Final
Water Resources Technical Report

Loop 88
Segments 1 and 2
From US Highway 84 to US Highway 62/82
Lubbock County, Texas

CSJ: 1502-02-002

September 2019

Prepared for the Texas Department of Transportation, Lubbock District

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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Appendices

Tables

1.0 INTRODUCTION

The Texas Department of Transportation (TxDOT) Lubbock District proposes to construct Segments 1 and 2 of Loop 88 in Lubbock County, Texas. The proposed project would construct a controlled access facility, consisting of a six-lane divided freeway (three lanes in each direction) with two-lane frontage roads, associated ramps and grade separated diamond intersections. Segment 1 of Loop 88 begins at United States Highway (US) 84 and Farm-to-Market (FM) 2641 intersection and generally follows FM 2641, then curves southward to follow County Road (CR) 1300 (Research Boulevard), where it then connects with Segment 2 at State Highway (SH) 114. Segment 2 of Loop 88 begins at the CR 1300/SH 114 intersection and generally follows CR 1300 to the south, before curving towards the southwest then back to the southeast to connect with the US 62/82 intersection and the beginning of the currently-under-design Segment 3. The two segment designations are for construction phasing purposes. The logical termini for this project are US 84 to the north and US 62/82 to the south (**Figures 1** and **2** in **Appendix A**). Construction limits for the project are at US 84 and 0.5 mile northwest of US 62/82. The project length is approximately 16.05 miles. The control-section-job (CSJ) number for the overall Loop 88 project is 1502-01-033; the CSJ for Segments 1 and 2 is 1502-02-002.

This report provides the results of water resource investigations in the project area and discusses the project's compliance with water resource regulations. This report addresses all regulations outlined in TxDOT's current Environmental Handbook for water resources.

2.0 PROJECT DESCRIPTION

2.1 *Existing Facility*

Most of the proposed project follow existing transportation facilities. From the northern construction limit, the project generally follows FM 2641 for approximately 4.26 miles. The existing FM 2641 is a two-lane undivided roadway with one lane in each direction. The project then generally follows CR 1300 south for approximately 8.33 miles. The existing CR 1300 is an unimproved dirt road approximately 20 feet wide. The remainder of the proposed project is on new location.

2.2 *Proposed Project*

For Segment 1, the frontage roads would start at US 84 while the mainlanes would begin approximately 0.97 mile west of US 84. Segment 2 would end approximately 0.48 mile northwest of US 62/82. The proposed improvements would include constructing a six-lane divided freeway, three lanes in each direction, with two-lane frontage roads in each direction. The proposed mainlanes would consist of six 12-foot-wide travel lanes with 10-foot-wide outside shoulders and 11-foot-wide inside shoulders. The proposed frontage roads consist of

two 12-foot-wide travel lanes with 8-foot-wide outside shoulders and 4-foot-wide inside shoulders. The proposed right-of-way (ROW) width is 400 feet.

There are approximately 40.81 acres of existing transportation ROW. The proposed project would require approximately 844.34 acres of proposed ROW, and approximately 91.42 acres of drainage easements.

3.0 PROJECT SITE AND SURROUNDING AREA

The project area is west of Lubbock, Texas, in the Llano Estacado subregion of the High Plains ecoregion of Texas (Griffith et al. 2007). Most of the project area is currently used for agricultural production, with limited residential properties throughout Segments 1 and 2. The proposed ROW includes some existing paved and unpaved roads.

3.1 *Site Topography*

The project area has relatively little change in topography, with elevations ranging from approximately 3,310 feet above mean sea level (MSL) to 3,330 feet above MSL (U.S. Geological Survey [USGS] 1956, 1985a, 1985b, 1985c). Most of the project area slopes eastward toward the North Fork Double Mountain Fork Brazos River, located approximately 10 miles east of the project area, and Yellow House Draw, located less than 0.5 mile east of the northern project limit. No streams are mapped within the project area, but several playas (shallow depressions) are located in or near the project area.

3.2 *Site Plant Communities*

Most of the project area consists of irrigated agricultural fields, and the primary crops observed during field investigations include cotton (*Gossypium hirsutum*), sorghum (*Sorghum bicolor*), and wheat (*Triticum aestivalis*). Plant species that occur in fallow fields and roadsides sideoats grama (*Bouteloua curtipendula*), Texas grama (*B. rigidiseta*), silver bluestem (*Bothriochloa laguroides*), common pepperweed (*Lepidium densiflorum*), redstem stork's bill (*Erodium cicutarium*), and Ram's-horn (*Proboscidea louisianica*).

3.3 *Soils*

Fourteen soil types are mapped within the project area by the Natural Resources Conservation Service (NRCS) (U.S. Department of Agriculture [USDA]–NRCS 2019a) (**Table 1**). Randall clay contains approximately 80 percent hydric components, and this soil type is mapped mainly within playas in the region. The other soil series include loams, sandy loams, and clay loams, all without hydric components (USDA –NRCS 2019b).

Table 1: Soils Mapped in the Project Area

Soil Mapping Unit	Percent in Project Area	Percent of Soil with Hydric Components
Acuff loam, 0 to 1% slopes	33.3	0
Acuff loam, 1 to 3% slopes	1.4	0
Amarillo fine sandy loam, 0 to 1% slopes	8.9	0
Amarillo fine sandy loam, 1 to 3% slopes	6.2	0
Drake clay loam, 0 to 1% slopes	1.0	0
Estacado clay loam, 0 to 1% slopes	16.6	0
Estacado clay loam, 1 to 3% slopes	5.2	0
Lofton clay loam, 0 to 1% slopes, rarely ponded	0.4	0
Mansker clay loam, 1 to 3% slopes	0.6	0
Olton clay loam, 0 to 1% slopes	20.5	0
Olton clay loam, 1 to 3% slopes	0.8	0
Randall clay, 0 to 1% slopes, occasionally ponded	3.7	80
Zita fine sandy loam, 0 to 1% slopes	1.3	0
Zita loam, 0 to 1% slopes	0.1	0

Source: USDA-NRCS 2019a, 2019b.

3.4 *Hydrology*

The project area is located within the North Fork Double Mountain Fork watershed (Hydrologic Unit Code 12050003) and the Yellow House Draw watershed (Hydrologic Unit Code 12050001) (USGS 2019), which are located within the Brazos River watershed. No natural streams cross the project area (USGS 2018). Based on topographic, floodplain, and National Wetland Inventory (NWI) maps, the project area contains portions of six playas (**Figures 3.1, 3.2, 4.1, 4.2, 5.1,** and **5.2** in **Appendix A**). Playas are natural, shallow, closed depressions that are common in the High Plains region and collect water from rainfall and agricultural irrigation (TPWD 2019). The Federal Emergency Management Agency (FEMA) has mapped 100-year floodplains within many playas in the region (FEMA 2019) (**Figure 3.1** and **3.2**). Water that collects in playas typically remains in the playa and gradually recedes through infiltration to groundwater or evaporation.

The average annual precipitation for the project area (based on National Oceanic and Atmospheric Administration [NOAA] data for Lubbock, Texas) is approximately 19 inches and the average annual snowfall is approximately 8 inches (NOAA 2019).

4.0 METHODS

Investigations to identify surface water resources, including potential waters of the U.S., included an initial review of background information, including aerial photography from various years, topographic, soils maps, NWI maps (U.S. Fish and Wildlife Service [USFWS] 2019), floodplain maps (FEMA 2019), and the National Hydrology Dataset (NHD) (USGS 2018). Following the background review, wetland specialists conducted field surveys of the project area in April 2019. During the survey, the project area was visited where access was available; right-of-entry (ROE) was not available for some areas of the proposed ROW and drainage easements. In those areas, the potential for surface water features was visually estimated from public access points and through review of the background data and maps. Most of the project area is in crop production or otherwise disturbed, so wetland determination data collection was limited to undisturbed areas at potential playa locations. Completed wetland determination data forms are provided in **Appendix C**.

5.0 RESULTS AND DISCUSSION

This section addresses the project's compliance with regulations related to water resources. As noted in Section 1.0, all water resource regulations outlined in TxDOT's current Environmental Handbook are discussed below; however, the following regulations do not apply to the project because the project would not affect the regulated resources:

- Executive Order 11990 on Wetlands
- General Bridge Act and Sections 9 and 10 of the Rivers and Harbors Act (RHA)
- Section 408/Section 14 of the RHA
- Section 303(d) of the Clean Water Act (CWA)
- Edwards Aquifer Rules
- Trinity River Corridor Development
- Wild and Scenic Rivers Act
- Coastal Zone Management Act and Texas Coastal Management Program (TCMP)
- Coastal Barrier Resources Act
- International Boundary and Water Commission (IBWC)
- Texas General Land Office (GLO) Memorandum of Understanding (MOU)

5.1 *Section 404 of the Clean Water Act: Waters of the U.S.*

The project area does not contain any waters of the U.S. subject to regulation under Section 404 of the CWA. Therefore, no impacts to waters of the U.S. are anticipated, and no Section 404 permit would be required.

Portions of six playas occur within the proposed ROW (see Playas 1 through 6 on **Figures 3.1, 3.2, 4.1, 4.2, 5.1,** and **5.2**) and are generally described below. However, the playas are not

expected to be considered waters of the U.S. because they are closed depressions that have no surface water connection to a water of U.S. **Figures 3.1, 3.2, 4.1, 4.2, 5.1,** and **5.2** show the playas as depicted by FEMA floodplain and NWI data. **Appendix B** provides representative photographs of the playas.

Review of aerial photography from various years and observations made during the April 2019 field investigations show that Playas 1, 4, 5, and 6 hold water after large rainfall events but are plowed and used for crop production during dry periods. Based on field investigations from public access points and where ROE was granted, vegetation in Playas 1, 4, 5, and 6 appeared similar to surrounding agricultural fields, contained standing crops or crop stubble (wheat and cotton), and were either plowed or showed recent signs of plowing. Standing water was present in the lowest portion of Playa 6, but aerial photographs show the water is not permanent. Wetland determinations at four observation points (see data forms in **Appendix C**) indicate these playas do not typically contain hydrophytic vegetation, nor do they contain soils that meet hydric soil criteria.

Playas 2 and 3 appear to be fallow fields with upland vegetation. During field investigations, Playa 2 was dominated by sand dropseed (*Sporobolus cryptandrus*), while Playa 3 was dominated by careless weed (*Amaranthus palmeri*) and Arkansas leastdaisy (*Chaetopappa asteroides*). Review of aerial photography and field observations did not reveal standing water or other signs of a playa in the proposed ROW at these locations. Wetland determinations at two observation points (see data forms in **Appendix C**) indicate these playas do not typically contain hydrophytic vegetation, nor do they contain soils that meet hydric soil criteria.

5.2 *Section 401 of the Clean Water Act: Water Quality Certification*

Section 401 of the CWA requires any applicant who seeks a permit from a federal agency for an activity that will involve a discharge into waters of the U.S. to first obtain a certification from the State that the discharge will not violate state water quality standards. The proposed project would not require authorization under Section 404, Section 10, or Section 9/General Bridge Act. Therefore, Section 401 of the CWA does not apply.

5.3 *Section 402 of the Clean Water Act*

Since Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit (CGP) and compliance (and the associated documentation) occur outside the environmental clearance process, compliance is ensured by the policies and procedures that govern the design and construction phases of the projects. TxDOT's Project Development Process Manual and the Plans, Specifications, and Estimates (PS&E) Preparation Manual require a Storm Water Pollution Prevention Plan (SW3P) be included in the plans of all projects that disturb 1 or more acres. The Construction Contract Administration Manual requires that the appropriate CGP authorization documents (Notice of Intent or Site Notice) be completed, posted, and

submitted, when required by the CGP, to the Texas Commission on Environmental Quality (TCEQ). It also requires that projects be inspected to ensure compliance with the CGP.

The PS&E Preparation Manual requires that all projects include Standard Specification Item 506 (Temporary Erosion, Sedimentation, and Environmental Controls), and the "Required Specifications Checklists" require Special Provision 506-003 on all projects that need authorization under the CGP. These documents require the project contractor to comply with the CGP and SW3P and complete the appropriate authorization documents.

5.4 *Executive Order 11988 on Floodplain Management*

Portions of the project limits are located within a FEMA designated 100-year floodplain associated with playas (**Figure 3.1** and **3.2**). This project is subject to and will comply with federal Executive Order 11988 on Floodplain Management. The department implements this Executive Order on a programmatic basis through its Hydraulic Design Manual. Design of this project will be conducted in accordance with the department's Hydraulic Design Manual. Adherence to the TxDOT Hydraulic Design Manual ensures that this project will not result in a "significant encroachment" as defined by Federal Highway Administration's (FHWA) rules implementing Executive Order 11988 at 23 CFR 650.105(q).

5.5 *Executive Order 11990 on Wetlands*

No wetlands were identified in the project area; therefore, Executive Order 11990 on wetlands does not apply because no wetlands would be impacted.

5.6 *Sections 9 and 10 of the Rivers and Harbors Act*

No water features within the project area are classified as navigable waters; therefore, Sections 9 and 10 of the RHA are not applicable to the project.

5.7 *Section 408/Section 14 of the Rivers and Harbors Act*

The project area does not include any U.S. Army Corps of Engineers (USACE) federally authorized civil works project or USACE-managed land. Therefore, Section 408/Section 14 of the RHA is not applicable to the project.

5.8 *Section 303(d) of the Clean Water Act*

Runoff from the project area would not directly discharge into a Section 303(d) listed threatened or impaired water, or into a stream within 5 miles upstream of a Section 303(d) listed threatened or impaired water. The most recent *2016 Texas Integrated Report Index of Water Quality Impairments* was utilized in this assessment (TCEQ 2018).

5.9 *Trinity River Corridor Development*

The project area is not located within the Trinity River Corridor Regulatory Zone; therefore, a Trinity River CDC is not required.

5.10 *Wild and Scenic Rivers*

No designated wild and scenic rivers occur in Lubbock County; therefore, the Wild and Scenic Rivers Act does not apply.

5.11 *Coastal Zone Management and Texas Coastal Management Program*

The project is not located within the TCMP coastal zone management boundary; therefore, the Coastal Zone Management Act and TCMP are not applicable to the project.

5.12 *Coastal Barrier Resources*

There are no Coastal Barrier Resources System units mapped in Lubbock County; therefore, the Coastal Barrier Resources Act does not apply to the project.

5.13 *Edwards Aquifer*

The Edwards Aquifer Recharge Zone, Contributing Zone, and Transition Zone do not occur in Lubbock County; therefore, the Edwards Aquifer Rules do not apply to the project.

5.14 *International Boundary and Water Commission*

No IBWC flood control projects or ROW occur in or adjacent to the project area; therefore, the project does not require an IBWC license.

5.15 *Texas General Land Office Memorandum of Understanding*

The project area does not include State-owned streambeds, state submerged lands, or other State-owned land that is under the management of the Texas GLO; therefore, no coordination with or lease from the GLO is required.

6.0 REFERENCES

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_____. 1985c. 7.5-minute series topographic map (1:48,000 scale), Wolfforth NE, Texas. USGS. Denver, Colorado, and Reston, Virginia, USA.

_____. 2018. National Hydrography Dataset (NHD) Online Mapper. https://viewer.nationalmap.gov/advanced-viewer/. Accessed May 2019.

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Appendix A

Figures

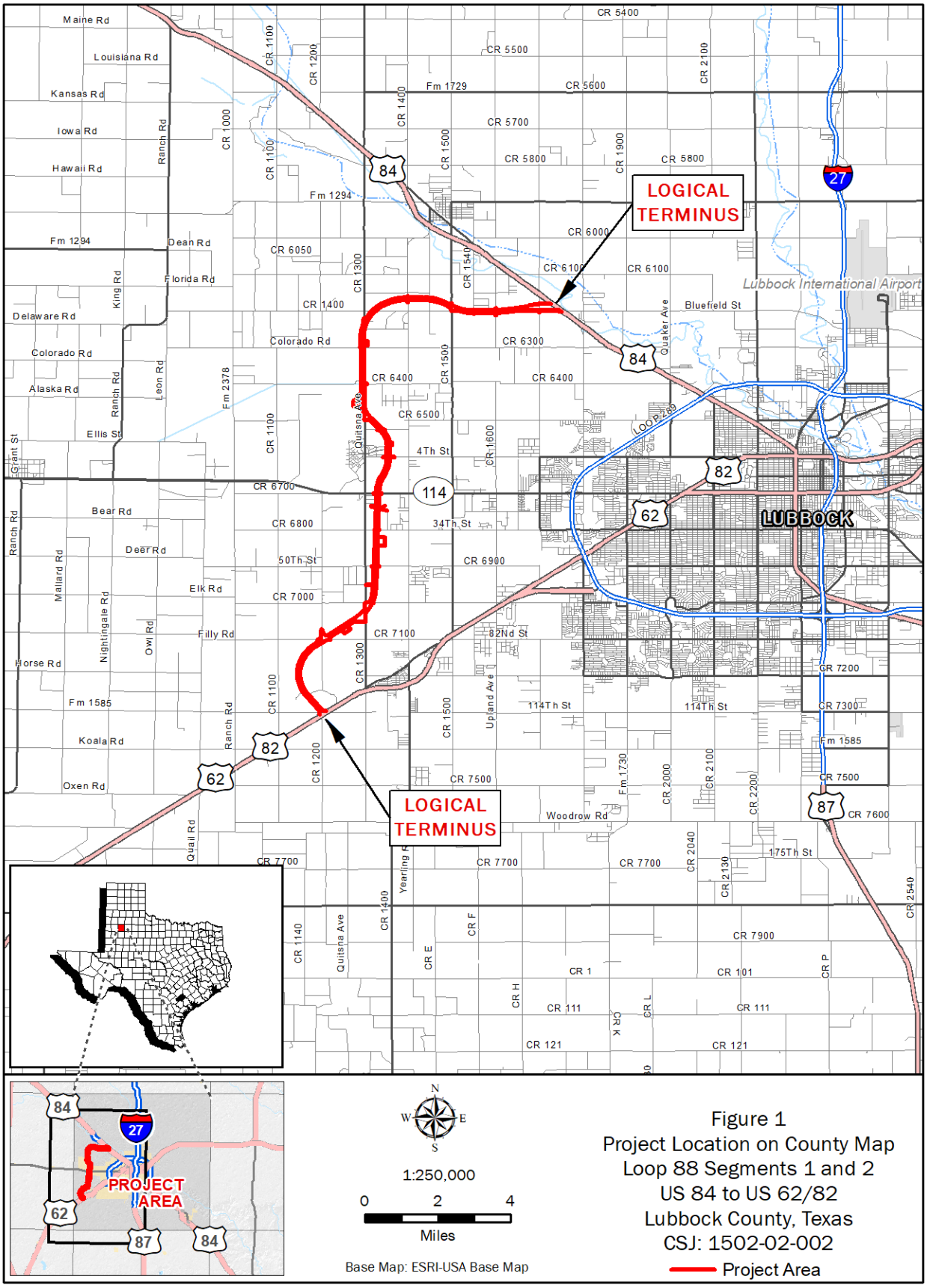


Figure 1
Project Location on County Map
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

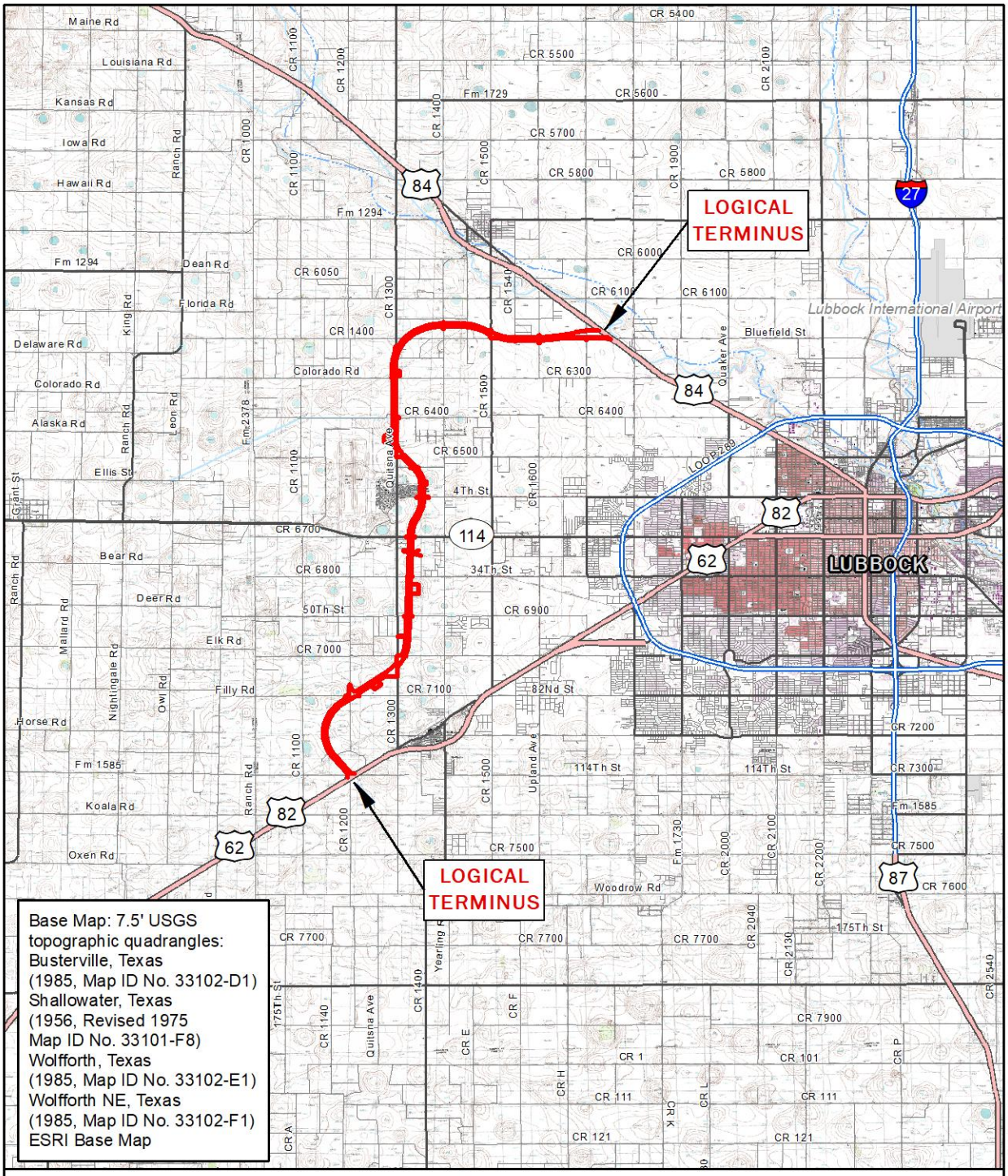


Figure 2
Project Location on Topographic Base
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

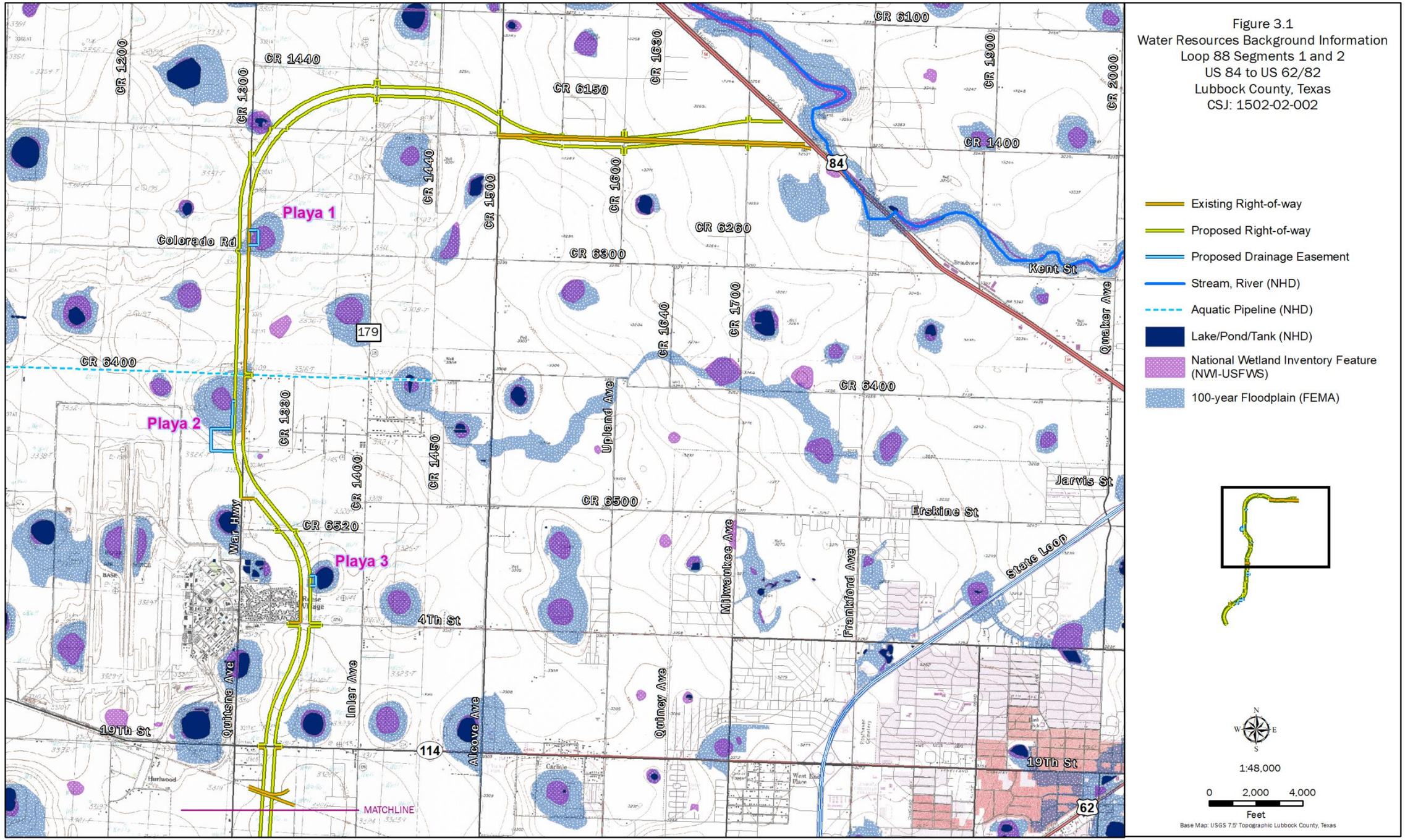
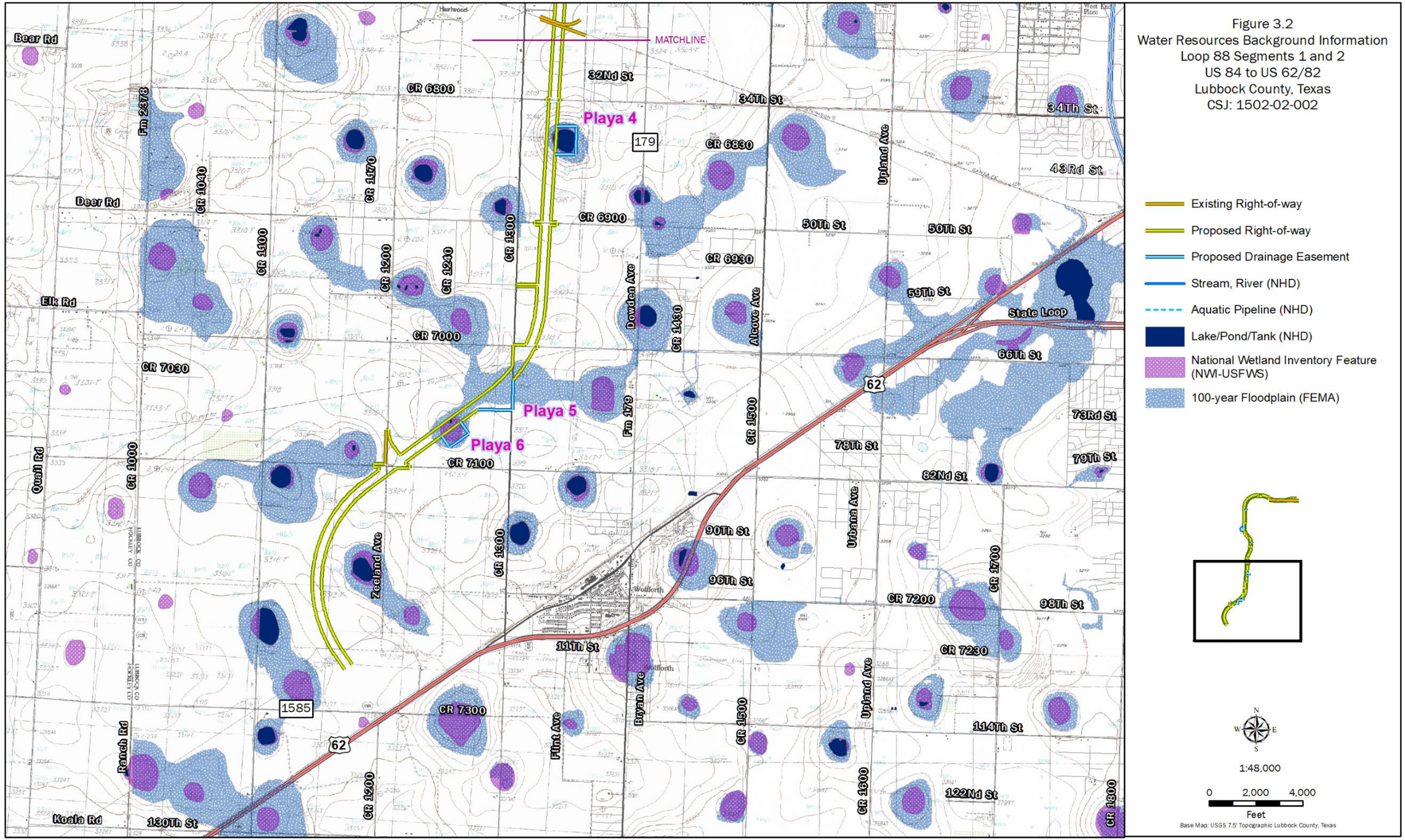


Figure 3.1
Water Resources Background Information
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Figure 3.2
Water Resources Background Information
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002



- Existing Right-of-way
- Proposed Right-of-way
- Proposed Drainage Easement
- Stream, River (NHD)
- Aquatic Pipeline (NHD)
- Lake/Pond/Tank (NHD)
- National Wetland Inventory Feature (NWI-USFWS)
- 100-year Floodplain (FEMA)

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Base Map: USGS 7.5' Topographic Lubbock County, Texas

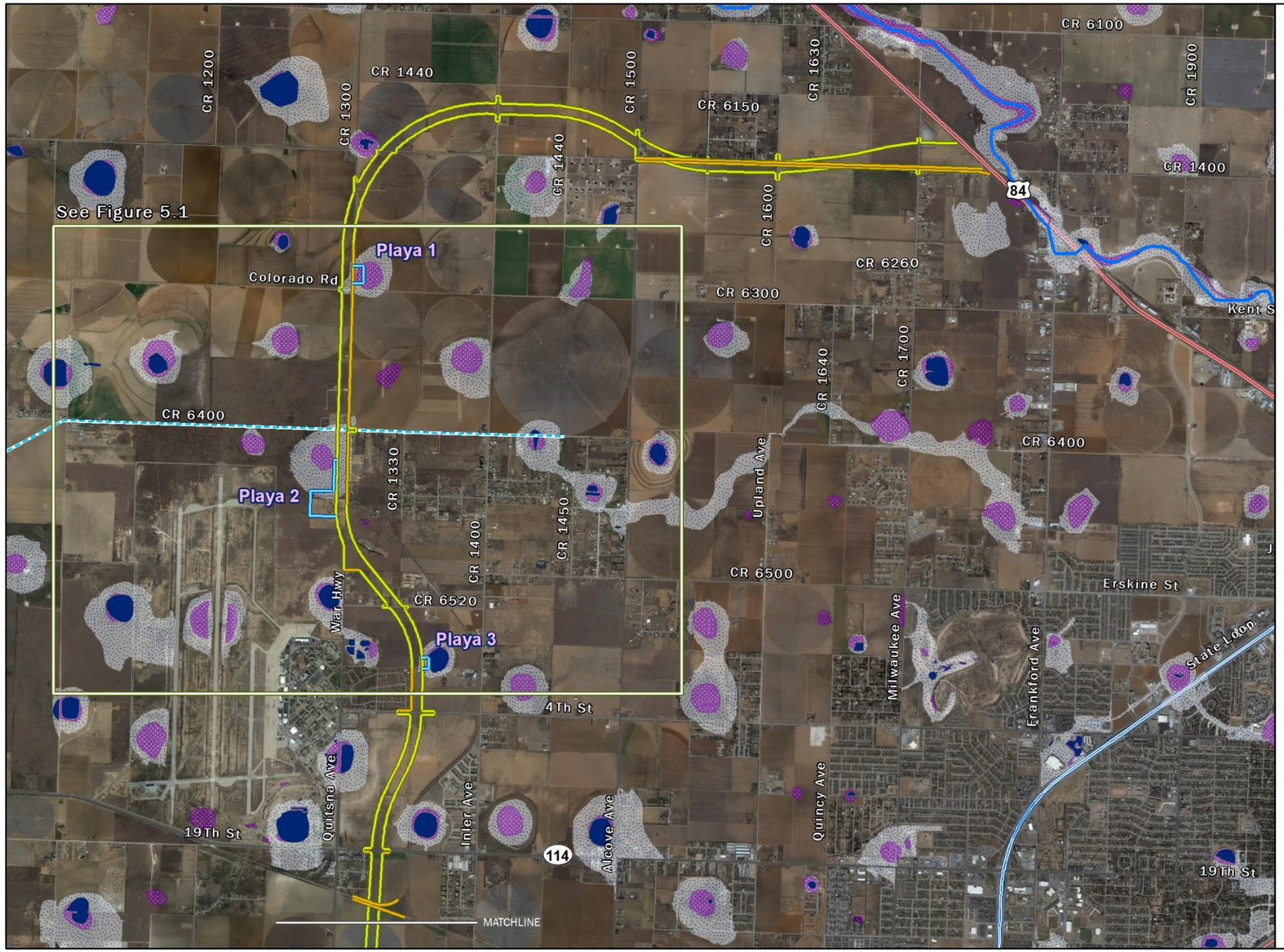

Figure 4.1
Project Area on Aerial Imagery
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

- Existing Right-of-way
- Proposed Right-of-way
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- Stream, River (NHD)
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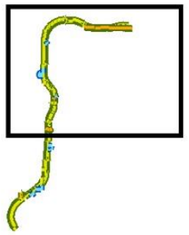

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Base Map: Texas Imagery Service, 2018 Lubbock County, Texas

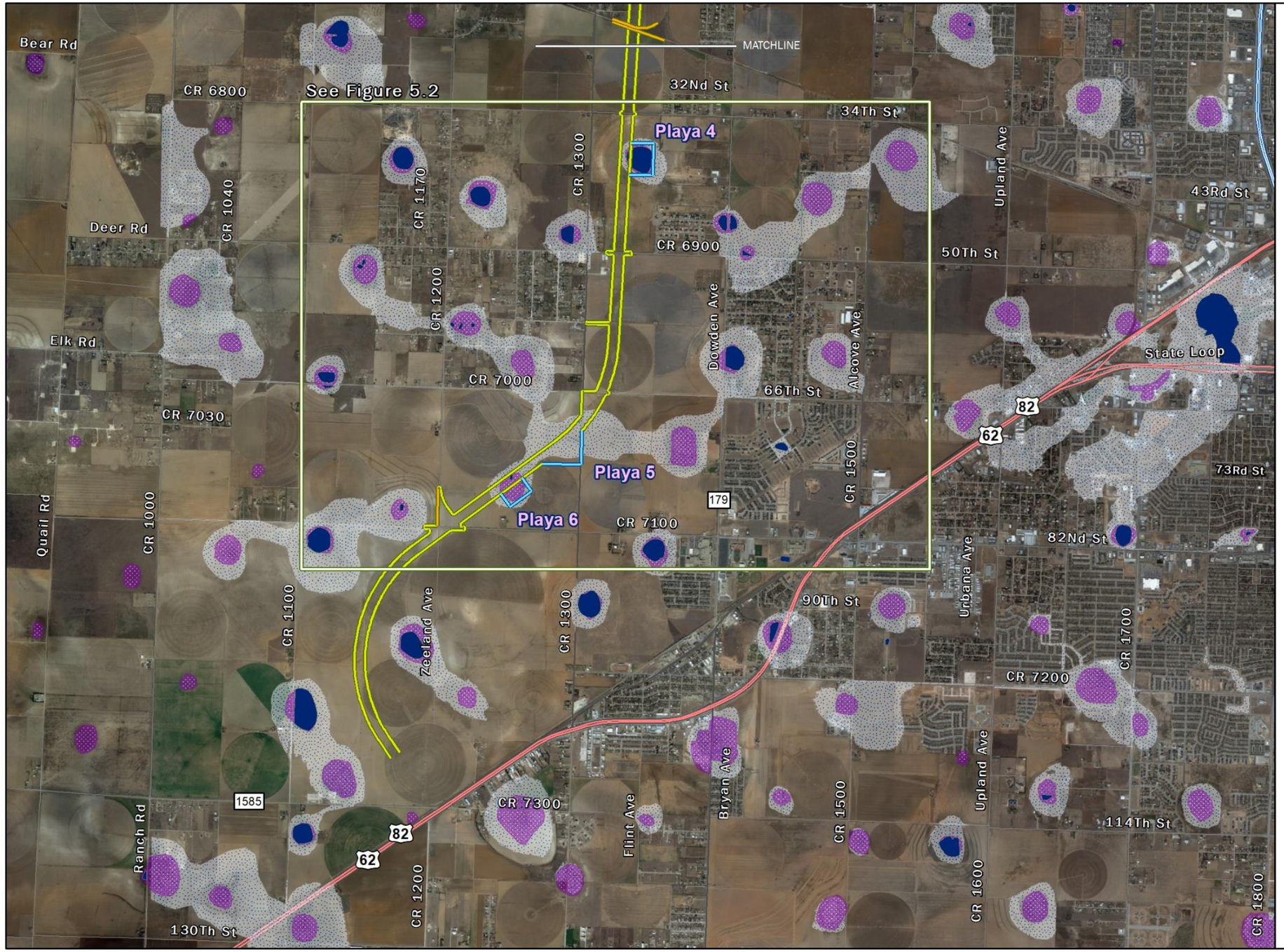

Figure 4.2
Project Area on Aerial Imagery
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

- Existing Right-of-way
- Proposed Right-of-way
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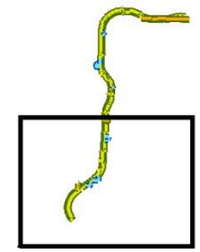
- 100-year Floodplain (FEMA)



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Base Map: Texas Imagery Service, 2018 Lubbock County, Texas

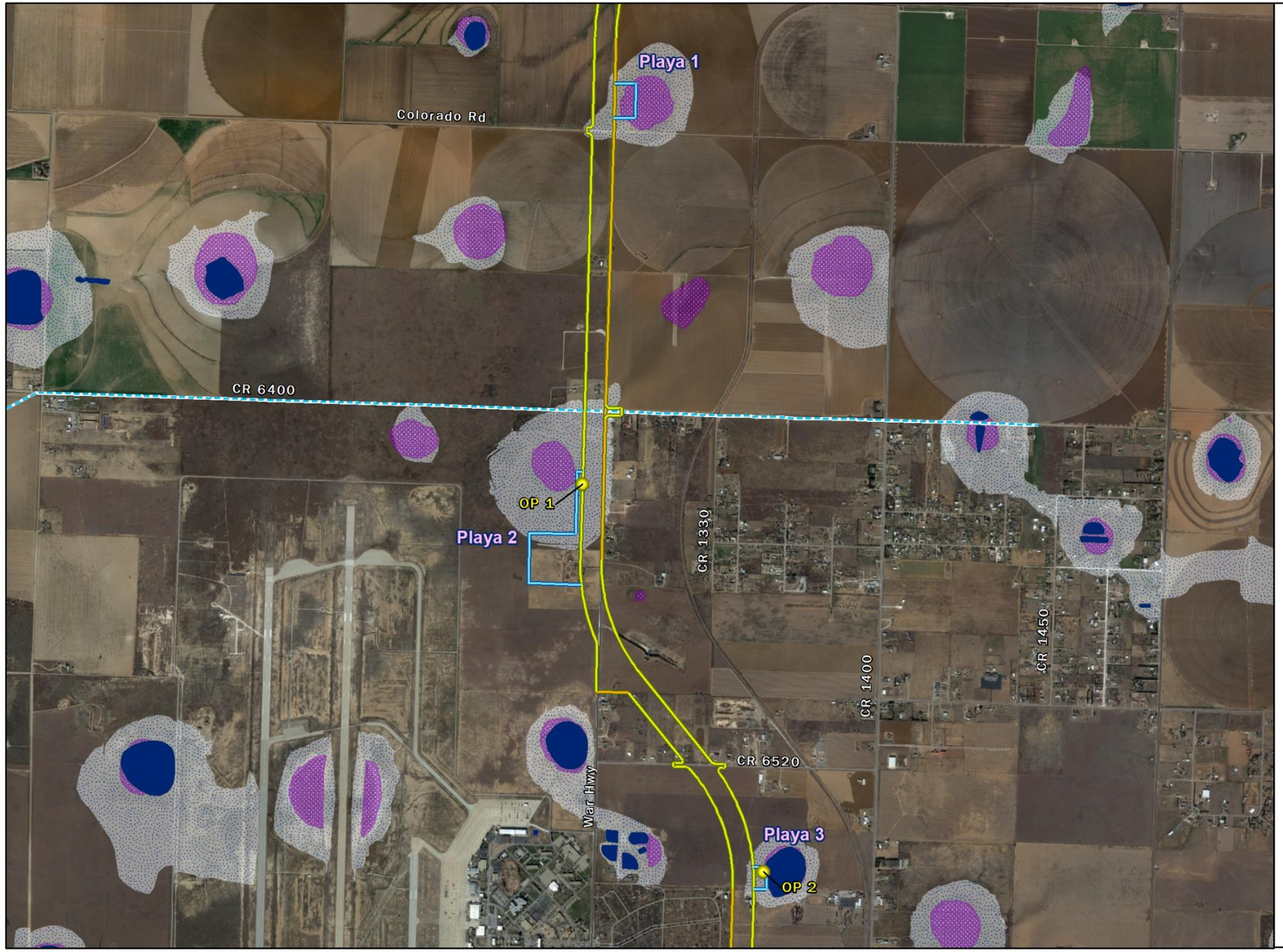
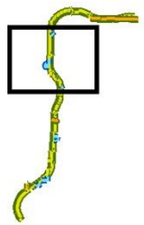


Figure 5.1
Playas
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

- Existing Right-of-way
- Proposed Right-of-way
- Proposed Drainage Easement
- Stream, River (NHD)
- Aquatic Pipeline (NHD)
- Lake/Pond/Tank (NHD)
- National Wetland Inventory Feature (NWI-USFWS)
- 100-year Floodplain (FEMA)
- Observation Point (OP #)



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Base Map: Texas Imagery Service, 2018 Lubbock County, Texas

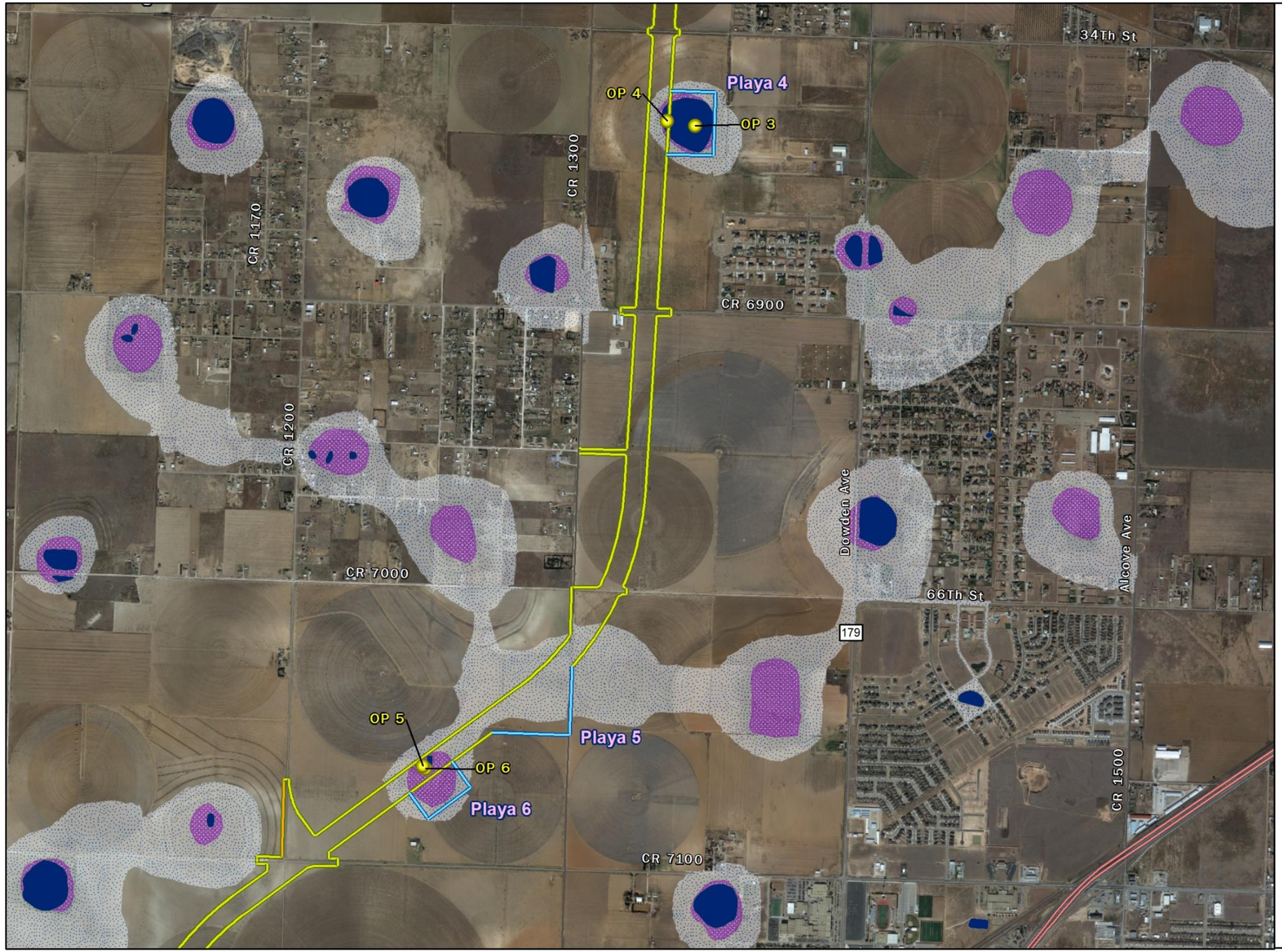

Figure 5.2
Playas
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

- Existing Right-of-way
- Proposed Right-of-way
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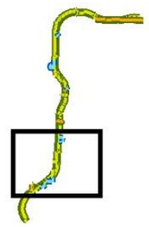

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Base Map: Texas Imagery Service, 2018 Lubbock County, Texas

Appendix B

Representative Photographs

Photo 1. Facing southeast toward Playa 1.

Photo 2. Facing northwest towards Playa 2.

Photo 3. Playa 3 at OP-02, facing east.

Photo 4. Playa 4 at OP-04, facing west.

Photo 5. Facing west toward Playa 5.

Photo 6. Playa 6, facing southeast.

Appendix C

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Loop 88 Segments 1 & 2 City/County: Lubbock Sampling Date: 2-Apr-19

Applicant/Owner: Texas Department of Transportation State: Texas Sampling Point: OP 01

Investigator(s): G. Casares, J. Noel, M. Torres Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): playa Local relief (concave, convex, none): flat Slope (%): 0 to 1

Subregion (LRR): H Lat: 33.617435 Long: -102.027994 Datum: WGS84

Soil Map Unit Name: Acuff loam, 0 to 1 percent slopes NWI Classification: PUSA

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No _____ (If no, explain in remarks)

Are vegetation No , soil No , or hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are vegetation No , soil No , or hydrology No 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 _____	No **X**	
Hydric Soil Present?	Yes _____	No **X**	
Wetland Hydrology Present?	Yes _____	No **X**	**Is the Sampled Area within a Wetland? Yes _____ No X**

Remarks: Does not meet the three criteria for a wetland.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30-ft R)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling/Shrub Stratum (Plot size: 15-ft R)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5-ft R)			
1. *Sporobolus cryptandrus*	90	Yes	FACU
2. *Amaranthus palmeri*	5	No	FACU
3. *Aphanostephus ramosissimus*	2	No	UPL
4. *Solanum elaeagnifolium*	1	No	UPL
5. *Achillea millefolium*	1	No	FACU
6.			
7.			
8.			
9.			
10.			
	99 = Total Cover		
50% of total cover: 49.5	20% of total cover: 19.8		
Woody Vine Stratum (Plot size: 30-ft R)			
1.			
2.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
% Bare Ground in Herb Stratum 0			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____ (A)	_____ (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present Yes _____ No X

Remarks: Does not meet the criteria for hydrophytic vegetation.

SOIL

Sampling Point: OP 01

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

Depth	Matrix		Redox Features					
(Inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 2	10YR 4/4	100					clay loam	
2 to 6	7.5YR 4/4	80					clay loam	mixed matrix
	7.5YR 4/4	20						
6 to 14	7.5YR 4/4	100					silty clay loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]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[3]:

- ___ 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)

[3]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** **X**

Remarks: Does not meet the criteria for hydric soil.

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 X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

Wetland Hydrology Present? **Yes** ___ **No** **X**

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

Remarks: Does not meet the criteria for wetland hydrology.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Loop 88 Segments 1 & 2 City/County: Lubbock Sampling Date: 4-Apr-19

Applicant/Owner: Texas Department of Transportation State: Texas Sampling Point: OP 02

Investigator(s): G. Casares, J. Noel, M. Torres Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): playa Local relief (concave, convex, none): none Slope (%): 0 to 1

Subregion (LRR): H Lat: 33.597672 Long: -102.015982 Datum: WGS84

Soil Map Unit Name: Randall clay, 0 to 1 percent slopes, occasionally ponded NWI Classification: PUSA

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No _____ (If no, explain in remarks)

Are vegetation No , soil No , or hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are vegetation No , soil No , or hydrology No 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 ____	No **X**	
Hydric Soil Present?	Yes ____	No **X**	
Wetland Hydrology Present?	Yes ____	No **X**	**Is the Sampled Area within a Wetland? Yes ____ No X**

Remarks: Does not meet the three criteria for a wetland.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30-ft R)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling/Shrub Stratum (Plot size: 15-ft R)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5-ft R)			
1. *Bothriochloa laguroides*	30	Yes	UPL
2. *Sisymbrium altissmum*	30	Yes	UPL
3. *Helianthus ciliaris*	25	Yes	FAC
4. *Rorippa sinuata*	5	No	FACW
5. *Veronica peregrina*	2	No	FACW
6. *Rumex crispus*	2	No	FAC
7. *Erodium cicutarium*	1	No	UPL
8.			
9.			
10.			
	95 = Total Cover		
50% of total cover: 47.5	20% of total cover: 19		
Woody Vine Stratum (Plot size: 30-ft R)			
1.			
2.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
% Bare Ground in Herb Stratum 5			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index Worksheet

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals ____ (A)	____ (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present Yes ____ No X

Remarks: Does not meet the criteria for hydrophytic vegetation.

SOIL

Sampling Point: OP 02

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

Depth	Matrix		Redox Features					
(Inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 3	7.5YR 3/2	100					loam	
3 to 9	7.5YR 3/2	100					silty loam	
9 to 14	10YR 4/2	100					silty loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]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[3]:

- ___ 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)

[3]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 X

Remarks: Does not meet the criteria for hydric soil.

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 X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

Wetland Hydrology Present? Yes ___ No X

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

Remarks: Does not meet the criteria for wetland hydrology.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Loop 88 Segments 1 & 2 City/County: Lubbock Sampling Date: 2-Apr-19

Applicant/Owner: Texas Department of Transportation State: Texas Sampling Point: OP 03

Investigator(s): G. Casares, J. Noel, M. Torres Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): playa Local relief (concave, convex, none): concave Slope (%): 0 to 2

Subregion (LRR): H Lat: 33.558435 Long: -102.019783 Datum: WGS84

Soil Map Unit Name: Randall clay, 0 to 1 percent slopes, occasionally ponded NWI Classification: PUSA

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ____ (If no, explain in remarks)

Are vegetation No, soil No, or hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are vegetation No, soil No, or hydrology No 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 ____	No **X**	
Hydric Soil Present?	Yes ____	No **X**	
Wetland Hydrology Present?	Yes ____	No **X**	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** **X**

Remarks: Does not meet the three criteria for a wetland.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30-ft R)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling/Shrub Stratum (Plot size: 15-ft R)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5-ft R)			
1. *Amaranthus palmeri*	70	Yes	FACU
2. *Chaetopappa asteroides*	40	Yes	UPL
3. *Salsola tragus*	1	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	111 = Total Cover		
50% of total cover: 55.5	20% of total cover: 22.2		
Woody Vine Stratum (Plot size: 30-ft R)			
1.			
2.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
% Bare Ground in Herb Stratum 0			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals ____ (A)	____ (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present **Yes** ____ **No** **X**

Remarks: Does not meet the criteria for hydrophytic vegetation.

SOIL

Sampling Point: OP 03

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

Depth	Matrix		Redox Features					
(Inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 2	10YR 3/2	100					loam	
2 to 6	7.5YR 3/2	100					loam	
6 to 14	7.5YR 3/2	100					clay loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]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[3]:

- ___ 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)

[3]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 X

Remarks: Does not meet the criteria for hydric soil.

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 X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

Wetland Hydrology Present? Yes ___ No X

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

Remarks: Does not meet the criteria for wetland hydrology.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Loop 88 Segments 1 & 2 City/County: Lubbock Sampling Date: 3-Apr-19

Applicant/Owner: Texas Department of Transportation State: Texas Sampling Point: OP 04

Investigator(s): G. Casares, J. Noel, M. Torres Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): playa Local relief (concave, convex, none): none Slope (%): 0 to 1

Subregion (LRR): H Lat: 33.558632 Long: -102.021548 Datum: WGS84

Soil Map Unit Name: Estacado clay loam, 0 to 1 percent slopes NWI Classification: PUSA

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No _____ (If no, explain in remarks)

Are vegetation No , soil No , or hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are vegetation No , soil No , or hydrology No 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 _____	No **X**	
Hydric Soil Present?	Yes _____	No **X**	
Wetland Hydrology Present?	Yes _____	No **X**	**Is the Sampled Area within a Wetland? Yes _____ No X**

Remarks: Does not meet the three criteria for a wetland.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30-ft R)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling/Shrub Stratum (Plot size: 15-ft R)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5-ft R)			
1. *Sisymbrium irio*	5	Yes	UPL
2. *Persicaria pensylvanica*	5	Yes	FACW
3. *Triticum aestivum*	1	No	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	11 = Total Cover		
50% of total cover: 5.5	20% of total cover: 2.2		
Woody Vine Stratum (Plot size: 30-ft R)			
1.			
2.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
% Bare Ground in Herb Stratum 90			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index Worksheet

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____ (A)	_____ (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present Yes _____ No X

Remarks: Does not meet the criteria for hydrophytic vegetation.

SOIL

Sampling Point: OP 04

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

Depth	Matrix		Redox Features					
(Inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 4	10YR 4/2	100					silty clay loam	
4 to 8	10YR 3/2	100					silty loam	
8 to 16	10YR 4/2	100					silty clay loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]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[3]:

- ___ 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)

[3]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** **X**

Remarks: Does not meet the criteria for hydric soil.

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 X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

Wetland Hydrology Present? **Yes** ___ **No** **X**

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

Remarks: Does not meet the criteria for wetland hydrology.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Loop 88 Segments 1 & 2 City/County: Lubbock Sampling Date: 3-Apr-19

Applicant/Owner: Texas Department of Transportation State: Texas Sampling Point: OP 05

Investigator(s): G. Casares, J. Noel, M. Torres Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): playa Local relief (concave, convex, none): none Slope (%): 0 to 1

Subregion (LRR): H Lat: 33.524804 Long: -102.035289 Datum: WGS84

Soil Map Unit Name: Randall clay, 0 to 1 percent slopes, occasionally ponded NWI Classification: PUSA

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No _____ (If no, explain in remarks)

Are vegetation No , soil No , or hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are vegetation No , soil No , or hydrology No 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 ____	No **X**	
Hydric Soil Present?	Yes ____	No **X**	
Wetland Hydrology Present?	Yes ____	No **X**	**Is the Sampled Area within a Wetland? Yes ____ No X**

Remarks: Does not meet the three criteria for a wetland.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30-ft R)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling/Shrub Stratum (Plot size: 15-ft R)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5-ft R)			
1. *Triticum asetivum*	40	Yes	UPL
2. *Chenopodium album*	15	Yes	FACU
3. *Persicaria pensylvanica*	10	No	FACW
4. *Erodium circutatum*	5	No	UPL
5.			
6.			
7.			
8.			
9.			
10.			
	70 = Total Cover		
50% of total cover: 35	20% of total cover: 14		
Woody Vine Stratum (Plot size: 30-ft R)			
1.			
2.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
% Bare Ground in Herb Stratum 30			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals ____ (A)	____ (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present Yes ____ No X

Remarks: Does not meet the criteria for hydrophytic vegetation.

SOIL

Sampling Point: OP 05

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

Depth	Matrix		Redox Features					
(Inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 3	7.5YR 2.5/2	99	7.5YR 4/6	1	C	M	clay loam	
3 to 9	7.5YR 2.5/2	100					clay loam	
9 to 16	7.5 Y 3/2	99	7.5YR 4/4	1	C	M	clay	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]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[3]:

- ___ 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)

[3]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 X

Remarks: Does not meet the criteria for hydric soil.

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)

- X 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 X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

Wetland Hydrology Present? Yes ___ No X

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

Remarks: Does not meet the criteria for wetland hydrology.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Loop 88 Segments 1 & 2 City/County: Lubbock Sampling Date: 3-Apr-19

Applicant/Owner: Texas Department of Transportation State: Texas Sampling Point: OP 06

Investigator(s): G. Casares, J. Noel, M. Torres Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): playa Local relief (concave, convex, none): concave Slope (%): 0 to 1

Subregion (LRR): H Lat: 33.52468 Long: -102.035128 Datum: WGS84

Soil Map Unit Name: Randall clay, 0 to 1 percent slopes, occasionally ponded NWI Classification: PUSA

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No _____ (If no, explain in remarks)

Are vegetation No , soil No , or hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are vegetation No , soil No , or hydrology No 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 ____	No **X**	
Hydric Soil Present?	Yes ____	No **X**	
Wetland Hydrology Present?	Yes **X**	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** **X**

Remarks: Does not meet the three criteria for a wetland.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30-ft R)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling/Shrub Stratum (Plot size: 15-ft R)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5-ft R)			
1. *Triticum aestivum*	15	Yes	UPL
2. *Persicaria pensylvanica*	5	No	FACW
3. *Erodium cicutarium*	2	No	UPL
4. *Sisymbrium altissiumum*	2	No	UPL
5. *Erysimum repandum*	1	No	UPL
6. *Rumex crispus*	1	No	FAC
7.			
8.			
9.			
10.			
	26 = Total Cover		
50% of total cover: 13	20% of total cover: 5.2		
Woody Vine Stratum (Plot size: 30-ft R)			
1.			
2.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
% Bare Ground in Herb Stratum 50			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals ____ (A)	____ (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present **Yes** ____ **No** **X**

Remarks: Does not meet the criteria for hydrophytic vegetation.

SOIL

Sampling Point: OP 06

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

Depth	Matrix		Redox Features					
(Inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 10	10YR 3/2	100					clay	
10 to 16	10YR 3/2	100					silty clay	
16 to 20	10YR 4/2	98	7.5YR 6/1	2	D	M	clay loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]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[3]:

- ___ 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)

[3]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** X

Remarks: Does not meet the criteria for hydric soil.

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)
- X 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)

- X 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 X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks: Meets the criteria for wetland hydrology.