



# Wetlands/Waters of the U.S. Delineation Report

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US Highway 79 from Interstate Highway 35 to  
Farm-to-Market Road 1460

Round Rock, Williamson County, Texas

CSJs: 0204-01-063

Cox|McLain Environmental Consulting, Inc.

September 2018

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT.

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## 1.0 Introduction and Purpose

The Texas Department of Transportation (TxDOT) Austin District is proposing improvements to United States Highway 79 (US 79) between Interstate Highway 35 (I-35) to Farm-to-Market Road 1460 (FM 1460) within the city of Round Rock in Williamson County, Texas. **Figure 1** and **Figure 2** provide an aerial and topographic view of the project area.

Within the project limits, US 79 consists of four 12-foot main lanes (two in each direction) with 10-foot outside shoulders. Some locations along the corridor have a 14-foot wide central turn lane. The existing US 79 right-of-way (ROW) varies from 150 to 300 feet wide.

Proposed improvements include widening the existing US 79 roadway to add a third travel lane in each direction and installing a raised median for safety. Improvements to intersections would include potential overpasses at US 79/Mays Street and US 79/FM 1460, and altering the US 79/I-35 Intersection. Driveways and access points would be modified to improve safety and traffic flow. The proposed improvements also include installing shared-use paths on both sides of US 79 to improve pedestrian and bicycle accommodations. The proposed project would require approximately 8.97 acres of new right-of-way.

The purpose of this report is to identify, delineate, and describe potentially jurisdictional waters, including wetlands, located within the existing project right-of-way and proposed detention pond location to assist in avoidance of impacts and determine whether U.S. Army Corps of Engineers (USACE) permit authorization would be required. Conclusions contained in this report are the opinions of the professionals conducting the study and are subject to confirmation by the USACE Fort Worth. The USACE regulates the discharge of dredged and fill material into wetlands and other waters of the U.S. under Section 404, subsection 330.5(a)(21) of the Clean Water Act. Section 10 of the Rivers and Harbors Act of 1899 authorizes the USACE to regulate any work in or affecting navigable waters of the U.S. Authorization is required from the USACE for any activity that would result in the discharge of dredged or fill material into wetlands and other waters of the U.S. Regulated activities may be permitted through the USACE via Individual Permits, Regional General Permits, Nationwide Permits, or Letters of Permission.

### Project Information

|                         |  |
|-------------------------|--|
| <b>Project Area:</b>    | US 79 from I-35 to FM 1460, within Williamson County, Texas<br>( <b>Figure 1</b> ) |
| <b>Size:</b>            | The length of the proposed project is approximately 2.6 miles                      |
| <b>County:</b>          | Williamson County, Texas   |
| <b>USGS 7.5' Quads:</b> | <i>Round Rock, Texas</i> ( <b>Figure 2</b> )                                       |
| <b>Client:</b>          | TxDOT Austin District  |
| <b>Client Address:</b>  | 7901 N Interstate Hwy 35, Austin, Texas 78753                                      |
| <b>Client Contact:</b>  | Hilda Ortiz  |

## 2.0 Methods

### 2.1 Data Review

Qualified wetland ecologists reviewed several published data resources prior to the field visit to identify potentially jurisdictional crossings. Sources consulted included National Wetland Inventory (NWI) maps, the National Hydrography Dataset, the Natural Resources Conservation Service (NRCS) Soil Survey for Williamson County, U.S. Geological Survey (USGS) 7.5-minute quadrangle sheets (*Round Rock, Texas*), Geologic Atlas of Texas maps (Austin sheet), Federal Emergency Management Agency (FEMA) floodplain maps, and recent and historical aerial photography.

### 2.2 Field Delineation

Qualified wetland ecologists conducted field investigations in March 2018 within the existing and proposed right-of-way. The routine method of wetland delineation outlined in the *Field Guide for Wetland Delineation: 1987 Corps of Engineers Manual* (WTI 1991) and updated in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region, Version 2.0* (USACE 2010) was utilized for wetland determinations within the project area. Field activities focused on wetlands and waters of the U.S. delineation and description.

The *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) defines wetlands based on three criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. In general, all three criteria must be present for an area to qualify as a wetland. Some exceptions can occur in disturbed areas or in newly formed wetlands where one indicator (such as hydric soils) might be lacking. These areas would be dealt with on an individual basis as outlined in the *Field Guide for Wetland Delineation* (WTI 1991) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual Great Plains Region, Version 2.0* (USACE 2010).

In addition to the jurisdictional wetlands defined above, the Clean Water Act regulates impacts to other waters of the United States. The term “waters of the United States” has broad meaning and incorporates both deepwater aquatic habitats and special aquatic sites, including wetlands, as listed below:

- The territorial seas with respect to the discharge of fill material
- Coastal and inland waters, lakes, rivers, and streams that are navigable waters of the United States, including their adjacent wetlands
- Tributaries to navigable waters of the United States, including adjacent wetlands
- Interstate waters and their tributaries, including adjacent wetlands

On August 28, 2015, the EPA finalized the Clean Water Rule: Definition of “Waters of the United States” (EPA 2015a). However, on October 9, 2015, the U.S. Court of Appeals for the Sixth Circuit issued a stay of the rule (EPA 2015b).

For linear waters of the United States, the Ordinary High Water Mark (OHWM) was determined by assessing a combination of factors at each site. In accordance with Sec. 328.3(e) of the Clean Water Act (CWA) and Regulatory Guidance Letter 05-05 (USACE December 5, 2005), the following factors were considered in determining the jurisdictional boundary:

- Natural line impressed on the bank
- Shelving
- Changes in the character of soil
- Destruction of terrestrial vegetation
- Presence of litter and debris
- Wracking
- Vegetation matted down, bent, or absent
- Sediment sorting
- Leaf litter disturbed or washed away
- Scour
- Deposition
- Multiple observed flow events
- Bed and banks
- Water staining
- Change in plant community
- Other appropriate means that consider the characteristics of the surrounding areas

Following the completion of preliminary data gathering and synthesis, the routine method of wetland determination was used to identify potentially jurisdictional areas within the existing ROW. Potential waters of the U.S. were evaluated in the field and localized hydrologic characteristics and the dominant vegetative species observed at the site were described. Locations where wetland determination data forms were completed are shown in **Figures 6a–6d**.

Photographs of the evaluated crossings are included in **Attachment B** of this report. Wetlands/waters of the U.S. boundaries were recorded using a handheld Trimble GeoXT Global Positioning System (GPS) unit in a manner consistent with USACE Fort Worth District survey guidance and confirmed using aerial photography; these are shown in **Figures 6a–6d**. GPS data was post-processed using Trimble Pathfinder Office software to achieve sub-meter accuracy.

## 3.0 Results

### 3.1 General Description of the Project Area

#### *Vicinity and Project Area*

The proposed project area is located within Williamson County, Texas. The existing right-of-way is dedicated to transportation use. Land surrounding the existing roadway right-of-way, consists of commercial uses, residential development, and a small amount of undeveloped land.

#### *Geology*

The project area is underlain by several geologic formations: Alluvium and Fluvial terrace deposits; Del Rio Clay and the Georgetown Formation; Edwards Limestone, Buda Limestone, and the Eagle Ford Group (TNRIS 2007) (**Figure 3**). Edwards Limestone, with a thickness of 60 to 350 feet, is composed of limestone, dolomite, and chert, which often displays a “honeycombed” pattern and cavernous voids forming an aquifer. More than 95 percent of the caves in Williamson County occur within the Edwards Formation (Reddell and Finch 1967). Del Rio Clay and the Georgetown Formation are mapped together, both run north-south through the central part of Williamson County and have an average thickness of 40-70 feet and 30-80 feet, respectively. Although not as consistent in its cave-forming characteristics as the Edwards Limestone, several caves and systems are known from the Georgetown Formation (Reddell and Finch 1967). Buda Limestone is a fine-grained mixture of bioclastic (mollusc-fragment-bearing) marl with a formation of 45 to 100 feet thick. The Eagle Ford Group is a mixture of shale and limestone, with an average thickness of 25 to 65 feet. Both the Alluvium and Fluvial deposits are associated with terraces and floodplains surrounding streams and rivers and often contain gravel (TNRIS 2007).

#### *Soils*

Information regarding soils within the project corridor was obtained from the U.S. Department of Agriculture NRCS Soil Surveys for Williamson County (NRCS 2016). Thirteen soil map units are found within the proposed project area. Information on soils is included in **Table 1** and the soils are shown in **Figure 4**. None of the soil map units are listed in the *National Hydric Soils List* as a hydric soil, though one may contain hydric inclusions (NRCS 2015).

*Table 1: Project Area Soils*

| Soil Map Unit Code | Soil Map Unit                       | Hydric (Yes/No) |
|--------------------|-------------------------------------|-----------------|
| BrA                | Branyon clay, 0 to 1 percent slopes | No              |
| BrB                | Branyon clay, 1 to 3 percent slopes | No              |

| Soil Map Unit Code | Soil Map Unit  | Hydric (Yes/No) |
|--------------------|--|-----------------|
| CfA                | Crawford clay, 0 to 1 percent slopes                               | No              |
| CfB                | Crawford clay, 1 to 3 percent slopes                               | No              |
| DoC                | Doss silty clay, moist, 1 to 5 percent slopes                      | No              |
| FaA                | Fairlie clay, 0 to 1 percent slopes                                | No              |
| GsB                | Georgetown stony clay loam, 1 to 3 percent slopes                  | No              |
| HuC2               | Houston black clay, 3 to 5 percent slopes, moderately eroded       | No              |
| KsA                | Krum silty clay, 0 to 1 percent slopes                             | No              |
| KsB                | Krum silty clay, 1 to 3 percent slopes                             | No              |
| Of                 | Oakalla silty clay loam, 0 to 2 percent slopes, frequently flooded | No*             |
| QuC                | Queeney clay loam, 1 to 5 percent slopes                           | No              |
| SuB                | Sunev silty clay loam, 1 to 3 percent slopes                       | No              |

\*May contain hydric inclusions.

Source: NRCS 2016.

### *Regional Vegetation*

Vegetation types within the US 79 project area, as determined during field visits by qualified biologists, include Edwards Plateau: Live Oak Motte and Woodland, Native Invasive: Deciduous Woodland, Blackland Prairie: Disturbance or Tame Grassland, Edwards Plateau: Floodplain Hardwood Forest, and Urban Low Intensity. The existing project right-of-way is a mixture of mowed and maintained vegetation along with landscaped yards and gardens.

### *Hydrology*

The project area is located within the Brazos River Basin. It lies within the Flood Insurance Rate Map (FIRM) Panel 48491C0495E and intersects the 100-year FEMA floodplain associated with Onion Branch (**Figure 5**) (FEMA 2018).

To determine the normality of rainfall at the time of the site assessment, both current rainfall data and historical data were obtained from the NRCS Climate Analysis for Wetlands Tables (WETS) Station in Georgetown, Texas, approximately 14.5 miles north of the project area (NRCS 2018) The tables are included in **Attachment C**. The recent local precipitation data is summarized in **Table 2**, and current condition was determined by the NRCS method (NRCS

1997). Based on these calculations, normal conditions were present during the time of the March 2018 field assessment.

*Table 2: Local Rainfall Evaluation*

|  | Prior Month                     | WETS Rainfall Percentile  |                           | 2017-18 Measured Rainfall (inches) | Condition Value <sup>1</sup> | Month Weight <sup>2</sup> | Product of Condition Value and Month Weight |
|--|---------------------------------|---------------------------|---------------------------|------------------------------------|------------------------------|---------------------------|---|
|  |                                 | 30 <sup>th</sup> (inches) | 70 <sup>th</sup> (inches) |                                    |                              |                           |   |
|  | 1 <sup>st</sup> – February 2018 | 0.98                      | 2.84                      | 2.72                               | 2                            | 3                         | 6   |
|  | 2 <sup>nd</sup> – January 2018  | 0.93                      | 2.65                      | 0.10                               | 1                            | 2                         | 2   |
|  | 3 <sup>rd</sup> – December 2017 | 1.02                      | 2.93                      | 3.07                               | 3                            | 1                         | 3   |
|  |                                 |                           |                           |                                    |                              | Sum <sup>3</sup> :        | 11  |

Source: NRCS 2018

- Notes:
1. Condition Value: 1 = dry, 2 = normal, 3 = wet
  2. Month Weight Value: highest value assigned to the most recent month
  3. Condition: drier than normal (sum is 6-9), normal (sum is 10-14), wetter than normal (sum is 15-18)

Wetland hydrology was primarily determined in the field by considering frequency and duration of inundation through visual observations of saturation, and the presence of other primary and secondary wetland hydrology indicators. Observed hydrology indicators included surface water (A1), saturation (A3), drift deposits (B3), water-stained leaves (B9).

### 3.2 Description of Wetlands/Waters in the Project Area

Qualified wetland ecologists investigated four hydrologic features. These features included three linear water features, which were identified through desktop review and field investigations, and a cluster of ponds that are indicated on historic topographic maps, historic aerials, and current NWI maps. These ponds are indicated between FM 1460 and the project's eastern terminus (**Figure 5**). Two of the three linear features were identified as potential waters of the U.S., and the others were determined to be man-made features in upland areas. Additional discussion of each of these features is included below and summarized in **Table 3**. The wetland determination data points assessed in the field and the crossing locations are depicted on **Figures 6a–6d**.

#### *Crossing 1 (Onion Branch)*

Onion Branch flows generally from north to south under US 79 toward its confluence with Brushy Creek. US 79 is carried over Onion Branch by an existing bridge. USGS topographic maps and NHD maps identify Onion Branch as an intermittent stream. NWI identifies Onion Branch as a freshwater emergent wetland [PEM1C – Palustrine (P), Emergent (E), Persistent (1), Seasonally Flooded (C)]. Within the project area, Onion Branch is located within the 100-year FEMA floodplain. Soil underlying Crossing 1 is mapped as Oakalla silty clay loam, 0 to 2

percent slopes, frequently flooded, which is not listed as a hydric soil, but it may contain hydric inclusions.

Flowing water was observed in Onion Branch at the time of the field visit; however, the water was principally in pools (1-14 inches deep) and the flow between the pools was almost imperceptible. Hardened underground utility infrastructure (e.g., concrete-encased wastewater pipes) formed the majority of the pools by impounding flow in Onion Branch. Other pools were apparently the result of scour, especially in the vicinity of existing bridge piers. Exposed bedrock constituted the majority of the stream bottom with adjacent low terraces of sand and gravel. Wetland Determination Data Form 1 and 2 were completed adjacent to the stream (**Attachment C**).

Vegetation adjacent to the stream was sparse due to the prevalence of scoured limestone bedrock. Green ash (*Fraxinus pennsylvanica*) was the dominant woody species adjacent to the stream. Live oak (*Quercus fusiformis*) and cedar elm (*Ulmus crassifolia*) were prevalent on the bluffs above the stream. Green ash comprised the scant sapling/shrub layer. Purple love grass (*Eragrostis pectinacea*), giant ragweed (*Ambrosia trifida*), and straggler daisy (*Calyptracarpus vialis*) were among the herbaceous species observed. Greenbriar (*Smilax bona-nox*) was the dominant woody vine in the area. See **Figure 5**, **Figure 6a**, and **Photos 1 – 11**.

Field observations conform to the categorization of Onion Branch as an intermittent stream. Approximately 0.08 acres and 205 linear feet of Onion Branch occur in the project area with an OHWM of approximately 17 feet. No wetlands were identified in the vicinity of Crossing 1.

#### *Crossing 2 (Brushy Creek Spring)*

Brushy Creek Spring emanates from the floor of an existing box culvert, and the spring flows southward through the culvert to Brushy Creek. The existing box culvert is a stormwater management structure that carries surface flow from areas north of US 79 to Brushy Creek. The spring discharges to the culvert under the US 79 right-of-way from cracks and joints in the culvert floor. USGS topographic maps, NHD maps, and NWI maps show no features in the vicinity of the spring or near the stormwater infrastructure north of US 79. The culvert and its outfall were installed in the side of a bluff above Brushy Creek and outside of the 100-year FEMA floodplain. Soil underlying Crossing 2 is mapped as Crawford clay, 0 to 1 percent slopes, which is not listed as a hydric soil.

The geologic assessment completed for this project classified this spring as ephemeral with a direct hydrological connection to Brushy Creek. Access to the culvert was granted and gained from the areas north of US 79. The spring was flowing at the time of the field visit and created a sheet of flowing water across the floor of the culvert less than 1 inch deep. Areas of the spring run that are within the project area are enclosed in the culvert and vegetation is absent. The culvert's inlet (north of US 79) and its outfall (south of US 79) are outside of the project area. The culvert is installed several feet below the grade of US 79, and its depth exceeds the depths of excavation proposed for this project. As stated above, the spring run is confined to the culverts in the project area. GPS measurements of the hydrologic limits of the feature

within the project area were not possible; therefore, the precise locations of the spring's discharge points and the lateral extent of the feature are unknown. The proposed improvements to US 79 would not require modification of the existing culvert. See **Figure 5**, **Figure 6a**, and **Photos 12 – 15**.

#### *Crossing 3 (Manmade Ponds)*

Crossing 3 consists of three lacustrine features within and adjacent to the project area between FM 1460 and the project's eastern terminus. Onion Branch flows generally from north to south under US 79 toward its confluence with Brushy Creek. US 79 is carried over Onion Branch by an existing bridge. USGS topographic maps and NHD maps identify these features as ponds. NWI classifies the features as freshwater ponds [PUBHh – Palustrine (P), Unconsolidated Bottom (UB), Permanently Flooded (H), Diked/Impounded (h)]. freshwater emergent wetland [PEM1C – Palustrine (P), Emergent (E), Persistent (1), Seasonally Flooded (C)]. One or more of these ponds is evident in historical aerial imagery from as early as 1953 and all three are evident in imagery from 1972 (**Attachment E**). The features do not occur within the 100-year FEMA floodplain. Soil underlying Crossing 3 is mapped as Branyon clay, 1 to 3 percent slopes, which is not listed as a hydric soil.

Field observations revealed that these features have been obliterated by recent commercial development and no sign of them was found. See **Figure 5**, **Figure 6c**, and **Photos 16 – 18**.

#### *Crossing 4 (Manmade Ditch)*

Crossing 4 is a manmade ditch that drains stormwater from upland areas north of US 79 and carries it southward toward a system of ditches adjacent to the Union Pacific Railroad right-of-way and eventually to Brushy Creek. USGS topographic maps, NHD maps, and NWI maps show no features in the vicinity of the manmade ditch. The manmade ditch is evident in historical aerial imagery from as early as 1941 and it appears largely unchanged in recent aerial imagery (**Attachment E**). Soil underlying Crossing 4 is mapped as Branyon clay, 1 to 3 percent slopes, which is not listed as a hydric soil.

Standing water, approximately 2 inches deep, was observed in the manmade ditch at the time of the field visit. Erosional scour had removed vegetation from the bottom of the ditch and clear shelving was observed at the approximate height of the standing water. The limits of this channel were delineated and are identified on **Figure 6d**. The banks off the manmade ditch were trapezoidal, approximately 5 feet deep, and steeply sloped. The channel and the ditch were cut in an approximately straight line perpendicular to US 79. Wetland Determination Data Form 3 was completed adjacent to the channel south of US 79 (**Attachment C**).

Vegetation along the steep banks of the ditch consisted almost exclusively of Japanese honeysuckle (*Lonicera japonica*). Mature woody species growing adjacent to the slopes included sycamore (*Platanus occidentalis*), American elm (*Ulmus americana*). Saplings of Chinese privet (*Ligustrum sinense*) and green ash were also noted.

The culvert that discharges to the manmade ditch collects stormwater from the roadside ditches and median along US 79. The inlets for the culvert are grated and drop vertically several feet to the main stem of the culvert. Wetland Determination Data Form 4 was

completed adjacent to one of these inlets north of US 79 (**Attachment C**). Data was collected in the bottom of a roadside ditch. Vegetation was apparently under routine maintenance and was dominated by Bermuda grass (*Cynodon dactylon*). See **Figure 5, Figure 6d, and Photos 19 – 23**.

Field observations made at Crossing 4 support the feature's categorization as a manmade ditch through an upland. Approximately 0.001 acres and 13 linear feet of the ditch occur between the culvert's southern headwall and the edge of the project area. The average width of the ditch's channel was 4 feet.

Table 3: Summary of Potential Waters of the U.S. Within the US 79 Project Area

| Single and Complete Crossing #               | Name of Water Body  | Latitude (decimal degrees) | Longitude (decimal degrees) | Linear Feet/Acres of Potential Waters of the U.S. Within the Existing Right-of-Way | Type of Aquatic Resource | Existing Structure | Geographic Authority to Which the Aquatic Resource "May be" Subject |
|--|---------------------|----------------------------|-----------------------------|--|--------------------------|--------------------|---|
| 1  | Onion Branch        | 30.518923                  | -97.673973                  | 205 In ft/<br>0.080 acres  | Intermittent Stream      | Bridge             | Section 404   |
| 2  | Brushy Creek Spring | 30.51726                   | -97.661179                  | Unknown  | Perennial Spring Run     | Culvert            | Section 404   |
| 3  | NWI Feature         | N/A                        | N/A                         | 0.0 In ft/<br>0.0 acres  | None                     | N/A                | None  |
| 4  | Manmade Ditch       | 30.518497                  | -97.650332                  | 17 In ft/<br>0.001 acres   | Manmade Ditch            | Culvert            | None  |
| Total Manmade Ditch Linear Feet/Acreage:     |                     |                            |                             | 17 In ft/<br>0.001 acre  |                          |                    |   |
| Total Water of the U.S. Linear Feet/Acreage: |                     |                            |                             | 205 In ft/<br>0.08 acres   |                          |                    |   |
| Total Wetland Acreage:                       |                     |                            |                             | 0.0 acres  |                          |                    |   |

## 4.0 Conclusions

Two potentially jurisdictional waters of the U.S. at four crossings were identified within the project area. The potential waters of the U.S. consisted of two linear waters of the U.S. (Onion Branch and Brushy Creek Spring and run). Historic upland ponds identified through desktop reviews were found to have been obliterated by recent development. One manmade ditch in an upland was investigated and was determined to be a non-jurisdictional feature. All proposed roadway and drainage improvements should be designed in a manner to avoid or minimize impacts to jurisdictional crossings.

It is anticipated that impacts would be permitted under Nationwide Permit 14, Linear Transportation Projects. At the time of this report, the project's design information is not detailed enough to allow for impact quantification; however, based on the total aquatic resources in the project area, no Pre-construction notification or compensatory mitigation are anticipated.

This report was prepared by:



Walt Meitzen

Cox|McLain Environmental Consulting, Inc.

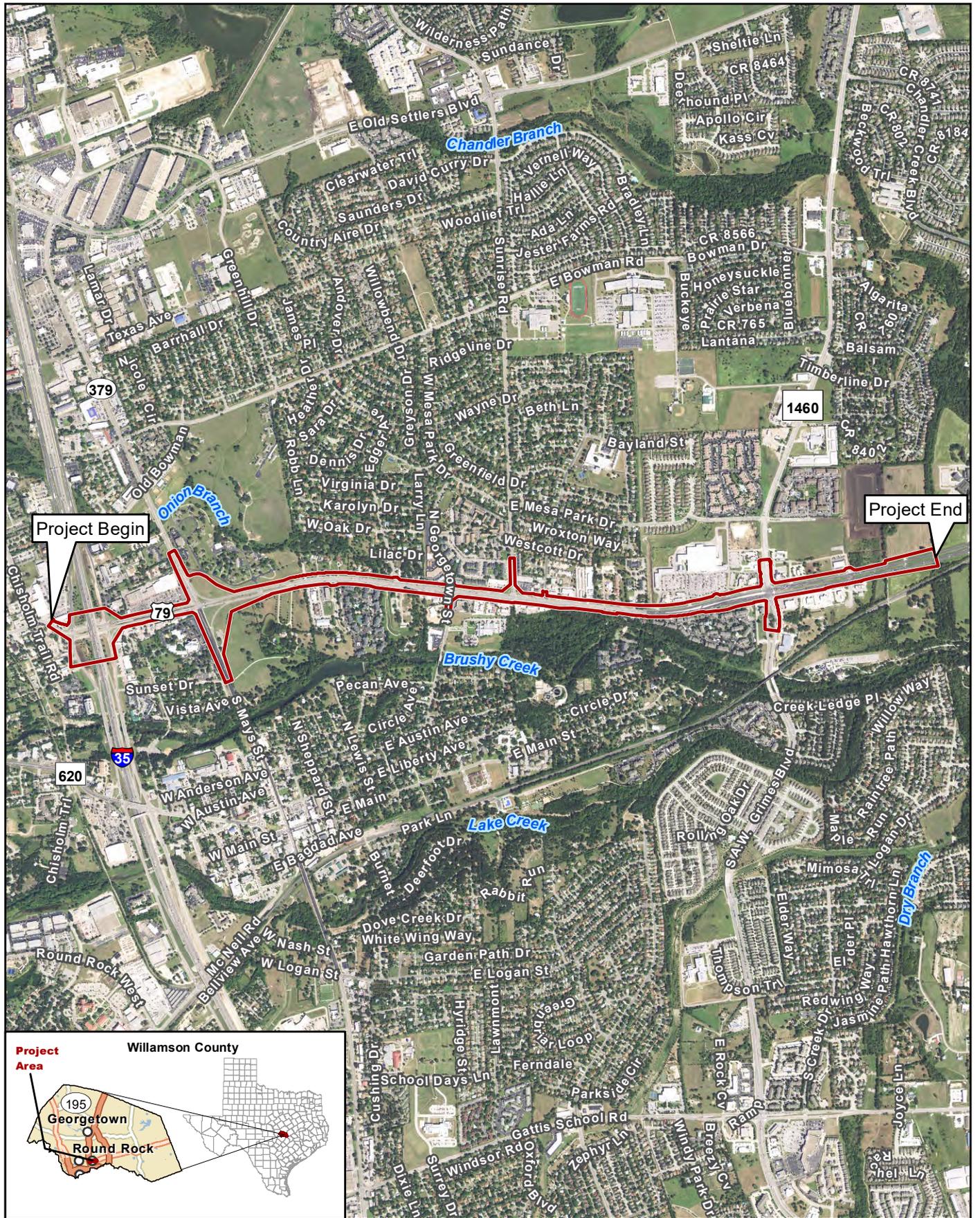
September 4, 2018

Date

## 5.0 References

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- Environmental Laboratory. 1987. *1987 Corps of Engineers Wetlands Delineation Manual*, <http://www.wes.army.mil/el/wetlands/pdfs/wlman87.pdf> U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. NTIS No. AD A176 912.
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- (WTI) Wetland Training Institute, Inc. 1991. Field Guide for Wetland Delineation: 1987 Corps of Engineers Manual. WTI 91-2. 133 pp.

## Attachment A – Figures



**Figure 1**  
**Project Location (Aerial Base)**  
 US 79 from I-35 to FM 1460

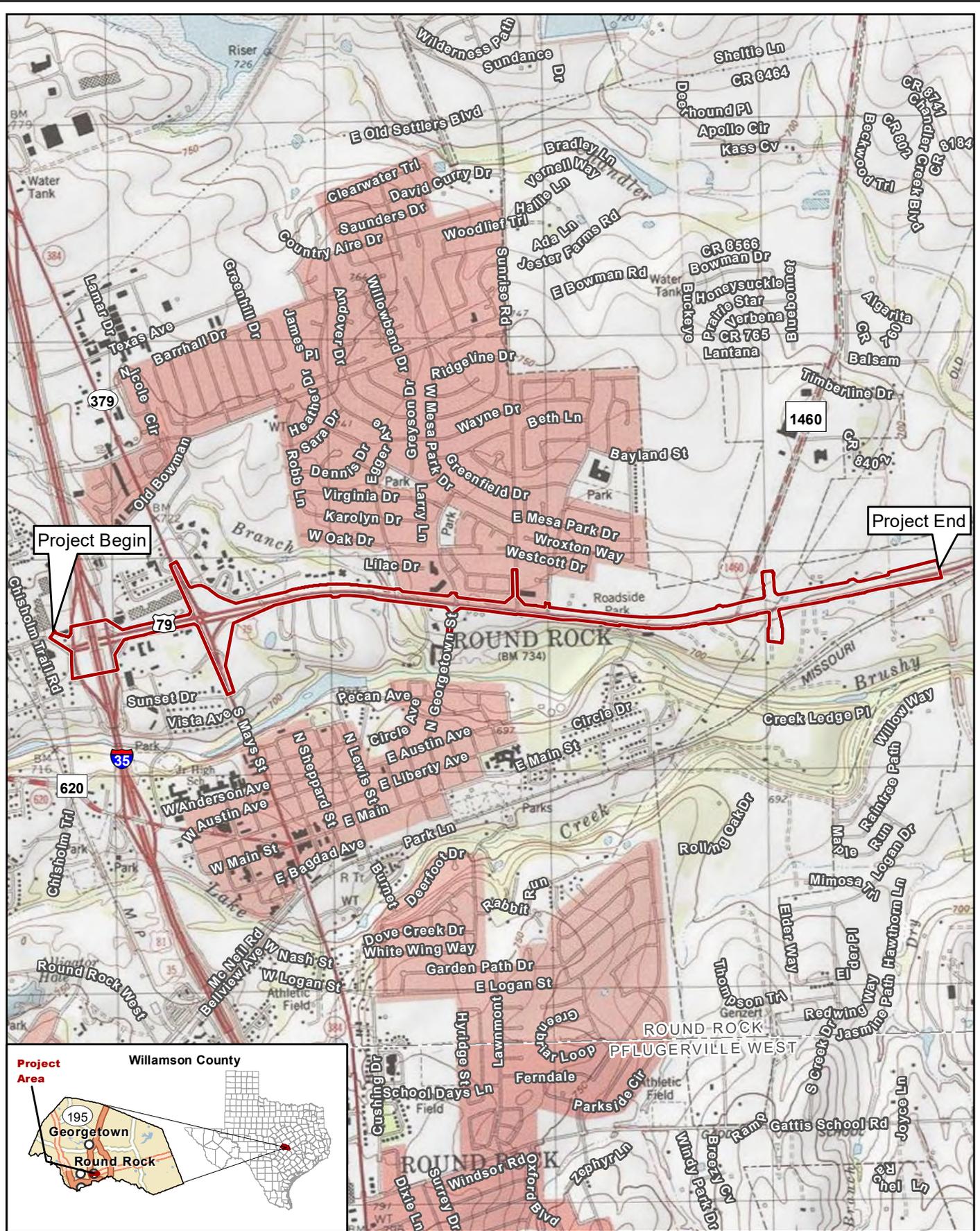
Project Location



0 2,000 Feet  
 0 500 Meters

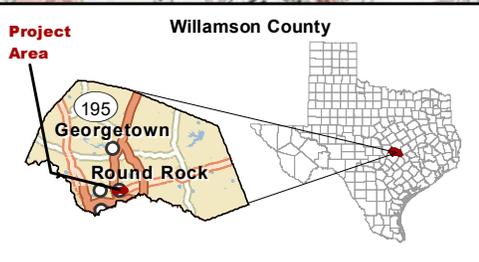
|                     |                   |
|---------------------|-------------------|
| Prepared for: TxDOT | 1 in = 2,000 feet |
|                     | Scale: 1:24,000   |
| CSJ: 0204-01-063    | Date: 8/16/2018   |

Aerial Source: NAIP (2016)



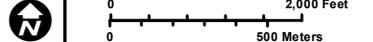
Project Begin

Project End



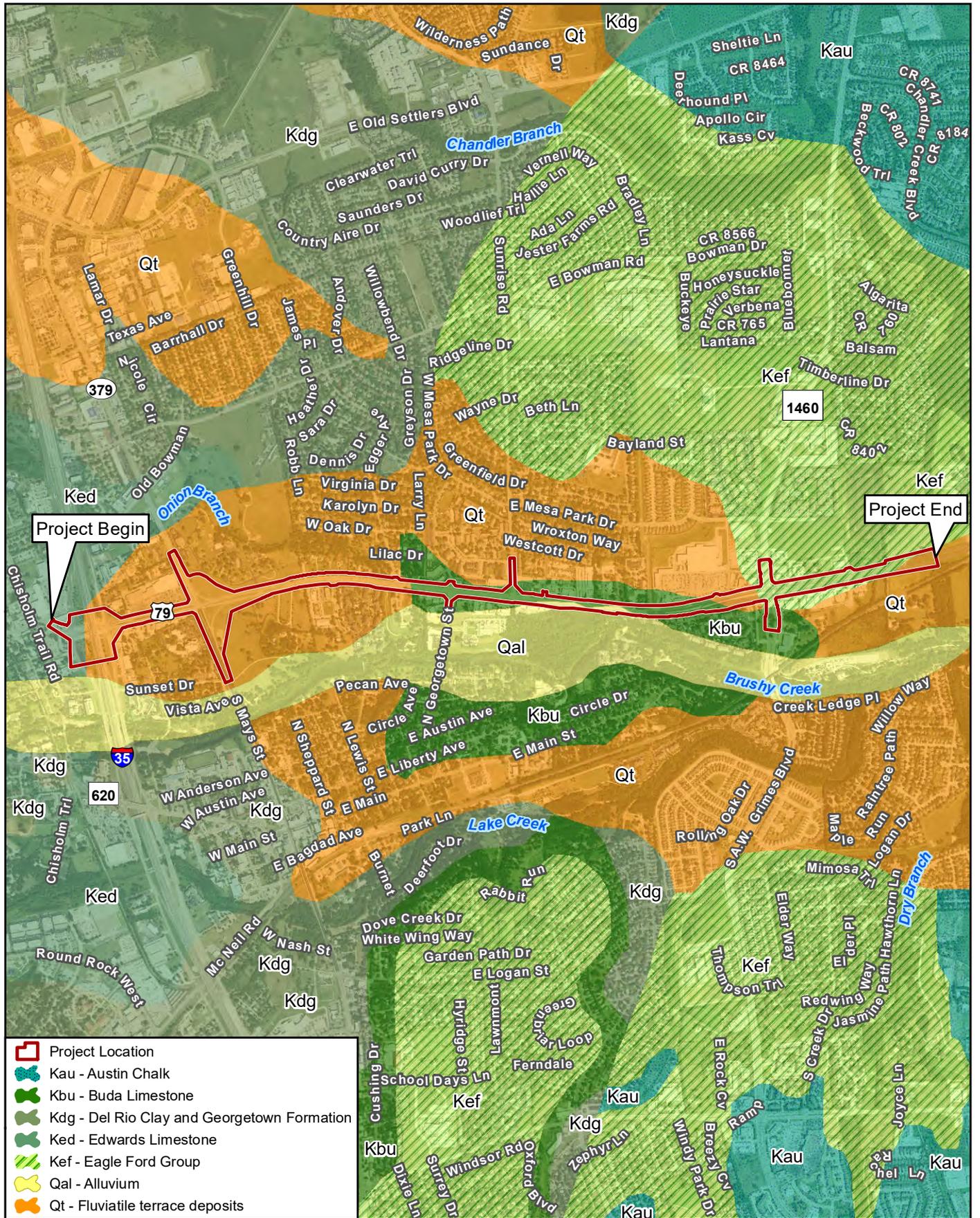
**Figure 2**  
**Project Location (Topographic Base)**  
**US 79 from I-35 to FM 1460**

Project Location



|                     |                   |
|---------------------|-------------------|
| Prepared for: TxDOT | 1 in = 2,000 feet |
|                     | Scale: 1:24,000   |
| CSJ: 0204-01-063    | Date: 8/16/2018   |

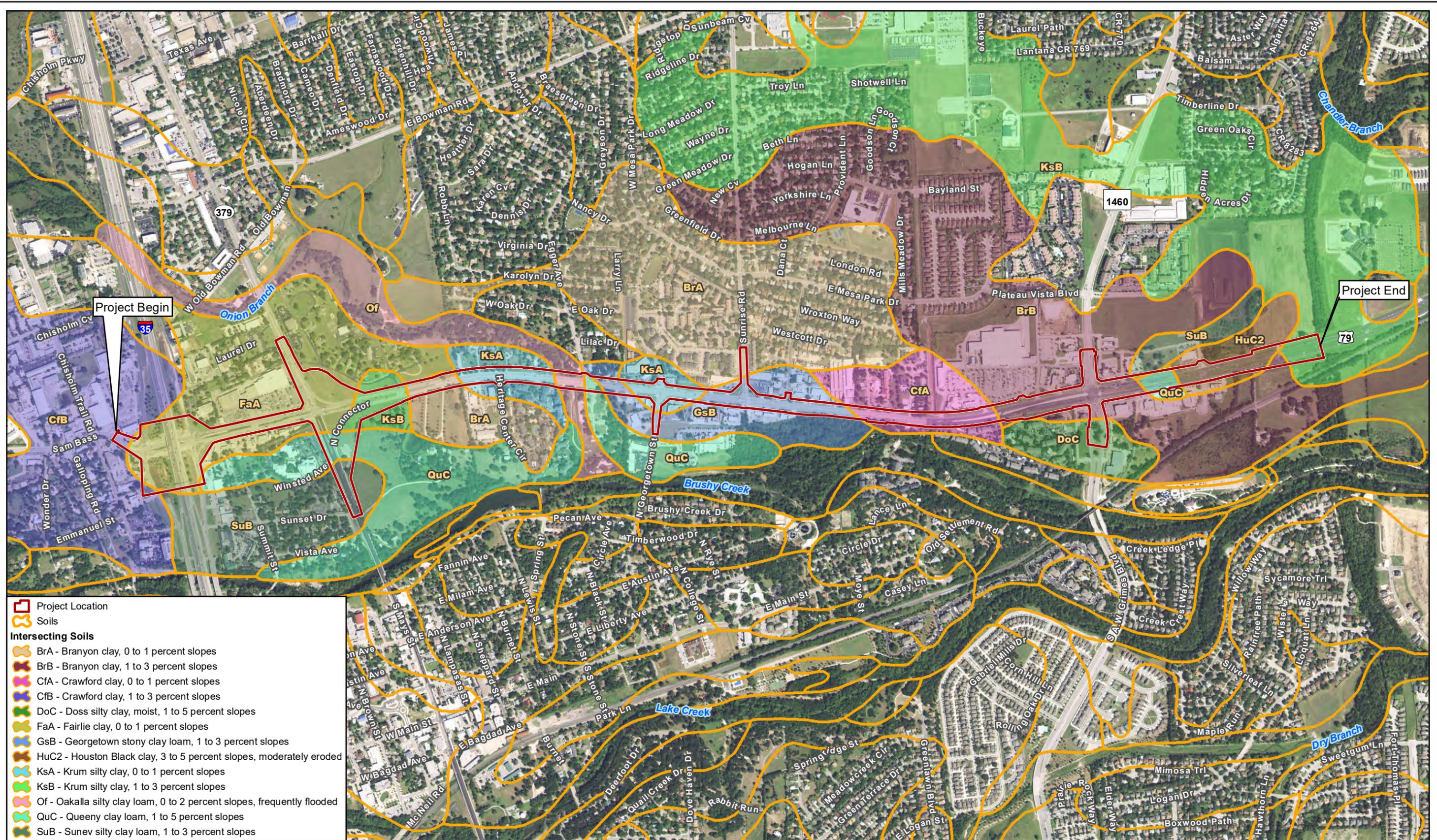
Basemap Sources: USGS Round Rock (1987) and Pflugerville West (1987) 7.5' Quadrangles



**Figure 3**  
**Project Area Geology**  
**US 79 from I-35 to FM 1460**

Data Source: Geologic Database of Texas (2007)  
 Geologic Atlas of Texas Austin Sheet (1981)  
 Aerial Source: NAIP (2016)

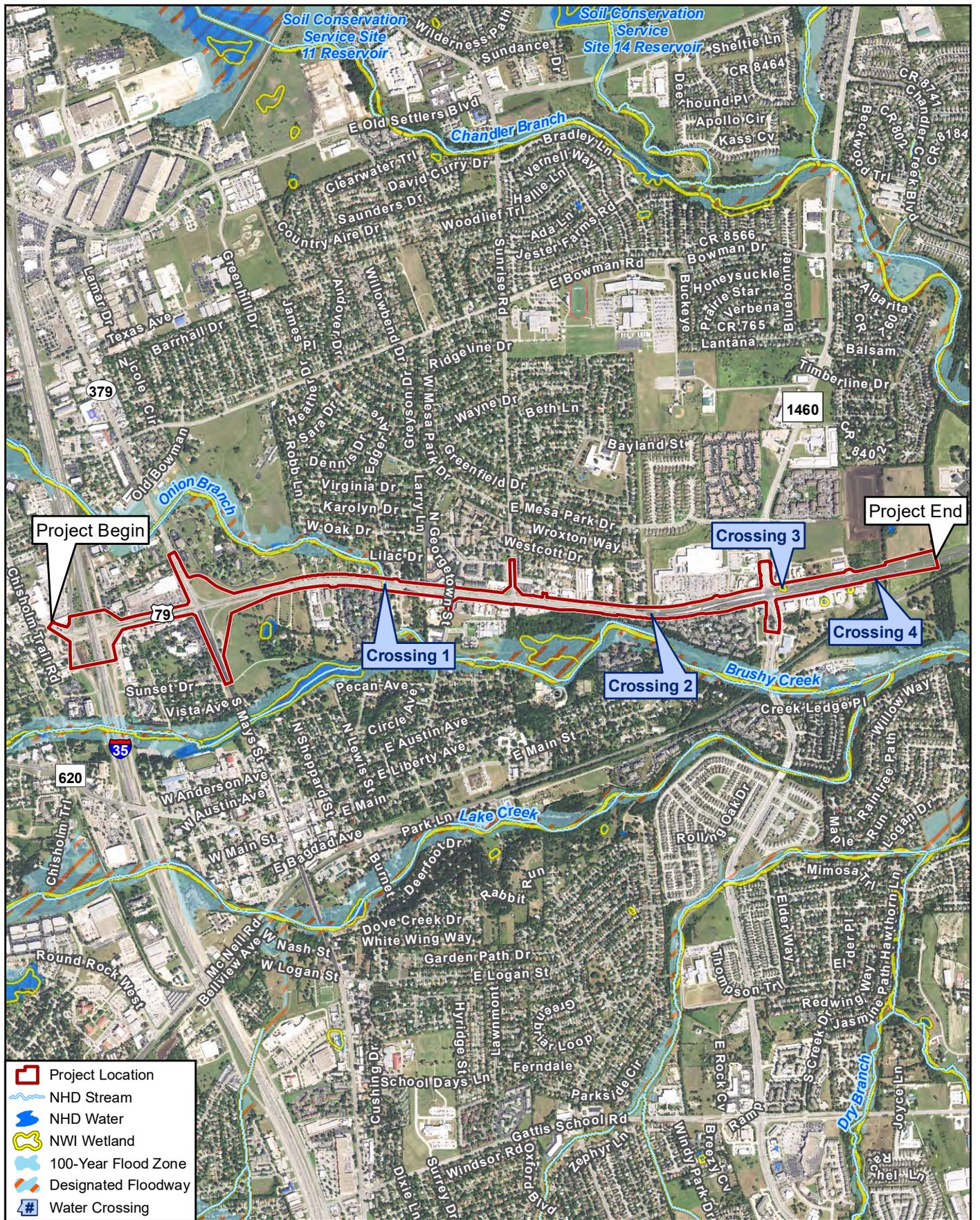
|                     |                   |            |
|---------------------|-------------------|------------|
|                     | 0                 | 2,000 Feet |
|                     | 0                 | 500 Meters |
| Prepared for: TxDOT | 1 in = 2,000 feet |            |
| CSJ: 0204-01-063    | Scale: 1:24,000   |            |
|                     | Date: 8/16/2018   |            |



-  Project Location
-  Soils
- Intersecting Soils**
-  BrA - Branyon clay, 0 to 1 percent slopes
-  BrB - Branyon clay, 1 to 3 percent slopes
-  CfA - Crawford clay, 0 to 1 percent slopes
-  CfB - Crawford clay, 1 to 3 percent slopes
-  DoC - Doss silty clay, moist, 1 to 5 percent slopes
-  FaA - Fairlie clay, 0 to 1 percent slopes
-  GsB - Georgetown stony clay loam, 1 to 3 percent slopes
-  HuC2 - Houston Black clay, 3 to 5 percent slopes, moderately eroded
-  KsA - Krum silty clay, 0 to 1 percent slopes
-  KsB - Krum silty clay, 1 to 3 percent slopes
-  Of - Oakalla silty clay loam, 0 to 2 percent slopes, frequently flooded
-  QuC - Queeny clay loam, 1 to 5 percent slopes
-  SuB - Sunev silty clay loam, 1 to 3 percent slopes

**Figure 4**  
**Project Area Soils**  
 US 79 from I-35 to FM 1460

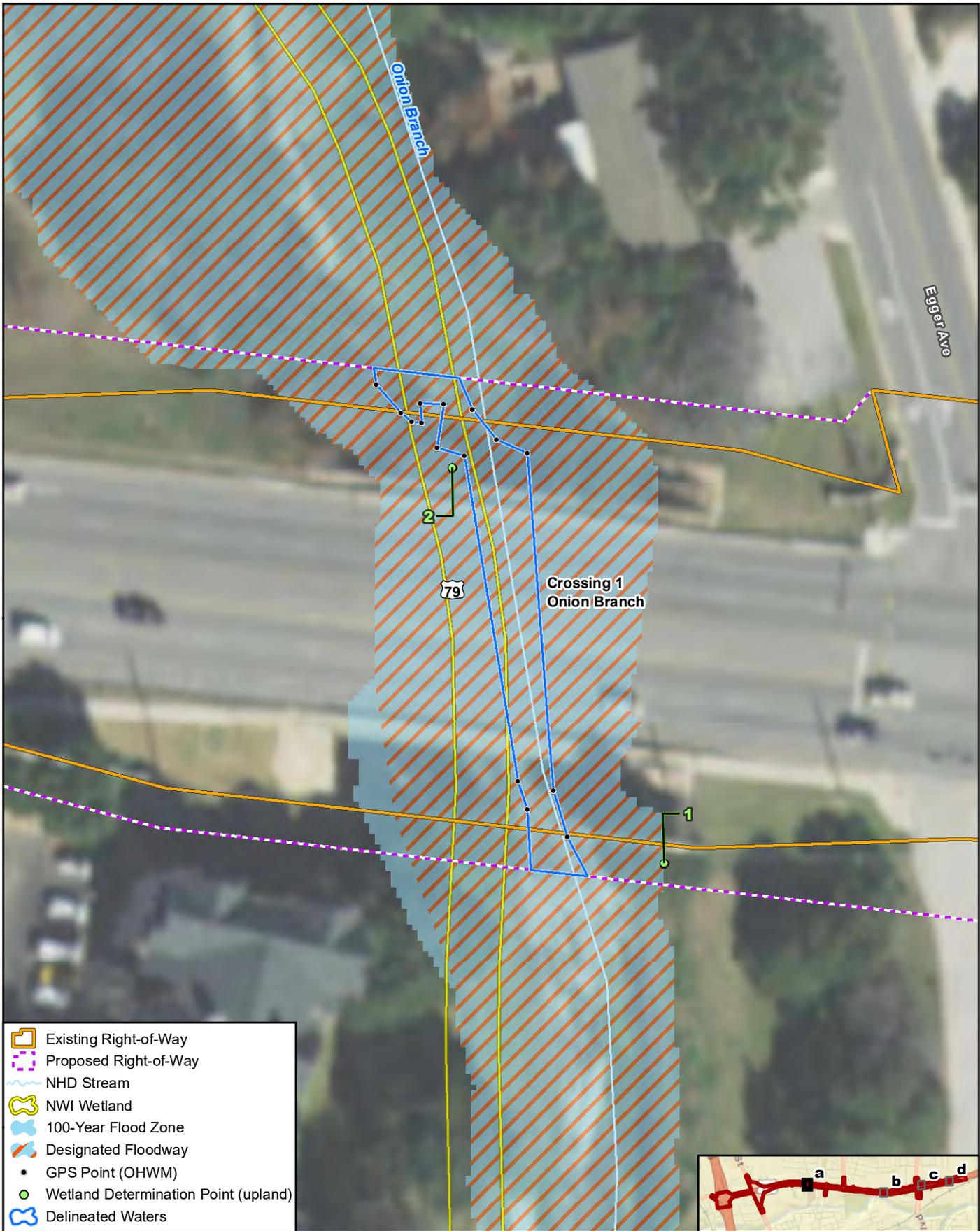
|   |                   |            |
|---|-------------------|------------|
|  | 0                 | 1,000 Feet |
|   | 0                 | 300 Meters |
| Prepared for: TxDOT   | 1 in = 1,000 feet |            |
| Data Source: NRCS (2017)  | Scale: 1:12,000   |            |
| Aerial Source: NAIP (2016)  | Date: 8/16/2018   |            |
| CSJ: 0204-01-063  |                   |            |



**Figure 5**  
**Water Resources**  
**US 79 from I-35 to FM 1460**

Data Sources: NHD (2018), NWI (2018),  
 FEMA NFHL (2018), CMEC (2018)  
 Aerial Source: NAIP (2016)

|                     |                   |            |
|---------------------|-------------------|------------|
|                     | 0                 | 2,000 Feet |
|                     | 0                 | 500 Meters |
| Prepared for: TxDOT | 1 in = 2,000 feet |            |
| CSJ: 0204-01-063    | Scale: 1:24,000   |            |
|                     | Date: 8/31/2018   |            |



-  Existing Right-of-Way
-  Proposed Right-of-Way
-  NHD Stream
-  NWI Wetland
-  100-Year Flood Zone
-  Designated Floodway
-  GPS Point (OHWM)
-  Wetland Determination Point (upland)
-  Delineated Waters



|   |                |           |
|---|----------------|-----------|
|  | 0              | 50 Feet   |
|   | 0              | 15 Meters |
| Prepared for: TxDOT   | 1 in = 50 feet |           |
|   | Scale: 1:600   |           |
| CSJ: 0204-01-063  | Date: 9/5/2018 |           |

**Figure 6a**  
**Potential Waters of the U.S.**  
**US 79 from I-35 to FM 1460**

Data Sources: NHD (2018), NWI (2018),  
 FEMA NFHL (2018), CMEC (2018)  
 Aerial Source: ESRI (2017)



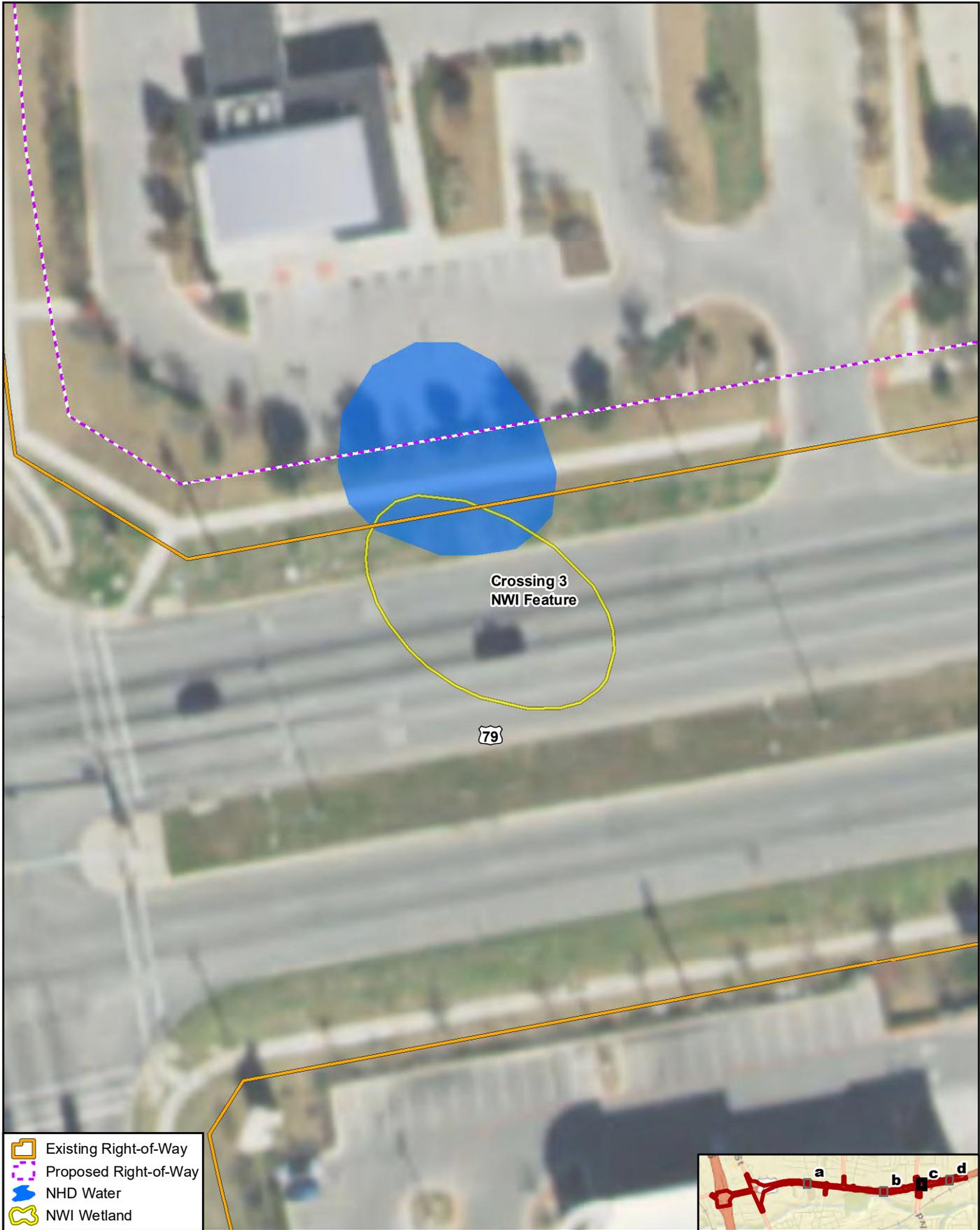
-  Existing Right-of-Way
-  Proposed Right-of-Way
-  100-Year Flood Zone
-  Designated Floodway
-  Approximate Spring Location
-  Springrun

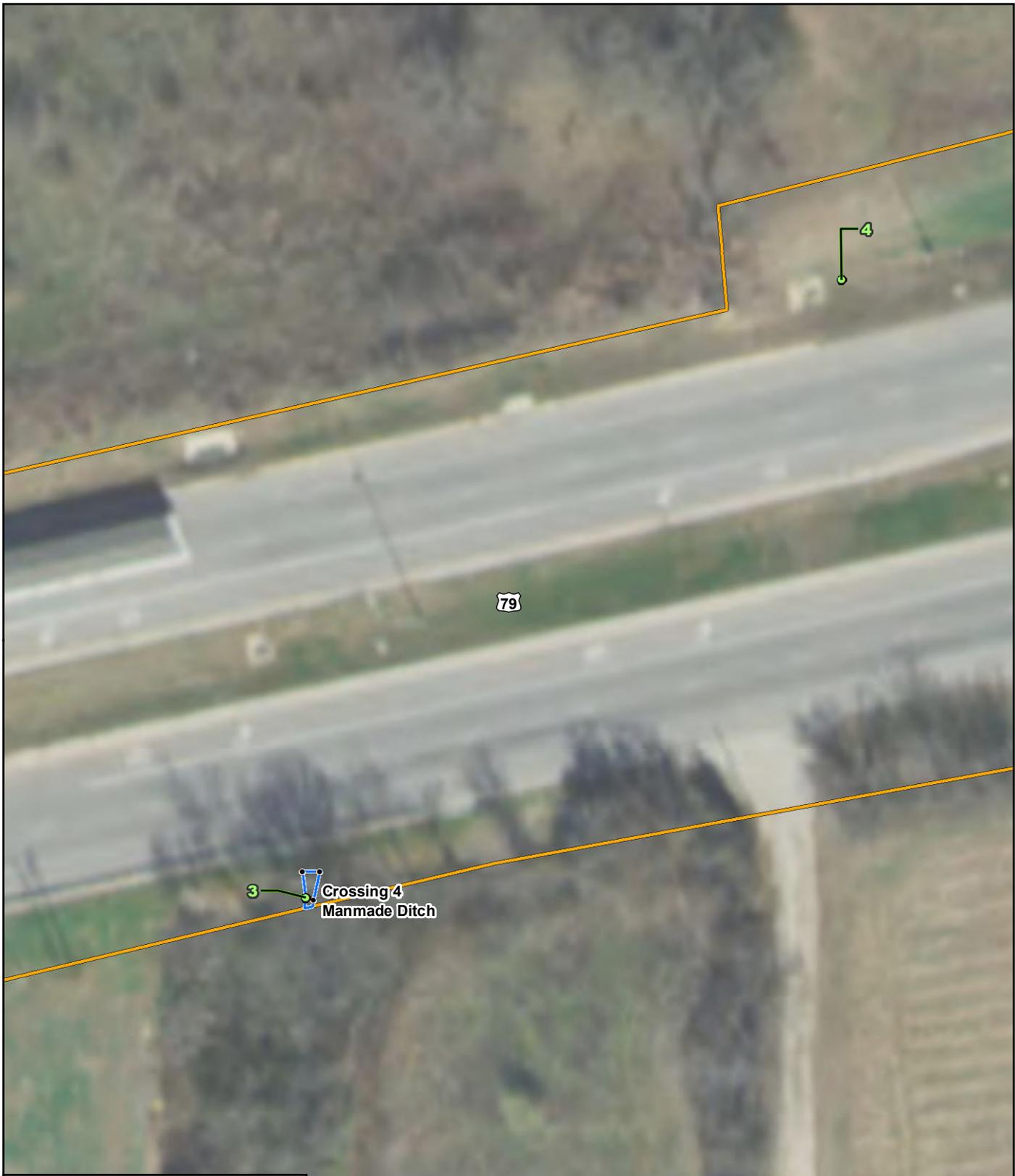


|   |   |
|---|---|
|  |  |
|   |  |
| Prepared for: TxDOT   | 1 in = 50 feet  |
|   | Scale: 1:600  |
| CSJ: 0204-01-063  | Date: 9/5/2018  |

**Figure 6b**  
**Potential Waters of the U.S.**  
**US 79 from I-35 to FM 1460**

Data Sources: NHD (2018), NWI (2018),  
 FEMA NFHL (2018), CMEC (2018)  
 Aerial Source: ESRI (2017)





-  Existing Right-of-Way
-  GPS Point (OHWM)
-  Wetland Determination Point (upland)
-  Delineated Waters

**Figure 6d**  
**Potential Waters of the U.S.**  
**US 79 from I-35 to FM 1460**



|   |                  |
|---|------------------|
|  | 0      50 Feet   |
|   | 0      15 Meters |
| Prepared for: TxDOT   | 1 in = 50 feet   |
|   | Scale: 1:600     |
| CSJ: 0204-01-063  | Date: 9/5/2018   |

Data Sources: NHD (2018), NWI (2018),  
 FEMA NFHL (2018), CMEC (2018)  
 Aerial Source: ESRI (2017)

## Attachment B – Project Area Photographs

All photographs were taken during the field delineation conducted on March 8, 2018



Photo 1: Crossing 1 - Onion Branch, viewing northwest.



Photo 2: Crossing 1 - Wetland Determination Point 1, viewing northwest.



Photo 3: Crossing 1 - Bridge at Onion Branch, viewing west.



Photo 4: Crossing 1 - Upstream at Onion Branch, viewing north. Note exposed bedrock streambed and minimal surface flow.



Photo 5: Crossing 1 - Concrete slab and rubble downstream of US 79 in Onion Branch, viewing south.



Photo 6: Crossing 1 - Scour pool under the existing US 79 Bridge, viewing north (upstream).



Photo 7: Crossing 1 - Scoured areas and flood debris associated with existing bridge piers.



Photo 8: Crossing 1 - Onion Branch, north of US 79, viewing north. Note concrete slab and underground utilities.



Photo 9: Crossing 1 - Onion Branch. Flow is left to right. The concrete slab encased the (broken) pipe that intersects the stream.



Photo 10: Crossing 1 - Wetland Determination Point 2, viewing west.



Photo 11: Crossing 1 - Concrete-lined water quality pond adjacent to the right bank of Onion Branch south (downstream) of the US 79 bridge, viewing southwest.



Photo 12: Crossing 2 - Pilot channel for stormwater infrastructure connected to the culvert where Brushy Creek Spring emanates. Flow is toward the photo point. US 79 is behind the photo point. Note the small (~4-inch) pipe above the headwall of the culvert's inlet.



Photo 13: Crossing 2 - Alternate view of the culvert's headwall, viewing west. Note the pipe and US 79 (right of frame). The small pipe connects to an inlet in the ditch adjacent to US 79 that drains stormwater from the roadway and surrounding area.



Photo 14: Crossing 2 - Culvert's inlet. Note the wet area of the headwall is under the small pipe's outlet and that the pilot channel is dry. Spring flow inside the culvert resulted in considerably larger volumes of flow, viewing south (downstream).



Photo 15: Crossing 2 - View south along the alignment of the culvert. US 79 is behind the photo point. The culvert's outfall and Brushy Creek are over the bluff that begins just beyond the maintained lawn (outside of right of way).



Photo 16: Crossing 3 - View northwest across recently developed area in the vicinity of the westernmost manmade pond that was identified through desktop analysis. US 79 is in the foreground and FM 1460 is in the distance.



Photo 17: Crossing 3 - Alternate view of the area shown in Photo 16. US 79 is in the foreground and FM 1460 is in the distance, viewing north-northwest.



Photo 18: Crossing 3 - View west across recently developed area in the vicinity of the manmade ponds south of US 79 that were identified through desktop analysis. An unnamed access drive is in the foreground and US 79 is in the distance.



Photo 19: Crossing 4 - View south (downstream) along the manmade ditch. Note the concrete headwall in the foreground. US 79 is behind the photo point.



Photo 20: Crossing 4 - View north (upstream) toward the culvert that discharges to the manmade ditch.



Photo 21: Crossing 4 - View south (downstream) along the manmade ditch. Soil tests for Wetland Determination Point 3 were taken from the pictured soil pit. Note the steep banks and straight alignment of the trapezoidal channel.



Photo 22: Crossing 4 - View east along the roadside ditch adjacent to US 79 (right of frame). Note the inlet in the foreground. This is one of several inlets that flow to the culvert that discharges into the manmade ditch. Soil data were collected from the pictured soil pit for Wetland Determination Point 4, viewing east.



Photo 23: Crossing 4 - View west along a roadside ditch and US 79 (left of frame). Note the pictured inlet, which is one of several that flow to the culvert that discharges to the manmade ditch.

Attachment C – WETS Tables

WETS Table

WETS Station: GEORGETOWN  
LAKE, TX

Requested years: 1971 - 2018

| Month   | Avg Max Temp | Avg Min Temp | Avg Mean Temp | Avg Precip | 30% chance precip less than | 30% chance precip more than | Avg number days precip 0.10 or more | Avg Snowfall |
|---------|--------------|--------------|---------------|------------|-----------------------------|-----------------------------|-------------------------------------|--------------|
| Jan     | 60.0         | 35.9         | 48.0          | 2.18       | 0.93                        | 2.65                        | 4                                   | 0.0          |
| Feb     | 64.0         | 40.0         | 52.0          | 2.34       | 0.98                        | 2.84                        | 4                                   | 0.0          |
| Mar     | 71.2         | 47.5         | 59.4          | 3.01       | 1.82                        | 3.65                        | 5                                   | 0.0          |
| Apr     | 78.7         | 54.7         | 66.7          | 2.66       | 1.20                        | 3.24                        | 4                                   | 0.0          |
| May     | 85.4         | 63.7         | 74.5          | 4.49       | 2.76                        | 5.43                        | 6                                   | 0.0          |
| Jun     | 91.5         | 69.8         | 80.6          | 4.08       | 2.26                        | 4.97                        | 5                                   | 0.0          |
| Jul     | 95.6         | 72.3         | 83.9          | 1.98       | 0.73                        | 2.29                        | 3                                   | 0.0          |
| Aug     | 96.5         | 72.2         | 84.3          | 2.47       | 0.77                        | 2.79                        | 3                                   | 0.0          |
| Sep     | 90.1         | 66.4         | 78.2          | 3.51       | 1.31                        | 4.24                        | 4                                   | 0.0          |
| Oct     | 81.0         | 56.8         | 68.9          | 4.04       | 1.82                        | 4.85                        | 5                                   | 0.0          |
| Nov     | 70.3         | 47.1         | 58.7          | 3.09       | 1.43                        | 3.77                        | 4                                   | 0.0          |
| Dec     | 61.0         | 38.4         | 49.7          | 2.41       | 1.02                        | 2.93                        | 4                                   | 0.0          |
| Annual: |              |              |               |            | 30.95                       | 41.48                       |                                     |              |
| Average | 78.8         | 55.4         | 67.1          | -          | -                           | -                           | -                                   | -            |
| Total   | -            | -            | -             | 36.25      |                             |                             | 52                                  | 0.0          |

GROWING SEASON DATES

|                           |                         |                        |                         |
|---------------------------|-------------------------|------------------------|-------------------------|
| Years with missing data:  | 24 deg = 23             | 28 deg = 18            | 32 deg = 17             |
| Years with no occurrence: | 24 deg = 2              | 28 deg = 0             | 32 deg = 0              |
| Data years used:          | 24 deg = 25             | 28 deg = 30            | 32 deg = 31             |
| Probability               | 24 F or higher          | 28 F or higher         | 32 F or higher          |
| 50 percent *              | 1/29 to 12/26: 331 days | 2/14 to 12/8: 297 days | 2/27 to 11/24: 270 days |
| 70 percent *              | 1/18 to 1/6: 353 days   | 2/8 to 12/15: 310 days | 2/21 to 11/30: 282 days |

\* Percent chance of the growing season occurring between the Beginning and Ending dates.

STATS TABLE - total precipitation (inches)

| Yr   | Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct   | Nov   | Dec  | Annl  |
|------|------|------|------|------|------|------|------|------|------|-------|-------|------|-------|
| 1980 |      |      |      |      |      |      | 0.02 | 0.42 | 4.72 | 2.58  | 3.61  | 0.99 | 12.34 |
| 1981 | 1.20 | 2.68 | 3.96 | 2.96 | 4.50 | 7.86 | 0.94 | 2.33 | 2.97 | 5.42  | 1.42  | 0.30 | 36.54 |
| 1982 | 0.95 | 1.09 | 1.14 | 4.61 | 5.56 | 5.69 | 0.07 | 3.38 | 1.48 | 2.72  | M6.01 | 1.47 | 34.17 |
| 1983 | 1.98 | 3.43 | 5.88 | 0.34 | 6.97 | 2.62 | 2.66 | 2.60 | 1.46 | 1.98  | 2.58  | 0.43 | 32.93 |
| 1984 | 1.60 | 0.45 | 2.10 | 0.76 | 2.38 | 3.42 | 3.09 | 0.05 | 1.71 | 11.43 | 2.07  | 3.66 | 32.72 |
| 1985 | 1.04 | 4.43 | 2.62 | 4.07 | 4.83 | 3.29 | 1.51 | 1.36 | 4.99 | 7.37  | 5.47  | 3.28 | 44.26 |
| 1986 | 0.38 | 5.36 | 0.32 | 0.48 | 5.44 | 4.04 | 0.00 | 2.35 | 4.44 | 8.12  | 2.49  | 6.53 | 39.95 |
| 1987 | 0.64 | 3.39 | 1.69 | 0.90 | 8.01 | 9.78 | 2.40 | 0.07 | 5.35 | 0.80  | 7.36  | 3.15 | 43.54 |
| 1988 | 0.47 | 0.72 | 1.79 | 2.15 | 3.11 | 3.27 | 1.25 | 2.17 | 1.11 | 1.11  | 0.87  | 1.35 | 20.11 |

|      |       |       |       |       |        |       |       |       |       | 39    | 52    |       | 06    |
|------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1989 | 4.26  | 1.66  | 3.35  | 1.03  | 4.64   | 3.90  | 0.77  | 2.31  | 0.72  | 1.82  | 1.21  | 0.14  | 25.81 |
| 1990 | 1.71  | 2.91  | 5.15  | 4.23  | 3.69   | 0.89  | 2.26  | 1.43  | 4.11  | 3.30  | 2.96  | 0.81  | 33.45 |
| 1991 | 5.20  | 2.41  | 1.80  | 6.96  | 3.95   | 4.80  | 1.07  | 3.35  | 3.49  | 1.03  | 1.30  | 10.78 | 46.14 |
| 1992 | 5.30  | 8.68  | 5.25  | 1.24  | 8.32   | 5.91  | 3.25  | 2.75  | 3.07  | 0.39  | 6.06  | 4.00  | 54.22 |
| 1993 | 3.45  | 2.45  | 4.56  | 3.44  | 6.05   | 6.35  | 0.00  | 0.00  | 3.01  | 3.18  | 1.37  | 1.87  | 35.73 |
| 1994 | 1.37  | 2.01  | 2.76  | 1.36  | 4.98   | 1.30  | 0.19  | 4.61  | 1.42  | 8.98  | 2.05  | 4.01  | 35.04 |
| 1995 | 0.93  | 1.21  | 1.81  | 4.91  | 6.01   | 1.81  | 2.10  | 3.06  | 2.67  | 0.33  | 3.59  | 0.64  | 29.07 |
| 1996 | 0.03  | 0.23  | 1.18  | 0.72  | 3.49   | 3.00  | 0.65  | 4.09  | 11.22 | 1.28  | 4.68  | 2.78  | 33.35 |
| 1997 | 2.00  | 4.55  | 2.29  | 11.58 | 5.94   | 6.90  | 1.23  | 1.07  | 2.55  | 5.00  | M4.15 | 4.54  | 51.80 |
| 1998 | 2.66  | 5.46  | 3.68  | 1.33  | 0.74   | 3.57  | 1.09  | 2.26  | 3.61  | 7.36  | 4.33  | 1.89  | 37.98 |
| 1999 | 0.60  | 0.10  | 3.82  | 2.11  | 5.62   | 8.58  | 3.88  | 0.05  | 0.07  | 1.52  | M0.16 | 1.64  | 28.15 |
| 2000 | 2.49  | 1.41  | 2.75  | 1.92  | 5.91   | 6.36  | 0.43  | 0.22  | 3.23  | 8.03  | M9.47 | M3.66 | 45.88 |
| 2001 | 4.00  | 2.01  | 7.16  | 1.81  | 4.20   | 1.85  | 0.53  | 3.47  | 1.84  | M3.00 | M6.09 | 3.86  | 39.82 |
| 2002 | 0.83  | 1.04  | 1.28  | 0.83  | 2.06   | 3.25  | 5.42  | 0.65  | 3.90  | M9.96 | M2.54 | M4.76 | 36.52 |
| 2003 | 1.43  | 4.33  | 1.15  | 0.29  | 2.03   | 5.11  | 1.61  | 2.43  | 3.28  | 2.29  | 0.74  | 0.67  | 25.36 |
| 2004 | 4.58  | 4.69  | 2.07  | 3.24  | 2.18   | 10.53 | 2.76  | 5.63  | 0.74  | 8.28  | 8.37  | 0.76  | 53.83 |
| 2005 | M3.18 | 3.26  | 2.95  | 1.29  | 3.20   | 0.58  | 2.69  | 7.95  | 0.20  | 1.51  | 1.36  | 0.18  | 28.35 |
| 2006 | 1.39  | 1.38  | 2.96  | 4.03  | 2.75   | 3.95  | 3.88  | 0.39  | 4.52  | 5.55  | 0.12  | 3.84  | 34.76 |
| 2007 | 6.55  | 0.10  | 5.83  | 1.82  | 8.57   | 7.79  | 10.49 | 2.51  | 3.54  | 1.85  | 1.44  | 0.80  | 51.29 |
| 2008 | 0.97  | 0.08  | 4.36  | 2.76  | 3.29   | 1.90  | 1.22  | 1.14  | 1.51  | 1.18  | 0.56  | 0.40  | 19.37 |
| 2009 | 0.94  | 1.39  | 3.84  | 6.54  | 1.54   | 0.90  | 1.09  | 1.64  | 12.15 | 11.66 | 2.32  | 2.73  | 46.74 |
| 2010 | 3.94  | 3.46  | 4.24  | 1.36  | 0.73   | 4.09  | 3.55  | 0.25  | 17.75 | 0.00  | 0.74  | 0.81  | 40.92 |
| 2011 | 2.73  | 0.74  | 0.17  | 0.54  | 0.83   | 1.17  | 0.02  | T     | 0.02  | 1.94  | 2.61  | 4.59  | 15.36 |
| 2012 | 2.67  | 3.65  | 4.73  | 0.13  | 3.15   | 0.21  | 2.34  | 3.94  | 5.90  | 0.88  | 0.29  | 0.12  | 28.01 |
| 2013 | M4.32 | M0.58 | 1.23  | 1.33  | 3.00   | 1.56  | M3.74 | 0.97  | 4.07  | 6.19  | 4.09  | 1.39  | 32.47 |
| 2014 | 0.43  | 0.24  | 1.20  | 2.58  | 7.20   | 1.98  | 3.77  | 0.08  | 3.15  | 4.41  | 4.88  | M1.18 | 31.10 |
| 2015 | M4.31 | M0.87 | 5.00  | 3.16  | M14.83 | M6.56 | M0.39 | M0.46 | 0.15  | 8.57  | M4.36 | M2.09 | 50.75 |
| 2016 | 0.23  | 1.46  | 3.16  | 8.08  | 6.89   | 4.03  | 2.02  | 14.00 | 1.50  | M0.27 | 2.93  | 2.36  | 46.93 |
| 2017 | 2.96  | 2.23  | 2.64  | 3.17  | 1.86   | 3.86  | 1.89  | 8.32  | 1.32  | M1.95 | M0.81 | 3.07  | 34.08 |
| 2018 | 0.10  | 2.72  | M2.51 | 0.88  | 2.01   | 2.26  | M1.03 | M2.54 |       |       |       |       | 14.05 |

Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation.

Data missing for all days in a month or year is blank.

Creation date: 2016-07-22

Attachment C – Wetland Determination Data Forms

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: U.S. Highway 79 City/County: Williamson Sampling Date: 03/08/2018  
 Applicant/Owner: TxDOT Austin District State: TX Sampling Point: WDP1  
 Investigator(s): Walt Meitzen, Claire Parra Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 2-3  
 Subregion (LRR): LRR J Lat: 30.518511 Long: -97.673733 Datum: NAD83  
 Soil Map Unit Name: Oakalla silty clay loam, 0 to 2 percent slopes, frequently flooded NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

|   |   |
|---|---|
| Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/><br>Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/><br>Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | <b>Is the Sampled Area<br/>within a Wetland?</b><br>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Remarks:<br>None of the three necessary wetland indicators are present. The WDP is not located within a wetland.  |   |

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: <u>30'</u> )                                 | Absolute % Cover | Dominant Species? | Indicator Status |  |
|---|------------------|-------------------|------------------|--|
| 1. <u>Ulmus crassifolia</u>   | 50               | Y                 | FAC              | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>2</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>5</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40</u> (A/B)  |
| 2. <u>Quercus virginiana</u>  | 40               | Y                 | FACU             |  |
| 3. <u>Celtis laevigata</u>  | 15               | N                 | FAC              |  |
| 4. _____  |                  |                   |                  | <b>Prevalence Index worksheet:</b><br>Total % Cover of: _____ Multiply by: _____<br>OBL species _____ x 1 = _____<br>FACW species _____ x 2 = _____<br>FAC species _____ x 3 = _____<br>FACU species _____ x 4 = _____<br>UPL species _____ x 5 = _____<br>Column Totals: _____ (A) _____ (B)<br><br>Prevalence Index = B/A = _____  |
| 105 = Total Cover   |                  |                   |                  |  |
| <b>Sapling/Shrub Stratum (Plot size: <u>15'</u>)</b>                  |                  |                   |                  |  |
| 1. <u>None</u>  |                  |                   |                  |  |
| 2. _____  |                  |                   |                  |  |
| 3. _____  |                  |                   |                  |  |
| 4. _____  |                  |                   |                  |  |
| 5. _____  |                  |                   |                  |  |
| 0 = Total Cover   |                  |                   |                  |  |
| <b>Herb Stratum (Plot size: <u>5'</u>)</b>                            |                  |                   |                  |  |
| 1. <u>Calyptocarpus vialis</u>  | 40               | Y                 | FAC              | <b>Hydrophytic Vegetation Indicators:</b><br>___ 1 - Rapid Test for Hydrophytic Vegetation<br>___ 2 - Dominance Test is >50%<br>___ 3 - Prevalence Index is ≤3.0 <sup>1</sup><br>___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br>___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)<br><br><sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 2. <u>Yabea microcarpa</u>  | 10               | N                 | UPL              |  |
| 3. <u>Cynodon dactylon</u>  | 10               | N                 | FACU             |  |
| 4. _____  |                  |                   |                  |  |
| 5. _____  |                  |                   |                  |  |
| 6. _____  |                  |                   |                  |  |
| 7. _____  |                  |                   |                  |  |
| 8. _____  |                  |                   |                  |  |
| 9. _____  |                  |                   |                  |  |
| 10. _____   |                  |                   |                  |  |
| 60 = Total Cover  |                  |                   |                  |  |
| <b>Woody Vine Stratum (Plot size: <u>30'</u>)</b>                     |                  |                   |                  |  |
| 1. <u>Smilax bona-nox</u>   | 15               | Y                 | FACU             |  |
| 2. <u>Rubus trivialis</u>   | 5                | Y                 | FACU             |  |
| 20 = Total Cover  |                  |                   |                  |  |
| % Bare Ground in Herb Stratum <u>40</u>                               |                  |                   |                  |  |
| Remarks:<br>The vegetative community did not pass the dominance test. |                  |                   |                  |  |

**SOIL**

Sampling Point: WDP1

| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) |               |     |                |   |                   |                  |         |                                     |
|---|---------------|-----|----------------|---|-------------------|------------------|---------|-------------------------------------|
| Depth (inches)  | Matrix        |     | Redox Features |   |                   |                  | Texture | Remarks                             |
|   | Color (moist) | %   | Color (moist)  | % | Type <sup>1</sup> | Loc <sup>2</sup> |         |                                     |
| 0-6   | 10YR 3/1      | 100 | None           |   |                   |                  | loam    | large limestone cobbles encountered |
|   |               |     |                |   |                   |                  |         |                                     |
|   |               |     |                |   |                   |                  |         |                                     |
|   |               |     |                |   |                   |                  |         |                                     |
|   |               |     |                |   |                   |                  |         |                                     |
|   |               |     |                |   |                   |                  |         |                                     |
|   |               |     |                |   |                   |                  |         |                                     |
|   |               |     |                |   |                   |                  |         |                                     |
|   |               |     |                |   |                   |                  |         |                                     |

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

| Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)  | Indicators for Problematic Hydric Soils <sup>3</sup> :   |
|--|--|
| <input type="checkbox"/> Histosol (A1)<br><input type="checkbox"/> Histic Epipedon (A2)<br><input type="checkbox"/> Black Histic (A3)<br><input type="checkbox"/> Hydrogen Sulfide (A4)<br><input type="checkbox"/> Stratified Layers (A5) (LRR F)<br><input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)<br><input type="checkbox"/> Depleted Below Dark Surface (A11)<br><input type="checkbox"/> Thick Dark Surface (A12)<br><input type="checkbox"/> Sandy Mucky Mineral (S1)<br><input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)<br><input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F) | <input type="checkbox"/> Sandy Gleyed Matrix (S4)<br><input type="checkbox"/> Sandy Redox (S5)<br><input type="checkbox"/> Stripped Matrix (S6)<br><input type="checkbox"/> Loamy Mucky Mineral (F1)<br><input type="checkbox"/> Loamy Gleyed Matrix (F2)<br><input type="checkbox"/> Depleted Matrix (F3)<br><input type="checkbox"/> Redox Dark Surface (F6)<br><input type="checkbox"/> Depleted Dark Surface (F7)<br><input type="checkbox"/> Redox Depressions (F8)<br><input type="checkbox"/> High Plains Depressions (F16) (MLRA 72 & 73 of LRR H) |
|  | <input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)<br><input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)<br><input type="checkbox"/> Dark Surface (S7) (LRR G)<br><input type="checkbox"/> High Plains Depressions (F16) (LRR H outside of MLRA 72 & 73)<br><input type="checkbox"/> Reduced Vertic (F18)<br><input type="checkbox"/> Red Parent Material (TF2)<br><input type="checkbox"/> Very Shallow Dark Surface (TF12)<br><input type="checkbox"/> Other (Explain in Remarks)  |

|  |   |
|--|---|
| <b>Restrictive Layer (if present):</b><br>Type: <u>limestone</u><br>Depth (inches): <u>6</u> | <b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
|--|---|

Remarks:  
 No hydric soil indicators are present. Restrictive layer of limestone cobbles encountered at 6 inches in the profile.

**HYDROLOGY**

| Wetland Hydrology Indicators:  |  |
|--|--|
| Primary Indicators (minimum of one required; check all that apply)   | Secondary Indicators (minimum of two required)   |
| <input type="checkbox"/> Surface Water (A1)<br><input type="checkbox"/> High Water Table (A2)<br><input type="checkbox"/> Saturation (A3)<br><input type="checkbox"/> Water Marks (B1)<br><input type="checkbox"/> Sediment Deposits (B2)<br><input type="checkbox"/> Drift Deposits (B3)<br><input type="checkbox"/> Algal Mat or Crust (B4)<br><input type="checkbox"/> Iron Deposits (B5)<br><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)<br><input type="checkbox"/> Water-Stained Leaves (B9) | <input type="checkbox"/> Salt Crust (B11)<br><input type="checkbox"/> Aquatic Invertebrates (B13)<br><input type="checkbox"/> Hydrogen Sulfide Odor (C1)<br><input type="checkbox"/> Dry-Season Water Table (C2)<br><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled)<br><input type="checkbox"/> Presence of Reduced Iron (C4)<br><input type="checkbox"/> Thin Muck Surface (C7)<br><input type="checkbox"/> Other (Explain in Remarks)   |
|  | <input type="checkbox"/> Surface Soil Cracks (B6)<br><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)<br><input type="checkbox"/> Drainage Patterns (B10)<br><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where tilled)<br><input type="checkbox"/> Crayfish Burrows (C8)<br><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)<br><input type="checkbox"/> Geomorphic Position (D2)<br><input type="checkbox"/> FAC-Neutral Test (D5)<br><input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |
| <b>Field Observations:</b><br>Surface Water Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____<br>Water Table Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____<br>Saturation Present? (includes capillary fringe)    Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____  | <b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>  |

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
 No wetland hydrology indicators are present.

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: U.S. Highway 79 City/County: Williamson County Sampling Date: 03/08/2018  
 Applicant/Owner: TxDOT Austin District State: TX Sampling Point: WDP2  
 Investigator(s): Walt Meitzen, Claire Parra Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 1-2  
 Subregion (LRR): LRR J Lat: 30.518923 Long: -97.673973 Datum: NAD83  
 Soil Map Unit Name: Oakalla silty clay loam, 0 to 2 percent slopes, frequently flooded NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

|   |   |
|---|---|
| Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/><br>Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/><br>Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | <b>Is the Sampled Area within a Wetland?</b><br>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Remarks:<br>Only one of the three necessary wetland indicators are present. The WDP is not located within a wetland.  |   |

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: <u>30'</u> )                                 | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet:   |
|---|------------------|-------------------|------------------|---|
| 1. <u>Fraxinus pennsylvanica</u>                                      | 40               | Y                 | FAC              | Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>2</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>4</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)   |
| 2. _____  | _____            | _____             | _____            |   |
| 3. _____  | _____            | _____             | _____            |   |
| 4. _____  | _____            | _____             | _____            |   |
| <u>40</u> = Total Cover   |                  |                   |                  | <b>Prevalence Index worksheet:</b><br>Total % Cover of: _____ Multiply by: _____<br>OBL species _____ x 1 = _____<br>FACW species _____ x 2 = _____<br>FAC species _____ x 3 = _____<br>FACU species _____ x 4 = _____<br>UPL species _____ x 5 = _____<br>Column Totals: _____ (A) _____ (B)<br><br>Prevalence Index = B/A = _____   |
| <b>Sapling/Shrub Stratum (Plot size: <u>15'</u>)</b>                  |                  |                   |                  |   |
| 1. <u>Fraxinus pennsylvanica</u>                                      | 15               | Y                 | FAC              |   |
| 2. _____  | _____            | _____             | _____            |   |
| 3. _____  | _____            | _____             | _____            |   |
| 4. _____  | _____            | _____             | _____            |   |
| 5. _____  | _____            | _____             | _____            |   |
| <u>15</u> = Total Cover   |                  |                   |                  |   |
| <b>Herb Stratum (Plot size: <u>5'</u>)</b>                            |                  |                   |                  |   |
| 1. <u>Daucus carota</u>   | 15               | Y                 | UPL              | <b>Hydrophytic Vegetation Indicators:</b><br><input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation<br><input type="checkbox"/> 2 - Dominance Test is >50%<br><input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) |
| 2. <u>Eragrostis sp.</u>  | 2                | N                 | UPL              |   |
| 3. <u>Ambrosia trifida</u>  | 2                | N                 | FAC              |   |
| 4. <u>Galium aparine</u>  | 2                | N                 | FACU             |   |
| 5. <u>Calyptocarpus vialis</u>  | 2                | N                 | FAC              |   |
| 6. _____  | _____            | _____             | _____            |   |
| 7. _____  | _____            | _____             | _____            |   |
| 8. _____  | _____            | _____             | _____            |   |
| 9. _____  | _____            | _____             | _____            |   |
| 10. _____   | _____            | _____             | _____            |   |
| <u>23</u> = Total Cover   |                  |                   |                  |   |
| <b>Woody Vine Stratum (Plot size: <u>30'</u>)</b>                     |                  |                   |                  |   |
| 1. <u>Smilax bona-nox</u>   | 10               | Y                 | FACU             | <b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>  |
| 2. _____  | _____            | _____             | _____            |   |
| <u>10</u> = Total Cover   |                  |                   |                  |   |
| % Bare Ground in Herb Stratum <u>77</u>                               |                  |                   |                  |   |
| Remarks:<br>The vegetative community did not pass the dominance test. |                  |                   |                  |   |

**SOIL**

Sampling Point: WDP2

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth<br>(inches) | Matrix        |     | Redox Features |   |                   |                  | Texture   | Remarks                              |
|-------------------|---------------|-----|----------------|---|-------------------|------------------|-----------|--------------------------------------|
|                   | Color (moist) | %   | Color (moist)  | % | Type <sup>1</sup> | Loc <sup>2</sup> |           |                                      |
| 0-12              | 10YR 3/1      | 100 | None           |   |                   |                  | clay loam | gravel and cobbled layer encountered |
|                   |               |     |                |   |                   |                  |           |                                      |
|                   |               |     |                |   |                   |                  |           |                                      |
|                   |               |     |                |   |                   |                  |           |                                      |
|                   |               |     |                |   |                   |                  |           |                                      |
|                   |               |     |                |   |                   |                  |           |                                      |
|                   |               |     |                |   |                   |                  |           |                                      |

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: mix of gravel and cobble  
 Depth (inches): 12

**Hydric Soil Present?** Yes  No

**Remarks:**

No hydric soil indicators are present. Restrictive layer of gravel and cobble (alluvium) encountered at 12 inches in the soil pit.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry-Season Water Table (C2)
- Oxidized Rhizospheres on Living Roots (C3)
- (where not tilled)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres on Living Roots (C3)
- (where tilled)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes  No  Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

**Remarks:**

Two wetland hydrology indicators, B3 (Drift deposits) and B9 (Water-stained leaves), are present.

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: U.S. Highway 79 City/County: Williamson County Sampling Date: 03/08/2018  
 Applicant/Owner: TxDOT Austin District State: TX Sampling Point: WDP3  
 Investigator(s): Walt Meitzen, Claire Parra Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-1  
 Subregion (LRR): LRR J Lat: 30.518497 Long: -97.650332 Datum: NAD83  
 Soil Map Unit Name: Houston Black clay, 3 to 5 percent slopes, moderately eroded NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

|   |   |
|---|---|
| Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/><br>Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/><br>Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | <b>Is the Sampled Area within a Wetland?</b><br>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Remarks:<br>Only one of the three necessary wetland indicators are present. The WDP is not located within a wetland.  |   |

**VEGETATION – Use scientific names of plants.**

| Tree Stratum (Plot size: <u>30'</u> )          | Absolute % Cover | Dominant Species? | Indicator Status |  |
|--|------------------|-------------------|------------------|--|
| 1. <u>Platanus occidentalis</u>                | <u>60</u>        | <u>Y</u>          | <u>FAC</u>       | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>3</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>6</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)  |
| 2. <u>Ulmus americana</u>                      | <u>60</u>        | <u>Y</u>          | <u>FAC</u>       |  |
| 3. _____                                       | _____            | _____             | _____            |  |
| 4. _____                                       | _____            | _____             | _____            |  |
| <u>120</u> = Total Cover                       |                  |                   |                  |  |
| Sapling/Shrub Stratum (Plot size: <u>15'</u> ) | Absolute % Cover | Dominant Species? | Indicator Status |  |
| 1. <u>Fraxinus pennsylvanica</u>               | <u>5</u>         | <u>Y</u>          | <u>FAC</u>       | <b>Prevalence Index worksheet:</b><br>Total % Cover of: _____ Multiply by: _____<br>OBL species _____ x 1 = _____<br>FACW species _____ x 2 = _____<br>FAC species _____ x 3 = _____<br>FACU species _____ x 4 = _____<br>UPL species _____ x 5 = _____<br>Column Totals: _____ (A) _____ (B)<br><br>Prevalence Index = B/A = _____  |
| 2. <u>Ligustrum sinense</u>                    | <u>5</u>         | <u>Y</u>          | <u>UPL</u>       |  |
| 3. _____                                       | _____            | _____             | _____            |  |
| 4. _____                                       | _____            | _____             | _____            |  |
| 5. _____                                       | _____            | _____             | _____            |  |
| <u>10</u> = Total Cover                        |                  |                   |                  |  |
| Herb Stratum (Plot size: <u>5'</u> )           | Absolute % Cover | Dominant Species? | Indicator Status |  |
| 1. <u>Lonicera japonica</u>                    | <u>70</u>        | <u>Y</u>          | <u>FACU</u>      | <b>Hydrophytic Vegetation Indicators:</b><br>___ 1 - Rapid Test for Hydrophytic Vegetation<br>___ 2 - Dominance Test is >50%<br>___ 3 - Prevalence Index is ≤3.0 <sup>1</sup><br>___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br>___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)<br><br><sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 2. _____                                       | _____            | _____             | _____            |  |
| 3. _____                                       | _____            | _____             | _____            |  |
| 4. _____                                       | _____            | _____             | _____            |  |
| 5. _____                                       | _____            | _____             | _____            |  |
| 6. _____                                       | _____            | _____             | _____            |  |
| 7. _____                                       | _____            | _____             | _____            |  |
| 8. _____                                       | _____            | _____             | _____            |  |
| 9. _____                                       | _____            | _____             | _____            |  |
| 10. _____                                      | _____            | _____             | _____            |  |
| <u>70</u> = Total Cover                        |                  |                   |                  |  |
| Woody Vine Stratum (Plot size: <u>30'</u> )    | Absolute % Cover | Dominant Species? | Indicator Status |  |
| 1. <u>Rubus trivialis</u>                      | <u>50</u>        | <u>Y</u>          | <u>FACU</u>      | <b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>   |
| 2. _____                                       | _____            | _____             | _____            |  |
| <u>50</u> = Total Cover                        |                  |                   |                  |  |
| % Bare Ground in Herb Stratum <u>30</u>        |                  |                   |                  |  |

Remarks:  
 The vegetative community did not pass the dominance test.

**SOIL**

Sampling Point: WDP3

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix        |     | Redox Features |   |                   |                  | Texture    | Remarks         |
|----------------|---------------|-----|----------------|---|-------------------|------------------|------------|-----------------|
|                | Color (moist) | %   | Color (moist)  | % | Type <sup>1</sup> | Loc <sup>2</sup> |            |                 |
| 0-7            | 10YR 3/1      | 100 | None           |   |                   |                  | sandy clay | fill present    |
| 7-12           | 10YR 3/1      | 100 | None           |   |                   |                  | sandy clay | no fill present |
| 12-18          | 2.5YR 8/1     | 100 | None           |   |                   |                  | sandy loam |                 |
|                |               |     |                |   |                   |                  |            |                 |
|                |               |     |                |   |                   |                  |            |                 |
|                |               |     |                |   |                   |                  |            |                 |
|                |               |     |                |   |                   |                  |            |                 |

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16) (MLRA 72 & 73 of LRR H)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16) (LRR H outside of MLRA 72 & 73)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes \_\_\_\_\_ No

Remarks:

No hydric soil indicators are present.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry-Season Water Table (C2)
- Oxidized Rhizospheres on Living Roots (C3) (where not tilled)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres on Living Roots (C3) (where tilled)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No \_\_\_\_\_ Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes \_\_\_\_\_ No \_\_\_\_\_ Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes  No \_\_\_\_\_ Depth (inches): 14"  
 (includes capillary fringe)

**Wetland Hydrology Present?** Yes  No \_\_\_\_\_

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

One primary wetland hydrology indicator, A3 (Saturation at 14"), present.

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: U.S. Highway 79 City/County: Williamson County Sampling Date: 03/08/2018  
 Applicant/Owner: TxDOT Austin District State: TX Sampling Point: WDP4  
 Investigator(s): Walt Meitzen, Claire Parra Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-1  
 Subregion (LRR): LRR J Lat: 30.519098 Long: -97.6497 Datum: NAD83  
 Soil Map Unit Name: Houston Black clay, 3 to 5 percent slopes, moderately eroded NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

|   |   |
|---|---|
| Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/><br>Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/><br>Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | <b>Is the Sampled Area<br/>within a Wetland?</b><br>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Remarks:<br>None of the three necessary wetland indicators are present. The WDP is not located within a wetland.  |   |

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: <u>30'</u> ) | Absolute % Cover | Dominant Species? | Indicator Status |  |
|---------------------------------------|------------------|-------------------|------------------|--|
| 1. <u>None</u>                        |                  |                   |                  | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>0</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>3</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)  |
| 2. _____                              |                  |                   |                  |  |
| 3. _____                              |                  |                   |                  |  |
| 4. _____                              |                  |                   |                  |  |
| <u>0</u> = Total Cover                |                  |                   |                  | <b>Prevalence Index worksheet:</b><br>Total % Cover of: _____ Multiply by: _____<br>OBL species _____ x 1 = _____<br>FACW species _____ x 2 = _____<br>FAC species _____ x 3 = _____<br>FACU species _____ x 4 = _____<br>UPL species _____ x 5 = _____<br>Column Totals: _____ (A) _____ (B)<br><br>Prevalence Index = B/A = _____  |
| <u>0</u> = Total Cover                |                  |                   |                  |  |
| <u>0</u> = Total Cover                |                  |                   |                  |  |
| <u>0</u> = Total Cover                |                  |                   |                  |  |
| <u>0</u> = Total Cover                |                  |                   |                  |  |
| <u>0</u> = Total Cover                |                  |                   |                  | <b>Hydrophytic Vegetation Indicators:</b><br>___ 1 - Rapid Test for Hydrophytic Vegetation<br>___ 2 - Dominance Test is >50%<br>___ 3 - Prevalence Index is ≤3.0 <sup>1</sup><br>___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br>___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)<br><br><sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| <u>0</u> = Total Cover                |                  |                   |                  |  |
| <u>0</u> = Total Cover                |                  |                   |                  |  |
| <u>0</u> = Total Cover                |                  |                   |                  |  |
| <u>0</u> = Total Cover                |                  |                   |                  |  |
| <u>0</u> = Total Cover                |                  |                   |                  |  |
| <u>0</u> = Total Cover                |                  |                   |                  |  |
| <u>0</u> = Total Cover                |                  |                   |                  |  |
| <u>0</u> = Total Cover                |                  |                   |                  |  |
| <u>0</u> = Total Cover                |                  |                   |                  |  |
| <u>0</u> = Total Cover                |                  |                   |                  | <b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>   |

Remarks:  
 The vegetative community did not pass the dominance test.

**SOIL**

Sampling Point: WDP4

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth<br>(inches) | Matrix        |     | Redox Features |   |                   |                  | Texture | Remarks |
|-------------------|---------------|-----|----------------|---|-------------------|------------------|---------|---------|
|                   | Color (moist) | %   | Color (moist)  | % | Type <sup>1</sup> | Loc <sup>2</sup> |         |         |
| 0-10              | 10YR 3/2      | 100 | None           |   |                   |                  | clay    |         |
| 10-18             | 2.5YR 7/6     | 100 | None           |   |                   |                  | clay    | fill    |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR F)**
- 1 cm Muck (A9) **(LRR F, G, H)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) **(LRR I, J)**
- Coast Prairie Redox (A16) **(LRR F, G, H)**
- Dark Surface (S7) **(LRR G)**
- High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes \_\_\_\_\_ No

Remarks:

No hydric soil indicators are present.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry-Season Water Table (C2)
- Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) **(LRR F)**

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No \_\_\_\_\_ Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes \_\_\_\_\_ No \_\_\_\_\_ Depth (inches): \_\_\_\_\_  
 Saturation Present? (includes capillary fringe) Yes \_\_\_\_\_ No \_\_\_\_\_ Depth (inches): \_\_\_\_\_

**Wetland Hydrology Present?** Yes \_\_\_\_\_ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators are present.

Attachment D – Historic Aerial Imagery

**Prepared for:**

COX MCLAIN ENVIRONMENTAL CONSULTING INC - Austin  
8401 Shoal Creek Blvd, STE 100  
Austin TX 78757



# Historical Aerial Photographs

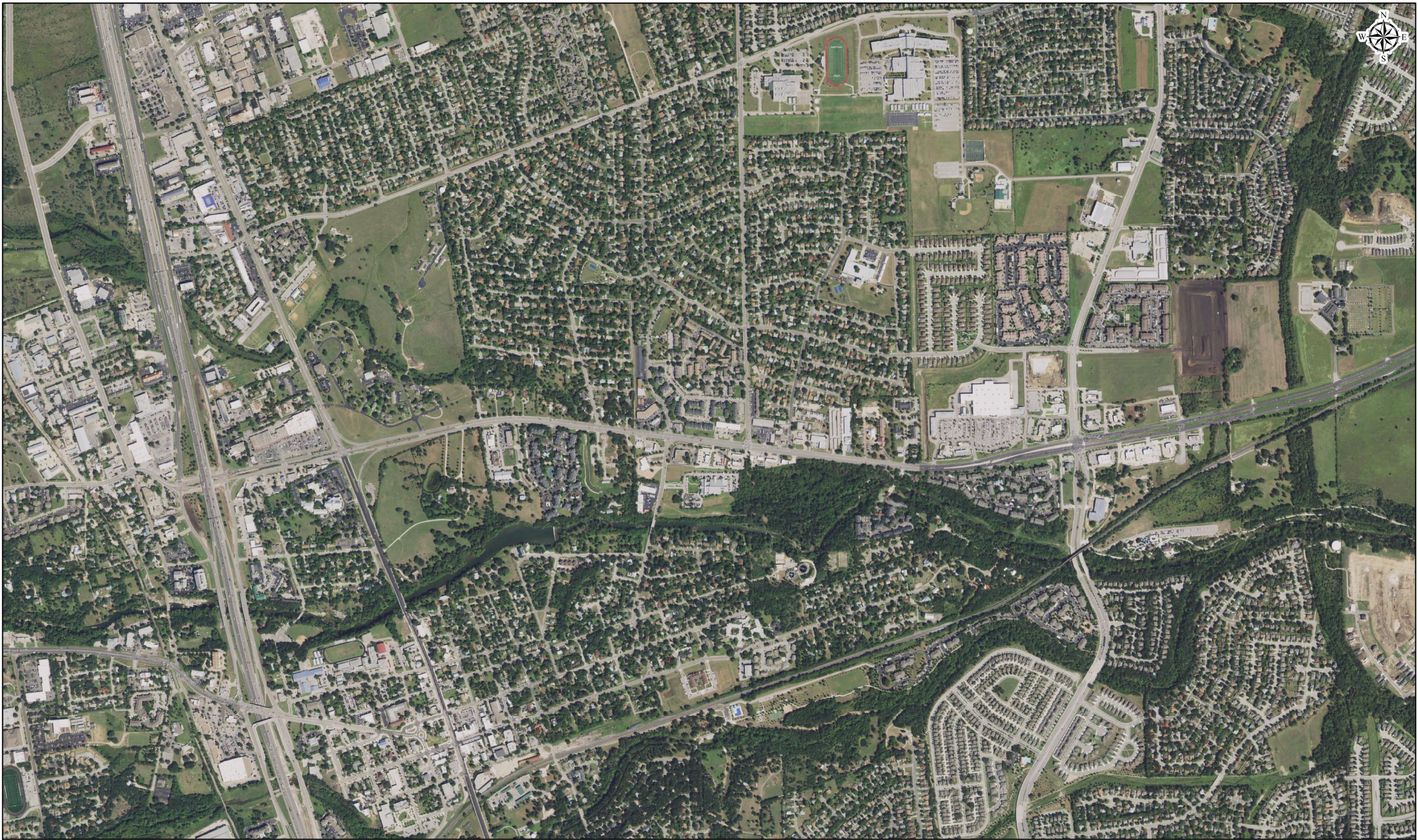
US 79

Williamson County, TX

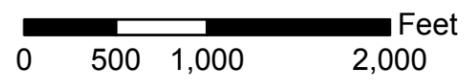
PO #: 003-005-001

ES-126361

Tuesday, November 21, 2017

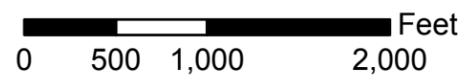


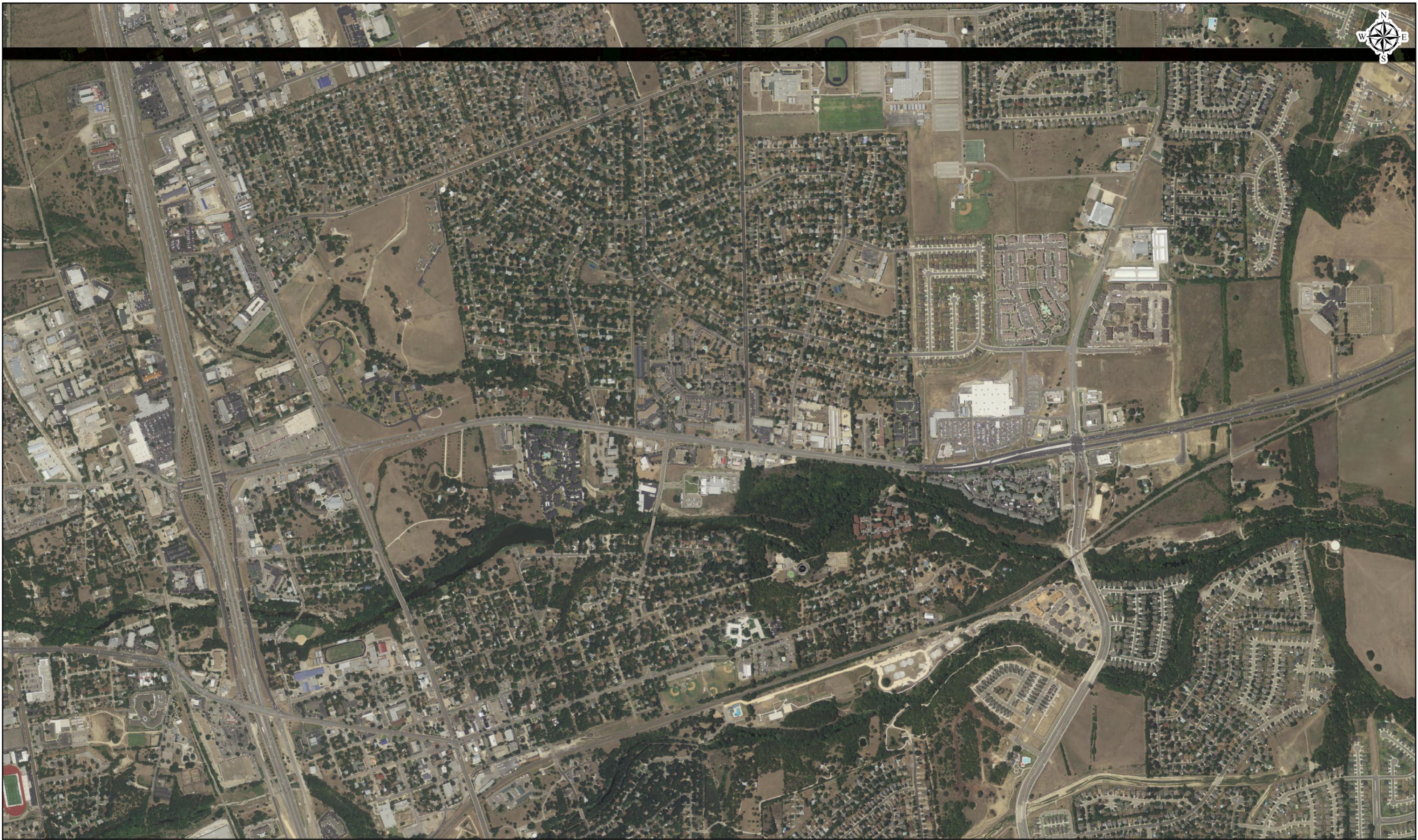
Date: 2016  
Source: USDA



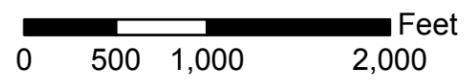


Date: 2012  
Source: USDA



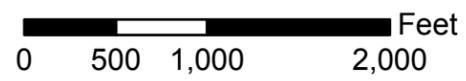


Date: 2008  
Source: USDA



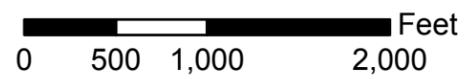


Date: 2004  
Source: USDA



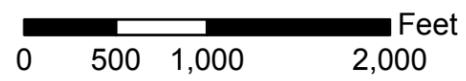


Date: 1995  
Source: USGS



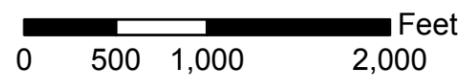


Date: 1988  
Source: TXDOT



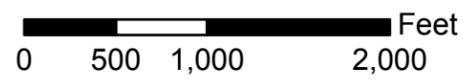


Date: 1981  
Source: USGS



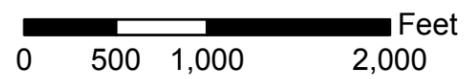


Date: 1972  
Source: ASCS



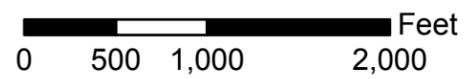


Date: 1969  
Source: USAF



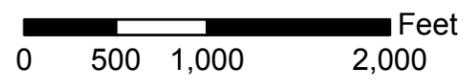


Date: 1953  
Source: AMS





Date: 1941  
Source: ASCS



|                               |                   |
|-------------------------------|-------------------|
| HISTORICAL AERIAL PHOTOGRAPHS |                   |
| ES-126361                     | November 21, 2017 |



## AERIAL SOURCE DEFINITIONS

| Acronym          | Agency  |
|------------------|---|
| <b>AerialOK</b>  | Aerial Oklahoma                                   |
| <b>AMS</b>       | Army Mapping Service                              |
| <b>ASCS</b>      | Agricultural Stabilization & Conservation Service |
| <b>EDAC</b>      | Earth Data Analysis Center                        |
| <b>Fairchild</b> | Fairchild Aerial Surveys                          |
| <b>LDOT</b>      | Louisiana Department of Transportation            |
| <b>TXDOT</b>     | Texas Department of Transportation                |
| <b>USNavy</b>    | United States Navy                                |
| <b>USAF</b>      | United States Air Force                           |
| <b>USCOE</b>     | United States Corps of Engineers                  |
| <b>USDA</b>      | United States Department of Agriculture           |
| <b>USGS</b>      | United States Geological Survey                   |
| <b>WALLACE</b>   | Wallace-Zingery Aerial Surveys                    |
| <b>WSDOT</b>     | Washington State Department of Transportation     |

|                               |                   |
|-------------------------------|-------------------|
| HISTORICAL AERIAL PHOTOGRAPHS |                   |
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