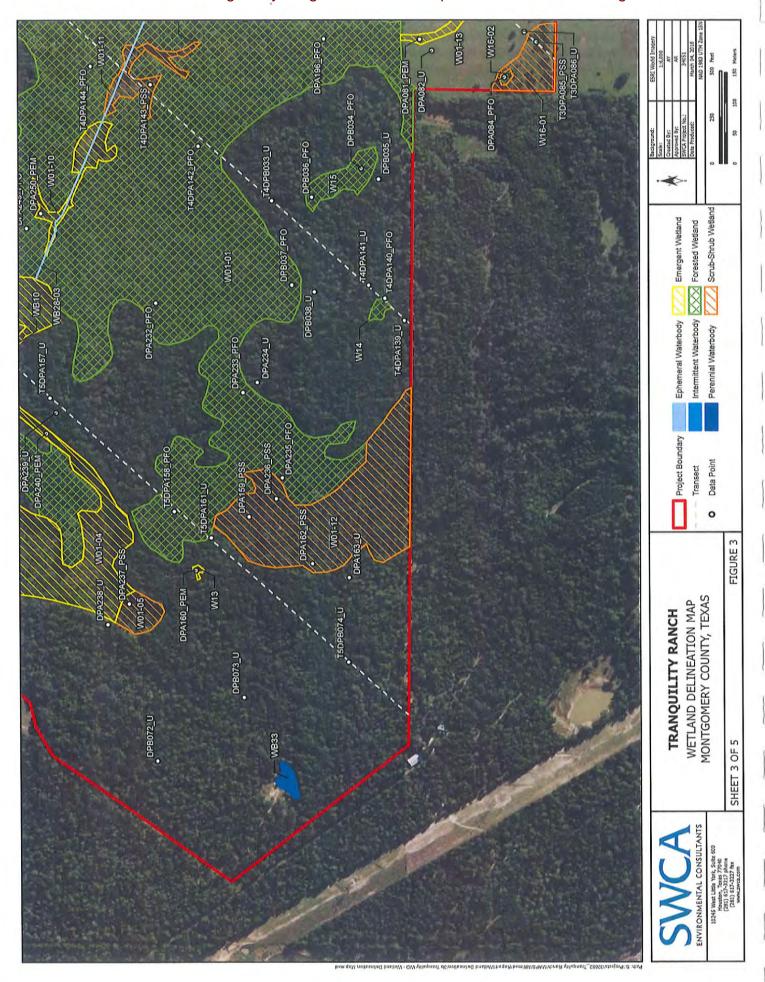


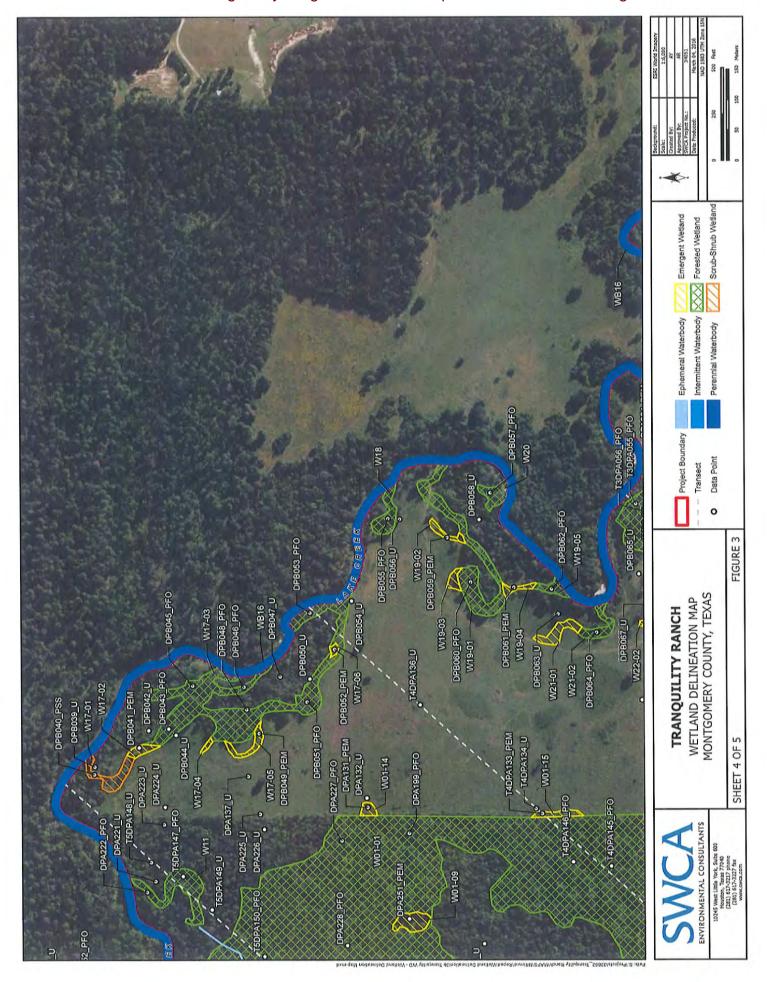


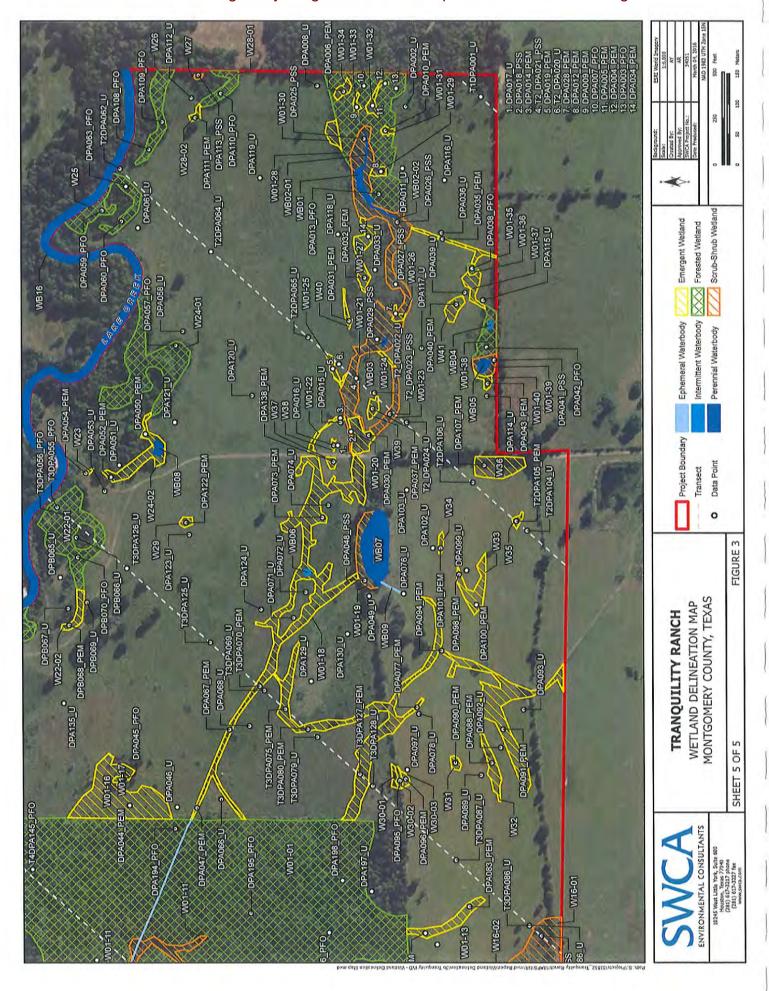












APPENDIX B

Wetland Delineation Data Sheets
Redacted

APPENDIX C

Photographic Log

Wetland Vegetation Communities - Palustrine Emergent (PEM) Wetlands



Figure 1. PEM wetland W01-32 as viewed from DPA005_PEM; view facing south.



Figure 3. PEM wetland W01-16 as viewed from DPA044_PEM; view facing south.



Figure 5. PEM wetland W01-04 as viewed from DPA160_PEM; view facing north.



Figure 2. PEM wetland W01-37 as viewed from DPA035_PEM; view facing north.



Figure 4. PEM wetland W24-02 as viewed from DPA050_PEM; view facing east.



Figure 6. PEM wetland W01-10 as viewed from DPA242_PEM; view facing east.

Wetland Vegetation Communities - Palustrine Scrub-Shrub (PSS) Wetlands



Figure 7. PSS wetland W01-21 as viewed from DPA026_PSS; view facing north.



Figure 9. PSS wetland W01-12 as viewed from DPA159_PSS; view facing east.



Figure 11. PSS wetland W02-02 as viewed from DPB005_PSS; view facing west.



Figure 8. PSS wetland W01-39 as viewed from DPA041_PSS; view facing north.



Figure 10. PSS wetland W02-02 as viewed from DPB003_PSS; view facing south.



Figure 12. PSS wetland W01-03 as viewed from DPB020_PSS; view facing south.

Wetland Vegetation Communities - Palustrine Forested (PFO) Wetlands



Figure 13. PFO wetland W01-28 as viewed from DPA003_PFO; view facing east.



Figure 15. PFO wetland W01-011 as viewed from T4DPA146_PFO; view facing north.



Figure 17. PFO wetland W17-03 along Lake Creek as viewed from DPB048_PFO; view facing west.



Figure 14. PFO wetland W01-01 as viewed from T4DPA142_PFO; view facing east.



Figure 16. PFO wetland W01-01 as viewed from DPB028_PFO; view facing north.



Figure 18. PFO wetland W18 along Lake Creek as viewed from DPB055_PFO; view facing east.

Non-wetland Vegetation Communities - Herbaceous Uplands



Figure 19. An herbaceous upland as viewed from DPA008_U; view facing north.



Figure 21. An herbaceous upland as viewed from T2DPA020_U; view facing east.



Figure 23. An herbaceous upland as viewed from T7DPB013_U; view facing north.



Figure 20. An herbaceous upland as viewed from DPA015_U; view facing west.



Figure 22. An herbaceous upland as viewed from DPB010_U; view facing north.



Figure 24. An herbaceous upland as viewed from DPB075_U; view facing south.

Non-wetland Vegetation Communities - Scrub-Shrub Uplands



Figure 25. A scrub-shrub upland as viewed from DPA068_U; view facing east.



Figure 27. A scrub-shrub upland as viewed from T7DPB014_U; view facing west.



Figure 29. A scrub-shrub upland as viewed from DPB063_U; view facing south.



Figure 26. A scrub-shrub upland as viewed from T4DPA136_U; view facing west.



Figure 28. A scrub-shrub upland as viewed from DPB039_U; view facing east.



Figure 30. A scrub-shrub upland as viewed from DPB066_U; view facing east.

Non-wetland Vegetation Communities - Forested Uplands



Figure 31. A forested upland as viewed from T4DPA141_U; view facing east.



Figure 33. A forested upland as viewed from T8DPA185_U; view facing north.



Figure 35. A forested upland as viewed from DPB021_U; view facing east.



Figure 32. A forested upland as viewed from T6DPA166_U; view facing east.



Figure 34. A forested upland as viewed from DPA226_U; view facing east.



Figure 36. A forested upland as viewed from DPB076_U; view facing south.

Waterbodies - Ephemeral Flow Waterbodies



Figure 37. Ephemeral stream WB09; view facing south (upstream).



Figure 39. Ephemeral stream WB15; view facing north (upstream).



Figure 41. Ephemeral stream WB22; view facing northeast (downstream).



Figure 38. Ephemeral stream WB12; view facing north (upstream).



Figure 40. Ehemeral stream WB18; view facing northeast (downstream).



Figure 42. Ephemeral stream WB30 (man-made); view facing east (downstream).

Waterbodies - Intermittent and Perennial Flow Waterbodies



Figure 43. Intermittent stream WB13; view facing south (downstream).



Figure 45. Man-made intermittent stream WB28-01; view facing west (upstream)



Figure 47. Confluence of WB18 (epemeral) and WB19 (intermittent); view facing south (upstream).



Figure 44. Intermittent stream WB14; view facing south (downstream).



Figure 46. Perennial stream WB16 (Lake Creek); view facing southeast (downstream).



Figure 48. Perennial stream WB20; view facing east (downstream).

Waterbodies - Ponded Waterbodies



Figure 49. Natural pond WB01 within old stream channel in pasture area; view facing north.



Figure 51. Man-made pond WB07; view facing south.



Figure 53. Man-made pond WB26; view facing southeast.



Figure 50. Natural pond WB05; view facing south.



Figure 52. Man-made pond WB23; view facing east.



Figure 54. Natural pond (due to beaver activity) WB34; view facing east.

APPENDIX D

NRCS Soil Map Unit Descriptions

Wetland Delineation Report for Tranquility Ranch – Soil Map Unit Descriptions Information provided from the NRCS National Cooperative Soil Survey.

MONTGOMERY COUNTY, TEXAS

Alaga fine sand (Ch). Ch comprises 100 percent Alaga and consists of sandy alluvium and occurs on stream terraces on coastal plains. Slopes are 0 to 5 percent. A typical profile consists of layers of loamy sand (0-4 inches), loamy fine sand (4-15 inches), and fine sand (15-80 inches). There is no zone of water saturation within a depth of 72 inches. Water movement in the most restrictive layer is high. The natural drainage class is somewhat excessively drained and this soil is rarely flooded. It is not ponded. The mapping unit is listed as non-hydric.

Betis fine sand, 0 to 5 percent slopes (BIC). BIC comprises 100 percent Betis and consists of sandy marine deposits and occurs on interfluves within the coastal plains. Slopes are dominantly 0 to 5 percent but can range from 0 to 12 percent. A typical profile consists of layers of loamy sand (0-10 inches) and loamy fine sand (10-80 inches). There is no zone of water saturation within a depth of 72 inches. Water movement in the most restrictive layer is high. The natural drainage class is somewhat excessively drained and this soil is not flooded. It is not ponded. The mapping unit is listed as non-hydric.

Betis fine sand, 5 to 12 percent slopes (BID). BID comprises 100 percent Betis and consists of sandy marine deposits and occurs on interfluves within the coastal plains. Slopes are dominantly 0 to 5 percent but can range from 0 to 12 percent. A typical profile consists of layers of loamy sand (0-10 inches) and loamy fine sand (10-80 inches). There is no zone of water saturation within a depth of 72 inches. Water movement in the most restrictive layer is high. The natural drainage class is somewhat excessively drained and this soil is not flooded. It is not ponded. The mapping unit is listed as non-hydric.

Fetzer loamy fine sand, 1 to 5 percent slopes (WkC). WkC comprises 100 percent Fetzer and consists of clayey marine deposits and/or loamy marine deposits and occurs on interfluves within the coastal plains. Slopes range from 0 to 8 percent. A typical profile consist of layers of loamy fine sand (0-28 inches) and clay loam (28-74 inches). There is no zone of water saturation within a depth of 72 inches. Water movement in the most restrictive layer is moderately low. The natural drainage class is somewhat poorly drained and this soil is not flooded. It is not ponded. The mapping unit is listed as non-hydric.

Kaman clay, 0 to 1 percent slopes, frequently flooded (KanA). KanA comprises 95 percent Kaman, 3 percent Simelake, 1 percent Cowmarsh, and 1 percent Pluck components. Kaman is the major soil unit and consists of clayey alluvium derived from igneous, metamorphic and sedimentary rock. This component occurs on flood plains in river valleys of the flat coastal plains. Slopes are 0 to 1 percent. A typical profile consists of layers of clay (0-80 inches). Water movement in the most restrictive layer is low. Available water to a depth of 60 inches (or restricted depth) is moderate. The natural drainage class is somewhat poorly drained. This component is frequently flooded. It is not ponded. The mapping unit is listed as hydric.

Kosse soils, frequently flooded (Ks). Ks is comprised of 100 percent Kosse and consists of loamy alluvium and occurs on flood plains within the coastal plains. Slopes are 0 to 1 percent. A typical profile consists of layers of sandy clay loam (0-44 inches), and loam (44-80 inches). Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. The natural drainage class is moderately well drained. This component is occasionally flooded. It is not ponded. The mapping unit is listed as non-hydric.

Landman fine sand (Ab). Ab comprises 100 percent Landman and consists of loamy alluvium and/or sandy alluvium. It occurs on stream terraces in the coastal plains. Slopes are 0 to 3 percent. A typical profile consists of layers of loamy fine sand (0-74 inches), sandy clay loam (74-82 inches), and sandy clay loam (82-90 inches). Water movement in the most restrictive layer is moderately high. The natural drainage class is moderately well drained. This soil is not flooded. It is not ponded. The mapping unit is listed as non-hydric.

Woodville fine sandy loam, 1 to 5 percent slopes (SuC). SuC comprises 100 percent Woodville and consists of clayey marine deposits. It occurs on interfluves within the coastal plains. Slopes are 1 to 5 percent. A typical profile consists of layers of fine sandy loam (0-9 inches) and clay (9-80 inches). Water movement in the most restrictive layer is low. The natural drainage class is somewhat poorly drained. This soil is not flooded. It is not ponded. The mapping unit is listed as non-hydric.

APPENDIX E

DAREM Monthly Wetland Hydrologic Condition Tables

Wetland Delineation Report for Tranquility Ranch - DAREM Monthly Wetland Hydrologic Condition Tables

Table E1. Project area rainfall normality during September 2015.

Prior		WE	TS Perc	entiles	(in) Measured		Rainfall		Month		0.	Score				
Month		- 3	30 th	70	O th	Rainf	all	Cond	ition"	We	eight	30	ore			
1 st	August	August				.83	4.	23	2.44		2			3	6	
2 nd	July		1	.29	3.	23	1.78		2		- 1	2		4		
3rd	June			2.15	5.	21	6.15		3		1		3			
DARE	I Score (i.e., Score	s Total)	J-											13		
DAREM Score		6	7	8	9	10	11	12	13	14	15	16	17	18		
DAREM Wetland Hydrologic Condition			Drier than normal				Normal				Wetter than normal			al		

Data sources: Montgomery weather station (TX6024; Global Historical Climatology Network [GHCND] No. USC00416024) for WETS percentiles and Magnolia 10.6 ENE weather station (GHCND No. US1TXMNG049) for measured rainfall.

Table E2. Project area rainfall normality during October 2015.

Prior Month		WE	WETS Percentiles			(in) Measured		Rainfall		Month			Score			
			30 th 70) th	Rainfall		Condition"		Weight ^b		50	Score			
1 st	September		September		2.91		5.52		1.21		1		3		3	
2 nd	August				4.3	23	2.44	2.44		2		2		4		
3 rd	July			1.29	3.23		1.78		2		1		2			
DARE	/I Score (i.e., Scores	Total)												9		
	DAREM Score 6		7	7 8 <u>9</u> 10		10	11 12		13	14	15	16	17	18		
DAREM Wetland		rler tha	ler than normal			١	lorma	al		V	eller th	an norm	al			

Data sources: Montgomery weather station (TX6024; Global Historical Climatology Network [GHCND] No. USC00416024) for WETS percentiles and Magnolla 10.6 ENE weather station (GHCND No. US1TXMNG049) for measured rainfall

Table E3. Project area rainfall normality during November 2015.

Prior Month		WETS Percentiles (in)			Measured	Rainfall	Month	Score				
			- 1	30 th	70 th	Rainfall	Condition*	Weight	Score			
st	October		October		1	.96	5.43	7.80	3	3	9	
Suq	September			2,91	5,52	1.21	1	2	2			
3 rd	August		1.83		4.23	2.44	2	1	2			
DAREM S	Score (i.e., Score	s Total)							13			

DAREM Wetland Drier than normal Wetter than normal Normal **Hydrologic Condition** Data sources: Montgomery weather station (TX6024; Global Historical Climatology Network [GHCND] No. USC00416024) for WETS percentiles and Magnolia 10.6 ENE weather station (GHCND No. US1TXMNG049) for measured rainfall.

^{1 =} measured rainfall that were less than the WETS 30th percentile, 2 = measured rainfall that were between the WETS 30th and 70th percentiles, and 3 = measured rainfall that were greater than the WETS 70th-percentile.

1 the prior month = 3, 2 the prior month = 2, and 3 the prior month = 1.

⁵ Scores are the product of the Condition × Weight.

^{1 =} measured rainfall that were less than the WETS 30th percentile, 2 = measured rainfall that were between the WETS 30th and 70th percentiles, and 3 = measured rainfall that were greater than the WETS 70th-percentile.

^h 1st prior month = 3, 2nd prior month = 2, and 3rd prior month = 1.

^o Scores are the product of the Condition × Weight.

magnolia 10,6 ENE Weather station (GHCNO No. 0S11 XMNo049) for measured rainfall.

1 = measured rainfall that were less than the WETS 30th percentile, 2 = measured rainfall that were between the WETS 30th and 70th percentiles, and 3 = measured rainfall that were greater than the WETS 70th-percentile.

1 the prior month = 3, 2 the prior month = 2, and 3 the prior month = 1.

Scores are the product of the Condition × Weight.