



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

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Austin, Texas 78754  
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December 12, 2024

**In Reply refer to:**  
2024-0020457

Ms. Clover Clamons  
Natural Resource Management Section Director  
Texas Department of Transportation (TxDOT)  
Environmental Affairs Division  
125 East 11<sup>th</sup> Street  
Austin, Texas 78701-2483

Subject: Conference and Biological Opinion on Proposed Ranch to Market Highway 2243 from 183A to Southwest Bypass, CSJ: 2103-01-038

Dear Ms. Clamons:

Enclosed is the U.S. Fish and Wildlife Service's (Service) Conference and Biological Opinion (CBO) based on our review of the Biological Assessment (BA) for RM 2243 from 183A to Southwest Bypass, Williamson County, Texas for effects on the endangered golden-cheeked warbler (*Setophaga chrysoparia*) (GCWA), Bone Cave harvestman (*Texella reyesi*) (BCH), and Inner Space Caverns mold beetle (*Batrissodes texanus*) (ISCMB); proposed to be listed tricolored bat (*Perimyotis subflavus*), and the candidate for listing monarch butterfly (*Danaus plexippus*) pursuant to section 7(a)(2) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*; ESA). The Texas Department of Transportation (TxDOT) also determined that the action may affect, but is not likely to adversely affect, the Jollyville Plateau salamander (*Eurycea tonkawae*) and Georgetown salamander (*Eurycea naufragia*). The Service received a final BA for the RM 2243 expansion on June 17, 2024, which initiated formal consultation.

This CBO is based on information provided in the June 17, 2024, BA, telephone and TEAMS conversations with Austin District staff, field investigations, and other sources of information. Literature cited in this CBO is not a complete bibliography of all literature available on the species of concern, highway construction and its effects, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at the Austin Ecological Services Field Office.

In the BA, TxDOT made no effect determinations for Tooth Cave spider (*Tayshaneta myopica*), whooping crane (*Grus americana*), Tooth Cave ground beetle (*Rhadine persephone*), and false spike (*Fusconaia mitchelli*). While these species are noted in our Information for Planning and Consultation database (IPaC, <https://ipac.ecosphere.fws.gov/>) to be in the project area, the TxDOT does not expect them to be impacted by the project, and the Service takes no position on these calls; therefore, these species are not discussed further in this BO.

## CONSULTATION HISTORY

November 10, 2021	Formal project kickoff meeting between Service and TxDOT staff
January 11, 2022	TxDOT and Service staff meet to discuss mitigation for Georgetown salamander
January 19, 2023	Email about phasing project and consulting on all phases
March 17, 2023	Email with project summary, karst mitigation measures
May 23, 2023	Site visit to On-Campus Cave with TxDOT, Service, Georgetown Independent School District (ISD), and SWCA
December 20, 2023	Call between TxDOT, the Service, BGE, SWCA, and Williamson County to discuss species mitigation
February 5, 2024	Service confirmed updated mitigation proposal is suitable and consistent with previous discussions
October 10, 2024	Service met with TxDOT, SWCA and BGE to provide a project overview for new staff members.
November 26, 2024	Service delivered a Draft CBO to TxDOT for review
December 3, 2024	Service met with TxDOT to discuss the Draft CBO.
December 12, 2024	Service delivered a CBO to TxDOT

## CONCURRENCE

The Service concurs with the TxDOT determination that the proposed action may affect, but is not likely to adversely affect, the Jollyville Plateau and Georgetown salamanders because the closest occupied spring to the project area is Garey Ranch Spring, about 3,696 feet to the north and significantly distant from the proposed activities. In the absence of effective conservation measures, potential project-related effects to either salamander would most likely happen from contaminated water entering the subsurface via recharge features and groundwater flow. However, mitigation and protective measures as well as best management practices for erosion and sedimentation control will be employed in the project area during and after construction as specified in the BA. These measures provide assurance that effects, if any, will be either so small as to not be measurable (insignificant) or extremely unlikely to occur (discountable). Additionally, Williamson County and TxDOT propose conservation measures within the Southwest Williamson County Regional Park (Regional Park), where a system of seeps and springs within Dry Fork Creek occurs at the southern end of the property, located near 30.556661° -97.753551°, approximately 3 miles south of the project area. It is very possible this zone of springs could host an undocumented surface population of the Jollyville Plateau salamander, though no formal surveys have ever been performed at this location. Additionally, a retention pond (30.553942° -97.756962°) was excavated within the Gardens at Mayfield, a residential neighborhood just south of the Regional Park. During excavation, several potential

Edwards Aquifer conduits were encountered, and the retention pond has since filled up with water and maintains a constant elevation. It is possible the retention pond could host an undocumented Jollyville Plateau salamander population, but no surveys have been done. Both the Regional Park and the retention pond are owned by Williamson County, and Williamson County and TxDOT propose the following conservation measures to be planned in Phase 1A and implemented prior to the construction of Phase 1B:

1. Map Dry Fork Creek seeps and springs within the area owned by Williamson County, south of East New Hope Drive.
2. Use a drone equipped with LIDAR to map contours in this area to better understand flow patterns of Dry Fork Creek. It is unclear if ponded sections are impounded by the nearby neighborhood.
3. Place mop heads within the artificially created springs at the Gardens at Mayfield Retention Pond to determine if salamanders are present or if amphipods (salamander food) are present.
4. Determine if eDNA from the retention pond can be successfully collected. If so, send samples to Dr. Tom Devitt of the University of Texas at Austin for genetic analysis.

These activities are planned as separate mitigation activities, to better inform whether salamanders are present in these additional areas. Planning for salamander mitigation is currently funded within Phase 1A and implementation will occur when the funding source for Phase 1B is determined. Therefore, the implementation phase for the salamander mitigation will be budgeted within Phase 1B. However, the salamander mitigation will commence prior to the start of construction for Phase 1B. If present, salamanders in these areas are not expected to be exposed to construction stressors, and most of these activities, would not measurably affect any individual salamanders that may be present, nor would they result in measurable impacts to the species habitat or forage base. The placement of mop heads in the springs, has a remote possibility of potential impact to individuals if present, although this is highly speculative, and exposure is deemed to be extremely unlikely to occur.

Based on all of the above information, we concur that effects to these species from the proposed activities are insignificant and discountable. Thus, effects to these species will not be addressed further in this document<sup>1</sup>.

### CONFERENCE AND BIOLOGICAL OPINION

This transmits our CBO for the proposed RM 2243, as described in the BA dated June 17, 2024. This project will improve Hero Way and a section of RM 2243 for 7.7 miles between Highway 183A near Leander to Southwest Bypass near Georgetown. Plans are to realign and widen the rural undivided highway in phases to make a divided controlled access freeway with two lanes and a frontage road in either direction. The BA describes how the Applicant will minimize, to the maximum extent practicable, adverse effects from activities potentially affecting GCWA, BCH,

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<sup>1</sup> While we do not anticipate adverse effects to these species, we note that the Reinitiation Notice section at the end of this document continues to apply to all species addressed in this consultation. Additionally, for transparency and completeness, we will also include measures for these species in the larger discussion of the description of the action and associated conservation measures below.

ISCMB, and tricolored bat. The proposed highway construction project is anticipated to impact BCH, ISCMB, GCWA, and tricolored bat habitat in Williamson County. The project will not occur within any federally designated or proposed critical habitat for listed species.

## **DESCRIPTION OF THE PROPOSED ACTION**

Regulations implementing the ESA (50 CFR 402.02) define “action” as “all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by federal agencies of the United States or upon the high seas.” As described in the BA, the following sections describe the various components of the proposed action, including conservation measures TxDOT commits to implementing as part of the proposed action.

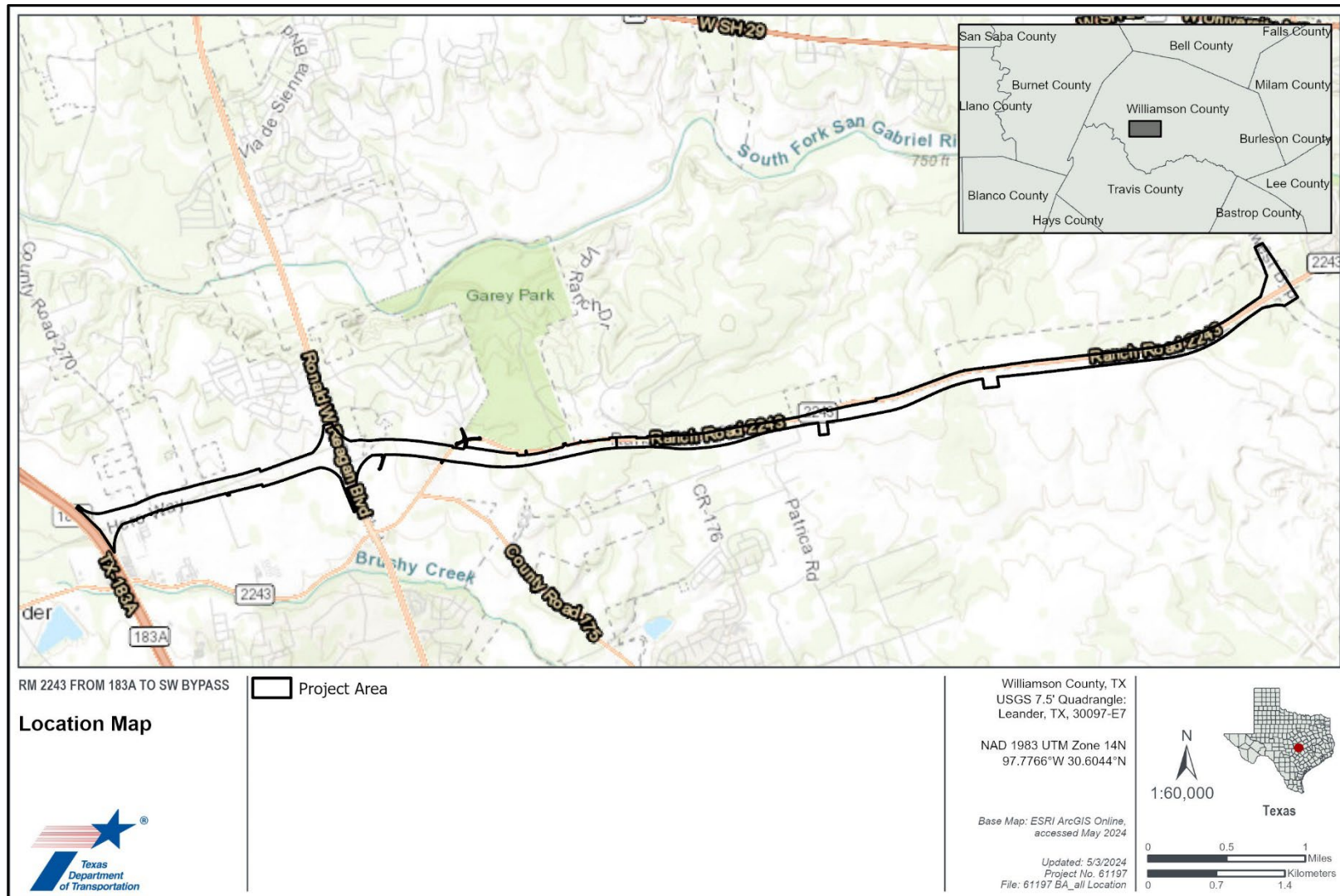
### **Action Area**

The implementing regulations for section 7(a)(2) of the ESA define an action area to be all areas affected directly or indirectly by the Federal action and not merely the immediate area affected by the proposed project (50 CFR § 402.02). The Service has determined that the action area for this project is approximately 1,265.3 acres including existing ROW, proposed new ROW, easements, and driveway license areas plus a 345-foot buffer. The Action Area is inclusive of effects to GCWAs, BCH, and ISCMBs and the rationale for the 345-foot buffer is as follows:

Cave crickets (*Ceuthophilus* spp.) are a vital nutrition source for karst environments because they forage on the surface at night and deposit valuable nutrients into the subterranean environment with their feces, eggs, and corpses (Service 2012). The Service (2018a) considers a 345-foot radius of cricket foraging area around a cave (approximately 8.6 acres) to represent the maximum distance cave crickets use when emerging to forage. As such, the Service (2018a) considers the cricket foraging area of importance for the harvestman and mold beetle.

Primary impacts to the tricolored bat are considered for trees and caves where the species may roost. Thus, the Action Area is also inclusive of a 164-foot buffer placed around the project area, which is the anticipated maximum spatial extent that effects of temporary noise, temporary lighting, and ecological effects related to new forest edges, are expected to occur, and be experienced by foraging and roosting TCB located in the vicinity of the Proposed Project (Bunkley et al. 2014).

**Figure 1. Project Area for the Proposed Action. While the action area is not shown on the map, it consists of the buffers described above, specifically a 345-buffer around the project area, which is also inclusive of the 164-ft buffer for the tricolored bat habitat.**



## **Proposed Project**

The following summarizes the proposed project, and a more detailed description is in the BA. Hero Way and a large portion of RM 2243 will be reconstructed into a controlled access facility with an approximately 350-970-foot proposed right of way (ROW). The project area covers 7.7 miles and approximately 489.7 acres. The project alignment will extend from west to east along Hero Way for approximately 1.6 miles (between 183A and Ronald Reagan Blvd), continue for approximately 0.7 mile on new alignment where it crosses existing RM 2243 and continues south of RM 2243 for approximately 0.5 mile. The project alignment connects with RM 2243 approximately 1.2 miles east of Ronald Reagan Blvd and continues along RM 2243 for approximately 5.0 miles, to SW Bypass. The main lanes include two 12-foot lanes in each direction with 4-foot inside shoulders, and 10-foot outside shoulders. The east and west bound lanes will be separated by a concrete barrier. Frontage roads will consist of three 12-foot westbound lanes and three 12-foot eastbound lanes. The frontage roads will have a 4-foot inside shoulder, and 2-foot curb and gutter on the outside. A 10-foot shared use path is also proposed along each frontage road. The main lanes and frontage roads will be separated by a 38-foot-wide open ditch with a flat bottom and vegetative filter strips (VFS) on the side slopes. There will be a 5-foot inside grassy buffer between the frontage roads and shared use paths and a varying 13-foot to 30-foot grassy buffer between the outside of the shared use paths and the proposed ROW line. Drainage includes an open ditch between the main lanes and frontage roads, and curb and gutter will be along the frontage roads with underground utilities. Grade separations are proposed at arterial cross-streets, and multi-level interchanges are proposed at 183A, Ronald Reagan Blvd, and SW Bypass. Current plans indicate that 13 culverts could be removed but no bridges will be removed since none occur within the project area. The project includes 4 phases and is separated into east and west segments for ease of analysis. The western project area segment (241.1 acres) includes the eastern and western terminus of Phase 1A and the eastern project area segment (248.6 acres) includes the eastern and western terminus of Phase 1B. Phases 2 and 3 traverse both the eastern and western project area segments. Construction of the proposed project is anticipated to be completed in 2042.

## **Project Phases**

Phase 1A is fully funded and will include constructing 3.9 miles of westbound frontage road along the existing Hero Way from the 183A northbound frontage road east to Ronald Reagan Blvd. The proposed Phase 1A alignment will follow the westbound frontage road to a point east of the Garey Park entrance and tie into the existing RM 2243 roadway. The footprint of the proposed Phase 1A alignment is approximately 19.1 acres. The proposed roadway will be a two-lane, undivided roadway with one eastbound and one westbound lane. Phase 1A will convey roadway runoff towards a 15-foot VFS parallel to the roadway. The runoff will then be conveyed to a ditch, ultimately draining to existing outfalls along the project. All water quality treatment for Phase 1A will be accomplished with VFS; no detention ponds are proposed. Construction of Phase 1A is currently scheduled to begin in the last quarter of 2024 or the first quarter of 2025 and is expected to last approximately 9 months.

Phase 1B is projected for implementation between 2026 to 2028 but construction is contingent on funding. Phase 1B is 4.4 miles long beginning at the Phase 1A terminus, east of the Garey Park entrance, and continue to SW Bypass. Phase 1B will construct the remaining portion of the



westbound frontage road and cover approximately 21.2 acres. The proposed roadway alignment will mostly follow the existing RM 2243 footprint except a few locations where it will be in the new ROW. The proposed roadway will consist of a two-lane, undivided roadway with one eastbound and one westbound lane. Water quality treatment measures for Phase 1B will include a 15-foot VFS parallel to the roadway with no detention ponds.

Additional Section 7 consultation (e.g., reinitiation) for Phase 2 will occur later in time, as implementation is projected between 2029 to 2032. Phase 2 will extend 7.7 miles, from 183A to SW Bypass. The remaining unconstructed westbound and eastbound frontage roads will be constructed in Phase 2. The proposed roadway alignment will mostly be in previously undisturbed areas and within the new ROW. The proposed roadway will consist of a four-lane divided roadway with two eastbound lanes and two westbound lanes. At this time, shoulder widths and turn lane locations have not been determined. Anticipated impacts to listed species from Phase 2 are addressed in this BA and will be revisited during consultation re-initiation later. Funding for Phase 2 has not been secured, and construction of Phase 2 is not projected within the immediate, foreseeable future.

Additional Section 7 consultation for Phase 3 will also occur later due to expected implementation between 2037 and 2042. Phase 3 extends 7.7 miles from 183A to SW Bypass; the controlled access facility and shared use paths will be completed in this phase. This facility will add pavement width to some areas of the frontage roads, on/off ramps, and the westbound and eastbound main lanes. Phase 3 will also include direct connectors to 183A, Ronald Reagan Blvd, and SW Bypass as well as grade separations and pedestrian facilities. The facility will consist of four main lanes (two westbound and two eastbound), six frontage road lanes (three westbound and three eastbound), two shared use paths (one on each side of the project), and multiple turn lanes spread throughout the project. Anticipated impacts to listed species from Phase 3 are addressed in this CBO and will be revisited later during consultation re-initiation.

Construction operations are regulated by the Texas Commission on Environmental Quality (TCEQ) Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit (CGP) which applies to stormwater discharges from construction projects that disturb soil on areas of one acre or greater. The CGP requires the preparation and implementation of a project specific Stormwater Pollution Prevention Plan (SWP3) that describes Best Management Practices (BMPs) designed to decrease erosion from and sediment generated by the project. Construction BMPs may include vegetation preservation/buffer zones, erosion control logs, sediment control fences, temporary seeding, soil retention blankets, stabilized construction exits, outfall protection, rock filter dams, stockpile management, and street sweeping. When selecting construction phase BMPs from the TxDOT Approved Products List, biodegradable/wildlife friendly options (e.g., those that minimize wildlife entrapment risks) will be used whenever possible. Many of these also have TxDOT standard specifications for which contractors must use and comply (TxDOT 2024). The CGP and SWP3 require that BMPs be in place before soil disturbing construction activities are initiated and be monitored and maintained in accordance with the project SWP3. The CGP and SWP3 also require the following to be addressed:

- Spill and leak response,
- Sanitary waste management,
- Chemical management,
- Concrete waste management,

- General material and equipment management,
- Material and equipment use over water,
- Dewatering,
- Inspection and maintenance of BMPs, and
- Revegetation, temporary, and permanent stabilization.

TxDOT and contractors are subject to the CGP and SWP3. Project BMPs are typically included in the project plans and the SWP3 is maintained as separate document, created once construction plans are complete. The requirement to comply with the CGP and preparation of a SWP3 are included in plans on the Environmental Permits, Issues, and Commitments (EPIC) sheet, which may also not be available at the time of consultation if project design is still underway.

As the project is located within the Edwards Aquifer Recharge Zone, water quality controls in the form of VFS will be designed, constructed, operated, and maintained in accordance with the TCEQ Edwards Aquifer Rules (30 TAC 213) to ensure that 80 percent of the incremental increase in the annual mass loading of total suspended solids from the site caused by the regulated activity is removed. A Water Pollution Abatement Plan (WPAP) would be prepared and submitted to the TCEQ for approval prior to construction of each phase. The WPAP applicant will be Williamson County and the initial WPAP will cover all of Phase 1A.

### ***Construction Equipment, Access, and Staging***

Construction access and staging will likely occur within TxDOT ROW. Construction access and the placement of project specific locations (PSLs) such as staging areas, equipment storage areas, temporary access roads, borrow pits, etc., would likely occur within and immediately adjacent to existing ROW. All PSLs associated with the proposed project area are also subject to the CGP and SWP3 and would be protected with BMPs described above. The contractor will be advised of the presence of potential habitat for protected species in the vicinity of the project. No PSLs will be allowed in any WOTUS. Any PSLs outside of the ROW and project area are not within the scope of this consultation as they will be selected by, and under the control of, the contractor. Additional details on access and staging will not be available until the design is finalized and a construction contractor is chosen. The construction contractor will also choose which roadway construction equipment is utilized for the project. Construction would include typical activities such as vegetation clearing, surface milling and grading, and excavation. Vegetation will either be cleared and grubbed by hand or with mechanized equipment, such as a brush hog, skid steer, or bulldozer. Milling machines are used to remove surface soils and existing pavement, which would be collected and transported by other machines such as excavators and dump trucks. Excavation equipment such as trackhoes and backhoes are typically used in smaller areas where access is limited, and the impact areas are localized. Bank stabilization (e.g., riprap, retaining walls, and bridge abutments) and side slope management would also require limited excavation and soil disturbance within the project area.

### ***Post-Project Restoration***

All disturbed areas will be re-vegetated according to TxDOT's standard practices for urban areas, in compliance with Executive Order 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping, the CGP, and the project specific SWP3. Re-



vegetation efforts will provide appropriate and sustainable cover to prevent erosion and siltation. Temporary bridges, haul roads, matting, falsework piling, BMPs, debris or other temporary materials placed during construction operations that are not part of the finished work will be removed at the completion of construction activities. TxDOT's standard practices for roadway operations and maintenance will be implemented following the completion of post-project site restoration activities. TxDOT will be responsible for the maintenance of the roadway and associated facilities.

### **Conservation Measures**

The TxDOT will implement the following conservation measures for the GCWA, BCH, ISCMB, Jollyville Plateau salamander, Georgetown salamander, monarch butterfly and tricolored bat with the intent to avoid and minimize adverse effects to oak-juniper woodland, subsurface limestone, groundwater, and the species listed above resulting from the proposed action:

#### **Measures Previously Implemented**

1. A geologic assessment of approximately 32 percent of the entire project area (including most of Phase 1A) and all easements where project activities may occur (BA, Section 3.1.2).
2. Presence/absence surveys in accordance with current Service protocols in two caves (Tinnel Cave and Lozano's Mine) where potential habitat for listed karst invertebrate species may have occurred (BA Section 3.1.2).

#### **Measures to be Implemented During Project Planning and Design**

1. The project is being designed to minimize the need for excavation within the project area to minimize impacts to subsurface limestone.
2. Continue performing geologic assessment and karst surveys (i.e., cave studies) as additional right-of-entry (ROE) becomes available.
3. Include all conservation measures into the Environmental Permits, Issues, and Commitments (EPIC) sheet in the project plans and General Notes.
4. Design appropriate temporary BMPs to minimize construction phase erosion and sedimentation impacts and to protect sensitive recharge features and include these in any required TCEQ permitting documents, (e.g., SWP3, WPAP), and construction plans in accordance with the CGP requirements and Edwards Aquifer Rules.
5. Include appropriate permanent BMPs to comply with TCEQ Edwards Aquifer Rules to remove at least 80% of the increase in total suspended solids load resulting from additional impervious covered added by the proposed project.
  - a. The VFS will provide 85 percent removal of the increase in total suspended solids from the additional impervious cover across all of Phase 1A, which is above the minimum threshold set by the TCEQ Edwards Aquifer Rules.

6. Protect sensitive recharge features in the Edwards Aquifer Recharge Zone from water quality impacts by using a combination of temporary and permanent BMPs and/or closure plans, as appropriate.

#### Measures to be Implemented Prior to Project Construction

1. Hold a preconstruction meeting with employees and contractors working on this project to review instructions specific to the contractor(s) related to implementation of the conservation measures documented in the EPIC, General Notes, and project plans. Preconstruction awareness training to project contractors will include information on protected species and habitat that may occur in the project area and outside the ROW and requirements to avoid effects to these species and their habitats.
2. Train and instruct personnel and contractors to report voids and seeping groundwater found during construction. Establish protection zones for karst features with surface expressions that contain potential habitat for protected species or are determined to be sensitive features in accordance with the TCEQ Edwards Aquifer Rules. Karst feature protection zones shall be demarcated with construction fencing to be maintained throughout the duration of construction. When construction plans are developed, these zones shall be clearly delineated and will be discussed with contractors at the preconstruction meeting.
3. Require contractors to implement the project specific SWP3 prior to soil disturbance and comply with the TCEQ CGP and WPAP for BMP monitoring and maintenance for the duration of construction as described in Section 2.1.3.
4. PSLs within the ROW outside of karst feature protection zones to minimize potential impacts to listed species and their habitat. Storage of chemical substances will only occur in designated PSLs with additional protections described in the BA Section 2.4.4 to prevent materials from running off or entering waterways or groundwater. PSLs may also occur outside of the project area if the contractor chooses. Environmental compliance for PSLs located outside of the ROW is the project contractor's responsibility. Williamson County will notify the contractor of the possibility of listed species and habitats in the project area, and the specific requirements to avoid impacts or the need to consult with the Service.

#### Measures to be Implemented During Project Construction

1. Adhere to project plans and specifications.
2. Adhere to the project SWP3 and WPAP regarding equipment maintenance, materials storage, spill containment and response, and waste containment and disposal.
3. Limit the clearing of vegetation and topsoil to only the areas needed to accomplish the project or activity.
4. Provide an on-call construction monitor throughout ground-disturbing activities to inspect and report karst voids encountered during construction in accordance with the Void Discovery Oversight and Reporting protocol described below.
5. If standing, seeping, or flowing water is encountered, the Groundwater Flow Mitigation and Protection Measures described below shall be implemented.

6. Provide annual monitoring reports to the Service documenting the status of the project and results of void evaluations, presence/absence surveys, and the status of void closures, as applicable. Monitoring reports shall be provided in January for work conducted in the previous calendar year throughout the duration of construction.

#### Void Discovery Oversight and Reporting

It is possible that karst features or caves without surface expressions (voids) may be revealed during excavation or drilling (drilled shafts or boreholes) in previously undisturbed bedrock. If a potential karst void is encountered during excavation or drilling activities, work within a minimum of 50 feet of the feature will cease to ensure surveyor safety until the feature is evaluated for potential karst invertebrate habitat by a karst scientist holding an appropriate 10(a)(1)(A) permit following current Service karst survey protocols.

For small diameter geotechnical boreholes (6 inches or less), the work stoppage area may be determined based on safety, feature protection, site conditions, and other activities in the area, but will not be less than 10 feet from the borehole to ensure surveyor safety. When karst voids that are not humanly enterable are encountered, including those in drilled shafts or geotechnical boreholes, the feature will be evaluated using a side-viewing downhole camera or other similar means, if feasible. If the feature does not meet the criteria for potential karst habitat, then the results of the evaluation shall be documented, and work shall continue. If a karst feature meets the Service criteria for potential karst invertebrate habitat, work within the immediate area will remain stopped while presence/absence surveys are conducted in accordance with current Service karst survey protocols. Presence/absence surveys will not be conducted if surface conditions make it unsafe to do so. Examples of unsafe conditions could include situations where:

- the feature is in an active traffic lane that would have to be closed for an extended period to conduct the survey,
- the excavation cannot be stabilized to make the feature safe to survey, or
- environmental conditions (e.g., bad air, flooding, excessive temperature) that create unsafe survey conditions.

Reasons for not conducting a presence/absence survey when a feature meets the Service criteria for potential habitat shall be documented in writing. Results of void evaluations and presence/absence surveys shall be provided to the Service. Occupation of any karst feature will be presumed if potentially listed karst invertebrates collected during surveying are immature or otherwise cannot be identified to species.

While a feature is being evaluated, the surface opening shall be covered to minimize the influence of diurnal variations in surface temperature. Protection of the feature may include a wood cover, plastic sheeting, and/or a blanket that is weighed down with rocks around the perimeter. During periods of high temperatures ( $>100^{\circ}$  F), a piece of insulation shall be added to the cover. Hazard fencing or barricades may be used to protect the area if there is a fall hazard, such as an open shaft. Appropriate BMPs shall be implemented to prevent surface runoff from entering the feature.

Once evaluation is completed and if it is possible within the needs of the project, the feature shall be closed or capped to preserve as much of the subsurface void space as possible. All feature closures shall be completed and reported in accordance with TCEQ Edwards Aquifer

Rules. If work must continue at the feature, disturbance to the feature shall be minimized and the final status of the feature shall be determined on a case-by-case basis following recommendations from a permitted scientist, geoscientist, and an engineer, as applicable. When features are closed, they shall be closed in a condition as similar as possible to pre-excavation conditions to preserve water and nutrient inflow and void volume, while protecting the feature from contaminated runoff. Geotechnical boreholes shall be plugged above the void, preserving the void space, then backfilled above the plug. The TCEQ Edwards Aquifer Rules require borings in the recharge zone to be plugged with non-shrink grout from the bottom of the borehole (top of the plug in the case of a void) to within three feet of the surface. The remainder of the borehole must be filled with cuttings or gravel.

#### Groundwater Flow Mitigation and Protective Measures for Salamanders<sup>2</sup>

If standing, seeping, or flowing water is encountered in an excavation, work within a minimum of 50 feet of the excavation shall cease until an evaluation is completed. Appropriate BMPs shall be implemented to minimize surface runoff from entering the excavation. A geoscientist shall evaluate the excavation to determine the source of the water and potential connectivity to the Edwards Aquifer. If it is determined that the water is connected to the Edwards Aquifer, a site-specific groundwater mitigation and solution feature closure plan shall be developed before work can continue near the groundwater feature. All groundwater mitigation and solution feature closure plans shall be completed and approved in accordance with TCEQ Edwards Aquifer Rules, as applicable.

The groundwater mitigation and solution feature closure plan shall be designed to permanently seal off the excavation from the groundwater feature. Where a feature contains flowing water that could be a groundwater flow path of the Edwards Aquifer, the plan will also include measures designed to maintain hydrologic connectivity across, under, or around the excavation. This may include the use of clean, porous media such as clean-washed rock, and PVC pipe of assorted sizes. The plan for excavations with flowing groundwater shall also include measures designed to permanently isolate and seal off the groundwater flow path from the rest of the excavation.

For drilled shafts, the groundwater mitigation and solution feature closure plan shall typically use permanent casing to seal off the groundwater source and prevent contamination before pouring concrete. Casing is intended to prevent the migration of concrete into voids. If flowing water is encountered during the excavation of drilled shafts, the plan may include the permanent placement of casing in a manner that seals the drilled shaft off from the area of groundwater conductivity while allowing continuity of groundwater flow through the annular space surrounding the casing. If casing is not used, concrete migration into voids will be addressed on a case-by-case basis based on the nature of the void and the engineering needs of the project with an emphasis on groundwater protection.

If accumulated groundwater must be pumped from an excavation, all pump intakes must be screened to exclude salamanders by placing cages with 1/16-inch or smaller mesh over any intake to exclude salamanders. Water must be removed at a low velocity ( $\leq 1$  cubic feet per second), to prevent salamanders from becoming trapped on intake screens/cages.

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<sup>2</sup> As noted previously, although salamanders were addressed in the concurrence section, these and additional following measures for salamanders are included in this section for transparency and completeness.

For geotechnical boring activities, the groundwater mitigation and solution feature closure plan shall typically involve filling the borehole with clean-washed 1-inch rock to approximately 2 feet above the groundwater level, placing a hole plug above the rock surface, capping the hole plug with a packed bentonite plug, and then sealing the top of the boring with suitable materials. For projects where TCEQ rules apply, the TCEQ Edwards Aquifer Rules require borings in the recharge zone to be plugged with non-shrink grout from the bottom of the borehole (or the top of the plug, in the case of a void) to within 3 feet of the surface. The remainder of the borehole must be filled with cuttings or gravel.

#### Measures to be Implemented Following Construction

1. Require contractors to remove all temporary erosion and sedimentation BMPs once final stabilization is reached and at the completion of the project in accordance with the TCEQ CGP and project specific SWP3 and WPAP.
2. Disturbed areas shall be re-vegetated according to TxDOT's standard practices and the TCEQ CGP, and project specific SWP3, in compliance with Executive Order 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping. Re-vegetation efforts shall provide appropriate and sustainable cover to prevent erosion and siltation.

#### Other Conservation Measures Described by Species

##### Golden-cheeked Warbler

Credits will be purchased from an available credit bank to offset impacts to GCWA breeding habitat (BA Section 3.1.1 for additional details). Credits will be purchased for Phases 1A and 1B from the Williamson County Conservation Foundation prior to construction. The following conservation measures are proposed during the construction phase of the project:

1. Clearing of potentially suitable GCWA habitat will be restricted to the time of year (September 15–March 1) when the species is not expected to be present in Texas.

If vegetation outside of GWCA habitat must be cleared during the period of March 1–September 15, the vegetation will not be cleared until it has been verified to be absent of active bird nests through a survey conducted by a qualified biologist and then will be cleared promptly upon that verification.

2. Williamson County and TxDOT anticipate purchasing GCWA credits to offset 2.0 acres of habitat removal and 21.7 acres for impacts to potential habitat within 250 feet of Phase 1A (BA Section 3.1.1 for further details).
3. Williamson County and TxDOT anticipate purchasing GCWA credits related to 0.2 acre of habitat removal and 36.4 acres for impacts to potential habitat within 250 feet of Phase 1B (BA Section 3.1.1 for further details).

GCWA credits for Phases 1A and 1B will be purchased prior to the start of construction activities, likely in the second half of 2024. GCWA mitigation for Phases 2 and 3 will be reevaluated when consultation is reinitiated in the future.

##### Bone Cave Harvestman and Inner Space Caverns Mold Beetle

The proposed karst invertebrate mitigation for the project includes a rehabilitation of the surface environment around On-Campus Cave; located in an open area behind Tippit Middle

School which is approximately 0.8 miles northeast of the project area. On-Campus Cave is a documented locality for the BCH and the ISCMB. Currently, unauthorized access to On-Campus Cave is prevented by aging railroad ties with ad-hoc fencing attached and installed decades ago. The surrounding landscape is manicured lawn with large bare patches of exposed limestone bedrock. It is unclear whether the bedrock is exposed naturally or is the result of overland flow scouring the area during heavy rain events. A track and football field are approximately 300 feet upslope from On-Campus Cave and stormwater that accumulates on the field appears to be diverted into the catchment basin for the cave.

Native vegetation will be planted within the catchment basin for On-Campus Cave to slow and filter overland flow as it moves towards the cave. Williamson County and TxDOT representatives met with GISD representatives on April 6, 2022, to discuss interest in rehabilitating this facility as an ecological restoration and educational opportunity for students. GISD representatives agreed that rehabilitation of On-Campus Cave could serve as both an ecological and educational opportunity. They indicated their approval to continue conversations and elevate rehabilitation design plans to the GISD School Board for further discussion and a vote of approval. TxDOT and Williamson County had a follow up meeting with GISD at Tippit Middle School on March 25, 2024, to discuss preliminary design plans and get feedback from GISD on the rehabilitation project. Mitigation activities at On-Campus Cave have already started, with commitments from the GISD already obtained.

On-Campus Cave rehabilitation may include the following activities:

1. LIDAR mapping of the area to obtain precise catchment basin measurements.
2. Landscape designers will develop site plans for the rehabilitation project.
3. Install overland flow mediators (e.g., rock gabions) to slow overland flow as it approaches On-Campus Cave.
4. Install native plant gardens with significant attention towards pollinator friendly plants and butterfly host plants.
5. Remove the existing cave “gate” and install a modern cave gate that is more effective at precluding unauthorized human entry but more amenable to entry by bats.
6. Walking trails consisting of impermeable permeable materials will be installed to support educational activities.
7. Install signage describing On-Campus Cave and its importance as an ecosystem for endangered karst invertebrates and species dependent on the Edwards Aquifer.
8. Install signage describing native plant species and associated pollinators.
9. Work with GISD to develop educational programs for students relevant to endangered karst invertebrates and the Edwards Aquifer.
10. Work with GISD to develop educational programs for students relevant to pollinators and native plant species.
11. Perform dye trace study to determine where Edwards Aquifer recharge that enters On-Campus Cave exits at nearby springs.



Williamson County and TxDOT propose to design the rehabilitation of On-Campus Cave as part of the mitigation actions for both Phase 1A and 1B. They commit to continue coordinating with the GISD School Board to obtain their full permission to rehabilitate On-Campus Cave. They anticipate that GISD School Board coordination and approval will occur during the first half of 2025. Design of the rehabilitation project began in 2024 and will be completed by the end of 2024 in the first half of 2025. Implementation of the rehabilitation project will commence in the second half of 2025.

#### Monarch Butterfly

Pollinator friendly plants will be incorporated throughout the approximately 8 acres of landscaping when rehabilitating On-Campus Cave. Significant time and consideration will focus on installing spring and fall blooming native plant species that are useful to the monarch butterfly as nectar sources during their seasonal migration. Additionally, several species of milkweed (*Asclepias* spp.) will be planted to provide host plants for monarch caterpillars.

Williamson County also utilizes a wildflower mix composed of native species when stabilizing and replanting areas affected by construction, as described within the *Protocol for Sustainable Roadsides – Williamson County* (TBG et al. 2010). The exact mix used is described within TBG et al. (2010) Chapter 2.4, Item 31–1. Many of these species may be utilized by the monarch butterfly when nectaring.

#### Tricolored Bat

It is unclear if caves occupied by tricolored bats will be discovered during the due diligence process once access for surveys is granted along the entirety of Phase 1B. If occupied caves are documented within the Phase 1B project area; then bat exclusion devices will be installed during the warm season (May 1 – November 30) prior to construction. Installation of such devices will ensure that tricolored bats are not present when construction activities occur that may disturb individuals during winter torpor.

A bat-friendly gate will be installed during the rehabilitation of On-Campus Cave. Currently, the fence and cave gate precluding access to On-Campus Cave for humans also prevents access for the tricolored bat. This cave is very large and maintains a microclimate described by Service (2021a) as conducive for winter roosting (i.e., stable temperature, humidity above 80 percent). Opening On-Campus Cave for tricolored bats will provide access to a very large and potentially very attractive winter roost for the species.

#### Conservation Measures – Phases 2 and 3

Phase 2 is currently proposed to occur between 2029 – 2032, while Phase 3 is currently proposed to occur between 2037 – 2042. Therefore, significant time will pass between any published BO associated with this BA and commencement of construction, or even the due diligence process for these later phases. Additionally, there are several known caves that could host the BCH and/or ISCMC that occur within the project area and other, currently unknown caves hosting the same species may also occur. Currently, ROE to large portions of the project area is unavailable; therefore, exact cave locations and occupancy are unknown. Thus, determining impacts to species and planning appropriate mitigation for Phases 2 and 3 is not possible currently. However, current design plans for Phases 2 and 3 are being used to create a range of potential impact scenarios that could occur for the karst invertebrates and other protected species (see

Section 4.1 for additional details). The following conservation measures and mitigation will be completed for Phases 2 and 3:

1. Survey all tracts for potential habitat as ROE becomes available.
2. Perform relevant presence/absence surveys on tracts where ROE becomes available, as needed.
3. Apply the same project-related conservation measures (e.g., water quality BMPs, recharge feature protection, construction crew education regarding species of concern, etc.) discussed in Section 2.4, and any other regulatory constructs that may be implemented between now and construction.
4. Re-initiate consultation with the Service prior to construction and after due diligence surveys have occurred.
5. Purchase the relevant amount of GCWA credits, as needed.

#### Other Conservation Measures Described by Species – Phases 2 and 3

##### Bone Cave Harvestman and Inner Space Caverns Mold Beetle

The preferred option for rehabilitation at On-Campus Cave is already described above, but additional mitigation for both the BCH and the ISCMB include the following:

Search for caves at the Texas Department of Public Safety facility southeast of Florence, mapping caves and collecting *Batrisesodes* specimens to perform genetic analysis. Specimens will be sent to a predetermined researcher.

1. Survey biota at Whitney West Cave (Twin Springs Karst Fauna Area) northwest of Georgetown for BCH. This includes excavating a feature washing open near the parking lot and mapping subsurface drainage for new feature and Whitney West Cave.

Census and study additional caves on the Lydda Tract (location of Cobbs Cavern Karst Fauna Areas) located southeast of Florence, mapping caves and collecting *Batrisesodes* and *Texella* specimens to perform genetic analysis. Specimens would be sent to a predetermined researcher.

The mitigation presented for BCH and ISCMB represent the types of options that could occur for Phases 2 and 3. Surveying the entire project area for karst features will help determine potential impacts to karst invertebrates and will provide valuable input when creating a mitigation plan for these species. Mitigation options will be further developed during consultation re-initiation.

##### Jollyville Plateau and Georgetown Salamanders

The extensive mitigation occurring at Garey Ranch Spring and BMPs associated with water quality controls and karst feature protection are sufficient to address potential impacts to salamanders in Phases 2 and 3. On-Campus Cave mitigation designed to slow down runoff and improve water quality entering the subsurface is expected to provide benefit to both species. Additionally, the lack of occupied springs near the project and away from Garey Park likely renders additional mitigation for salamanders related to this project unnecessary. However, this topic will certainly be revisited during the consultation re-initiation.

### Monarch Butterfly

Installation of pollinator friendly gardens around On-Campus Cave is likely sufficient to offset potential impacts to the monarch butterfly related to Phases 2 and 3. Further, this species is currently a candidate for protection under the ESA, and it is unclear when the species will be fully listed. However, this topic will certainly be revisited during consultation re-initiation for future phases.

### Tricolored Bat

Opening up On-Campus Cave to provide easy access to a very large winter bat roost with ideal climate conditions is likely sufficient to offset potential impacts to the tricolored bat related to Phases 2 and 3. Further, this species is currently proposed for protection under the ESA, and it is unclear when the species will be listed. This topic will be revisited during consultation re-initiation for future phases.

## **ANALYTICAL FRAMEWORK FOR JEOPARDY DETERMINATION AND DESTRUCTION OR ADVERSE MODIFICATION DETERMINATION**

Section 7(a)(2) of the ESA requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. “Jeopardize the continued existence of” means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR § 402.02).

The jeopardy analysis in this CBO considers the effects of the action, and any cumulative effects, on the range-wide survival and recovery of the listed species. It relies on four components: (1) the Status of the Species, which describes the range-wide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the listed species in the action area, without the consequences to the listed species caused by the proposed action; (3) the Effects of the Action, which includes all consequences to listed species that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action; and (4) the Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on the species.

For purposes of making the jeopardy determination, the Service: (1) reviews all the relevant information, (2) evaluates the current status of the species and environmental baseline, (3) evaluates the effects of the action and cumulative effects, (4) adds the effects of the action and cumulative effects to the environmental baseline, and, in light of the status of the species, determines if the action is likely to jeopardize listed species.

## STATUS OF THE SPECIES AND CRITICAL HABITAT

### Golden-Cheeked Warbler

The GCWA was listed as endangered on December 27, 1990 (55 FR 53160). There is no critical habitat designated for this species. The primary reasons for listing were habitat loss, oak wilt, nest parasitism, drought, and fire (55 FR 53160). The GCWA winters in mountainous regions of Chiapas, Mexico and Guatemala, Honduras, El Salvador, and Nicaragua (Ridgeway 1902, Oberholser 1974, Pulich 1976, Perrigo and Booher 1994, Rappole et al. 1999, Komar 2008). On the wintering grounds, GCWAs prefer foraging in deciduous trees in pine-oak forests (Thompson 1995, Rappole 1996). The GCWA migrates from Mexico and Central America and nests from March through August in mixed Ashe juniper/deciduous woodlands in approximately 35 counties across the Edwards Plateau, Lampasas Cut-Plain, and Llano Uplift regions of central Texas (Kroll 1974, Oberholser 1974, Pulich 1976). To our knowledge, a comprehensive survey of GCWAs throughout their range does not exist, but various estimates of acres of habitat in the breeding range have been made. Morrison et al.'s (2010) habitat model estimated 4.4 million acres range-wide. Duarte et al. (2013) estimated 3.9 million acres of potential breeding habitat and determined there was a 29 percent loss of habitat between 1999/2000 and 2010/2011. The most recent approximation by Mueller et al. (2022) estimated 5.5 million acres. These models used varying methods for their estimates, thus the wide range.

Various researchers have made several estimates of population numbers in the last 10 plus years. Mathewson et al. (2012) modeled range-wide GCWA habitat and estimated there could be as many as 263,339 males. However, independent peer review of this population model raised concerns with overestimation (The Wildlife Society 2011). Partners in Flight (2019) estimated the GCWA global breeding population to be 110,000 individuals, based on data from seven routes in the North American Breeding Bird Survey. Finally, Mueller et al. (2022) predicted 264,560 males using only slightly different methods from Mathewson et al. (2012).

According to the GCWA Recovery Plan (Service 1992), the breeding range has been divided into eight recovery regions. The primary recovery criterion is protection of sufficient habitat to support 3,000 breeding pairs in each of the eight recovery regions (Service 1992). Groce et al. (2010) found no evidence to indicate that the amount of GCWA breeding habitat is increasing or stable due to continued loss and fragmentation from human development, shifts in land use, and construction of roads and utility transmission corridors. The 6 Texas counties that contain the I-35 corridor between Temple south to San Antonio that bound the eastern edge of the GCWA's range were in the top 30 counties (out of 254) for growth in the 2020 Census (U.S. Census Bureau 2020). Georgetown and Williamson County populations increased around 22 percent from 2017 to 2022 based on U.S. Census Bureau 2022 American Community Survey. There is no foreseeable reason why growth would not continue to follow this trajectory. Because projected increases in human population will continue within the breeding range of the species, the threats described above are likely to intensify.

A variety of public and private lands currently receive some level of protection from future land development activities, and some of these are managed as natural areas or wildlife preserves focusing on the protection and management of the GCWA. Groce et al. (2010) and updated

information from our Geographic Information System geodatabase determined the amount of GCWA habitat on state and federally owned lands includes approximately 77,198 acres of Department of Defense (DOD) lands (Fort Cavazos, JBSA-Camp Bullis, and U.S. Army Corps Engineers); 39,428 acres on Texas Parks and Wildlife Department (TPWD) lands; and 2,844 acres on Lower Colorado River Authority properties. The Service's Balcones Canyonlands National Wildlife Refuge supports numerous GCWAs on their approximately 25,000 acres. Additionally, cities, counties, conservation organizations, and others own approximately 50,000 acres across the breeding range. There are also multiple conservation banks established for the GCWA that will protect an additional 15,000 acres upon sale of all conservation credits.

We incorporate by reference the Golden-cheeked Warbler Recovery Plan (Service 1992) and 5-Year Review (Service 2014). Additional information on this species' life history, range, migration, habitat, threats, recovery needs, and status can be found at the Service's endangered species page: <https://ecos.fws.gov/ecp/species/33>

#### Bone Cave Harvestman

This karst invertebrate was listed as endangered on September 16, 1988 (53 FR 36029) due to increased urban development, pollution, vandalism, and red-imported fire ants (*Solenopsis invicta*). Critical habitat has not been designated for this species.

The BCH is an arachnid that is endemic to central Texas. It is classified as a troglobite (spending its entire life underground), has small or absent eyes, and pale coloration (Barr 1968). Its habitat includes caves and mesocavernous voids, which are landforms and subsurface features (for example, sinkholes and caves) produced by dissolution of bedrock in karst limestone (Barr 1968). Within this habitat the BCH depends on high humidity, stable temperatures, suitable substrates (for example, spaces between and underneath rocks), and surface-derived nutrients (Barr 1968). The absence of light in deep cave zones precludes photosynthetic activity by plants and associated primary production. Rather, nutrient sources found in these underground habitats are those actively (e.g., animals) or passively (e.g., gravity, water, or wind) transported in from overlying surface habitats (Barr 1967 and 1968, Culver 1982, Poulson 2012, Culver and Pipan 2009). Thus, although the BCH spends its entire life underground, its ecosystem is dependent on the overlying surface habitat.

The primary threat to the BCH is habitat destruction (Service 2011). Impacts to caves and karst habitat occur in several ways, including but not limited to: 1) completely filling the cave during development, 2) quarrying activities, or 3) capping or sealing cave entrances. Other causes of habitat degradation include altering drainage patterns, altering native surface plant and animal communities, reducing or increasing nutrient flow, contamination, damage caused by excessive human visitation, and threats from red-imported fire ants (Service 2011). Red-imported fire ants impact karst invertebrates by competing with the beneficial cave crickets, feeding directly on karst invertebrates, and by competing with karst invertebrates for habitat resources (Service 2011). The recovery strategy for all listed karst invertebrates is to reduce threats to the species by protecting an adequate number of karst areas to ensure a high probability of the species' long-term survival (Service 2011). This includes protecting caves or cave clusters and the associated mesocaverns necessary to support populations that represent the range of the species potential

genetic diversity. Maintenance of these karst preserves involves keeping them free from contamination, excessive human visitation, and nonnative fire ants by maintaining an ecologically healthy surface plant and animal community. Preserve managers need to regularly monitor and adaptively manage to control existing and new threats (Service 2011).

We track the known locations of each species for progress towards recovery. Below is a summary of the number of caves the BCH is known from (this includes confirmed and unconfirmed locations), how many karst fauna regions (KFRs) it occurs in, and how many potential and established karst fauna areas (permanent preserves that would meet the Service's 2011 preserve design criteria; KFA) exist for BCH (Table 1). It is important to note that a large number of these potential KFAs are within preserve properties, they have just not been established as official KFAs.

Table 1. Summary of the number of caves, karst fauna regions (KFRs) and karst fauna areas for the BCH addressed in this Opinion.

<b>Species</b>	<b>No. of Caves</b>	<b>KFRs</b>	<b>Potential KFAs</b>	<b>Established KFAs</b>
Bone Cave harvestman	241	6	36	4

#### Inner Space Caverns Mold Beetle

This karst invertebrate was listed as endangered on September 16, 1988 (53 FR 36029) due to habitat destruction, degradation and fragmentation the results from urban development. Critical habitat has not been designated for this species.

The ISCMB is a member of the subfamily Pselaphine that is endemic to a restricted range in the Balcones Canyonlands ecoregion of Texas, specifically Williamson County. It is classified as a troglobite (spending its entire life underground), has small or absent eyes, elongated antennae and legs, and elongated sensory hair-like structures (Chandler 1992). Its habitat includes caves and mesocavernous voids, which are landforms and subsurface features (for example, sinkholes and caves) produced by dissolution of bedrock in karst limestone (Griffith et al. 2007). Within this habitat the ISCMB depends on high humidity, stable temperatures, suitable substrates (for example, spaces between and underneath rocks), and surface-derived nutrients (Bull and Mitchell 1972). Most pselaphines are predators and the ISCMB feeds on other invertebrates (Park 1960). Most nutrients that cave-based species like the ISCMB depend on originate from the surface ecosystem directly surrounding the cave (Barr 1968). Thus, although the BCH spends its entire life underground, its ecosystem is dependent on the overlying surface habitat.

The primary threat to the ISCMB is habitat destruction (Service 2018). Impacts to caves and karst habitat occur in several ways, including but not limited to: 1) completely filling the cave during development, 2) quarrying activities, or 3) capping or sealing cave entrances. Other causes of habitat degradation include altering drainage patterns, altering native surface plant and animal communities, changing nutrient flow, contamination, damage caused by excessive human visitation, and threats from red-imported fire ants (Service 2011). Red-imported fire ants impact karst invertebrates by competing with the beneficial cave crickets, feeding directly on karst invertebrates, and by competing with karst invertebrates for habitat resources (Service 2011).



The recovery strategy for all listed karst invertebrates is to reduce threats to the species by protecting an adequate number of karst areas to ensure a high probability of the species' long-term survival (Service 2011). This includes protecting caves or cave clusters and the associated mesocaverns necessary to support populations that represent the range of the species potential genetic diversity. Maintenance of these karst preserves involves keeping them free from contamination, excessive human visitation, and nonnative fire ants by maintaining an ecologically healthy surface plant and animal community. Preserve managers need to regularly monitor and adaptively manage to control existing and new threats (Service 2011).

### Tricolored Bat

The tricolored bat is a small insectivorous bat identified by its tri-colored fur, which is dark at the base, lighter in the middle, and dark at the tips. With a wingspan of approximately three inches, tricolored bats are one of the smallest bat species in North America (Service 2021). When roosting, it can be identified by its distinctive orange forearm. Tricolored bat lifecycle includes mating in late summer into early fall, where females store sperm over winter months and complete fertilization in early spring, followed by birthing one or two young in small maternity colonies (<20 total bats) in late spring to early summer. Juveniles wean quickly and are flying and foraging by four weeks. Juveniles likely do not mate in their first fall season (Service 2021a). After mating, tricolored bats are typically solitary and may roost or hibernate individually away from other bats.

The tricolored bat is known to occur in Texas and has been documented in a variety of habitats across the state (Service 2021). Throughout their range, tricolored bats show a shift in roost preference, tending to roost in structures or caves in winter, and on foliage, or tree bark in summer, including during the maternity season (Service 2021, Shute, et. al 2021). Tricolored bats have been shown to prefer live or dead hardwood trees for maternity roosts (Hammesfahr et al. 2022). Tricolored bats are known to use transportation infrastructure and will commonly use culverts as winter roost sites. Research indicates that tricolored bats demonstrate preference for culverts that have openings at least 1.60 meters high, and total lengths of at least 44 meters (Meierhoffer et al. 2019). Foraging habitat for tricolored bats includes forest edges and forested areas along waterways (Service 2021). Individuals may forage 15 miles or more from their roost sites (Thames 2020).

Threats to tricolored bats include habitat loss, mortality from wind turbines, and white-nose syndrome (Service 2021). Winter roost loss and disturbance can be particularly harmful to tricolored bat both on an individual and population level (Service 2021). Disturbance in winter roost sites can also lead to susceptibility to and mortality from white-nose syndrome (Boyles and Willis 2010). White nose syndrome has been detected in Texas, however the impacts of the fungus on Texas populations of tricolored bats is currently poorly understood. Models indicate a predicted increase of occurrence in north and central Texas (Meierhoffer, et al. 2021).

### Monarch Butterfly

The monarch is a species of butterfly in the family Nymphalidae that occurs in North, Central, and South America; Australia; New Zealand; islands of the Pacific and Caribbean; and elsewhere

(Malcolm and Zalucki 1993). Adult monarchs have 3 to 4-inch wingspan with bright orange wings surrounded by a black border and overlaid by black veins. The black border has a double row of white spots, present on the upper side and lower side of forewings and hindwings (Bouseman and Sternberg 2001). The monarch butterfly is a candidate for listing under the ESA. On December 17, 2020, the Service published a rule that determined the species listing was warranted but precluded by other priorities (85 FR 81813). A listing decision for the species is anticipated in 2024.

Monarchs migrate through Texas during both the spring and fall between breeding grounds in the northern U.S. and Canada and wintering grounds in Mexico (Service 2020, USDA 2023). Along the way, monarch will feed and breed over two to five generations, dependent on environmental conditions (Service 2020a). During fall migration adults move southward within the months of September to November with peak migratory populations occurring in north Texas at the beginning of October, and south Texas by the third week in October (Tracy et al. 2022). Large congregations of individuals may pass through a given area during optimal climatic conditions during fall migration. The northern remigration occurs when overwintering adults emerge from their winter roosts and begin to move northwards through Mexico and into the southern U.S. from February to April (Tracy et al. 2022). Overwintered, adult monarchs arrive in southern Texas as early as February. By mid-March adult monarchs are typically sighted at latitudes between Houston and Dallas (Tracy et al. 2022). The species is widespread during migration and is expected to occur in the action area during migration. Adults are found in a variety of habitats including native prairies, pastures, open woodlands and savannas, desert scrub, roadsides, and other habitats with abundant nectar plants, including urbanized areas. Although adults may be present year-round, they are primarily encountered between March and November and are most observed in the summer and fall during breeding and migration. Larval caterpillars are most frequently observed between April and September.

Monarchs are dependent on healthy and abundant host plants for breeding, specifically deposition of eggs and for larval consumption. Known host plants for monarchs include a variety of species in the family Apocynaceae, with a demonstrated preference for milkweeds (genus *Asclepias*) (Jones and Agrawal 2019). Adults also need sufficient quality and quantity in nectar resources for feeding after emergence, and through breeding and migration (Service 2020). Monarchs have been observed nectaring on a variety of flowering plant species (Rudolph et. al. 2006).

Monarch populations are known to fluctuate and appear to be somewhat resilient; however, area of occupancy, number of subpopulations, population size, and habitat quality in North America have all declined, and North American populations have declined by more than 50 percent this century (NatureServe 2023). Threats to monarch include loss or changes to breeding, migratory, and wintering habitat with sufficient host plant and nectar resources; use of pesticides and herbicides; climate change; and drought. Road mortality is also a threat; however, it is a much lower threat and is thought to contribute to less than 5 percent of the overall decline of monarch (Service 2020). Monarch butterflies may be present in the action area during various portions of their life and annual cycles. Adults, larvae, and eggs may be present within the project area at various times of year. The action area and most of Texas lies within the spring and fall migration routes and spring breeding areas (Howard and Davis 2009).

## ENVIRONMENTAL BASELINE

Regulations implementing the ESA (50 CFR 402.02) define the environmental baseline as the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions, which are contemporaneous with the consultation in process. The impacts to listed species or designated critical habitat from Federal agency activities or existing Federal agency facilities that are not within the agency's discretion to modify are part of the environmental baseline.

### Status of the Species within the Action Area

#### Golden-cheeked Warbler

Most records of GCWA observations that have been submitted to eBird (2022) from Recovery Region 5 are birds seen in Travis County, with many sightings in Williamson County. Most of the Recovery Region 5 records were obtained in the Balcones Canyonlands National Wildlife Refuge, which are approximately 8.3 miles southwest of the proposed project. Six sightings of the species within the Action Area are attributed to Garey Park from 2019–2021 and a single sighting is located near Garey Park at RM 2243 (existing); however, it is not clear whether these were migrants or breeding individuals. Imagery indicates the eBird sightings do not appear to be within or near closed canopy forest and no additional information is given about those sightings.

According to the Morrison et al. (2010) GCWA habitat model, the project area contains 114.1 acres of potentially suitable (ranging from low probability of occurrence to high probability of occurrence) GCWA habitat and that approximately 162.2 acres of potentially suitable habitat occurs within 250 feet (this acreage excludes potential habitat within the project area). Table 2 shows the potential GCWA habitat, and the occupancy probability of this habitat, present within the project area and within 250 feet (Morrison et al. 2010).

Table 2. Potential suitable golden-cheeked warbler habitat in the Project Area and within 250 feet.

<b>Occupancy Probability</b>	<b>Acres in Project Area</b>	<b>Percentage of Total Habitat in Project Area</b>	<b>Acres within 250 ft</b>	<b>Percentage of Total Habitat within 250 feet</b>
<0.3	45.6	39.96%	52.7	32.49%
0.3-0.5	25.2	22.09%	45.7	28.18%
0.5-0.7	0.1	0.09%	2.4	1.48%
>0.7	43.2	37.86%	61.4	37.85%
<b>Total</b>	<b>114.1</b>		<b>162.2</b>	

SWCA delineated potential GCWA habitat by completing initial desktop mapping and then verifying those results in the field. SWCA completed the initial desktop mapping by inspecting recent aerial imagery (Google Earth Pro 2022) to delineate woodland areas that appeared to have a structure and composition consistent with the characteristics of suitable GCWA habitat (see Campbell 2003).

All desktop mapping was performed by a Service-permitted, avian ecologist with more than 25 years of experience surveying for GCWA individuals and habitats (Paul Sunby, SWCA Senior Avian Ecologist, Service Permit TE-800611-8). Mr. Sunby field verified and refined the desktop delineation of potential GCWA breeding habitat during a field visit performed on November 17, 2021. The habitat estimates from this report are not expected to have appreciably changed since 2021.

According to this delineation, Phase 1A includes 2.0 acres of potential GCWA habitat and 21.7 acres of potential habitat within the 250-foot buffer. Phase 1B includes 0.2 acre of potential GCWA habitat and 36.4 acres within the 250-foot buffer. **Figure B-5** (see **Appendix B**) depicts the SWCA-delineated GCWA habitat within the Phases 1A and 1B project area and within the 250-foot buffer. The SWCA-delineated GCWA habitat represents a more up-to-date model of potential habitat present within the proposed project and within 250 feet, as Morrison et al. (2010) used aerial imagery from over a decade prior, which may have included areas that have since been developed and are no longer considered to be potential suitable habitat for the GCWA.

#### Bone Cave Harvestman

BCH occur in caves and other karst features formed in the Edwards Limestone in Williamson and Travis counties. This species typically occurs in karst features lacking sunlight and that possess high humidity, relatively constant temperature, and receive nutrients from surface plant and animal communities (Service 2018a). However, detailed life history information (e.g., diet, reproduction) is currently unknown (Service 2018a). Service (2018a) indicates BCH has been documented to occur in approximately 203 caves.

The project area is located within the Georgetown Karst Fauna Region (KFR), is confined to Edwards Limestone outcrops bounded at the northern extent by the North Fork San Gabriel River and bounded at the southern extent by Brushy Creek, as described by Veni and Jones (2021) (Figure B-6 in Appendix B). The Georgetown KFR is known to contain two endangered species of karst invertebrates: the BCH and the ISCMB (see Section 3.1.3). The Veni and Jones (2021) KFRs attempt to map the separate and distinct ecological communities present within the Edwards Limestone complex of the Austin area.

Karst Zones (also described by Veni and Jones 2021) attempt to describe the likelihood of encountering endangered karst invertebrate occurrence across the landscape. The Karst Zones within the project area (see Appendix A) are defined as the following (Veni and Jones 2021):

- Karst Zone 1: areas known to contain endangered cave fauna.
- Karst Zone 2: areas having a high probability of suitable habitat for endangered or other endemic invertebrate cave fauna.
- Karst Zone 3: areas that probably do not contain endangered cave fauna.

- Karst Zone 3a: areas suitable for troglobite species but have a low probability of containing endangered karst species because the habitat is occupied by other troglobite species.
- Karst Zone 3b: areas which have a low probability of containing endangered karst species because they are poorly suited for troglobite species.
- Karst Zone 4: areas that do not contain endangered cave fauna.
- Karst Zone 4a: areas suitable for troglobite species but which do not contain endangered karst species because the habitat is occupied by other troglobite species.
- Karst Zone 4b: areas which do not contain troglobite species.

The majority of the Action Area (i.e., 784.2 out of 1,265.1 acres; 62 percent) is located within Karst Zone 1 which are areas known to contain endangered karst fauna (see Table 3 and BA Appendix A) and the remainder of the Action Area falls within Karst Zone 4b. Karst Zone 1 generally coincides with the Edwards Limestone Formation while Karst Zone 4b generally coincides with the Keys Valley Marl Formation in the western portion of the Action Area.

Table 3. Karst zone acreage within the project area and action area

<b>Project Area</b>	<b>Karst Zone</b>	<b>Acres in Project Area</b>	<b>Percent of Project Area</b>	<b>Acres in Action Area</b>	<b>Project Area + Action Area Buffer (Acres)</b>
Eastern	1	248.6	51 percent	411.6	660.2
Eastern	4b	0	0 percent	2.4	2.4
Western	1	42.9	9 percent	81.1	124.0
Western	4b	198.1	40 percent	280.4	478.5
<b>Total</b>		<b>489.6</b>	<b>100 percent</b>	<b>775.5</b>	<b>1,265.1</b>

SWCA (2016, 2022) identified four caves (i.e., Lozano's Mine, Cluster Cave, Tinnel Cave, F 37) from within the Action Area during field surveys where ROE has been granted (BA Appendix E and Appendix F). Presence/absence surveys did not locate either endangered karst invertebrate in Lozano's Mine or F-37, the BCH was detected in Tinnel Cave, and no surveys were performed in Cluster Cave due to lack of potential habitat (BA Appendix F). An additional six caves were identified through a data request with TSS (2021) in parts of the action area where ROE has not yet been granted. Ku Klux Klan Cave is not known to contain any endangered karst invertebrates (TSS 2021). In Goat Cave, millipedes, harvestmen, and cave crickets have been observed; however, it is unknown whether the harvestmen present within this cave are BCH or another species (TSS 1967, 2021). The BCH has been documented in Man-With-A-Spear Cave (TSS 2021). The status of BCH in Circle Cave, Water Tower Cave, and Spotted Sink is unknown. Figure B-6 (BA Appendix B) shows the locations of these caves within the Action Area. Per Section 2.4.2, cave studies will be completed as ROE is obtained.

#### Inner Space Caverns Mold Beetle

The ISCMC inhabits Edwards Limestone caves, enlarged rock joints, sinkholes, and smaller karst conduits where subsurface voids are in permanent darkness (Service 2018b). This species' known range is limited to central Williamson County (Service 2018b); however, the species' southwestern range extent is unknown, primarily due to a lack of data on caves in the area (Van

Kampen-Lewis et al. 2019). Therefore, the extent to which the species may occur within caves inside the Action Area is unknown. The closest documented ISCMB locality to the project area is within On-Campus Cave, approximately 0.9 mile east of the project area.

The same information discussed about the Georgetown KFR, Karst Zones, and nearby caves above is applicable here. The BCH and ISCMB are known to require similar environmental conditions to survive. Like the BCH, the 345-foot cricket foraging area around occupied caves is thought to be an ecologically relevant zone for the ISCMB since cave crickets will forage and then deposit guano in the caves. SWCA (2022b) was unable to locate the ISCMB after 14 presence/absence surveys within both Lozano's Mine and Tinnel Cave. Figures in BA Appendix A show the KFR and Karst Zones relative to the Action Area.

#### Beneficial Effects to Golden-Cheeked Warbler, Inner Space Caverns Mold Beetle, and Bone Cave Harvestman

Expected beneficial aggregate effects reasonably expected to occur in the action area include continued state, local government, and private lands preservation. Additional expected benefits include preservation of GCWA and karst invertebrate habitat due to implementation of Habitat Conservation Plans (HCP). The Williamson County Regional HCP (SWCA et al. 2008) provides an umbrella authorization for activities without a federal nexus that would otherwise require an individual permit from the Service. These activities include public or private construction and development; road construction, maintenance, and improvement; utility installation and maintenance; and school development or improvement projects. The Regional HCP's Covered Species include the GCWA, BCH, and ISCMB and details how such public and private improvement projects affect Covered Species, as well as requested amount of incidental take (SWCA et al. 2008). It is expected that at least a portion of future non-federal development within Williamson County, which includes Georgetown and Leander ETJs, would be compliant with the ESA by participation in the RHCP (SWCA et al. 2008).

#### Tricolored Bat

The tricolored bat was documented from Lozano's Mine (approximately 350 feet south of the Phase 1A project area) see Figure B-3 (BA Appendix B) during the presence/absence surveys for endangered karst invertebrates (SWCA 2022b). The species was not documented within Tinnel Cave, nor in Cluster Cave. Surveys performed in late 2015 and early 2016 to determine karst invertebrate presence/absence in F-37 did not document tricolored bat presence.

It is unclear if tricolored bats occur in Man-With-A-Spear, Ku Klux Klan, Circle, Water Tower, Spotted Sink, and Goat Caves; all of which occur in or near the Phase 1B project area. If access is granted to these caves, biota surveys will be conducted to determine if tricolored bats utilize these karst features.

Additionally, it is unclear if other caves that are utilized by tricolored bats occur within or near the Phase 1B project area. If access is granted to these caves, biota surveys will determine if tricolored bats utilize these karst features, should they occur.



### Monarch Butterfly

The monarch butterfly is a habitat generalist that can occur just about anywhere in Williamson County, but its preferred habitat includes grassland or shrubland habitats with native grasses and shrubs with milkweed and other flowering plants (Service 2020). The eastern migratory population of monarch butterfly funnels through Texas during the spring to breed and fall to migrate to their winter roosting ground in Mexico (Service 2020), making this region of the country especially important for migrants. Adults of this species may utilize a variety of flowers for nectar within the project area. They may also lay eggs on milkweeds, the species larval host plant, that occur within the project area.

Tracy et al. (2024) created a milkweed density map for Williamson County that was ground-truthed and refined with field investigations at transects throughout the County during the spring and fall of 2022. NLCD (Dewitz 2023) was utilized to find potential monarch habitat across Williamson County and then was field verified; this is an approach that follows the methodology provided in Kantola et al. (2021) and as refined in Tracy et al. (2022). Using these methods, average milkweed densities were assigned to each 0.25-acre cell within Williamson County. Average estimated milkweed density was placed in three categories: 1) low (0.01 to 1.67 milkweeds per 0.25 ac); 2) medium (1.68 to 3.23 milkweeds per 0.25 ac); and 3) high (3.24 to 4.80 milkweeds per 0.25 ac). Table 7 and Figure B-9 in Appendix B depict the average estimated milkweed density within the project area. Phases 1A and 1B could affect 30.2 acres high density milkweed, 7.4 acres of medium density milkweed, and 0.9 acre of low-density milkweed.

Table 4. Average estimated milkweed density within the project area (Tracy et al. 2024)

<b>Average Estimated Milkweed Density Category</b>	<b>Phase 1A (Acres)</b>	<b>Phase 1B (Acres)</b>
High (>3.23 and <= 4.80 milkweeds/0.25 ac)	13.1	17.1
Medium (>1.67 and <=3.23 milkweeds/0.25 ac)	3.8	3.6
Low (>0.01 and <=1.67 milkweeds/0.25 ac)	0.8	0.1
Total	17.7	20.8

The closest records of the species include many sightings submitted to iNaturalist (2024) from within Garey Park in recent years. iNaturalist (2024) also includes documentation of many milkweeds occurring near the existing RM 2243 in the past few years. It is unclear to what extent the monarch butterfly may utilize milkweed within the project area.

### Critical Habitat

No critical habitat has been designated or proposed for the GCWA, BCH, or ISCMB. No critical habitat for any listed or proposed species occurs within the Action Area. Critical habitat will not be discussed further in this document.

## EFFECTS OF THE ACTION

In accordance with 50 CFR 402.02, effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action but that are not part of the action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see §402.17).

### Golden-cheeked Warbler

Two distinct types of impacts to GCWA habitat are considered: i) those areas where potential habitat is removed by the project, and ii) those areas where potential habitat could be indirectly impacted (i.e., areas within 250 feet of vegetation clearing). Habitat removal while GCWA is actively breeding can result in death or injury to baby birds and could cause disturbance to adult birds. Additionally, habitat removal at any time of year can have impacts to territory-seeking males and breeding females returning to a previously held territory that is no longer extant.

Indirect habitat impacts are those that can be attributed to a particular action and are typically realized outside of a construction footprint and later in time. These types of stressors considered for the proposed project are primarily related to increased predation rates associated with nearby habitat removal and increased human activities associated with construction and increased traffic. While some of these stressors are temporary in nature, others can be long-lasting.

### Habitat removal and fragmentation impacts.

GCWAs may be killed or injured because of activities proposed to be performed within the project area or more broadly, within the 250-foot buffer. The clearing of potential GCWA habitat will be performed outside of the nesting season to preclude the direct destruction of active GCWA nests. In addition, any woody vegetation not identified as GCWA habitat that is to be cut during the period of March 1–September 15 would only be cut after a survey was performed to verify the absence of active bird nests of any species. Vegetation clearing activities near nesting GCWA is thought to diminish breeding habitat. However, vegetation identified as potentially suitable GCWA habitat will be cut during the time of year that birds are absent from their Texas breeding grounds, and so the noise and activity associated with vegetation clearing is not expected to result in any immediate disturbance to the species.

Construction of the proposed project within the ROW of the roadway will require the removal of approximately two acres of potentially suitable woodland habitat as identified by SWCA during their November 2021 delineation in Phase 1A and 0.2 acre within Phase 1B (BA Section 3.1.1; Table 8). Phase 2 could remove 7.3 acres of potential GCWA habitat and Phase 3 could remove 16.3 acres of potential GCWA habitat (Table 5). As seen on Figure B-5 (BA Appendix B), most of the potentially suitable habitat removed will, in essence, be shaved from the margins of existing patches of woodland that already abut the existing roadway.

Table 5 provides a breakdown of the amount of potentially suitable GCWA habitat that would be removed and modified because of activities occurring within the project area and within a 250-foot buffer for Phases 1A, 1B, 2, and 3.

Table 5. Summary of Impacts to Potential Golden-cheeked Warbler Habitat

<b>Project Area</b>	<b>Acres in Project Area</b>	<b>Acres within 250-feet</b>
Phase 1A	2.0	21.7
Phase 1B	0.2	36.4
Phase 2	7.3	71.3
Phase 3	16.3	66.9
<b>Total</b>	<b>25.8</b>	<b>196.3</b>

Approximately 21.7 and 36.4 acres of potentially suitable GCWA habitat outside the project area but within 250 feet may be subject to impacts for Phase 1A and Phase 1B, respectively (Table 5), including 2.2 (2.0 and 0.2 acres for Phase 1A and 1B, respectively) within the project area. Approximately 71.3 and 66.9 acres of potentially suitable GCWA habitat outside the project area but within 250 feet may be subject to impacts for Phase 2 and Phase 3, respectively (Table 5). GCWA mitigation for Phases 2 and 3 will be reevaluated when consultation is reinitiated in the future.

Any GCWA that uses this impacted habitat could experience various stressors related to the proposed project. Increased stressors from nearby vegetation clearing may include habitat modification for less feeding and nesting areas and an increase in predation rates. The Service (2014) identifies several species as having been documented to, or likely to, prey upon GCWA. These include red-imported fire ant (*Solenopsis invicta*), western coachwhip (*Masticophis flagellum testaceus*), Great Plains rat snake (*Pantherophis emoryi*), Woodhouse's scrub-jay (*Aphelocoma woodhouseii*), Cooper's hawk (*Accipiter cooperii*), American crow (*Corvus brachyrhynchos*), greater roadrunner (*Geococcyx californianus*), brown-headed cowbird (*Molothrus ater*), and mice (*Peromyscus spp.*). The Service (2014) also identifies eastern fox squirrel (*Sciurus niger*), blue jay (*Cyanocitta cristata*), grackles (*Quiscalus spp.*), and feral cats (*Felis domesticus*) as potential predators whose numbers might increase in fragmented and urban habitats.

The cutting of woodland habitat can create a sharp division or edge between remaining woodland and newly opened areas. GCWA will occur at both the edge and in the interior of woodlands. Peak (2007) found that GCWAs suffer lower nest success rates close to woodland edges because of increased nest depredation rates, with most losses caused by snakes. It is believed that snakes prefer woodland edges over woodland interior because access to adjacent sunnier, open areas enhances their thermoregulation capabilities. Both western coachwhip and Great Plains rat snake are known to occur in Williamson County (Dixon 2013). Clearing of woodland within the project area would create new woodland edges in some locations; however, some woodlands within 250 feet of the project area are already exposed to edges because of existing roads or open areas cleared of vegetation. Additionally, the proposed project could result in decreased numbers of snakes because of losses to vehicle collision mortality within the project area.

Other construction activities that would occur as part of the proposed project, including construction of the roadway in the Action Area, could be performed during the GCWA nesting season. Studies of the possible effects of road construction on GCWA have demonstrated that road construction noise and activity have no noticeable effect on GCWA pairing success, territory placement, or productivity (Lackey et al. 2011; Pruett et al. 2014). However, it is possible that construction activities would still carry some potential to disturb GCWAs at least temporarily because of noise, human activity, or vibrations.

In summary, we expect that, while the proposed activities may result in effects to GCWA, we expect these effects will be limited to habitat impacts described above that are reasonably certain to occur. With the implementation of the conservation measures described in the BA, we anticipate that individual birds may experience a reduction of up to 196.3 acres of habitat. However, these effects are localized, as described herein, and we do not anticipate the Action would appreciably reduce the likelihood of both the survival and recovery of this species in the wild.

#### Bone Cave Harvestman and Inner Space Caverns Mold Beetle

The Action Area is broken into two areas for karst invertebrates: 1) where potential habitat may be impacted by ground disturbance and/or impervious cover, and 2) where potential habitat is within 345 feet of vegetation clearing. BCH and ISCMB can be injured or killed and habitat can be lost or altered. Other effects that are outside the construction area and are later in time (i.e., within the Action Area, outside of the project area) can be understood as potential stressors to the species. Impacts and stressors to the BCH and ISCMB are discussed below.

Habitat Removal and Alteration impacts. Nine known, mapped caves or sinkholes are present within the project area; however, none of these are mapped within Phases 1A and Phase 1B (BA Figure B-6 in Appendix B). The exact locations of most features are not confirmed; however, due to lack of access to the majority of Phase 1B. Except for Lozano's Mine, at least a portion of these caves' footprints extend within the project area in which ground-disturbing activities will take place at some point. At least two of these caves (i.e., Tinnel Cave and, Man-With-A-Spear Cave) are known to contain the BCH (TSS 1967, 2021; SWCA 2022). Additionally, construction activities in locations within the project area that have been identified as Karst Zone 1 (BA Appendix A), areas that are known to contain endangered cave fauna, or where previously undetected voids may become detected and/or are disturbed. Generally, voids are detectable once the surface has been graded and cleared of debris. However, any impacts to these previously undetected voids would be minimized with BMP use and void discovery protocol (BA Section 2.4.2). It is possible that the proposed project could cause mechanical injury and/or mortality to a small number of karst invertebrates as their habitat, either known caves or previously undetected voids within Karst Zone 1, is physically altered within the project area.

Additionally, ground disturbance adjacent to karst invertebrate habitat may not encounter humanly observable voids; however, smaller interstitial spaces inhabited by endangered karst individuals can collapse via dislodged rocks, soil, or dust due to local, machine-related vibration. Such incidents are conceivable and could also cause injury and/or mortality to karst invertebrates as adjacent habitat is physically altered. Although it is conceivable that a BCH and ISCMB may

be directly injured or killed because of project activities, it is much more likely that an individual would be directly impacted because of harm via habitat loss. As previously stated, the entire eastern project area (248.6 acres) occurs within Karst Zone 1 and 42.9 acres of the western project area occurs within Karst Zone 1. However, the current resolution of the project allows a more detailed look at where excavation and impermeable cover will be installed for each phase. More specifically, the proposed project will permanently impact approximately 5.1 acres of Karst Zone 1 habitat within Phase 1A, 21.1 acres in Phase 1B, 27.7 acres in Phase 2, and 88.4 acres in Phase 3 (Table 6). It is unclear what the addition of an impermeable layer (i.e., new location roadway or roadway expansion) would be atop BCH habitat, which is characterized as layers of permeable and impermeable rock interspersed with clay. Proposed Karst Zone 1 excavation volume in Phase 1A will be 142,400 cubic yards (CY), Phase 1B will be 120,850 CY, Phase 2 will be 143,000 CY, and Phase 3 will be 555,000 CY (Table 6). Any BCH and ISCMB that are within the project area, or the larger Action Area, may no longer be able to utilize those areas directly beneath roadways; however, the actual extent of these impacted areas may be less than these maximum amounts, although this may be difficult to discern based on the habitat characteristics.

Table 6. Proposed Excavation Volume and Acreage for Each Phase in Karst Zones

	<b>Karst Zone 1</b>	<b>Karst Zone 1</b>	<b>Karst Zone 1</b>	<b>Karst Zone 4b</b>	<b>Karst Zone 4b</b>	<b>Karst Zone 4b</b>
<b>Phase</b>	<b>Excavation Volume (CY)</b>	<b>Max Cut (ft)</b>	<b>Project Area (acres)</b>	<b>Excavation Volume (CY)</b>	<b>Max Cut (ft)</b>	<b>Project Area (acres)</b>
Phase 1A	142,500	14.4	5.1	37,800	13.9	14.1
Phase 1B	120,850	16.5	21.1	9,550	13.6	0.0
Phase 2	143,000	18.6	27.7	21,000	8.9	16.8
Phase 3	555,000	19.1	88.4	36,000	12.4	62.1

It is possible that previously undetected voids could be discovered within the project area during construction. Due to largely unknown underground connectivity of the karst features within this area, it is possible that a void encountered in this area could alter habitat within nearby caves or interstitial spaces within the project area as a direct consequence of construction, and in the larger Action Area as a stressor. The impacts to voids encountered during clearing activities would vary depending on the vertical and horizontal extent of the void space, and whether the void is situated in the floor of the milled or graded area or in the wall. If a large portion of a void is exposed, climate alteration would be exacerbated. If only a narrow opening to a void is created, climate alteration may be minimal. In either case, flooding may occur on the floor of the down-cut area, especially if it has the aspect of a large trench, channeling floodwaters.

Additionally, the installation of an impermeable roadway could preclude rainwater from reaching subterranean locations. Such alteration to karst habitat could negatively impact BCH and ISCMB present within the project area. However, the three-dimensional nature of karst habitat characterized by unseen layers of impermeable and permeable layers makes quantification of potential impacts difficult. Nonetheless, potential impacts to previously undetected voids would be minimized due to implementation of BMPs and void discovery protocol (BA Section 2.4.2).

The proposed project is expanding existing impervious cover within an already urbanized to semi-urbanized landscape. Existing impervious cover will increase by 8.0 acres within Phase 1A, 21.1 acres within Phase 1B, 44.5 acres within Phase 2, and 152.9 acres within Phase 3 (see Table 7). It is unlikely that the proposed project would affect hydrologic patterns within local mesocaverns (voids smaller than 8 inches) already impacted by existing impervious cover. The potential for impacts to previously undetected karst features would be minimized from construction activities and from post-construction spills on the proposed roadway by the implementation of BMPs and conservation measures (i.e., void discovery protocol) in accordance with the Edwards Aquifer Protection Plan and associated Edwards Aquifer Rules for the entire project area, as detailed by Barrett (2005).

Table 7. Additional Impervious Cover by Project Phase.

<b>Phase</b>	<b>Impervious Cover Increase (acres)</b>
Phase 1A	8.0
Phase 1 B	21.1
Phase 2	44.5
Phase 3	152.9

Other potential stressors to the BCH may occur through impacts to surface water runoff quality or quantity; this includes increased sedimentation or water-borne contamination from spills, roadway materials, or equipment entering the subterranean environment from project construction activities. Sediment or contaminants may harm lower trophic-level food or prey species such as fungi or springtails (collembolans) and thereby result in negative impacts to listed karst invertebrates (including the BCH and ISCMB). Additionally, urban encroachment within a cave's cricket foraging zone could limit the amount of nutrients consumed by crickets (or other cave fauna) and carried into a cave.

It is possible the project area intersects the subsurface drainage area of an undetected void containing the BCH and ISCMB and that project-derived runoff could move towards it via subsurface conduits and pores. However, the possibility of project-derived runoff entering such a void through unmapped subsurface pores is not certain or guaranteed. The possibility that project-derived runoff enters an undetected void through subsurface conduits is likely limited to the construction phase and not afterwards. However, the void discovery protocol (BA Section 2.4.2) would minimize potential subsurface runoff if a currently undetected void is discovered.

Finally, the installation of a roadway could preclude much needed moisture from reaching karst habitat. Howarth (1987) reports that troglobites (obligate subterranean dweller) are unable regulate their internal moisture content and have evolved to utilize atmospheric moisture content for regulatory processes. In fact, Howarth (1987) states that troglobites "...have become freshwater animals living in an aerial environment." As such, moisture removal from interstitial spaces occupied by the BCH and ISCMB can also impact habitat quality for the species and its food.

In summary, we expect that, while the proposed activities may result in effects to BCH and ISCMB, we expect these effects will be limited to habitat impacts described above that are reasonably certain to occur. With the implementation of the conservation measures described in



the BA, we anticipate that individual invertebrates will experience a reduction of up to 29.1 acres of habitat, the area replaced with impervious cover during Phases 1A and 1B. However, these effects are localized, as described herein, and we do not anticipate the Action would appreciably reduce the likelihood of both the survival and recovery of this species in the wild.

#### Tricolored Bat

There is potential for tricolored bats to occupy a cave, culvert, tree, or structure that is being impacted within the project area. It is possible the TCB could be documented within a cave that intersects the project as ROE for surveys becomes available. Additionally, there are 13 culverts that are planned for removal from the existing roadway. There is potential for harm of individuals during the construction phase if bats are roosting in these areas that are being modified or removed. While adult bats could hypothetically fly away from a tree being removed, even volant individuals may be harmed during the process. A confused bat flying during the day may also be subject to increased predatory potential while flying or after landing on a less than ideal new roost. Young bats that are unable to fly would likely be killed if roost trees are removed while occupied. Finally, bats of any age could be trapped within occupied buildings, culverts, or caves that are being modified or collapsed during construction, should the need arise. While the potential for harm exists, such an incident is not reasonably certain to occur since no occupied caves, bridges, culverts, or abandoned buildings are documented within the project area. Moreover, Service (2021a) indicates that maternity colonies are often situated near abundant food and water resources. Most of the tree patches that may serve as potential maternity colonies and could be removed as part of this project area are located east of Ronald Reagan Boulevard. The proposed intersection with Ronald Reagan Boulevard and the project is approximately 0.5 mile north of Brushy Creek and 0.75 mile south of the South Fork San Gabriel River, with abundant trees and caves in between.

Trees (both live and dead) can provide roosting habitat for adult males and females. Removal of such trees would occur during the day when the bats are resting and likely sleeping. Therefore, it is possible the roosting bats could awaken to machinery approaching the tree and fly away. Service (2021a) indicate female TCBA maintain high roost fidelity during the summer, and it is unclear what (if any) effects would occur to individuals that return to a former roost tree that has been removed. However, only clearing trees from approximately September 16 to February 28 should eliminate the potential for impacting active maternity colonies.

The Service (2021a) indicates the TCB has high site fidelity for hibernacula as well. It is unclear what the effects to the bats would be if individuals return to a commonly used hibernacula that is no longer extant or accessible. The high number of caves and culverts in Williamson County may provide adequate alternate shelter options for bats that find themselves without a preferred hibernaculum. We are uncertain whether additional energy expenditure of finding a new hibernaculum or traveling to another location may stress individuals.

In summary, while we expect that the project may result in effects to some individuals, as described above, at most, only small numbers of individuals may be affected, and such effects are not reasonably certain to occur, particularly with the implementation of the conservation

measures described in the BA. We do not anticipate the Action would appreciably reduce the likelihood of both the survival and recovery of these species in the wild.

### Monarch Butterfly

It is estimated that there is approximately 38.8 acres of potential monarch habitat within the project area for Phases 1A and 1B (Table 4). Much of this area would be impacted by soil-disturbing activities during construction, though native grasses and wildflowers would be used to revegetate disturbed areas so some habitat for monarch would be expected to recover over time. Overall, Phases 1A and 1B of the project would add approximately 29.1 acres of additional impervious cover (Table 7) which would result in the permanent loss of those areas as potential habitat for monarch butterfly. Additionally, there is potential for monarch butterflies to lay eggs on milkweed within the project area, with at least two documented milkweed plants occurring in the project area (iNaturalist 2024) it is not reasonably certain that eggs or subsequent caterpillars would be injured or killed during earthmoving activities, vegetation clearing, or by vehicles driving over them.

Monarch butterflies are dependent upon nectar from flowers as their primary food source. As such, removing these plant species from the project area could alter feeding activities. However, the herbaceous perennial flowers removed during construction activities can be found elsewhere near the project area; therefore, the monarch butterflies could fly to unaffected plants and continue feeding at these locations without measurable impacts to their fitness or reproduction. Therefore, the potential impacts of vegetation clearing on any given butterfly would likely be considered negligible, and we do not expect that the Action would appreciably reduce both the likelihood of survival and recovery of this species in the wild.

### *Beneficial effects*

As part of the proposed action TxDOT has committed to fund additional surveys and specimen collection for both listed karst invertebrates and listed salamander species. The proposed karst invertebrate mitigation for the project also includes a rehabilitation of the surface environment around On-Campus Cave; located in an open area behind Tippit Middle School about 0.8 miles northeast of the project area. On-Campus Cave is a documented locality for the BCH and the ISCMC. Native vegetation will be planted within the catchment basin for On-Campus Cave to slow and filter overland flow as it moves towards the cave. Williamson County and TxDOT representatives met with GISD representatives on April 6, 2022, to discuss interest in rehabilitating this facility as an ecological restoration and educational opportunity for students. GISD representatives agreed that rehabilitation of On-Campus Cave could serve as both an ecological and educational opportunity. They indicated their approval to continue conversations and elevate rehabilitation design plans to the GISD School Board for further discussion and a vote of approval. Additionally, TxDOT and Williamson County had a follow up meeting with GISD at Tippit Middle School on March 25, 2024, to discuss preliminary design plans and get feedback from GISD on the rehabilitation project.

Williamson County and TxDOT propose to design the rehabilitation of On-Campus Cave as part of the mitigation actions for both Phase 1A and 1B. They commit to continue coordinating with the GISD School Board to obtain their full permission to rehabilitate On-Campus Cave. They

anticipate that GISD School Board coordination and approval will occur during the first half of 2025. Design of the rehabilitation project began in 2024 and will be completed by the end of 2024 in the first half of 2025. Implementation of the rehabilitation project will commence in the second half of 2025.

## **CUMULATIVE EFFECTS**

Cumulative effects are those effects of future state or private activities not involving Federal activities that are reasonably certain to occur in the action area of the Federal action subject to consultation (50 CFR 402.02). We considered cumulative effects in this BO, but do not consider future Federal actions that are unrelated to the proposed action in this section because they require separate consultation pursuant to section 7 of the ESA.

TxDOT included a cumulative effects analysis (see Figures B-11 and B-12 in the BA) that predicted reasonably foreseeable future development along the project corridor by 2030. Williamson County, where the proposed project is located, has a projected human population increase of 31.7 percent between 2022 and 2030 (Texas Demographic Center 2022). This is more than double the projection for the state of Texas (projected 13.8 percent growth rate during the same period) and indicates potentially more extensive land use changes in the foreseeable future. Phase 1A's eastern extent (east of Garey Park) is in the City of Georgetown extraterritorial jurisdiction (ETJ) (Georgetown Texas 2022a) and the western area is in the City of Leander ETJ (Leander Texas 2022a). According to Georgetown's 2030 Comprehensive Plan (Georgetown Texas 2022) and Leander's 2020 Comprehensive Plan (Leander Texas 2022), significant portions of the Action Area are currently zoned as residential neighborhoods (including mixed density neighborhoods) and commercial areas.

While we are unaware of any specific actions at this time that would result in cumulative effects, effects from land changes and development will likely result in incremental impacts to habitat for the species addressed in this Opinion.

## **CONCLUSION**

After reviewing the current status of GCW, BCH, and ISCMB, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is our biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the GCW, BCH, or ISCMB. Similarly, for the TCB and monarch, it is our conference opinion that the action, as proposed, is not likely to jeopardize the continued existence of these proposed and candidate species. No critical habitat is designated for these species.

We base this conclusion on the following:

1. Effects to species addressed in this CBO will be localized and affect only very small numbers of individuals of each species.

2. A number of measures will be implemented to avoid and reduce the potential for exposure and effects to each species. For example, for karst species, any features discovered will have conservation measures applied to limit vegetation and ground disturbance and will have groundwater protection protocols from the SWP3 and WPAP also applied. Groundwater Flow Mitigation and Protection Measures will be implemented as well.
3. In addition to construction-related effects, the proposed action includes measures to improve or rehabilitate habitat for species post-construction. For example, rehabilitation of the surface environment around On-Campus Cave, which has documented occurrences of BCH and ISCMC, will increase species habitat features.
4. TCB and monarchs are known to occur in the project area. However, effects to individual TCB from Phases 1A and 1B are not reasonably certain to occur because of limited potential habitat in the project area. Effects to individual monarchs also are not reasonably certain to occur from Phases 1A and 1B. Although 29.1 acres in the project area will be covered with impervious cover during these phases, removing plants that could be used for foraging and reproduction and reduces available habitat, more habitat is available adjacent to the project area, and TxDOT will plant additional areas providing more habitat. Thus, while there may be small, localized reductions in available foraging and breeding habitat, we do not anticipate that such reductions would result in substantial reductions or impacts to feeding, breeding, and survival over the longterm, particularly as additional areas will be planted nearby.

The conclusions of this CBO are based on full implementation of the project as described in the Description of the Proposed Action section of this document, including conservation measures that were incorporated into the project design.

### INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined (50 CFR § 17.3) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined (50 CFR § 17.3) as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary and must be undertaken by TxDOT, as appropriate, for the exemption in section 7(o)(2) to apply. TxDOT has a continuing duty to regulate the activity covered by this incidental take statement. If TxDOT (1) fails to assume and implement the terms and conditions or (2) fails to require Williamson County to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, TxDOT must report the progress of the action and its impact on the species as specified in the incidental take statement. [50 CFR §402.14(i)(3)].

## **AMOUNT OR EXTENT OF TAKE**

Based on the results of the “Effects of the Action” analysis above, the Service anticipates incidental take of GCW, BCH, and ISCMB will occur as a result of this proposed action. Because quantifying take of individuals of these species is difficult, particularly with small, cryptic species of individuals that are seasonally present, this CBO instead evaluates acres of habitat affected as a surrogate for the level of incidental take for each of these species. The incidental take due to the proposed action is expected to occur in the form of harm as described in the Effects of the Action section and specified below. The following amounts of incidental take are reasonably certain to occur in Phase 1A and 1B, as described in the “Effects of the Action” section:

Harm to individual GCWAs from displacement of individual GCWA from nesting habitat is anticipated in up to 2.2 acres and increased risk of nest predation, and exposure to noise and vibration is anticipated in up to 58.1 acres of GCWA habitat.

Harm to individual BCH and ISCMB from project activities in Karst Zone 1 anticipated in up to 26.2 acres within the project area and within an additional 456.1 acres defined by the 345-foot buffer around the project area.

Specifically, the estimated amount of take of GCW is based on the amount of habitat to be directly impacted during Phases 1A and 1B (2.2 acres) plus a 250-foot buffer area outside of the project area (58.1 acres), which will be indirectly affected plus a 250-foot buffer area outside of the project area (58.1 acres), which will be indirectly affected. Incidental take of GCW will occur because of habitat alterations that open edges to additional risk of predation and lethal effects along with noise and disturbance in the form of sublethal effects that affect reproductive success.

Similarly, the estimated amount of take of BCH and ISCMB is based on the amount of surface habitat in Karst Zone 1 to be directly impacted during Phase 1A and 1B (26.2 acres), plus a 345-foot buffer area outside of the project area (456.1 acres), which could be affected. Incidental take of BCH and ISCMB will occur because of construction activities including excavation, vegetation removal, and addition of impervious surface.

## **EFFECT OF THE TAKE**

In the accompanying BO, we have determined that the level of anticipated take is not likely to jeopardize the GCW, BCH, and ISCMC based on the anticipated effects of the proposed action discussed in the Effects of the Action section. Although we anticipate some incidental take will occur, the implementation of the conservation measures proposed should ultimately result in avoidance and minimization of most adverse effects to individuals.

## **REASONABLE AND PRUDENT MEASURES**

Reasonable and prudent measures are those actions the Service believes necessary or appropriate to minimize the impacts, i.e., amount or extent, of incidental take. (50 CFR 402.02).

The Service believes the following reasonable and prudent measures will minimize the impact of incidental take of listed species from the proposed Action.

1. TxDOT shall use its authorities to minimize impacts of incidental take to the listed species addressed in this Incidental Take Statement.

## **TERMS AND CONDITIONS**

To be exempt from the prohibitions of section 9 and section 4(d) of the ESA, TxDOT must comply with the following terms and conditions, which implement the reasonable and prudent measure described above.

As part of the RPM and Terms and Conditions described below, we anticipate monitoring and reporting will be needed to confirm our assumptions in our CBO, as well as the assumptions outlined in the BA. To implement RPM #1, TxDOT shall ensure the following Term and Condition is implemented related to monitoring and reporting:

1. TxDOT shall provide annual reports to the Service for all activities implemented under this CBO and continue until the calendar year after all construction and restoration has been completed. Spatial information (maps) may be submitted in GIS format.
2. All personnel involved in any authorized activity covered by the biological opinion will be informed of these terms and conditions prior to the implementation of the authorized activity and the requirements to implement them. Such information must be provided sufficiently prior to implementation of the activities to ensure compliance.

## **Disposition of Dead or Injured Listed Species**

Upon locating a dead, injured, or sick listed species initial notification must be made to the Service's San Antonio Law Enforcement Office, 210-681-8419, and the Austin ESFO, Texas Transportation Branch (737) 382-4894, within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of



the animal, a photograph if possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office with a copy to this office. Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve the biological material in the best possible state.

## **CONFERENCE REPORT**

### **CONFERENCING ON PROPOSED AND CANDIDATE SPECIES**

The Act requires a Federal agency to conference if their action is likely to jeopardize a species proposed for listing or that is likely to destroy or adversely modify critical habitats proposed for designation (ESA 7(a)(4)). Recommendations resulting from that conference are advisory (i.e., they are not required) because the species or critical habitat is the subject of a proposed rule and the prohibition against jeopardy and adverse modification under ESA section 7(a)(2) only applies to listed species and critical habitat designations. Conferencing can be conducted informally or can follow the format of a formal consultation under 7(a)(2).

The Agencies agreed it would be prudent to use this opportunity for TxDOT to conference with the Service on the effects to a species that is proposed for listing. In addition, although not required, the Agencies agreed to evaluate a candidate species. By conferencing now, any future consultation required under 7(a)(2) when a species listing or critical habitat designation is finalized may be streamlined, and in some cases, conferences can satisfy the consultation requirements under 7(a)(2). Using this approach, in this conference, we found the Action is not likely to jeopardize any proposed or candidate species considered in this CBO.

Upon completion of this conference, TxDOT may elect to adopt any of the recommendations provided by the Service. In the future, upon listing of the species or designation of critical habitat, the TxDOT can request the Service adopt the conference opinion as a biological opinion to satisfy the 7(a)(2) requirement.

## **CONSERVATION RECOMMENDATIONS**

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. Provide assistance to resolve uncertainty regarding the distribution of karst invertebrate and salamander species included in this consultation.
2. Assist with implementing recovery tasks for the GCWA.

For the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

### REINITIATION NOTICE

This concludes the conference for RM 2243 from 183A to Southwest Bypass. You may ask the Service to confirm the conference opinion as a biological opinion issued through formal consultation if the proposed species is listed or critical habitat is designated. The request must be in writing. If the Service determines there have been no significant changes in the action as planned or in the information used during the conference, the Service will confirm the conference opinion as the biological opinion for the project and no further section 7 consultation will be necessary. After listing as threatened or endangered and any subsequent adoption of this conference opinion, TxDOT shall re-initiate consultation if: 1) the amount or extent of incidental take is exceeded; 2) new information reveals effects of the agency action that may affect the species in a manner or to an extent not considered in the conference opinion; 3) the agency action is subsequently modified in a manner that causes an effect to the species that was not considered in this opinion or written concurrences; or 4) a new species is listed or critical habitat designated that may be affected by the action.

This concludes formal consultation on the RM 2243 from 183A to Southwest Bypass. As provided in 50 CFR §402.16, reinitiation of consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this biological opinion or written concurrence; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Please refer to the consultation number, 2024-0020457, in future correspondence concerning this project. Should you require assistance please contact Dawn Gardiner at [Dawn\\_Gardiner@fws.gov](mailto:Dawn_Gardiner@fws.gov).

Approved:

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Karen Myers, Field Supervisor  
Austin Ecological Services Field Office

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Date

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