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PREFACE

The U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE) are charged with the regulation of “waters of the United States” (as defined in 33 CFR 328.3) under the Federal Water Pollution Control Act of 1972, modified to the Clean Water Act (CWA) in 1977. Wetlands are regulated pursuant to Section 404 of the CWA in part because of their ability to filter and cleanse pollutants and sediments from stormwater before they enter other receiving waters. Additionally, Section 10 of the Rivers and Harbors Act (RHA) of 1899 regulates activities such as dredge and fill and construction within navigable waters of the United States. The USACE generally defines navigable waters of the United States as, “Those waters subject to the ebb and flow of the tide shoreward to the mean high-water mark and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.”

The USACE and EPA jointly define wetlands as, “Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.” The USACE typically does not consider non-vegetated aquatic sites, such as streams or ponds, to be wetland areas. However, under Section 404 (b)(1), the EPA recognizes riffle and pool complexes (streams), vegetated shallows (shallow ponds), sanctuaries and refuges, wetlands, mudflats, and coral reefs as “special aquatic sites” that are subject to the provisions of the CWA. Methods for conducting USACE wetland delineations are described in the *Corps of Engineers Wetlands Delineation Manual* (‘87 Manual) and the Interim Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region, Version 2 (Regional Supplement). These two publications provide the basis for defining the boundaries and extents of wetland communities and provide the only approved methodologies for performing formal USACE wetland delineations.

The U.S. Environmental Protection Agency (EPA) and the United States Army Corps of Engineers (USACE) are charged with the regulation of “waters of the United States” under the Federal Water Pollution Control Act of 1972; amended to the Clean Water Act (CWA) in 1977. As waters of the U.S., wetlands are regulated pursuant to Section 404 of the CWA in part because of their ability to filter and cleanse sediments and pollutants from storm water run-off before the run-off enters receiving streams and other waterbodies. Waters of the U.S. as defined within 33 CFR 328.3 includes:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
2. All interstate waters including interstate wetlands.

3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including such waters: (i) which are or could be used by interstate or foreign travelers for recreation or other purposes; or (ii) from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or (iii) which are used or could be used for industrial purpose by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the U.S. under the definition.
5. Tributaries (including ephemeral tributaries) of waters identified in paragraphs (1)-(4) above.
6. The territorial seas; and
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in sections (1)-(6) above.

The USACE and EPA each maintain specific and often unique authority with respect to the administration of Section 404 of the CWA. However, where issues involving the assertion of federal jurisdiction are concerned, the USACE and EPA share this authority jointly, and both must concur prior to the USACE issuing a formal decision in the form of a jurisdictional determination (JD). The USACE will typically issue a JD when an applicant or affected party seeks a decision as to whether a wetland and/or waterbody is subject to regulatory jurisdiction under Section 404 of the CWA or Section 9 or 10 of the Rivers and Harbors Act of 1899.

The regulatory guidance the USACE employs to determine federal jurisdiction has been a contentious and ever evolving process, often requiring intervention from the U.S. Supreme Court. The current guidance is derived from the Court's 2006 *John Rapanos v. United States* Decision and detailed within JD Guidebook. The JD Guidebook outlines the procedures for assessing a waters relationship or "nexus" to Navigable Waters, waters that have historically fallen under the purview of the USACE. The JD Guidebook refers to such waters as Traditional Navigable Waters (TNW). Non-navigable tributaries of TNWs that flow year-round or have continuous flow at least seasonally are considered relatively permanent waters (RPW). The USACE typically asserts jurisdiction over TNWs RPWs.

Waterbodies with flow regimes limited to brief intervals, such as those associated with heavy precipitation events, are classified non-RPWs. In order for the USACE to assert jurisdiction over these ephemeral tributaries, non-RPWs, in combination with all its adjacent wetlands, must be evaluated for their potential to have more than a speculative or insubstantial effect on the physical, chemical, and biological integrity of downstream TNWs (USACE 2007).

Under the USACE and EPA regulation, wetlands are most often considered to be jurisdictional based on the degree to which they are adjacent to waterbodies. This inclusion is largely because

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of the role that wetlands play in removing sediments, cleansing pollutants, retarding rainfall runoff, and providing valuable habitat to the waterbody's biota. The USACE interprets the term "adjacent" to mean bordering, contiguous with, or neighboring. Wetlands may be considered adjacent even when they are separated from other Waters of the U.S. under certain circumstances. Specifically, adjacent wetlands are identified by meeting at least one of following criteria:

- An unbroken surface or shallow sub-surface hydrologic connection exists between the wetland and jurisdictional waters.
- Wetlands are physically separated from jurisdictional waters by "man-made dikes or barriers, natural river berms, beach dunes, and the like;" or
- A wetland's physical proximity to a jurisdictional water is reasonably close enough that wetlands are "neighboring" and, therefore, adjacent. For example, wetlands situated within the riparian area or floodplain of a jurisdictional water will generally be considered neighboring.

The USACE does not typically consider ditches excavated wholly through uplands and draining only uplands as jurisdictional. However, man-made channels connected directly to a jurisdictional waterbody without passing through an outfall structure may allow water from a jurisdictional waterbody to backflow into said man-made channel, thereby justifying an upstream extension of jurisdiction to the channel in question.

Within the USACE Galveston District, wetlands occurring within the Federal Emergency Management Administration (FEMA) 100-year floodplain are generally considered to be similarly situated and manifesting a significant nexus to TNWs and, as such, may be considered jurisdictional under Section 404 of the CWA. The classic example of this would be oxbow wetlands that are created as a result a change to the location of a waterbodies channel. Often these features become hydrologically isolated, and over time, stranded above the ordinary high-water line of the new channel. Often segregated by naturally accreting sediment berms, the wetland habitats may only occasionally experience hydrologic inflows resulting from periodic over-bank flooding of adjacent waterbodies during high intensity flow events common to the floodway and to a lesser extent the flood plains. It is these exchanges which constitute a chemical, physical of biological nexus between such wetlands and downstream TNWs.

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1.0 INTRODUCTION

1.1 SCOPE OF WORK

Kingfisher Natural Resource Management (KNRM, Kingfisher) was subcontracted by CRG Texas Environmental Services to conduct a wetland delineation and USACE Jurisdiction Assessment for a 70-acre tract (herein referred to as project area, site, property) located in Calhoun County, Texas approximately 1.54 miles from the center of Port Lavaca, immediately South of the Harbor of Refuge, an L-shaped man-made embayment of Lavaca Bay. Refer to Figures 1 Location Map in Appendix A for the location and setting of the project area. All special aquatic sites including wetlands, shorelines and embayments that occur within the project area were delineated; including all areas ostensibly or potentially regulated under Section 10 of the RHA as well as Section 404 of the CWA and under the jurisdiction of the USACE.

KNRM completed the following tasks in support of the delineation and the documentation of the project area.

- The delineation and GPS location of the wetland boundaries within the project area.
- Preparation of maps to accurately reflect the location and size of the wetland delineated.
- Assessment of the USACE jurisdictional status of any on-site wetlands and waterbodies that may constitute a nexus to downstream jurisdiction waters.
- Preparation of a written report containing a discussion of the methods and finings and required documentation supporting the conclusions.

As previously discussed, the project area consists of a single 124-acre belonging to the City of Port Lavaca. Approximately three-fifths of the property's frontage is tidal waters associated Lavaca Bay. Based on a review of historical aerial imagery view from Goole Earth, the property has been utilized a number of uses including temporary light industrial usage, storage, and debris disposal, in the northwest corner of the property there appears to be a former placement area for disposal of dredged sediments. This area is surrounded by a berm indicating sediments from the dredging of the adjacent harbor may have been placed at this location. Throughout the property there are numerous dump piles and mounds that suggest the area continues to be used to accept excavated or dredged material, as well as disposal, of various forms of storm debris. The south-central portion of the property contains accumulations of woody debris. A small portion of the property in the southeast corner is maintained as a private gun range. The most significant assembles of native and man-made aquatic resources make the southeast portion of the property. The entirety of the property's shoreline is native and un-stabilized. Also of note, there appears to be an area of created wetlands occurring along south bank of the entrance channel to the Harbor of Refuge. Photographs of the project area are found in Appendix B.

2.0 METHODS

In September 2024, KNRM conducted a wetland delineation and jurisdictional assessment of the project area following the specific protocols previously described in the introduction to this report. Prior to initiating intensive on-site wetland investigations, KNRM reviewed recommended literature and data published by the state and federal agencies including Texas Natural Resources Information Systems (TNRIS), United States Geological Survey (USGS) topographic maps, Natural Resource Conservation Service (NRCS) soils surveys, Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps, NWI maps, and other relevant publications. These resources helped to preliminarily identify any potential waters of the U.S., including wetlands and other special aquatic sites that might occur within the project area. The presence or absence of special aquatic sites other than wetlands (i.e., sanctuaries, refuges, mudflats, vegetated shallows, coral reefs, and riffle and pool complexes) was determined by desktop review and on-site field surveys of the project area and adjacent lands.

2.1 Wetlands/Special Aquatic Sites

As part of KNRM's delineation efforts, 3 transect lines on the 124-acre project area were traversed to identify potential wetlands based on the three wetland criteria: hydrophytic vegetation, hydric soils, and hydrology. Typically, all three criteria must be present for an area to meet the definition of a wetland. However, when direct or indirect evidence of all three indicators were not observed, best professional judgment was applied to determine if an area may be considered a wetland.

Where practicable, wetland boundaries were delineated where all three wetland diagnostic criteria, hydrophytic vegetation, hydric soils, and hydrology, were present. However, due to the significant disturbance and manipulation and disposal for nonnative soils evaluation of individual soil pedons was found to be unreliable of extant hydric soil characteristics and were excluded from routine examination with greater emphasis being placed on vegetative constituents and evidence of hydrology. Data at each site documenting the wetland evaluation criteria were recorded on Wetland Determination Forms (data sheets) as required by both the '87 Manual and Regional Supplement. The designation of wetland habitat (type) is based on the classification system developed by Cowardin et al. (1979). Where the boundaries of wetlands and other special aquatic sites were obscured or otherwise absent as a result of impacts, techniques including aerial interpretation and photo interpretation were employed to delineate the wetland boundary.

2.1.1 Hydrophytic Vegetation

Hydrophytic vegetation refers to plants adapted to survive in soils that remain saturated or inundated for at least 5 percent of the growing season. There are five designations used to classify plants based upon an individual species' proclivity to tolerate hydric conditions; ranging from most to least hydric, species are categorized as: obligate (OBL), facultative wetland (FACW), facultative (FAC), facultative upland (FACU), and upland (UPL).

To assess vegetation consistent with guidance prescribed by the Regional Supplement, KNRM personnel examined all relevant strata and recorded the constituent species to derive dominance and prevalence values within sample plots. Based upon the USACE *National Wetland Plant List for the Atlantic Gulf Coastal Plain v. 2.4.0*, KNRM personnel assigned the appropriate wetland indicator status for each species to determine wetland indicator status. Within a prescribed assessment area (typically a 30-foot-radius plot), the predominance of vegetation composed of species that are FAC, FACW or OBL fulfills the criterion for the presence of hydrophytic vegetation.

2.1.2 Soils

Hydric soils typically have characteristics indicating that they have developed where anaerobic conditions persist as a result of prolonged saturation during a portion of the growing season. The

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NRCS Hydric Soil Technical Standard requires that anaerobic conditions and saturation persist within the upper part of the soil profile (6 inches for sands and 10 inches for loams and clays) for no less than 14 consecutive days during the growing season in order for a soil to be considered hydric.

The Regional Supplement requires the use of the NRCS Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils, Version 3.2 (U.S. Department of Agriculture [USDA] 1996) to identify characteristic morphologies endemic to soils that have formed under conditions of prolonged saturation, flooding, or ponding. These indicators are often specific to individual Land Resource Regions (LRR) or Major Land Resource Areas (MLRA). The project area is located within LRR T and Major Land Resource Area MLRA 150A.

As previously stated, the lack of reliable native soil characteristics made the use of hydric soil indicators problematic for this site and were disregarded for the purposes of identifying a wetland boundary.

2.1.3 Wetland Hydrology

Of the three wetland criteria, hydrology is perhaps the most difficult to accurately assess partly due to the natural variability of climatic and seasonal influences that can dramatically affect water table levels and surface saturation. Wetland hydrology refers to the presence of water at or near the soil surface for a duration sufficient for the development of anaerobic conditions in the upper portion of the soil profile. Continuous saturation or inundation within 30 cm of the soil surface for no less than 14 consecutive days will meet the standard for hydrology specified in the USACE's *Technical Standard for Water Table Measurements of Potential Wetlands.*

While investigations to accurately determine if such conditions occur are often impractical, the '87 Manual and Regional Supplement detail a variety of hydrologic indicators which provide sufficient evidence to confirm the presence of wetland hydrology. The list of primary and secondary indicators includes: the presence of water-stained leaves, saturation, sediment deposits, water marks, crawfish burrows, drainage patterns, and other physical evidence. Observations of these indicators were recorded on the data sheets.

The normality of rainfall has a considerable influence on the maintenance of wetland hydrology. This is particularly true for the summer months when high evapotranspiration rates result in the rapid drawdown of water tables. To accurately assess the normality of rainfall and its influence on wetland hydrology, KNRM employed the Direct Antecedent Rainfall Evaluation Method (DAREM) (Sprecher and Warne 2001). This method assesses normal rainfall by considering the 3-month period prior to the month being evaluated which is then compared to a baseline of normal rainfall provided by the NRCS Wetlands Evaluation Tables (WETS). Evaluation under these methods results in a determination of one of three conditions: the site being drier than normal, normal, or wetter than normal.

2.2 Streams

Where encountered, streams and other linear conveyances (e.g., creeks, rivers, man-made ditches) were identified by the presence of an ordinary high-water mark (OHWM) or limits of the mean annual high tide line are usually identifiable by channel characteristics such as scouring of the channel or a vegetation line within the channel. The OHWM is a defining element for identifying the lateral limits of non-wetland waters. Streams were classified as perennial, intermittent, or ephemeral based on field observations.

- A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.
- An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.
- An ephemeral stream has flowing water only during, and shortly after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round, and groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.
- Tidal Streams which are subject to the ebb and flow of the daily tide are delineated similarly to normal non-tidal stream where the uplands exist and the landward of the mean annual high tide line.

2.3 Other Surface Waters

Tidal waters were delineated at the observed Mean Annual Hightide Line or, in the case of a the presence of a vertical barrier such as a seawall, bulkhead or other similar revetment where a tidal influence was present, the upland limits of the tidal area was established at the interface created by the barrier or the upper limit of the Mean Annual High-tide Line for areas such as rip-rap. Notes were taken relative to the interface and depicted on the maps; Therefore, a wetland or shoreline bounded by a seawall or other similar revetment was indicated by the barrier or interface present.

2.4 Data Logging and Mapping

To achieve the desired accuracy, KNRM used a Topcon Hiper SR series GPS and Magnet Field data collection software to geographically reference data points and feature boundaries obtained during the field survey the data was collected using Texas State Plane Coordinate System FIPS 4204. ESRI ARGIS Pro (GIS) software was used to analyze collected features, calculate areas, and generate the attached maps (Appendix A). The data was collected and recorded according to the USACE SWG Standard Operating Systems for Recording and Submitting Jurisdictional Delineations Using Global Positioning Systems and Geographic Information Systems Tools and Techniques dated 21 April 2016.

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3.0 JURISDICTIONAL ASSESSMENT

KNRM evaluated the jurisdictional status of the project area wetlands from data obtained as part of the wetland delineation and preliminary wetland assessment. As previously stated in Section 1.0, due to the proximity to Traditionally Navigable Waters (Lavaca Bay), wetlands and other special aquatic sites within the project area are considered Navigable in Fact and are subject to USACE jurisdiction under the CWA and Section 10 of the RHA. One exclusion to this assessment was made for wetland B and C. These palustrine wetlands discussed in more detail later in the report were contained wholly within a disposal area segregated by earthen a continuous berm from adjacent resources and lacking a continuous surface connection to nearby jurisdictional features.

USACE guidance for the determination of jurisdiction can be summarized as follows:

1. Jurisdictional Waters
   - Traditionally Navigable Waters (TNW)
   - Abutting wetlands to a TNW
   - Relatively Permanent Water RPW a non-navigable tributary with relatively permanent flow (> 3 months)
   - Wetlands abutting (contiguous connection to) a TNW or RPW

2. Significant Nexus determination required – the determination that a waterbody possesses a demonstrable chemical physical or biological relationship to a downstream TNW.
   - Non-RPW a non-navigable tributary with seasonal flow (< 3 months)
   - Adjacent wetlands (non-abutting) to and RPW
   - Adjacent Wetlands non-adjacent or non-abutting a non-RPW

3. Non-jurisdictional waters
   - Wetland having no continuous surface connection to RPWs discharging directly to TNWs.
   - Swales, small washes, ditches excavated wholly in uplands characterized by low volume and infrequent flow.

4.0 WETLAND DELINEATION RESULTS

4.1 Soils

According to the NRCS Soil Surveys for Calhoun County, two major soil map units are present within the project area (USDA, 2018): Laewest clay, 0 to 1 percent slopes, Harris clay, frequently flooded and Dacosta-Contee complex, 0 to 1 percent slopes.

Laewest clay, 0 to 1 percent slopes: (*Fine, smectitic, hyperthermic Typic Hapluderts*). The Laewest series consists of very deep, moderately well drained soils that formed in clayey flood basin deposits on alluvial plains or deltas of the Beaumont Formation of Pleistocene Age. These nearly level to gently sloping soils are on broad flat coastal plains. Slope ranges from 0 to 8 percent. Mean annual precipitation is about 940 mm (37 in) and the mean annual air temperature is about 21.5 degrees C (70.5 degrees F). Laewest soils are moderately well drained. The permeability is slow.

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Water enters the soil rapidly when it is dry and cracked, but very slowly when the soil is wet, and the cracks are sealed. Runoff is high on 0 to 1 percent slopes and very high on slopes greater than 1 percent.

<u>Harris clay, frequently flooded</u>: (*Typic Natraquerts*). The Harris series consists of very deep, poorly drained, very slowly permeable soils that are deposited from rivers, bays, and canals. These gently sloping soils occur on flats in coastal areas. Slope ranges from 0 to 2 percent. Mean annual precipitation is about 1397 mm (55 in) and mean annual air temperature is about 20.5 degrees C (70 degrees F). Poorly drained. Permeability is very slow. Runoff is very high. Tidally flooded. These soils have endo-saturation from April through December from 46 to 102 cm (18 to 40 in). Mainly used for rangeland. Vegetation is mostly hydrophytic, salt tolerant species such as gulf cordgrass and common reed grass. The soil is listed as hydric.

<u>Dacosta-Contee complex, 0 to 1 percent slopes</u>: (*Fine, smectitic, hyperthermic Vertic Argiudolls*) The Dacosta series consists of very deep, moderately well drained, very slowly permeable soils that formed in loamy and clayey fluviomarine deposits derived from the Beaumont Formation of Pleistocene age. These nearly level to gently sloping soils are on flats on coastal plains. Slope is mainly less than 1 percent but range up to 3. Mean annual precipitation is about 940 mm (37 in) and the mean annual air temperature is about 21 degrees C (70 degrees F). Soil Moisture: An udic soil moisture regime. The soil moisture control section is moist in some or all parts for more than 275 days in normal years. The soil is listed as hydric.

Initial investigation of the soils onsite repeatedly showed that native soil profiles were absent and what was present was unconsolidated material that did not exhibit any meaningful characteristics to the areas being investigated. The pedons that were extracted had no natural profile development and exhibited random inclusion of various marine sediments and terrestrial clays and clastics. Wetland A and wetland Q had native profiles, but this was the exception and were not diagnostic to wetland margins. Therefore, soils were not useful in determining wetland boundaries and were excluded pursuant to specifications of the ’87 manual.

4.2 Wetland Hydrology

Wetland hydrology was determined in the field by frequency and duration of inundation, which is this case is influenced by tidal regimes. Visual observation of saturation in the upper 10 inches of the soil profile, and the presence of other primary wetland hydrology indicators, such as surface water, high water table, saturation, oxidized root channels, water-stained leaves, water marks, sediment deposits, and algal matting. Secondary indicators used to determine wetland hydrology included crustacean burrows, drift deposits, drainage patterns and saturation visible aerial imagery. If the area displayed one or more primary hydrology indicators or two or more secondary hydrology indicators, a positive hydrology determination was made.

Wetland hydrology within the project area is influenced almost exclusively by tidal regimes. In most cases and due in part to the minimal tide differential and presence of bulkheads and other types of revetments, there is an abrupt margin between the wetlands and their adjacent uplands.

The Point Comfort WETS weather station (417140), located in Calhoun County, Texas approximately 5.00 miles East of the project area in Point Comfort, Texas, was used to determine the normality of rainfall for September 2024, the month in which the delineation was performed. Data from this station was also used to acquire both historical trends and monthly rainfall totals and used to determine the measured rainfall for the three months prior to the delineation. The DAREM calculations for September 2024 were calculated using observed rainfall data and comparative WETS data (Table 1). Based upon these calculations, the three-month period leading up to the delineation was found to have normal precipitation patterns.

Table 1. Rainfall Summary

		WETS Rainfall percentile (in)		**Evaluation Month:** September 2024			
	Prior Month	**30^{th}**	**70^{th}**	**Measured rainfall**	**Condition**[a]	**Month Weight**[b]	**Score**[c]
1^{st}	August	1.63	4.19	0.84	1	3	3
2^{nd}	July	1.31	3.72	13.44	3	2	6
3^{rd}	June	2.75	5.40	10.56	3	3	3
						Sum:	**12**
					Condition:	**Normal**	

[a] Condition values are 1 for <30^{th} percentile, 2 for between 30^{th} and 70^{th} percentile, 3 for >70^{th} percentile
[b] Month Weight is 3 for the most recent month, 2 to the previous month, and so on.
[c] Score is the product of the condition and month weight.
[d] Drier than normal (sum is 6-9), normal (sum is 10-14), wetter than normal (sum is 15-18)

Where wetlands were delineated, indicators of hydrology observed most frequently included: soil saturation, surface water, soil surface cracks, crayfish burrows, redox concentrations on live root channels, and presence of reduced iron.

4.3 Aquatic Habitats

Kingfisher identified six aquatic resource habitat classes including 5 vegetation communities and one deep-water habitat within the survey area. Knrm identified 37.7 acres of aquatic resources including the broad categories of estuarine marsh, palustrine marsh, aquatic beds Each of the communities were characterized based on their vegetative type in the Cowardin Classification. The Cowardin Classification system is a hierarchical classification system for wetlands and other habitats developed for the U.S. Fish and Wildlife Service. The final determination of wetland habitat type is based on this classification system developed by Cowardin et al. (1979). Table 1 below list the classes identified.

Table2: Aquatic Resources

Resource Name	Cowardin Class	Feature Class	Area (ac.)
	Intertidal/extratidal		
Wetland Q	E2AB3	Marsh- Intertidal	12.50
Wetland P	E2SS3	Scrub-shrub-extratidal	3.93
Wetland L	E2US3	Tidal Pool -intertidal	0.07

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Wetland K	E2EM3	Marsh- Intertidal	1.65
Wetland A	E2EM3	Marsh-extratidal	1.95
Wetland B	PEM1	Palustrine Emergent Marsh	0.31
Wetland C	PEM1	Palustrine Emergent Marsh	0.03
Wetland D	PEM1	Palustrine Emergent Marsh	0.03
Wetland E	PEM1	Palustrine Emergent Marsh	0.01
	Intertidal		
Shoreline	E2US1	Shoreline	1.21
Shoreline	E2EM2	Shoreline	2.77
Shoreline	E2US3	Shoreline	0.68
Shoreline	E2US3	Shoreline	0.17
	Subtidal		
Estuarine	E1US1	Estuarine	0.84
Estuarine	E1US3	Estuarine	2.48
Estuarine	E1US3	Estuarine	1.31
Estuarine	E1UB3	Estuarine	3.15
Estuarine	E1US3	Estuarine	2.49
Estuarine	E1AB3	Estuarine Marsh	0.78
Estuarine	E1AB3	Estuarine Marsh	0.27
Estuarine	E1AB3	Estuarine Marsh	0.21
Estuarine	E1AB3	Estuarine Marsh	0.02
Estuarine	E1AB3	Estuarine Marsh	0.05
Estuarine	E1AB3	Estuarine Marsh	0.11
Estuarine	E1AB3	Estuarine Marsh	0.11
Estuarine	E1UB3	Shoreline	0.44
Estuarine	E1AB3	Shoreline	0.15
			Total
			37.7

Frequently occurring species identified within each vegetation community are mentioned in the following discussion. Refer to Appendix B for photographs and Appendix C for data sheets listing the vegetation at each data point. Species identified at each data point were recorded on the data sheets along with aerial coverage and wetland indicator statuses.

4.3.1 Estuarine, Subtidal Unconsolidated Bottom, Mud (E1US)

This classifies the habitat type as estuarine (system), subtidal (subsystem) composed of unconsolidated bottom (class), mud (dominance type), unconsolidated shore or marsh. This class includes wetland and deep-water habitats with at least 25% cover of particles smaller than stones and a vegetative cover of less than 30%. These areas are classified by the lack of stable surfaces for plant and animal attachment. This NWI is mapped in the northeast portion of the project area associated with the excavated pond. No data points were collected in this NWI. These are tidally influenced near-shore marine habitats that where the substrate is always submerged. These areas often support submerged aquatic vegetation (sav), and sessile and benthic invertebrate communities adapted for life in marine environments.

4.3.2 Marsh, Intertidal Marsh, (E2EM)

This classifies the habitat type as an estuarine (system), intertidal (subsystem), emergent Marsh (class) with persistent vegetation (vegetation form). Estuarine systems typically consist of deep-water tidal habitats and adjacent tidal wetlands that are semi-enclosed by land but have open or obstructed access to the ocean. Unconsolidated shores (class) are characterized by substrates that are greater than 30% aerial cover of vegetation. These systems are more strongly influenced by their association with the land. Intertidal subsystems contain substrates that are exposed and flooded by the tides. The emergent wetland class is characterized by erect, rooted herbaceous hydrophytes. These habitats are usually dominated by perennial plants that are present through most of the growing season. The vegetation communities occur in the intertidal zone and remain submerged or partially for during a tidal period.

Extratidal marshes such as Wetland A in the Northwest corner are included as intertidal since the tidal influence is periodic throughout the month rather than daily. In lower areas where tidal influence is of a prolonged duration oyster grass (*Spartina alterniflora*) is the primary species occupying this zone. As elevation and slope progress landward species including salt grass (*Distichlis spicata*), woody glasswort (*Salicornia bigelovii*), saltwort (*Batis maritima*) and key grass (*Monanthochloa littoralis*) were observed. Marshhay cordgrass (Spartina patens), annual marsh elder (*Iva frutescens*), sea oxeye daisy (*Borrichia frutescens*) dominated in areas that experienced brief tidal inundation.

4.3.4 Estuarine Intertidal Unconsolidated Shoreline, non-persistent/non-persistent (E2US)

This classifies the habitat type as estuarine (system), intertidal (subsystem), unconsolidated shore (class), mud (dominance type). Unconsolidated shores (class) are characterized by substrates that have less than 30% aerial cover of vegetation other than pioneer successional stage species. Mud shores (dominance type) tend to have a higher organic content and higher levels of anaerobic conditions than cobble-gravel or sand shores. These areas exhibit slopes greater than 5% and are present as narrow mudflats with clastics and other shell materials. They are found adjacent with emergent wetlands, high-marsh and uplands depending upon the slope.

4.3.5 Estuarine Intertidal Unconsolidated Shoreline (E2US)

This classifies the habitat type as estuarine (system), intertidal (subsystem), unconsolidated shore (class), mud (dominance type). Unconsolidated shores (class) are characterized by substrates that have less than 30% aerial cover of vegetation other than pioneer successional stage species. Mud shores (dominance type) tend to have a higher organic content and higher levels of anaerobic conditions than cobble-gravel or sand shores. These areas exhibit slopes greater than 5% and are present as narrow mudflats with clastics and other shell materials. They are found adjacent with emergent wetlands, high-marsh and uplands depending upon the slope.

4.3.6 Estuarine subtidal Unconsolidated Shoreline (E1US)

The Palustrine Scrub-shrub Wetland community identified within the project area consists of wetland areas dominated by trees, shrubs, and herbaceous species. Three tree species, Chinese

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tallow (*Triadica sebifera*), Sugarberry (*Celtis laevigata*), and American elm (*Ulmus americana*), were identified as the dominant species within this community. Sumpweed (*Iva annua*) and (*Solidego sempervirons*) seaside golden-rod, marsh elder and sea ox-eye daisy, marshay cordgrass are the principal herbaceous components.

4.3.7 Palustrine Emergent Marsh, (PEM1)

Palustrine emergent marsh with persistent vegetation were observed in areas above the daily intertidal zone, areas commonly referred to as extratidal. The primary hydrologic influence is freshwater from precipitation which is supplemented periodically from Spring tides and other extratidal events. The vegetation observed in this area was water hyssop (*Bacopa monieri*) in the damp depressions with St. Augustine grass *(Stenotaphrum Secundatum*) in more well drained zones.

4.4 Wetlands and Deepwater habitats Summary

Kingfisher identified four aquatic resource habitat classes within the survey area including one, estuarine intertidal vegetation community and three palustrine vegetation communities. Table 2 provides the acreage of the wetlands within the project area. Refer to Appendix C for representative photographs of the wetlands. No other special aquatic sites were identified on the property.

5.0 WETLAND JURISDICTIONAL ASSESSMENT

The wetlands identified within the project area were exclusively adjacent to maintain a continuous surface connection to waters of the U.S. conforming to the to the revised Definition of the Waters of the U.S. Rule (§ 328.3) of January 2023 and, amended by Sackett v EPA [June] 2023. However, as wetlands B, C, D & E do not maintain a continuous surface connection to a waters of the U.S. as stipulated in Sackett these features are excluded from regulation of the 2023 Clean Water Rule. Furthermore, given wetland B and C location within what could be classified as “Waste Treatment Systems” *Amended 2023 Rule: (b)(1) Exclusion: Waste Treatment Systems*, including treatment ponds and lagoons designed to mee the requirement so the Clean Water Act, wetlands B and C would likely have enjoyed exemption within the intervening Sackett decision. To be clear, wetlands adjacent abutting the tidal waters of Lavaca Bay remain under USACE and EPA jurisdiction and subject to Section 404 of the CWA and Section 10 of the RHA.

6.0 SUMMARY AND COCLUSIONS

In summary, KNRM conducted a wetland delineation of the 124-acre City of Port Lavaca Tracts in September of 2024. During the delineation of KNRM identified 3 broad classes of wetlands totaling 37.7 acres of these, 0.38 acres of wetland were found to fall beyond USACE and EPA jurisdiction. Two of these, wetlands B and c totaling .36 acres are located within a disposal / placement area.

With respect to USACE jurisdiction, KNRM found that that all aquatic resources within the project area were subject to the ebb and flow of tidal waters. As a result, these wetlands and aquatic resources within the project area are subject to USACE jurisdiction based on this relationship to traditionally navigable waters and would require a Department of the Army Permit pursuant to the Waters of the U.S. Rule, Section 404 of the CWA, and Section 10 of the RHA.

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7.0 REFERENCES

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Appendix A:
Figures

Map Scale: 1: 8,012

KINGFISHER NATURAL RESOURCE MANAGEMENT

124-ac. Harbor of Refuge
Wetland Delineation - Project Area
City of Port Lavaca, Texas
Exhibit 1

This figure and all data contained within are supplied as is with no warranty. Kingfisher Natural Resource Management expressly disclaims responsibility for damages or liability from any claims that may arise out of the use or misuse of this map. It is the sole responsibility of the user to determine if the data on this map meets the user's needs. This map was not created as survey data, nor should it be used as such. It is the user's responsibility to obtain proper survey data, prepared by a licensed surveyor, where required by law.

Map Scale: 1: 8,012

KINGFISHER
NATURAL RESOURCE MANAGEMENT

124-ac. Harbor of Refuge
Wetland Delineation - NWI Map
City of Port Lavaca, Texas
Exhibit 2

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Map Scale: 1: 8,012

KINGFISHER
NATURAL RESOURCE MANAGEMENT

124-ac. Harbor of Refuge
Wetland Delineation - Wetlands
City of Port Lavaca, Texas
Exhibit 3

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Map Scale: 1: 812

KINGFISHER
NATURAL RESOURCE MANAGEMENT

Wetland Delineation Shorelines
124-ac. Harbor of Refuge
Port Lavaca, TX
Exhibit 4

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Map Scale: 1: 6,502

KINGFISHER
NATURAL RESOURCE MANAGEMENT

124-ac. Harbor of Refuge
Wetland Delineation - Project Area Wetlands
City of Port Lavaca, Texas
Exhibit 5

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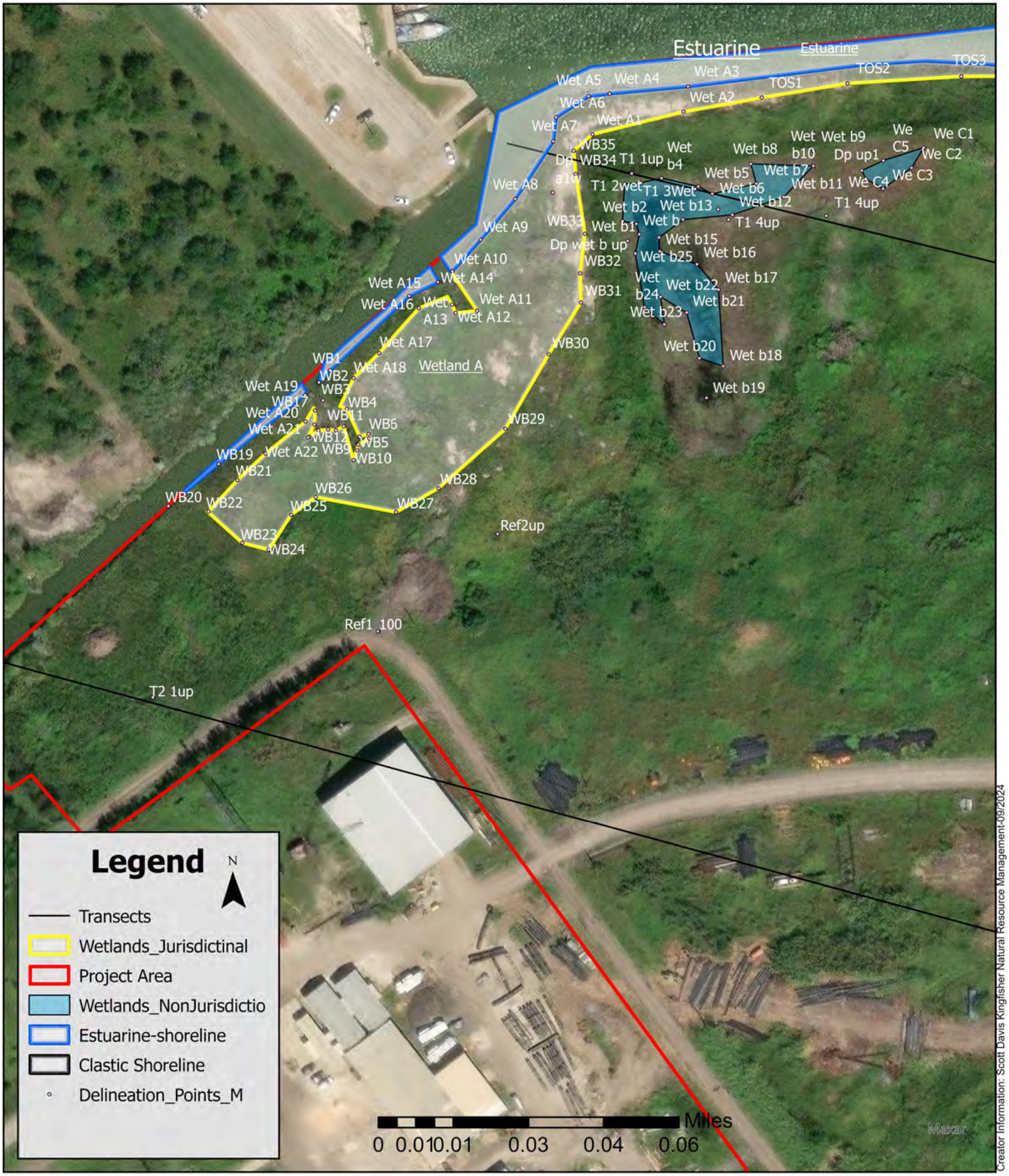

Map Scale: 1: 812

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NATURAL RESOURCE MANAGEMENT

Wetland Delineation NE Isolation
124-ac. Harbor of Refuge
Port Lavaca, TX
Exhibit 6

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Map Scale: 1: 812

KINGFISHER
NATURAL RESOURCE MANAGEMENT

Wetland Delineation NE Isolation
124-ac. Harbor of Refuge
Port Lavaca, TX
Exhibit 7

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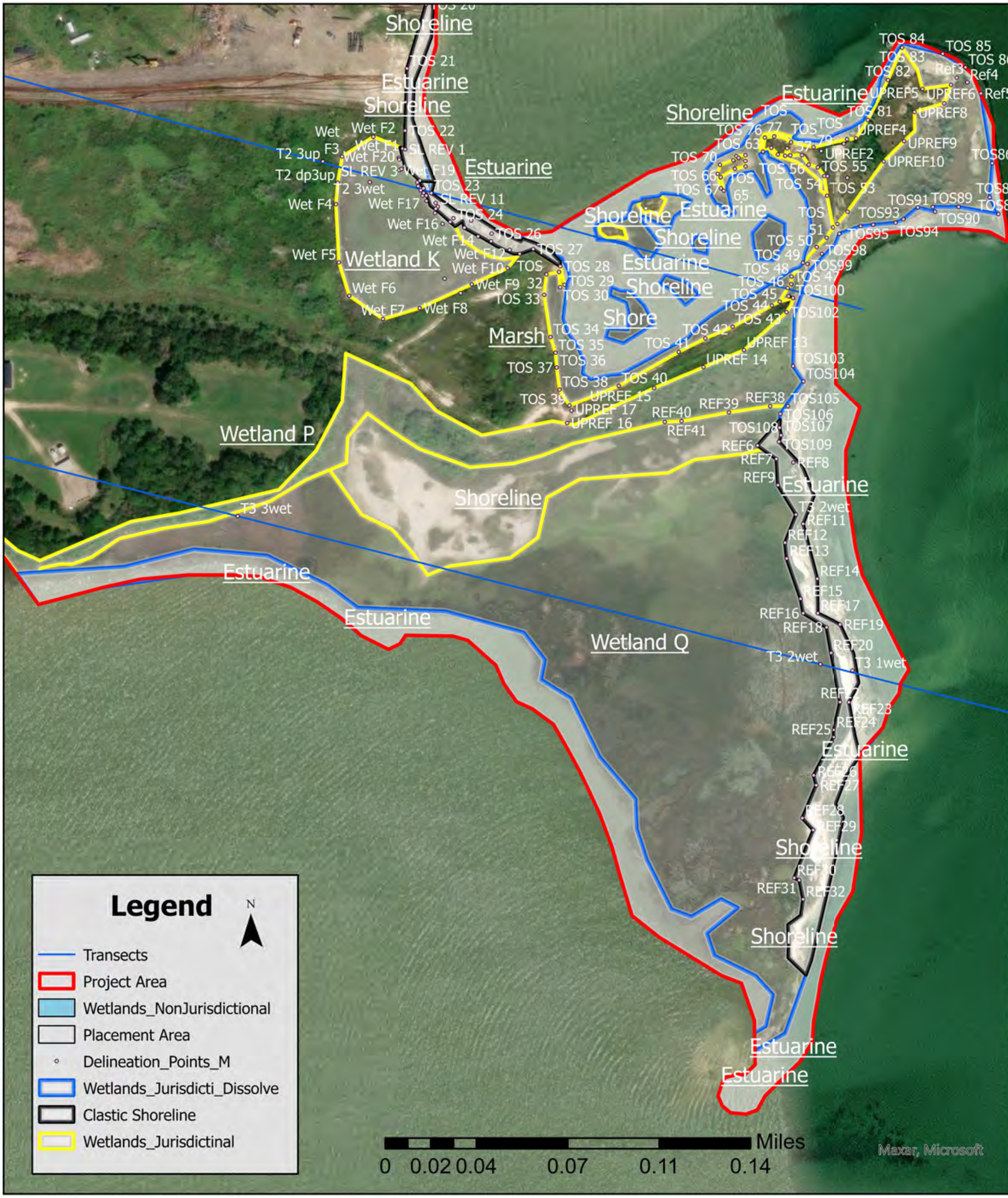

Map Scale: 1: 1,387

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NATURAL RESOURCE MANAGEMENT

124-ac. Harbor of Refuge
Wetland Delineation - SE-Isolation
City of Port Lavaca, Texas
Exhibit 8

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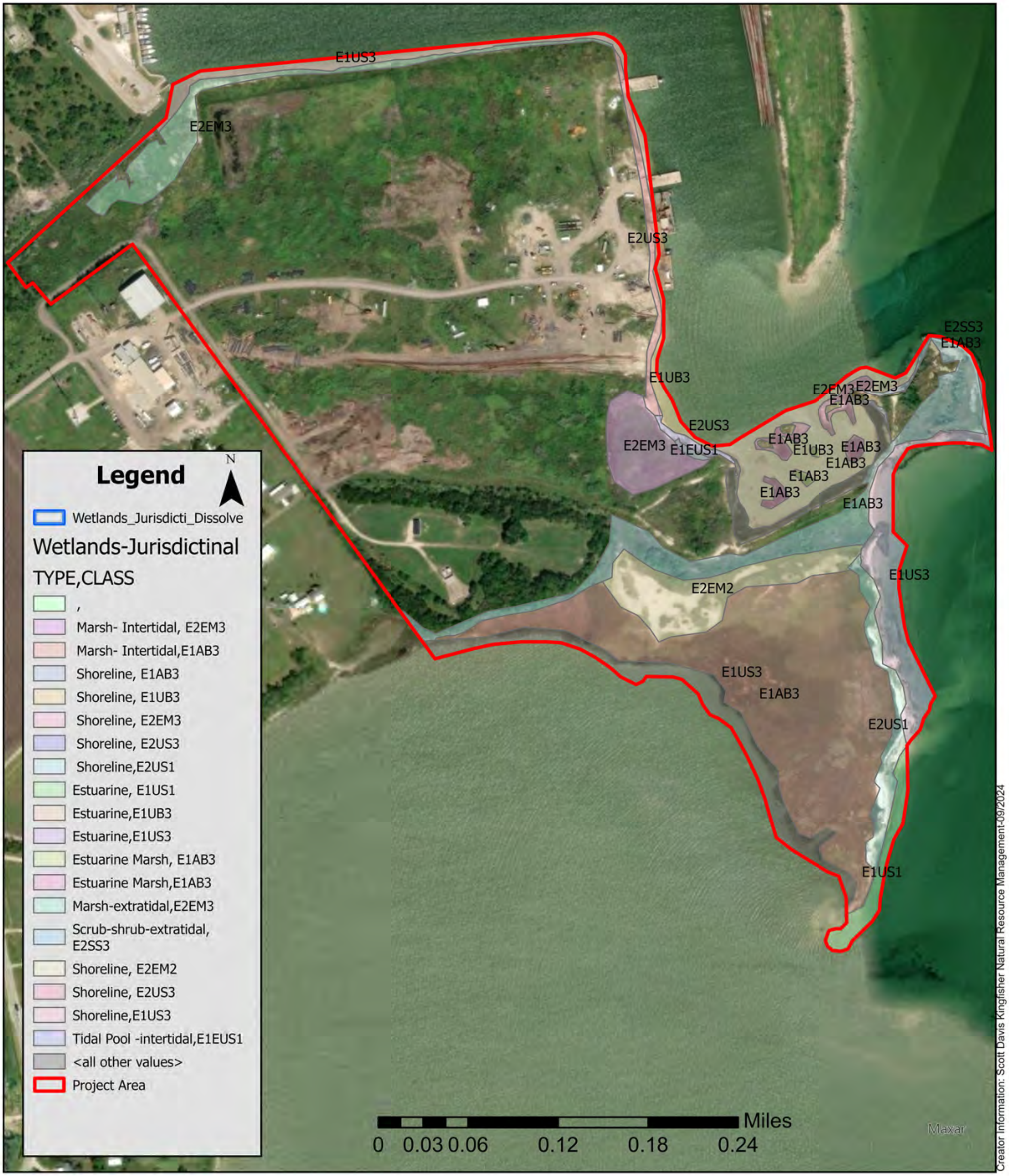

Map Scale: 1: 4,844

KINGFISHER
NATURAL RESOURCE MANAGEMENT

124-ac. Harbor of Refuge
Wetland Delineation - Aquatic Resource Habitats
City of Port Lavaca, Texas
Exhibit 9

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Appendix B:
Photographic Log

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Appendix C:
Wetland Determination Sheets

Project Photos

File Number:
Project: 70-Acre Wetland Delineation
Location: City of Port Lavaca, TX
Investigator: Scott Davis
Date: September 2024

Figure 1: Aerial view of the barge basin frontage and Wetland A of the project area looking to the North.

Figure 2: Aerial view of the Northern end of the project area looking East towards Lavaca Bay

Figure 3: Aerial view of the Northern end of the project area looking East towards Lavaca Bay. Confining berm is visible separating wetland A from adjacent disposal area.

Figure 4: Aerial View of the Property looking West along the tidal creek adjacent to Wetland A west of the boat ramp.

KINGFISHER NATURAL RESOURCE MANAGEMENT

Project Photos

File Number:
Project: 70-Acre Wetland Delineation
Location: City of Port Lavaca, TX
Investigator: Scott Davis
Date: September 2024

Figure 5: Aerial view of the project area looking towards the northeast corner of the project area. Barge basin is visible to the East.

Figure 6: Aerial view of the property depicting typical upland vegetation communities adjacent to Wetland A.

Figure 7: Aerial view of the project area depicting typical upland vegetation communities north of the dirt road that bisects the property.

Figure 8: Aerial view to the East. Tidal marsh fringe is visible at the base of a berm contains a relict disposal area.

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NATURAL RESOURCE MANAGEMENT

Project Photos

File Number:
Project: 70-Acre Wetland Delineation
Location: City of Port Lavaca, TX
Investigator: Scott Davis
Date: September 2024

Figure 9: Aerial view of the project area south of central dirt road looking across the Port Lavaca Gun Range across to Lavaca Bay.

Figure 10: Aerial view of the project area looking across the Port Lavaca Gun Range across to Lavaca Bay.

Figure 11: Aerial view of the wetland marsh and Lavaca Bay South of the Gun Range.

Figure 12: Aerial view toward the Northeast from above the marsh south of the Gun Range.

Project Photos

File Number:
Project: 70-Acre Wetland Delineation
Location: City of Port Lavaca, TX
Investigator: Scott Davis
Date: September 2024

Figure 13: Aerial view of Wetland A looking towards the public boat ramp West of the Barge Basin.

Figure 14: Aerial view of habitat adjacent to Wetland A looking towards the West.

Figure 15: Tidal Wetland D inundated by extratidal inundation.

Figure 16: Tidal Wetland D at low tide.

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NATURAL RESOURCE MANAGEMENT

Project Photos

File Number:
Project: 70-Acre Wetland Delineation
Location: City of Port Lavaca, TX
Investigator: Scott Davis
Date: September 2024


Figure: 17: Typical upland community taken above the project area looking South.


Figure18: Upland vegetation community contained within the disposal area at the northern end of the project area.


Figure 19: View of tidal marsh the and the depositional shoreline.


Figure 20: View of the shole protect the tidal marsh to the south of the property.

KINGFISHER NATURAL RESOURCE MANAGEMENT

File Number:
Project: 70-Acre Wetland Delineation
Location: City of Port Lavaca, TX
Investigator: Scott Davis
Date: September 2024


Figure 21: View of tidal Marsh adjacent to project area to the South.


Figure 22: Aerial view of southern end of the project area looking towards marsh habitat East of the project area and Gun Range.


Figure 23: View upland communities above the center of the project are looking North.


Figure 24: Aerial view of the project area looking southwest above the berm disposal area.

Project Photos

File Number:
Project: 70-Acre Wetland Delineation
Location: City of Port Lavaca, TX
Investigator: Scott Davis
Date: September 2024

Figure 25: View of dump piles located in the northeast quadrant of the project area.

Figure 26: View of vegetated dump piles in the northeast quadrant of the property.

Figure 27: View of the northern half of the property looking North across the upland vegetation communities.

Figure 28: View of the eastern end of the project are adjacent to barge channel.

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Appendix D:
Supporting Documentation

WETS Station: POINT COMFORT, TX

Requested years: 1971 - 2000

Month	Temperature (°F)			Precipitation (inches)				
	Avg daily max	Avg daily min	Avg daily mean	Avg	30% chance will have: less than	30% chance will have: more than	Avg number of days with 0.10 inch or more	Average total snowfall
Jan	64.6	45.7	55.2	2.94	1.69	3.58	5	0.0
Feb	68.4	48.7	58.6	2.49	1.02	3.03	4	0.0
Mar	74.3	55.5	64.9	2.77	1.01	3.34	3	0.0
Apr	79.1	61.7	70.4	2.97	1.37	3.55	3	0.0
May	84.3	69.0	76.7	4.49	2.22	5.39	5	0.0
Jun	89.2	74.9	82.0	4.48	2.75	5.40	5	0.0
Jul	91.6	77.3	84.5	3.30	1.31	3.72	4	0.0
Aug	91.7	76.8	84.2	3.43	1.63	4.19	5	0.0
Sep	89.4	71.7	80.5	5.61	2.90	6.85	7	0.0
Oct	82.7	63.7	73.2	4.62	2.51	5.64	5	0.0
Nov	74.1	54.6	64.4	3.81	1.74	4.66	5	0.0
Dec	67.1	47.6	57.3	2.94	1.50	3.59	5	0.0
Annual:					38.65	48.78		
Average	79.7	62.3	71.0	-	-	-	-	-
Total	-	-	-	43.84			57	0.0

GROWING SEASON DATES

Requested years of data:	1971 - 2000		
Years with missing data:	24 deg = 4	28 deg = 5	32 deg = 5
Years with no occurrence:	24 deg = 16	28 deg = 11	32 deg = 4
Data years used:	24 deg = 26	28 deg = 25	32 deg = 25

Probability	Temperature		
	24 F or higher	28 F or higher	32 F or higher
	Beginning and Ending Dates Growing Season Length		
50 percent *	No occurrence	1/16 to 1/11 360 days	1/25 to 12/15 324 days

Climatological Data for POINT COMFORT, TX - August 2024

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2024-08-01	90	79	84.5	45	35	0.00	0.0	0
2024-08-02	90	79	84.5	45	35	0.00	0.0	0
2024-08-03	92	78	85.0	45	35	0.00	0.0	0
2024-08-04	94	79	86.5	47	37	0.00	0.0	0
2024-08-05	M	M	M	M	M	0.00	0.0	0
2024-08-06	95	78	86.5	47	37	0.00	0.0	0
2024-08-07	94	80	87.0	47	37	0.00	0.0	0
2024-08-08	95	80	87.5	48	38	0.00	0.0	0
2024-08-09	93	78	85.5	46	36	0.00	0.0	0
2024-08-10	96	76	86.0	46	36	0.01	0.0	0
2024-08-11	92	76	84.0	44	34	0.00	0.0	0
2024-08-12	92	82	87.0	47	37	0.00	0.0	0
2024-08-13	94	82	88.0	48	38	0.00	0.0	0
2024-08-14	94	81	87.5	48	38	0.00	0.0	0
2024-08-15	93	81	87.0	47	37	0.00	0.0	0
2024-08-16	94	81	87.5	48	38	0.00	0.0	0
2024-08-17	94	81	87.5	48	38	0.00	0.0	0
2024-08-18	94	79	86.5	47	37	0.00	0.0	0
2024-08-19	95	79	87.0	47	37	0.00	0.0	0
2024-08-20	96	80	88.0	48	38	0.00	0.0	0
2024-08-21	97	79	88.0	48	38	0.00	0.0	0
2024-08-22	97	83	90.0	50	40	0.00	0.0	0
2024-08-23	96	79	87.5	48	38	0.13	0.0	0
2024-08-24	93	79	86.0	46	36	0.00	0.0	0
2024-08-25	95	77	86.0	46	36	0.04	0.0	0
2024-08-26	94	76	85.0	45	35	0.03	0.0	0
2024-08-27	83	73	78.0	38	28	0.54	0.0	0
2024-08-28	90	72	81.0	41	31	0.02	0.0	0
2024-08-29	M	71	M	M	M	0.04	0.0	0
2024-08-30	90	75	82.5	43	33	0.03	0.0	0
2024-08-31	91	74	82.5	43	33	0.00	0.0	0
Average|Sum	**93.2**	**78.2**	**85.8**	**1336**	**1046**	**0.84**	**0.0**	**0.0**

Climatological Data for POINT COMFORT, TX - July 2024

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2024-07-01	92	79	85.5	46	36	0.00	0.0	0
2024-07-02	93	79	86.0	46	36	0.00	0.0	0
2024-07-03	92	79	85.5	46	36	0.00	0.0	0
2024-07-04	92	81	86.5	47	37	0.00	0.0	0
2024-07-05	93	80	86.5	47	37	0.00	0.0	0
2024-07-06	94	77	85.5	46	36	0.00	0.0	0
2024-07-07	95	75	85.0	45	35	0.00	0.0	0
2024-07-08	M	M	M	M	M	S	0.0	0
2024-07-09	92	73	82.5	43	33	2.60A	0.0	0
2024-07-10	93	77	85.0	45	35	0.00	0.0	0
2024-07-11	88	75	81.5	42	32	0.79	0.0	0
2024-07-12	84	75	79.5	40	30	0.08	0.0	0
2024-07-13	88	75	81.5	42	32	0.02	0.0	0
2024-07-14	86	77	81.5	42	32	0.00	0.0	0
2024-07-15	88	80	84.0	44	34	0.01	0.0	0
2024-07-16	92	80	86.0	46	36	0.00	0.0	0
2024-07-17	92	80	86.0	46	36	0.00	0.0	0
2024-07-18	92	80	86.0	46	36	0.00	0.0	0
2024-07-19	92	78	85.0	45	35	0.00	0.0	0
2024-07-20	87	73	80.0	40	30	0.29	0.0	0
2024-07-21	90	76	83.0	43	33	0.00	0.0	0
2024-07-22	99	78	88.5	49	39	0.34	0.0	0
2024-07-23	89	M	M	M	M	0.52	0.0	0
2024-07-24	85	68	76.5	37	27	0.85	0.0	0
2024-07-25	85	71	78.0	38	28	2.76	0.0	0
2024-07-26	81	69	75.0	35	25	0.38	0.0	0
2024-07-27	80	72	76.0	36	26	2.78	0.0	0
2024-07-28	80	72	76.0	36	26	1.81	0.0	0
2024-07-29	84	75	79.5	40	30	0.21	0.0	0
2024-07-30	90	80	85.0	45	35	0.00	0.0	0
2024-07-31	90	80	85.0	45	35	0.00	0.0	0
Average|Sum	**89.3**	**76.3**	**82.8**	**1248**	**958**	**13.44**	**0.0**	**0.0**

Climatological Data for POINT COMFORT, TX - June 2024

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2024-06-01	87	65	76.0	36	26	0.98	0.0	0
2024-06-02	84	77	80.5	41	31	4.70	0.0	0
2024-06-03	90	82	86.0	46	36	0.02	0.0	0
2024-06-04	89	81	85.0	45	35	0.03	0.0	0
2024-06-05	90	82	86.0	46	36	0.00	0.0	0
2024-06-06	88	69	78.5	39	29	0.88	0.0	0
2024-06-07	90	74	82.0	42	32	0.00	0.0	0
2024-06-08	90	78	84.0	44	34	0.00	0.0	0
2024-06-09	89	78	83.5	44	34	0.00	0.0	0
2024-06-10	90	79	84.5	45	35	0.00	0.0	0
2024-06-11	91	77	84.0	44	34	0.00	0.0	0
2024-06-12	91	78	84.5	45	35	0.00	0.0	0
2024-06-13	90	77	83.5	44	34	0.03	0.0	0
2024-06-14	92	78	85.0	45	35	0.00	0.0	0
2024-06-15	91	80	85.5	46	36	0.00	0.0	0
2024-06-16	91	81	86.0	46	36	0.00	0.0	0
2024-06-17	91	78	84.5	45	35	0.05	0.0	0
2024-06-18	91	78	84.5	45	35	0.08	0.0	0
2024-06-19	89	75	82.0	42	32	0.36	0.0	0
2024-06-20	80	76	78.0	38	28	2.81	0.0	0
2024-06-21	88	73	80.5	41	31	0.31	0.0	0
2024-06-22	88	73	80.5	41	31	0.00	0.0	0
2024-06-23	89	76	82.5	43	33	0.00	0.0	0
2024-06-24	88	76	82.0	42	32	0.11	0.0	0
2024-06-25	89	78	83.5	44	34	0.20	0.0	0
2024-06-26	91	81	86.0	46	36	0.00	0.0	0
2024-06-27	91	80	85.5	46	36	0.00	0.0	0
2024-06-28	92	81	86.5	47	37	0.00	0.0	0
2024-06-29	92	82	87.0	47	37	0.00	0.0	0
2024-06-30	92	82	87.0	47	37	0.00	0.0	0
Average|Sum	**89.5**	**77.5**	**83.5**	**1312**	**1012**	**10.56**	**0.0**	**0.0**