

CONCEPTUAL MITIGATION PLAN

Avoidance and minimization of adverse impacts to the natural environment was a critical goal of the City of Kemah planning process and preliminary design. Due to the location of the proposed Project, impacts to all environmental resources could not be avoided. Alternative analyses were performed in an effort to minimize impacts to the natural environment, including aquatic resources (see *Attachment 4*). Following the identification of the preferred alternative, the proposed boat ramp improvements were designed to occur in areas that had been previously impacted. The improvements would occur directly under the SH 146 bridge, an area that had been dredged at one time.

Due to the location of the Project and type of impact (fill of open water), mitigation opportunities are limited for the City. The City proposes to create a small intertidal marsh just south of the existing ramp in an area that collects stormwater runoff. Additionally, signage would be constructed to educate the public about the functions/uses of wetlands, specifically intertidal marshes. The proposed mitigation was recommended by Texas Parks & Wildlife Department (TPWD).

For unavoidable impacts to waters identified within the Project area, compensatory mitigation would be required by the USACE to replace the functions provided by these waters. The mitigation site occurs within TxDOT ROW. The City has a Multiple Use Agreement with TxDOT allowing the City to make improvements to this area.

The City proposes to construct a 0.3 acre intertidal marsh to mitigate for impacts to approximately 1.34 acres of open water (*Sheets 3 and 11*). The 1.34 acres of open water consist of historically disturbed areas. Approximately 1.13 acres of tidally influenced open water occurs below the SH 146. No vegetation occurs in this area and the area receives little to no sunlight since it is below the SH 146 bridge. The remaining 0.21 acre is an open water drainage ditch that was constructed to carry stormwater runoff from an existing pump station. The ditch was constructed below the mean higher high water elevation; thus, the ditch is tidally influenced.

The 0.3 acre intertidal marsh would replace the function of the 1.34 acres of open water. The marsh would be constructed at an intertidal level of approximately 0.5 - 0.7 feet above mean low tide and planted with smooth cordgrass (*Spartina alterniflora*). The smooth cordgrass transplants (plugs) would be placed on 3-foot centers. The transplanting effort would be conducted between March 15 and May 31 after the issuance of the permit.

A monitoring effort shall be conducted within 60 days following the initial smooth cordgrass transplanting effort. A written report and photo documentation detailing the results would be submitted to the USACE and TPWD. The monitoring report will note percent survival of the transplants. If at least 50% survival of the transplanted smooth cordgrass is not achieved, then a second planting effort would be initiated within 30 days of the survey. The proposed planting plan follows TPWD's transplanting criteria.

A second monitoring effort would be conducted one year following the initial transplanting effort. A written report and photo documentation detailing the results would be provided to the USACE and TPWD within 30 days following the monitoring effort. The monitoring would note percent vegetative cover, and if at least 70% canopy cover is not achieved within one year following planting, an additional planting effort would be initiated. All additional planting efforts would follow the methodology for the initial planting.

A final monitoring effort would occur 2 years following the initial smooth cordgrass transplanting. A written report and photo documentation detailing the results would be provided to USACE and TPWD within 30 days of the monitoring survey. If 70% canopy cover has not been achieved, an additional planting would occur. The site would be monitored until 70% canopy cover is achieved. Once 70% canopy cover is achieved, mitigation would be deemed complete and no further monitoring would be required.

Summary

In summary, on-site proposed mitigation is likely to exhibit a higher quality and exhibit a greater Social and Ecological Significance than the open water that occurs below the SH 146 bridge. The greater social

significance would occur with educational signage that describes benefits of a salt marsh. The current open water area under bridge is isolated and public access is denied do to safety concerns. The establishment of a smoothcordgrass marsh would provide structure for prey species to use and provide foraging opportunities for wading birds and other predatory species. While the open water and smooth cordgrass cannot be directly compared one to another, it is typically believed that vegetated wetlands are of greater value than open water that occurs in a disturbed environment.

The City has avoided and then minimized unavoidable Project impacts to the extent possible in accordance with the requirements of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act.