Water Features Delineation Report

Project Name

Project Limits, County(ies), State

CSJ(s)

Document Date (Month and Year)

#### Contact Information:

TxDOT Environmental Affairs Division

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Phone Number

Email address

TxDOT <Insert District Name> District

Name, Title

Phone Number

Email address

Limit contacts to one person each for ENV and District

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Attachment 2 – Historical Aerial Photographs

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Instructions for each attachment are provided on the attachment cover sheets.

# INTRODUCTION

All references to other locations in the report (e.g., Sections. Attachments, Tables, and Figures) within the body of the report must be shown in bold text.

The Texas Department of Transportation (TxDOT) conducted a water features delineation for a proposed road project on Road Name from XX to XX in City, County, Texas (CSJ XXXX-XX-XXX). The delineation was performed to evaluate the presence of water features and identify their boundaries within the project area. Field visits were conducted on X date and Y Date, 202X.The delineation was completed on Month, Day, Year.

Streams were delineated according to USACE Regulatory Guidance Letter (RGL) 05-05 Ordinary High Water Mark (OHWM) Identification for non-tidal waters and the Mean High Tide (MHT) line for tidal waters (2005). Per Section 404 of the Clean Water Act (CWA), wetlands were delineated using the routine method described in the USACE 1987 Wetlands Delineation Manual (1987 Manual) (1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0) dated 2010, Great Plains Region (Version 2.0) dated 2010, or Arid West Region (Version 2.0) dated 2008 (2008 or 2010 Regional Supplement) (2010). Wetland types and boundaries were determined through initial map review, followed by fieldwork involving the examination of three parameters: hydrology, vegetation, and soils. Delineation criteria and indicators for each of these parameters are outlined in the 1987 Manual and 2008 or 2010 Regional Supplement, which present wetland indicators, delineation guidance, and other information specific to the Name of Region. Wetlands were classified according to the Cowardin Classification System (1979) used for the United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI).

# PROJECT DESCRIPTION

Insert a project description here, making sure project information is consistent with information found in ECOS, or the environmental document (i.e., EA, or EIS) including project type (bridge replacement, roadway widening, new location roadway, etc.), roadway name, project limits, project location, project length, acreage of new right of way (ROW), and acreage of temporary or permanent easements. State whether right-of-entry (ROE) was granted for all portions of the project. If ROE was not granted for all or part of the project, please discuss which parcels did not have ROE and how parcels with no ROE were assessed (aerial interpretation, view over a fence, etc.). Use the blanket term “desktop delineation” to describe those water features, or portions of water features, delineated using non-field data.

See **Attachment 1** for maps of the project area. **Figure 1** provides a vicinity map that depicts the location of the project area, and **Figure 2** is an aerial overview map of the project area.

# METHODOLOGY AND RESULTS

The following information sources were considered and, if applicable, consulted prior to and during the field delineation to assist in the identification of potential water features within the project area.

## USGS Topographic Maps

United States Geological Survey (USGS) topographic maps illustrate elevation contours, drainage patterns, and hydrography. The xxx, Texas, USGS Quad map dated year(s) was/were reviewed to assist in determining the location and type of water features within the project area. See **Figure 3** in **Attachment 1** for a 7.5-minute series USGS topographic overview map.

Insert a paragraph summarizing observations from topographic maps. Multiple years of topographic maps should be included based on availability. According to the topographic map, the elevation throughout the project area ranges from approximately 550 feet to 650 feet. The topographic map shows a total of twelve intermittent streams within the project limits. Those streams west of SH 78 flow southwest to Lavon Lake. Streams between SH 78 and CR 648 flow south to Elm Creek which flows west to Lavon Lake. One stream between CR 648 and CR 547 flows south to South Lake. Cowskin Creek and Brushy Creek flow south where they merge and continue south to the Sabine River.

## Mapped Water Features

The U.S. Fish and Wildlife National Wetland Inventory (NWI) and U.S. Geological Survey National Hydrography Dataset (NHD) data was reviewed as contributing resources to help identify potential water features located within the project area.

No NWI or NHD features were identified within the project area. AND/OR See **Figure X** in **Attachment 1** for mapped NWI and/or NHD features. Mapped NWI and NHD features are discussed in **Section 3.9** of this report.

## Aerial Photography

Aerial photography provides good insight to the state and function of land resources. Signs of inundation and vegetative signatures on aerial images indicate whether land might be functioning as a wetland or supporting a stream system. Historical and current aerial photography were reviewed utilizing Google Earth (2015) prior to and during the field and/or desktop delineation to further understand the nature of the project area and better understand the context of water features within the project area.

The table below summarizes observations for the project area for each year reviewed. See **Attachment 2** for historical aerial photographs reviewed.

Styles associated with Tables include Caption, Table Text, and Table Header Row. Styles are applied to the tables in the Template. Tables are formatted for accessibility.

Table 1. Summary of Historical Aerial Photography Observations

|  |  |
| --- | --- |
| Year | Observations |
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## FEMA FIRM

The Federal Emergency Management Agency (FEMA) maintains flood insurance rate maps (FIRMs) that depict mapped floodplains. FEMA FIRM data was reviewed to evaluate the location of mapped floodplains in relation to water features located within the project area (FEMA 2011). Refer to **Figure X** in **Attachment 1** for an illustration of the FEMA FIRM data within and surrounding the project area. OR FEMA FIRM data was not available for the project area (FEMA 2011).

## LiDAR

Light detection and ranging (LiDAR) is a remote sensing technique that measures spatial and temporal data. LiDAR produces high resolution, accurate, land-elevation information and can be used to map the potential distribution of current and historic wetlands. LiDAR information was obtained from the Texas Geographic Information Office database to assist in evaluating elevation changes throughout the project area. OR LiDAR data was not available for the project area.

If applicable, insert a description of LiDAR data here. See **Figure X** in **Attachment 1** for LiDAR data within the project area.

## Soils

### NRCS Soil Survey

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) maintains an online Web Soil Survey database (USDA NRCS 2024a). The data provided in the Web Soil Survey provides a good basis for the soil textures and types expected to be found at a particular delineation area. NRCS-mapped soil types at the project area were reviewed to determine which of the soils exhibit hydric characteristics. NRCS‑mapped soil types are assigned a hydric indicator status of “hydric” or “non-hydric” by the National Technical Committee for Hydric Soils (USDA NRCS 2024b).

NRCS soil data was reviewed to evaluate the mapped soils within the project area. OR NRCS data was not available for the project area. If applicable, insert description of NRCS mapped soils here. See **Figure X** in **Attachment 1** for NRCS data within the project area.

### Observed Soils

Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper horizons. Anaerobic conditions created by repeated or prolonged saturation or flooding result in permanent changes in soil color and chemistry. The changes in soil color are used to differentiate hydric from non-hydric soils.

At each sample point, in areas where the absence of inundation or heavy saturation allowed, a pit was excavated to a depth of at least 16 inches to reveal soil profiles and to determine if positive indicators of hydric soils were present. Hydric soil indicators relate to color, structure, organic content, and the presence of reducing conditions. Color characteristics (Hue, Value, and Chroma) were recorded using Munsell® Soil Color Charts (2022).

Insert whether normal circumstances or naturally problematic conditions were present, and a description of typical soils found onsite (e.g., color and texture). No sample points exhibited hydric soils within the project area. OR See the wetland determination data forms in **Attachment 3** for specific soil data recorded at each sample point. Soils are discussed for each water feature delineated in **Section 3.9** of this report.

## Hydrology

### Antecedent Precipitation Tool

The Antecedent Precipitation Tool (APT) is an automation tool that the USACE developed to facilitate the comparison of antecedent, or recent, rainfall conditions for a given location to the range of normal rainfall conditions that occurred during the preceding 30 years. Using daily rainfall data, the APT calculates 30-day rolling totals for each of the three 30-day periods preceding the observation date. For each period, a weighted condition value is assigned by determining whether the 30-day total falls within, above, or below the 30th to 70th percentiles of precipitation totals from the same date range over the preceding 30 years. The weighted condition values are then summed across the three 30-day periods to calculate a final precipitation normalcy index score. An index score of 9 or lower indicates antecedent precipitation conditions are drier than normal; a score of 10-14 indicates conditions are normal; and a score of 15 or higher indicates conditions are wetter than normal (EPA 2021).

The APT was used to conduct a typical year analysis for the date of delineation fieldwork to determine if the site was experiencing average, above average, or below typical hydrology. Fieldwork was conducted on date(s). A single point method using the latitude and longitude coordinates for the site was utilized to adequately represent the data sources available via the APT for an appropriate analysis of onsite climatic conditions. The analysis demonstrated the site on date(s), representing a time of year referenced as the wet/dry season, was experiencing wetter/drier than normal OR average climatic conditions. See **Attachment 4** for APT results.

### Observed Hydrology

Wetland hydrology is characterized when, under normal circumstances, the surface is either inundated or the upper horizon(s) of the soil are saturated at a sufficient frequency and duration to create anaerobic conditions. Seasonal and long-term rainfall patterns, local geology and topography, soil type, local water table conditions, and drainage are factors that influence hydrology.

Wetland hydrology indicators include the following: oxidized rhizospheres along living roots, saturated soils, standing surface water, algal mat, aquatic fauna, high water table, iron deposits, sparsely vegetated concave surface, geomorphic position, moss trim lines, water-stained leaves, crawfish burrows, watermarks, drainage patterns, and surface soil cracks. During the field survey, these indicators were used to determine if an area exhibited wetland hydrology.

Insert description of hydrology indicators found onsite. See **Attachment 3** for specific hydrology indicators recorded at each sample point. Hydrology is discussed for each water feature delineated in **Section 3.9** of this report.

## Vegetation

In accordance with the procedure set forth in the 1987 Manual and the 2008 or 2010 Regional Supplement, the hydrophytic status of vegetation communities was determined by identifying dominant species and, if necessary, calculating a "Prevalence Index," as defined in the 1987 Manual.

Individual plant species were checked against the (current date) National Wetland Plant List (USACE 2023), and their regional wetland indicator statuses were determined. Species are classified as follows:

* Obligate Wetland (OBL) if they almost always occur in wetlands (>99 percent of the time)
* Facultative Wetland (FACW) if they usually occur in wetlands (67-99 percent of the time)
* Facultative (FAC) if they are equally likely to occur in wetlands and non-wetlands (34‑66 percent of the time)
* Facultative Upland (FACU) if they usually occur in non-wetlands (67-99 percent of the time)
* Obligate Upland (UPL) if they almost always occur in non-wetlands (>99 percent of the time)
* No indicator (NI) status for those species for which insufficient information is available to determine an indicator status

Hydrophytic vegetation is considered prevalent where more than 50% of the dominant species in a plant community have an indicator status of OBL, FACW, or FAC. However, in cases where the vegetation community does not meet this hydrophytic threshold, but indicators of hydric soils and wetland hydrology are present, the prevalence index can be applied. Calculation of this index is based on consideration of both dominant and non-dominant plants in each stratum of the vegetation community, whereby each indicator status category is given a numeric code and weighted by absolute percent cover. The prevalence index ranges from 1 to 5 and an index of 3.0 or less signifies that hydrophytic vegetation is present.

Insert description of general vegetation communities present (e.g., PFO, tidal marsh, maintained ROW, etc.) found onsite. No sample points exhibited hydrophytic vegetation within the project area. AND/OR See the wetland determination data forms in **Attachment 3** for specific vegetation recorded at each sample point.

## Water Features Delineation

Delineation of any non-tidal waterbodies located within the project area followed the methodology outlined in RGL 05-05. With respect to any tidal waterbodies located within the site, the mean high tide (MHT) line was identified by observing changes in vegetation, drift deposits of shells and debris, and physical markings or characteristics along the shoreline that may indicate the general height reached by a rising tide.

Data collected for any waterbodies includes average water depth, average width per waterbody, length of linear segments within the project boundary, and water flow classification (i.e., tidal, non-tidal, ephemeral, intermittent, and/or perennial).

The wetland delineation was conducted based on the 1987 Manual and the 2008 or 2010 Regional Supplement. Hydrology, soils, and vegetation data was collected at sample points within the project area. All three indicator parameters must be met for the area to be classified as a wetland.

Geospatial data was collected utilizing a specify Trimble unit used with sub-meter accuracy. For U. S. Army Corps of Engineers Galveston District (SWG) projects only, include the following required text: All geospatial data was collected in accordance with the April 21, 2016, memorandum from the Galveston District of the USACE entitled, ‘SWG-Standard Operating Procedures: Recording and Submitting Jurisdictional Delineations Using Global Positioning Systems (GPS) and Geographic Information Systems (GIS) Tools and Technologies.” The GPS data table is included as **Attachment 6**.

No wetland features were identified within the project area. AND/OR No streams were identified within the project area. See **Figure X** in **Attachment 1** for a depiction of the location within the project area where sample point data was collected. AND/OR **Table 2** summarizes the water features identified within the project area. See **Figure X** in **Attachment 1** for a depiction of the boundaries of each water feature, as well as the location within the project area where sample point data was collected. See **Attachment 3** for the completed wetland determination data forms for the project. See **Attachment 5** for one or more photographs of each water feature observed within the project area.

Water features, including potentially jurisdictional ditches, must be numbered 1, 2, 3, etc., consecutively from one end of the project to the other. Please present potentially jurisdictional ditches as a polygon, as with other water features. For likely non-jurisdictional roadside ditches, please combine them into one water feature as the last row in the table, as presented in the example ditches row. Please present likely non-jurisdictional ditches as a line feature on the Water Features Map, Figure X, Appendix 1.

Numerical values of water features in acres must be rounded to the nearest hundredth (e.g., 0.01 acre); however, if rounding results in a zero value (i.e., 0.00 acre) or is otherwise not appropriate for a given water feature, acres for that water feature must be rounded to the nearest thousandth (e.g., 0.001). If one or more water features have acres that are rounded to the nearest thousandth, the acres total for all water features combined must be rounded to the nearest thousandth. Numerical values of water features in linear feet must be rounded to the nearest whole number (e.g., 1 foot).

Table 2. Summary of Water Features

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Water Feature Number | Name | Type | Latitude, Longitude | Acres within Project Area (all water features) | Linear Feet (linear water feature only) | Potentially Navigable (Section 10)? |
| 1 | WD-25 | PSS |  | 0.12 | n/a | no |
| 2 | S-01 (Big Branch) | Perennial Stream |  | 0.097 | 151 | no |
| 3 | RD-10 | Roadside Drainage Ditches |  |  | 1,000 | no |

Describe each water feature identified within the project area and discuss flow and connectivity to downstream waters (in situations where multiple water features exhibit the same descriptors, they may be discussed together to avoid an exorbitant amount of duplicative text), depth to OHWM, and any problematic conditions. Additional relevant information can be added to this template to better explain an unusual circumstance, site conditions, etc. Avoid any discussion on jurisdiction, impacts, and permitting in this section of the report. Example text is below.

#### Water Feature 1 (WD-25)

Water Feature (WF) 1 (WD-25) is a palustrine scrub-shrub (PSS) wetland measuring 0.12 acre and located within a depression along the western portion of the project site. WF 1 is not depicted in topographic or NWI maps. WF 1 is fed by WF 2 (S-01). During the site investigation, approximately 1 inch of standing water was observed within WF 1. Soils underlying the WF 1 are mapped as “Melhomes soils, frequently flooded,” which is a hydric soil type in Newton County. Vegetation within WF 1 was dominated by hydrophytic plant species. See **Attachment 3**, Wetland Determination Data Form WD-25, for detailed information. See **Attachment 5**, Photos 5 and 6, for a depiction of WF 1.

#### Water Feature 2 (S-01)

WF 2 (S-01) is a perennial stream that crosses the center of the project area. It is depicted as a perennial stream on topographic maps and as a perennial riverine feature (R5UBH) on NWI maps. Two segments of WF 2 totaling 151 linear feet (0.097 acre) occur within the project area: a 28-linear-foot (0.05-acre) segment that runs within a concrete box culvert under an existing bridge, and the remaining 123-linear-foot (0.047-acre) segment. During the site investigation, approximately 1 foot of flowing water was observed within the channel, which has a defined bed and bank and OHWM of approximately 10-12 feet. WF-2 flows generally to the south, and traverses approximately 3.68 miles to the east of the project area, where it has a confluence with the Sabine River. Soils underlying the channel are mapped as “Melhomes soils, frequently flooded,” which is a hydric soil type in Newton County. Areas along WF 2 were evaluated for the presence of adjacent wetlands, of which one was identified (WF 1). Floodwater from WF 2 feeds WF 1 (WD-25).

#### Water Feature 3 (Roadside Drainage Ditches)

Roadside drainage ditches excavated to convey runoff from the transportation system, along with culverts under crossroads and driveways, occur throughout the project area and generally follow along main lanes. The ditches typically consist of shallow swales containing upland plant species consistent with those found within the maintained ROW vegetation community. These roadside ditches appear to have been constructed or excavated in uplands to convey surface water, do not appear to have been excavated within or relocate a tributary, and do not appear to have been constructed within adjacent wetlands.

# CONCLUSION

Do not address potential impacts or permitting within this report.

A water features delineation was conducted for the Road Name Project Name from XX to XX in City, County, Texas (CSJ XXXX-XX-XXX). The field delineation was completed on Month Day, Year. Based on desktop data and field delineation results, 39 water features were identified within the project area: one perennial stream, 15 intermittent streams, 11 wetlands (six of which are forested), 11 ponds, and numerous roadside drainage ditches (counted as one water feature). Refer to Section 3.9 and Table 2, above, for a description of each water feature. See **Figure X** in **Attachment 1** for a depiction of all water features within the project area.

For SWG only, draft rationale for potential jurisdictional status of each water feature. Do not discuss jurisdiction with USACE districts other than SWG. Example text for SWG below-

Of the 12 water features identified within the project area, eight are potentially jurisdictional, and three are likely non-jurisdictional.

* Stream 1 and Stream 2 are relatively permanent waters (RPWs) that exhibit a direct downstream connection to a TNW. Stream 1 and Stream 2 are tributaries to Camp Creek, which flows into Caney Creek, a TNW. Due to Stream 1 and Stream 2’s continuous surface connection to a TNW, the USACE will likely assert jurisdiction over these features.
* Wetlands 1-6 are either directly abutting or adjacent to RPWs with a downstream connection to a TNW; therefore, the USACE will likely assert jurisdiction over Wetlands 1-6.
* Four (4) agricultural stock ponds were observed to be excavated wholly within uplands. These features are not associated with any defined streams with a downstream connection to a TNW and are located outside of the 100-year floodplain; therefore, the professional opinion offered in this report is that the above referenced features would likely not be considered jurisdictional by the USACE.

The professional opinion offered in this report is based on best professional judgement.

# LITERATURE CITED

The citations below are provided as examples and should be reviewed and confirmed so that this list only includes literature cited in the text of the document or figures.

Cowardin, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. Jamestown, ND: Northern Prairie Wildlife Research Center Online (Version 04DEC1998). Available at: <http://www.npwrc.usgs.gov/resource/wetlands/classwet/index.htm>. Accessed February 2022.

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U.S. Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0), ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-10-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

Attachment 1 - Figures

All Figures must contain a Figure number, legend, north arrow, scale, data source and date, project name, project CSJ, project vicinity and location inset, major roads labels, and major waterbodies and water feature labels. LiDAR must be color coded (not greyscale) by elevations range (e.g., blue equals 100-200 feet). All features, descriptors, labels, etc., must be readable. Do not use 100% filled polygons for delineated features; instead display them so the aerial photograph is visible. For projects that include parcels without right-of-entry (ROE), include those areas on the Figures along with a notation stating lack of ROE. Roadside ditches must be referred to as “roadside drainage ditches and not “ditch” or “drainage ditch.”

Attachment 2 - Historical Aerial Photographs

Include historical aerial imagery, starting with the newest photographs first.

Attachment 3 - Wetland Determination Data Forms

Document presence or lack of the three (3) criteria for waters at all sample points. Delineation forms must be filled out completely.

Attachment 4- Antecedent Precipitation Tool Results

APT must include all dates of the site visit(s).

Attachment 5- Site Photographs

Photographs taken during the site visit(s) include a minimum of 1 photograph per sampling location. Site photographs must include coordinates of the representative site photos within the photo caption, as well as list the direction in which the site photograph was taken. Water feature number must be identified in the caption of each photo, as applicable. Maximum of two photos per page.

Attachment 6 - GPS Data Table

For projects located within the jurisdiction of the USACE Galveston District, follow the SWG-Standard Operating Procedures: Recording and Submitting Jurisdictional Delineations Using Global Positioning Systems (GPS) and Geographic Information Systems (GIS) Tools and Technologies.

This report was written on behalf of the Texas Department of Transportation by

Insert Organization Info and/or Logo Here