



Texas Parks & Wildlife 2013 PA

Threshold Table 2017 Revision

This agreement defines the thresholds to determine if an area and type of potential impact from a transportation project triggers a need to coordinate the project with TPWD, while other coordination triggers are identified in the biological evaluation form.

THRESHOLD TABLE

PROGRAMMATIC AGREEMENT

BETWEEN

TEXAS DEPARTMENT OF TRANSPORTATION

AND

TEXAS PARKS AND WILDLIFE DEPARTMENT

UNDER THE 2013 MOU

2017 Revision

Introduction

Under §2.205 (a) (2) of the Memorandum of Understanding (MOU) between the Texas Department of Transportation (TxDOT) and the Texas Parks and Wildlife Department (TPWD), effective September 1, 2013, TxDOT will determine the need for coordinating a proposed transportation project with TPWD by comparing the results of a Tier I site assessment to the triggers in §2.206 and thresholds found in this Threshold Table Programmatic Agreement. The Tier I Site Assessment is a section of the TPWD Analysis Form. TxDOT will coordinate a transportation project with TPWD if a trigger is met or a threshold is exceeded and one of the conditions under §2.205 is met.

As required by §2.213(b)(2) of the MOU, the Interagency Implementation Team has developed this Programmatic Agreement (PA) to establish thresholds to be used in determining the need for TPWD coordination as required by §2.205 of the MOU.

Calculating Acreage of Impacts

A desktop review to determine whether the acreage of impact exceeds an established threshold should be conducted using a Geographic Information System (GIS) and the Ecological Mapping Systems of Texas (EMST). The EMST is based on the highest resolution spatial data available for land cover and vegetation communities. Ecological Systems are defined in the EMST as groupings of plant communities that tend to co-occur on the landscape and share similar ecological processes, substrates, and/or environmental gradients. The Ecological Systems of the EMST will be used as the basis for measuring acreage of impacts.

Similar Ecological Systems habitat types have been combined to establish the MOU Types shown in the Table 1 and 2 below. The MOU Types are simplified landforms that combine similar Ecological Systems for purposes of setting thresholds. A statewide "Crosswalk Table" that lists the Ecological Systems name and the associated MOU Type is included as an Appendix.

Other Triggers

It is important to note that this Programmatic Agreement addresses only the thresholds described in §2.205 and §2.213 and not the other triggers for coordination. Although the EMST is the most detailed spatial information available regarding land cover and vegetation communities, some triggers listed in §2.206 of the MOU require evaluation of impacts to vegetation that may not be mapped in the EMST. For instance, the MOU Types representing riparian vegetation in the tables below are set at a threshold of 0.10 acre to be consistent with the trigger identified in the MOU which requires coordination if "the project

may impact 0.10 acre of riparian vegetation based on the judgment of a qualified biologist or as mapped in the EMST.” This language is intended to initiate coordination on projects that impact 0.10 or more of riparian vegetation whether mapped in the EMST or not. For example, the removal of 0.10 acre of riparian vegetation as observed by a qualified biologist in an area mapped as Agriculture would require coordination with TPWD, even though the threshold for the Agriculture MOU Type is 10 acres. In addition, suitable habitat for state-listed species and Species of Greatest Conservation Need (SGCN) are not specifically mapped in the EMST, although the EMST can be used to help determine the potential for the species habitat to be present and therefore whether the trigger is met.

Coordination Thresholds

Projects that disturb habitat in an area equal to or greater than the area of disturbance indicated in the following tables require coordination with TPWD. The thresholds are organized by ecoregion in the Threshold Table, and the ecoregion boundaries are those mapped by the Environmental Protection Agency (Level III) (http://www.epa.gov/wed/pages/ecoregions/level_iii_iv.htm.) Some projects may be located in multiple ecoregions (i.e. some projects may cross one or more ecoregion boundaries). For projects that have impacts in multiple ecoregions and the thresholds differ between ecoregions for a single MOU Type, the average of the thresholds for that MOU Type should be used to determine the requirement for coordination with TPWD. Not all ecoregions have thresholds for all MOU Types. Projects that occur in multiple ecoregions, but do not have a threshold for an MOU Type in one of the ecoregions should use the threshold for the ecoregion having the MOU Type. That is, if an ecoregion does not have a threshold for an MOU Type, do not include a zero for that ecoregion when averaging thresholds for that MOU Type.

There is no threshold for project impacts to areas classified as the Urban MOU Type or areas classified as the Open Water MOU Type.

Mapped/Actual Vegetation Type Discrepancies

Mapped EMST Ecological System and MOU Types must be documented in the project file. Discrepancies between mapped and actual communities must be documented as described below.

The procedures to document actual vegetation types that are different than those mapped in the EMST include:

- A) Site visit by a qualified biologist,-
- B) Explanation of discrepancy between actual habitat and EMST Ecological System, and
- C) Photo documentation of the existing conditions.
 - Existing ROW: Representative photos must be included in the project file to document discrepancies between EMST data and existing conditions except when the appropriate classification of existing TxDOT ROW is the Urban MOU Type.
 - New ROW: Representative photos are required in the project file to document any discrepancies between EMST data and existing conditions for all new ROW, including instances where the appropriate classification of the new ROW is the Urban MOU Type.

This information should be included in the TPWD Analysis Form.

The interagency team will monitor the frequency and causation of vegetation type discrepancies. Procedures to document vegetation discrepancies may be modified by consensus of the interagency team. If the procedures to document vegetation discrepancies are modified by the interagency team, the modified procedures will become an addendum to this PA.

ROW Slope Management

Some projects such as overlays require recontouring of adjacent soil to match the edge of pavement with the adjacent ROW. For projects that do not result in an increased area under impervious cover (including the addition of pervious shoulders), temporary disturbance of soil directly adjacent to an existing roadway surface is exempt from the threshold triggers in this Threshold Table PA. Therefore, for these projects, slope management areas should not be included in the calculation of a threshold for TPWD coordination. Slope management is limited to the area between the edge of existing pavement and the flow line of an adjacent ditch, but is not to exceed 20 feet when no ditch is present or the flow line of the adjacent drainage is beyond the outside edge of adjacent ROW.

This threshold exemption for slope management does not exempt an activity from any other MOU trigger besides those defined in this Threshold Table PA. It is important to recognize that in some locations TxDOT ROWs adjacent to the existing roadway surface support state-listed species, SGCN, or other features that could trigger coordination. The results from the Tier I site assessment are to be used to determine the need to coordinate or apply species-specific BMPs available under the BMP PA. This slope maintenance exemption from MOU coordination does not change any applicable water quality management requirements for the work.

Maintenance Activities

Section 2.202(b) exempts from coordination under the MOU maintenance projects for which a programmatic environmental review has been conducted under §2.133. This exemption is applicable to any project whose activities are described in the most recent TxDOT Maintenance Program Environmental Assessment (EA), regardless of funding source.

District environmental personnel will review projects implementing maintenance activities within their district's jurisdiction to ensure compliance with applicable federal and state laws, regardless of TPWD coordination under the MOU.

Maintenance activity exemptions should be documented in the TPWD Analysis Form.

Table 1. Threshold Table by Ecoregion

Ecoregion — Arizona/New Mexico Mountains (AZNM)	
MOU Types	Threshold (acre)
Agriculture	10
Arid Marsh Cienega Wetland	0.01
Chihuahuan Grassland, Steppe	2
Disturbed Prairie	2
Riparian	0.1
Gambel Oak, Mixed Montane	0.1
Madrean Woodlands, Forests	0.1
Mixed, Arid, Sand Grassland	2
Scrub, Thornscrub, Shrubland	3
Warm Desert Riparian, Wash	0.1

Ecoregion -- Central Great Plains (CGPL)	
MOU Types	Threshold (acre)
Agriculture	10
Breaks, Cliffs, Barrens	3
Crosstimbers Woodland and Forest	1
Disturbed Prairie	2
Edwards Plateau Savannah, Woodland, and Shrubland	1
Riparian	0.1
Great Plains Sandhill Steppe	1
Mixed, Arid, Sand Grassland	2
Playa	0.1
Tallgrass Prairie, Grassland	0.1
Tobosa Grassland	1
Western Wetlands, Riparian	0.1

Ecoregion — Chihuahuan Desert (CHIH)	
MOU Types	Threshold (acre)
Agriculture	10
Arid Marsh, Cienega, Wetland	0.01
Breaks, Cliffs, Barrens	1
Chihuahuan Grassland, Steppe	2
Disturbed Prairie	3
Edwards Plateau Savannah, Woodland, and Shrubland	1
Riparian	0.1
Gambel Oak, Mixed Montane	0.1
Great Plains Sandhill Steppe	1
Madrean Woodlands, Forests	0.1
Mesquite Woodland, Shrubland	2
Mixed, Arid, Sand Grassland	2
Playa	0.01
Scrub, Thornscrub, Shrubland	3
Tobosa Grassland	1
Warm Desert Badland, Pavement	10
Warm Desert Dunes	1
Warm Desert Riparian, Wash	0.1
Western Wetlands, Riparian	0.1

Ecoregion — Cross Timbers (CRTB)	
MOU Types	Threshold (acre)
Agriculture	10
Breaks, Cliffs, Barrens	1
Crosstimbers Woodland and Forest	2
Disturbed Prairie	3
Edwards Plateau Savannah, Woodland, and Shrubland	2
Riparian	0.1
Llano Acidic Woodland, Glade	0.1
Mixed, Arid, Sand Grassland	1
Post Oak Savanna	1
Tallgrass Prairie, Grassland	0.1
Tobosa Grassland	1
Western Wetlands, Riparian	0.1

Ecoregion — East Central Texas Plains (ECPL)	
MOU Types	Threshold (acre)
Agriculture	10
Calcareous Prairie	0.01
Coastal Barrens and Glades	0.01
Coastal Grassland	1
Crosstimbers Woodlands and Forest	1
Disturbed Prairie	2
Edwards Plateau Savannah, Woodland, and Shrubland	1
Riparian	0.1
Longleaf Pine Woodland	0.01
Mixed Woodlands and Forests	1
Post Oak Savanna	2
Scrub, Thornscrub, Shrubland	2
Seep and Bog	0.01
Tallgrass Prairie, Grassland	0.5
Tidal and Salt Marsh	0.1
Wet Savanna, Swamp, Baygall	0.1
Xeric Sandyland	0.1

Ecoregion -- Edwards Plateau (EDPT)	
MOU Types	Threshold (acre)
Agriculture	10
Breaks, Cliffs, Barrens	1
Chihuahuan Grassland, Steppe	2
Crosstimbers Woodland and Forest	1
Disturbed Prairie	2
Edwards Plateau Savannah, Woodland, and Shrubland	3
Riparian	0.1
Great Plains Sandhill Steppe	1
Llano Acidic Woodland, Glade	0.1
Mesquite Woodland, Shrubland	3
Mixed, Arid, Sand Grassland	2
Playa	0.01
Post Oak Savanna	1
Scrub, Thornscrub, Shrubland	2
Tallgrass Prairie, Grassland	0.1
Tobosa Grassland	1
Warm Desert Badland, Pavement	10
Warm Desert Riparian, Wash	0.1
Western Wetlands, Riparian	0.1

Ecoregion — High Plains (HIPL)	
MOU Types	Threshold (acre)
Agriculture	10
Breaks, Cliffs, Barrens	2
Chihuahuan Grassland, Steppe	2
Disturbed Prairie	3
Edward Plateau Savannah, Woodland, and Shrubland	1
Riparian	0.1
Great Plains Sandhill Steppe	2
Mesquite Woodland, Shrubland	1
Mixed, Arid, Sand Grassland	2
Playa	0.1
Scrub, Thornscrub, Shrubland	3
Tobosa Grassland	1
Warm Desert Badland, Pavement	10
Warm Desert Dunes	0.1
Warm Desert Riparian, Wash	0.1
Western Wetlands, Riparian	0.1

Ecoregion — South Central Plains (SCPL) (West Gulf Coast Plain in TCAP)	
MOU Types	Threshold (acre)
Agriculture	10
Calcareous Prairie	0.01
Coastal Barrens and Glades	0.01
Coastal Grassland	1
Coastal Mixed Woodland and Forest	0.5
Crosstimbers Woodland and Forest	1
Disturbed Prairie	3
Edwards Plateau Savannah, Woodland, and Shrubland	1
Riparian	0.1
Longleaf Pine Woodland	0.01
Mixed Woodlands and Forests	3
Post Oak Savanna	1
Seep and Bog	0.01
Tallgrass Prairie, Grassland	1
Tidal and Salt Marsh	0.1
Wet Savanna, Swamp, Baygall	0.1

Ecoregion — Southern Texas Plains (STPL)	
MOU Types	Threshold (acre)
Agriculture	10
Breaks, Cliffs, Barrens	1
Coastal Grassland	1
Disturbed Prairie	3
Edwards Plateau Savannah, Woodland, and Shrubland	1
Riparian	0.1
Mesquite Woodland, Shrubland	1
Mixed, Arid, Sand Grassland	1
Post Oak Savannah	1
Scrub, Thornscrub, Shrubland	3
South Texas Wetland	0.1
Tallgrass Prairie, Grassland	1
Tidal and Salt Marsh	0.1
Xeric Sandyland	0.1

Ecoregion — Southwestern Tablelands (SWTB)	
MOU Types	Threshold (acre)
Agriculture	10
Breaks, Cliffs, Barrens	2
Disturbed Prairie	3
Riparian	0.1
Great Plains Sandhill Steppe	2
Mesquite Woodland, Shrubland	2
Mixed, Arid, Sand Grassland	2
Playa	0.1
Tobosa Grassland	1
Western Wetlands, Riparian	0.1

Ecoregion — Texas Blackland Prairies (TBPR)	
MOU Types	Threshold (acre)
Agriculture	10
Coastal Grassland	1
Crosstimbers Woodland and Forest	1
Disturbed Prairie	3
Edwards Plateau Savannah, Woodland, and Shrubland	1
Riparian	0.1
Mixed Woodlands and Forest	1
Post Oak Savanna	2
Scrub, Thornscrub, Shrubland	2
Tallgrass Prairie, Grassland	2
Wet Savanna, Swamp, Baygall	0.1
Xeric Sandyland	0.1

Ecoregion — Western Gulf Coastal Plain (WGCP) (Gulf Coast Prairies and Marshes in TCAP)	
MOU Types	Threshold (acre)
Agriculture	10
Beaches and Salt, Tidal Flats	0.01
Calcareous Prairie	0.01
Clay Dunes	0.01
Coastal Grassland	2
Coastal Mixed Woodland and Forest	1
Disturbed Prairie	3
Riparian	0.1
Longleaf Pine Woodland	0.01
Mixed Woodlands and Forests	0.5
Mixed, Arid, Sand Grassland	0.1
Palm Grove Forest	0.01
Post Oak Savanna	1
Scrub, Thornscrub, Shrubland	2
Seagrass Beds, Interdunal Wetlands	0.01
South Texas Wetland	0.01
Tallgrass Prairie, Grassland	2
Tidal and Salt Marsh	0.01
Wet Savanna, Swamp, Baygall	0.1
Xeric Sandyland	0.1

Table 2. Thresholds by Acreage

Ecoregion Acronyms:

AZNM = Arizona/New Mexico Mountains	HIPL = High Plains
CGPL = Central Great Plains	SCPL = South Central Plains
CHIH = Chihuahuan Desert	STPL = Southern Texas Plains
CRTB = Cross Timbers	SWTB = Southwestern Tablelands
ECPL = East Central Texas Plains	TBPR = Texas Blackland Prairies
EDPT = Edwards Plateau	WGCP = Western Gulf Coastal Plain

10 acres: MOU Types given a 10-acre threshold have low habitat value or have been significantly and permanently disturbed by anthropogenic processes, although they do provide some wildlife habitat and support some functions in the ecosystems in which they occur. MOU Types given a 10-acre threshold in all ecoregions where they occur include:

- Agriculture
- Warm Desert Badland/Pavement

3 acres: MOU Types given a 3-acre threshold are common statewide and/or ecoregion-wide (varies by ecosystem within a type/ecoregion) or have low habitat value where they occur. MOU Types given a 3-acre threshold in the indicated ecoregions include:

- Scrub, Thornscrub, Shrubland (AZNM, CHIH, HIPL, STPL)
- Breaks, Cliffs, Barrens (CGPL)
- Disturbed Prairie (CHIH, CRTB, HIPL, SCPL, STPL, SWTB, TBPR, WGCP)
- Edwards Plateau Savannah, Woodland, and Shrubland (EDPT)
- Mesquite Woodland and Shrubland (EDPT)
- Mixed Woodlands and Forest (SCPL)

2 acres: MOU Types given a 2-acre threshold are somewhat common statewide and/or ecoregion-wide (varies by ecosystem within a type/ecoregion) or have medium habitat value where they occur. MOU Types given a 2-acre threshold in the indicated ecoregions include:

- Chihuahuan Grassland, Steppe (AZNM, CHIH, EDPT, HIPL)
- Disturbed Prairie (AZNM, CGPL, ECPL, EDPT)
- Mixed, Arid, Sand Grassland (AZNM, CGPL, CHIH, EDPT, HIPL, SWTB)
- Mesquite Woodland and Shrubland (CHIH, SWTB)
- Crosstimbers Woodland and Forest (CRTB)
- Edwards Plateau Savannah, Woodland, and Shrubland (CRTB)
- Post Oak Savanna (ECPL, TBPR)
- Scrub, Thornscrub, Shrubland (ECPL, EDPT, TBPR, WGCP)

- Breaks, Cliffs, Barrens (SWTB, HIPL)
- Great Plains Sandhill Steppe (SWTB, HIPL)
- Tallgrass Prairie, Grassland (TBPR, WGCP)
- Coastal Grassland (WGCP)

1 acre: MOU Types given a 1-acre threshold are not common statewide and/or ecoregion wide (varies by ecosystem within a type/ecoregion) or have high habitat value where they occur. MOU Types given a 1-acre threshold in the indicated ecoregions include:

- Crosstimbers Woodland and Forest (CGPL, ECPL, EDPT, SCPL, TBPR)
- Edwards Plateau Savannah, Woodland, and Shrubland (CGPL, CHIH, ECPL, HIPL, SCPL, STPL, TBPR)
- Great Plains Sandhill Steppe (CGPL, CHIH, EDPT)
- Tobosa Grassland (CGPL, CHIH, CRTB, EDPT, HIPL, SWTB)
- Warm Desert Dunes (CHIH)
- Breaks, Cliffs, Barrens (CHIH, CRTB, EDPT, STPL)
- Mixed, Arid, Sand Grassland (CRTB, STPL)
- Post Oak Savanna (CRTB, EDPT, SCPL, STPL, WGCP)
- Coastal Grassland (ECPL, SCPL, STPL, TBPR)
- Mixed Woodlands and Forests (ECPL, TBPR)
- Tallgrass Prairie, Grassland (SCPL, STPL)
- Mesquite Woodland and Shrubland (STPL, HIPL)
- Coastal Mixed Woodland and Forest (WGCP)

0.5 acre: MOU Types given a 0.5-acre threshold are uncommon statewide or ecoregion wide (varies by ecosystem within a type/ecoregion) or have a very high habitat value where they occur. MOU Types given a 0.5-acre threshold in the indicated ecoregions include:

- Tallgrass Prairie, Grassland (ECTP)
- Coastal mixed Woodland and Forest (SCPL)
- Mixed Woodlands and Forests (WGCP)

0.1 acre (Riparian): The following MOU Types were given a 0.1-acre threshold because they represent riparian vegetation types. This threshold was set to be consistent with the riparian vegetation trigger in §2.206 (6). These types were given a 0.1-acre threshold in all ecoregions where they occur, except where indicated:

- Riparian
 - Warm Desert Riparian, Wash
 - Playa (0.01 acre in CHIH and EDPT)
 - Western Wetlands, Riparian
 - Llano Acidic Woodland, Glade

- Tidal and Salt Marsh (0.01 acre in WGCP)
- Wet Savanna, Swamp, Baygall (SCPL, ECPL)
- South Texas Wetland (0.01 acre in WGCP)

0.1 acre (other): The following MOU Types were given a 0.1-acre threshold because they are uncommon statewide or ecoregion wide (varies by ecosystem within a type/ecoregion), have a high habitat value, or are under significant threat by agriculture, oil and gas, or other development where they occur:

- Gambel Oak Mixed Montane (AZNM, CHIH)
- Madrean Woodlands, Forests (AZNM, CHIH)
- Tallgrass Prairie, Grassland (CGPL, CRTB, EDPT)
- Xeric Sandyland (ECPL, STPL, TBPR, WGCP)
- Mixed, Arid, Sand Grassland (WGCP)
- Warm Desert Dunes (HIPL)

0.01 acre: MOU Types given a 0.01-acre threshold are considered to be very rare statewide or ecoregion wide (varies by ecosystem within a type/ecoregion) and/or very important by TPWD plant community ecologists. Because these types are very rare, not only should TPWD be informed of potential threats to them, but the likelihood that TxDOT would encounter them on any given project is low. These types are listed below with their statewide percent cover for reference.

- Arid Marsh Cienega Wetland (0.001% statewide)
- Playa in CHIH (ecosystem in this ecoregion 0.000% statewide)
- Playa in EDPT (ecosystem in this ecoregion 0.004% statewide)
- Calcareous Prairie (0.033% statewide)
- Coastal Barrens and Glades (0.005% statewide)
- Longleaf Pine Woodland (0.008% statewide)
- Seep and Bog (0.002% statewide)
- Palm Grove Forest (0.000% statewide)
- Seagrass beds, Interdunal Wetlands (0.009% statewide)
- WGCP – Beaches and Salt, Tidal Flats (0.157% statewide)
- WGCP – Clay dunes (0.014% statewide)
- WGCP – South Texas Wetland (0.019% statewide, 0.1-acre threshold outside WGCP)
- WGCP – Tidal and Salt Marsh (0.83% statewide, 0.1-acre threshold outside WGCP)

Revisions

As stated in §2.213(c), programmatic agreements may be changed at any time by the written concurrence of the Executive Directors of TxDOT and TPWD. This PA will allow for adaptive refinement as the two agencies progress in the implementation of the 2013 MOU. Therefore, this PA must be amended or re-approved by the Executive Director of each agency no later than one year after the effective date.

SIGNATURES



Executive Director, Texas Department of Transportation



Date



Executive Director, Texas Parks and Wildlife Department



Date

THRESHOLD TABLE

PROGRAMMATIC AGREEMENT

APPENDIX

Threshold Table Programmatic Agreement Appendix

Ecological Systems to MOU Types Crosswalk Table

Ecological System Name	NatureServe Number	MOU Type
Agriculture	TPW101.005	Agriculture
Azonal Wetland	TPW101.009	Riparian
Barren	TPW101.008	Agriculture
Bastrop Lost Pines Forest and Woodland	CES205.896	Mixed Woodlands and Forest
Central and South Texas Coastal Fringe Forest and Woodland	CES203.464	Coastal Mixed Woodland and Forest
Central and Upper Texas Coast Dune and Coastal Grassland	CES203.465	Coastal Grassland
Central and Upper Texas Coast Fresh and Oligohaline Tidal Marsh	CES203.472	Tidal and Salt Marsh
Central Mixedgrass Prairie	CES303.659	Mixed, Arid, Sand Grassland
Central Texas Coastal Prairie Riparian	CES203.714	Riparian
Central Texas Coastal Prairie River Floodplain	CES203.713	Riparian
Chihuahuan Creosotebush Desert Scrub	CES302.731	Scrub, Thornscrub, Shrubland
Chihuahuan Desert Hill and Foothill Grassland	CES999.001	Chihuahuan Grassland, Steppe
Chihuahuan Gypsophilous Grassland and Steppe	CES302.732	Chihuahuan Grassland, Steppe
Chihuahuan Loamy Plains Desert Grassland	CES302.061	Mixed, Arid, Sand Grassland
Chihuahuan Mixed Desert and Thornscrub	CES302.734	Scrub, Thornscrub, Shrubland
Chihuahuan Mixed Salt Desert Scrub	CES302.017	Scrub, Thornscrub, Shrubland
Chihuahuan Sandy Plains Semi-Desert Grassland	CES302.736	Mixed, Arid, Sand Grassland

Ecological System Name	NatureServe Number	MOU Type
Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	CES302.737	Scrub, Thornscrub, Shrubland
Chihuahuan Succulent Desert Scrub	CES302.738	Scrub, Thornscrub, Shrubland
Chihuahuan-Sonoran Desert Bottomland and Swale Grassland	CES302.746	Tobosa Grassland
Columbia Bottomlands Forest and Woodland	CES203.715	Riparian
Crosstimbers Oak Forest and Woodland	CES205.682	Crosstimbers Woodland and Forest
Disturbance Grassland	TPW101.002	Disturbed Prairie
East-Central Texas Plains Post Oak Savanna and Woodland	CES205.679	Post Oak Savanna
East-Central Texas Plains Xeric Sandyland	CES205.897	Xeric Sandyland
Edwards Plateau Carbonate Glade and Barrens	CES303.655	Breaks, Cliffs Barrens
Edwards Plateau Cliff	CES303.653	Breaks, Cliffs Barrens
Edwards Plateau Dry-Mesic Slope Forest and Woodland	CES303.656	Edwards Plateau Savannah, Woodland, and Shrubland
Edwards Plateau Floodplain	CES303.651	Riparian
Edwards Plateau Limestone Savanna and Woodland	CES303.660	Edwards Plateau Savannah, Woodland, and Shrubland
Edwards Plateau Limestone Shrubland	CES303.041	Edwards Plateau Savannah, Woodland, and Shrubland
Edwards Plateau Riparian	CES303.652	Riparian
Edwards Plateau Upland Depression	CES303.654	Playa
Gulf Coast Chenier Plain Fresh and Oligohaline Tidal Marsh	CES203.467	Tidal and Salt Marsh
Gulf Coast Chenier Plain Salt and Brackish Tidal Marsh	CES203.468	Tidal and Salt Marsh
Invasive Shrub and Woodland	TPW101.006	Disturbed Prairie
Laguna Madre Salt and Brackish Tidal Flat	CES301.461	Beaches and Salt, Tidal Flats
Llano Estacado Caprock Escarpment and Breaks Shrubland and Steppe	CES303.725	Breaks, Cliffs Barrens

Ecological System Name	NatureServe Number	MOU Type
Llano Uplift Acidic Forest Woodland and Glade	CES303.657	Llano Acidic Woodland, Glade
Madrean Encinal	CES305.795	Madrean Woodlands, Forests
Madrean Juniper Savanna	CES301.730	Chihuahuan Grassland, Steppe
Madrean Lower Montane Pine-Oak Forest and Woodland	CES305.796	Madrean Woodlands, Forests
Madrean Mesic Canyon Forest and Woodland	CES999.000	Madrean Woodlands, Forests
Madrean Oriental Chaparral	CES302.031	Madrean Woodlands, Forests
Madrean Pinyon-Juniper Woodland	CES305.797	Madrean Woodlands, Forests
Madrean Upper Montane Conifer-Oak Forest and Woodland	CES305.798	Madrean Woodlands, Forests
Native Invasive Shrub and Woodland	TPW101.001	Disturbed Prairie
North American Warm Desert Active and Stabilized Dune	CES302.744	Warm Desert Dunes
North American Warm Desert Badland	CES302.743	Warm Desert Badland, Pavement
North American Warm Desert Bedrock Cliff and Outcrop	CES302.745	Warm Desert Badland, Pavement
North American Warm Desert Cienega	CES302.747	Arid Marsh, Cienega, Wetland
North American Warm Desert Lower Montane	CES302.748	Warm Desert Riparian, Wash
North American Warm Desert Pavement	CES302.750	Warm Desert Badland, Pavement
North American Warm Desert Playa	CES302.751	Playa
North American Warm Desert Riparian	CES302.753	Warm Desert Riparian, Wash
North American Warm Desert Volcanic Rockland	CES302.754	Warm Desert Badland, Pavement
North American Warm Desert Wash	CES302.755	Warm Desert Riparian, Wash
Open Water	TPW101.004	Open Water
Red River Large Floodplain Forest	CES203.065	Riparian

Ecological System Name	NatureServe Number	MOU Type
Rio Grande Delta Thorn Woodland	CES301.716	South Texas Wetland
Rocky Mountain Gambel Oak-Mixed Montane Shrubland	CES306.818	Gambel Oak, Mixed Montane
South-Central Saline Glade	CES203.291	Coastal Barrens and Glades
Southeastern Coastal Plain Cliff	CES203.398	Riparian
Southeastern Coastal Plain Interdunal Wetland	CES203.258	Seagrass Beds, Interdunal Wetlands
Southeastern Great Plains Floodplain Forest	CES205.710	Riparian
Southeastern Great Plains Riparian Forest	CES205.709	Riparian
Southeastern Great Plains Tallgrass Prairie	CES205.685	Tallgrass Prairie, Grassland
Southern Coastal Plain Herbaceous Seep and Bog	CES203.078	Seep and Bog
Sylviculture	TPW101.007	Agriculture
Tamaulipan Calcareous Thornscrub	CES301.986	Scrub, Thornscrub, Shrubland
Tamaulipan Caliche Grassland	CES301.989	Mixed, Arid, Sand Grassland
Tamaulipan Closed Depression Wetland	CES301.197	South Texas Wetland
Tamaulipan Floodplain	CES301.990	Riparian
Tamaulipan Lomas	CES301.462	Clay Dunes
Tamaulipan Mixed Deciduous Thornscrub	CES301.983	Scrub, Thornscrub, Shrubland
Tamaulipan Palm Grove Riparian Forest	CES301.991	Palm Grove Forest
Tamaulipan Ramadero	CES301.992	Riparian
Tamaulipan Saline Lake	CES301.717	South Texas Wetland
Tamaulipan Saline Thornscrub	CES301.711	Scrub, Thornscrub, Shrubland
Tamaulipan Savanna Grassland	CES301.985	Tallgrass Prairie, Grassland

Ecological System Name	NatureServe Number	MOU Type
Texas Blackland Tallgrass Prairie	CES205.684	Tallgrass Prairie, Grassland
Texas Coast Beach	CES203.463	Beaches and Salt, Tidal Flats
Texas Coast Salt and Brackish Tidal Marsh	CES203.473	Tidal and Salt Marsh
Texas Saline Coastal Prairie	CES203.543	Tidal and Salt Marsh
Texas Saline Inland Prairie	CES301.720	Riparian
Texas-Louisiana Coastal Prairie	CES203.550	Coastal Grassland
Texas-Louisiana Coastal Prairie Pondshore	CES203.541	Tidal and Salt Marsh
Upper Texas Coast Beach	CES203.544	Beaches and Salt, Tidal Flats
Urban	TPW101.003	Urban
West Gulf Coastal Plain Catahoula Barrens	CES203.364	Coastal Barrens and Glades
West Gulf Coastal Plain Chenier and Upper Texas Coastal Fringe Forest and Woodland	CES203.466	Coastal Mixed Woodland and Forest
West Gulf Coastal Plain Flatwoods Pond	CES203.547	Wet Savanna, Swamp, Baygall
West Gulf Coastal Plain Large River Floodplain Forest	CES203.488	Riparian
West Gulf Coastal Plain Mesic Hardwood Forest	CES203.280	Mixed Woodlands and Forest
West Gulf Coastal Plain Near-Coast Large River	CES203.459	Riparian
West Gulf Coastal Plain Nonriverine Wet Hardwood Flatwoods	CES203.548	Wet Savanna, Swamp, Baygall
West Gulf Coastal Plain Pine-Hardwood Flatwoods	CES203.278	Wet Savanna, Swamp, Baygall
West Gulf Coastal Plain Pine-Hardwood Forest	CES203.378	Mixed Woodlands and Forest
West Gulf Coastal Plain Sandhill Oak and Shortleaf Pine Forest and Woodland	CES203.056	Mixed Woodlands and Forest
West Gulf Coastal Plain Seepage Swamp and Baygall	CES203.372	Seep and Bog
West Gulf Coastal Plain Small Stream and River Forest	CES203.487	Riparian

Ecological System Name	NatureServe Number	MOU Type
West Gulf Coastal Plain Southern Calcareous Prairie	CES203.379	Calcareous Prairie
West Gulf Coastal Plain Stream Terrace Sandyland Longleaf Pine Woodland	CES203.891	Longleaf Pine Woodland
West Gulf Coastal Plain Upland Longleaf Pine Forest and Woodland	CES203.293	Longleaf Pine Woodland
West Gulf Coastal Plain Weches Glade	CES203.277	Coastal Barrens and Glades
Western Great Plains Cliff and Outcrop	CES303.665	Breaks, Cliffs Barrens
Western Great Plains Closed Depression Wetland	CES303.666	Playa
Western Great Plains Floodplain	CES303.678	Western Wetlands, Riparian
Western Great Plains Mesquite Woodland and Shrubland	CES303.668	Mesquite Woodland, Shrubland
Western Great Plains Open Freshwater Depression Wetland	CES303.675	Western Wetlands, Riparian
Western Great Plains Riparian	CES303.956	Western Wetlands, Riparian
Western Great Plains Saline Depression Wetland	CES303.669	Playa
Western Great Plains Sand Prairie	CES303.670	Mixed, Arid, Sand Grassland
Western Great Plains Sandhill Steppe	CES303.671	Great Plains Sandhill Steppe
Western Great Plains Shortgrass Prairie	CES303.672	Mixed, Arid, Sand Grassland
Western Great Plains Wooded Draw and Ravine	CES303.680	Western Wetlands, Riparian

Figure 1: Map of Level III Ecoregions in Texas

