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MITIGATION PLAN

The Texas Department of Transportation (TxDOT) proposes to improve approximately 3.65 miles of Interstate Highway (IH) 45 from north of the Texas City Wye to north of the Causeway Bridge in Galveston County, Texas. The proposed project from approximately 4,000-feet north of the Texas City Wye (intersection of IH 45 and State Highway (SH) 6 and SH 146) to north of the Galveston Causeway Bridge would consist of reconstructing and widening IH 45 from a six-lane interstate to an eight-lane interstate. Additionally, frontage roads would be reconstructed with a minimum of four 12-foot lanes (2 in each direction), with bicycle accommodations. The proposed project also includes the reconstruction of the intersection of IH 45 and SH 6 and SH 146.

Delineated and impacted acreages of jurisdictional Waters of the U.S., including wetlands, for the proposed project right of way (ROW) are summarized in **Table 3**. The proposed project is anticipated to permanently impact 17.125 acres (ac) of wetlands.

In accordance with the stated preference of Transportation Equity Act (TEA-21), TxDOT proposes to compensate for these losses through banking credits from the approved Brazoria Coastal Bottomland Mitigation Bank. TxDOT is proposing to mitigate for impacts to freshwater impacts within the project area through the purchase of credits at the Brazoria Coastal Bottomlands Mitigation Bank (BCMBM) and Gulf Coastal Plains Mitigation Bank. Eleven of the 41 wetlands identified within the project area (2.037 acres total) are considered freshwater wetlands. Impacts to these wetlands totals 2.037 acres. Credits were calculated using appropriate ratios, as stated in the BCMBM Mitigation Banking Instrument. As stated in the BCBMB Mitigation Banking Instrument, preservation-based wetland credits are debited at scaled ratios (2:1, 4:1, and 6:1) depending on functionality (low, medium, high) of the wetlands that are being impacted. Wetlands present within the site were primarily roadside maintained ditches, ephemeral ditches within detention basins, and man-made or manipulated resources. The purchase of in-kind wetland credits is expected, as the BCBMB is a highly diverse wetland habitat complex which includes willow swamps, bottomland hardwoods, and most notably applicable to this project, an expansive gilgai wetland-upland complex. Freshwater wetlands within the project area are presented in **Table 1** below.

Table 1. Freshwater Impact Totals

Wetland Name	Total Acreage	Permanent Impacts (Acres)
Wetland 4	0.253	0.253
Wetland 5	0.346	0.346
Wetland 8	0.198	0.198

Wetland 9	0.046	0.005
Wetland 10	0.006	0
Wetland 12	0.099	0.099
Wetland 13	0.152	0.152
Wetland 14	0.310	0.310
Wetland 15	0.049	0.049
Wetland 16	0.557	0.557
Wetland 17	0.104	0.068
Totals	**2.120**	**2.037**

Using a 3:1 ratio, TXDOT is proposing to mitigate for the 2.037 acres of freshwater impacts with the purchase of **7 credits** at the BCBMB.

Thirty wetlands were identified within the project area that were determined to be tidally influenced marsh. Impacts to these waters was calculated at 15.088 acres. Tidally influenced wetlands impacted by the proposed project were assessed using the Interim Hydrogeomorphic Approach for Assessing Wetland Function (iHGM), specifically for Tidal Fringe. The Functional Capacity Units (FCUs) calculated for tidally influenced wetlands and waters within the project area are listed below:

Table 2. iHGM Totals – Tidal Fringe

Wetland Name	Biota FCUs	Botanical FCUs	Physical FCUs	Chemical FCUs
Wetland 1	0.601	0.880	0.411	0.587
Wetland 2	0.217	0.327	0.164	0.213
Wetland 3	0.224	0.373	0.209	0.205
Wetland 6	0.187	0.210	0.262	0.183
Wetland 7	0.346	0.388	0.485	0.339

Wetland 11	0.008	0.012	0.007	0.008
Wetland 18	0.002	0.002	0.001	0.002
Wetland 19	0.040	0.041	0.023	0.041
Wetland 20	0.014	0.014	0.008	0.014
Wetland 21	0.033	0.033	0.018	0.033
Wetland 23	0.445	0.306	0.342	0.458
Wetland 24	0.012	0.012	0.006	0.012
Wetland 25	0.948	0.379	1.061	1.137
Wetland 26	0.803	1.032	0.764	0.826
Wetland 27	0.728	0.935	0.692	0.748
Wetland 28	1.640	1.747	1.248	1.622
Wetland 29	0.126	0.169	0.109	0.113
Wetland 30	0.159	0.239	0.139	0.155
Wetland 31	0.355	0.484	0.401	0.346
Wetland 33	0.355	0.484	0.339	0.346
Wetland 34	0.044	0.049	0.027	0.049
Wetland 35	0.430	0.547	0.437	0.391
Wetland 36	0.142	0.216	0.13	0.14
Wetland 37	0.052	0.071	0.064	0.051
Wetland 38	0.007	0.010	0.010	0.007
Wetland 39	0.011	0.016	0.010	0.01
Wetland 40	0.172	0.213	0.119	0.17
Wetland 41	1.317	1.632	1.24	1.306
Total	**9.418**	**10.821**	**8.726**	**9.512**

TXDOT proposes to mitigate for the potential loses of function at the approved Gulf Coastal Plains Mitigation Bank (GCP). GCP has available credits for the proposed impacts and would be considered in-kind. The proposed mitigation in total is as follows:

- **Biota: 9.418 credits**
- **Botanical: 10.821 credits**
- **Physical: 8.726 credits**
- **Chemical: 9.512 credits**

The 100-year floodplain areas affected by the project would be mitigated by the use of floodplain mitigation basins throughout the project area. Therefore, the proposed project would not increase the base flood elevation level and would not violate the applicable floodplain regulations or ordinances. The hydraulic design practices would be in accordance with current TxDOT and Federal Highway Administration (FHWA) design policies and standards. In cooperation with the Federal Emergency Management Agency (FEMA), TxDOT would conform to the standard for temporary and permanent fill set by Flood Insurance Rate Maps.

AVOIDANCE AND MINIMIZATION

Results of the wetland delineation, along with field assessments of the functions and values of the various jurisdictional water crossings and wetland areas within the proposed project study area, were evaluated during the project planning phase. The objective of the evaluation process was to design a project that satisfied the recommended sequencing process of avoidance, minimization, and compensation for unavoidable impacts to jurisdictional waters and wetlands. As a result of this process, portions of the jurisdictional wetland acreage existing in the proposed project ROW would be avoided in final design (**Table 2**).

Avoidance of jurisdictional waters in project design would be accomplished primarily by bridging, with 120-foot spans between columns to minimize disturbances to aquatic and wetland functions and habitats. The project is a widening project. As such, all streams that are being crossed were already impacted by the existing road and have been cleared and maintained, channelized, and culverted. Widening at this location is preferable to constructing another road that might result in greater impacts to these crossings or other wetlands. Excavation is an unavoidable temporary impact of crossing improvements. In areas where impacts were unavoidable, project design would minimize these impacts by specifying retaining walls rather than side slopes, where practicable.

PROPOSED COMPENSATION FOR UNAVOIDABLE LOSSES

The purchase of banking credits recognizes and conforms to the mandate of the Transportation Equity Act of the 21st Century (TEA-21, Public Law 105-178), which established a preference for mitigation banking to satisfy compensatory mitigation

requirements for unavoidable losses to wetlands and other natural habitats for the purpose of federally-funded linear transportation projects. The design of the proposed project satisfies CWA Section 404(b)(1) guidelines requiring that no discharge of dredged or fill material in Waters of the U.S. be permitted unless appropriate and practicable steps have been taken to minimize adverse effects associated with the discharge [40 CFR 230.10(d)]. The proposed project also complies with the mandated mitigation sequence established by Section 404(b)(1) of avoidance, minimization, and compensation for unavoidable losses to the aquatic environment, and the 1989 Federal policy goal of "no net loss" of wetlands.

Table 3 below summarizes the jurisdictional features identified within the proposed project boundary.

Table 3: Jurisdictional Waters of the U.S.[1]

Site number	Latitude	Longitude	Cowardin Class	Estimated amount of aquatic resource in review area (acres)	Estimated amount of permanent impacts in review area (acres)	Type of Work	Class of aquatic resource
Wetland 1	29.335061	-94.937999	Estuarine Emergent	2.391	0.978	Roadway widening and culvert construction	Section 10 Wetland
Wetland 2	29.337110	-94.942350	Estuarine Emergent	0.551	0.327	Roadway widening and bridge construction	Section 10 Wetland
Wetland 3	29.332510	-94.937489	Estuarine Emergent	0.508	0.373	Roadway widening and regrading	Section 10 Wetland
Wetland 4	29.330659	-94.935655	Palustrine Emergent	0.253	0.253	Roadway Widening	Section 404 Wetland
Wetland 5	29.330659	-94.935655	Palustrine Emergent	0.346	0.346	Detention	Section 404 Wetland
Wetland 6	29.329943	-94.934955	Estuarine Emergent	0.524	0.524	Roadway widening and regrading	Section 10 Wetland
Wetland 7	29.329710	-94.933821	Estuarine Emergent	0.969	0.969	Roadway widening and regrading	Section 10 Wetland
Wetland 8	29.337702	-94.932502	Palustrine Emergent	0.198	0.198	Roadway widening and regrading	Section 404 Wetland
Wetland 9	29.338259	-94.930762	Palustrine Emergent	0.046	0.005	Roadway widening and regrading	Section 404 Wetland
Wetland 10	29.337565	-94.931079	Palustrine Emergent	0.006	0	Roadway widening	Section 404 Wetland

Site number	Latitude	Longitude	Cowardin Class	Estimated amount of aquatic resource in review area (acres)	Estimated amount of permanent impacts in review area (acres)	Type of Work	Class of aquatic resource
Wetland 11	29.332894	-94.932371	Estuarine Emergent	0.012	0.012	Roadway widening and regrading	Section 10 Wetland
Wetland 12	29.333032	-94.931380	Palustrine Emergent	0.099	0.099	Roadway widening and regrading	Section 404 Wetland
Wetland 13	29.332321	-94.932318	Palustrine Emergent	0.152	0.152	Regrading	Section 404 Wetland
Wetland 14	29.331533	-94.932771	Palustrine Emergent	0.31	0.31	Roadway widening and regrading	Section 404 Wetland
Wetland 15	29.332090	-94.931831	Palustrine Emergent	0.049	0.049	Regrading	Section 404 Wetland
Wetland 16	29.330676	-94.931741	Palustrine Emergent	0.557	0.557	Roadway Widening and Culvert Extension	Section 404 Wetland
Wetland 17	29.329927	-94.931311	Palustrine Emergent	0.104	0.068	Roadway widening and regrading	Section 404 Wetland
Wetland 18	29.326572	-94.929112	Estuarine Emergent	0.112	0.002	Regrading	Section 10 Wetland
Wetland 19	29.327017	-94.928079	Estuarine Emergent	0.10	0.041	Regrading	Section 10 Wetland
Wetland 20	29.325189	-94.925787	Estuarine Emergent	0.014	0.014	Regrading	Section 10 Wetland
Wetland 21	29.323351	-94.924999	Estuarine Emergent	0.582	0.033	Roadway widening and regrading	Section 10 Wetland
Wetland 22	29.322558	-94.922748	Estuarine Emergent	0.021	0	Regrading	Section 10 Wetland
Wetland 23	29.31.9630	-94.920354	Estuarine Emergent	1.476	0.611	Roadway widening and regrading	Section 10 Wetland
Wetland 24	29.318628	-94.917598	Estuarine Emergent	0.112	0.012	Roadway widening and regrading	Section 10 Wetland
Wetland 25	29.308123	-94.906433	Estuarine Emergent	2.065	1.895	Regrading	Section 10 Wetland
Wetland 26	29.309445	-94.907702	Estuarine Emergent	1.032	1.032	Roadway widening and regrading	Section 10 Wetland
Wetland 27	29.308924	-94.907313	Estuarine Emergent	0.935	0.935	Roadway widening and regrading	Section 10 Wetland
Wetland 28	29.308279	-94.906991	Estuarine Emergent	3.153	2.496	Roadway Widening and	Section 10 Wetland

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Site number	Latitude	Longitude	Cowardin Class	Estimated amount of aquatic resource in review area (acres)	Estimated amount of permanent impacts in review area (acres)	Type of Work	Class of aquatic resource
						bridge construction	
Wetland 29	29.307595	-94.906665	Estuarine Emergent	0.188	0.188	Bridge construction	Section 10 Wetland
Wetland 30	29.307162	-94.509838	Estuarine Emergent	0.239	0.239	Bridge construction	Section 10 Wetland
Wetland 31	29.306507	-94.905542	Estuarine Emergent	0.691	0.691	Bridge construction	Section 10 Wetland
Wetland 32	29.305896	-94.906149	Estuarine Emergent	0.088	0	No Work	Section 10 Wetland
Wetland 33	29.304695	-94.905164	Estuarine Emergent	0.691	0.691	Roadway widening and regrading	Section 10 Wetland
Wetland 34	29.304417	-94.905373	Palustrine Emergent	0.049	0.049	No Work	Section 10 Wetland
Wetland 35	29.305197	-94.903356	Estuarine Emergent	0.781	0.781	Roadway widening and regrading	Section 10 Wetland
Wetland 36	29.304565	-94.902117	Estuarine Emergent	0.216	0.216	No Work	Section 10 Wetland
Wetland 37	29.304064	-94.902305	Estuarine Emergent	0.102	0.102	Regrading	Section 10 Wetland
Wetland 38	29.303996	-94.902264	Estuarine Emergent	0.016	0.016	Regrading	Section 10 Wetland
Wetland 39	29.311148	-94.909421	Estuarine Emergent	0.016	0.016	Roadway widening	Section 10 Wetland
Wetland 40	29.309133	-94.907324	Estuarine Emergent	0.213	0.213	Roadway widening and bridge construction	Section 10 Wetland
Wetland 41	29.309874	-94.907021	Estuarine Emergent	1.632	1.632	Roadway widening and bridge construction	Section 10 Wetland

[1] See Wetland Report for additional details of delineated areas.
[2] Impact calculations for wetlands consider fill impacts only; acreage and linear foot calculations for jurisdictional waters represent the sum of fill and excavation impacts.
NA – Not Applicable as the feature will be avoided and there are no anticipated impacts