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February 20, 2018

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RE: Draft Environmental Impact Statement and Section 404 Permit Applications for the Texas Central Railway, LLC Proposed Dallas to Houston High-Speed Rail Project (Dallas, Ellis, Freestone, Grimes, Harris, Leon, Limestone, Madison, Navarro, and Waller Counties)

Dear Mr. Wright, et al:

The Texas Parks and Wildlife Department (TPWD) received the December 19, 2017 notice of release of the draft Environmental Impact Statement (EIS) for the proposed Dallas to Houston High-Speed Rail Project (Project). TPWD also received separate public notices issued December 22, 2017 from the Fort Worth District and Galveston District of the U.S. Army Corps of Engineers (USACE) regarding Section 404 of the Clean Water Act permit applications for the Project (Fort Worth - SWF-2011-00483 and Galveston – SWG-2014-00412).

Texas Central Railway, LLC and its affiliates (Texas Central Railroad and Texas Central Partners) propose to construct and operate the Project, which consists of a 240-mile, for-profit, electric-powered, high-speed passenger rail system connecting Dallas and Houston. The Project would cross ten counties with an approximate 10,000-acre disturbance footprint, of which approximately 8,000 acres is permanent.

The United States Department of Transportation's Federal Railroad Administration (FRA) is accepting comments on the draft EIS, which it prepared for environmental review under the National Environmental Policy Act.

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Concurrently, the USACE Fort Worth District and USACE Galveston District will be using the EIS and other permit application information in their evaluation of a Department of Army permit and decision regarding impacts to wetlands and waters of the U.S. in accordance with Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. The USACE Fort Worth District and USACE Galveston District will be accepting comments on each district's respective 404 permit application. The public comment period ends February 20, 2018 for the draft EIS and the USACE permit applications.

Based on TPWD staff review of the draft EIS and Section 404 permit applications, TPWD offers specific comments, concerns, recommendations, and requests regarding the Project that can be found in Attachment A to this letter. Listed below are TPWD's principal concerns, which are more fully addressed in Attachment A:

- TPWD specifically advises against and strongly discourages the selection of Build Alternatives C and F because they cross Fort Boggy State Park (SP) and require right-of-way encroachment on Fort Boggy SP property. Although the FRA identifies Build Alternative A as the preferred alternative, the draft EIS indicates that FRA will continue to analyze the Build Alternatives through the final EIS. TPWD is concerned with the evaluation of impacts of Build Alternatives C and F on Fort Boggy SP with respect to noise, recreation, cultural resources, conversion of a Section 4(f) property, and use of state property. TPWD does not agree with FRA's preliminary Section 4(f) determination that the Project's use of Fort Boggy SP will have *de minimis* impacts on the park. Because there appears to be no condemnation authority for the taking of state-owned lands for this Project, the approval of Texas Parks and Wildlife Commission, subject to the requirements and limitation of Chapter 26 of the Texas Parks and Wildlife Code, would be necessary for the granting of any easement across Fort Boggy SP.

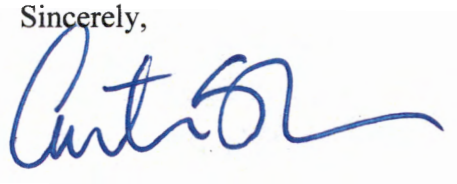
- The Section 404 permit applications provide inadequate information for TPWD to fully review the Project's impacts to waters of the U.S. and proposed mitigation, which is conceptual.

Please consider TPWD's concerns, comments, recommendations, and requests that have been provided to avoid or minimize adverse impacts of the Project on the recreational, cultural, fish, and wildlife resources of Texas.

If you have any questions regarding TPWD's input on the EIS, please contact Ms. Karen Hardin, Wildlife Division, at (903) 322-5001 or Karen.Hardin@tpwd.texas.gov. For questions regarding TPWD's input on issues related to Fort Boggy SP, please contact Mr. David Riskind, State Parks Division, at (512) 389-4897 or David.Riskind@tpwd.texas. gov. For questions regarding TPWD's input on the Section 404 permit application to the USACE Fort Worth District, please contact Mr. Ryan

McGillicuddy, Inland Fisheries Division, at (512) 389-8622 or Ryan.McGillicuddy@tpwd.texas.gov. For questions regarding TPWD's input on the Section 404 permit application to the USACE Galveston District, please contact Ms. Colleen Roco, Coastal Fisheries Division, at (281) 534-0139 or Colleen.Roco@tpwd.texas.gov. Thank you.

Sincerely,



Carter Smith
Executive Director

CS:KH:dj

Attachment

cc: Ms. Karen Hardin
Mr. David Riskind
Mr. Ryan McGillicuddy
Ms. Colleen Roco

Attachment A

Texas Parks and Wildlife Department Comments
Texas Central Railway, LLC Proposed Dallas to Houston High-Speed Rail Project
Draft Environmental Impact Statement, and Section 404 Permit Applications
(Fort Worth District - SWF-2011-00483 and Galveston District – SWG-2014-00412)
Dallas, Ellis, Freestone, Grimes, Harris, Leon, Limestone, Madison, Navarro, and Waller Counties

PROJECT DESCRIPTION

Texas Central Railway, LLC (TCR) and its affiliates (Texas Central Railroad and Texas Central Partners) propose to construct and operate a 240-mile, for-profit, electric-powered, high-speed passenger rail (HSR) system connecting Dallas and Houston with a 90-minute travel time using the Japanese N700 Tokaido Shinkansen technology. The proposed Dallas to Houston High-Speed Rail Project (Project) would achieve speeds exceeding 200 miles per hour (mph) in a fully sealed corridor with dedicated northbound and southbound tracks built at-grade, on retained fill/embankment, or on elevated viaduct within a minimum 100-foot wide corridor. The corridor would not be interconnected with any other railroad systems, and the train would either travel below or above existing roadways and other infrastructure. Three stations are proposed: a 90-acre terminal in Dallas, a 60-acre terminal in Houston, and a 115-acre intermediate Brazos Valley Station in Grimes County. Associated operational and maintenance facilities would include two 100-acre trainset maintenance facilities (TMFs), seven 20-acre maintenance-of-way facilities (MOWs), eleven 11-acre traction power substations (TPSSs), nine 0.4-acre sectioning posts, and fifteen 0.4-acre sub-sectioning posts. Signal houses would be placed every 25 miles within a 0.2 to 0.8-acre footprint, and communications housing and 50-foot towers would be placed every 6 miles. The disturbance footprint of the primarily linear Project is approximately 10,000 acres, of which approximately 8,000 acres would be permanent impacts, per Table 3.6-22 of the draft Environmental Impact Statement (EIS). An estimated 60 percent of the alignment would be on viaduct, pending final design, which would allow for greater movement around and under the HSR system.

DRAFT ENVIRONMENTAL IMPACT STATEMENT

Having jurisdiction over railroad safety, the United States Department of Transportation's (DOT) Federal Railroad Administration (FRA) may issue a Rule of Particular Applicability detailing specific safety regulations for the Project and impose requirements, conditions, waivers, or other regulatory actions to ensure safe operation of the Project. Establishing new regulations regarding HSR Project safety and potential DOT credit and financial assistance will be major federal actions for the Project that have triggered preparation of an EIS for environmental review under the National Environmental Policy Act (NEPA). FRA is the lead agency for preparation of the EIS, in cooperation with the Environmental Protection Agency (EPA), Federal Highway Administration (FHWA), Federal Transit Administration (FTA), Surface Transportation Board (STB), United States Army Corps of Engineers (USACE), and the United States Fish and Wildlife Service (USFWS). Following public comment on the draft EIS, FRA will prepare a final EIS and offer additional public comment opportunity, followed by issuing a Record of Decision (ROD) to document FRA's selected alternative, summarize the impacts of the selected alternative, and list required mitigation measures. Once a ROD is issued, the FRA can continue the process for establishing a final rule regarding safety regulations for the Project.

AECOM assisted FRA in the preparation of the draft EIS in compliance with NEPA to assess the potential beneficial and detrimental effects of implementing the proposed Project. FRA evaluated the following six end-to-end alignment alternatives and the No Build Alternative after conducting a public scoping and involvement program, corridor screening, engineering refinements, and alignment screening:

- Build Alternative A (Segments 1, 2A, 3A, 4, 5)
- Build Alternative B (Segments 1, 2A, 3B, 4, 5)
- Build Alternative C (Segments 1, 2A, 3C, 5)
- Build Alternative D (Segments 1, 2B, 3A, 4, 5)
- Build Alternative E (Segments 1, 2B, 3B, 4, 5)
- Build Alternative F (Segments 1, 2B, 3C, 5)

The No Build Alternative was identified as not meeting the specified Purpose and Need for the Project and only retained in the draft EIS as a basis for comparison. In identifying the preferred alternative, FRA removed Build Alternatives D, E, and F from further consideration because they would cross USACE fee property. USACE would deny these alternatives as there are viable alternatives that avoid the USACE fee property. Build Alternative C was also removed from further evaluation because it was the only alternative that would require an extra security measure of installing 45 miles of concrete barrier between the proposed rail and Interstate Highway (IH) 45 frontage roads. **FRA identified Build Alternative A as the preferred alternative** because it would have fewer permanent impacts to the socioeconomic, natural, physical, and cultural resources environment than other alternatives.

TPWD Comments and Recommendations on the DEIS

As the state agency with primary responsibility for protecting the state's fish and wildlife resources, in accordance with the authority granted by Parks and Wildlife Code §12.0011, per coordination under NEPA, and per coordination with USACE, Texas Parks and Wildlife Department (TPWD) hereby provides the following recommendations and informational comments to minimize the adverse impacts to the state's fish and wildlife resources and state parks in the routing, construction, mitigation, and operation of the proposed HSR Project. The subsequent sections of this Attachment are organized by sections in the draft EIS.

> **Comment:** Please note that due to the size of the draft EIS document and release of the draft EIS and Clean Water Act (CWA) Section 404 permit applications on December 22, 2017, immediately prior to the holiday season, TPWD's review was as possible, given the resulting compressed timeframe for review. However, it is likely that information applicable to TPWD concerns may have been overlooked by TPWD staff.

After attending a June 2014 Agency Scoping Meeting and October 2014 Agency Workshop, TPWD provided the FRA with a copy of the April 2013 preliminary information letter that was sent to the Texas Department of Transportation (TxDOT) regarding the Texas –Oklahoma Passenger Rail Study (TOPRS). TPWD provided the TOPRS project letter to the FRA since it addresses many of the concerns and recommendations that would be common to the proposed Project on an ecoregion basis. When the scope narrowed to six route alternatives, TPWD provided additional input on the Project during the scoping period for the draft EIS by letter dated February 26, 2016. With refinement of the Build Alternatives for the draft EIS, at TPWD's request, the FRA provided a digital copy of the GIS

shapefiles of the limits of disturbance (LOD) for the six Build Alternatives to assist in TPWD's review of the Project.

Recommendation: Please review previous TPWD correspondence and consider the recommendations provided in that correspondence which remain applicable to the Project. For recommendations that may have been addressed in the draft EIS, the previous recommendations may provide greater detail than how they were reiterated or addressed in the draft EIS.

Section 2.7.2 Comparison of Build Alternatives A, B and C

After eliminating Build Alternatives D, E, and F due to statutory considerations regarding the availability of a viable alternative to crossing the existing USACE federal project at Lake Bardwell, FRA compared Build Alternatives A, B and C to identify the preferred alternative. This section of the draft EIS indicates that recreational facilities are an environmental resource with negligible differences between alternatives. TPWD disagrees and considers Build Alternative C, which crosses Fort Boggy State Park (SP), as noticeably different from Build Alternatives A and B, which are not near and do not cross Fort Boggy SP, a state-owned recreational property. This is further supported by Section 3.13.5.2.2 addressing existing land use conversion which indicates that impacts to parks and recreation areas would be more prevalent under Build Alternatives C and F.

Recommendation: TPWD recommends removing recreational facilities from the list of resources having negligible difference in identification of a preferred alternative and including recreational facilities as an evaluation criteria in Table 18 of the executive summary.

Section 3.3 Water Quality

Section 3.3.6.1 identifies water quality compliance measures (WQ-CM) that would be required for all Build Alternatives. WQ-CM#3 includes blankets and matting as one of a number of stormwater control measures that could be used to stabilize disturbed areas.

Recommendation: For soil stabilization and/or revegetation of disturbed areas, TPWD recommends erosion and seed/mulch stabilization materials that avoid entanglement hazards to snakes and other wildlife species. Because the mesh found in many erosion control blankets or mats pose an entanglement hazard to wildlife, TPWD recommends the use of no-till drilling, hydromulching, and/or hydroseeding rather than erosion control blankets or mats in revegetation efforts due to a reduced risk to wildlife. If erosion control blankets or mats will be used for the Project, the products should contain no netting or contain loosely woven, natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic mesh matting should be avoided. TPWD recommends the EIS include a mitigation measure for utilizing wildlife-friendly products.

Water quality mitigation measures (WQ-MM) are measures that would be implemented to minimize impacts to water quality. WQ-MM#3 indicates that seed mixes used for revegetation efforts should be approved by the U.S. Department of Agriculture to minimize the introduction of invasive species and to restore temporary construction areas to similar, or better, if feasible, preexisting conditions.

Recommendation: TPWD recommends that seed mixes in previously undisturbed areas such as native pasture and woodlands, consist of native species appropriate for the ecoregion. Areas of

existing wetland and riparian habitats should be restored with appropriate native wetland and riparian species and detailed in the Project's mitigation plan for impacts to Waters of the U.S. This would be to prevent native habitats from being converted to potentially non-native agricultural-related species, such as non-native bermudagrass (*Cynodon dactylon*) and KR bluestem (*Bothriochloa ischaemum*). Refer to TPWD's February 26, 2016 scoping letter for further details.

Recommendation: TPWD recommends that WC-MM#3 also indicate that TCR should prepare and follow a maintenance plan to monitor, treat, and control invasive species within the construction and operation right-of-ways (ROWs).

Section 3.4 Noise

Noise and vibration assessments apply primarily to how they affect people with screening distances at 1,300 feet for noise (new HSR in rural areas) and 275 feet for vibration. The Project contains no Category 1 land uses, which includes land where quiet is an essential element of their intended purpose. Land use Category 2 includes residences and buildings where people normally sleep. Project impacts to noise receivers in Category 2 include zero, moderate, and severe impacts depending on how close they are to the Project and the level of existing noise. Land use Category 3 includes primarily day-use buildings such as schools, churches, and libraries, and some parks and recreational facilities, and are termed institutional land uses. The Project only identified moderate operational noise impact on one noise receiver in Category 3, with no other Category 3 land use impacts.

Section 3.4 Noise and Fort Boggy SP Visitors and Wildlife: Although parks were identified as a sensitive land use in the study area, the summary of existing noise measurements in Table 3.4-8 does not include Fort Boggy SP as a short-term or long-term monitoring site. The noise impacts at Fort Boggy SP were not characterized in Table 3.4-12, regarding operational noise impacts for Category 2 land uses, which could include campsites at Fort Boggy SP, nor in Table 3.4-13, regarding operational noise impacts for Category 3 land uses, which includes parks. TPWD considers Fort Boggy SP as a noise sensitive location and a sensitive land use that would have 24-hour noise sensitivity for users wanting to enjoy nature. Any increase in existing noise would be considered an impact at Fort Boggy SP.

The elevation of the tracks and the deciduous and often short-statured (30 feet or less) nature of the woodlands at Fort Boggy SP exacerbate the impacts on the park's noise environment. Visitors to the park come specifically to escape from urban noise, and the frequency and loudness of the proposed HSR facility will degrade their experience. The park's Facilities Development Plan (Carman 2014) includes trails to be built within 0.25 mile of the proposed rail line, which is within the study area for noise impacts. The placement of these trails was determined due to archeological and sensitive habitat constraints as well as the park's mission to get visitors out into nature for their enjoyment.

Section 3.17 regarding recreational facilities briefly discusses noise impacts and dismisses the need for evaluation of noise impact to Fort Boggy SP because no park amenities are located with the Project's 0.25-mile study area for indirect impact to recreational facilities. Fort Boggy SP contains one overnight campsite that is within 0.25 mile of the proposed LOD as shown in Figure 1.

Studies have shown an adverse effect of increased noise levels on wildlife populations, including incremental increases caused by the enlargement of existing transportation facilities. Furthermore, these studies show that wildlife become sensitized to continued noise and that it increases levels of

stress hormones as well as interferes in their ability to communicate (e.g. bird territorial calls). The west side of Fort Boggy SP is being managed largely as a wildlife and plant conservation area allowing for limited human use (dirt path hiking trails are likely to be built, but none have been constructed at this time). The Project's 0.25-mile noise study area covers approximately 656 acres of forest and wetland habitat at the park including more than half of its marshland; an area important to breeding amphibians and birds for which acoustic pollution is especially harmful.

Recommendation: TPWD recommends an extensive noise impacts evaluation on Fort Boggy SP's visitors and wildlife in the EIS. The entire property is parkland that would allow for future trails and camping areas upon adequate funding, thus the draft EIS should assess noise impacts for any portion of the property within the study area, regardless of whether existing amenities are present in the study area. TPWD recommends assessing noise within Fort Boggy SP at the ROW of the Project, at the one-quarter mile mark from the LOD on each side of the Project alignment during winter months when deciduous trees would be in leaf-off conditions, and at the existing campsite. The evaluation should take into consideration the basin-like topography of the landscape and the potential for noise to echo across the park greater than the one-quarter mile study area distance. Noise impacts on Fort Boggy SP should also be incorporated in *Chapter 4.0 Indirect and Cumulative Impacts.*

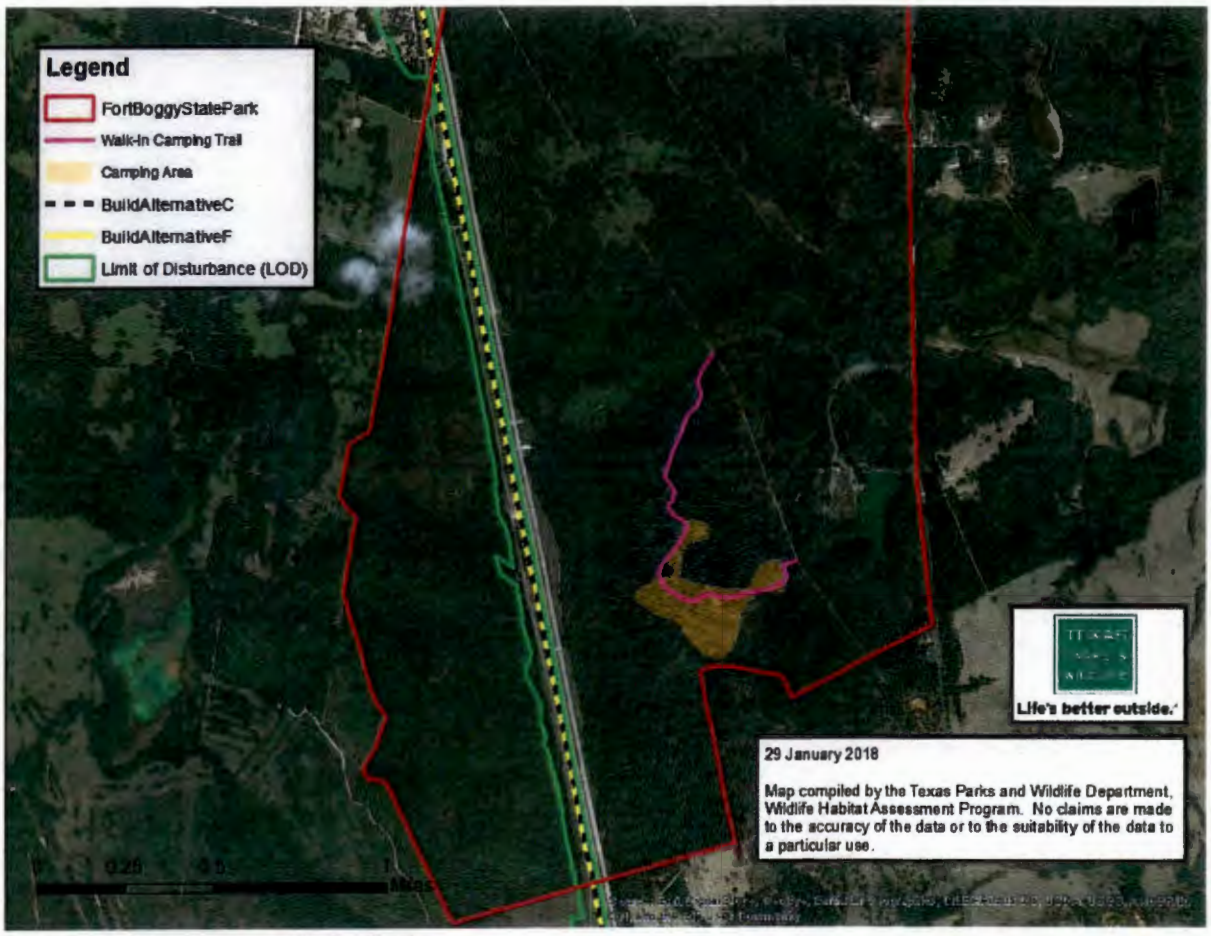


Figure 1: Fort Boggy State Park

Section 3.4 Noise/Vibration and Wildlife: Criteria for noise effects on wildlife (mammals and birds) and domestic animals (livestock and poultry) were identified as a Sound Exposure Level of 100 decibels (dBA). Appendix E indicates that the 100 dBA limit would only be exceeded within 15 feet from the tracks which is inside the HSR ROW. The draft EIS concludes no noise impacts to wildlife would occur because no animals would be this close to the tracks. The draft EIS indicates that the startle effect on wildlife would be minimized by maximizing the use of viaduct, and in most places the viaduct would be at a height that exceeds the minimum distance for startle effect impacts, which is presented as 40 feet. The draft EIS indicates noise levels would be reduced by shielding either below the viaduct or within a culvert and concludes no significant noise impacts on wildlife would occur underneath the tracks.

Although mentioned by TPWD as a concern during scoping, the draft EIS does not indicate that the culverts under IH-45 within Freestone and Leon Counties are known to support roosting and/or hibernating bats which may be impacted by construction and operation noise and vibration along Build Alternatives C and F. The Texas Natural Diversity Database (TXNDD) contains element occurrence records (EORs) for nine bat roosts in IH-45 culverts within the LOD. Associated with these bat roosts are two EORs of the Southeastern myotis bat (*Myotis austroriparius*), which is a species of greatest conservation need (SGCN) as listed on the TPWD Annotated County Lists of Rare, Threatened, and Endangered Species of Texas online application (RTEST) and identified in the Texas Conservation Action Plan (TCAP). The draft EIS does not present vibration exposure levels for wildlife, specifically bats. Vibrations and noise can cause arousal from hibernation. Disturbance to hibernating bats reduces the probability of survival because arousals and the return to euthermy depletes imperative fat reserves (Smith and Stevenson 2015). A noise disturbance effect of the Project could include bat roost abandonment (CalTrans 2016), however, TPWD is not aware of research regarding bats and noise or vibration impacts associated with existing HSR. The draft EIS Section 3.6 also indicates that the effect of train noise and vibration on wildlife, including wildlife habituation to HSR, is unclear because it has not been thoroughly studied. Because roosting and/or hibernating bats would be located near or directly underneath the HSR ROW, the noise and vibration impacts of the HSR on these wildlife resources should be fully addressed in the EIS.

The draft EIS indicates that noise impacts on wildlife would be reduced for sections on viaduct or within a culvert crossing under the Project, but it does not indicate the extent of noise reduction or the level of noise proposed under the viaduct or within a culvert under the Project. The draft EIS does not indicate vibration levels within proposed wildlife crossing culverts or how vibration levels may differ under the Project for designs at-grade, on embankment, or on viaduct.

A noise and vibration mitigation measure (NV-MM) that would be implemented to lessen the impacts of all Build Alternatives includes NV-MM#1which indicates that during final design, TCR would conduct additional noise and vibration assessments of sensitive receivers along the preferred alternative. NV-MM#3 addresses sound barrier mitigation, but it is not applicable to noise- and vibration-sensitive wildlife, such as bats.

Recommendation: TPWD recommends the EIS identify the extent of noise reduction and the levels of noise and vibration proposed under the Project for designs at-grade, on embankment, or on viaduct. TPWD recommends further assessment of noise and vibration impacts to bats. TPWD recommends identifying existing sound and vibration levels within representative culverts along IH-45 without freight rail traffic to establish a baseline for assessing potential noise and vibration impacts to bats as a result of the Project.

Recommendation: If further analysis regarding noise and vibration impacts on bats indicates that noise or vibration levels caused by the Project could trigger disturbance, then TPWD recommends a) identifying bat roosts and hibernacula as sensitive receivers for NV-MM#1, b) developing a NV-MM specific to bats that identifies practices that will be utilized to attenuate any adverse noise and vibration impacts in known areas of roosting/hibernating bats or in culverts found to contain bats during surveys along the preferred alternative, c) documenting the noise and vibration attenuation practices as mitigation measures in the post-ROD Mitigation Monitoring Program, and d) including research of HSR noise and vibration impacts on roosting and/or hibernating bats as a NV-MM because FRA criteria adopted for effects on animals by HSR noise and vibration are considered interim until further specific research results are known.

Section 3.6 Natural Resources

Section 3.6 Protected Species: The draft EIS addresses potential Project impacts to four federal- and state-listed endangered species: Houston toad (*Bufo houstonensis*), interior least tern (*Sterna antillarum athalassos*), Navasota ladies'-tresses (*Spiranthes parksii*), and large-fruited sand-verbena (*Abronia macrocarpa*). The EIS identified that the study area contains suitable habitat for the Houston toad, Navasota ladies'-tresses, and large-fruited sand verbena based on the creation of Project-specific habitat suitability models coupling Ecological Mapping Systems of Texas (EMST) and additional data specific to each species. In consultation with USFWS, three years of presence/absence surveys for these species are being conducted in suitable habitat in areas with right-of-entry permissions. Natural resource compliance measure (NR-CM) #8 indicates that areas of potential habitat that could not be accessed for species surveys would be monitored during construction by qualified biologists approved by the USFWS with protocols for ceasing construction and contacting USFWS upon unexpected encounters of Navasota ladies'-tresses and large-fruited sand verbena. More rigorous NR-CMs are identified for the Houston toad. The draft EIS indicates that 208 acres, representing 66 percent of the potential habitat of the large-fruited sand verbena, were not accessible during presence/absence surveys. The draft EIS does not indicate the percent of potential Navasota ladies'-tresses or Houston toad habitats that were not accessible during presence/absence surveys for these species.

Recommendation: TPWD recommends the EIS identify the percent of potential habitat not accessible during presence/absence surveys for the Navasota ladies'-tresses and Houston toad.

The EIS concluded that the study area does not contain suitable habitat for the federal- and state-listed endangered Texas prairie dawn (*Hymenoxys texana*) due to an evaluation of the Project-specific habitat suitability model, TXNDD EORs, review of historic aerial photography, and field investigations for the presence of mima mounds, which are closely associated with the presence of Texas prairie dawn. The EIS does acknowledge that if mima mounds are found during any field efforts, then presence/absence surveys for the species would be conducted.

While the draft EIS recognizes the potential for the Texas prairie dawn to occur within the Harris County study area, TPWD is concerned with the draft EIS assumption that absence of mima mounds due to past agricultural modification would likely negate the presence or return of the species. According to Singhurst et al. (2014), the plant association likely to include the Texas prairie dawn persists on sandy and clay prairie landscapes with salty barren spots adjacent to or between mima mounds. Additionally, the authors note the barren spots generally hold water during wet seasons, which is suggestive of depressional wetlands. Texas prairie dawn is known to occur in locations near

all Build Alternatives including sites on Katy Prairie Conservancy land and the Addicks and Barker Reservoirs Project lands. Singhurst et al. (2014) note that the plant often occurs in association with other rare, endemic species.

Recommendation: Based on the information presented above and because the Texas prairie dawn is very difficult to identify outside the flowering season, TPWD recommends a NR-CM for TCR to consult a botanical expert with experience in detecting the Texas prairie dawn to survey the preferred route for the Texas prairie dawn prior to commencing any construction.

Recommendation: TPWD recommends that NR-CM#8 include the Texas prairie dawn in the event this species is unexpectedly encountered.

The Section 3.6.4.4.2 discussion regarding EOR for nesting/breeding populations of the federal- and state-listed endangered interior least tern (*Sterna antillarum athalassos*) indicates that no reports of nesting have been made since 2006 and that variability in potential nesting habitat caused by frequently flooded sandbars prohibits the ability to map potential habitats.

Comment: Although NR-CM#9 addresses interior least tern occurrences at lignite mining sites, the Section 3.6.4.4.2 discussion does not indicate that the two EORs from Freestone and Leon County are associated with lignite surface mining sites and that there would also be variability in the location of potential habitat in disturbed mining sites. Please note that although the TXNDD occurrences are mapped as of 2006, there is more recent nesting data from lignite mining sites that are reported to the Railroad Commission of Texas, which is the state agency with oversight of lignite mining in Texas and whose permit requires annual reporting of listed species occurrences within the mining permit area. Indicating that no reports have been made since 2006 is inaccurate.

The Project is located within an approximately 200-mile wide corridor in which 95 percent of sightings of the Aransas/Wood Buffalo flock of the federal- and state-listed endangered whooping crane (*Grus americana*) have been documented during migration. Safe access to stopover sites is critical for the migration of whooping cranes. Please note that the only wild population of the whooping crane is the Aransas/Wood Buffalo flock which contained an estimated 329 individuals in 2016, thus it is important to consider Project impacts to this rare species and its stopover habitat. However, the draft EIS indicates that the whooping crane is not evaluated further within the EIS because it does not nest in the study area and would potentially occur as a transient or migrant.

Collisions with power lines are a source of mortality for whooping cranes. During migration, whooping cranes use waste grains from cropland including barley, wheat and corn and use wetland habitats such as marshes, small ponds, lake edges, and some river habitat.

Recommendation: TPWD recommends that TCR avoid locating the Build Alternatives near areas that may provide stopover habitat for whooping cranes during migration. TPWD recommends that the Build Alternatives be evaluated for potential whooping crane migration stopover habitat. Areas of potential stopover habitat should be considered as avoidance areas for proposed routes to reduce potential collisions of this species with the catenary system and Project-related electric transmission lines. During construction and low-light conditions, TPWD recommends lowering construction cranes or other large articulating arms of equipment to avoid bird collisions. TPWD recommends a NR-CM specifying that TCR will report bird and other wildlife strikes and mortality to FRA and/or USFWS during construction and operation.

The draft EIS rules out potential occurrence in the study area of the federal- and state-listed endangered red-cockaded woodpecker (*Picoides borealis*) based on the EMST and the lack of vegetation types with park-like stands of pines which is the habitat requirement for this species. The EIS does recognize that EMST is meant for generalized guidance and that actual conditions and acreages may differ in the EMST from actual on-the-ground measurements. Because not all of Texas has been ground-truthed to verify the vegetation types in the EMST, there could be areas of suitable protected species habitat in the study area that may not have been identified using the EMST and other models. Species models come with assumptions and should not be the sole method for determining where suitable habitat occurs within the preferred alternative and should not be used in the place of a field assessment of the preferred alternative.

> **Recommendation:** TPWD recommends a NR-CM in which the preferred alternative is fully assessed on-the-ground to ensure that all suitable habitat for the federal- and state-listed endangered red-cockaded woodpecker, whooping crane, Houston toad, interior least tern, Navasota ladies'-tresses, large-fruited sand verbena, and Texas prairie dawn have been identified and appropriately surveyed prior to construction.

Section 3.6 General Wildlife and Vegetation: The draft EIS does not include state-listed threatened plant and wildlife species or species of greatest conservation need (SGCN) in the analysis of Project impacts on protected species and only includes federally-listed species afforded protection under the Endangered Species Act. The document indicates there are 35 SGCN plant species identified by TPWD that have no regulatory protection. The draft EIS also indicates that two plant species had no potential to occur due to local population extirpation, but those plants are not named. Table 3.6-8 lists 37 protected wildlife species with potential to occur in the Project counties including state-listed wildlife. This list was narrowed to two federal- and state-listed wildlife species, mentioned above, for analysis of Project impacts on protected species. The draft EIS dismisses the need for evaluation of 14 wildlife species whose range is outside the Project area (i.e. marine species), 7 birds that would be present only during migration or as transients, and 14 state-listed wildlife species considered as having no regulatory protection with the state, other than liability for take. No portion of the draft EIS specifically considers or names approximately 12 fauna and 37 flora SGCN provided on the TPWD RTEST county lists.

> **Recommendation:** TPWD recommends the EIS identify which rare, SGCN, and extirpated plant and wildlife species, that are listed on the TPWD RTEST county lists, were dismissed from the analysis of impacts.

With the implementation of natural resource compliance measures (NR-CM) and mitigation measures (NR-MM) identified in Section 3.6.6, the draft EIS concludes that all Build Alternatives would have no significant impacts to general wildlife and vegetation, including state-listed species and SGCN. However, the draft EIS states that all mitigation measures for general wildlife and vegetation are considered due diligence measures and do not have associated regulations or an enforcement agency because no state regulations exist for mitigation of impacts to general wildlife and vegetation.

Some of the wildlife and vegetation avoidance and minimizations measures and NR-MMs are in line with TPWD scoping recommendations including practices to maximize the use of disturbed lands, to minimize fragmentation by following existing utility and road corridors where practicable, to build on viaduct for approximately 60 percent of the route, to minimize the LOD, to utilize wildlife crossings,

to construct with wildlife-friendly trenches, and to use dark-sky friendly lighting. However, the draft EIS falls short in fully considering the Project's impacts on state-listed species, SGCN, and rare vegetation communities and in identifying mitigation measures to avoid or minimize impacts to some state-listed species and other rare natural resources.

Recommendation: TPWD recommends incorporating additional NR-MMs into the Project as discussed below.

The draft EIS indicates that impacts to state-listed species, including two federal candidate species, could be minimized and/or avoided by mobilizing qualified biologists to conduct surveys prior to and during construction activities, to ensure that the Project is constructed following the NR-MMs, to identify species encountered, and to relocate species to avoid direct mortality because the only way to comply with state laws and regulations is to avoid incidental take of state-listed species. However, none of the NR-MMs indicate that TCR should utilize a biological monitor to reduce potential impacts to general wildlife and vegetation including state-listed species, SGCN, and rare vegetation communities.

Recommendation: With the absence of the assessment of Project impacts to state-listed species and SGCN that have potential to occur in the LOD, TPWD recommends the EIS identify a NR-MM to reduce impacts to sensitive resources in which TCR utilizes a qualified and TPWD-permitted biological monitor to be present during site clearing and construction activities to monitor the LOD for state-listed species, SGCN, and other sensitive resources and to conduct TPWD-permitted wildlife relocation, when necessary.

Recommendation: TPWD recommends that NR-MM#1 for site training be expanded to specifically include state-listed species and rare SGCN potentially occurring in the Project area.

The draft EIS acknowledges the TXNDD occurrences of colonial waterbird rookeries and bald eagle nesting areas within the study area. NR-MM#2 identifies federally-listed species habitat, waterbird rookeries, bald eagle nesting areas, migratory bird nests, waters and wetlands, and riparian corridors as sensitive habitats subject to exclusion fencing, flagging, and signage to preclude impacts. Additionally, NR-CM#2 addresses surveying for bald eagle nests in compliance with the Bald and Golden Eagle Protection Act and following the National Bald Eagle Management Guidelines.

Recommendation: TPWD recommends NR-MM#2 include TXNDD EORs of state-listed and SGCN flora and rare vegetation communities as sensitive habitat areas to be flagged as avoidance areas during construction.

Of the 14 state-listed wildlife species eliminated from evaluation of protected species, the Louisiana pigtoe (*Pleurobema riddellii*), Texas heelsplitter (*Potamilus amphichaenus*), Texas pigtoe (*Fusconaia askewi*), sandbank pocketbook (*Lampsilis satura*) smooth pimpleback (*Quadrula houstonensis*), Texas fawnsfoot (*Truncilla macrodon*), creek chubsucker (*Erimyzon oblongus*), and alligator snapping turtle (*Macrochelys temminckii*) are aquatic state-listed species with suitable habitat in some waters crossed by the Project. The smooth pimpleback and Texas fawnsfoot are also federal candidate species. Based on nearby surveys, the Trinity River most likely contains state-listed mussels at its intersection with all Build Alternatives.

Where Project activities could impact aquatic resources, including state-listed species, TPWD may recommend relocating aquatic life under a TPWD permit as detailed in TPWD's scoping letter. Impacts could occur where the Project requires work within streams, such as at temporary or permanent haul roads or crossings or where dewatering activities could strand aquatic resources.

As indicated in TPWD's scoping letter, TPWD regulates take of mussels, including both native common mussels and state-listed mussels.

Recommendation: NR-MM#3 regarding aquatic resources and the potential need for presence/absence surveys for mussels should indicate that such surveys would be applicable for native common mussels and state-listed mussels and should be conducted under the authority of a TPWD permit and an associated Aquatic Resource Relocation Plan (ARRP), see *8.0 Applicable Federal, State and Local Permits and Approvals* below. ARRPs also contain information regarding protocols for mussel surveys. NR-MM#3 should also indicate that coordination with the TPWD Kills and Spills Team to initiate such a permit would also apply to Project activities with potential to impact aquatic resources during stream disturbances or dewatering. See TPWD February 26, 2016 scoping letter for more details.

The draft EIS does not address the Project's potential to introduce or spread aquatic invasive species (AIS) during construction activities in inland waters.

Recommendation: For compliance with TPW Code Sections 66.007 and 66.0072 and Texas Administrative Code (TAC) Title 31, Part 2, Chapter 57, Subchapter A, TPWD recommends a NR-CM in which TCR must prepare and follow an AIS transfer prevention plan that outlines BMPs that will be used to prevent inadvertent transfer of AIS species to new areas via Project equipment and temporary fills that would enter and/or leave inland waters. Refer to TPWD February 26, 2016 scoping letter for more details.

Although the draft EIS indicates no TXNDD EORs for the state-listed threatened creek chubsucker (*Erimyzon oblongus*), the TXNDD does contain a record of the creek chubsucker (EOR 13127) within Hurricane Creek in a temporary construction area located at approximately Station HN2 369+00 within the LOD along Segment 5 for all Build Alternatives. The Appendix D Project footprint maps show that Hurricane Creek and its associated woodland and riparian corridor would be disturbed for temporary construction. Other temporary construction areas and permanent areas used for ancillary facilities throughout the Project also contain wetland, open water, and stream habitats and their associated riparian corridors. It is not clear if the Project would require full disturbance across all temporary construction areas.

Recommendation: For the protection of the state-listed threatened creek chubsucker, TPWD recommends that the temporary construction area at Station HN2 369+00 be designed to avoid disturbance to Hurricane Creek and its associated riparian corridor.

Recommendation: Because of the importance of waters and their associated vegetated buffers which are identified as sensitive habitat areas in NR-MM#2, TPWD recommends that all areas of temporary construction along the selected route be designed to avoid disturbance to wetlands, open waters, streams, and their associated vegetated buffers, to the extent feasible, for the protection of those waters as well as the wildlife that utilize those habitats. Permanent ancillary facilities such as TMFs, MOWs, TPSSs, sectioning posts, sub-sectioning posts, signal houses, communications

housing, and detention basins should be further refined during final design to avoid impacting waters of the U.S. and their associated vegetated buffers to the greatest extent practicable. Detention and retention sites should not be constructed on-channel in existing streams.

As indicated in TPWD's scoping comments, of the state-listed terrestrial species potentially occurring in the Project LOD, the threatened Texas horned lizard (*Phrynosoma cornutum*), timber rattlesnake (*Crotalus horridus*), and Rafinesque's big-eared bat (*Corynorhinus rafinesquii*) are more at risk for being impacted by construction activities due to their limited mobility or life history requirements.

The EIS indicates the potential for the state-listed threatened Rafinesque's big-eared bat to occur within the study area due to the occurrence of bottomland hardwoods and includes NR-CM#3 specific to surveying potential tree, culvert, and bridge roost habitats for maternity colonies of Rafinesque's big-eared bat and to not disturb the colonies until pups have fledged. As indicated in scoping comments and in *Section 3.4 Noise*, bat roosts are located within culverts under IH-45 in Freestone and Leon Counties.

Recommendation: TPWD recommends the EIS identify that culverts under IH-45 would also serve as suitable habitat for the Rafinesque's big-eared bat because multiple culverts along IH-45 and within the LOD of Alternatives C and F have EORs for bat roosts including two EORs of the Southeastern myotis bat, an SGCN.

Recommendation: TPWD recommends that NR-CM#3 also include consultation with TPWD upon detection of bat roosts that will be disturbed by the Project to determine appropriate mitigation, such as construction of artificial roosts to offset the impact to bats.

Recommendation: If Build Alternative C or F is selected as the preferred alternative, TPWD recommends a NR-MM to survey the culverts along the length of the Project where the Project would follow IH-45 to identify bat roosts within the LOD. TPWD recommends NR-MMs to minimize noise and vibration impacts on bats and to conduct studies to evaluate those impacts on bats, see TPWD's NV-MM recommendations in *Section 3.4 Noise*.

Recommendation: TPWD recommends that bat roosts should be included as sensitive habitat areas covered under NR-MM#2.

NR-MM#5 and NR-MM#6 address construction trench practices to avoid trapping wildlife.

Recommendation: TPWD recommends additional NR-MMs specific to the state-listed Texas horned lizard and timber rattlesnake including site training to prohibit TCR and their contractors from intentionally killing the timber rattlesnake and other snakes, informing personnel of the dangers of handling live or dead timber rattlesnakes, identifying relocation protocols to be used by TPWD-permitted individuals for handling state-listed reptiles that will not readily leave the Project area and are in danger of impact by construction activities, and reporting encounters of state-listed species to the TXNDD. More details regarding these recommendations can be found in the TPWD February 26, 2016 scoping letter.

The draft EIS identifies NR-MM#9 to reduce barriers to wildlife movement including the installation of wildlife crossings in sections that are not built on viaduct following recommendations outlined in the wildlife crossings technical memorandum of Appendix E. The permanent wildlife crossings would

facilitate movement within a species' home range. The draft EIS indicates that the location of wildlife crossings would be determined through environmental analysis in consultation with TPWD and USFWS to identify wildlife corridors and large habitat blocks to facilitate placement of crossings. Potential locations of wildlife crossings are shown in the draft EIS *Appendix G Conceptual Engineering Plans and Details.*

Recommendation: TPWD recommends the use of wildlife crossings in areas of restricted movement across the ROW and seeks further coordination with TCR in finalizing the location of potential wildlife crossings. In addition to accommodating general wildlife resources, TPWD recommends strategic placement of wildlife crossings to accommodate the Eastern spotted skunk (*Spilogale putorius*), also known by its subspecies name in Texas as the Plains spotted skunk (*Spilogale putorius interrupta*), and the Southern crawfish frog (*Lithobates areolatus areolatus*), both SGCN. Crossings are recommended where multiple EORs of the Eastern spotted skunk and the Southern crawfish frog are located near the Project in northwest Harris County.

A large temporary construction area at the intersection of Wintergreen Trail and Lancaster Hutchins Road along Segment 1, at approximately Station DS 370+00, is directly adjacent to a recently documented rare native prairie remnant identified in the TXNDD as a Vertisol Blackland Prairie (*Schizachyrium scoparium - Sorghastrum nutans - Andropogon gerardii - Bifora americana* Vertisol Grassland; EOR 11919). The connection between the HSR and the Dallas South TMF would require permanent impacts within a portion of the prairie EOR where it borders Lancaster Hutchins Road. Native prairie remnants of the Northern Blackland Prairie have potential to support rare plants including the following SGCN as identified on the RTEST Dallas County lists: Texas milk vetch (*Astragalus reflexus*), Osage Plains false foxglove (*Agalinis densiflora*), Hall's prairie clover (*Dalea hallii*), and Glen Rose Yucca (*Yucca necopina*). This prairie remnant is vulnerable to loss due to development.

Recommendation: TPWD recommends TCR avoid or minimize temporary and permanent disturbances to the prairie remnant (EOR 11919) north of Station DS 370+00. TPWD strongly recommends TCR consider incorporating the prairie into the Project for permanent protection as a Project conservation area or mitigation area due to the vulnerability of the site to loss by future development. TCR may coordinate with TPWD to identify local conservation partners that could assist in proper management of the prairie property.

The Project will cross the Katy Prairie, an environmentally sensitive coastal prairie ecosystem, as discussed in the TPWD February 26, 2016 scoping letter.

Comment: Please refer to TPWD's comments and recommendations in *Section 3.7 Waters of U.S* below regarding impacts associated with the Katy Prairie.

Table 3.6-3 lists reptiles and amphibian species with potential to occur within the study area. The state-listed threatened timber rattlesnake (*Crotalus horridus*) is on the table with an indication there are only known records within three Project area counties (Dallas, Ellis and Navarro Counties). However, the TXNDD also contains EORs of the timber rattlesnake in Freestone and Leon Counties. The table does not include the Southern crawfish frog, an SGCN which has EORs in Freestone, Navarro, Harris and Waller Counties.

Recommendation: TPWD recommends Table 3.6-3 also represent known EORs from the TXNDD.

The draft EIS incorrectly references the TXNDD element occurrence records (EORs) as obtained from the TPWD county lists of protected species and species of greatest conservation need. Please note that the TXNDD is a database of known records of rare species, special features, and vegetation communities, whereas the TPWD RTEST online application provides information regarding state-listed species and species of greatest conservation need potentially occurring in each county in Texas. Both resources are separate tools managed by and obtained through the TPWD Wildlife Division's Wildlife Diversity Program in which the Wildlife Habitat Assessment Program and TXNDD staff are housed. For example, citation number 56 indicates that EORs were obtained from the county lists. Additionally, citation number 59 indicates that the TXNDD and RTEST are the same resource.

Recommendation: TPWD recommends correctly citing the TXNDD EORs and RTEST and revising the citations that are inaccurate.

Recommendation: TPWD recommends the Post-ROD Mitigation Monitoring Program identify post construction investigations that would be conducted to track, report, research, and remediate Project impacts on fish and wildlife such as collision with the catenary system, wildlife use of crossings, artificial bat roost use, and noise and vibration affects that have not yet been studied for HSR within the U.S.

Section 3.6 Habitats at Fort Boggy SP: Based on aerial review of the LOD, TPWD estimates that the proposed Project will cause the direct loss of approximately 15 acres of forested and marsh habitat at Fort Boggy SP including rare habitats for which the park has set aside for conservation including old-growth post oak (*Quercus stellata*) and sand post oak (*Quercus margaretta*) savanna, overcup oak (*Quercus lyrata*) swamp, Boggy Creek and its associated buttonbush (*Cephalanthus occidentalis*) marsh and swamp. However, *Chapter 7.0 Section 4(f) and 6(f) Evaluation* indicates that the Project would require acquisition of 67 acres of the park, thus the impacts to habitat may be greater than estimated. A Project-related detention basin is proposed in a rare habitat at Fort Boggy SP.

Comment: TPWD recommends full avoidance of habitats at Fort Boggy SP. If impacts cannot be avoided, then all impacts to park resources need to be fully mitigated, see TPWD comments for Section *3.13 Land Use, Chapter 7.0 Section 4(f) and 6(f) Evaluation,* above and *Chapter 8.0 Applicable Federal, State and Local Permits and Approvals*, below. TPWD recommends that the Project-related detention basin proposed on Fort Boggy SP be moved to a non-forested upland area outside of the park.

Section 3.7 Waters of U.S

Due to concurrent review of the draft EIS and Section 404 permit applications, please refer to the section below titled *USACE Section 404 of the Clean Water Act Permit Applications* for TPWD input regarding impacts to Waters of the U.S for both the draft EIS and 404 permit applications.

Section 3.10 Aesthetics and Scenic Resources

The draft EIS Landscape Unit #6 Central Eastern Rural, Fairfield to Old San Antonio Road includes key viewpoint (KVP) #17, in the vicinity of Fort Boggy SP. The draft EIS indicates the viaduct would

be approximately 40 feet above grade almost to the top of the tallest trees, possibly reducing views of the park from the frontage road and rest stop. The draft EIS concludes a neutral degree of impact with slight reduction in visual quality for travelers and park users, and that the viaduct is compatible with surrounding environment. All Build Alternatives rank close to each other with regards to beneficial (all equal), adverse (all equal), and neutral (close) visual impacts.

TPWD cannot determine by the information provided in the draft EIS how the height of the viaduct relates to the height of IH-45 and the existing trees across Fort Boggy SP. A portion of Build Alternatives C and F would also cross the park in an open marsh area without tall trees to act as existing screening of the viaduct to park visitors. The draft EIS does not give an indication of whether the proposed HSR would be visible from areas within Fort Boggy SP.

> **Recommendation:** TPWD recommends the EIS identify the heights of the viaduct relative to the existing natural and manmade environment across Fort Boggy SP and identify potential lines of sight from the park amenities to the HSR. If the HSR would be visible from existing park amenities, then TPWD recommends an aesthetics and scenic resources mitigation measure for TCR to provide natural screening in consultation with TPWD to reduce visual impacts to park users for Build Alternatives C and F.

Section 3.13 Land Use

The draft EIS indicates that the Project would require permanently converting approximately 13.7 acres of state-owned public use land at Fort Boggy SP to transportation use, where the park is crossed by Build Alternatives C and F in Leon County. Because there appears to be no condemnation authority for the taking of state-owned lands for this Project, the approval of the Texas Parks and Wildlife (TPW) Commission, subject to the requirements and limitations of Chapter 26 of the Texas Parks and Wildlife Code (Chapter 26), would be necessary for the granting of any easement across Fort Boggy SP. Section 3.13.5.2.2, regarding the environmental consequences of converting existing land uses, discusses the conversion of recreational use to transportation use at the federal property at Lake Bardwell, but does not discuss the conversion occurring at Fort Boggy SP under Build Alternatives C and F. Section 3.13.2, regarding state regulatory context, and Section 3.13.5.2.2 do not identify TCR's need to comply with Chapter 26.

The draft EIS identifies Chapter 26 in the draft EIS *Chapter 7.0 Section 4(f) and 6(f) Evaluation,* but does not address it further in the document, and the legal implications involved in crossing TPWD property are not adequately addressed. The proposed alternatives that cross Fort Boggy SP would constitute a constructive use or taking of public land used as a park, which requires compliance with Chapter 26. Chapter 26 requires that before a state agency (TPWD) can approve any project (proposed Project) that will result in the use or taking of public land designated and used as a park (Fort Boggy SP), that agency (TPWD) must provide certain notices to the public, conduct a hearing, and render a finding that there is no feasible and prudent alternative and that the Project includes all reasonable planning to minimize harm to the park. The use or taking of Fort Boggy SP would require approval from the TPW Commission for an easement with associated fees and mitigation for adverse impacts to the park. The amount of the fee and required mitigation would be determined by the TPW Commission. The Project includes four feasible and prudent alternatives to crossing Fort Boggy SP: Alternatives A, B, D, and E. However, FRA eliminated Build Alternatives D and E from further consideration in Section *2.7.2 Comparison of Build Alternatives A, B and C*; therefore Build Alternatives A and B are feasible and prudent alternatives to crossing Fort Boggy SP. Because there

are prudent and feasible alternatives, it does not appear that the Chapter 26 standard could be met in connection with the Project's proposed use or conversion of Fort Boggy SP to transportation use.

Recommendation: TPWD recommends the draft EIS acknowledge the land use conversion at Fort Boggy SP in the sections regarding regulatory context and environmental consequences of existing land use conversion. TPWD recommends a land use compliance measure (LU-CM) for TCR to coordinate with TPWD and the TPW Commission to pursue approval and necessary agreements for the use of state-owned property associated with Fort Boggy SP in the event Build Alternative C or F is selected as the preferred alternative.

Comment: If the TPW Commission chooses to grant TCR an easement to cross TPWD property, the required process includes a public hearing at a regularly scheduled TPW Commission meeting. Coordination with TPWD and the TPW Commission regarding TPWD's Chapter 26 process needs to be initiated by TCR at least a year prior to construction.

The draft EIS includes an assessment of lands held under an Agricultural Conservation Easement created through the Agricultural Act of 2014 (also known as the Farm Bill) Agricultural Conservation Easement Program. One easement was identified within the study area and located one-half mile outside of the Project LOD, Warren Ranch/Barn Owl Woods. The draft EIS did not consider conservation easements established solely by non-profit natural resource organizations. As indicated by TPWD during scoping, land trust conservation easements protect and conserve the land's natural values such as wetlands, fertile soils, mature trees, and wildlife habitat. Fragmentation of wildlife habitat due to linear transportation projects on properties where conservation agreements serve to protect the state's natural resources now and in the future is of concern to TPWD. Lands with conservation easements protect existing wildlife habitat from future fragmentation, and TPWD recognizes that they have greater environmental integrity than comparable lands without conservation easements.

Recommendation: TPWD continues to recommend that properties protected by non-governmental conservation easements be identified in the EIS and avoided during development of the preferred alternative.

Section 3.17 Recreation

Section 3.17.3 identifies a change of use, access, visual quality, or noise as direct impacts to recreational facilities or parklands located within the LOD, and identifies indirect impacts as impacts to recreational facilities or parklands located within a study area 0.25 mile beyond the LOD to account for potential noise impacts. The draft EIS indicates construction noise would extend 40 to 630 feet from the noise source and operational noise would be less than construction noise.

Table 15 of the executive summary does not incorporate Fort Boggy SP as being impacted by any Build Alternatives including trails or parkland even though the non-federal public property is a state park that will require a change of use from state-owned land used for recreation to transportation use along Build Alternatives C and F.

Recommendation: TPWD recommends that Table 15 of the executive summary be corrected to indicate impacts to Fort Boggy SP by increasing the tally of parks impacted by one additional park for Alternatives C and F.

Comment: Table 3.17-6, regarding recreational facilities in the Leon County study area, incorrectly identifies Fort Boggy SP as owned by the USACE. This is state land under the ownership and management of TPWD. Table 3.17-6 also fails to identify cabins and hike-in campsites as site amenities. The discussion of Fort Boggy SP indicates it is located only on the east side of IH-45, when in fact it is located on both sides of IH-45. The discussion indicates Fort Boggy SP is open only for day-use; however, the park recently reinstated overnight use in campsites or in cabins.

The discussion of environmental consequences on recreational facilities identifies that operational impacts would be long-term and permanent and would represent direct changes that permanently alter the use, character, or setting of the recreational facility, such as acquisition of a portion of any recreational facility and changes in access, use, or viewshed.

The draft EIS states that Segment 3C along Build Alternatives C and F would not directly impact the recreational facilities within Fort Boggy SP even though the Build Alternatives would be on park lands and the reconstruction of the IH-45 west frontage road and the Build Alternatives would directly impact Fort Boggy SP property. The draft EIS concludes that the portion of the park impacted by the Project and frontage road reconfiguration are on undeveloped land and not accessible to park users and that 88 percent of the Project through the park would be on viaduct. The discussion also concludes that the park's recreational areas are outside the LOD for considering direct impacts and are outside the 0.25-mile study area for considering indirect impacts.

Please note that the acquisition of a portion of the Fort Boggy SP and the subsequent conversion of a portion of the Fort Boggy SP property, which is a recreational facility in its entirety, to transportation use within the LOD are direct impacts on Fort Boggy SP. Although it does not appear that the Project would impact access at the park due to the Project being primarily on viaduct, other direct impacts to Fort Boggy SP would be a change in the character of the park through a reduction in the size of vegetation communities and a potential change in viewshed. As indicated in *Section 3.10 Aesthetics and Scenic Resources*, above, the viewshed from within the park towards the proposed HSR were not adequately evaluated.

Additionally, because a Fort Boggy SP recreational trail and camping area east of IH-45 comes within 0.25 mile of the LOD, and because all areas of the park are a recreational property, the Project would have indirect impacts on the park and its visitors including temporary construction noise and permanent operational noise impacts that would degrade park visitor experiences.

Request: TPWD finds the conclusions regarding Fort Boggy SP inadequate and requests the EIS identify that the Project will have direct impacts on the park including acquisition of park property which is a recreational facility in its entirety, a change in use from recreation to transportation use, and a change in character of the vegetative setting and/or viewshed of Fort Boggy SP within the LOD. The EIS should also identify the indirect noise impacts to Fort Boggy SP. TPWD requests that the EIS identify that the Project will require compliance with TPW Code Chapter 26 and will require a Section 4(f) evaluation due to greater than *de minimis* impacts. See TPWD's input and more discussion regarding Fort Boggy SP in *Section 2.7.2 Comparison of Build Alternatives A, B and C, Section 3.4 Noise, Section 3.6 Natural Resources, 3.10 Aesthetics and Scenic Resources Section, Section 3.13 Land Use, Chapter 7.0 Section 4(f) and 6(f) Evaluation,* and *Chapter 8.0 Applicable Federal, State and Local Permits and Approvals.*

Comment: The impacts on Fort Boggy SP should also be included in *4.0 Indirect and Cumulative Impacts*, Table 4-1.

Section 3.19 Cultural Resources

The draft EIS indicates that all Build Alternatives falling on non-federal public land, or land that is under the ownership or control of a political subdivision of the State of Texas, are subject to compliance with the Antiquities Code of Texas (Texas Natural Resources Code Title 9, Chapter 191) and require the Texas Historical Commission (THC) to review actions potentially disturbing prehistoric or historic sites within the public domain.

At Fort Boggy SP, the Project would require use of state-owned property along Build Alternatives C and F west of the existing IH-45 ROW to accommodate the HSR and reconfiguration of the IH-45 west frontage road, which appears to also be proposed as the HSR access road. Section 3.19, regarding cultural resources, does not identify Fort Boggy SP as a public property subject to the Texas Antiquities Code. In the park, there are three known archeological sites within the proposed frontage road corridor, and several more in the vicinity of a Project-related detention basin. One of the sites inside the proposed corridor has been recommended for further testing and may be significant. The other two may be an indication of something more significant nearby or deeper. The park has had multiple cultural resource surveys that have detected new records upon each subsequent survey. Historic records indicate that Fort Boggy was adjacent to a spring, and there is a spring at the north end of the proposed access road corridor. TPWD is concerned with the Project's impact in the vicinity of the spring, because the area has potential to be associated with the original location of Fort Boggy, which has never been found.

Because significant archeological sites continue to be discovered and the actual location of Fort Boggy has never been encountered, there is a potential to encounter unknown and unrecorded cultural resources, both historic and prehistoric, within the Project area in or near Fort Boggy SP.

Because the cultural resources at Fort Boggy SP have been overlooked in the draft EIS, THC may not be aware that the Project would cross state-owned land and affect its associated cultural resources. Because the FRA will not be able to fully determine the Project's effects on cultural resources prior to approving the Project, FRA and THC have decided to develop and implement a programmatic agreement for the Project to ensure the appropriate measures are taken to minimize harm for potential impacts. The draft PA will be available for public comment upon circulation of the final EIS.

Recommendation: TPWD recommends the EIS identify Fort Boggy SP as state-owned property subject to the Antiquities Code of Texas and recognize the potential for cultural resources to occur within the LOD within the park property.

Request: TPWD requests that FRA consult with TPWD to specifically address the cultural resources and assessment needs at Fort Boggy SP for inclusion in the EIS and PA.

Recommendation: If Fort Boggy SP property is utilized for any aspect of the Project, TPWD recommends a shovel test survey of the entire easement area and deep testing in locations where the potential for deeply-buried cultural remnants exist to determine appropriate mitigation measures for impacts to cultural resources at the park.

Chapter 4.0 Indirect and Cumulative Impacts

Refer to TPWD's input in *Section 3.4 Noise, Section 3.17 Recreation*, and *USACE Section 404 of the Clean Water Act Permit Applications.*

Chapter 7.0 Section 4(f) and 6(f) Evaluation

Section 4(f) of the USDOT Act (49 U.S.C. 303(a)) specifies that projects receiving funding from the USDOT may not support the use of a Section 4(f) property unless the agency (e.g., FRA) determines there is no feasible or prudent alternative to such use and the project includes all possible planning to minimize harm to the resource resulting from such use, or a finding can be made that the project as a whole has a *de minimis*, or minimal, impact on the Section 4(f) resource. This provision allows avoidance, minimization, mitigation, and enhancement measures to be considered in making a *de minimis* determination. For parks, recreation areas, and wildlife and waterfowl refuges, a *de minimis* impact is one that would not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f).

A Section 4(f) use occurs when land is permanently incorporated into a transportation facility, when there is a temporary occupancy of land that is adverse in terms of the statute's preservation purpose, or when there is a constructive use of a Section 4(f) property as determined by the criteria in § 774.1.

Public parks, recreation areas, and wildlife and waterfowl refuges are protected under Section 4(f) when the property is publicly owned, the primary use is designated as a park, recreation area, or refuge by the official with jurisdiction over the resource, it is considered a significant use by the agency with jurisdiction, and it is open to the public. The study area for the Section 4(f) evaluation was identified as 0.25 mile from the LOD based on the screening distance for noise impacts.

The draft EIS indicates that Segment 3C, along Build Alternatives C and F, across Fort Boggy SP would require permanent acquisition of 67 acres (3.5 percent) of the park and that the area to be acquired is currently open space and does not contain developed recreational features. However, the draft EIS does recognize the permanent acquisition as a Section 4(f) use.

The draft EIS indicates that construction of Segment 3C would result in temporary increases in noise levels at Fort Boggy SP, and that the noise levels during HSR operation would be consistent with user expectations in the portion of the park within the LOD due to the existing IH-45 traffic noise. The draft EIS concludes that the increase in noise would not adversely affect the protected activities, features, or attributes of the property.

Comment: The discussion regarding Fort Boggy SP as an existing public park and recreation area along Segment 3C in Leon County, Table 7.2, and the assessment of the use of Fort Boggy SP should identify that the park includes overnight use and campsites.

Comment: TPWD is concerned that the draft EIS and Chapter 7 do not consider the noise effects on Fort Boggy SP visitors utilizing the trail and camping area that are within the 0.25-mile study area and that echo noise could carry farther than the one-quarter mile study area due to the topography of the area. TPWD considers any increase in noise an adverse impact on park visitor experience. Additionally, the ability of deciduous trees to buffer noise is greatly diminished during

leaf-off conditions, thus noise impacts may travel farther than the 0.25-mile study area during tree dormancy.

Chapter 7 of the draft EIS indicates that construction activities and the HSR viaduct would likely be visible from several portions of the park, but it is anticipated to be obscured by existing vegetation and IH-45 from the developed areas of the park.

Comment: TWD is concerned that the impacts to the viewshed from Fort Boggy SP were not fully investigated, and the ability for trees to obscure the viewshed would be reduced during the dormancy season, when deciduous trees lose their leaves.

TPWD agrees that access to the park would not be impacted because the height of the viaduct would allow for human and wildlife passage below the HSR. Additionally, if pursued by TPWD to develop areas west of the Project, access to the park would likely be obtained from the reconfigured west frontage road.

The draft EIS indicates that the following measures to minimize harm to Fort Boggy SP have been identified based on coordination to-date:

- Segment 3C was designed to be predominately on viaduct through Fort Boggy SP to minimize the direct impacts to resource, and
- During final design, TCR would continue to identify ways to minimize impacts to Fort Boggy SP.

These minimization measures would not eliminate the permanent conversion of Section 4(f) property. However, FRA's preliminary determination is that the use of Fort Boggy SP, including any measures to minimize harm (such as any avoidance, minimization, mitigation, or enhancement measures), would have *de minimis* impact on the property because the acquisition of property would not adversely affect the activities, features, or attributes that qualify the park for protection under Section 4(f).

The draft EIS indicates that FRA will make its Section 4(f) determination as part of the final EIS and/or ROD for the Build Alternatives, after considering public and agency comments on this draft Section 4(f) evaluation. The proposed impact and preliminary use determinations are based on coordination with the officials having jurisdiction over the respective resources, as described in Section 7.10. These officials will be notified of FRA's intent to make *de minimis* impact determinations, as applicable. Should the officials with jurisdiction concur, FRA would issue determinations of *de minimis* impacts as part of its final Section 4(f) determination in the final EIS and/or ROD.

Comment: TPWD is under the impression that this comment letter is TPWD's coordination with FRA per Section 4(f) in response to the draft EIS. Because of the concerns voiced above and in other sections of this letter, and because all measures to minimize harm to Fort Boggy SP have not been determined, TPWD cannot agree at this time with the *de minimis* determination.

Without a *de minimus* determination, the use of Fort Boggy SP could only occur if there are no feasible or prudent alternatives to crossing Fort Boggy SP property. The Project includes two other feasible and prudent alternatives, Build Alternatives A and B, as discussed in *Section 2.7.2 Comparison of Build Alternatives A, B and C.*

Recommendation: In the absence of details regarding the measures that will be implemented to minimize or mitigate harm to Fort Boggy SP, TPWD recommends that Build Alternatives C and F, which cross through Fort Boggy SP, be eliminated from consideration as preferred alternatives due to the determination of a Section 4(f) use that can be avoided with other feasible or prudent alternatives.

Additionally, visitors also utilize Fort Boggy SP for the wildlife and vegetative resources that offer passive recreation. Damage to the park's habitat, impact to cultural resources, and degradation of the visitor experience with respect to viewshed and noise would need to be fully mitigated in consultation with TPWD in order to determine if a *de minimis* impact is appropriate.

Recommendation: If FRA wishes to further assess the determination of *de minimis* use of Section 4(f) property at Fort Boggy SP, then TPWD recommends addressing the concerns of TPWD and identifying all mitigation measures in consultation with TPWD prior to seeking TPWD's concurrence with the determination. For direct use impacts to state park property, TPWD expects mitigation through acquisition of like (area, character, and conservation value) property adjacent to Fort Boggy SP that would become part of the park. TPWD recommends the implementation of noise reduction strategies to reduce noise associated with the HSR and/or to reduce existing noise on IH-45 as a way to minimize the cumulative impact of noise associated with the existing environment and the proposed Project. TPWD recommends mitigation measures to entirely avoid cultural resources at Fort Boggy SP or fully mitigate them. TPWD recommends visual screening mitigation measures to minimize impacts to park visitor viewsheds. TPWD recommends constructing auxiliary features, such as detention basins and HSR control facilities, outside of Fort Boggy SP property and outside of nearby forest used by wildlife whose home ranges overlap the park and adjacent lands. Additionally, TPWD recommends that stormwater discharges from the Project's drainage ditches and detention basins or other effluent be directed to areas away from Fort Boggy SP.

Chapter 8.0 Applicable Federal, State and Local Permits and Approvals

Comment: Table 8-1 should include:

- TPWD *Marl, Sand, Gravel, Shell or Mudshell Permit* for disturbance to state-regulated stream beds.
- TPWD *Permit to Introduce Fish, Shellfish or Aquatic Plants into Public Waters* and associated Aquatic Resource Relocation Plan (ARRP) in the event that project activities within state waters necessitate the relocation of aquatic life to an area of suitable habitat outside the project footprint and to avoid TCR liability for lost resources under the authority of TPW Code Sections 12.0011 (b) (1) and 12.301.
- TPWD *Scientific Permit for Research*, which authorizes handing of state-listed terrestrial species associated with relocation, surveys, monitoring, and research.
- State approval under Chapter 26 of the Texas Parks and Wildlife Code, for Build Alternatives that cross Fort Boggy SP, regarding a change in land use from a state park to transportation use and regarding TCR's pursuit of an easement to cross Fort Boggy SP which can only be granted by the Parks and Wildlife Commission.
- State approval under the Antiquities Code of Texas (Texas Natural Resources Code Title 9, Chapter 191); Texas Administrative Code (Title 13, Chapter 26) for Build Alternatives that cross Fort Boggy SP, regarding impacts to cultural resources.

USACE SECTION 404 OF THE CLEAN WATER ACT PERMIT APPLICATIONS

Concurrently with the FRA preparation of the EIS, the USACE Fort Worth District and USACE Galveston District, which are also cooperating agencies for the Project, will be using the EIS and other permit application information in their evaluation of a Department of Army (DOA) permit and decision regarding impacts to wetlands and waters of the U.S. in accordance with Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. The USACE review and issuance of a permit under Section 404 is a separate federal action from FRA's determination on the safety of the system, and the DOA permits must be obtained prior to construction.

USACE-Fort Worth District 404 Permit Application # SWF-2011-00483

TPWD does not currently have sufficient information with regard to the specific location and extent of impacts necessary to evaluate the 404 permit application. Additionally, no mitigation plan was provided with the publically-available draft EIS materials. However, TPWD requested and obtained from the USACE a mitigation plan for the portion of the Project within the USACE Forth Worth District. The plan is highly conceptual in nature and lacks the detail necessary for TPWD to provide full review. The mitigation plan also includes significant discrepancies with the draft EIS related to the extent and type of impacts. For example, while Table 3.7-82 of the draft EIS indicates that Build Alternative A would result in an estimated total of 343.6 LF of impacts to perennial streams from culverts, excavation, and fill, and the mitigation plan estimates the size of potential impacts to perennial stream as 7,613 LF. A more detailed accounting of impacts and mitigation opportunities is necessary prior to permit issuance.

The mitigation plan indicates that each crossing of a Waters of the U.S. (WOTUS) would be considered a single and complete project, and that impact at these crossings totaling less than 0.1 acre (for wetlands) or 300 LF (for streams) would not be mitigated.

> **Recommendation:** TPWD believes that unmitigated impacts for the Project's proposed single and complete crossings would represent a significant cumulative net loss to WOTUS in Texas, and that mitigation for lost functions should be provided to the greatest extent practicable.
>
> **Request:** TPWD requests the opportunity to continue review of the mitigation plan and project materials related to the 404 process as they are further developed.

General Comments: Please refer to TPWD's recommendations provided in our review of the draft EIS, as they are also applicable to Section 404.

Culverts: If culverts are used at stream crossings, the crossings should be designed with the culvert(s) in the active channel area lower than those in the floodplain benches so that the flow in the channel is not overly spread out. The central/low-flow culvert(s) should be large enough to handle a 1.5 year flow without backing up water. The bottoms of these lower culverts should be set at least a foot below grade (i.e. recessed) to allow natural substrate to cover the culvert bottom and to allow for aquatic organism passage. These lower, recessed culverts should be installed in the thalweg or deepest part of the channel and be aligned with the low flow channel.

Permittee Responsible Mitigation: Permittee responsible mitigation (PRM) should be held to the same standards as mitigation banks with respect to site protection, performance standards, success criteria, financial assurances, etc. The applicant should refer to the Guidelines for Fort Worth District Mitigation Banks (Guidelines) in the development of their mitigation plan, which should be made available to the Interagency Review Team for review prior to permit issuance.

In accordance with the Guidelines, reference reaches should be identified to determine the potential ecological uplift of the proposed mitigation. Reference reaches should also be used to guide stream designs and credit calculations, and should consist of stable stream segments with measured morphological characteristics (dimension, pattern, profile, and bed material) associated with bankfull discharge.

The selection of a well-qualified consultant for stream channel mitigation design and implementation is critical for project success. A well-qualified stream consultant will have significant expertise and experience in actual stream design and implementation. Consistent with 33 CFR 332.8(d)(2)(vi) and the Guidelines, TPWD recommends that detailed qualifications include a project portfolio that demonstrates the consultant's experience in designing and implementing large-scale stream channel and riparian buffer mitigation projects. At a minimum, the portfolio should include the following for each project: name of project or bank, location (nearest city, state), client name, year initiated, size (i.e., linear feet for stream channel length; riparian buffer area in acres or riparian buffer width in feet), current status (i.e., "design", "construction", "post-construction", "monitoring year ___ of ___", or "completed/closed out") of existing projects, and "in-development" for proposed projects. TPWD also recommends the detailed qualifications demonstrate that key personnel have formal education and training in fluvial geomorphology or stream ecology.

Consistent with the Guidelines, 60 percent stream channel design plans should be required for the draft mitigation plan, and 95 percent design plans for the final mitigation plan. Additionally, as-built stream channel design plans should be required upon completion of earthwork.

Site Protection – Detailed information on the proposed easement holder should be provided for agency review in accordance with CESWF-12-MITB. Also, the draft conservation easement should be provided for agency review.

If the Project is permitted, TPWD recommends that all stream mitigation areas employ the use of specific and measurable performance standards outlined in *A Function-Based Framework for Stream Assessment & Restoration Projects - EPA 843-K-12-006*. At a minimum, the stream should meet the "Functioning" classification for the following parameters: Floodplain Connectivity (Bank Height Ratio), Entrenchment Ratio, Lateral Stability (using the Bank Erosion Hazard Index and bank pin measurements), Meander Width Ratio, Buffer Width (based on meander belt width), Bank Erosion Hazard Index, and Near-Bank Stress. A "Functioning-at-risk" classification would require repairs or adaptive management, while a "Not functioning" classification may result in a determination of project failure and a requirement that mitigation be attained by other means (such as a mitigation bank or additional off-site mitigation). Such standards are important not only for segments with a stream design component but also for riparian-only restoration projects. The use of such standards will help to demonstrate that the selected mitigation strategy is the most appropriate and effective for the site and is capable of producing stable and functioning stream segments.

Reconstructed streams should survive a minimum of two bankfull events not less than one year apart prior to the end of the monitoring period. Survival should be defined as meeting the "Functioning" classification for the aforementioned parameters. Additionally, a jurisdictional determination should be included as a success criterion and should demonstrate that all mitigation features are functioning as waters of the U.S prior to the end of the monitoring period.

TPWD recommends the sponsor utilize the following ecological performance standards as minimum success criteria for streams in addition to demonstrating stream stability and functional (TXRAM) lift:

- For tree plantings – Planting densities and survival criteria should be based upon approved reference conditions. If no reference is provided survival success will be determined by 250 stems/acre of living tree stems over two meters tall that have been rooted for 5 years.
- For herbaceous plantings – desirable native herbaceous success will be determined by a minimum of 70 percent aerial coverage after two years.
- There should be a diversity standard at the interim and final releases such as "of the eight riparian species planted, seven will persist with each of the seven constituting not less than 5 percent of the total stems." It may be appropriate to consider the hard-mast and soft mast groups separately.
- Non-native, invasive plant species will not exceed 0 percent cover of the overstory and midstory and 1 percent cover of the herbaceous layer at the end of the monitoring period. A list of the non-native invasive plant species on the TexasInvasives.org website should be incorporated as an appendix to the site management plan. If the sponsor wishes to provide their own list, appropriate justification should be provided. Revegetation should only include the use of species native to the immediate area.

In accordance with the Guidelines, interim scores should be developed which indicate whether the Project is on an appropriate ecological lift trajectory toward the final score. Monitoring should occur until the Project attains projected TXRAM scores and all performance standards have consistently been met.

Monitoring and Long-term Management – Restored streams should be monitored for a minimum of 5 years post construction and planting, survival of two bankfull events, and until all performance standards are met. An endowment should be provided to fund long-term management of the mitigation sites. An entity should be designated as the party responsible for providing long-term management (invasive species control, fence maintenance, etc.).

Financial assurances should be developed for the short-term completion of the Project as well as for long-term maintenance. Long-term financial assurances to fund long-term management of the site, preferably in the form of a non-wasting endowment, should be provided to maintain the site in perpetuity as indicated in the Final Rule (33 CFR §332.7(d)(2)). These should be fully funded by the close of the monitoring period.

The first step of establishing the endowment is a detailed analysis of average annual costs of management activities needed to maintain and protect the Project's stream functions and conservation values. The analysis should consist of a table that shows all of the tasks (e.g., invasive species management, monitoring, reporting, etc.); task descriptions; labor (hours); cost per unit; cost, frequency, timing or scheduling of the tasks; the total annual funding necessary for each task; and any

associated assumptions for each task required by the long-term management plan or reasonably anticipated for long-term management. Cost estimates should be based on tasks implemented by a third party in present-day dollars or equipment prices in present-day dollars.

TPWD recommends the applicant include an annualized, line item cost for perpetual legal defense of the conservation easement (CE). This line item is intended to be in addition to the agreed-upon fee between the applicant and the conservation easement holder. TPWD recommends the endowment principal be in an amount sufficient to fully provide for the financial requirements of the long-term management of the Project in accordance with the long-term management plan and the costs analyzed and identified above. The endowment principal must be large enough to generate adequate funds for annual long-term management activities after adjusting for inflation and investment fees. The applicant should select and justify an appropriate capitalization rate that will provide investment earnings to be used annually for long-term management expenditures. TPWD also recommends that any endowment fund revenues (including earnings and interest) remaining after the endowment principal is adjusted for inflation that exceed the anticipated annual management expenses of the Project be retained in the endowment fund and may be made available to fund unexpected expenses and adaptive management needs.

To ensure proper use and reporting of the funds, TPWD recommends the endowment be subject to annual independent audits and transparent reporting formats. More specifically, TPWD recommends the applicant retain the services of an organization or individual with demonstrated experience in successful investment and management of non-wasting endowments.

USACE-Galveston District 404 Permit Application # SWG-2014-00412

Draft EIS Section 3.7 Waters of the U.S. and 404 Permit Application

TPWD is concerned with the Project's impact on the Gulf Coastal Plain – Coastal Prairie Habitats and Wetlands which should be more fully addressed in Section 3.7.4, regarding the affected environment of Waller and Harris Counties, and the 404 Permit.

TPWD's February 26, 2016 scoping letter expressed concerns that the proposed alignment may further fragment coastal prairie habitat, including the Katy Prairie. Consequently, TPWD recommended the Project footprint follow U.S. Highway (US) 290 through this area to the greatest extent possible. However, review of the draft EIS and the Section 404 Public Notice (PN) issued by the USACE Galveston District, indicates a significant portion of the proposed alignment for all Build Alternatives along Segment 5 deviates from US 290 and traverses undeveloped land within the Katy Prairie in Harris and Waller Counties. Additionally, large portions of undeveloped land of the Katy Prairie in Harris County south of US 290 would be impacted by the potential placement of the Houston North TMF and temporary construction areas.

Coastal prairie historically covered approximately 6.5 million acres of Texas coastal plan and has been reduced to less than one percent of its historical range (Allain et al. 1999; USGS 2000), making it one of the rarest habitat types in Texas. Coastal prairie is considered a critically imperiled ecosystem by conservation organizations (Allain et al 1999). The Katy Prairie and other nearby grasslands support a system of freshwater wetlands within a complex micro-topography of mima mounds, depressions, ancient meander scars, and relict stream levees. The complex mosaic created by slight changes in elevation and inundation provides a diverse vegetative community that supports a range of habitat

niches for a broad selection of organisms. For example, the Katy Prairie Conservancy has recorded over 300 avian species, 110 species of mammals, amphibians, and reptiles, and more than 600 species of grasses, wildflowers, trees, vines, and shrubs on the approximately 20,000 acres of Katy Prairie that has been preserved by the organization. The Katy Prairie is designated a Global Important Bird Area by National Audubon and is vitally important for migratory birds that utilize the Central Flyway. In addition to sustaining wildlife, the wetlands of the coastal prairie serve to detain and filter the abundance of precipitation that falls on the Gulf coast. The IT has been demonstrated that for each 1 percent increase in organic matter in soil, the water-holding capacity increases 20,000 gallons per acre (Bryant 2015). Yet, evaluation of the loss of coastal palustrine emergent wetlands between the mid-1950s and the early-1990s showed a 29 percent decline, or an average annual net loss of 6,355 acres (Moulton et al. 1997). Subsequent research by Texas A&M University reported the loss of freshwater coastal prairie wetlands in Harris County alone from 1992 to 2010 was approximately 29 percent (Jacob et al. 2012). Many blame the exacerbation of impacts from recent Houston floods on the loss of these prairie and wetland habitats to development.

The proposed Project would cut across the Katy Prairie in an east-west direction on an elevated embankment. While the National Wetland Inventory (NWI) labels many of the depressional wetlands as "other", review of historical Google Earth imagery clearly shows strong wetland signatures in the pattern of the typical prairie pothole complex. The proposed Project would intersect a number of these "other" wetlands, as well as several that the NWI does not label. Conceptual project plans provided with the Galveston District PN do not indicate the elevation of the embankment, but due to the gradual gradient of the coastal plains, slight disturbances in elevation can have a profound impact on hydrologic patterns. On coastal prairies, a significant amount of water that occurs from rainfall traverses the landscape as sheetflow, gradually joining streams and rivers that flow to the bays.

TPWD has concerns that the construction of an elevated embankment across the Katy Prairie would not only further fragment habitat and directly destroy wetlands, but also would impede the natural hydrologic flow of water across the landscape. This may have an impact on the hydrology of lands to the south, which include the Katy Prairie Conservancy (KPC), the Katy Prairie Stream Mitigation Umbrella Bank, the proposed Katy Hockley Mitigation Bank, and other conservation lands. Additionally, the collection and transport of rainwater in ditches running alongside the railway and then directly to receiving streams that are tributaries of Cypress Creek likely would impact the character of the streams, as well as lend to decreased water quality in the Cypress Creek watershed.

TPWD also is concerned that construction of the Project in an east-west direction through prairie lands will have a deleterious impact on the migrating and resident avian species that utilize the prairie wetlands, particularly since the proposed route is less than one mile from KPC land. A study completed by Garcia de la Morena et al (2017) found that bird mortality from high speed trains averaged 60.5 birds per kilometer per year along a 321.7 km route running at similar speeds and number of trips per day as the proposed Project and similarly passed through croplands and protected areas of ornithological interest.

Recommendation: TPWD continues to recommend avoidance and minimization of impacts within Coastal prairie wetlands and recommends that impacts to sheetflow hydrology be avoided by eliminating the utilization of an embankment or at-grade track through any prairie lands of Harris and Waller Counties. TPWD also recommends that compensatory mitigation be provided for direct impacts to all depressional wetlands within the coastal prairie complexes and particularly within the Katy Prairie.

Recommendation: If impacts to coastal prairie habitat are unavoidable, TPWD recommends the USACE consider the impacts to coastal prairie habitat and require TCR to provide additional mitigation in the form of PRM within the Katy Prairie complex. TPWD further recommends the applicant explore and implement design features that will minimize mortality to avian species.

For impacts to WOTUS including wetlands, the draft EIS presents compliance measures (WW-CMs) and permits that would be required for all Build Alternatives.

WW-CM#4 of the draft EIS is applicable to Section 404 individual permits and states that *"Any authorization USACE renders for the Project would be conditioned such that construction of each phase of the Project that impacts jurisdictional waters will not be allowed to occur until such time that each phase of the Project is designed, submitted for review and is subsequently approved by the USACE... The USACE will coordinate with applicable federal and state agencies, such as EPA, TCEQ, TPWD, USFWS, etc., as part of the permit process."*

Recommendation: TPWD is concerned with the ambiguity of the above-mentioned section because without specific Project plans TPWD is unable to provide constructive comments regarding the design plans and impacts of the Project. Therefore, TPWD recommends the USACE and FRA place special conditions within the EIS and any Section 404 permits that the applicant must provide and coordinate each phase of the Project plans for proposed impacts to any Waters of the U.S. with federal and state resource agencies and the public prior to construction activities commencing.

WW-CM#5 of the draft EIS, regarding development of a mitigation plan, states that the applicant submitted a draft mitigation plan to the USACE Fort Worth and Galveston Districts as part of the July 2016 Section 404 submittal packet. The compliance measure indicates that the draft mitigation plan includes a combination of PRM efforts (onsite and/or offsite) and purchasing mitigation credits from mitigation banks. The compliance measure states that FRA will adopt the final mitigation plan for impacts to wetlands and waters the U.S. upon USACE approval.

The applicant has furnished the TPWD – Coastal Fisheries Division with the Dallas to Houston High-Speed Rail Attachment G – Form 4345, Block 23 Mitigation Plan for USACE Permit SWG-2014-00412. As stated in both the draft EIS and the mitigation plan, the applicant proposes to mitigate only permanent impacts at each single and complete crossing of a WOTUS greater than 0.1 acre (wetlands) of 300 linear feet for streams.

Request: TPWD does not agree that the 240-mile Project's crossing over a single waterbody is a functional, complete project and requests that the applicant provide compensatory mitigation for all wetland and stream habitat impacts, including those natural features that have been altered (channelized, diked, terraced) and temporal losses.

The applicant proposes to offset impacts to wetland habitat and stream channels in the USACE Galveston District by purchasing credits from Mill Creek, Spellbottom, Katy Prairie Stream Mitigation Umbrella Bank, Greens Bayou, Houston-Conroe, Gin City, Lower Brazos and Gulf Coastal Plains Mitigation Banks, with the exclusion of 1.36 acres of potential forested impacts. Based on the USACE RIBITS database as of January 5, 2018, the Project area is not located within the primary or secondary services areas for Gin City or Gulf Coastal Plains mitigation banks. Additionally, the Waller County

and Katy Prairie (Harris County) portions of the Project site are not within the Greens Bayou or Lower Brazos Mitigation banks service areas. Currently, Mill Creek has only limited stream credits available and Spell Bottom credits are limited to forested wetlands.

Recommendation: Since the majority of the impacts within Harris and Waller Counties occur within the Gulf Coast: Coastal Prairie wetland vegetation type and there is a high potential for future cumulative impacts from the Project, TPWD recommends the applicant explore credit availability with the Katy Prairie Stream Mitigation Umbrella Bank and/or formulate a PRM plan that incorporates preservation of in-kind wetland or stream habitats within the globally significant Katy Prairie.

The applicant also proposes 1) purchasing out-of-kind wetland mitigation credits or 2) purchasing credits from a bank outside the Project's primary or secondary service area for compensatory mitigation of the 1.36 acres of forested wetland impacts within the USACE Galveston District. Forested wetlands could be considered a difficult-to-replace aquatic resource as defined in 33 CFR Part 332.2 and therefore, mitigation for forested wetland impacts should occur within the same watershed as the impacts.

Recommendation: TPWD recommends that the applicant should also not be allowed to purchase out-of-kind compensatory mitigation credits nor should they be allowed to purchase credits from a bank that does not serve the Project area for forested wetlands.

Again, TPWD is concerned by the lack of detail and conceptual nature of both the draft EIS mitigation plan and the "final" mitigation plan submitted with the application for SWG-2014-00412.

Recommendation: Because TPWD is unable to adequately review the draft mitigation plan at this time due to lack of information, TPWD recommends the USACE and FRA place special conditions within the final EIS and any Section 404 permits requiring that the applicant must provide and coordinate each phase of the Project for both proposed impacts to any Waters of the U.S. and the proposed mitigation plan for those impacts with federal and state resource agencies and the public prior to construction activities commencing. The final mitigation plan should include the calculations for the corresponding functional assessment per district (Texas Rapid Assessment Method (TXRAM) in the Fort Worth District and the Hydrogeomorphic Model (iHGM) in the Galveston District) to determine change in function and compensatory mitigation requirements associated with the impacts.

Streams are identified as a difficult-to-replace resource under the preamble and 33 CFR 332.3 (e)(3) in the Compensatory Mitigation of Losses of Aquatic Resources (73 Federal Register 19596, April 10, 2008). Ecological risk and economic risk of stream channel mitigation failure can be higher due to the difficult-to-replace nature of streams.

Recommendation: In addition to following the defined performance standards listed within EPA's Function-Based Framework for Stream Assessment & Restoration Projects, TPWD recommends the applicant implement the Galveston District's Level 1 (<500 linear feet) or Level 2 (>500 linear feet) Stream Condition Assessment Tool Standard Operating Procedures (GDSCAT SOP) to assess the current functional condition of the stream for mitigation determination. The GDSCAT assists in determining the relative potential of the stream to support and maintain a diverse community of organisms by visually assessing hydrogeomorphic and fluvial geomorphic

characteristics such as active floodplain width/depth ratios, bed elevation and floodplain storage and releases. Pre- and post-construction surveys using the appropriate Level (1 or 2) of the GDSCAT should be completed in order to determine appropriate stream credits or for developing a PRM for all stream crossings even if impacts per crossing are less than 300 linear feet.

Recommendation: If the sufficient types or amounts of wetland or stream in–kind credits are not available with the primary service area of an approved mitigation bank, TPWD recommends the applicant formulate a PRM plan within the same watershed(s) impacted, containing all the components of identified in 33 CRF §332.4(c)(2) through(c)(13) of the Mitigation Rule issued on July 10, 2008.

Recommendation: In addition, if the applicant develops a PRM plan, TPWD recommends that the applicant place a third-party, perpetual conservation easement on the proposed mitigation site in which a conservation easement should be in place within 180 days of permit issuance and be held by a qualified land trust for the purpose of conserving fish and wildlife habitat. A list of land trusts in the State of Texas can be found on the Texas Land Trust Council's website.

References

Allain, L., M. Vidrine, V. Grafe, C. Allen and S. Johnson. 1999. Paradise lost? The coastal prairie of Louisiana and Texas. U. S. Fish and Wildlife Service and U. S. Geological Survey. 39 pp.

Bryant, Lara. 2015. Organic matter can improve your soil's water holding capacity. Natural Resources Defense Council. Accessed from: https://www.nrdc.org/experts/lara-bryant/organic-matter-can-improve-your-soils-water-holding-capacity.

California Department of Transportation (CalTrans). 2016. Technical Guidance for the Assessment and Mitigation of the Effects of Traffic Noise and Road Construction Noise on Bats. July. (Contract 43A0306.) Sacramento, CA. Prepared by ICF International, Sacramento, CA, and West Ecosystems Analysis, Inc., Davis, CA. Accessed from: http://www.dot.ca.gov/hq/env/noise/pub/FINAL_CaltransNoiseEffectsonBats_7-6-16.pdf.

Carman, Drew. 2014. Fort Boggy State Park Facility Development Plan, Texas Parks and Wildlife Department, State Parks Division, Planning and Geospatial Resources. 45 pp.

Garcia de la Morena, Eladio L., Juan E. Malo, Israel Hervas, Cristina Mata, Sebatian Gonsalez, Ramon Morales and Jesus Herranz. 2017. On-board video recording unravels bird behavior and mortality produced by high-speed trains. Frontiers in Ecology and Evolution. 05 October 2017. Accessed from: https://www.frontiersin.org/articles/10.3389/fevo.2017.00117/full.

Jacob, John S., Kirana Pandian, Ricardo Lopez, and Heather Biggs. 2012. Houston-Area Freshwater Wetland Loss, 1992 – 2010. Texas A&M University System. Accessed from: http://tcwp.tamu.edu/wetlands/wetland-loss/.

Moulton, D.W., T. E. Dahl and D.M. Dall. 1997. Texas Coastal Wetlands Status and Trends Mid-1950's to Early-1990's. United States Department of the Interior Fish and Wildlife Service Southwestern Region Albuquerque, New Mexico. Accessed from:

https://www.fws.gov/wetlands/Documents/Texas-Coastal-Wetlands-Status-and-Trends-mid-1950s-to-early-1990s.pdf.

Singhurst, JR, N. Shackelford, W. Newman, J.N. Mink, and W.C. Holmes. 2014. The ecology and abundance of *Hymenoxys texana* (Asteraceae). Phytoneuron 2014-19: 1-19. Published 21 January 2014. ISSN 2153 733X.

Smith, Holly J. and Justin S. Stevenson. 2015. Best Management Practices for Bat Species Inhabiting Transportation Infrastructure. Adapted from Smith, H. J., and J. S. Stevenson. 2013. Linking conservation and transportation: a bats in bridges report. New Mexico Department of Transportation Task No. 5372-33. Accessed from: http://www.ct.gov/dot/lib/dot/documents/dpolicy/waternoisecompliance/helpfuldesign/Bat_BMP's.pdf.

USGS (U.S. Geological Survey). 2000. Coastal prairie. FS-019-00. National Wetlands Research Center, Lafayette, LA.