

## **Appendix N: Water Resources**

Surface Waters Analysis Form

Section 404/10 Impacts Table

Waters of the US Delineation Report

**Surface Waters Analysis Form**





# Form Surface Water Analysis

Project Name: **I-35 Capital Express Central Project**

CSJ(s): **0015-13-388**

County(ies): **Travis County**

Date Analysis Completed: **December 15, 2022**

Prepared by: **HDR Engineering, Inc.**

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 9, 2019, and executed by FHWA and TxDOT.

## I. Section 402 of the Clean Water Act

No project-specific analysis is required as part of the environmental review process under Section 402 of the Clean Water Act for the reasons provided below:

Since TPDES Construction General Permit (CGP) authorization and compliance (and the associated documentation) occur outside of the environmental clearance process, compliance is ensured by the policies and procedures that govern the design and construction phases of the project. The Project Development Process Manual and the Plans, Specifications, and Estimates (PS&E) Preparation Manual require a storm water pollution prevention plan (SWP3) be included in the plans of all projects that disturb one 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 Texas Commission on Environmental Quality (TCEQ) and the municipal separate storm sewer system (MS4) operator. 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 Specification Checklists" require the current version of Special Provision 506 on all projects that need authorization under the CGP. These documents require the project contractor to comply with the CGP and SWP3, and to complete the appropriate authorization documents.

For more information regarding Section 402 of the Clean Water Act, see **ENV's Water Resources Handbook**.

## II. Section 404 of the Clean Water Act

Select the appropriate statement(s) below (for some projects, it may be appropriate to select both the second and third statements):

No impacts to jurisdictional waters are anticipated.



- This project will use a non-reporting nationwide permit under Section 404 and no delineation or impacts table is needed to verify. Indicate which non-reporting NWP will be used below:

Non-reporting NWP no(s): **<enter non-reporting NWP no(s)>**

(In the unusual situation in which NWP 16 will be used, select the third checkbox below instead of this one.)

- This project will use a reportable permit under Section 404, **or** it is not yet clear which permitting option will be used, if any, and so a delineation is needed or a delineation and impacts table are needed to make that determination.

(In the unusual situation in which NWP 16 will be used, select this third checkbox, even if the project qualifies for a non-reporting NWP 16.)

For more information regarding Section 404 of the Clean Water Act, see **ENV’s Water Resources Handbook**.

### III. Section 14 of the Rivers and Harbors Act (33 USC 408)

No project-specific analysis is required as part of the environmental review process under Section 14 of the Rivers and Harbors Act (33 USC 408) (“Section 408”) for the reasons provided below:

Any project that involves alterations to, or will temporarily or permanently occupy or use, a USACE federally authorized civil works project (e.g., sea walls, bulkheads, reservoirs, levees, wharfs, or other federal civil works projects, or associated federal land (fee simple) or easements) will require USACE authorization under Section 408 prior to construction of the project. Obtaining any required authorization under Section 408 from the USACE is generally handled by hydraulic and/or design engineers. For any project that requires authorization under both Section 404 and Section 408, the Section 404 authorization cannot be issued until the Section 408 authorization is issued.

For more information regarding Section 408, see **ENV’s Water Resources Handbook**.

### IV. Section 303(d) of the Clean Water Act

For a CE project, no project-specific analysis is required as part of the environmental review process under Section 303(d) of the Clean Water Act for the reasons provided below:

To date, TCEQ has not identified (through either a total maximum daily load (TMDL) or the review of projects under the TCEQ MOU) a need to implement control measures beyond those required by the construction general permit (CGP) on road construction projects. Therefore, compliance with the project’s CGP, along with coordination under the TCEQ MOU for certain transportation projects, collectively meets the need to address impaired waters during the environmental review process. As required by the CGP, the project and associated activities will be implemented, operated, and maintained using best management practices to control the discharge of pollutants from the project site.



For an EA or EIS project, further analysis regarding impaired waters is required under TxDOT's MOU with TCEQ for inclusion in the body of the environmental assessment or environmental impact statement. To do this further analysis, determine whether the project is located within five linear miles (not stream miles) of, is within the watershed of, and drains to, an impaired assessment unit under Section 303(d) of the federal Clean Water Act.

For an EA or EIS project only, provide the date of the Section 303(d) list consulted: <enter date, for EAs and EISs only>

For an EA or EIS project only, check the appropriate box below:

- checkbox This project is not located within five linear miles (not stream miles) of, is not within the watershed of, or does not drain to, an impaired assessment unit under Section 303(d) of the federal Clean Water Act.
checkbox This project is located within five linear miles (not stream miles) of, is within the watershed of, and drains to, an impaired assessment unit under Section 303(d) of the federal Clean Water Act.

For an EA or EIS project only, if the second box is checked, fill-in the table below for any impaired assessment units within five miles of the project and within the same watershed as the project:

Table with 4 columns: Watershed, Segment name, Segment number, Assessment unit number. Row 1: Colorado, Waller Creek, 1429C, 1429C\_01. Rows 2-6: <enter text>

For more information regarding Section 303(d) of the Clean Water Act, see ENV's Water Resources Handbook.

V. General Bridge Act/Section 9 of the Rivers and Harbors Act

Select the appropriate statement below:

- checkbox This project will not require a permit, bridge lighting authorization, or exemption from the United States Coast Guard under Section 9 of the Rivers and Harbors Act, which outlines the requirements for approval to construct dams, dikes, bridges, or causeways in or over a navigable waterway.
checkbox This project will require a permit, bridge lighting authorization, or exemption from the United States Coast Guard under Section 9 of the Rivers and Harbors Act, which outlines the requirements for approval to construct dams, dikes, bridges, or causeways in or over a navigable waterway.



For more information regarding the General Bridge Act/Section 9 of the Rivers and Harbors Act, see **ENV's Water Resources Handbook**.

**VI. Section 10 of the Rivers and Harbors Act**

Select the appropriate statement(s) below (for some projects, it may be appropriate to select both the second and third statements):

- No structures will be constructed in or over a navigable waterway.
- This project will use a non-reporting nationwide permit under Section 10 and no delineation or impacts table is needed to verify. Indicate which non-reporting NWP will be used below:

Non-reporting NWP no(s): <enter non-reporting NWP no(s)>

- This project will use a reportable permit under Section 10, or it is not yet clear which permitting option will be used, if any, and so a delineation is needed or a delineation and impacts table are needed to make that determination.

In addition to the NWP with PCN required for the proposed project, it is anticipated that a NWP 14, NWP 58 without PCN and RGP 8 would be required.

For more information regarding Section 10 of the Rivers and Harbors Act, see **ENV's Water Resources Handbook**.

**VII. Section 401 of the Clean Water Act**

Select the appropriate statement below:

- This project will not require authorization under Section 404 of the federal Clean Water Act. Therefore, this project is not required to comply with TCEQ's Water Quality Certification Program, established under Section 401 of the Clean Water Act.
- This project will require authorization under Section 404 of the federal Clean Water Act. Therefore, this project is required to comply with TCEQ's Water Quality Certification Program, established under Section 401 of the Clean Water Act.

If the project is required to comply with TCEQ's Water Quality Certification Program, established under Section 401 of the Clean Water Act, then select the appropriate statement below:

- This project will require a NWP under Section 404 that is covered by TCEQ's blanket 401 water quality certification (i.e., all NWPs other than NWP 16) and therefore will comply with Section 401 of the Clean Water Act by implementing TCEQ conditions for NWPs.
- This project will require authorization under a NWP under Section 404 that is not covered by TCEQ's blanket 401 water quality certification (i.e., NWP 16), or under an Individual Standard Permit, Letter of Permission, or Regional General Permit under Section 404; therefore, TxDOT will coordinate a Section 401 water quality certification with TCEQ.



For more information regarding Section 401 of the Clean Water Act, see **ENV's Water Resources Handbook**.

**VIII. Executive Order 11990, Protection of Wetlands**

Select the appropriate statement below:

- This project is not federally funded and therefore is not subject to Executive Order 11990, Protection of Wetlands.
- This project is federally funded and therefore is subject to Executive Order 11990, Protection of Wetlands, and will not involve construction in any wetlands.
- This project is federally funded and therefore is subject to Executive Order 11990, Protection of Wetlands, and will involve construction in one or more wetlands. Explanation of how the project will comply with Executive Order 11990 is provided below.

Explanation of why there is no practicable alternative to such construction:

**<enter explanation, if applicable>**

Explanation of how the project includes all practicable measures to minimize harm to wetlands:

**<enter explanation, if applicable>**

For more information regarding Executive Order 11990, Protection of Wetlands, see **ENV's Water Resources Handbook**.

**IX. Executive Order 11988, Floodplain Management**

Select the appropriate statement below:

- This project is not federally funded and therefore is not subject to Executive Order 11988, Floodplain Management.
- This project is federally funded and therefore is subject to Executive Order 11988, Floodplain Management, and will not involve construction in the floodplain.
- This project is federally funded and therefore is subject to Executive Order 11988, Floodplain Management. However, the project will not involve a significant encroachment in the floodplain.

"Significant encroachment" means "a highway encroachment and any direct support of likely base flood-plain development that would involve one or more of the following construction-or flood-related impacts:



- (1) A significant potential for interruption or termination of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route.
- (2) A significant risk, or
- (3) A significant adverse impact on natural and beneficial flood-plain values." 23 CFR 650.105(q)

In the above definition, "risk" means "the consequences associated with the probability of flooding attributable to an encroachment. It shall include the potential for property loss and hazard to life during the service life of the highway." 23 CFR 650.105(o).

This project is federally funded and therefore is subject to Executive Order 11988, Floodplain Management, and will involve a significant encroachment in the floodplain. Explanation of how the project will comply with Executive Order 11988 is provided below.

Explanation of how the project has been designed or modified, or will be designed or modified, to minimize potential harm to or within the floodplain:<sup>1</sup>

**<enter explanation, if applicable>**

Reasons why the proposed action must be located in the floodplain:<sup>2</sup>

**<enter explanation, if applicable>**

Alternatives considered and why they were not practicable (i.e., capable of being done within reasonable natural, social, or economic constraints):<sup>3</sup>

**<enter explanation, if applicable>**

Statement indicating whether the action conforms to applicable State or local floodplain protection standards:<sup>4</sup>

**The project will comply with the standards in the TxDOT Hydraulic Design Manual.**

For more information regarding Executive Order 11988, Floodplain Management, see **ENV's Water Resources Handbook**.

**X. Drinking Water Systems**

No project-specific analysis is required as part of the environmental review process for drinking water systems for the reasons provided below:

In accordance with TxDOT's Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges (Item 103, Disposal of Wells), any drinking water wells would need to be properly removed and disposed of during construction of the project.

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<sup>1</sup> EO 11988, Section 2.(a)(2).  
<sup>2</sup> 23 CFR 650.113(a)(1).  
<sup>3</sup> 23 CFR 650.105(k), 650.113(a)(2).  
<sup>4</sup> 23 CFR 650.113(a)(3).



**XI. Resources Consulted**

Indicate which resources were consulted/actions were taken to make the surface water determinations recorded in this form (DO NOT ATTACH TO THIS FORM OR UPLOAD TO ECOS ANY RESOURCES CONSULTED – JUST CHECK THE APPROPRIATE BOX(ES)):

Aerial Photography (list dates mm/yyyy): 1995, 2002, 2003, 2005, 2006, 2007, 2008, 2009, 2011, 2012-2022

Topographic Maps

Floodplain Maps

Site Visit

USFWS NWI Maps

NRCS Soil Survey

NHD

TCEQ Streams/Waterbodies

LIDAR

USACE Approved JDs

USACE Section 10 waters

USACE 408 data

TCEQ 303(d) Impaired Waters

Contacted resource agency (list agency and reason): \_\_\_\_\_

Other (list): \_\_\_\_\_

## Section 404/10 Impacts Table



Section 404/10 Impacts Table

Version 3, July 2021

I-35 Capital Express Central Project

0015-13-388

<USACE Project Number>

11-Apr-23

Waterbody or wetland characteristics							Potentially Jurisdictional?		Total Section 404 impacts for WATERBODY OR WETLAND						Total section 404 impacts for CROSSING						Authorization			
Crossing number	Waterbody or wetland number	Name	Type	Latitude, Longitude	Acres within project area (all waterbodies and wetlands)	Linear feet/acres within project area (streams only)	Section 404 (waters of the U.S.)	Section 10 (navigable waters)	Temporary			Permanent			Temporary			Permanent			Authorization Type	Number (NWP and RGP only)	Reason (PCN only)	Mitigation Required?
									Temporary waterbody or wetland impacts (acres)	Temporary stream impacts (linear feet/acres)	Cubic yards (CY) of fill material to be temporarily discharged	Permanent waterbody or wetland impacts (acres)	Permanent stream impacts (linear feet/acres)	Cubic yards (CY) of fill material to be permanently discharged	Temporary waterbody or wetland impacts (acres)	Temporary stream impacts (linear feet/acres)	Cubic yards (CY) of fill material to be temporarily discharged	Permanent waterbody or wetland impacts (acres)	Permanent stream impacts (linear feet/acres)	Cubic yards (CY) of fill material to be permanently discharged				
1	S-1	Tannehill Branch	Intermittent stream	30.313812, -97.708623	0.02	23	Yes	No	0	0		0	4 lf / 0.01 ac		0	0		0	4 lf / 0.01 ac		NWP - Non-reporting	14		No
2	OW-1	Lady Bird Lake	Open water	30.250702, -97.735944	5.39	N/A	Yes	No	0.01 ac	0		0	0		0.01	0		0	0		NWP - Non-reporting	14		No
3	S-2	Harpers Branch	Intermittent stream	30.248942, -97.735099	0.13	264	Yes	No	0	0		0	10 lf / 0.01		0	0		0	10 lf / 0.01		NWP - Non-reporting	58		No
4	NJD-1	Harpers Branch	Drainage ditch	30.244464, -97.735639	0.33	794	No	No	N/A	N/A		N/A	N/A		N/A	N/A		N/A	N/A					
5	S-3	Colorado River	Perennial stream	30.144595, -97.412259	0.34	467	Yes	Yes	0	0		0	160 lf / 0.14 ac		0	0		0	160 lf / 0.14 ac		NWP - PCN	58	Other	Yes
6	S-4	Waller Creek	Perennial stream	30.268906, -97.735032	0.28	316	Yes	No	0	0		0	0		0	0		0	0					
7	S-5	Boggy Creek	Intermittent stream	30.300145, -97.712760	0.01	30	Yes	No	0	0		0	0		0	0		0	0					
8	OW-1	Lady Bird Lake	Open water	30.252866, -97.738002	5.39	N/A	Yes	No	0	0		0.09 ac	0		0	0		0.09 ac	0		RGP	8		No
9	OW-1	Lady Bird Lake	Open water	30.251120, -97.735704	5.39	N/A	Yes	No	0	0		0.01 ac	0		0	0		0.01 ac	0		NWP - Non-reporting	58		No

# Waters of the US Delineation Report



# Waters of the U.S. Delineation Report-Draft

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I-35 Capital Express Central Project from  
US 290 to SH 71  
(CSJ: 0015-13-388)

Texas Department of Transportation, Austin District

April 2023

## Table of Contents

1.0	Introduction.....	3
2.0	Ecological Site Description.....	3
3.0	Methods.....	4
3.1	Map and Database Review.....	4
3.1.1	USGS Topographic Maps.....	4
3.1.2	USFWS NWI Data.....	4
3.1.3	NRCS Soil Survey Data.....	4
3.1.4	Aerial Photography.....	4
3.1.5	FEMA FIRM.....	4
3.1.6	LiDAR.....	4
3.2	Waters of the U.S. Delineation.....	4
3.2.1	Hydrology.....	5
3.2.2	Vegetation.....	5
3.2.3	Soils.....	6
4.0	Results.....	6
4.1	Map and Database Review.....	6
4.1.1	USGS Topographic Maps.....	6
4.1.2	USFWS NWI Data.....	6
4.1.3	NRCS Soil Survey Data.....	6
4.1.4	Aerial Photography.....	7
4.1.5	FEMA FIRM.....	8
4.1.6	LiDAR.....	8
4.2	Waters of the U.S. Delineation.....	8
4.2.1	Hydrology.....	10
4.2.2	Vegetation.....	10
4.2.3	Soils.....	10
5.0	Conclusion.....	10
6.0	References.....	12
7.0	Attachments.....	13

## List of Tables

Table 1: NWI Features.....	6
Table 2: NRCS Soil Units.....	7
Table 3: Historic Aerial Photography Observations.....	8
Table 4: Summary of Waterbody Features.....	9
Table 5: Urban Habitat Type Dominant Plant Species.....	10

## 1.0 Introduction

The Texas Department of Transportation (TxDOT) conducted a waters of the U.S. (WOTUS) delineation for a proposed road project on I-35 from US 290 to SH 71 in Austin, Texas (CSJ 0015-13-388). The field delineation was conducted on July 8, 2021. The study area was modified to include a new drainage outfall location in March 2023; therefore, desktop data was obtained to determine the waters data provided below for the updated study area.

The delineation was performed to evaluate the presence of jurisdictional WOTUS and identify their boundaries within the project area. It is anticipated that this waters of the U.S. delineation report (WOTUS DR) will be used in support of the jurisdictional determination process for on-site aquatic resources. If it is determined that jurisdictional resources will be impacted, this WOTUS DR will also support applications for regulatory permits that may be required from the United States Army Corps of Engineers (USACE) for proposed construction activities.

Waterbodies were delineated according to USACE Regulatory Guidance Letter (RGL) 05-05 Ordinary High Water Mark (OHWM) Identification for non-tidal waters and the Mean High Tide (MHT) line for tidal waters. As required under Section 404 of the Clean Water Act (CWA), wetlands were delineated using the routine method described in the USACE 1987 Wetlands Delineation Manual (1987 Manual) and the USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0) (2010 Regional Supplement). Wetland types and boundaries were determined through initial map review, followed by fieldwork involving the examination of three (3) parameters: hydrology, vegetation, and soils. Delineation criteria and indicators for each of these parameters are outlined in the 1987 Manual and the 2010 Regional Supplement. The 2010 Regional Supplement presents wetland indicators, delineation guidance, and other information that is specific to the Great Plains region, per the regional supplement. Wetlands were classified according to the Cowardin Classification System used for the United States Fish and Wildlife Service's (USFWS) National Wetlands Inventory (NWI).

This document contains the following four (4) attachments:

- Attachment 1 – Figures
- Attachment 2 – Wetland Determination Data Forms
- Attachment 3 – Historical Aerial Photographs
- Attachment 4 – Site Photographs

## 2.0 Ecological Site Description

The project area is located within the Texas Blackland Prairie Land Resource Region (LRR J) of the Great Plains and is more specifically located in Major Land Resource Area (MLRA) 86A (Texas Blackland Prairie). This area is characterized by a gently sloping, dissected plain. Dissected areas with steeper slopes occur along entrenched river and creek valleys. Broad meander belts are associated with the major streams, and wide floodplains are flanked by nearly level stream terraces. Elevation ranges from 300 to 600 feet (90 to 185 meters), increasing gradually from southeast to northwest. This area is underlain by chalk, claystone, marl, and shale in the Eagle Ford Group, Austin Chalk, and the Navarro Group (including the “Taylor marl”) of Cretaceous age. The average annual precipitation is 30 to 46 inches (760 to 1,170 millimeters) in most of this area, but it is less than 30 inches in the southern tip. Most of the rainfall occurs in spring and fall.

Currently, the project area consists of an urbanized area within the Colorado River watershed. The project area gradually slopes towards Lady Bird Lake, an impoundment of the Colorado River that creates a long narrow lake. The watershed in the project area has been modified from its natural condition, with most of the drainage features and streams being re-routed into ditches and stormwater drainage systems. The project area has a high percentage of impermeable surface area of asphalt and concrete.

## **3.0 Methods**

### **3.1 Map and Database Review**

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

#### **3.1.1 USGS Topographic Maps**

USGS topographic maps illustrate elevation contours, drainage patterns, and hydrography. The Austin East, Montopolis and Oak Hill, Texas, USGS Quad maps were reviewed to determine the likelihood of the project area containing jurisdictional waterbodies.

#### **3.1.2 USFWS NWI Data**

NWI data were reviewed as a contributing resource to help identify potential wetland features located within the project area.

#### **3.1.3 NRCS Soil Survey Data**

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

#### **3.1.4 Aerial Photography**

Aerial photography provides good insight to the state and function of land resources. Signs of inundation and vegetative signatures on aerial images indicate whether land might be functioning as a wetland or supporting a stream system. Historic and current aerial photography was reviewed utilizing Google Earth, prior to and during the field delineation, in order to further understand the nature of the project area.

#### **3.1.5 FEMA FIRM**

The Federal Emergency Management Agency (FEMA) maintains flood insurance rate maps (FIRMs). The FIRM including the project area was reviewed to determine if the 100-year floodplain is mapped. The USACE utilizes the 100-year floodplain to assist in determining jurisdiction of aquatic features. FEMA FIRM data was reviewed to evaluate the location of any mapped floodplain in relation to aquatic resources located within the project area.

#### **3.1.6 LiDAR**

Light detection and ranging (LiDAR) is a remote sensing technique that measures spatial and temporal data. LiDAR information is provided by the TNRIS online database for each USGS Quad. LiDAR data was obtained for the Austin East, Montopolis and Oak Hill, Texas, USGS Quads to evaluate elevation changes throughout the project area. Refer to Figure 7 in Attachment 1 for an illustration of contour data derived from LiDAR in and surrounding the project area.

### **3.2 Waters of the U.S. Delineation**

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

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

Any wetland delineation was conducted based on the 1987 Manual and the USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0), as well as the three (3) parameters described within. The three-parameter approach requires investigation of hydrological characteristics, hydrophytic vegetation, and hydric soils at selected sample points within a project area. Sample points are located to ascertain upland/wetland boundaries and to record significant spatial changes in wetland plant communities. All three (3) indicator parameters must be met in order for the area to be classified as a wetland. See subsections on Hydrology, Vegetation, and Soils, below, for indicator-specific information.

Geospatial data was collected utilizing an Arrow 100 Series Global Positioning System (GPS) with sub-meter accuracy.

### **3.2.1 Hydrology**

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

Wetland hydrology indicators include: oxidized rhizospheres along living roots, saturated soils, standing surface water, algal mat, aquatic fauna, high water table, iron deposits, sparsely vegetated concave surface, geomorphic position, moss trim lines, water-stained leaves, crawfish burrows, watermarks, drainage patterns, and surface soil cracks.

During the field survey, these indicators were used to determine if an area exhibited wetland hydrology.

### **3.2.2 Vegetation**

In accordance with the procedure set forth in the 1987 Manual and the USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0), the hydrophytic status of vegetation communities was determined by identifying dominant species and, if necessary, calculating a "Prevalence Index," as defined in the 1987 Manual.

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

- Obligate Wetland (OBL) if they almost always occur in wetlands (>99 percent of the time)
- Facultative Wetland (FACW) if they usually occur in wetlands (67-99 percent of the time)
- Facultative (FAC) if they are equally likely to occur in wetlands and non-wetlands (34-66 percent of the time)
- Facultative Upland (FACU) if they usually occur in non-wetlands (67-99 percent of the time)
- Obligate Upland (UPL) if they almost always occur in non-wetlands (>99 percent of the time)

A no indicator (NI) status is recorded for those species for which insufficient information is available to determine an indicator status.

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



of 3.0 or less signifies that hydrophytic vegetation is present. No wetland vegetation communities were identified within the project area.

### 3.2.3 Soils

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

At each sample point, in areas where the absence of inundation or heavy saturation allowed, a pit was excavated to a depth of at least 16 inches to reveal soil profiles and to determine whether or not positive indicators of hydric soils were present. Hydric soil indicators relate to color, structure, organic content, and the presence of reducing conditions. Color characteristics (Hue, Value, and Chroma) were recorded using Munsell® Charts.

## 4.0 Results

### 4.1 Map and Database Review

#### 4.1.1 USGS Topographic Maps

A review of 7.5-minute USGS topographic maps show that the project area gradually slopes toward Lady Bird Lake. Drainage north of Lady Bird Lake flows in a south or southeasterly direction, while drainage from south of Lady Bird Lake flows in a north or northeasterly direction. Elevation in the project area ranges from approximately 690 feet at the northern limits of the project area to 410 feet at the Colorado River. Lady Bird Lake and the Colorado River are the only water bodies shown within the project area on USGS topographic maps. Attachment 1, Figure 3 is a 7.5-minute series USGS topographic overview map of the project area.

#### 4.1.2 USFWS NWI Data

The table below summarizes the NWI features within the project area. Refer to Figure 4 in Attachment 1 for an illustration of the NWI features in and surrounding the project area.

*Table 1: NWI Features*

Classification Code	Code Description	Wetland Type
L1UBHh	Lacustrine, Limnetic, Unconsolidated Bottom, Permanently Flooded, Impounded	Lake
R2UBH	Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded	Riverine

#### 4.1.3 NRCS Soil Survey Data

The table below summarizes the soil units represented within the project area based on information collected from the Web Soil Survey database. No hydric soils are found within the project area. Refer to Figure 5 in Attachment 1 for an illustration of the mapped soil units in and surrounding the project area.

**Table 2: NRCS Soil Units**

Soil Unit	Soil Unit Name	Description	Hydric/Non-hydric
Ur	Urban land, 0 to 6 percent slopes	Urban soils that are highly disturbed.	Non-hydric
HsD	Houston Black soils and Urban land, 0 to 8 percent slopes	The Houston Black series consists of very deep, moderately well drained, very slowly permeable soils that formed in clayey residuum derived from calcareous mudstone of Cretaceous Age. These nearly level to moderately sloping soils occur on interfluves and side slopes on upland ridges and plains on dissected plains.	Non-hydric
UsC	Austin-Urban land complex, 2 to 5 percent slopes	The Austin series consists of moderately deep, well drained, moderately slowly permeable soils that formed in residuum weathered from chalk. These soils are on nearly level to sloping erosional uplands.	Non-hydric
TuD	Travis soils and urban land, 1 to 8 percent slopes	The Travis series consists of very deep, well drained, slowly permeable soils that formed in clayey and loamy sediments of ancient terraces. These soils are on nearly level to sloping uplands.	Non-hydric
UuE	Urban land and Brackett soils, 1 to 12 percent slopes	The Brackett series consists of shallow to paralithic bedrock, well drained soils formed in residuum weathered from limestone of Cretaceous age, mainly from the Glen Rose formation. These nearly level to very steep soils are located on backslopes of ridges on dissected plateaus of the Edwards Plateau.	Non-hydric

**4.1.4 Aerial Photography**

Historic aerial imagery for the project and surrounding areas was evaluated using images provided by Google Earth. The table below summarizes observations for the project area for each year reviewed. Attachment 3 contains copies of some of the historic aerial photographs reviewed for the project area.

**Table 3: Historic Aerial Photography Observations**

Year	Observations
1985	The project area is urbanized with no undeveloped land.
1995	Improved resolution shows that Tannehill Branch is concrete lined within the project area.
2002	No changes are visible in the project area.
2005	No changes are visible in the project area.
2007	The Mueller Airport is converted to retail and multi-family residential developments.
2011	Development along Lady Bird Lake increases.
2013	Construction of the Lady Bird Lake walkway is completed.
2022	Urbanization throughout the project area intensifies. The Lady Bird lake OHWM has not changed since 1985.

#### **4.1.5 FEMA FIRM**

A review of FEMA FIRMs indicated the project area bisects three 100-year floodplains at Tannehill Branch, Colorado River, and at Lady Bird Lake. All of these floodplains cross the project in a perpendicular fashion and follow the respective drainages. The Base Flood Elevation (BFE) at Lady Bird Lake is 440 feet, the BFE at Tannehill Branch is 638 feet, and the BFE at the Colorado River is 437 feet. Refer to Figure 6 in Attachment 1 for an illustration of the FEMA FIRM data within and surrounding the project area.

#### **4.1.6 LiDAR**

A review of LiDAR data indicated that drainage in the project area is highly modified due to intense urbanization. Lidar was used to identify drainage features within the project area and to determine if a surface hydrologic connection existed outside of the project area. One and two-foot contour data from LiDAR was used to assist in identifying the OHWMs at Lady Bird Lake and at the proposed stormwater outfall location on the Colorado River below Longhorn Dam. Refer to Figure 7 in Attachment 1 for an illustration of LiDAR data within the project area.

### **4.2 Waters of the U.S. Delineation**

The table below summarizes the waterbodies identified within the project area. No wetlands were identified within the project area. Refer to Figure 8 in Attachment 1 for a depiction of the boundaries of each waterbody feature. Refer to Attachment 4, Representative Site Photos, for one or more photographs of each waterbody feature observed within the project area.

**Table 4: Summary of Waterbody Features for the Preferred Alternative**

Waterbody Number	Name	Type	Latitude, Longitude	Acres within project area (all waterbodies)	Linear feet within project area (waterbodies only)	Potentially Jurisdictional (Section 404)?	Potentially Navigable (Section 10)?
S-1	Tannehill Branch	Intermittent Stream	30.313812, -97.708623	0.02	23	Yes	No
OW-1	Lady Bird Lake (Colorado River)	Open Water	30.250702, -97.735944	5.39	438	Yes	No
S-2	Harpers Branch	Intermittent Stream	30.248942, -97.735099	0.13	264	Yes	No
NJD-1	Harpers Branch	Drainage Ditch	30.244464, -97.735639	0.33	794	No	No
S-3	Colorado River (Proposed Stormwater Outfall Structure)	Perennial Stream	30.144595, -97.412259	0.34	467	Yes	Yes
S-4	Waller Creek	Perennial Stream	30.268906, -97.735032	0.28	316	Yes	No
S-5	Boggy Creek	Intermittent Stream	30.300145, -97.712760	0.01	30	Yes	No
<b>Total</b>				<b>6.5</b>	<b>2,332</b>		

### 4.2.1 Hydrology

Hydrology in the project area has been modified significantly due to intense urban development. Normal circumstances are not present due to past stream channelization, construction of stormwater management structures and mechanical re-routing of the natural hydrology in the area. No sample points exhibited wetland hydrological indicators within the project area. The wetland determination data form in Attachment 2 includes the specific hydrology recorded at the sample point.

### 4.2.2 Vegetation

Vegetation within the project area is significantly disturbed due to intense urban development. Normal circumstances are not present due to extensive vegetation disturbance and the introduction of non-native and ornamental plant species. Representative dominant taxa for each distinct habitat type encountered within the project area are listed in the table below. Indicator status for each species was obtained from the 2020 NWPL.

**Table 5: Urban Habitat Type Dominant Plant Species**

Strata	Scientific Name	Common Name	NWPL Classification
Herbaceous	<i>Cynodon dactylon</i>	Bermuda Grass	FACU
Sapling	<i>Melia azedarach</i>	China Berry	FACU
Tree	<i>Carya illinoensis</i>	Pecan	FAC

### 4.2.3 Soils

No sample points exhibited hydric soils within the project area. The wetland determination data form in Attachment 2 includes the specific soil data recorded at the sample point.

## 5.0 Conclusion

A WOTUS delineation was conducted for the I-35 Capital Express Central project from US 290 to SH 71 in Austin, Texas (CSJ 0015-13-388). The field delineation was completed on July 8, 2021. After the Public Hearing was held on February 9, 2023, design refinements were made to Modified Build Alternative 3, the Preferred Alternative, based on comments from the public hearing as well as updated parcel information and survey data. For water resources, design refinements included the relocation of the Colorado River outfall; therefore, the data provided in this WOTUS DR includes the updated outfall location with no field work completed. Refer to Section 5.2, above, for a table summarizing the aquatic resources (i.e., waterbodies/wetlands) identified within the project area.

S-3 is the Colorado River which is a traditional navigable water (TNW). OW-1, Lady Bird Lake, is an impoundment of the Colorado River and is therefore a TNW. Because these features are TNWs, the USACE will assert jurisdiction over S-3 and OW-1. S-1, Tannehill Branch, is a relatively permanent water (RPW) that has a continuous surface connection to the Colorado River. S-2, Harpers Branch, is a short segment of stream that has a continuous surface connection to Lady Bird Lake. S-4, Waller Creek, is a relatively permanent water (RPW) that has a continuous surface connection to Lady Bird Lake. S-5, Boggy Creek, is a RPW that has a continuous surface connection to the Colorado River. Due to S-1, S-2, S-4 and S-5's continuous surface connections to a TNW, the USACE will likely assert jurisdiction over these features. NJD-1, Harpers Branch, is a drainage ditch constructed in uplands that flows into an underground stormwater management system and has no continuous surface connection to any other RPW or TNW. The USACE will likely not assert jurisdiction over NJD-1.

The professional opinion offered in this report is based on best professional judgement. It should be noted that the USACE makes the final determination on the location of waterbody and wetland boundaries and their jurisdictional status. To obtain an official jurisdictional determination (JD) from the USACE, this report must be submitted to the USACE Fort Worth District Office, along with a JD request form and, if appropriate, a pre-construction notification / permit application.

## 6.0 References

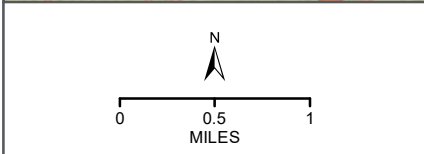
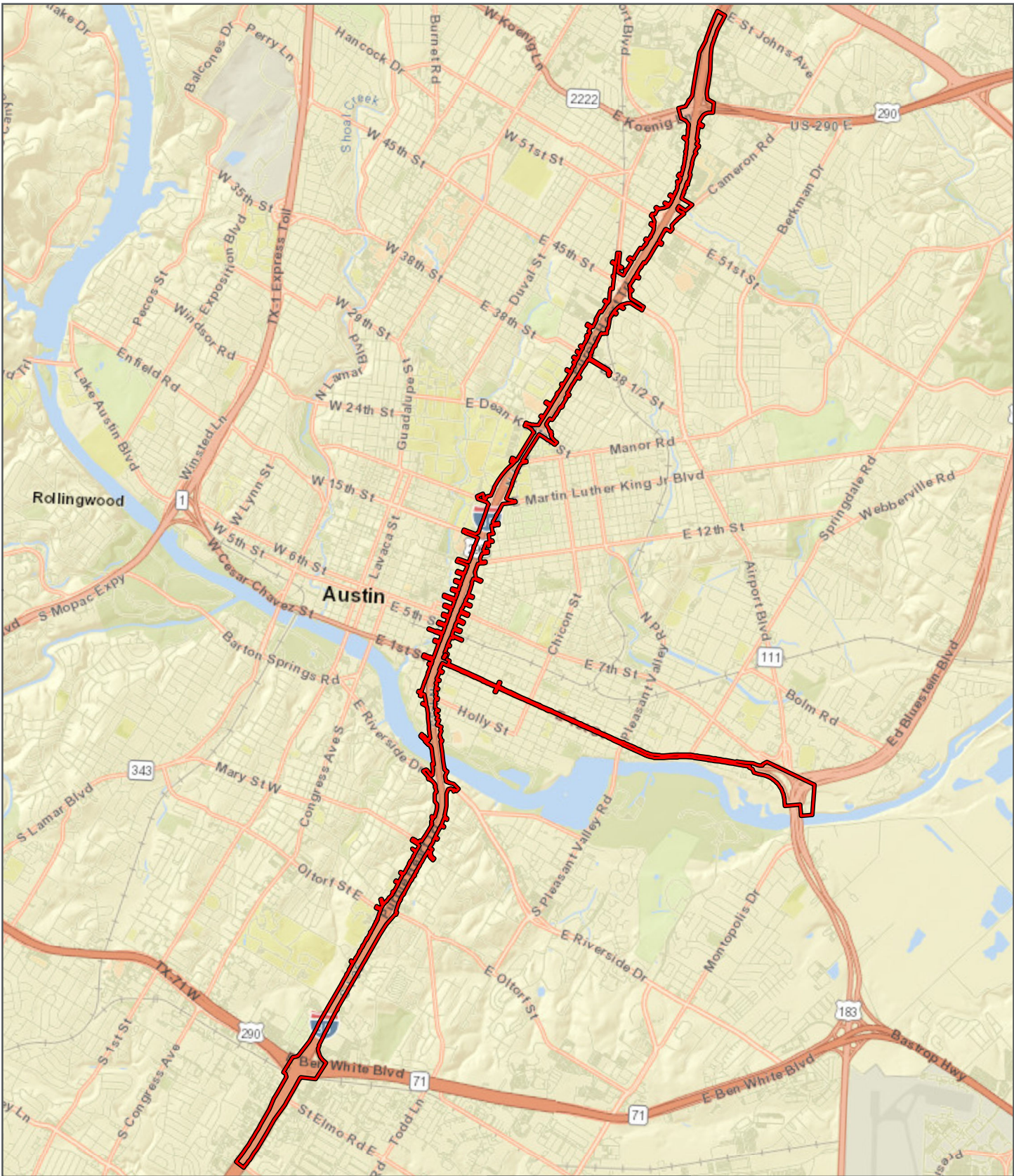
- Cowardin, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. Jamestown, ND: Northern Prairie Wildlife Research Center Online. <http://www.npwrc.usgs.gov/resource/wetlands/classwet/index.htm> (Version 04DEC1998).
- Federal Emergency Management Agency (FEMA). 2011. Flood Insurance Rate Maps for Travis County. Accessed July 2021.
- Google Inc. (2009). Google Earth (Version 5.1.3533.1731) [Software]. Accessed July 2021.
- Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. *The National Wetland Plant List: 2016 wetland ratings*. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X.
- Lists of Hydric Soils. National List; all states. United States Department of Agriculture. National Resource Conservation Service. Available online at <http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/>. Accessed July 2021.
- Munsell® Soil Color Charts. 2009. GretagMacbeth, New Windsor, New York
- Natural Resources Conservation Service (NRCS). 2006. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. Available online at [www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS?nrcs142p2-050898.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS?nrcs142p2-050898.pdf). Accessed July 2021.
- Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/>. Accessed July 2021.
- United States Department of Agriculture, Natural Resources Conservation Service. 2010. Field Indicators of Hydric Soils in the United States, Version 7.0. L.M. Vasilas, G.W. Hurt, and C.V. Noble (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.
- U.S. Army Corps of Engineers (USACE). Regulatory Guidance Letter: Ordinary High Water Mark Identification. Available online <http://www.usace.army.mil/Portals/2/docs/civilworks/RGLS/rg105-05.pdf>. Accessed July 2021.
- U.S. Army Corps of Engineers (USACE). 1987. Corps of Engineers Wetland Delineation Manual. Technical Report Y-87-1, U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS.
- U.S. Army Corps of Engineers (USACE). 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0), ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-10-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- U.S. Army Corps of Engineers (USACE). 2020. National Wetland Plant List, version 3.5. Available online <http://www.usace.army.mil/Portals/2/docs/civilworks/RGLS/rg105-05.pdf>. Accessed December 2021. U.S. Army Corps of Engineers Engineer Research and Development Center Cold Regions Research and Engineering Laboratory, Hanover, NH.


## **7.0 Attachments**

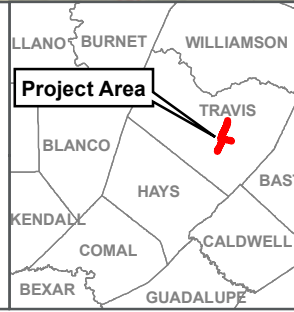
1. Figures
2. Wetland Determination Data Forms
3. Historical Aerial Photographs
4. Site Photographs



## Attachment 1 - Figures



**Legend**  
 MODIFIED ALTERNATIVE 3 - STUDY AREA

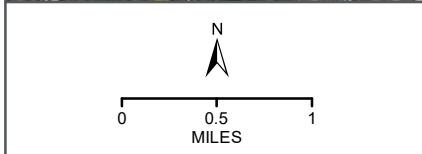
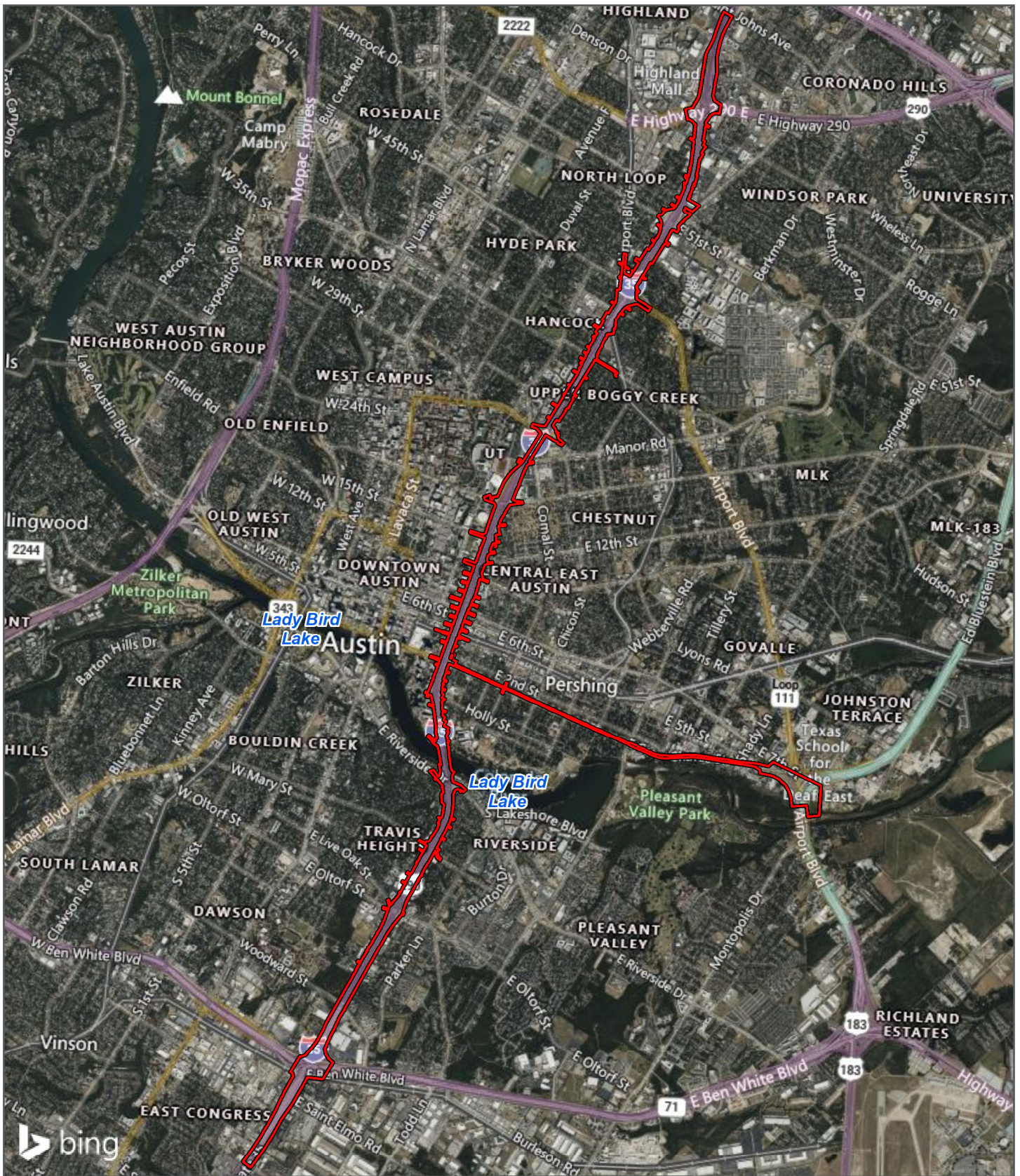



**GENERAL LOCATION**  
 I-35 CAPITAL EXPRESS  
 CENTRAL PROJECT  
 TRAVIS COUNTY, TX

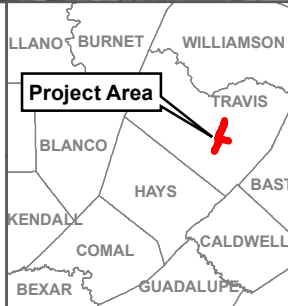
APRIL 2023      FIGURE 1







**Legend**  
 MODIFIED ALTERNATIVE 3 - STUDY AREA



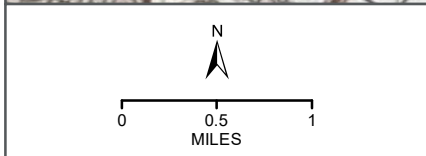
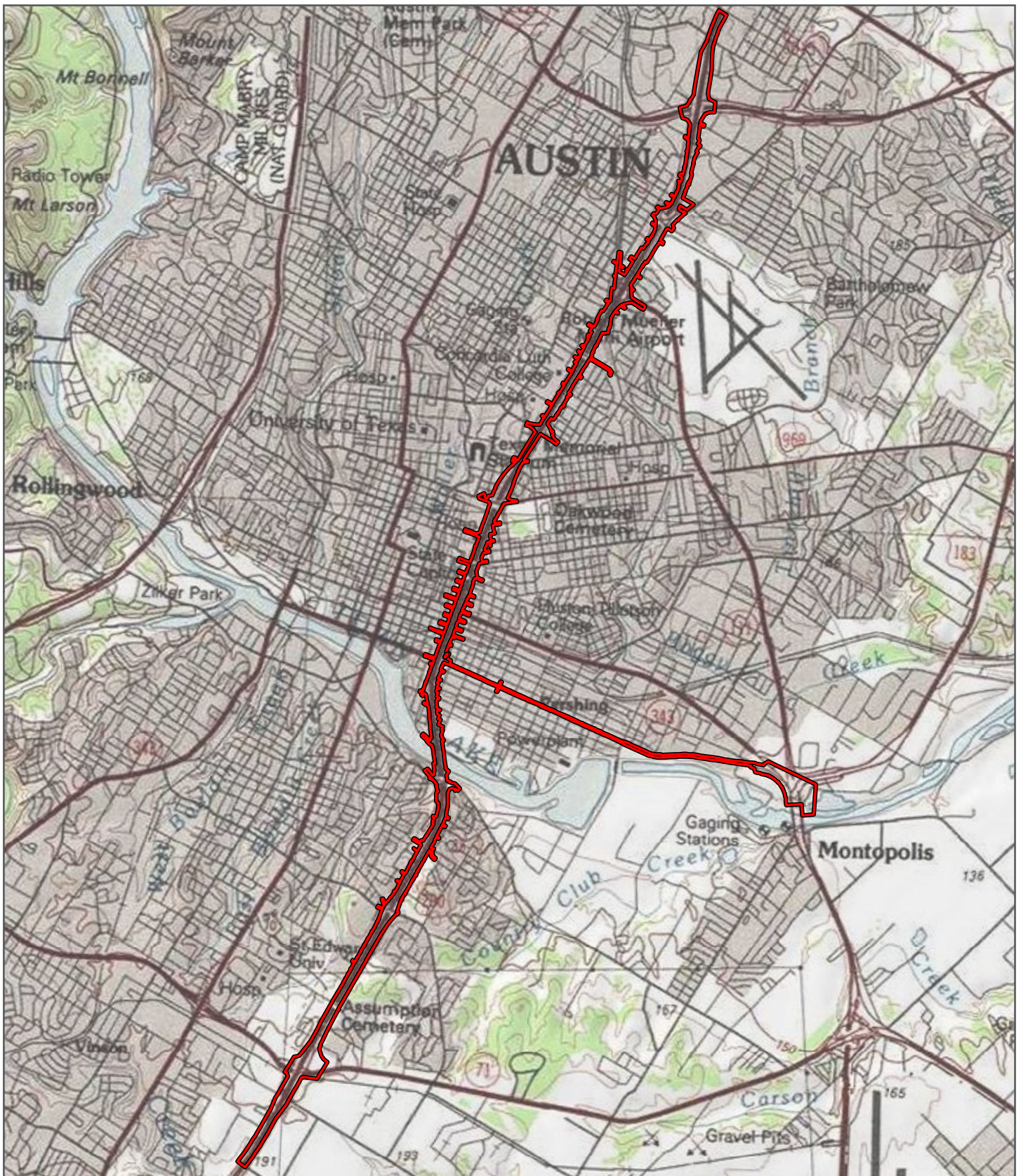
**AERIAL MAP**  
 I-35 CAPITAL EXPRESS  
 CENTRAL PROJECT  
 TRAVIS COUNTY, TX




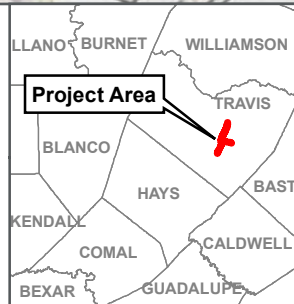
APRIL 2023

FIGURE 2





**Legend**  
 MODIFIED ALTERNATIVE 3 - STUDY AREA



**TOPOGRAPHIC MAP**  
 I-35 CAPITAL EXPRESS  
 CENTRAL PROJECT  
 TRAVIS COUNTY, TX  
 APRIL 2023  
 FIGURE 3











	<p><b>Legend</b></p> <ul style="list-style-type: none"> <li><span style="border: 2px solid red; display: inline-block; width: 20px; height: 10px; margin-right: 5px;"></span> MODIFIED ALTERNATIVE 3 - STUDY AREA</li> <li><span style="background-color: lightblue; display: inline-block; width: 20px; height: 10px; margin-right: 5px;"></span> LAKE</li> <li><span style="background-color: cyan; display: inline-block; width: 20px; height: 10px; margin-right: 5px;"></span> FRESHWATER POND</li> <li><span style="border-bottom: 2px solid blue; display: inline-block; width: 20px; margin-right: 5px;"></span> NHD FLOWLINE</li> </ul>		<p><b>NHD &amp; NWI MAP</b></p> <p><b>I-35 CAPITAL EXPRESS CENTRAL PROJECT</b></p> <p>TRAVIS COUNTY, TX</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">APRIL 2023</td> <td style="width: 50%; padding: 5px;">FIGURE 4-1</td> </tr> </table>	APRIL 2023	FIGURE 4-1
APRIL 2023	FIGURE 4-1				








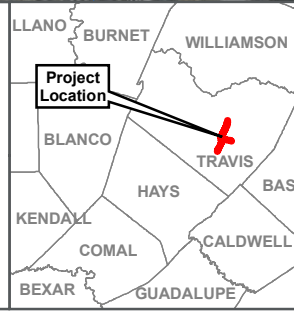


**Legend**

-  MODIFIED ALTERNATIVE 3 - STUDY AREA
-  LAKE
-  FRESHWATER POND
-  FRESHWATER EMERGENT WETLAND
-  NHD FLOWLINE



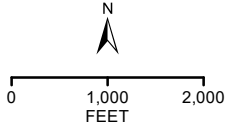
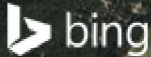
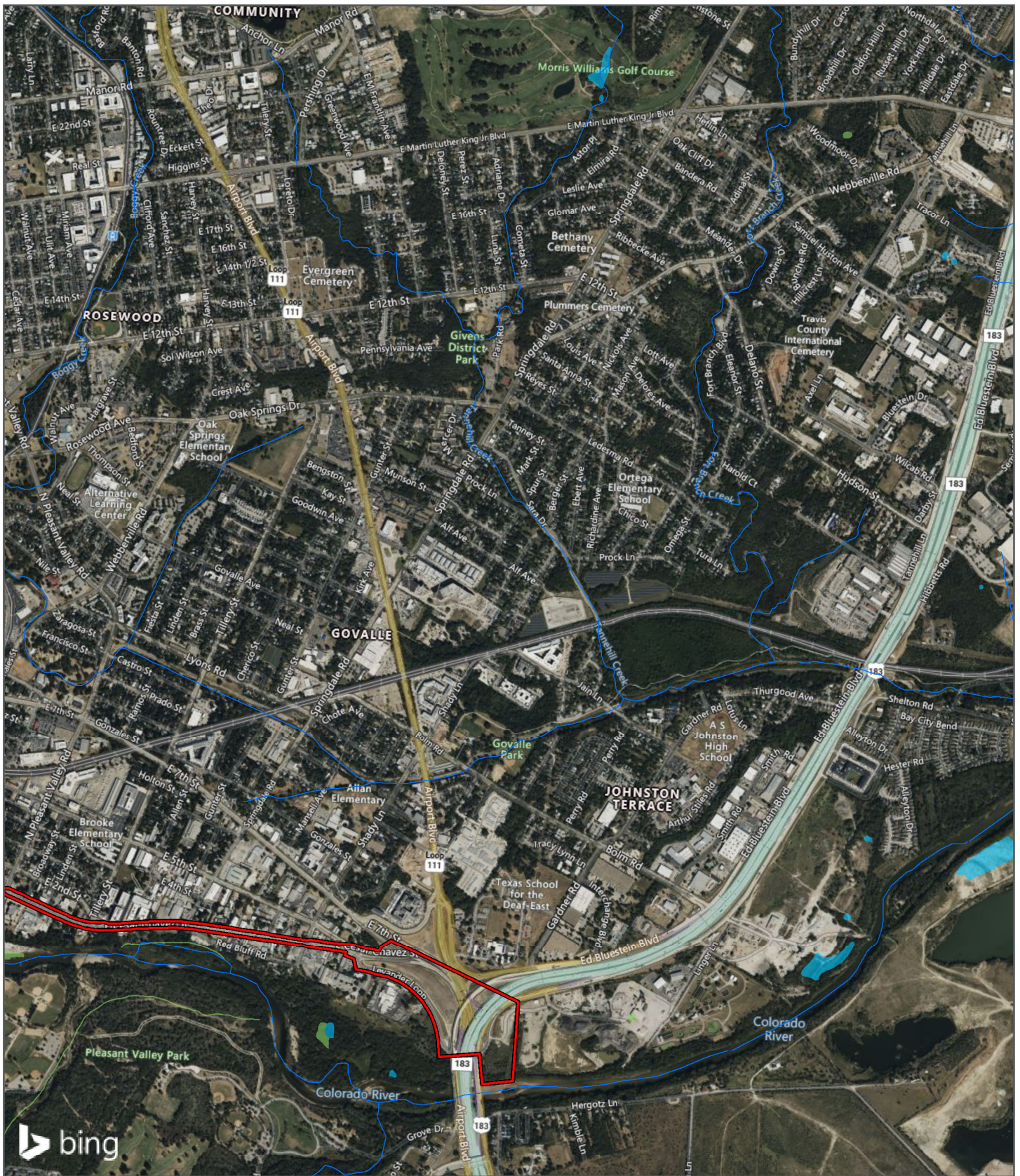
**NHD & NWI MAP**

**I-35 CAPITAL EXPRESS  
CENTRAL PROJECT**

TRAVIS COUNTY, TX

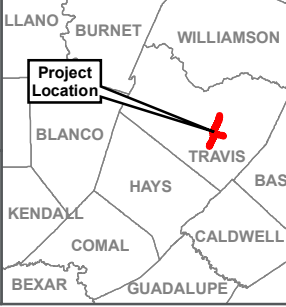
APRIL 2023	FIGURE 4-2
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**Legend**

- MODIFIED ALTERNATIVE 3 – STUDY AREA
- FRESHWATER POND
- FRESHWATER EMERGENT WETLAND
- NHD FLOWLINE



**NHD & NWI MAP**

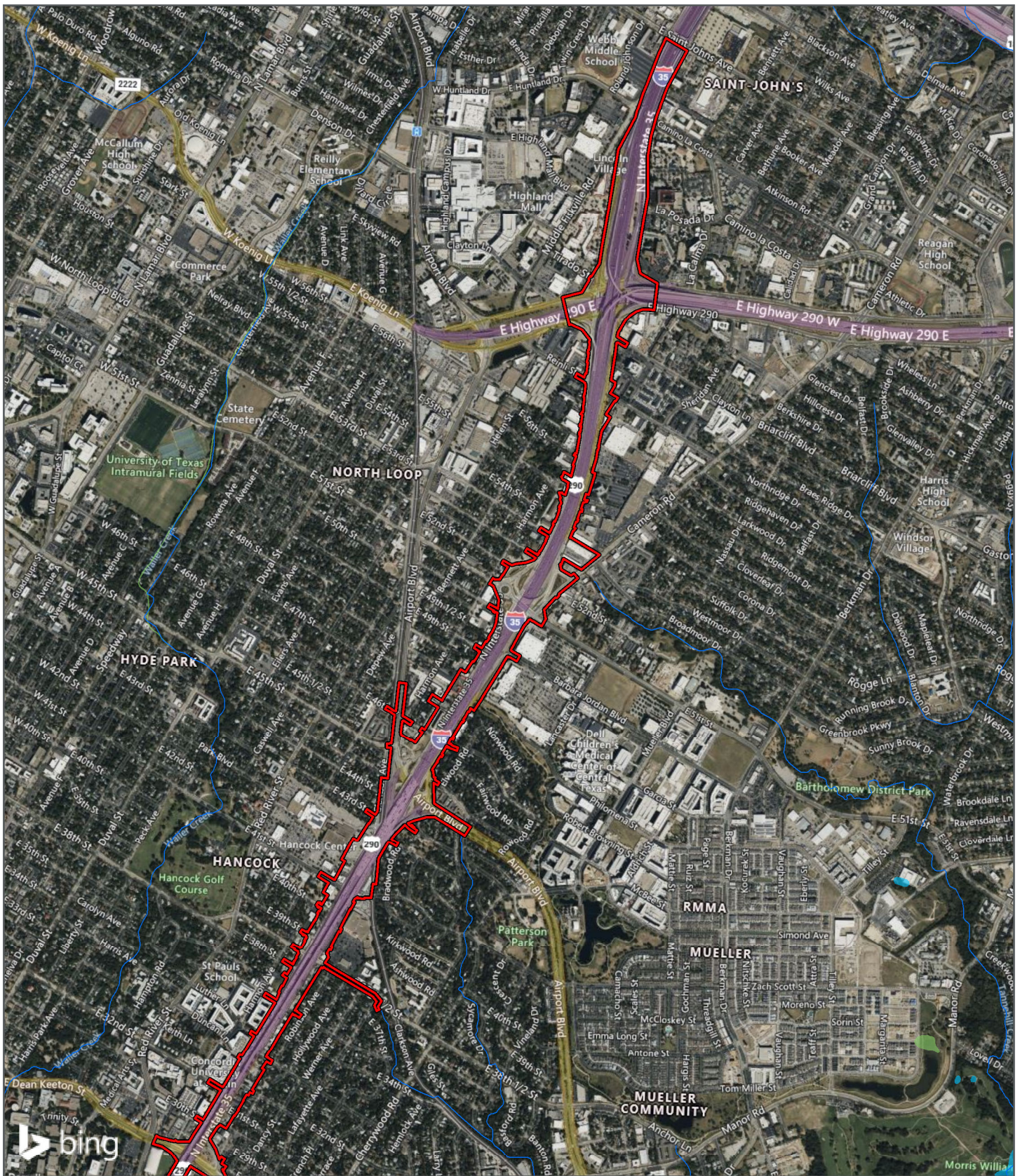
I-35 CAPITAL EXPRESS CENTRAL PROJECT



TRAVIS COUNTY, TX

APRIL 2023





FIGURE 4-3

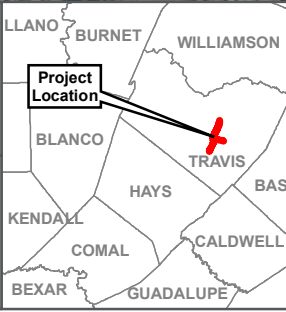




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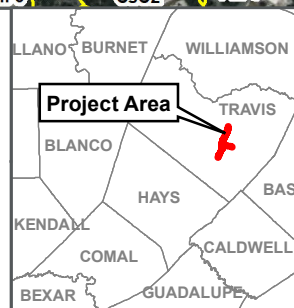
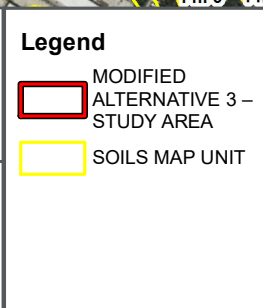
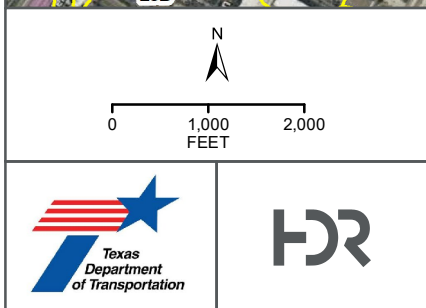
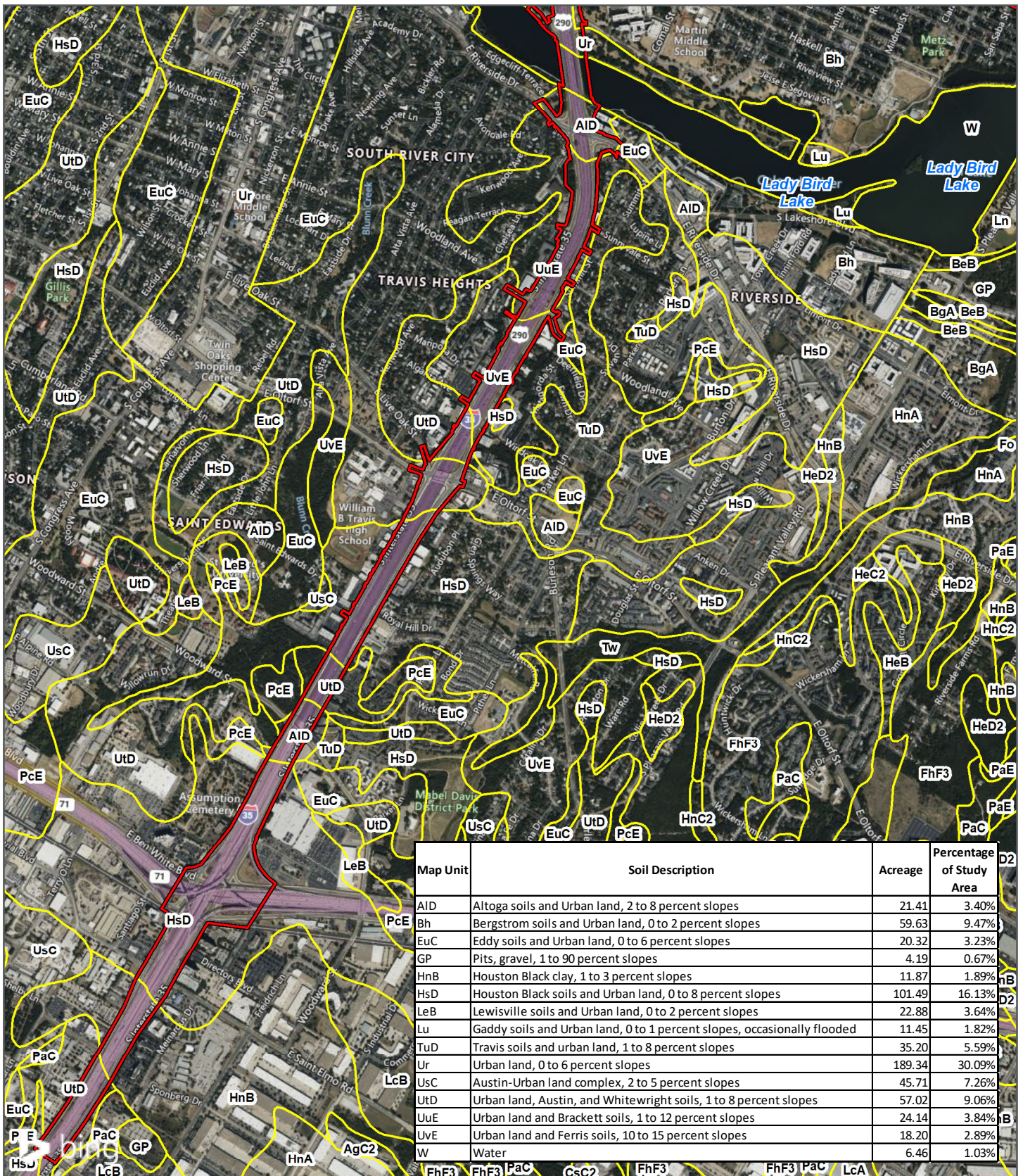
-  MODIFIED ALTERNATIVE 3 – STUDY AREA
-  FRESHWATER POND
-  FRESHWATER EMERGENT WETLAND
-  NHD FLOWLINE



**NHD & NWI MAP**  
**I-35 CAPITAL EXPRESS CENTRAL PROJECT**  
**TRAVIS COUNTY, TX**

APRIL 2023      FIGURE 4-4





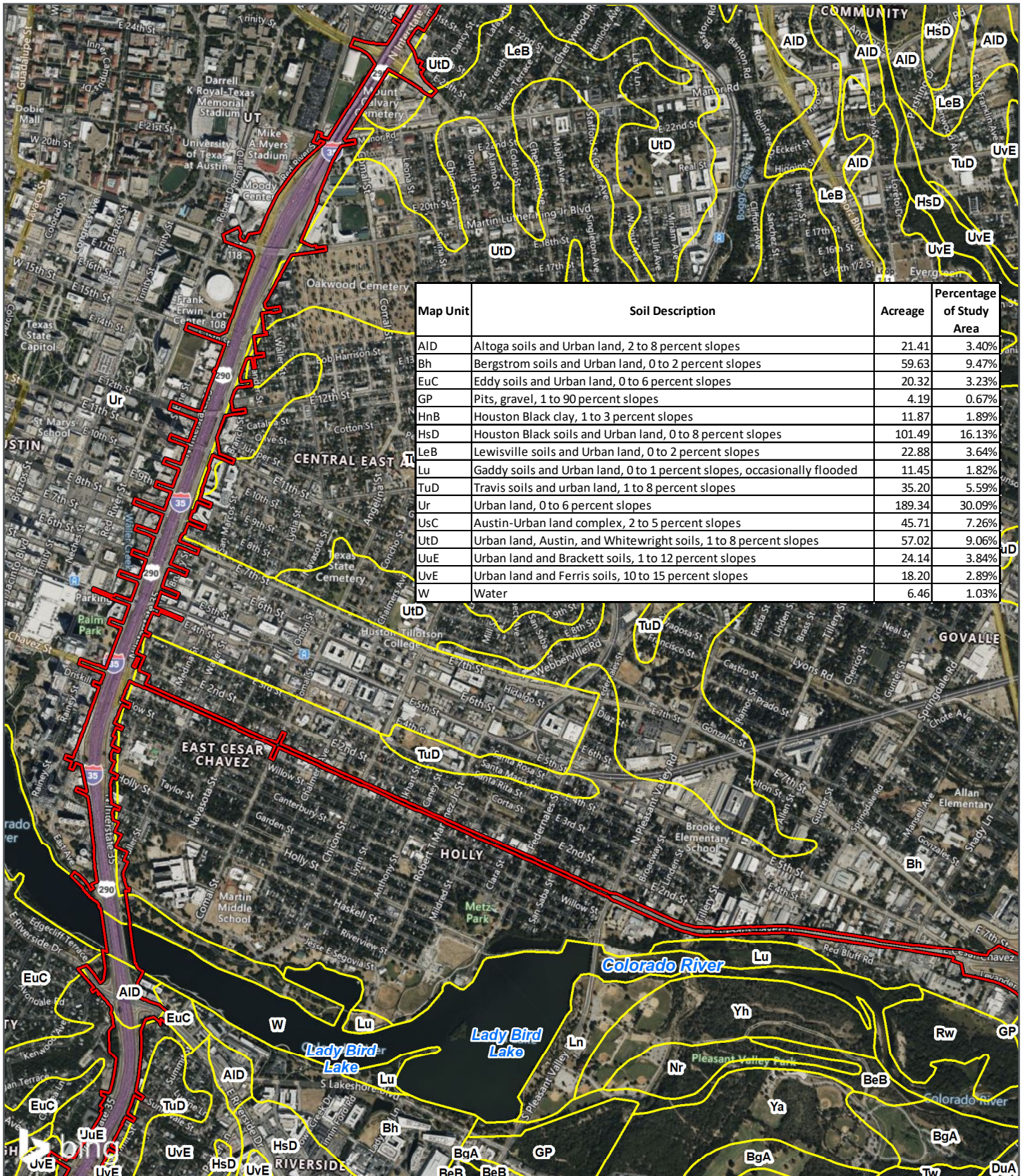
**SOILS MAP**

I-35 CAPITAL EXPRESS  
CENTRAL PROJECT

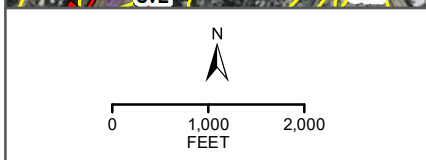
TRAVIS COUNTY, TX

APRIL 2023 FIGURE 5-1



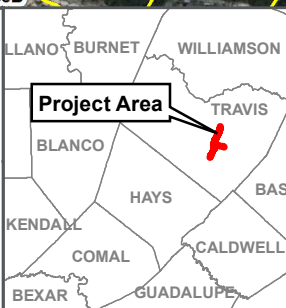


Map Unit	Soil Description	Acreege	Percentage of Study Area
AID	Altoga soils and Urban land, 2 to 8 percent slopes	21.41	3.40%
Bh	Bergstrom soils and Urban land, 0 to 2 percent slopes	59.63	9.47%
EuC	Eddy soils and Urban land, 0 to 6 percent slopes	20.32	3.23%
GP	Pits, gravel, 1 to 90 percent slopes	4.19	0.67%
HnB	Houston Black clay, 1 to 3 percent slopes	11.87	1.89%
HsD	Houston Black soils and Urban land, 0 to 8 percent slopes	101.49	16.13%
LeB	Lewisville soils and Urban land, 0 to 2 percent slopes	22.88	3.64%
Lu	Gaddy soils and Urban land, 0 to 1 percent slopes, occasionally flooded	11.45	1.82%
TuD	Travis soils and urban land, 1 to 8 percent slopes	35.20	5.59%
Ur	Urban land, 0 to 6 percent slopes	189.34	30.09%
UuC	Austin-Urban land complex, 2 to 5 percent slopes	45.71	7.26%
UTD	Urban land, Austin, and Whitewright soils, 1 to 8 percent slopes	57.02	9.06%
UuE	Urban land and Brackett soils, 1 to 12 percent slopes	24.14	3.84%
UvE	Urban land and Ferris soils, 10 to 15 percent slopes	18.20	2.89%
W	Water	6.46	1.03%



**Legend**

- MODIFIED ALTERNATIVE 3 - STUDY AREA
- SOILS MAP UNIT

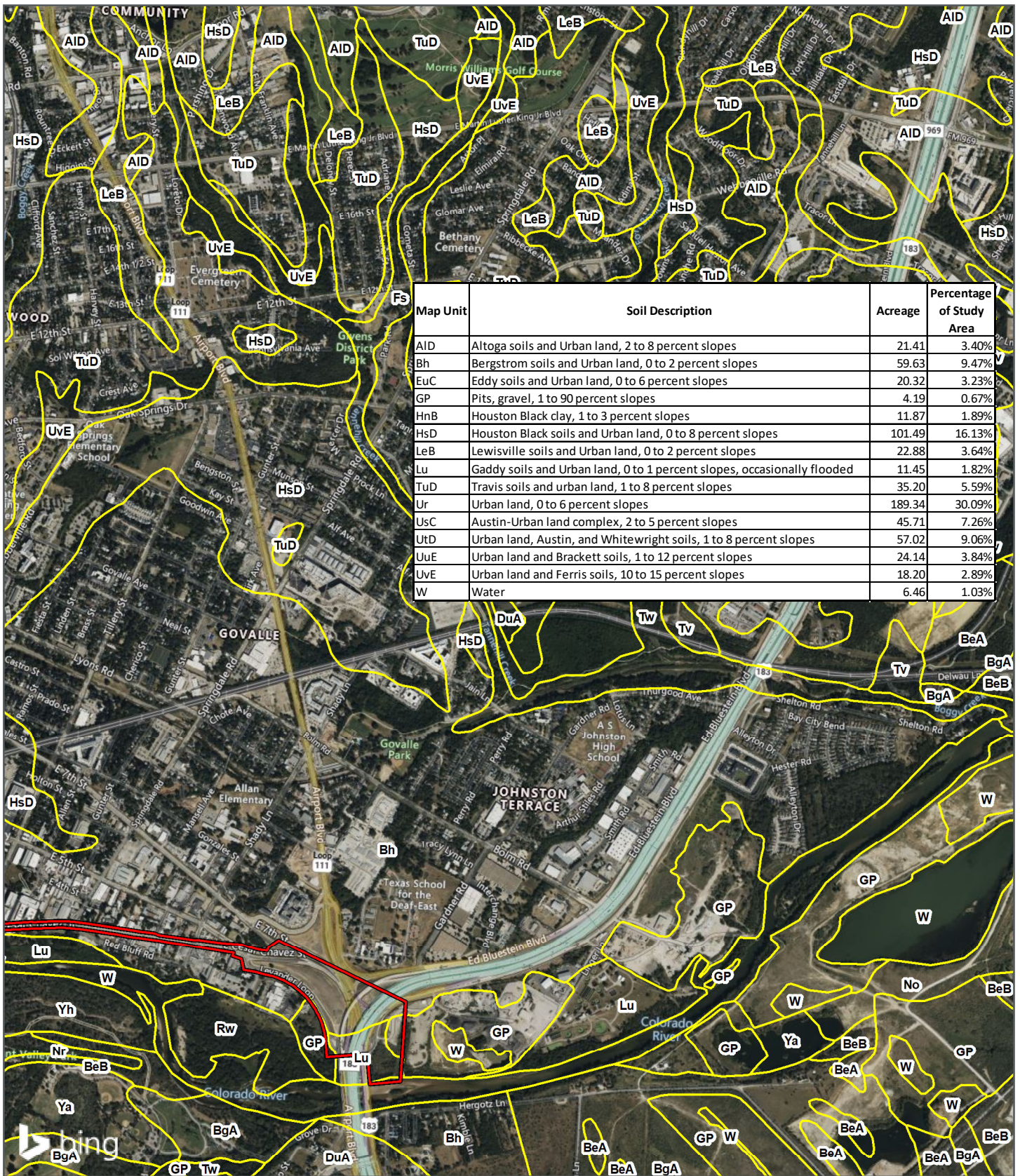


**SOILS MAP**  
 I-35 CAPITAL EXPRESS  
 CENTRAL PROJECT  
 TRAVIS COUNTY, TX

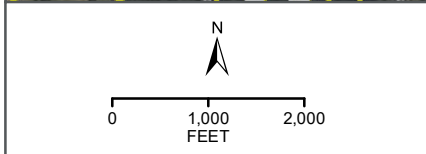
APRIL 2023      FIGURE 5-2





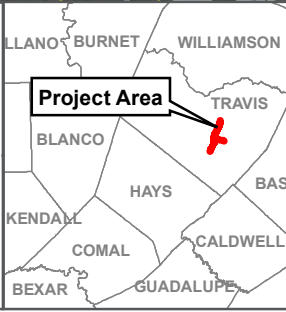


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W	Water	6.46	1.03%



**Legend**

- MODIFIED ALTERNATIVE 3 - STUDY AREA
- SOILS MAP UNIT



**SOILS MAP**

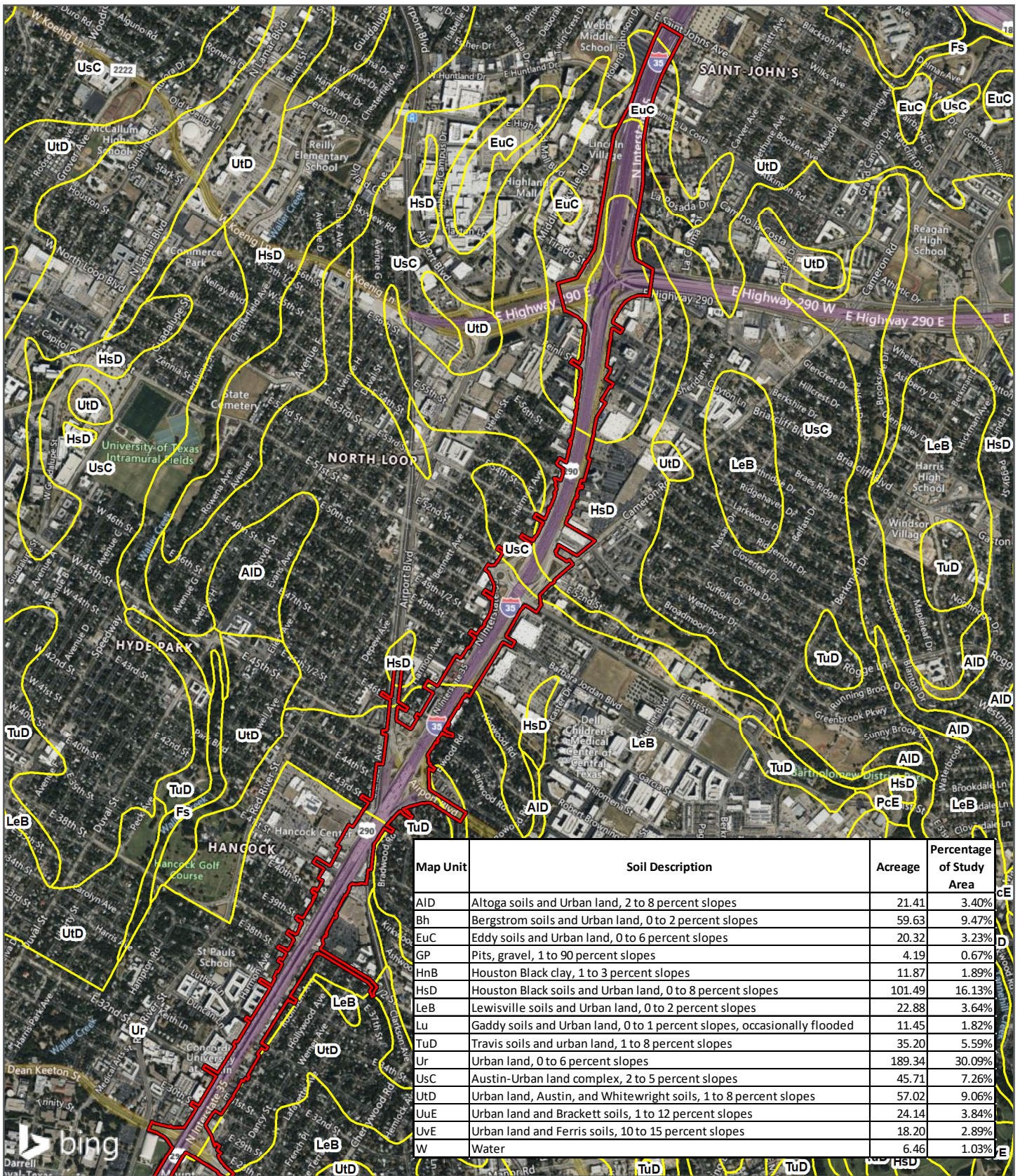
I-35 CAPITAL EXPRESS  
CENTRAL PROJECT

TRAVIS COUNTY, TX


APRIL 2023	FIGURE 5-3
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




Map Unit	Soil Description	Acreage	Percentage of Study Area
AID	Altoga soils and Urban land, 2 to 8 percent slopes	21.41	3.40%
Bh	Bergstrom soils and Urban land, 0 to 2 percent slopes	59.63	9.47%
EuC	Eddy soils and Urban land, 0 to 6 percent slopes	20.32	3.23%
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UvE	Urban land and Ferris soils, 10 to 15 percent slopes	18.20	2.89%
W	Water	6.46	1.03%


  
 0 1,000 2,000 FEET

**Legend**

-  MODIFIED ALTERNATIVE 3 - STUDY AREA
-  SOILS MAP UNIT



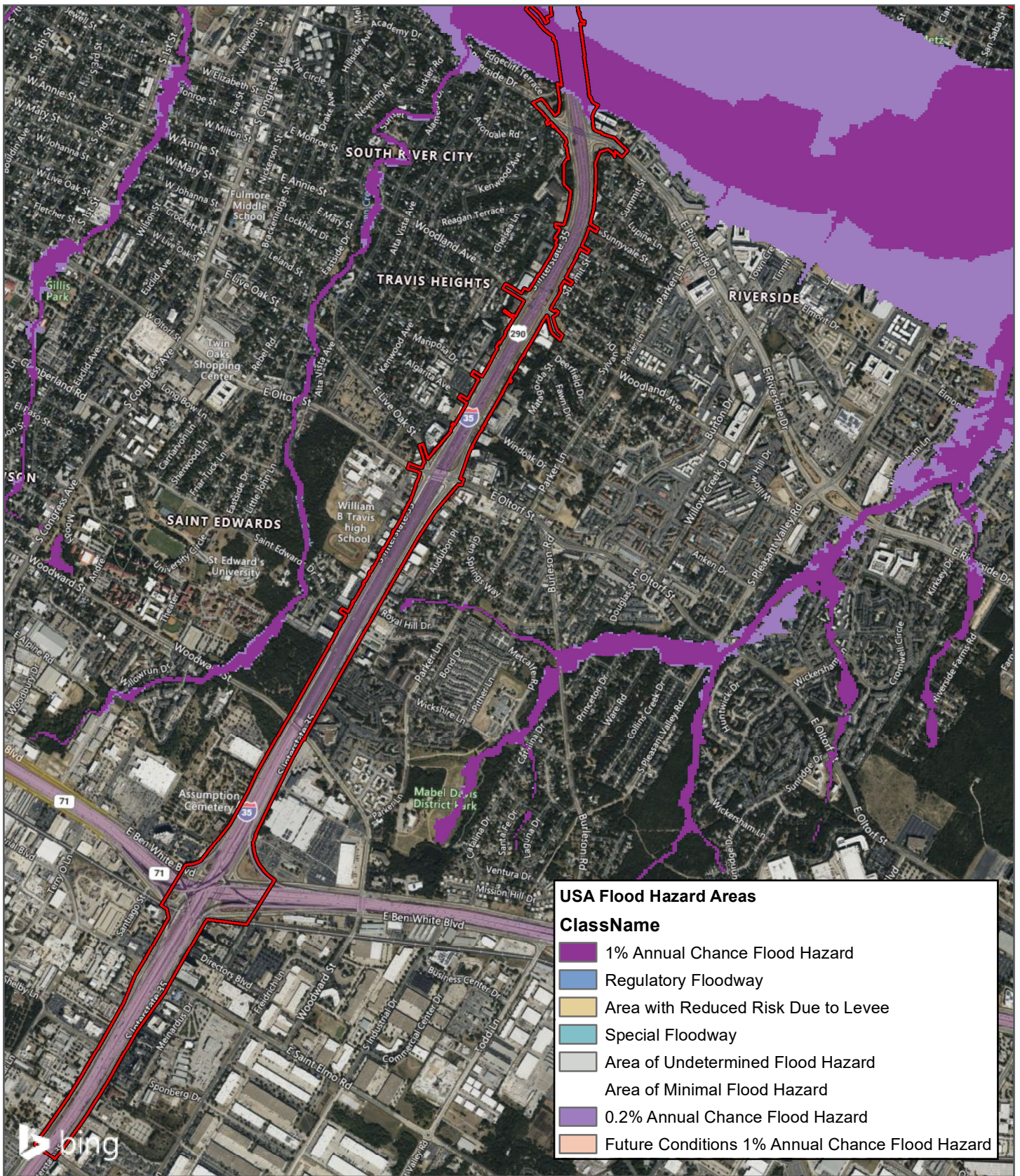
**SOILS MAP**

I-35 CAPITAL EXPRESS  
CENTRAL PROJECT

TRAVIS COUNTY, TX

APRIL 2023      FIGURE 5-4

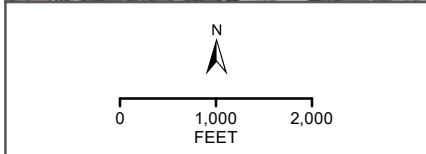




**USA Flood Hazard Areas**

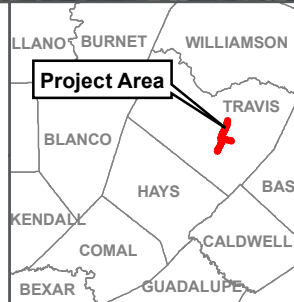
**ClassName**

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Area with Reduced Risk Due to Levee
- Special Floodway
- Area of Undetermined Flood Hazard
- Area of Minimal Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard



**Legend**

MODIFIED ALTERNATIVE 3 - STUDY AREA



**FEMA FLOODPLAIN MAP**

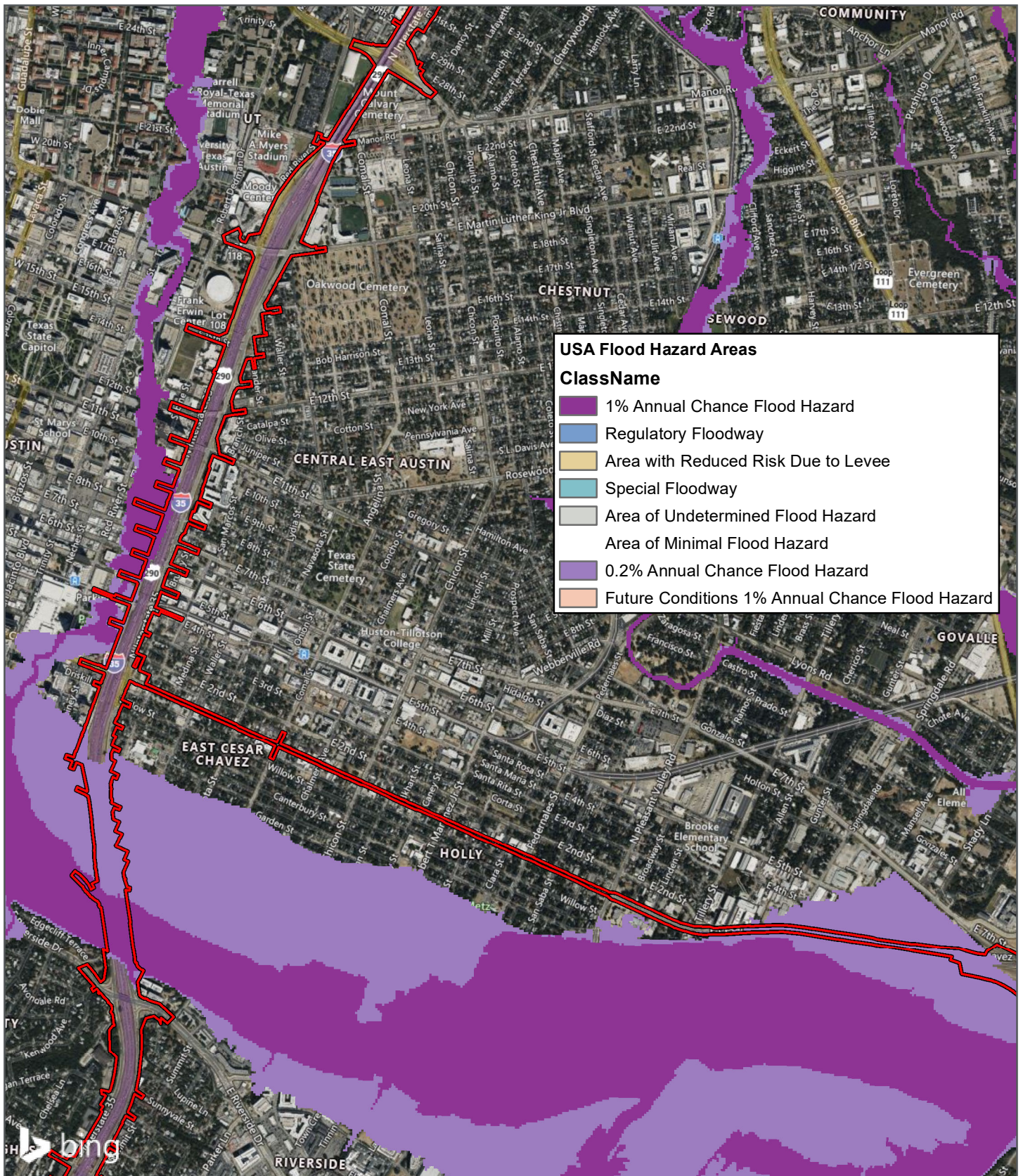
I-35 CAPITAL EXPRESS  
CENTRAL PROJECT

TRAVIS COUNTY, TX

APRIL 2023	FIGURE 6-1
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**USA Flood Hazard Areas**

**ClassName**

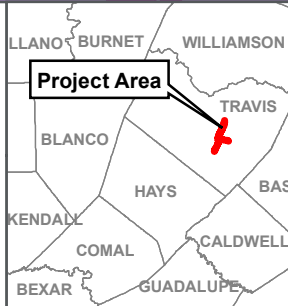
- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Area with Reduced Risk Due to Levee
- Special Floodway
- Area of Undetermined Flood Hazard
- Area of Minimal Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard

N

0      1,000      2,000  
FEET

**Legend**

MODIFIED ALTERNATIVE 3 – STUDY AREA



**FEMA FLOODPLAIN MAP**

I-35 CAPITAL EXPRESS  
CENTRAL PROJECT

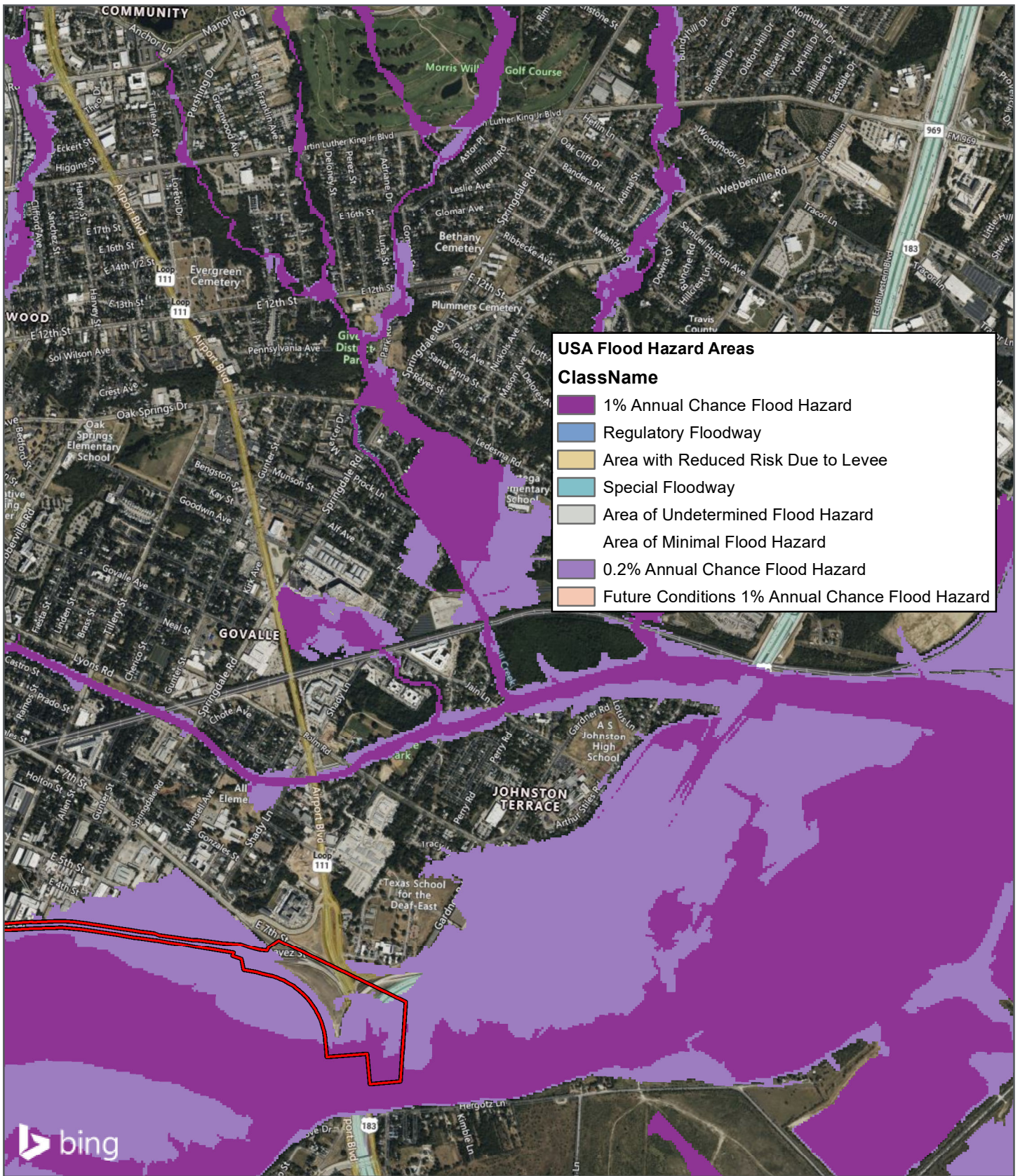
TRAVIS COUNTY, TX



APRIL 2023

FIGURE 6-2



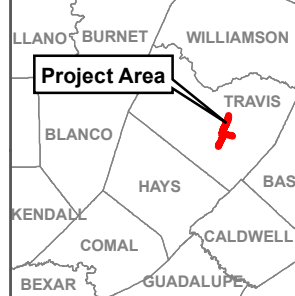






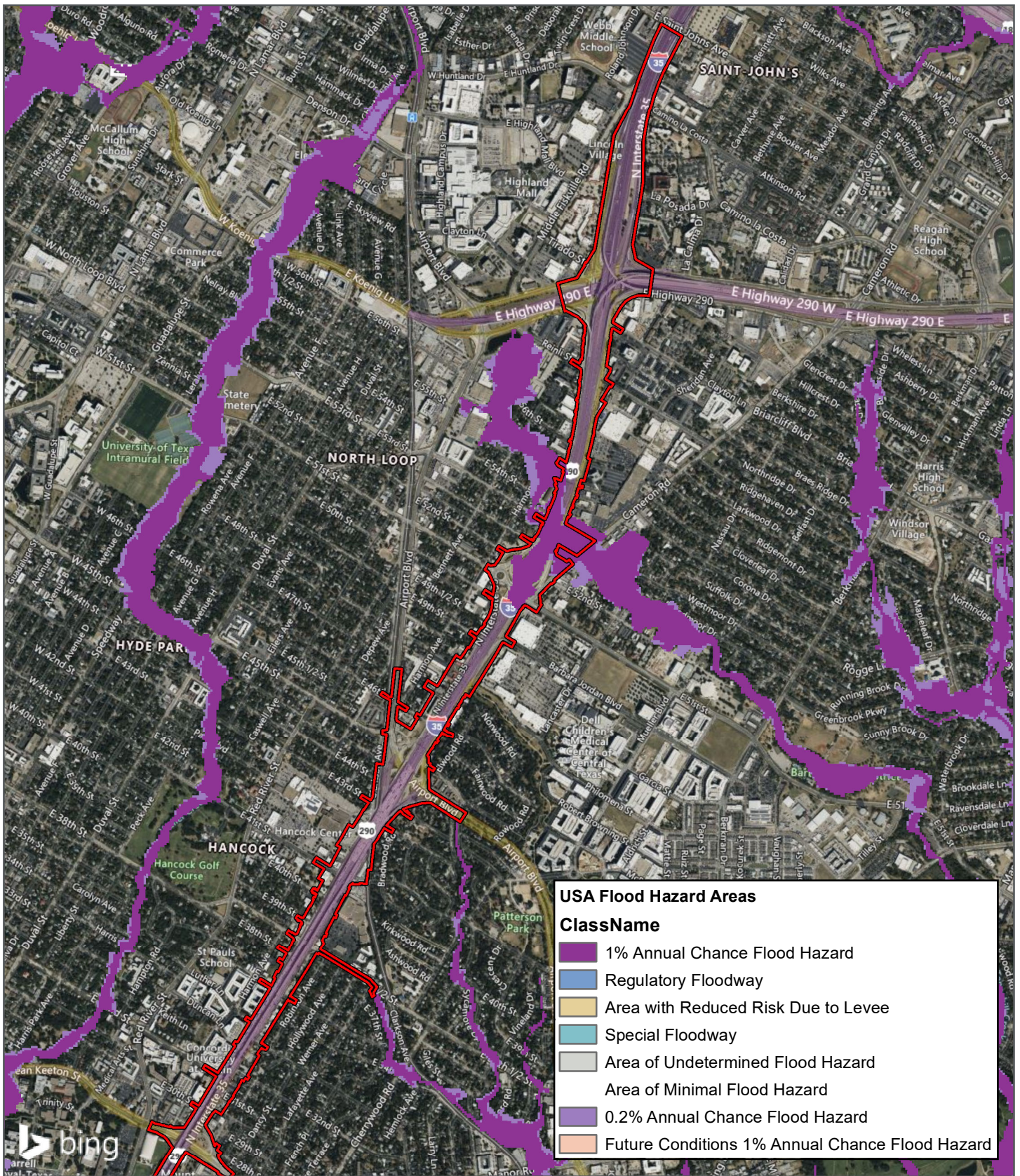
**USA Flood Hazard Areas**

**ClassName**

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Area with Reduced Risk Due to Levee
- Special Floodway
- Area of Undetermined Flood Hazard
- Area of Minimal Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard

 	<p><b>Legend</b></p> <p><span style="border: 2px solid red; display: inline-block; width: 20px; height: 10px; margin-right: 5px;"></span> MODIFIED ALTERNATIVE 3 - STUDY AREA</p>		<p><b>FEMA FLOODPLAIN MAP</b></p> <p>I-35 CAPITAL EXPRESS CENTRAL PROJECT</p> <p>TRAVIS COUNTY, TX</p>
			<div style="width: 45%;"> <p>APRIL 2023</p> </div> <div style="width: 45%;"> <p>FIGURE 6-3</p> </div>

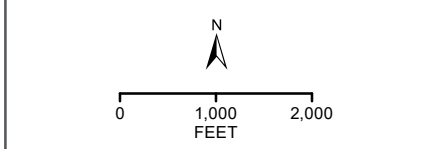




**USA Flood Hazard Areas**

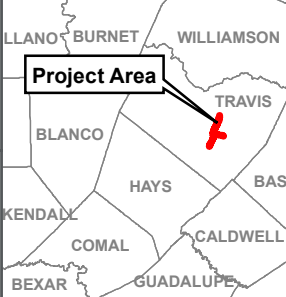
**ClassName**

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Area with Reduced Risk Due to Levee
- Special Floodway
- Area of Undetermined Flood Hazard
- Area of Minimal Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard



**Legend**

MODIFIED ALTERNATIVE 3 - STUDY AREA



**FEMA FLOODPLAIN MAP**

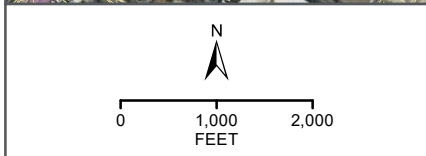
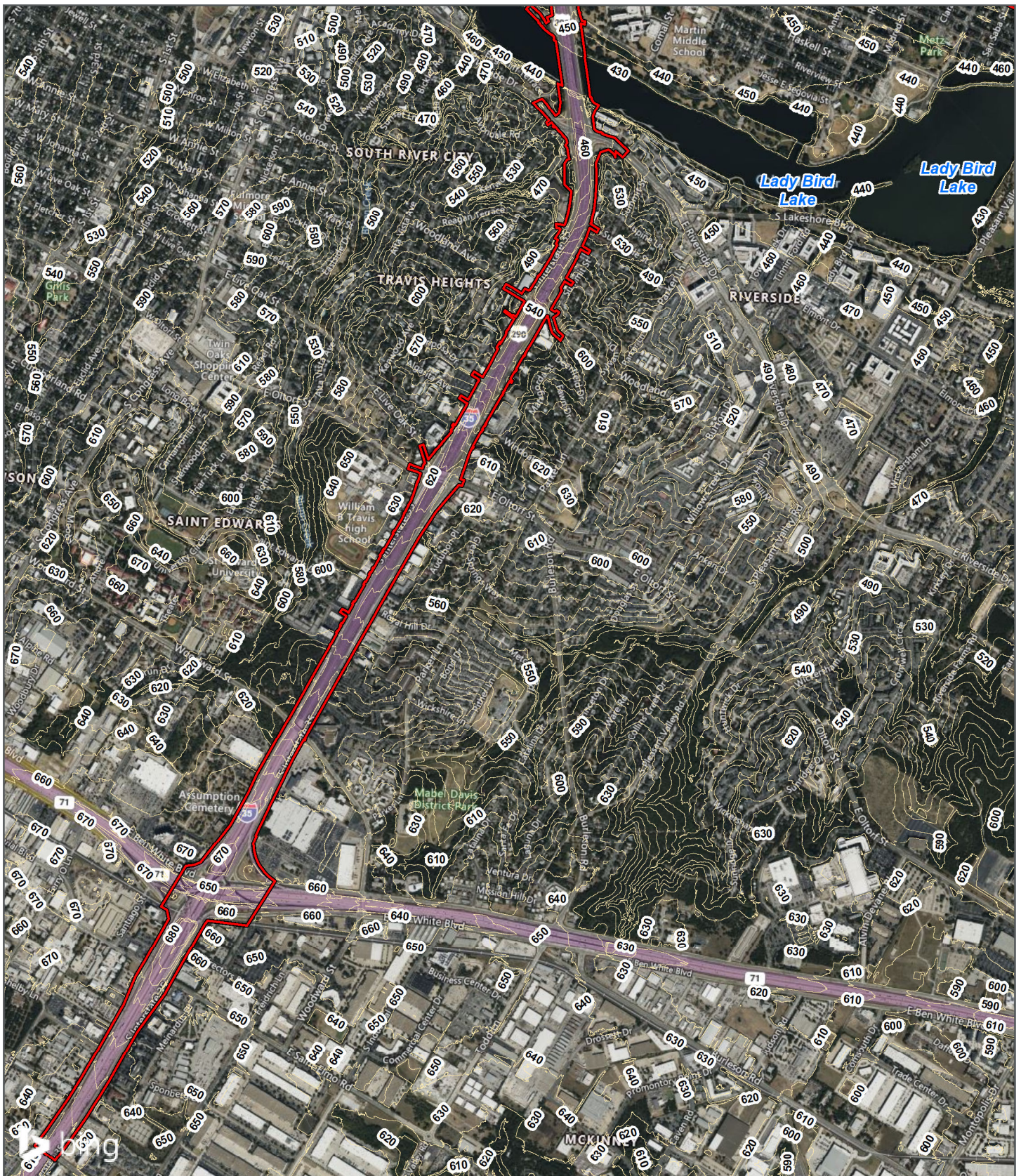
I-35 CAPITAL EXPRESS  
CENTRAL PROJECT

TRAVIS COUNTY, TX

APRIL 2023 FIGURE 6-4

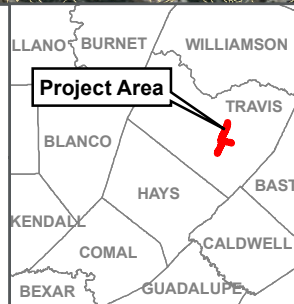






**Legend**

- MODIFIED ALTERNATIVE 3 – STUDY AREA
- CONTOURS (10')



**LIDAR MAP**

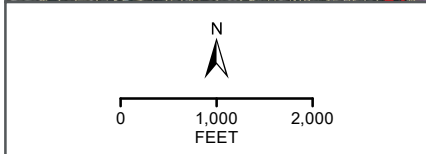
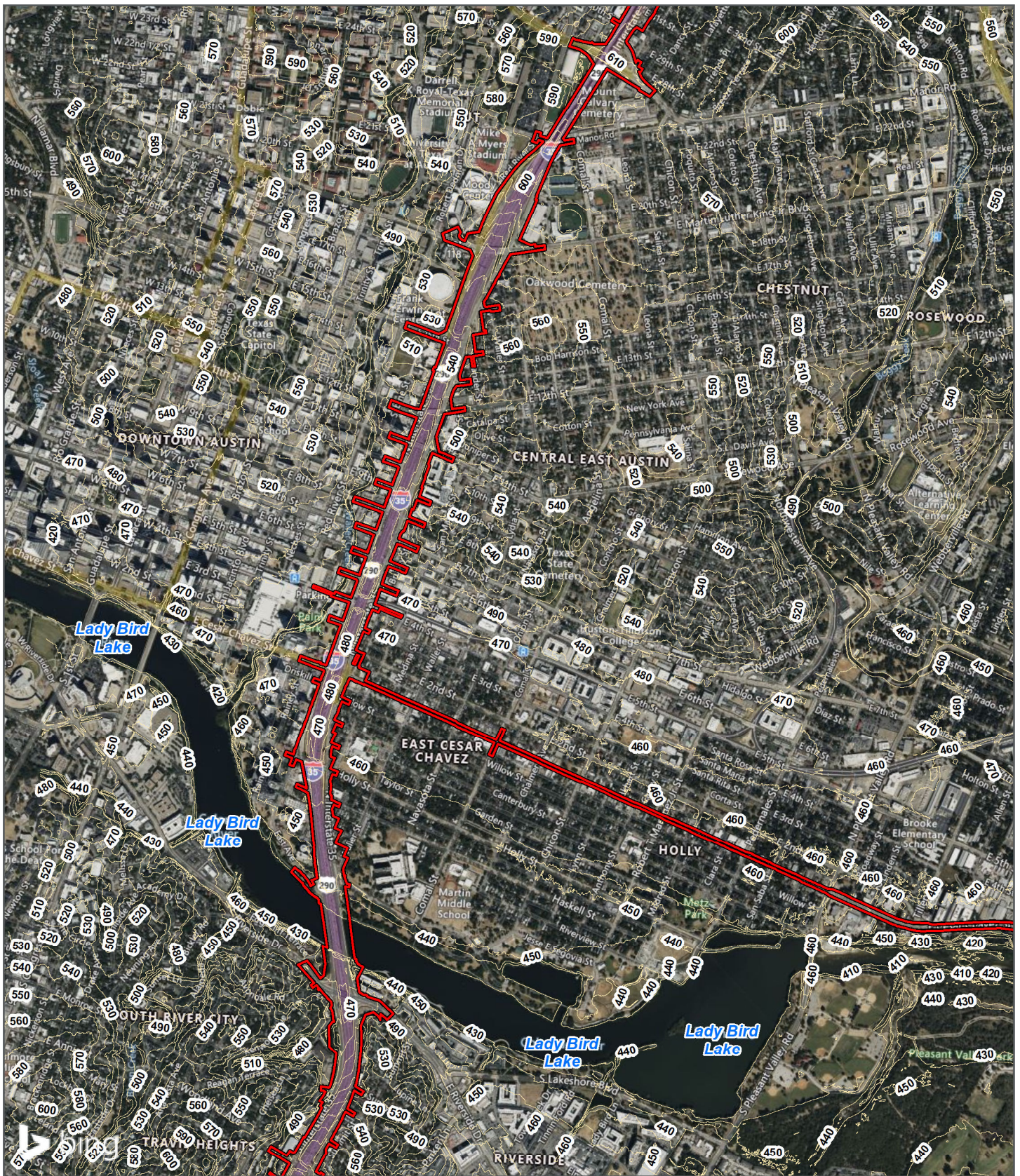
**I-35 CAPITAL EXPRESS  
CENTRAL PROJECT**

**TRAVIS COUNTY, TX**

APRIL 2023	FIGURE 7-1
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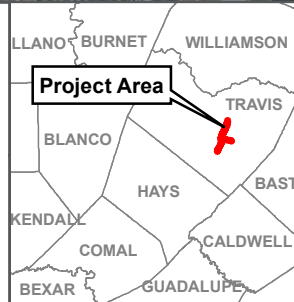






**Legend**

- MODIFIED ALTERNATIVE 3 - STUDY AREA
- CONTOURS (10')



**LIDAR MAP**

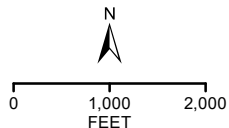
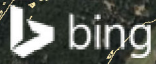
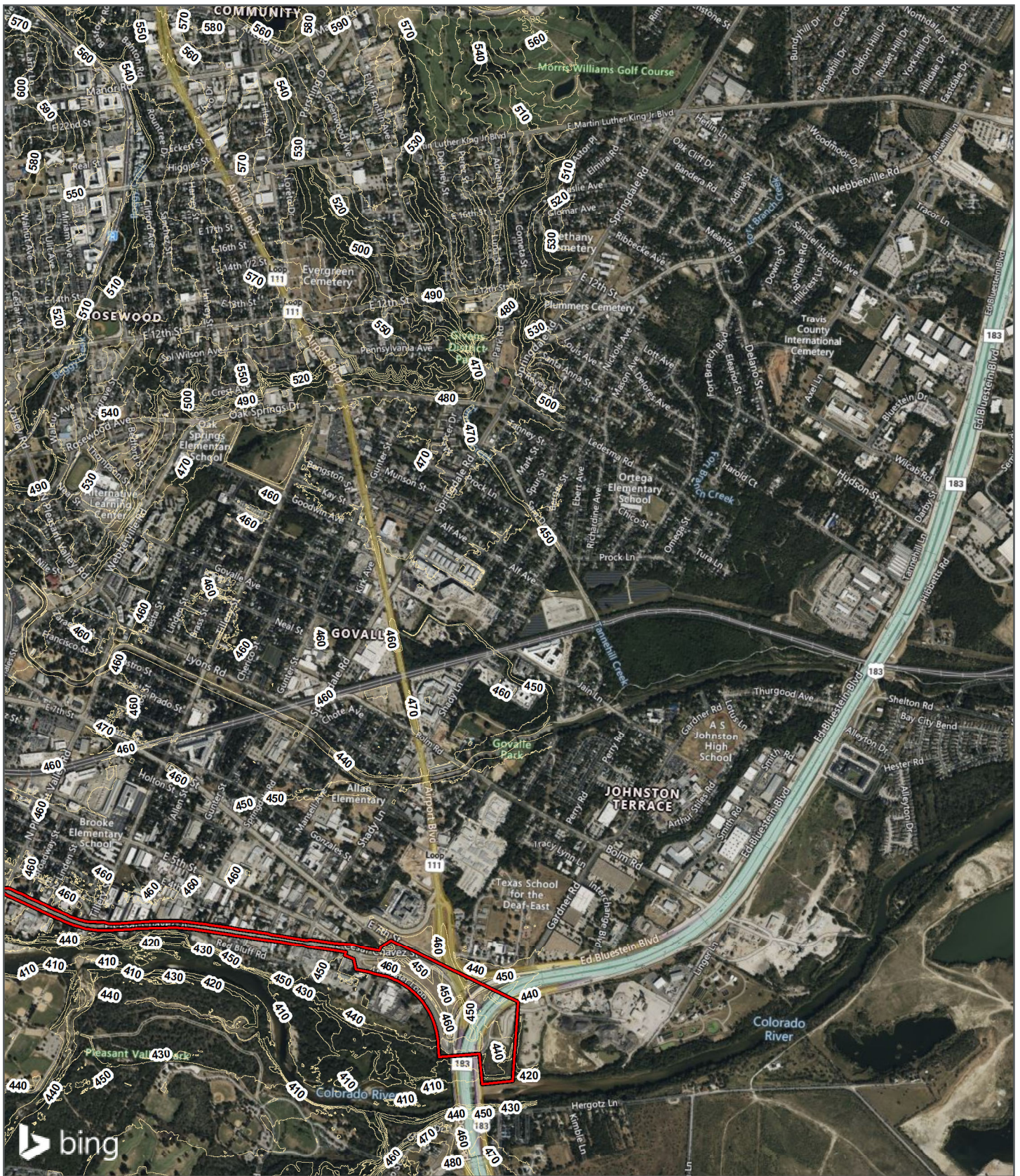
**I-35 CAPITAL EXPRESS  
CENTRAL PROJECT**

**TRAVIS COUNTY, TX**

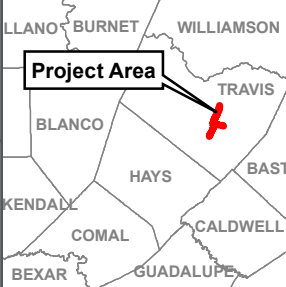
APRIL 2023	FIGURE 7-2
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- Legend**
- MODIFIED ALTERNATIVE 3 – STUDY AREA
  - CONTOURS (10')



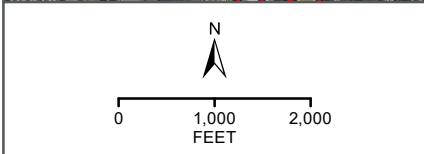
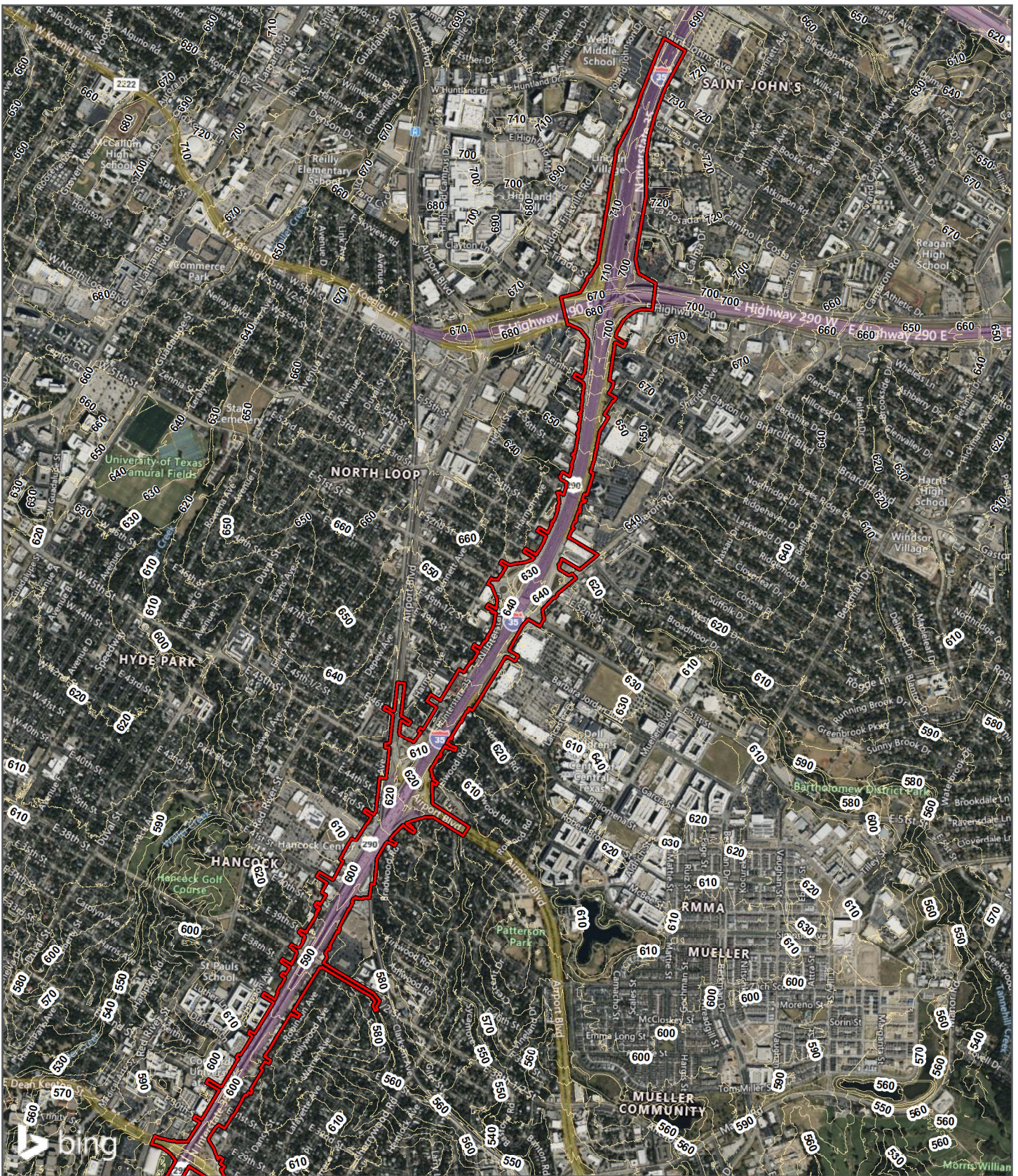
**LIDAR MAP**  
**I-35 CAPITAL EXPRESS**  
**CENTRAL PROJECT**  
**TRAVIS COUNTY, TX**

APRIL 2023

FIGURE 7-3

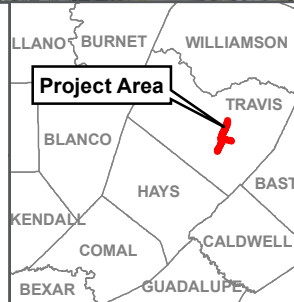






**Legend**

- MODIFIED ALTERNATIVE 3 - STUDY AREA
- CONTOURS (10')



**LIDAR MAP**

**I-35 CAPITAL EXPRESS  
CENTRAL PROJECT**

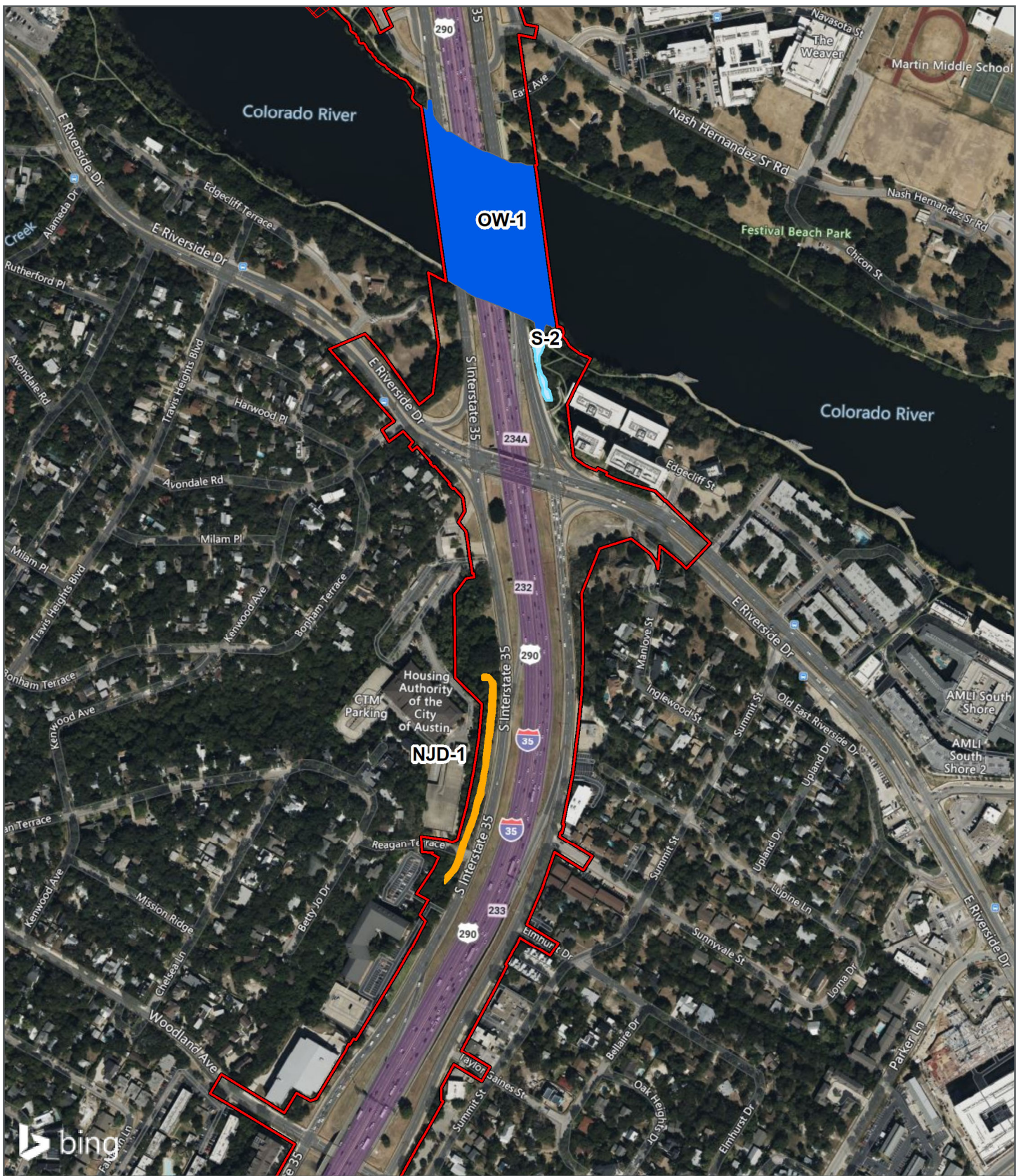
**TRAVIS COUNTY, TX**

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APRIL 2023 FIGURE 7-4





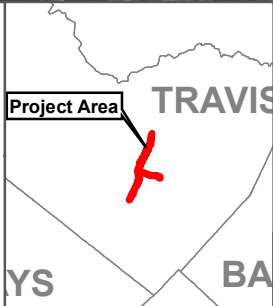


bing

0 250 500  
FEET

**Legend**

- MODIFIED ALTERNATIVE 3 - STUDY AREA
- OPEN WATER
- NON JURISDICTIONAL DRAINAGE
- INTERMITTENT STREAM
- PROPOSED CONSTRUCTION DOCK



**SECTION 404 IMPACTS**

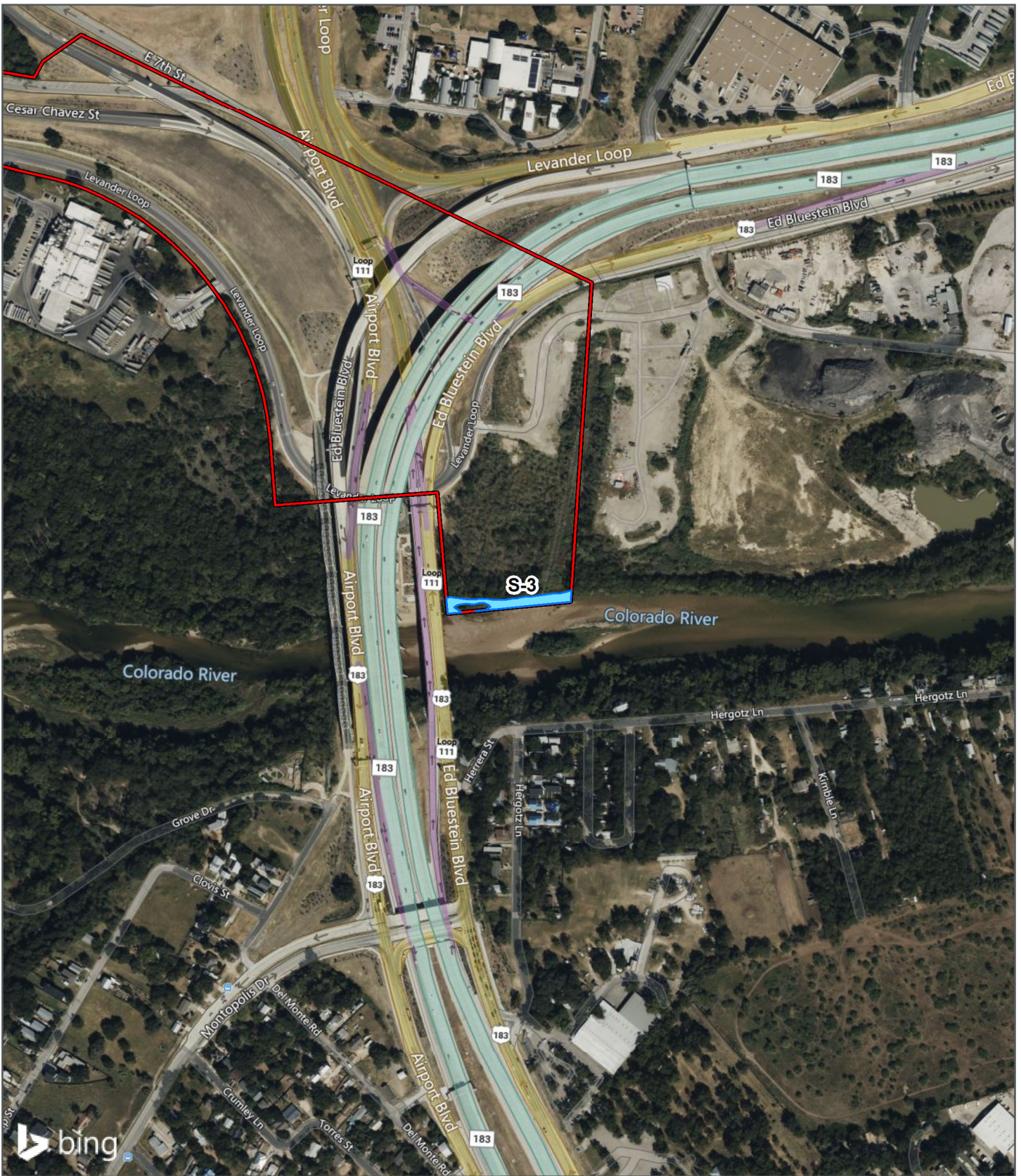
I-35 CAPITAL EXPRESS  
CENTRAL PROJECT

TRAVIS COUNTY, TX

APRIL 2023

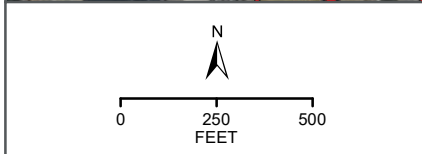
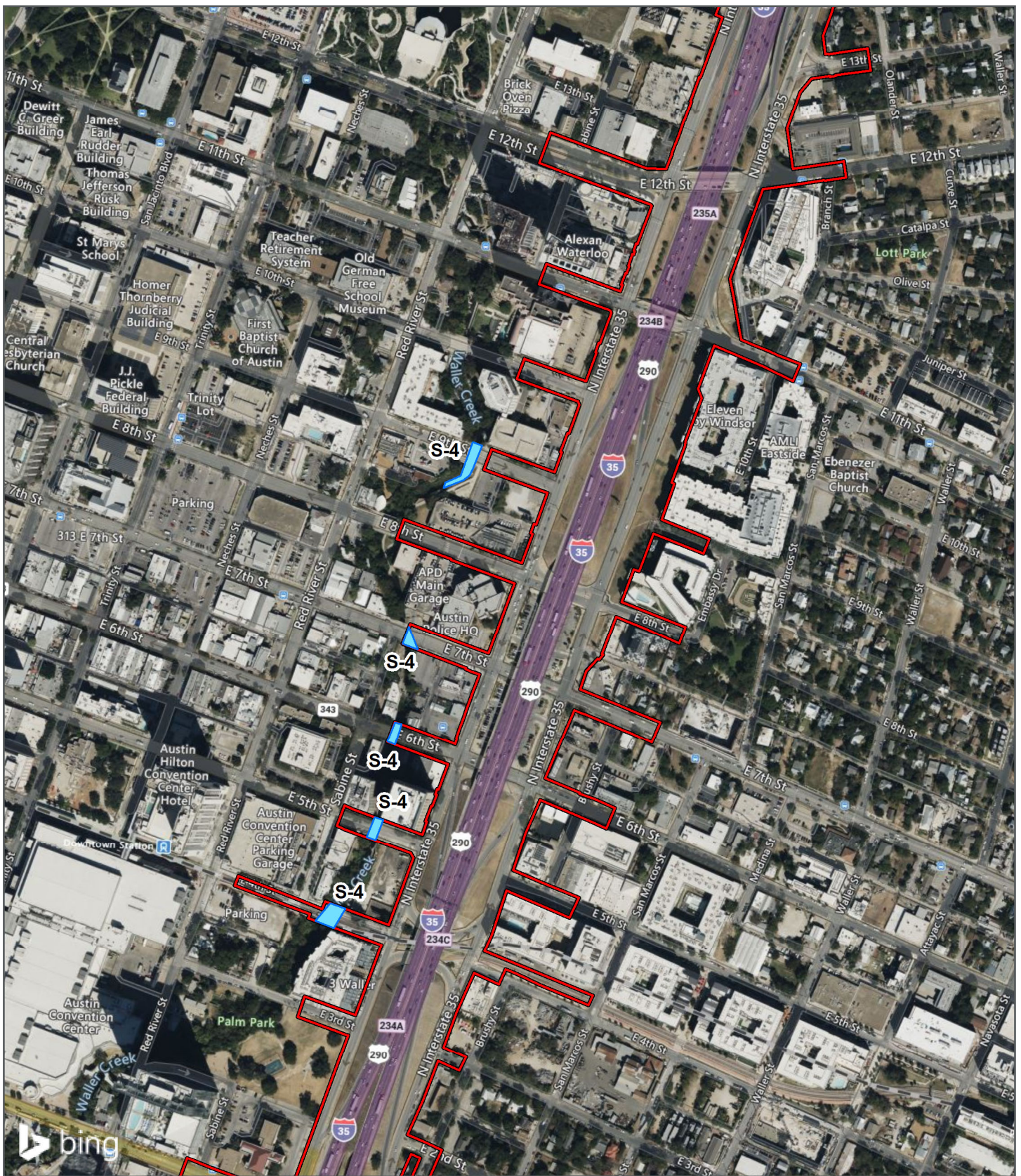
FIGURE 8-1





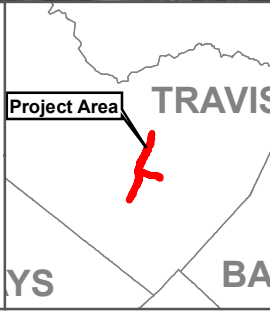
	<p><b>Legend</b></p> <ul style="list-style-type: none"> <li><span style="border: 2px solid red; display: inline-block; width: 20px; height: 10px; margin-right: 5px;"></span> MODIFIED ALTERNATIVE 3 – STUDY AREA</li> <li><span style="background-color: lightblue; display: inline-block; width: 20px; height: 10px; margin-right: 5px;"></span> PERENNIAL STREAM</li> </ul>		<p><b>SECTION 404 IMPACTS</b></p> <p>I-35 CAPITAL EXPRESS CENTRAL PROJECT</p> <p>TRAVIS COUNTY, TX</p>	
			<p>APRIL 2023</p>	<p>FIGURE 8-2</p>





**Legend**

- MODIFIED ALTERNATIVE 3 - STUDY AREA
- PERENNIAL STREAM



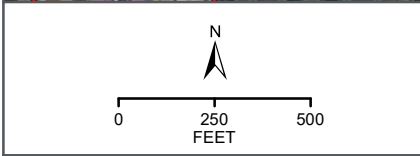
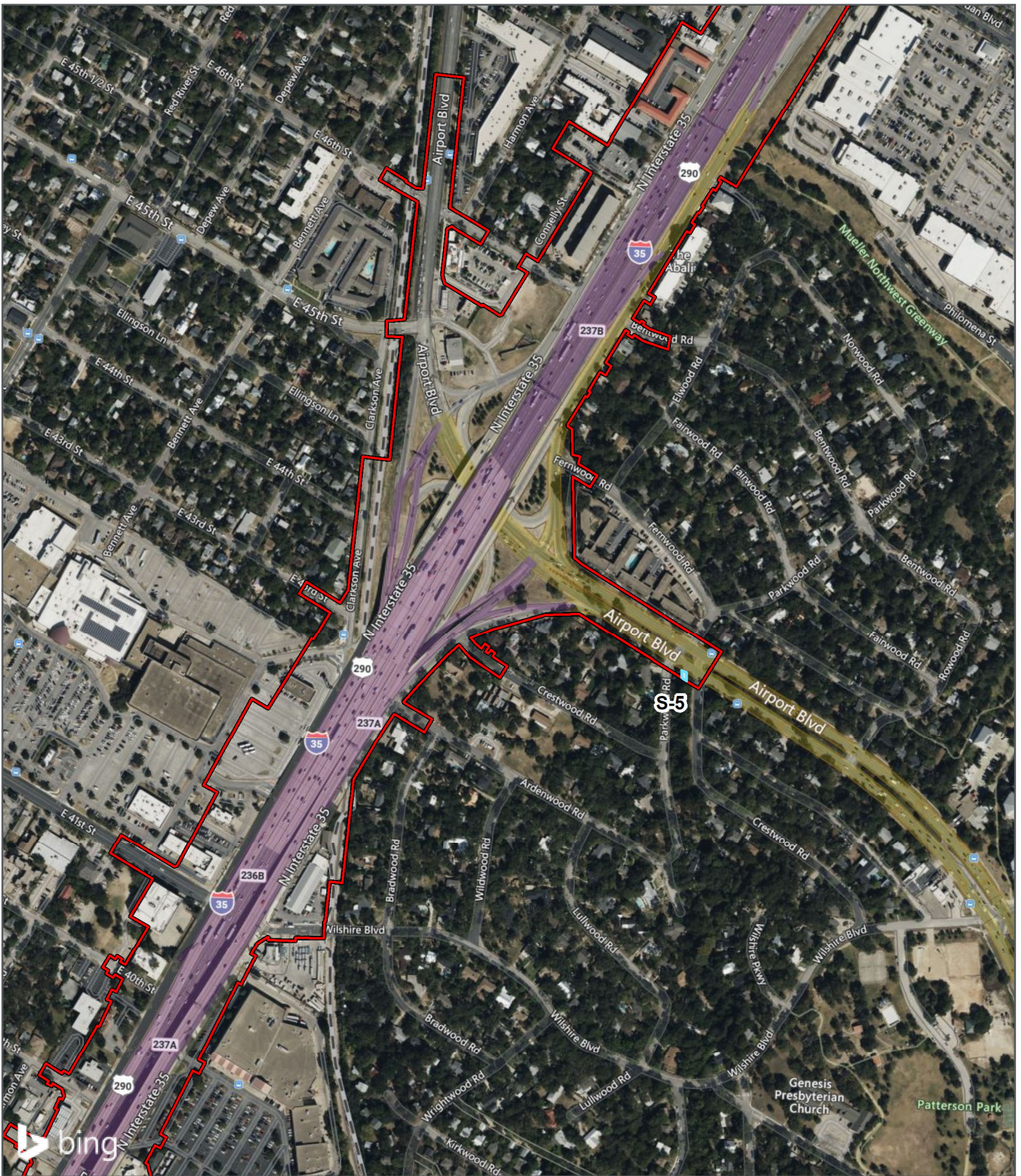
**SECTION 404 IMPACTS**  
 I-35 CAPITAL EXPRESS  
 CENTRAL PROJECT  
 TRAVIS COUNTY, TX



APRIL 2023

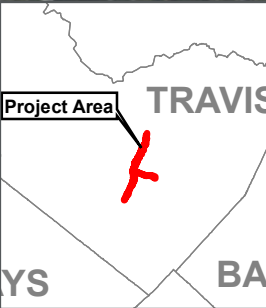
FIGURE 8-3





**Legend**

- MODIFIED ALTERNATIVE 3 – STUDY AREA
- INTERMITTENT STREAM



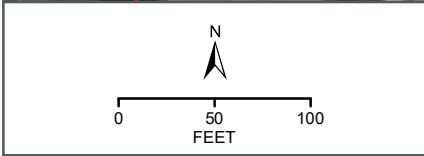
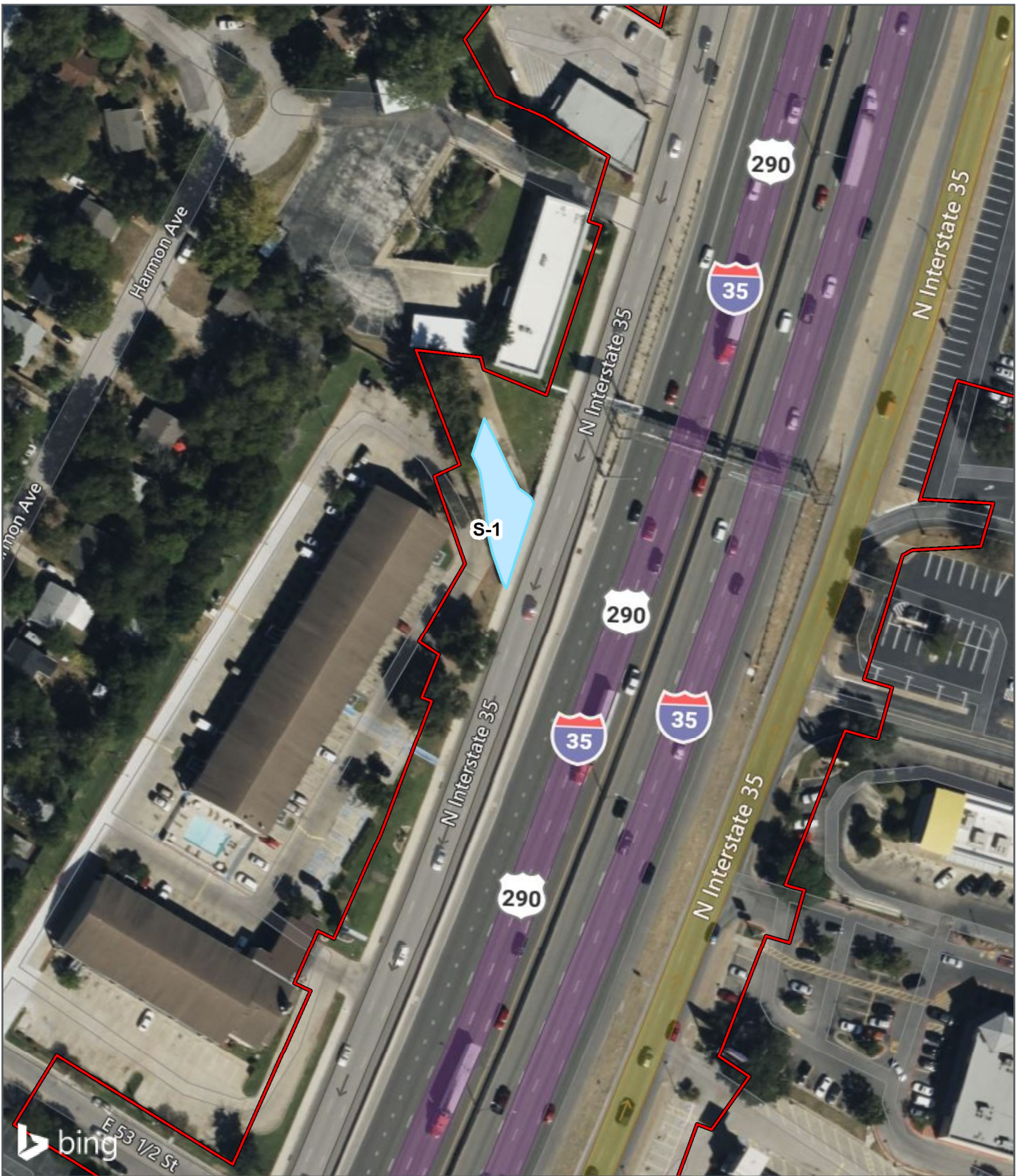
**SECTION 404 IMPACTS**  
 I-35 CAPITAL EXPRESS  
 CENTRAL PROJECT  
 TRAVIS COUNTY, TX





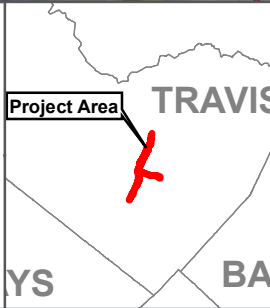
APRIL 2023

FIGURE 8-4





	MODIFIED ALTERNATIVE 3 - STUDY AREA
	INTERMITTENT STREAM



<b>SECTION 404 IMPACTS</b>	
I-35 CAPITAL EXPRESS CENTRAL PROJECT	
TRAVIS COUNTY, TX	
APRIL 2023	FIGURE 8-5



## **Attachment 2 - Wetland Determination Data Forms**

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: I-35 From US 290 to SH 71 City/County: Austin/Travis Sampling Date: July 8, 2021  
 Applicant/Owner: Texas Department of Transportation State: TX Sampling Point: DP-1  
 Investigator(s): A. Roberts, S. Moren Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): convex Slope (%): 3  
 Subregion (LRR): LRR J; MLRA 86 Lat: 30.251056° Long: -97.735338° Datum: NAD 83  
 Soil Map Unit Name: Urban land, 0 to 6 percent slopes NWI classification: L1UBHh

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 checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: City park with heavy foot traffic has significantly disturbed the vegetation. Vegetation is dominated by introduced non-native species. Hydrophytic vegetation is limited to 3 feet of the shoreline. Heavy use and construction of trails has compacted and disturbed the soil. Hydrology has been modified by the damming of the Colorado River into a maintained level impoundment. Due to disturbed soils and lack of hydrology, this site is not considered to be wetland fringe.	

### VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0 = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>30'</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
0 = Total Cover				
Herb Stratum (Plot size: <u>30'</u> )				
1. <u>Ambrosia trifida</u>	25	Yes	FAC	
2. <u>Colocasia esculenta</u>	25	Yes	OBL	
3. <u>Cynodon dactylon</u>	15	Yes	FACU	
4. <u>Equisetum hyemale</u>	10	No	FACW	
5. <u>Cicuta maculata</u>	10	No	OBL	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
85 = Total Cover				
Woody Vine Stratum (Plot size: <u>30'</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
0 = Total Cover				
% Bare Ground in Herb Stratum <u>15</u>				

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): 2 (A)  
 Total Number of Dominant Species Across All Strata: 3 (B)  
 Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (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<sup>1</sup>  
 \_\_\_ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 \_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes  No

Remarks:  
 Hydrophytic species are limited to an approximate 3 foot width from the waters edge and are not in a continuous band that is typical of a fringe wetland (patchy). These species are either rooted within the substrate of LBL or are accessing saturated soil immediately adjacent to LBL.

**SOIL**

Sampling Point: DP-1

**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>		

<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.

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

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present? Yes _____ No <sup>X</sup> _____</b>
Type: _____ Depth (inches): _____	

Remarks:  
  
No soil sample taken in the municipal park due to soil compaction and disturbance. No visible water staining of the soil surface. The site was historically upland prior to the damming of the Colorado River. Site is not listed as an NRCS hydric soil.

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	
<u>Primary Indicators (minimum of one required; check all that apply)</u>	<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<b>(where tilled)</b>
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Frost-Heave Hummocks (D7) ( <b>LRR F</b> )
<b>Field Observations:</b>	<b>Wetland Hydrology Present? Yes _____ No <sup>X</sup> _____</b>
Surface Water Present? Yes _____ No <sup>X</sup> _____ Depth (inches): _____ Water Table Present? Yes _____ No <sup>X</sup> _____ Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes _____ No <sup>X</sup> _____ Depth (inches): _____	

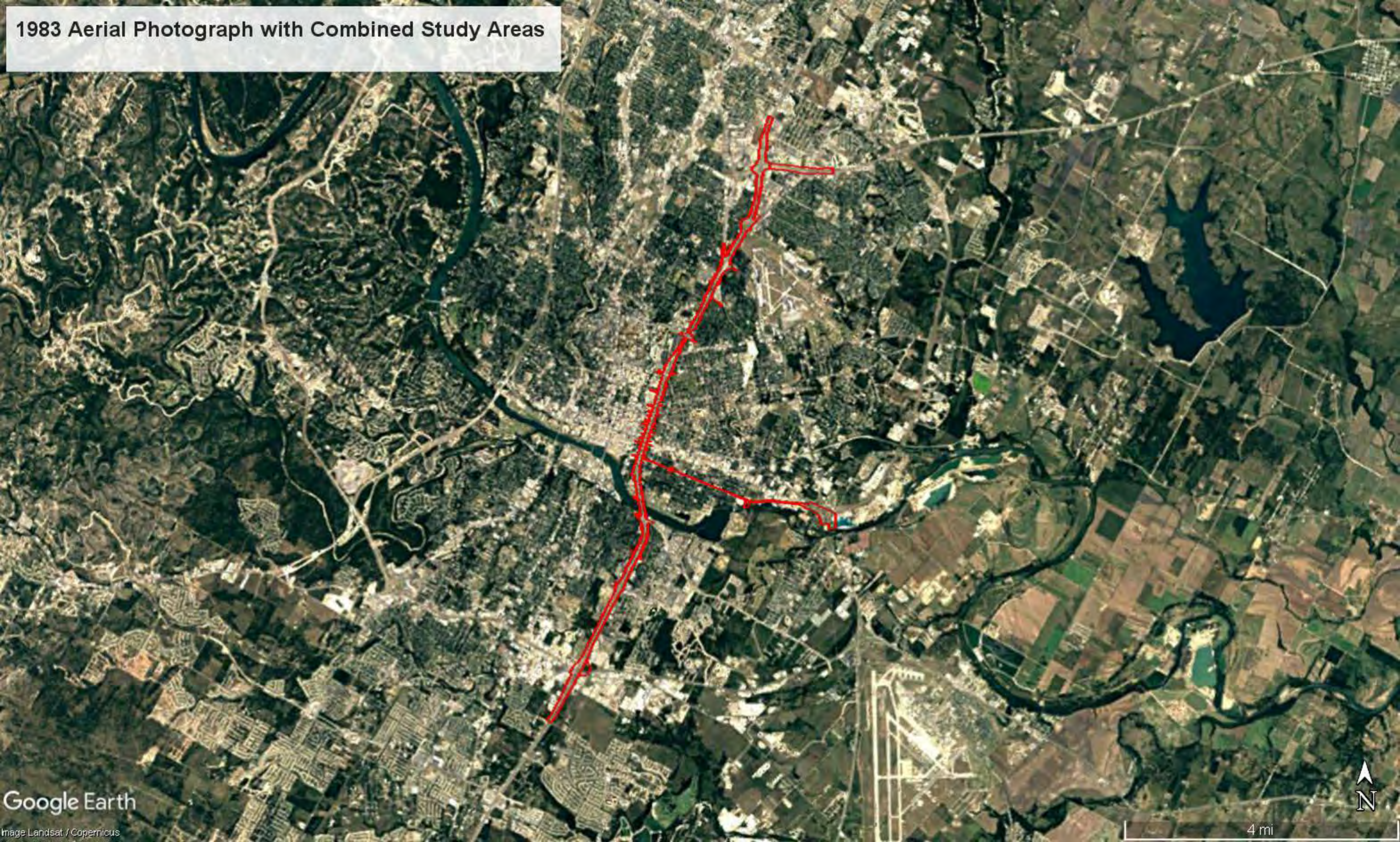
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Clearly defined bank with an approximate 1-2 foot elevation change to the average water level of LBL. Not a gradual slope that would facilitate fringe wetland.

## **Attachment 3 – Historical Aerial Photographs**

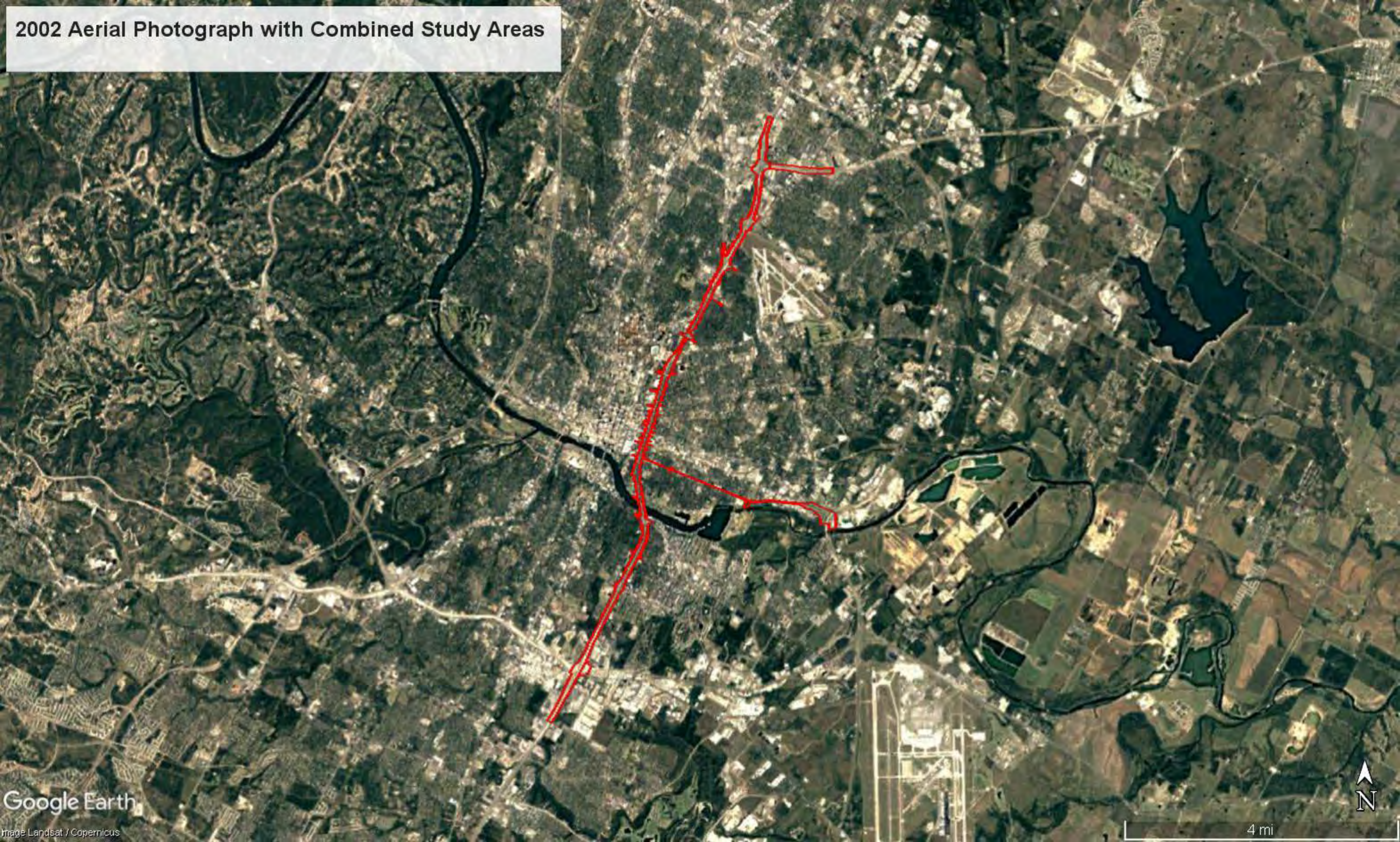


1983 Aerial Photograph with Combined Study Areas



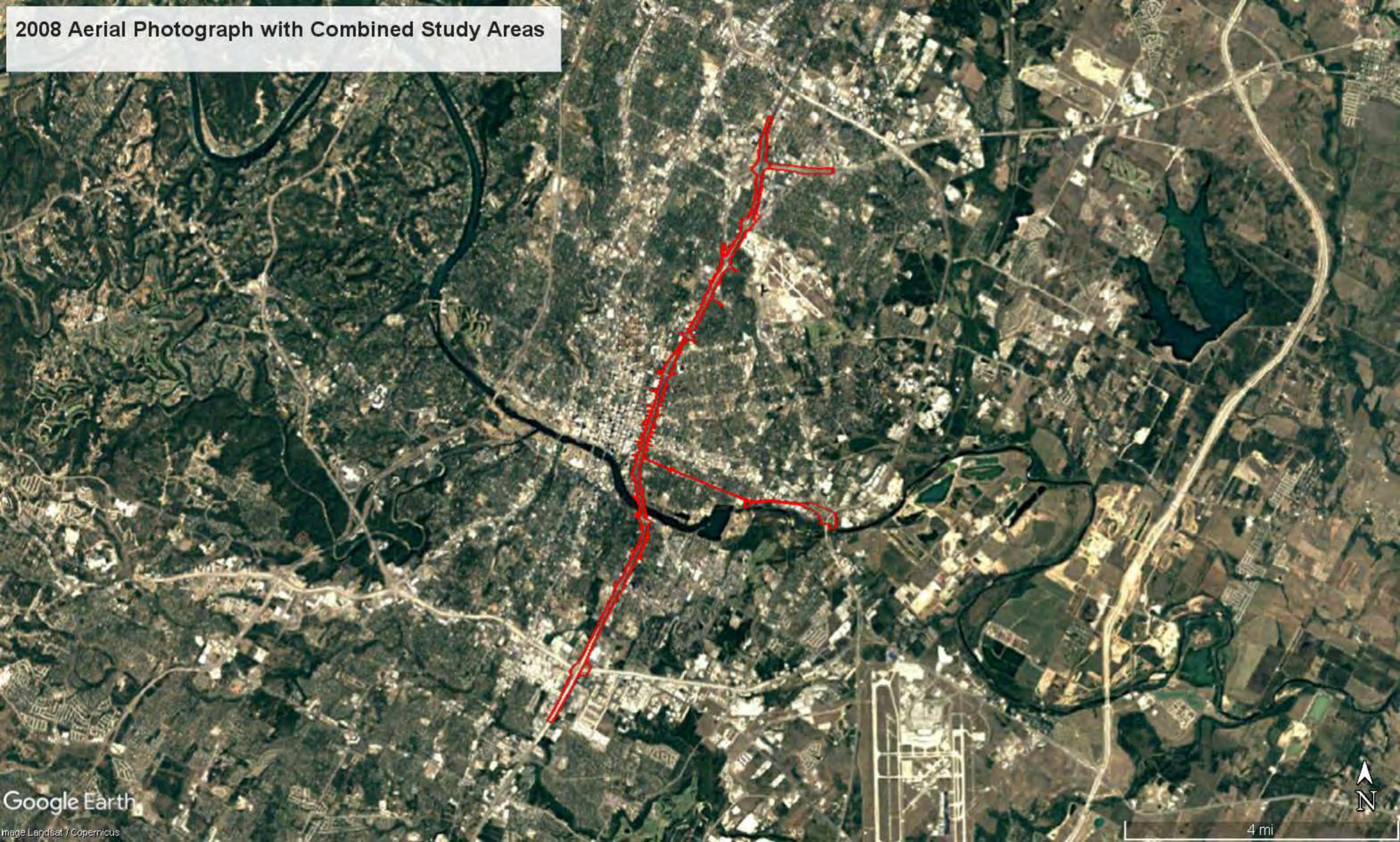


2002 Aerial Photograph with Combined Study Areas



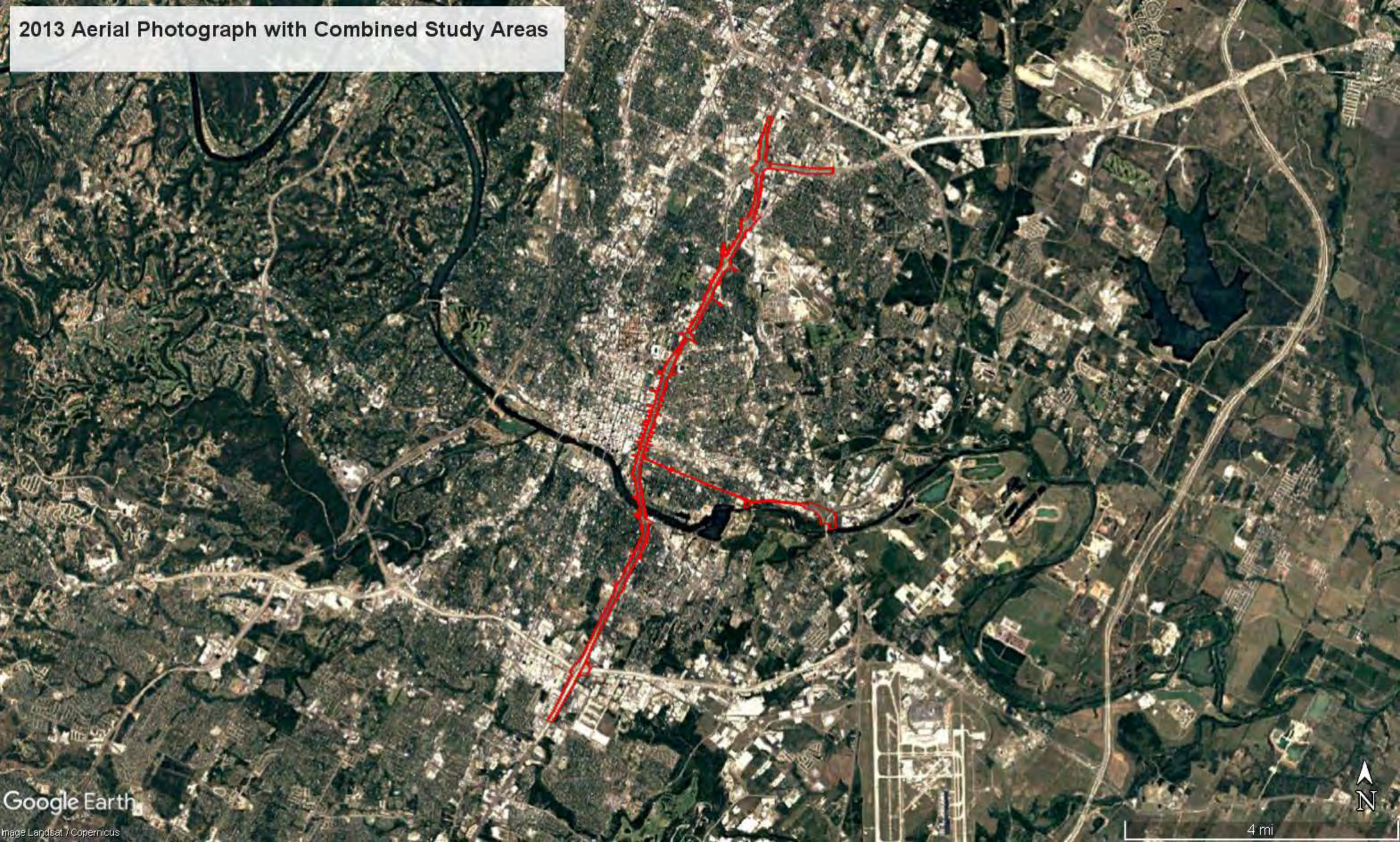


2008 Aerial Photograph with Combined Study Areas





2013 Aerial Photograph with Combined Study Areas





2022 Aerial Photograph with Combined Study Areas





## **Attachment 4 - Site Photographs**



Photo 1: Tannehill Branch (S-1) facing southwest.



Photo 2: Harpers Branch (S-2) near Lady Bird Lake facing north.





Photo 3: Colorado River (S-3) at proposed stormwater outfall location, aerial view.

### Colorado River



12/22/2021

Photo 4: Lady Bird Lake (OW-1) facing north.





Photo 5: Typical vegetation along Lady Bird Lake (OW-1).



Photo 6: Typical condition of southern shoreline at Lady Bird Lake (OW-1).





Photo 7: Typical condition of northern shoreline at Lady Bird Lake (OW-1).



Photo 8: Harpers Branch (NJD-1) facing south.

