



Draft Cumulative Impact Analysis

State Loop (SL) 335, Segment C-2

District: Amarillo

Limits: From Farm-to-Market (FM) 1719 to Echo Street

CSJ Number: 2635-04-040; 2635-01-040

Location: Potter County, Texas

November 2020

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by the Texas Department of Transportation (TxDOT) pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 9, 2019, and executed by the Federal Highway Administration and TxDOT.

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1 Project Overview

The Texas Department of Transportation (TxDOT) proposes improvements to State Loop (SL) 335 from Farm-to-Market (FM) 1719 to Echo Street and from north of Cherry Avenue to south of River Road along US 87. SL 335 creates a circumferential loop around the City of Amarillo and is divided into 10 segments. The proposed improvements between FM 1719 and Echo Street are within Segment C-2. Proposed improvements and project location maps can be found in TxDOT's Environmental Compliance Oversight System (ECOS).

2 Cumulative Impacts

The requirement to assess cumulative impacts of a proposed project is established in the Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act (NEPA) for federal actions and in TxDOT's environmental review rules (43 TAC 2). Per the regulations, cumulative impacts are defined as:

..the impact on the environment which results from the incremental impact of a project when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

As stated in TxDOT guidance, the concept of "cumulative effects" considers that development projects can lead to further development and every resource has a limited capacity to sustain effects. A resource can only absorb so many additional effects before it fails. Simply stated, analyzing cumulative effects addresses the sustainability of a resource.

The cumulative effects analysis for this project follows the TxDOT's Cumulative Impacts Analysis Guidelines (January 2019). The guidelines describe a five-step process for determining potential cumulative impacts, which are noted below:

1. Define the resource study area (RSA), conditions, and trends
2. Identify direct and indirect effects on each resource from the proposed project
3. Identify other actions (past, present, and reasonably foreseeable) and their effect on each resource
4. Determine the overall effects of the project combined with other actions
5. Identify mitigation if applicable

The following sections will discuss the steps used in the analysis and document the outcome as it relates to the current proposed project.

2.1 Step 1: Resource Study Area, Conditions, and Trends

Prior to the cumulative analysis, resources for cumulative impact analysis must be determined and documented, which is accomplished by conducting an overview of the proposed project's direct and indirect effects. The determination will also document which resources were not carried forward into

the cumulative analysis based on the project having no direct or indirect effects on a resource, resulting in no need to perform a cumulative impact analysis (AASHTO 2011). Once the resources that will be analyzed for cumulative effects are identified, Step 1 will: 1) summarize the resources' current conditions and trends, 2) define the RSA for each affected resource, and 3) establish a timeframe for the analysis.

Direct and Indirect Impacts Overview

Cumulative impacts are typically determined based on the presence of direct and indirect impacts. **Table 1** provides an overview of the proposed project's anticipated direct and indirect impacts and notes whether a cumulative impact analysis will be performed for the resource.

Table 1. Direct and Indirect Impacts Overview

| Resource | Description of Direct Impact | Description of Indirect Impact | Resource in Poor or Declining Health? | Considered for Cumulative Impact Analysis? |
|-------------------------|--|--|---|--|
| Air Quality | None; mobile source air toxic (MSAT) emissions are anticipated to be reduced due to the reduced vehicle miles traveled associated with more direct routing, and because of the Environmental Protection Agency's MSAT reduction programs. | None | No, the project is not located in an area of nonattainment | No |
| Archeological Resources | None; no historic or prehistoric archeological sites were documented in the project area. | None | No, federal and state regulations exist that protect archeological sites from publicly funded projects | No |
| Biological Resources | Impacts are anticipated to protected vegetation including disturbed prairie; mixed/ arid/ sand grasslands; and western wetlands, and riparian habitats. The project may impact, although not likely to adversely impact, the following state-listed species: Woodhouse's toad, mountain plover, western burrowing owl, peppered chub, American badger, cave myotis bat, eastern spotted skunk, prairie vole, swift fox, thirteen-lined ground squirrel, and Texas horned lizard. No impacts to federally-listed species are anticipated. The proposed project could impact approximately 80 acres of prime farmland soils. | Encroachment effects include fragmented vegetation and habitats, which could result in reduced movement of wildlife and vulnerability of remaining vegetated and prime farmland soil areas. | Yes, due to increasing urbanization and past industrial and commercial activities | Yes |
| Community Impacts | No adverse impacts anticipated to community cohesion, or access and travel patterns. Approximately 33 residences would be displaced due to ROW acquisition, including 18 single-family homes and 15 mobile homes. Approximately seven business would be displaced by ROW acquisition. Residences and businesses available for sale and/or rent appeared to sufficiently accommodate relocations. Two churches would lose existing parking spaces but sufficient space to expand exists. | None | No, community resources are likely increasing due to population growth | No |
| Hazardous Materials | There were two sites that were recommended for further investigation for potential of hazardous materials or soil and/or groundwater contamination concerns from two potentially acquired parcels. | If additional investigation finds that cleanup activities are warranted, TxDOT would follow federal, state, and local guidance and regulations, which would mitigate further indirect contamination to nearby locations. | No, any hazardous material sites would be regulated by federal, state, and local guidance, and some sites (e.g. gas stations) are likely to increase to service population growth | No |
| Historic Resources | There were 94 historic-age properties within the APE, which includes a 150-foot buffer from the proposed project. Of those properties, three are recommended for listing in the National Register of Historic Places (NRHP) and two are recommended for further study for inclusion. Both properties recommended for further study and one of the properties recommended for listing in the NRHP would be directly impacted by the proposed project. | The proposed project is not anticipated to diminish the integrity of any of the historic properties. Further, both direct and indirect impacts to historic resources are mitigated through coordination with the State Historic Preservation Officer as outlined in Section 106 of the National Historic Preservation Act. | No, federal and state regulations exist that avoid, minimize, and mitigate impacts to historically significant structures resulting from publicly funded projects | No |
| Noise | 24 out of 46 representative receivers would be impacted by the proposed project's increase in traffic noise from current levels. Noise barriers were reviewed at the impacted representative receivers to determine whether they would be reasonable and feasible. One of the potential noise barriers at the representative receivers was deemed reasonable and feasible. | None | None | No |
| Parks, Recreation Areas | The proposed project would not require any ROW from parks or recreational areas. | None | No, no impacts to parks/recreational areas | No |
| Visual/Aesthetics | None; not anticipated to create adverse visual impacts and determined to be visually compatible with existing conditions | None | No, the proposed visual character of the project area is consistent with the existing character | No |

| Resource | Description of Direct Impact | Description of Indirect Impact | Resource in Poor or Declining Health? | Considered for Cumulative Impact Analysis? |
|-----------------|---|---|---|--|
| Water Resources | There are anticipated impacts to six of eight stream crossings within the project area. No potentially jurisdictional streams are anticipated to be impacted by the project. Any potential floodplain impacts will be addressed through FHWA, TxDOT, county, and local design policies and standards. In addition, coordination with the local floodplain administrator would be required for proposed impacts within the limits of the 100-year (base) floodplain. | TxDOT mitigation measures and best management practices (BMPs) will help to mitigate possible direct and indirect impacts to waters of the U.S. Specific indirect impacts include water quality impacts that are similar to direct impacts, such as increased runoff based on increased impervious cover, and are addressed programmatically through TxDOT's MS4 program. | Waters of the U.S., including wetlands, and floodplains are considered in poor or declining health due to reduction from urbanization. However, USACE, FEMA, and local communities regulate activities impacting these resources and future development would abide by these regulations. | No |

Based on the direct and indirect impacts of the proposed project, the cumulative analysis will examine the potential cumulative impacts to biological resources using TxDOT's five-step process. The following section will discuss biological resources' current conditions and trends and identify the RSA.

2.1.1 Biological Resource Study Area (RSA)

The three biological resources with the potential for direct, indirect, and cumulative impacts include vegetation, state-protected species, and prime farmland soils with potential to occur within the RSA. Vegetation, protected species, and prime farmland soils present within the project area have wide-spanning ranges that would be unreasonable to review as part of this assessment. In order to provide a more practical consideration of the proposed project's contribution to the cumulative effects, the RSA for biological resources is the area bound by the four watersheds that encompass the proposed project area and the entire SL 335. These watersheds include West Amarillo Creek-Canadian River (HUC-10 1109010503), East Amarillo Creek-Canadian River (HUC-10 1109010504), Upper McClellan Creek (HUC-10 1112030101), and Headwaters Prairie Dog Town Fork Red River (HUC-10 1112010301). A map of the RSA is found in **Appendix A**.

The temporal RSA, which is the timeframe in which effects to resources are reviewed, is from 1940 to 2045. The year 2045 was selected because it is the planning year for the most recent Amarillo MPO's long-range plan, and 1940 because this is the approximate time that Amarillo Army Air Base, a major employment center at the time, was established. Opening of the Army Air Base, and eventually closing in the 1960s, played a major role in population and employment growth in the area.

Current Conditions and Trends

The proposed project area is within the Amarillo metropolitan area, which has been moderately impacted by human activities. The degree and extent of the changes in habitat and natural vegetation have directly influenced the number of wildlife and vegetation species found in the area. Historic and current actions, such as clear cutting for agriculture and ranching, oil and gas exploration, predator control, use of pesticides, and various forms of air, water, and land pollution, have contributed to declines in the condition of biological resources. The remaining wildlife and vegetation occur in modified natural habitats within the immediate vicinity of encroaching urban areas and include domesticated species and invasive vegetation. Outside of the urbanized areas, the natural habitat remains unmodified or is used for ranching and agricultural purposes. These unmodified or agricultural habitats currently face conversion to large lot residences. This conversion has already occurred near the proposed project area as evidenced by the multiple residences found along SL 335 to the east of the US 87 intersection and the southern portion of US 87. The conversion to more impactful land uses (e.g. residential, commercial uses) is anticipated to continue throughout the RSA. As evidenced by the projected population and employment growth, urbanization is anticipated to continue to be an influential effect on biological resources throughout the region.

2.2 Step 2 – Direct and Indirect Effects of Each Resources

As noted in **Table 1**, direct and indirect impacts are anticipated for biological resources, making it necessary to analyze the potential for cumulative impacts. The direct and indirect impacts to biological resources by the proposed project are summarized below. Detailed discussion on impacts can be found in the **Biological Evaluation Form** and the **Tier I Site Assessment Form**.

Direct impacts to biological resources were analyzed by determining the project’s impact on threatened and endangered species, vegetation, and protected farmland soils. The proposed project is in range of five federally listed species and over 20 state protected species. No federally listed species are anticipated to be impacted by the proposed project. The proposed project is within range and suitable habitat of several state protected species. Potential impacts to these state-listed species are noted in **Table 2**.

Table 2. Direct Impacts to State-Listed Species

| Species | State Status* | Impact Determination |
|--|---------------|----------------------|
| Texas horned lizard (<i>Phrynosoma cornutum</i>) | T | May impact |
| Woodhouse's toad (<i>Anaxyrus woodhousii</i>) | SGCN | May impact |
| Mountain plover (<i>Charadrius montanus</i>) | SGCN | May impact |
| Western burrowing owl (<i>Athene cunicularia hypugaea</i>) | SGCN | May impact |
| Peppered chub (<i>Macrhybopsis tetranema</i>) | SGCN | May impact |
| American badger (<i>Taxidea taxus</i>) | SGCN | May impact |
| Cave myotis bat (<i>Myotis velifer</i>) | SGCN | May impact |
| Eastern spotted skunk (<i>Spilogale putorius</i>) | SGCN | May impact |
| Prairie vole (<i>Microtus ochrogaster taylori</i>) | SGCN | May impact |
| Swift fox (<i>Vulpes velox</i>) | SGCN | May impact |
| Thirteen-lined ground squirrel (<i>Ictidomys tridecemlineatus</i>) | SGCN | May impact |
| Massasauga (<i>Sistrurus tergeminus</i>) | SGCN | May impact |
| Western box turtle (<i>Terrapene ornate</i>) | SGCN | May impact |
| Western hognose snake (<i>Heterodon nasicus</i>) | SGCN | May impact |
| Western rattlesnake (<i>Crotalus viridis</i>) | SGCN | May impact |

*SGCN = Species of Greatest Conservation Need; E = State-Listed Endangered; T = State-Listed Threatened

As noted in the table, the proposed project is anticipated to potentially impact habitat for the one state-threatened species and 14 SGCN species.

The proposed project would also impact vegetation by converting existing vegetation habitats to transportation uses. Direct impacts to vegetation habitats are noted in **Table 3**.

Table 3. Direct Vegetation Impacts

| Vegetation Type | Impacted Acreage |
|---|------------------|
| CRP/Other Improved Grassland | 1.65 |
| Native Invasive: Mesquite Shrubland | 49.61 |
| High Plains: Shortgrass Prairie | 12.12 |
| Rolling Plains: Mixedgrass Prairie | 4.98 |
| Urban Low Intensity | 188.93 |
| High Plains: Floodplain Deciduous Shrubland | 2.23 |
| High Plains: Floodplain Herbaceous Vegetation | 4.31 |
| High Plains: Riparian Deciduous Shrubland | 6.59 |
| High Plains: Riparian Hardwood Forest | 5.24 |

The last potential direct impact due to the proposed project is to prime farmland soils. The majority of soils found within the proposed project area are considered prime farmland soil. These soil types include the following:

- Acuff loam, 1 to 3 percent slopes;
- AcC—Acuff loam, 3 to 5 percent slopes;
- Bippus clay loam, 0 to 1 percent slopes, occasionally flooded, cool;
- Estacado clay loam, 0 to 1 percent slopes;
- EcB—Estacado clay loam, 1 to 3 percent slopes;
- Olton clay loam, 0 to 1 percent slopes; and
- Paloduro clay loam, 1 to 3 percent slopes.

In addition, the following soils are considered to be of statewide importance: Ady fine sandy loam, 1 to 3 percent slopes; Posey clay loam, 1 to 3 percent slopes; and Posey clay loam, 3 to 5 percent slopes. Based on the results of the Farmland Protection Policy Act Form SCS-CPA 106, the impacts to prime farmland soils would not be considered substantial.

Indirect (encroachment) impacts by the proposed project to biological resources were also analyzed. Potential encroachment impacts to protected species, vegetation, and prime farmland soil included habitat loss and fragmentation that could lead to more edge habitat at the expense of more pristine interior habitat. In addition, there could be increased species mortality in locations where the project intersects habitat during construction and operation of the proposed project. Roadway mortality is generally not believed to significantly affect animal populations under normal conditions; however, if the population is experiencing other sources of stress (e.g. disease), then traffic-related mortality can contribute to the demise of the population (FHWA 2011, FHWA 2008, Caltrans 2009). Traffic noise could indirectly impact species as well, but this would likely be minimal since the roadway currently exists.

2.3 Step 3 – Other Actions

Past, present, and reasonably foreseeable actions have the potential to provide more context in the potential cumulative impacts to biological resources. These actions are summarized in **Table 4** below.

Table 4. Past, Current, and Reasonably Foreseeable Actions within the Biological RSA

| Action | Type of Action | Description |
|---|----------------|--|
| Past | | |
| Opening and Closing of Amarillo Army Air Base | Development | In 1942, the Amarillo Army Air Base was constructed and greatly contributed to the increase in Amarillo's population until it was closed in the 1960s. The establishment of the Air Base also brought the construction of the Pantex Ordnance Plant, which constructs nuclear weapons and is currently still open. According to the Amarillo Comprehensive Plan, the base closure caused a steep decrease in the city's population. |
| Harrington Regional Medical Center Construction | Development | The Harrington Regional Medical Center was established in 1965. From its inception, the center served as a major employment hub for Amarillo and the Panhandle. Since 1965, the center has increased in size and encompasses a range of institutions and services such as the Department of Veterans Affairs Medical Center, Texas A&M Agricultural Research and Extension Center, Don and Sybil Harrington Cancer Center, and the Texas Tech University Regional Academic Health Sciences Center. |
| Construction of SL 335 | Transportation | Initial planning for the loop began in the 1950s, and construction of the two-lane corridor was not completed until 1999. |
| Present | | |
| Expansion of SL 335 | Transportation | SL 335 is currently beginning widening between Bell Street to SW 9 th Street, a segment known as SL 335 Segment B-2. |
| Foreseeable Future Actions | | |
| Higher Education Expansions | Development | The expansion of Frank Phillips College, West Texas A&M University, Texas A&M University, and Texas Tech University's proposed veterinary school are proposed for construction in the foreseeable future with some projects starting within the next 10 years. |
| Medical Center Expansion | Development | Additional services and centers are proposed for construction including a new Harrington |

| Action | Type of Action | Description |
|---------------------|----------------|--|
| | | Cancer Center and Thomas E. Creek Veterans Affairs Hospital. |
| Expansion of SL 335 | Transportation | As funding becomes available, full expansion of the entire SL 335 corridor is anticipated, increasing mainlanes to four lanes and including two-lane frontage roads. |

Table 4 shows a historical, present, and anticipated story of growth for Amarillo. This growth and development changed the natural character of the RSA from untouched natural areas or low impact uses such as ranching to more impactful uses such as oil/gas exploration and development of commercial and residential properties. As land uses changed, biological resources changed in some of the following ways.

- Destruction and fragmentation of vegetation and wildlife habitats
- Destruction of aquatic vegetation with the filling of wetlands and streams
- Reduction in air, water, and habitat quality due to pollution
- Increased runoff and water pollution due to increases in impervious cover

The past impacts to vegetation and wildlife are still occurring and are anticipated to continue based on population and employment projections. The City of Amarillo has policies for land use, planning, zoning, preservation of biological resources, and mitigation techniques for impacts such as increased impervious cover.

The effects of the actions noted in the table above combined with the potential impacts of the proposed project will be further discussed in the next step.

2.4 Step 4 – Effects of the Project Combined with Other Actions

Slow net regional growth within the RSA is anticipated in the foreseeable future. Like past regional growth within the RSA, future development would continue to degrade biological resources. Planned and anticipated development, such as the new veterinary school and potential residential and commercial development along the proposed project, could spur more growth in ancillary services like restaurants and increases in residential properties. As noted in the Induced Growth Analysis Report, the proposed project has the potential to slightly accelerate growth. Based on growth projections, planned developments, city planning and zoning policies, and the project’s minimal potential to induce growth, the proposed project, combined with other actions, is anticipated to have minimal cumulative impacts on biological resources within the RSA.

The proposed project is not anticipated to induce growth because it is unlikely to be the main contributing factor to growth in the area. Based on growth projections, planned developments, city planning and zoning policies, and the project’s minimal potential to induce growth, the proposed project could anticipate minimal cumulative impacts to biological resources within

the RSA. **Table 5** provides an acreage for past, present, and foreseeable future actions within the RSA. The total RSA acreage is 1,008,592 acres. Acreage for past action was based on footprints of existing roads, buildings, parks, cemeteries, and major industrial complexes. The acreage for present actions included the SL 335 C-2 project footprint and the areas identified for potential induced growth in the Induced Growth Analysis Report. Foreseeable future actions looked at a 400-foot buffer around the segments of SL 335 that have not started construction and the known locations of future development such as higher education and medical center facilities. The past, present, and foreseeable future actions were combined to determine the potential cumulative impacts of the proposed project on biological resources.

Table 5. Anticipated Cumulative Impacts

| | Past Action | Present Action | Foreseeable Future Action | Cumulative Impact |
|-------------------|-----------------------------------|--|---|---|
| Actions | Existing development ¹ | SL 335 C-2 direct and induced impacts ^{2,3} | -SL 335 expansion -Higher education facilities ⁴ -Medical center facilities ⁵ | Past + Present + Foreseeable Future Actions |
| Acreage | 218,528 | 23,636 | 2,408 | 244,572 |
| Percentage of RSA | 22% | 2% | 0.2% | 24% |

Source: ¹OpenStreet Maps Texas Database (2020); ²SL 335 C-2 Environmental Assessment; ³SL 335 C-2 Induced Growth Analysis Report; ⁴Texas Tech University, West Texas A&M University; ⁵Locations surrounding existing facilities

Based on the results from Table 5, approximately 24 percent of the RSA could be cumulatively impacted by the SL 335 C-2 project. The percentage of the RSA that could be impacted represents a minimal portion of the RSA, and the proposed project would not be anticipated to cause substantial impacts.

2.5 Step 5 – Mitigation

The TxDOT Cumulative Impacts Analysis Guidance notes that the sponsoring agency “is not required to implement mitigation measures for effects caused by others (NCHRP, 2006). Nonetheless, all relevant, reasonable mitigation measures must be identified, even if they are outside of the jurisdiction of the agency, or unlikely to be implemented (FHWA, 2003).” Potential mitigation of the unavoidable cumulative impacts that could be implemented by entities other than TxDOT is discussed below.

Future development could incorporate construction best management practices (BMPs) to reduce impacts such as avoiding wildlife if discovered, minimizing construction staging to previously disturbed location, and replanting using native plants. In addition, offsite preservation could be used to mitigate for destruction of habitat by development. Detention ponds, which are designed to temporarily store a portion of surface water runoff during storm events and slowly release the water over a period of time, could mitigate the loss of surface water storage and increased surface runoff from new land development and increased

impervious cover. Detention ponds can also mitigate decreased water quality and increased potential of flooding.

Existing governmental regulations, in conjunction with the goals and coordination of community planning efforts, would address the many and varied issues that influence the local and ecosystem-level conditions. The vision, goals, and coordination of the federal, state, and local regulations, as well as numerous stakeholders, including local, state, and federal agencies, serve to safeguard resources and prevent or minimize negative impacts that would threaten the general health and sustainability of the region.

Through coordination with Texas Parks and Wildlife Department, the following specific BMPs for vegetation, wildlife, and protected species would be implemented for the project.

Vegetation

- Minimize the amount of vegetation cleared. Removal of native vegetation, particularly mature native trees and shrubs should be avoided to the greatest extent practicable.
- Wherever practicable, impacted vegetation should be replaced with in-kind on-site replacement/restoration of native vegetation.
- To minimize adverse effects, activities should be planned to preserve mature trees, particularly acorn, nut or berry producing varieties. These types of vegetation have high value to wildlife as food and cover.
- It is strongly recommended that trees greater than 12 inches in dbh that are removed be replaced. TPWD's experience indicates that for ecologically effective replacement, a ratio of three trees for every one (3:1) lost should be provided to the extent practicable either on-site or off-site. Trees less than 12 inches dbh should be replaced at a 1:1 ratio.
- Replacement trees should be of equal or better wildlife quality than those removed and be regionally adapted native species.
- When trees are planted, a maintenance plan that ensures at least an 85 percent survival rate after three years should be developed for the replacement trees.
- The use of any non-native vegetation in landscaping and revegetation is discouraged.
 - Locally adapted native species should be used. The use of seed mix that contains seeds from only locally adapted native species is recommended.
- Avoid vegetation clearing activities during the general bird nesting season, March through August, to minimize adverse impacts to birds.

Wildlife and Protected Species

Bat BMPs

To determine the appropriate best management practice to avoid or minimize impacts to bats, review the habitat description for the species of interest on the TPWD Rare, Threatened, and Endangered Species of Texas by County List or other trusted resources. All bat surveys and other activities that include direct contact with bats shall comply with TPWD recommended white-nose syndrome protocols located on the TPWD Wildlife Habitat Assessment Program website under "Project Design and Construction".

The following survey and exclusion protocols should be followed prior to commencement of construction activities. For the purposes of this document, structures are defined as bridges, culverts (concrete or metal), wells, and buildings.

- For activities that have the potential to impact structures, cliffs or caves, or trees; a qualified biologist will perform a habitat assessment and occupancy survey of the feature(s) with roost potential as early in the planning process as possible or within one year before project letting.
- For roosts where occupancy is strongly suspected but unconfirmed during the initial survey, revisit feature(s) at most four weeks prior to scheduled disturbance to confirm absence of bats.
- If bats are present or recent signs of occupation (i.e., piles of guano, distinct musky odor, or staining and rub marks at potential entry points) are observed, take appropriate measures to ensure that bats are not harmed, such as implementing non-lethal exclusion activities or timing or phasing of construction.
- Exclusion devices can be installed by a qualified individual between September 1 and March 31. Exclusion devices should be used for a minimum of seven days when minimum nighttime temperatures are above 50°F AND minimum daytime temperatures are above 70°F. Prior to exclusion, ensure that alternate roosting habitat is available in the immediate area. If no suitable roosting habitat is available, installation of alternate roosts is recommended to replace the loss of an occupied roost. If alternate roost sites are not provided, bats may seek shelter in other inappropriate sites, such as buildings, in the surrounding area. See Section 2: Standard Recommendations for recommended acceptable methods for excluding bats from structures.
- If feature(s) used by bats are removed as a result of construction, replacement structures should incorporate bat-friendly design or artificial roosts should be constructed to replace these features, as practicable.
- Conversion of property containing cave or cliff features to transportation purposes should be avoided where feasible.
- Avoid unnecessary removal of dead fronds on native and ornamental palm trees in south Texas (Cameron, Hidalgo, Willacy, Kenedy, Brooks, Kleberg, Nueces, and San Patricio counties) from April 1 through October 31. If removal of dead fronds is necessary at other times of the year, limit frond removal to extended warm periods (nighttime temperatures 55°F for at least two consecutive nights), so bats can move away from the disturbance and find new roosts.
- Large hollow trees, snags (dead standing trees), and trees with shaggy bark should be surveyed for colonies and, if found, should not be disturbed until the bats are no longer occupying these features. Post-occupancy surveys should be conducted by a qualified biologist prior to tree removal from the landscape.
- Retain mature, large diameter hardwood forest species and native/ornamental palm trees where feasible.
- In all instances, avoid harm or death to bats. Bats should only be handled as a last resort and after communication with TPWD.

Bird BMPs

In addition to complying with the Migratory Bird Treaty Act (MBTA) perform the following BMPs:

- Prior to construction, perform daytime surveys for nests including under bridges and in culverts to determine if they are active before removal. Nests that are active should not be disturbed.
- Do not disturb, destroy, or remove active nests, including ground nesting birds, during the nesting season;
- Avoid the removal of unoccupied, inactive nests, as practicable;
- Prevent the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair;
- Do not collect, capture, relocate, or transport birds, eggs, young, or active nests without a permit.

Fish BMPs

- For projects within the range of a SGCN or State-Listed fish and work is adjacent to water: Water Quality BMPs. No TPWD Coordination required.
- For projects within the range of a SGCN or State-Listed fish, and work is in the water: TPWD coordination required.

General BMP

- Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.

Terrestrial Reptile BMPs

- Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, utilize erosion control blankets or mats that contain no netting or contain loosely woven, natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.
- For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees (1: 1) in areas left uncovered. Visually inspect excavation areas for trapped wildlife prior to backfilling.
- Inform contractors that if reptiles are found on project site allow species to safely leave the project area.
- Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter where feasible.
- Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.
- Avoid harvester ant mounds in the selection of Project Specific Locations (PSLs) where feasible (for Texas Horned Lizard only)

Water Quality BMPs

In addition to BMPs required for a TCEQ Storm Water Pollution Prevention Plan and/or 401 water quality permit:

- Minimize the use of equipment in streams and riparian areas during construction. When possible, equipment access should be from banks, bridge decks, or barges.

- When temporary stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing.

Fossorial Mammal BMPs

- If black-tailed prairie dog burrows or pocket gopher mounds are to be excavated/directly impacted coordinate with TPWD Wildlife Habitat Assessment Program.
- When a construction zone is adjacent to active black-tailed prairie dog burrows or pocket gopher mounds, erect barriers to discourage individuals moving through or into the construction area.
- When seeding or revegetation is planned in an area adjacent to black-tailed prairie dog burrows or pocket gopher mounds, a vegetative barrier should be considered in the planting to discourage dispersal in the ROW.

The Farmland Conversion Impact Rating corridor assessment results did not warrant further consideration for BMPs, protection, or coordination with the Natural Resources Conservation Service.

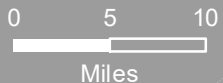
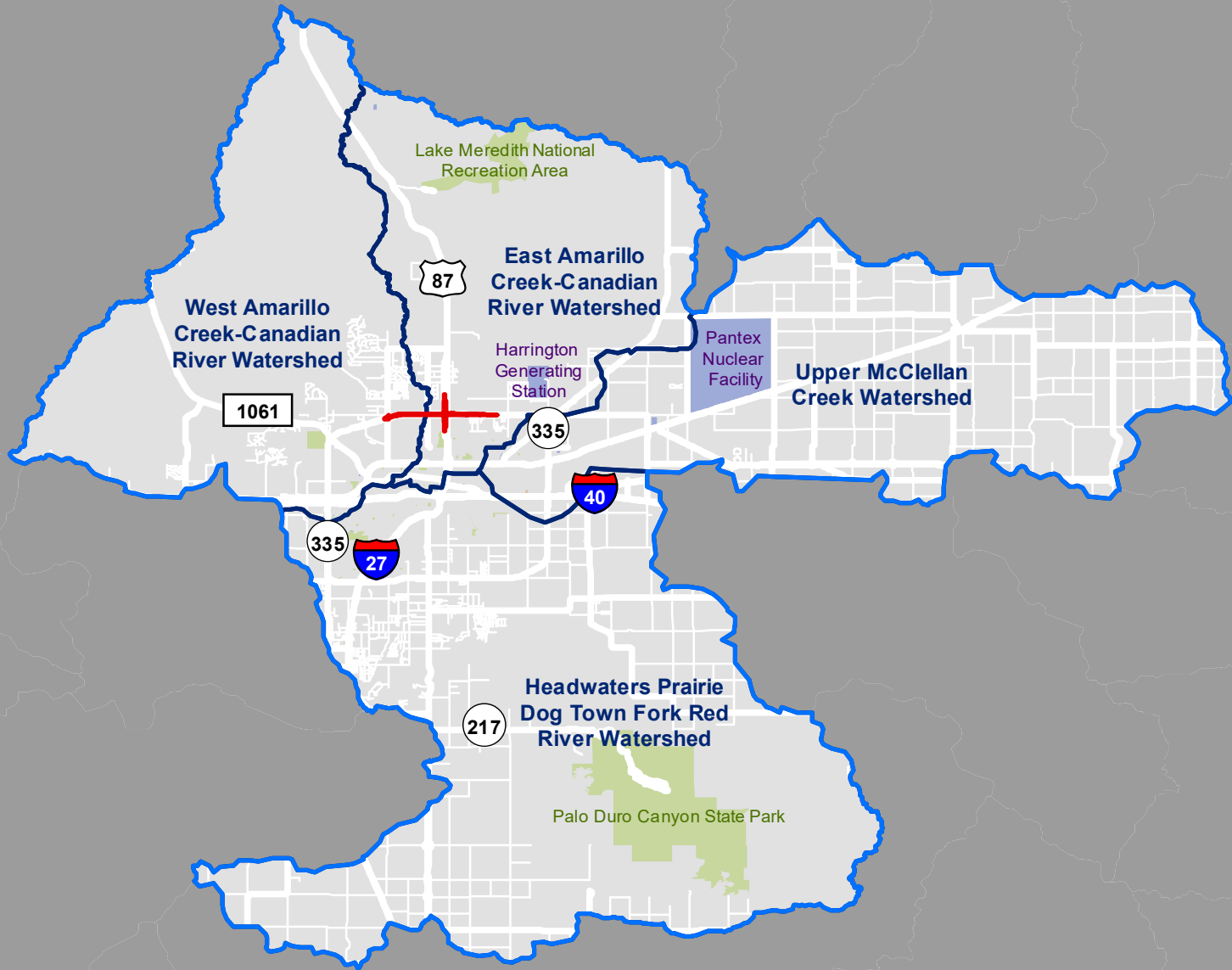
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Appendix A
Biological Resources Resource Study Area Map

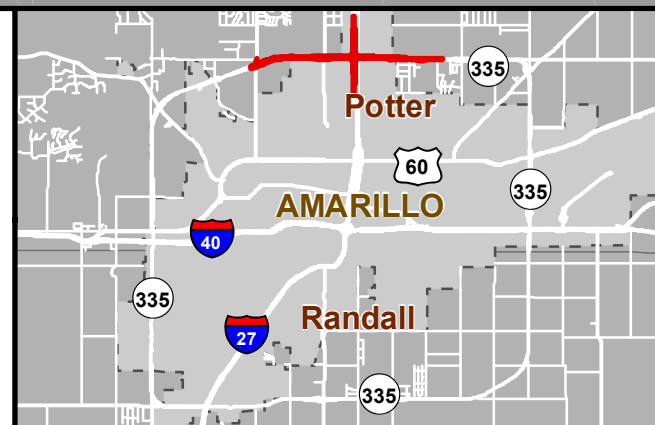


-  Proposed Project
-  Biological Resources RSA
-  Watershed Boundary

State Loop 335 Segment C-2

Biological Resources Resource Study Area Map

CSJ 2635-04-040; 2635-01-040



Addendum



MEMO

TO: John Wimberley, TxDOT Amarillo District
FROM: James Hamilton, WSP Environmental Team
SUBJECT: SL 335, Segment C-2, Cumulative Impact Analysis Update
DATE: January 19, 2023

The Draft Cumulative Impact Analysis technical report was completed for the SL 335 C-2 project in November 2020. Biological resources were evaluated for potential cumulative impacts. The analysis concluded that the proposed project could anticipate minimal cumulative impacts to biological resources within the resource study area (RSA) and that the proposed project would not be anticipated to cause substantial impacts.

Per guidance from TxDOT's cumulative impacts subject-matter expert, a new online search for planned development that could be considered reasonably foreseeable actions in the greater Amarillo area was conducted and identified two recently announced projects.

One project is the development and construction of a meat processing facility by business cooperative Producer Owned Beef, with support from the Texas Enterprise Fund, Amarillo Economic Development Corporation (AEDC), the City of Amarillo, and Highland Park ISD, announced in August 2022. The development site is 1,100 acres along Spur 228 between I-40 and US 87/287, southeast of Rick Husband Amarillo International Airport. The facility is planned to have up to 1,600 employees.

Another was the groundbreaking in June 2022 for a 400-acre industrial project. The project is for construction and development of a critical metals refinery by private company CVMR in cooperation with AEDC, the City of Amarillo and Potter County. The project was reported as AEDC's largest effort and is projected to have more than 1,000 employees. The 400-acre site is located at the CentrePort industrial complex along east SL 335 north of the airport.

The development of a combined 1,500 acres would increase total cumulative impact in the biological resource study area by approximately 0.6%. No other projects of this scale were identified. Given that the relative change in RSA impact is minimal and that no other major developments were identified, we believe that the findings of the 2020 analysis remain valid.

James Hamilton, Lead Consultant/Environmental Planner



MEMO

TO: Max Graff , TxDOT Amarillo District
FROM: James Hamilton, WSP Environmental Team
SUBJECT: **SL 335, Segment C-2, Induced Growth and Cumulative Impacts**
DATE: **November 16, 2023**

Induced Growth Analysis

The SL 335 C-2 Induced Growth Analysis was completed and the final technical report submitted to TxDOT Amarillo District in July 2020 and subsequently approved by TxDOT Environmental Affairs Division (ENV). Later design and ROW revisions in early 2022 were assessed by ENV and it was determined that those changes did not affect the findings of the Induced Growth Analysis.

Additional ROW revisions were proposed by TxDOT in October 2023. These revisions resulted in a net change of approximately seven additional acres of proposed ROW distributed widely throughout the project limits. This change in proposed ROW would not affect the findings of the Induced Growth Analysis. In addition, no major or extensive changes in highway design coincide with these ROW revisions that would affect the findings of the Induced Growth Analysis.

Consequently, we conclude that the findings of the Induced Growth Analysis, dated July 2020, remain valid.

Cumulative Impacts Analysis

The SL 335 C-2 Cumulative Impacts Analysis was completed and the final technical report submitted to TxDOT Amarillo District in November 2020 and subsequently approved by TxDOT ENV. Later design and ROW revisions in early 2022 were assessed by ENV and an update was requested on other reasonably foreseeable actions that could potentially affect vulnerable resources analyzed, in this case, biological resources. A supplemental memorandum was submitted to TxDOT Amarillo in January 2023 concluding that other reasonably foreseeable actions arising after the November 2020 analysis would have minimal impact on the resource study area (RSA) and that the findings of the Cumulative Impacts Analysis remained valid.

Additional review of other currently planned, reasonably foreseeable actions identified during the 2022-2023 period include:

- The company PLANT-AS plans a 400-acre facility at the Centerpoint East industrial park for advanced controlled environment agriculture production, generating 700 full-time positions.



- Albers Aerospace plans a 30-acre facility near the airport for innovative technological engineering services, generating approximately 400 jobs.
- An approximately 100-acre Amazon Fulfillment Center opened in 2022 near the Centerpoint East industrial park with approximately 500 employees.

The development of over 500 acres, along with 1,500 acres identified in the 2022 memorandum, would increase total cumulative impacts in the biological RSA by approximately 0.8%. No other projects of this scale or magnitude were identified. Given that the relative change in RSA impact is minimal and that no other major developments were identified, our professional judgement is that the findings of the 2020 Cumulative Impacts Analysis remain valid.

A handwritten signature in black ink that reads "James D. Hamilton". The signature is fluid and cursive.

James Hamilton, Lead Consultant/Environmental Planner