



Final Cumulative Impacts Analysis

US 87

From east of US 385 to FM 2589 west of Dumas

Hartley and Moore County, Texas

CSJ Number(s): 0425-01-021, 0425-01-022, 0425-02-037, 0425-02-038, and 0425-02-040

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Attachment

Cumulative Impacts Study Area Map

Introduction

The proposed project consists of widening of the existing United States Highway (US) 87 from east of US 385 to Farm-to-Market (FM) 2589 west of Dumas to a four-lane divided highway. Widening of US 87 would occur to the north of the existing right-of-way (ROW) from east of the US 385 Interchange to 0.35 miles east of County Road (CR) 47/Monsanto Road and transition to widen completely to the south of the existing ROW 0.75 miles east of CR 47/Monsanto Road with the widening continuing to the south of the existing ROW to FM 2589. The proposed total ROW width varies from 210- to 250-feet. The existing pavement would be preserved to accommodate two 12-foot lanes, a 10-foot outside shoulder, and a 4-foot inside shoulder. Two additional 12-foot lanes, a 10-foot outside shoulder, and a 4-foot inside shoulder would be constructed in the proposed ROW. The eastbound and westbound lanes would be separated by a 68-foot depressed median. Drainage improvements associated with the project will extend east of FM 2589 approximately 5,200 feet along the north side of US 87.

Cumulative Impacts

Council on Environmental Quality (CEQ) regulations (40 C.F.R. § 1508.7) define cumulative impacts (i.e., effects) as “the impact on the environment which results from the incremental impact of the proposed action when added to other past, present and reasonably foreseeable future actions.” The purpose of cumulative impacts analysis is to view the direct and indirect impacts of the proposed project within the larger context of past, present, and future activities that are independent of the proposed project, but which are likely to affect the same resources in the future. This approach allows for an evaluation of the incremental impacts of the proposed Build Alternative considering the overall health and abundance of selected resources.

The following five-step approach as described in TxDOT’s Cumulative Impacts Analysis Guidelines (January 2019), was used to assess the potential cumulative impacts of the past, present, and reasonably foreseeable actions to the resources in the project area:

1. Resource Study Area, Conditions and Trends
2. Direct and Indirect Effects on Each Resource from the Proposed Project
3. Other Actions – Past, Present, and Reasonably Foreseeable – and their Effect on Each Resource
4. The Overall Effects of the Proposed Project Combined with other Actions
5. Mitigation of Cumulative Impacts

All the resource categories considered in the environmental assessment for the proposed project are candidates for the cumulative impacts analysis. The initial step of the cumulative impacts analysis uses information from the evaluation of direct and indirect impacts in the selection of environmental resources that should be evaluated for cumulative impacts. TxDOT’s Guidance states: “If a project will not cause direct or indirect impacts on a resource, it will not contribute to a cumulative impact on that resource”.

The resources or environmental issues considered for cumulative impacts assessment are listed in **Table 1**. As recommended by CEQ guidance, specific indicators of each resource's condition are identified and shown. The use of indicators of a resource's health, abundance, and/or integrity are helpful tools in formulating quantitative or qualitative metrics for characterizing overall impacts to resources. These indicators are also key aspects of each resource that have already been evaluated in terms of the project's direct and indirect impacts and facilitate greater consistency and objectivity in the analysis of cumulative impacts.

Table 1: Resources Considered for Cumulative Impacts

Resource or Topic Evaluated	Resource/ Topic Directly Impacted?	Resource/ Topic be Indirectly Impacted?	Are Impacts Substantial?	Is Resource in Poor/ Declining Health?	Included in Cumulative Impacts Analysis?	Explanation For Including or Excluding the Resource or Topic from Cumulative Effects Analysis
Air Quality	No	No	N/A	No	No	Excluded because neither direct nor indirect impacts are anticipated.
Traffic Noise	Yes	No	No	N/A	No	Excluded because indirect impacts are not anticipated, and the direct impacts are not substantial to warrant a cumulative impacts analysis.
Section 4f/ Section 6f	No	No	N/A	N/A	No	Excluded because neither direct nor indirect impacts are anticipated.
Visual/Aesthetics	No	No	N/A	N/A	No	Excluded because neither direct nor indirect impacts are anticipated.
Biological Resources						
Threatened and Endangered Species	No	No	N/A	Yes	No	Excluded because neither direct nor indirect impacts are anticipated.

Resource or Topic Evaluated	Resource/ Topic Directly Impacted?	Resource/ Topic be Indirectly Impacted?	Are Impacts Substantial?	Is Resource in Poor/ Declining Health?	Included in Cumulative Impacts Analysis?	Explanation For Including or Excluding the Resource or Topic from Cumulative Effects Analysis
Migratory Birds	No	No	N/A	Yes	No	Excluded because neither direct nor indirect impacts are anticipated.
Vegetation and Wildlife Habitat	Yes	No	Yes	No	Yes	Included because direct impacts are anticipated.
Soils	No	No	N/A	No	No	Excluded because neither direct nor indirect impacts are anticipated.
Farmland	Yes	No	No	No	No	Excluded because indirect impacts are not anticipated, and the direct impacts are not substantial to warrant a cumulative impacts analysis.
Socioeconomic						
Community Cohesion	No	No	N/A	N/A	No	Excluded because neither direct nor indirect impacts are anticipated.
EJ Populations	No	No	N/A	N/A	No	Excluded because neither direct nor indirect impacts are anticipated.
LEP Populations	No	No	N/A	N/A	No	Excluded because neither direct nor indirect impacts are anticipated.
Public Facilities and Services	No	No	N/A	N/A	No	Excluded because neither direct nor indirect impacts are anticipated.

Resource or Topic Evaluated	Resource/ Topic Directly Impacted?	Resource/ Topic be Indirectly Impacted?	Are Impacts Substantial?	Is Resource in Poor/ Declining Health?	Included in Cumulative Impacts Analysis?	Explanation For Including or Excluding the Resource or Topic from Cumulative Effects Analysis
Cultural Resources						
Historic Properties	No	No	N/A	N/A	No	Excluded because neither direct nor indirect impacts are anticipated.
Archeological Resources	No	No	N/A	N/A	No	Excluded because neither direct nor indirect impacts are anticipated.
Water Resources						
Groundwater	No	No	N/A	N/A	No	Excluded because neither direct nor indirect impacts are anticipated.
Threatened or Impaired Waters	No	No	N/A	N/A	No	Excluded because neither direct nor indirect impacts are anticipated.
Navigable Waters	No	No	N/A	N/A	No	Excluded because neither direct nor indirect impacts are anticipated.
Wetlands and Jurisdictional Waters of the U.S.	No	No	N/A	N/A	No	Excluded because neither direct nor indirect impacts are anticipated.
Floodplains	No	No	N/A	N/A	No	Excluded because neither direct nor indirect impacts are anticipated.
Water Quality	No	No	N/A	N/A	No	Excluded because neither direct nor indirect impacts are anticipated.

Source: Project Team, 2021.

As documented in the technical reports and forms prepared for the proposed project and listed in **Table 1**, it was determined that the proposed action would not have considerable direct or indirect

impacts on the following resources: community cohesion; environmental justice and limited English proficiency populations; public facilities and services; Section 4(f) and 6(f) properties; visual aesthetics, historic properties; archeological resources; air quality, threatened and endangered species; topography and soils; groundwater; lakes, rivers, and streams; waters of the U.S., including wetlands; water quality; and floodplains. Therefore, a cumulative impacts analysis on these resources are not warranted.

Vegetation and Wildlife Habitat

Cumulative impacts are analyzed in terms of the specific resource being affected. The resource eligible for cumulative impacts analysis is vegetation and wildlife habitat because the direct effects of the proposed ROW vegetation would result in land use conversion to transportation use and is evaluated for cumulative effects. The following sections present the information following steps 1 through 5 of the cumulative analysis for vegetation and wildlife habitat.

Resource Study Area, Conditions and Trends

A Resource Study Area (RSA) has both temporal and geographic components. The temporal component of the RSA is the timeframe in which effects to resources are expected to occur. A starting temporal boundary of 2005 is used because it was the latest substantial development in the project limits of the Faria Dumas Dairy that could be determined using historical aerials and Google Earth aerial imagery. It also reflects other farm establishments during the same time period. The temporal boundary extends to 2043, the horizon year for the proposed project.

Due to laws and regulations concerning Waters of the U.S. and associated floodplains, agricultural practices and residential/commercial development usually avoid streams and their associated floodplains and can leave portions of pristine habitat in place. For this reason, quality wildlife habitat and vegetation are usually found within stream systems, adjacent to intermittent and perennial streams. The proposed project is located within four sub-watersheds. The geographical RSA for vegetation and wildlife used in this analysis consists of these sub-watersheds because it supports the vegetation, wildlife habitat, and waters most likely to be affected by the proposed project. The RSA captures portions of Hartley and Moore Counties. The RSA totals approximately 111,508 acres. A map of the RSA is shown on the **Cumulative Impacts Resource Study Area Map**.

The RSA is located within the High Plains and Rolling Plains Ecological Regions, which is historically dominated by prairies and grasslands. This region includes over 20,000 playa lakes supporting over 240,000 species of wildlife including endangered and threatened species. Existing wildlife habitat and vegetation is declining in the region due to large scale landscapes fragmented by agricultural production, oil and gas production, wind farm development and other commercial development. Over time, agriculture has come to dominate the region leading to fragmentation of a once continuous habitat. With competition for food and cover with livestock, conversion of native shortgrass prairie

habitat to improved pastures or other agricultural developments, and urban and rural developments, varying levels of decline in the density and diversity of wildlife can be seen today.¹

The RSA includes the City of Hartley and portions of Hartley and Moore Counties. Historic aerial imagery and topographic maps were reviewed to determine the development trend in the RSA. Comparing historical aerials from 1970 to 1997, large land conversion to agricultural land production occurred on several large parcels and covers most of the study area. Historically, farming and agricultural production was already a dominating land use in this area and can be observed in historical aerials prior to 1970. The City of Hartley and nearby Dumas have areas of development broken up by large tracts of agricultural and undeveloped land. Little redevelopment and development of large-scale construction were identified; however, a second wave of growth was observed in the mid-2000s when several dairy and agricultural businesses were established in the area. Likewise, the population in this area grew during this same time period.

Population in Moore and Hartley Counties have remained generally stable within the last 20 years. In the 2000 census, the total population for Moore County was 20,121 and 5,537 for Hartley County. The total population for Moore County was 21,904 and 6,064 for Hartley County in the 2010 census. Hartley grew in population approximately 9.5 percent from 2000 to 2010. Moore County grew in population for the same amount from 2000 to 2010 to the same degree (approximately 8.9 percent). The U.S. Census Bureau estimates a total population of 20,940 in 2019 for Moore County and 5,576 for Hartley County in 2019. These 2019 numbers represent a decrease in population in recent years, showing a four and eight percent decrease respectively from the 2010 Census total population numbers.

Direct and Indirect Effects from the Proposed Project

The proposed project would require approximately 258 acres of proposed ROW. The direct effects to vegetation and wildlife habitat would result from the conversion of the 258 acres of proposed ROW to urban transportation use. The addition of the proposed 258 acres to the approximately 430 acres of the existing transportation use ROW would result in a total of approximately 688 acres for the proposed US 87 improvements. No indirect effects to vegetation and wildlife habitat are anticipated from the proposed project. The proposed and existing ROW acres of the proposed project are shown by EMST MOU² observed habitat type in **Table 2**. The total acreage of proposed and existing right of way consists of approximately 0.6 percent of the entire RSA.

¹ <https://tpwd.texas.gov/education/hunter-education/online-course/wildlife-conservation/texas-ecoregions>

² EMST MOU habitat types are from the Ecological Management System Tool used for the biological and TIER I site assessments for the proposed project and completed in accordance with the Memorandum of Understanding between TxDOT and Texas Parks and Wildlife Department.

Table 2: US 87 Proposed and Existing Acreage by Observed EMST MOU Habitat

Habitat Type	Acres
Agriculture	34.6
Disturbed prairie	239.3
Playa	0.7
Riparian	1.8
Urban	411.5
Total Acreage	687.9

Source: Project Team, 2021.

Other Actions – Past, Present and Reasonably Foreseeable – and their Effect on each Resource

The cumulative impacts analysis considers the combined effects of past, present, and reasonably foreseeable actions on the resources analyzed. To identify other past, present, and reasonably foreseeable actions within the RSA, various data sources were evaluated and used including aerial imagery, appraisal district databases, and planned development information from local cities, counties, school districts and economic development organizations. Past actions include construction of businesses and other developments that have created the landscape that currently exists. Past developments include dairy farms, energy production and other agricultural production companies and businesses. As a result of past actions within the RSA, the existing EMST MOU habitat of the entire RSA consists of various habitat types and is listed by acreage in **Table 3**.

Table 3: Existing EMST MOU Habitat Types in the Entire RSA

Habitat Type	Acres
Agriculture	80,327
Disturbed prairie	18,777
Playa	731
Riparian	260
Urban	11,413
Total Acreage	111,508

Source: Project Team, 2021.

Other present and reasonably foreseeable actions are primarily focused on large-scale development projects in the study area in consideration of the larger scaled parcels and land holdings typical of the area. Referencing the TxDOT project tracker database, several transportation projects were identified within the study area and are included in **Table 4**. Local school district plans are also included in **Table 4** and reflects the Dumas Independent School District (DISD) Bond Program that was recently approved by voters to construct three new elementary schools and improve existing facilities.

Table 4: Other Present and Reasonably Foreseeable Actions

Project	Description	Year Built/ To Be Built
US 385	Seal Coat from Hartley to Channing	Construction underway or soon to begin
US 87	Seal Coat from US 385 to US 287	Construction underway or soon to begin
US 385	Rehabilitation of existing roadway / Safety improvements from US 87 in Hartley to Channing (14.5 miles)	Begins in 4 years
US 87	Seal coat from south of Dalhart to US 87/385 split.	Begins in 4 years
FM 807	Highway improvements/ Rehabilitation from FM 281 to US 87 (11.7 miles)	Begins in 5 to 10 years
2019 DISD Bond Program	Construction of new school locations and various improvements to existing facilities	Improvements soon to begin and construction of new facilities from approximately 1 to 3 years.

Source: Project Team, 2021.

Among the five reasonably foreseeable transportation projects identified within the RSA, three of these projects are identified to be seal coat improvements. These projects typically do not require additional ROW and would generally consist of repaving of existing roadways and remaining within the existing right-of-way; therefore, no additional acreage of wildlife habitat and vegetation would be required and impacted. The remaining two projects are rehabilitation projects with unknown proposed ROW requirements. A 50-foot buffer from either side of the roadway was estimated for analysis purposes only. The buffer would provide sufficient estimate to provide moderate widening if included in the proposed projects. The 50-foot buffer along the limits of each of the projects and staying within the RSA boundaries, a total of 66 acres of potential impact is estimated for both FM 807 and US 385 rehabilitation transportation projects.

New schools proposed in the 2019 DISD Bond program include one elementary school in Cactus, located outside the study area. Two additional schools are proposed within the DISD area that includes most of Moore County; however, exact locations have not yet been determined. Reviewing the typical acreage of existing schools in the district, it can be estimated to be approximately 10 to 15 acres for a new school location totaling 30 acres of potential impact for two new school locations. Referencing the economic development companies and chamber of commerce entities in the area, no major reasonably foreseeable developments are anticipated. Energy, dairy and agricultural production businesses dominate this landscape; however, research also found no reasonably foreseeable large-scale developments anticipated in these industries within the study area.

Potential cumulative impacts considered and discussed include direct impacts to vegetation and wildlife habitat as a result of implementation of the proposed project in combination with the effects of potential induced growth and other past, present, and reasonably foreseeable actions. For the purposes of this analysis, it was assumed that any of the past, present, and reasonably foreseeable actions would impact all the native vegetation and wildlife habitat within the confines of the development; however, the new school locations have not yet been determined and specific habitat type impacts cannot be determined at this time; however, it is likely that the school location would be in an urban habitat type location. Total vegetation impacts by other past, present and reasonably foreseeable actions total approximately 96 acres. Impacts to non-urban vegetation total approximately 42 acres.

The Overall Effects of the Proposed Project Combined with Other Actions

The cumulative impacts on non-urban vegetation and wildlife habitat resulting from the proposed project is approximately 688 acres of proposed and existing direct impacts, no acres from induced growth impacts, and 96 acres of impacts from other past, present, and reasonably foreseeable actions would total approximately 784 acres. The cumulative impacts to vegetation and wildlife habitat would affect about 0.3 percent of the approximately 100,095 acres of non-Urban MOU Habitat-type vegetation within the RSA.

Table 5 summarizes the information gathered in Steps 1 through 4 and presents the potential cumulative impacts to vegetation and wildlife habitat.

Table 5: Total Cumulative Impacts

Habitat Type	Existing and Proposed Direct Impacts	Other Past, Present and Reasonably Foreseeable Actions	Total Acreage
Agriculture	34.6	2	36.6
Disturbed prairie	239.3	40	279.3
Playa	0.7	0	0.7
Riparian	1.8	0	1.8
Urban	411.5	54	465.5
Total Acreage	687.9	96	783.9

Source: Project Team, 2021.

While cumulative impacts would affect approximately 318 acres of non-Urban MOU Habitat-type vegetation and potential wildlife habitat, it is likely that most of the wildlife that resides in the RSA would migrate to other areas of available non-human-altered habitat. The vegetation and intermittent streams surrounding the proposed project are connected to other nearby vegetated areas, creating open corridors that can be used by aerial and terrestrial animals. Development within the RSA could fragment existing vegetation into small, distinct segments surrounded by manmade structures instead of the existing continuous corridors, effectively removing travel corridors for many animals.

In the context of the entire RSA studied, an impact of 0.3 percent of non-urban habitat-type vegetation is not considered substantial. Based on the continued availability of protected habitat areas along streams and riparian corridors, the potential cumulative impact occurring over a 44-year period, allowing for resource recovery; and assuming appropriate implementation of regulated avoidance, minimization, and mitigation strategies for vegetation and habitat impacts, the proposed project would not contribute to substantial cumulative impacts to the area's vegetation and habitat.

Mitigation of Cumulative Effects

The proposed project would not substantially contribute to cumulative impacts on vegetation; therefore, no mitigation is offered for potentially impacted vegetation as a result of the proposed project. Incorporating parks, open spaces, and riparian corridors around and within developed areas would provide wildlife habitat and shelter. Planting these areas with native fruit or nut-bearing trees and shrubs, and native grain-bearing grasses would provide food for wildlife and would help to mitigate impacts to habitat used by wildlife. This mitigation could be conducted by whoever is responsible for the impact such as a city or a developer. Private development within the associated municipalities within the RSA (City of Hartley and Hartley and Moore Counties) would be subject to the laws and ordinances regulating residential, commercial and industrial development set by each municipal government. Local municipalities and entities can manage growth issues through local ordinances, such as zoning and land use ordinances. Overall, the expected foreseeable impacts would be compatible with local plans and goals.

Private developers would not be subject to the FPPA for impacts to prime farmland soils and farmland soils of statewide importance. The Texas Farm and Ranch Lands Conservation Program (TFRLCP), created in 2005, is a grant-making program that provides landowners with financial incentives to conserve their land and productivity through Agricultural Conservation Easements. These easements restrict all future development while allowing the landowner to continue farming or ranching (American Farmland Trust, 2009). The TFRLCP was transferred from the Texas General Land Office (GLO) to TPWD in 2016. Approved grant projects awarded by the Texas GLO range in size from 175 acres to 2,995 acres and by the TPWD range in size from 144 acres to 7,229 acres. According to USDA 2017 Census of Agriculture County Profiles, the average farm size in Hartley County is approximately 4,000 acres and approximately 1,900 acres in Moore County. This type of program would be effective mitigation within the RSA.