

DRAFT MITIGATION REQUIREMENTS AND/OR CONDITIONS  
FOR TTA-PROVIDED APPROVALS

The following are anticipated requirements and conditions for TTA-Provided Approvals and are provided as a basis for preparation of the Development Price. Implementation of mitigation measures described below does not relieve Developer from other requirements or mitigation requirements described in the Agreement. Material changes to these requirements and conditions shall be considered a TTA-Directed Change in accordance with the Agreement; however, variations in the percentages for habitat type, planting species and distribution of percentages between species and the actual number of mitigation sites as required by the final permit conditions shall not constitute grounds for a TTA-Directed Change. Costs for mitigation shall be included in the EPDs. Developer shall initiate mitigation measures prior to construction a Segment unless otherwise approved by the TTA. Developer shall monitor and maintain mitigation sites, features, and improvements for the lesser of: a) as required by the applicable Environmental Approval; or b) five (5) years. Developer shall inspect and maintain mitigation sites during this period; a) as required by the applicable Environmental Approval; or b) in the absence of specific inspection language in the applicable Environmental Approval, as required for establishment of plantings and at six-month maximum intervals thereafter.

**1.0 PROPOSED MITIGATION FOR HISTORICAL PROPERTIES**

Developer shall comply with all cultural resource conditions and requirements defined in the appropriate Environmental Approval. Developer shall provide visual screening for sixteen (16) historic properties where the visual line-of-sight from the historic property intersects a plane located 15 feet above the top of pavement for any roadway constructed as a part of the Development Work. If 25-foot tall screening cannot effectively screen the historic property, Developer shall be entitled to cost relief in accordance with Section 14 of the Agreement. Screening shall consist of one or a combination of landscaping, walls and/or berms. Landscaping features utilized for said screening shall be of such a size and density to effectively screen the historic property within of 3 years of start of construction adjacent to the affected property. Costs of such screening shall not be considered part of the landscape budget.

**2.0 PROPOSED MITIGATION FOR SECTION 401 WATER QUALITY CERTIFICATION**

Developer shall comply with all water quality management conditions defined in the Agreement. Developer shall incorporate post construction total suspended solids (TSS) controls at all stream crossings. In addition, Developer shall incorporate permanent BMP's, which may include the use of permanent filtration/detention/retention design features, at the twenty-one (21) identified perennial river and stream crossings. These BMP's and design features shall be designed in such a manner so as to preserve pre-construction water quality conditions. Developer shall be responsible for performing

surveys and testing to determine pre-construction water quality conditions as well as the design and construction of these BMP, TSS, and any filtration/detention/retention features.

### **3.0 PROPOSED COMPENSATORY MITIGATION FOR WATERS OF THE US**

Developer shall provide a conceptual plan and acquire land area suitable for developing a total of 265 acres of compensatory mitigation for waters of the U.S. and riparian buffer. These mitigation site(s) shall be acceptable to the USACE. Within these mitigation site(s), Developer shall develop 175 acres of compensatory mitigation for the Interim Design for Segments 1 through 6 (excluding Segment 5) using the approximate percent habitat mix specified in Table 1, regardless of whether or not the TTA issues NTP3 or NTP4. This 175 acres of compensatory mitigation is intended to compensate for a maximum of 75 total acres of impacts to various habitats for construction of the Interim Design for Segments 1 through 6 (excluding Segment 5). Cost for compensatory mitigation resulting from impacts in excess of 75 acres, as a result of Developer's Interim Design for Segments 1 through 6 (excluding Segment 5), shall be borne by Developer and shall not be considered a TTA-Directed Change; provided, however that in the event that NTP4 is not issued by the TTA, the mitigation performed for the anticipated impacts for construction of Segment 6 shall be held in reserve by the TTA as compensatory mitigation for future construction of Segment 6. The TTA shall be responsible for developing the remaining 90 acres of land area for the Ultimate Design requirements. The TTA has identified nine potential wetland mitigation sites as listed in Table 2, however, the TTA is not limited to consideration of only these nine sites during the permitting process. The USACE, USFWS and TPWD participated in a field review of three of the nine sites and expressed interest in two of those sites as potential mitigation sites.

<b>Table 1 Proposed Relative Percentages of Habitat Types for Mitigation</b>		
<b>Habitat Type</b>	<b>Percent*</b>	<b>Functions</b>
Bottomland Hardwoods (non-wetland)	60	Wildlife Habitat Streambank Stabilization Biodiversity Maint. Stormwater Retention Erosion Control Nutrient Cycling/Retention
Emergent Wetlands (< 2ft)	15	Wildlife Habitat Water Quality Biodiversity Maint. Stormwater Retention Erosion Control Nutrient Cycling/Retention
Forested/Scrub Wetlands (< 2ft)	10	Wildlife Habitat Streambank Stabilization Biodiversity Maint. Erosion Control Nutrient Cycling/Retention
Deepwater Areas (2 to 5 ft)	10	Stormwater Retention Flood Control Water Quality Fish Habitat Biodiversity Maint. Erosion Control
Streambed / Temporarily inundated floodplain channels	5	Fish & Wildlife Habitat Drainage/Flood Control Biodiversity Maint. Water Quality Nutrient Cycling
<b>Total</b>	<b>100</b>	

\* These values are provided as a guide for mitigation planning and development. Final plans shall be adjusted for each category as necessary based on site-specific characteristics and the requirements of the applicable Environmental Approval.

**Table 2**  
**TTA Identified Potential Wetland Mitigation Sites**

Site 1	Station 305+00-310+00, San Gabriel watershed - Perennial/intermittent stream (tributary to Mankins Branch) east of Georgetown and west of proposed SH 130. This is the site where the proposed ROW crosses over an existing stormwater detention area (possible existing mitigation site). Potential mitigation may include a similar wetland and/or riparian restoration since both streams that enter from the west have been cleared. Source of hydrology and soils seem to be good for wetland establishment.
Site 2	Station 1180+00-1200+00, Colorado watershed - East of Pflugerville. Area east of the SH 130 and possibly further downstream east of Cameron Rd. These streams have also been cleared. Wetlands do exist within the proposed ROW nearby, which would indicate the soils and hydrology would be sufficient. East of Cameron Rd seems to be the potential site since two stream channels converge and flow to the east, which would provide a wide area for wetland and riparian restoration. This site was visited by the USACE, USFWS, and TPWD and was identified as a potentially favorable mitigation site.
Site 3	Station 1960+00-1970+00, Colorado watershed - Gilleland Creek overflow channel. Southeast of FM 973. Two significant swales which carry floodwaters to the east. Hydrology and soils appear to be adequate for wetland and riparian establishment. Pasture has been cleared presumably for grazing. Good potential for bottomland restoration and riparian preservation. This site was visited by the USACE, USFWS, and TPWD.
Site 4	Station 3780+00-3800+00, San Marcos watershed - Plum Creek Floodplains. East and/or west sides of US 183. Channelized floodplain oxbows to the west of 183 offer good opportunity for restoration. Several cleared floodplain channels offer good opportunity for bottomland hardwood restoration. Floodplains would also be used for depressional wetland creation if needed. This site was visited by the USACE, USFWS, and TPWD and was identified as a potentially favorable mitigation site.
Site 5	Station 3850+00-3865+00, San Marcos watershed - Plum Creek floodplains west of location where ROW separates from US 183 north of Lockhart. Similar site characteristics and opportunities for mitigation as the on Site 4 as described above.

<b>Table 2 TTA Identified Potential Wetland Mitigation Sites</b>	
Site 6	Station 4092+00-4105+00, San Marcos watershed - Clear Fork Floodplains south of CR 217. Appears to be two channels with riparian buffer. Potential for riparian preservation and enhancement to widen the buffer width through plantings, as well as wetland creation. Hydrology may not be as consistent as in some of the other sites.
Site 7	Station 4245+00-4280+00, San Marcos watershed - Little and Big West Forks of Plum Creek. Mitigation at this site may be difficult due to the proposed ROW crossing at this location. Potential forested wetland on the west side of the ROW for preservation, and existing stream channels on the east side of ROW have potential for riparian enhancement and wetland creation.
Site 8	Station 4500+00-4513+00, San Marcos watershed - Dickerson Creek. - Potential for wide riparian buffer restoration north of the proposed ROW along Dickerson Creek.
Site 9	Station 4767+00-4804+00, San Marcos watershed - York Creek (Cottonwood Creek) floodplains. Main channel and abandoned overflow channel have both been cleared for pasture

### **3.1 Mitigation Techniques & Approach**

Within each mitigation site, Developer shall prepare a mosaic of habitat areas that includes perennial and/or intermittent streams, bottomland hardwood habitat, floodplain detention/retention features, and wetlands. Developer may use multiple mitigation methods including restoration, enhancement, creation, and preservation depending upon physical and ecological site conditions. The majority of the proposed mitigation would include the restoration of bottomland hardwood habitats in the floodplains of natural stream channels. Wetlands, including forested, shrub/scrub, and emergent areas, will be restored, enhanced, or created in the mitigation areas at the habitat mix defined in Table 1. Developer shall provide a minimum of 100 foot buffer planted with native upland vegetation and at a maximum slope of 6 to 1 between the area of compensatory mitigation and the nearest property line.

Developer may utilize preservation of existing streams, wetlands, and riparian habitat as a component for the mitigation in an effort to provide adjacent plant communities the opportunity to increase biodiversity through natural colonization in addition to the plantings by the project Developer. Developer shall preserve native riparian habitat that is providing valuable functions, when possible, to provide additional functional benefits to the restoration and enhancement areas. However, preservation shall not exceed 20% of the proposed total acreage for compensatory mitigation at each site.

Developer shall excavate wetland and deep-water habitats in floodplain areas to allow overflow from streams, thereby serving to help reduce flood volumes and velocities in the existing channels. The sites can be used to develop shallow fringe wetland habitats (forested, shrub, or emergent communities) as well. The mitigation sites shall not be used as detention or retention areas for the SH 130 roadway. Developer shall design and excavate overflow channels, if necessary, to provide overbank flows into the floodplain to ensure adequate water volumes to provide non-SH 130 stormwater detention function and hydrology necessary to support fringe wetland development. The overflow channels may be deemed necessary if the existing channel has downcut, thereby reducing overbank flooding frequencies.

### **3.2 Species Selection and Planting Plan**

Developer shall select plantings for restoration, enhancement, and creation of riparian bottomland and forested wetland mitigation areas that focus on establishing a diverse native plant community including mast-producing and beneficial trees, fast-growing “diversity” species, and understory or shrub species. Developer shall plant trees according to their habitat preference as determined by a qualified biologist/landscape designer. A list of woody species native to Central Texas, which may be used depending on commercial availability, is provided in Table 3. Developer may transplant trees, from other areas of the Right of Way scheduled to be cleared for construction of the Interim Design, using accepted arboricultural techniques and appropriate erosion control.

In a riparian or forested wetland stand, Developer shall plant trees on 10 to 12 foot centers (approximately 300 to 400 trees per acre) depending on the size potential of mature trees, species survivability, growth rates, etc. Developer shall achieve a target density three years after plantings of 240 to 320 trees/acre, or an 80 percent survival rate.

Shrub/understory species shall make up no more than 20% of the plantings.

The plant communities for the emergent wetland may be established using a variety of techniques, including planting of commercially available material, relocated “seed bank”, and/or natural recolonization. Developer may make use of soil from wetlands, on-channel ponds, and upland stock ponds with wetland fringe to be impacted by the roadway project. A natural seed bank may also exist in the floodplain soils of most of the potential mitigation sites. Developer may use means such as restricted grazing, seeding and fertilization to encourage germination and growth of these natural seed banks if schedules permit. Developer shall plant and manage the mitigation sites so that the vegetative cover is dominated (>75% cover) by native non-invasive species.

Developer shall be responsible for watering, weeding, and other activities needed to maintain a desirable seedbed and growing conditions. Prior to the TTA’s acceptance of the mitigation site(s), Developer shall be required to replace plants lost during the establishment period with replacement plants of the same size and type as established plants in the surrounding areas.

<b>Table 3 Native Woody Species List found in Central Texas for Potential Use in Riparian and Forested Wetland Mitigation Sites*</b>
<p><b>HIGHLY DESIRABLE TREES</b></p> <ul style="list-style-type: none"> <li>Water Hickory (<i>Carya aquatica</i>)</li> <li>Pecan (<i>Carya illinoensis</i>)</li> <li>Persimmon (<i>Diospyros virginiana</i>)</li> <li>Sugar Hackberry (<i>Celtis laevigata</i>)</li> <li>Red Mulberry (<i>Morus rubra</i>)</li> <li>Sycamore (<i>Platanus occidentalis</i>)</li> <li>Black Cherry (<i>Prunus serotina</i>)</li> <li>Oak sp. (<i>Quercus</i> sp.)</li> <li>Western soapberry (<i>Sapindus drummondii</i>)</li> <li>Bald cyperus (<i>Taxodium distichum</i>)</li> <li>American Elm (<i>Ulmus americanus</i>)</li> </ul>
<p><b>DIVERSITY TREES (fast growing; limited value for wildlife; or potentially problematic)</b></p> <ul style="list-style-type: none"> <li>Box Elder (<i>Acer negundo</i>)</li> <li>River Birch (<i>Betula nigra</i>)</li> <li>Gum Bumelia (<i>Bumelia lanuginosa</i>)</li> <li>Green Ash (<i>Fraxinus pennsylvanica</i>)</li> <li>Honey Locust (<i>Gleditsia triacanthos</i>)</li> <li>Eastern Red Cedar (<i>Juniperus virginiana</i>)</li> <li>Black willow (<i>Salix nigra</i>)</li> <li>Elm spp. (<i>Ulmus</i> spp.)</li> </ul>
<p><b>UNDERSTORY (SMALL TREES / SHRUBS)</b></p> <ul style="list-style-type: none"> <li>Buttonbush (<i>Cephalanthus occidentalis</i>)</li> <li>Eastern Redbud (<i>Cercis canadensis</i>)</li> <li>Hawthorns (<i>Crateagus</i> spp.)</li> <li>Mexican plum (<i>Prunus mexicana</i>)</li> <li>Carolina buckthorn (<i>Rhamnus caroliniana</i>)</li> <li>Prairie flameleaf sumac (<i>Rhus lanceolata</i>)</li> <li>Shining sumac (<i>Rhus copallina</i>)</li> <li>Rusty blackhaw (<i>Viburnum rufidulum</i>)</li> </ul>

\* These species are provided as a guide. Final plant palate shall be adjusted as necessary based on site-specific characteristics and the requirements of the applicable Environmental Approval.