DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R2-ES-2010-0091]

[4500030114]

RIN 1018-AX11

Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Nine Bexar County, Texas, Invertebrates

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), designate critical habitat for *Rhadine exilis* (ground beetle, no common name), *Rhadine infernalis* (ground beetle, no common name), Helotes mold beetle (*Batrisodes venyivi*), Cokendolpher Cave harvestman (*Texella cokendolpheri*), Robber Baron Cave meshweaver (*Cicurina*

baronia), Madla Cave meshweaver (*Cicurina madla*), Braken Bat Cave meshweaver (*Cicurina venii*), Government Canyon Bat Cave meshweaver (*Cicurina vespera*), and Government Canyon Bat Cave spider (*Neoleptoneta microps*) under the Endangered Species Act of 1973, as amended (Act). These species are collectively known as the nine Bexar County invertebrates. In total, approximately 4,216 acres (ac) (1,706 hectares (ha)) in Bexar County, Texas, fall within the boundaries of the critical habitat designation. Also, we announce a 12-month finding on a petition to revise critical habitat designation by removing unit 13 from designation under the Act. After review of all available scientific and commercial information, we find that the petitioned action is not warranted at this time.

DATES: This rule becomes effective on [INSERT DATE 30 DAYS AFTER DATE OF FEDERAL REGISTER PUBLICATION].

ADDRESSES: This final rule and the associated final economic analysis are available on the Internet at *http://www.regulations.gov*. Comments and materials received, as well as supporting documentation used in preparing this final rule, are available for public inspection, by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, Austin Ecological Services Field Office, 10711 Burnet Road, Suite 200, Austin, TX 78758; telephone 512-450-0057; facsimile 512-490-0974.

FOR FURTHER INFORMATION CONTACT: Adam Zerrenner, Field Supervisor, U.S. Fish and Wildlife Service, Austin Ecological Services Field Office, 10711 Burnet

Road, Suite 200, Austin, TX 78758; telephone 512-490-0057 x248; facsimile 512-490-0974. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800-877-8339.

SUPPLEMENTARY INFORMATION:

Background

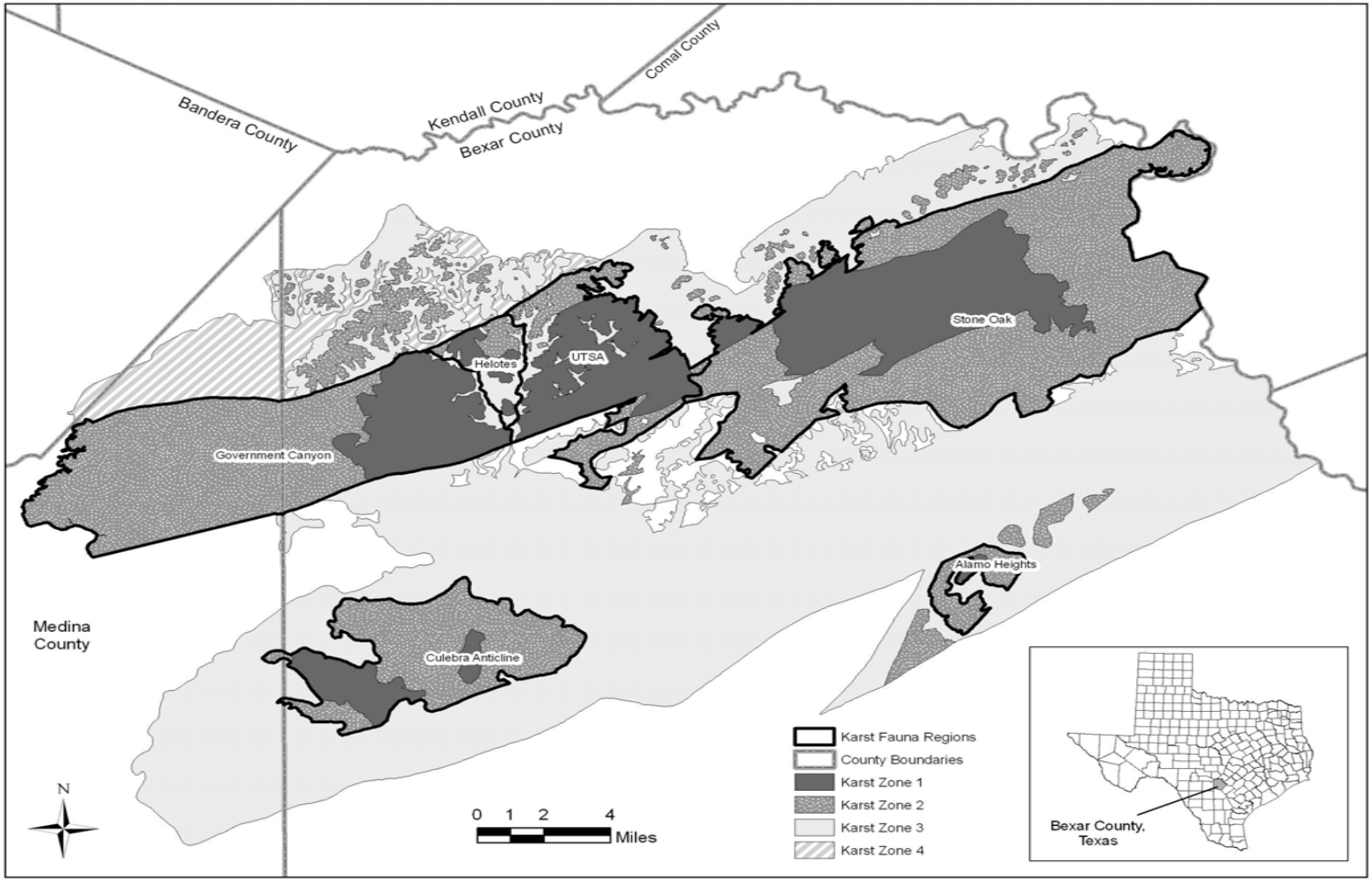
It is our intent to discuss in this final rule only those topics directly relevant to the development and designation of critical habitat for the *Rhadine exilis* (ground beetle, no common name), *Rhadine infernalis* (ground beetle, no common name), Helotes mold beetle, Cokendolpher Cave harvestman, Robber Baron Cave meshweaver, Madla Cave meshweaver, Braken Bat Cave meshweaver, Government Canyon Bat Cave meshweaver, and Government Canyon Bat Cave spider under the Act (16 U.S.C. 1531 *et seq.*). For more information on the biology and ecology of the nine Bexar County invertebrates, refer to the final listing rule published in the **Federal Register** on December 26, 2000 (65 FR 81419), and to our September 2011 final recovery plan (Service 2011), which is available from the Austin Ecological Services Field Office (see **ADDRESSES** section). For information on the nine Bexar County invertebrates' critical habitat, refer to the proposed rule to designate critical habitat for the nine Bexar County invertebrates published in the **Federal Register** on August 27, 2002 (67 FR 55063), the final critical habitat designation published April 8, 2003 (68 FR 17155), and the proposed revised critical habitat designation published on February 22, 2011 (76 FR 9872). Information on the associated draft economic analysis for the February 22, 2011 (76 FR 9872),

proposed rule to designate revised critical habitat was published in the **Federal Register** on August 2, 2011 (76 FR 46234).

We use the terms karst fauna regions (KFRs), karst zones, and karst fauna areas (KFAs) in this document. The term "karst" refers to a subterranean terrain that is formed by the slow dissolution of calcium carbonate from limestone bedrock by mildly acidic groundwater. This process creates numerous cave openings, cracks, fissures, fractures, sinkholes, and bedrock resembling Swiss cheese.

Veni (1994, pp. 68–76) delineated six KFRs within Bexar County: Stone Oak, University of Texas at San Antonio (UTSA), Helotes, Government Canyon, Culebra Anticline, and Alamo Heights (Figure 1). These KFRs are bounded by geological or geographical features that may represent obstructions to the movement (on a geologic timescale) of troglobites (small, cave-dwelling animals that have adapted to their dark surroundings), which has resulted in the present-day distribution of endemic (restricted to a given region) karst invertebrates in the Bexar County area. The basis for these divisions is the lack of continuity between caves, which may form complete barriers or significant restrictions to migration of troglobites over modern or geologic timescales. These discontinuities result from cave development and the geologic history of the area.

Figure 1. Karst Fauna Regions and Karst Zones in Bexar County, Texas.



The KFRs were analyzed by Veni (1994, pp. 72–73) using the then current range of 19 troglobitic species, including the 9 Bexar County invertebrates. The KFRs are important because they are used to establish recovery criteria for individual species in the Bexar County Karst Invertebrate Recovery Plan (Service 2011, pp. 17-26). To meet those criteria, specified numbers of preserves of a given quality must be protected within each KFR in which they occur.

Also, the six KFRs were delineated by Veni (2003, pp. 10–18) into five karst zones that reflect the likelihood of finding a karst feature that will provide habitat for the endangered invertebrates, based on geology, distribution of known caves, distribution of cave fauna, and primary factors that determine the presence, size, shape, and extent of caves with respect to cave development. As described by Veni (2003, pp. 10–18), these five zones (Figure 1) are defined as:

Zone 1: Areas known to contain one or more of the nine Bexar County invertebrates (areas where species are present).

Zone 2: Areas having a high probability of suitable habitat for the invertebrates (areas that may contain one or more invertebrates, but have not been fully surveyed).

Zone 3: Areas that probably do not contain the invertebrates (because there is very little suitable karst habitat).

Zone 4: Areas that require further research, but are generally equivalent to Zone 3, although they may include sections that could be classified as Zone 2 or 5 (areas where less is known about the karst structure than with Zone 3).

Zone 5: Areas that do not contain the nine Bexar County invertebrates (areas with

units of rock that do not contain karst habitat).

A karst fauna area (Service 1994, p. 76) is a geographic area known to support one or more locations of an endangered species. A KFA is distinct in that it acts as a system that is separated from other KFAs by geologic and hydrologic features and/or processes or distances that create barriers to movement of water, contaminants, and troglobitic fauna.

Previous Federal Actions

We published a proposed rule to list the nine Bexar County karst invertebrate species as endangered in the **Federal Register** on December 30, 1998 (63 FR 71855). On November 1, 2000, the Center for Biological Diversity filed a complaint against the Service alleging that we exceeded our 1-year obligation to publish a final listing rule and make a determination whether to designate critical habitat for the nine Bexar County karst invertebrates. We published a final listing rule on December 26, 2000 (65 FR 81419). In the final listing rule, we determined that critical habitat designation was prudent. On August 27, 2002, we proposed that 25 units encompassing approximately 9,516 ac (3,857 ha) in Bexar County, Texas, be designated as critical habitat for the nine karst invertebrates (67 FR 55063). The final critical habitat rule, designating approximately 1,063 ac (431 ha) in 22 units, was published on April 8, 2003 (68 FR 17155).

On July 17, 2007, the Center for Biological Diversity, Citizens Alliance for Smart Expansion, and Aquifer Guardians in Urban Areas provided us with a 60-day notice of intent to sue on the final critical habitat rule. On January 14, 2009, the plaintiffs (*CBD* v. *FWS*, case number 1:09-cv-00031-LY) filed suit in Federal Court (Western District of Texas), alleging that the Service failed to use the best available science, and incorrectly made exclusions according to sections 3(5)(A) and 4(b)(2) of the Act. On December 18, 2009, the parties filed a settlement agreement where we agreed to submit a revised proposed critical habitat determination for publication in the **Federal Register** on or before February 7, 2011, and a final revised determination by February 7, 2012. The proposed rule was submitted to the **Federal Register** prior to the February 7, 2011, deadline, and it published on February 22, 2011 (76 FR 9872). On August 2, 2011 (76 FR 46234), we reopened the comment period and announced the availability of a draft economic analysis, an amended required determinations section of the proposal, and a public hearing to allow. This final rule is published in accordance with the settlement agreement.

12-month Finding

On July 8, 2010, we received a petition from Capital Foresight Limited Partnership to revise designated critical habitat for *Rhadine exilis* by removing Unit 13. The petitioner alleges that the original specimens collected from Black Cat Cave were never positively identified as *R. exilis*. They stated that another species of *Rhadine* with a slender body form similar to *R. exilis* occurs in a cave a short distance from Black Cat

Cave, which is likely connected by mesocaverns (small, human-inaccessible, interstitial spaces in karst limestone), and that two species of *Rhadine* with similar body forms have never been documented to occur in the same location. In addition, the petitioner asserted that drinking water is leaking into Black Cat Cave and that the habitat has been highly degraded by the Bulverde Road, rending the area no longer suitable for conservation of the species. However, information in our files at the time we received the petition indicated that a species expert had identified the original specimen collected from Black Cat Cave as *R. exilis* (T. Barr, pers. comm., 2010).

In our February 22, 2011 proposed rule (76 FR 9872), we issued a 90-day finding that the Capital Foresight Limited Partnership presented substantial information indicating that revising critical habitat for *Rhadine exilis* may be warranted. We initiated a review to determine if revising critical habitat for *R. exilis* is warranted. During that review, we received evidence that the cave entrance had been filled with dirt and rocks, and a concrete structure had been placed over the natural opening.

In addition, the species expert examined the original specimens and stated, "My preliminary conclusions are that the Black Cat *Rhadine* are distinct from *Rhadine exilis* though closely related, but I want to spend about six hours or so on a final evaluation" (T. Barr, pers. comm., 2011). Unfortunately, T. Barr died in May 2011, and his collection was donated to the Carnegie Museum of Natural History. The Texas Memorial Museum is working with the Carnegie Museum to locate, obtain, and examine the specimens from Black Cat Cave, but this task has not been accomplished to date.

The preliminary determination by the species expert (T. Barr) that this was not *Rhadine exilis* casts some additional doubt on whether the unit contains, or ever contained, the species. However, because the specimens are not currently available for examination, we give deference to the original identification of the species as *Rhadine exilis* by the species expert, T. Barr.

It has been 24 years since this *Rhadine* has been found in the cave, and nine surveys conducted since 2008 have not confirmed its presence. In addition, the surface habitat has been further degraded since the original specimens were collected. However, because of the cryptic nature of the karst invertebrates, it often takes intensive survey efforts to document a species' presence within a cave (Krejca and Weckerly 2007, p. 286), and the lack of positive survey results does not indicate with reasonable certainty that *R. exilis* is currently absent in Black Cat Cave. In addition, many of the surveys were conducted during either extreme drought or during temperature extremes, when karst species recede into mesocaverns that have a more favorable microclimate. Although the surface habitat has been degraded, Black Cat Cave and the surrounding mesocaverns still contain the physical or biological features essential to the conservation of the species. Even though recent survey efforts have failed to detect the *R. exilis* in Black Cat Cave, and the surface habitat has been degraded, we have determined that Unit 13 still meets the definition of critical habitat, as defined in section 3(5)(A)(i) of the Act, by being occupied at the time of listing, and currently containing the physical or biological features essential to the conservation of the species, which may require special management

considerations or protection. In addition, the karst habitat within Unit 13 is needed to conserve *R. exilis* in the Stone Oak KFR.

At this time, we find that revising critical habitat by removing Unit 13 is not warranted. It is therefore included in this final designation. However, if at some future time further taxonomic studies reveal that the specimens collected in Black Cat Cave were not *Rhadine exilis*, or more intensive survey efforts do not reveal the species' presence, then we will consider revising this critical habitat designation. This document includes our 12-month finding on the petition, as well as our final designation of critical habitat for the nine Bexar County invertebrates, as provided in section 4(b)(3)(B) of the Act.

Summary of Comments and Recommendations

We requested written comments from the public on the proposed designation of critical habitat for the nine Bexar County invertebrates during two comment periods. The first comment period associated with the publication of the proposed rule (76 FR 9872) opened on February 22, 2011, and closed on April 25, 2011. We also requested comments on the proposed critical habitat designation and associated draft economic analysis during a comment period that opened August 2, 2011, and closed on September 1, 2011 (76 FR 46234). We did receive three requests for a public hearing. Therefore, we held a public hearing on August 17, 2011. We also contacted appropriate Federal, State, and local agencies; scientific organizations; and other interested parties and invited

them to comment on the proposed rule and draft economic analysis during these comment periods.

During the first comment period, we received 35 comment letters directly addressing the proposed critical habitat designation. During the second comment period, we received 27 comment letters addressing the proposed critical habitat designation or the draft economic analysis. During the August 17, 2011, public hearing, one individual made comments on the designation of critical habitat for the nine Bexar County invertebrates. All substantive information provided during comment periods has either been incorporated directly into this final determination or addressed below. Comments we received are grouped into seven general issues specifically relating to the proposed critical habitat designation for the nine Bexar County invertebrates, and are addressed in the following summary and incorporated into the final rule as appropriate.

Peer Review

In accordance with our peer review policy published on July 1, 1994 (59 FR 34270), we solicited expert opinions from eight knowledgeable individuals with scientific expertise that included familiarity with the nine Bexar County invertebrates, the geographic region in which the species occur, and conservation biology principles. We received responses from four of the peer reviewers.

We reviewed all comments received from the peer reviewers for substantive

issues and new information regarding critical habitat for the nine Bexar County invertebrates. The peer reviewers generally concurred with our methods and conclusions and provided additional information, clarifications, and suggestions to improve the final critical habitat rule. Peer reviewer comments are addressed in the following summary and incorporated into the final rule as appropriate.

Peer Reviewer Comments

(1) *Comment*: One peer reviewer questioned whether tree roots were present in the Bexar County caves in critical habitat and therefore their nutrient importance.

Our Response: Tree roots are present in many of the Bexar County caves in designated critical habitat, and we believe they are important nutrient sources for the invertebrates.

(2) *Comment*: One peer reviewer stated that there should be more discussion of the potential impacts of global warming and the predicted increased drying expected in Texas (Banner *et al*. 2010). Another commented that loss of habitat or reduction of habitat quality are likely to be more immediate threats to the nine endangered karst invertebrates than climate change effects.

Our Response: We agree and added information to emphasize the threats of climate change on the species and the immediacy of habitat destruction (see section on *Special Management Considerations or Protection*).

(3) *Comment*: One peer reviewer stated that four of the listed invertebrates are known from one or very few specimens from a single or very few locations and are likely to suffer from the negative effects of small population sizes and lack of genetic diversity. The reviewer questions whether significant effort or expense should be directed to their protection and monitoring, except where their locations overlap with other species.

Our Response: While we agree that these species are rare and highly vulnerable, the Act does not provide for flexibility regarding whether or not they receive the protections of critical habitat.

(4) *Comment*: Two peer reviewers commented that monitoring plans should be added as part of the final critical habitat.

Our Response: While monitoring is important, it is a component of the recovery plan and is outside of the scope of critical habitat determination under the Act.

(5) *Comment*: One peer reviewer said that we should be clear in the document that the 100-meter (m) distance to protect cave crickets and other invertebrates from red imported fire ant (*Solenopsis invicta*) (fire ant) foraging comes from a study by Suarez *et al*. (1998) on Argentine ants in California.

Our Response: We clarified this point, and based on this and other comments, removed the 100-m distance.

Comments from the State

Section 4(i) of the Act states, "the Secretary shall submit to the State agency a written justification for his failure to adopt regulations consistent with the agency's comments or petition." Comments received from the State regarding the proposal to designate critical habitat for the nine Bexar County invertebrates are addressed below.

(6) *Comment*: The proposed rule may have substantial impact on the State's transportation system in Bexar County and will increase costs and complexity of consultations. The State requested that the Service not designate critical habitat in Texas Department of Transportation (TxDOT) right of way (ROW).

Our Response: Because of changes in the criteria for delineation of critical habitat units, some of the total area in TxDOT ROW has been reduced. The impact of designation on transportation projects was analyzed in the draft and final economic analyses, and based on the estimated costs in that analysis, we did not find disproportionate economic impacts of designation.

(7) *Comment*: One State agency (TxDOT) and several other individuals commented that the use of the 0.3-mile (mi) distance for the theoretical mesocavern boundary is not supported by the geologic or genetic studies we cited.

Our Response: Based on these and other comments, and our own internal analysis of the issue, we removed the 0.3-mi (0.5-kilometer (km)) distance from this final rule. Please see the Summary of Changes from Proposed Rule section**.**

(8) *Comment*: One State agency (TxDOT) commented that a review of additional cave data for proposed Unit 16 indicates that the hydrological component of the primary constituent element (PCE) does not occur within the area of concern under and east of Loop 1604 and should not be included in designated critical habitat. The commenter also suggested that maintaining the intact surface communities in the undeveloped area to the west of Loop 1604 is a higher conservation priority and more likely to benefit the species in the cave.

Our Response: Based on these comments and other information provided, we are not including this area in critical habitat, because it does not meet the definition of critical habitat for any of the nine Bexar County invertebrates.

(9) *Comment*: One State agency (TxDOT) and several other individuals commented that the PCEs are too general and that critical habitat should contain more than one PCE.

Our Response: Based on this and other comments and information provided, we modified our PCEs and our criteria for delineation so that both PCEs needed to be present a unit in order to meet the definition of critical habitat.

(10) *Comment*: One State agency (TxDOT) and several other individuals commented that the derivation of the area of native vegetation required and the buffer against edge effects were not based on the best available science.

Our Response: We believe the derivation was based on the best available science for the vegetation requirements we identified in the proposed rule. However, while native vegetation is beneficial to promote the long-term viability of an area, the native vegetation species we identified in the proposed rule may not be necessary to the conservation of the nine Bexar County invertebrates. Based on these and other comments, we revised the area needed around each occupied cave entrance to focus on the optimal size necessary to provide long-term viability for the listed species. We dropped the focus on deriving the area based on native plant species and instead relied on the expert opinion of the Bexar County Karst Invertebrates Recovery Team (Service 2008, pp. B-1-B-5) for the size of area needed, which is 100 ac (40 ha) to meet conservation objectives.

(11) *Comment*: The State Comptroller stated that the proposed critical habitat could have substantial impacts to this region of the State and add additional costs to taxpayers without sufficient scientific basis. The Service should delay all action in order to re-examine this proposal and the available research.

Our Response: We have addressed the economic impacts of designation to all

parties through an economic analysis and have determined that there will not be significant economic impacts due to this designation. In addition, we carefully considered and addressed all comments submitted. As a result of these comments and our analysis of the issues, this final designation is smaller in area, and thus smaller in the economic effects associated with the areas originally proposed. In regards to delaying our action to designate critical habitat, we are not able to delay because we are held to a February 7, 2012, deadline to submit a final rule to the **Federal Register** according to a court-ordered settlement agreement.

Public Comments

General Comments

Issue 1: Extent of mesocaverns to be included.

(12) *Comment*: Several commenters stated that site-specific geologic information limits or precludes the use of the 0.3-mi (0.5-km) distance as a measure of the distance that mesocaverns are likely to be connected to occupied features in several proposed units.

Our Response: We agree that there may be site-specific issues involved in some units. Based on this and other comments, we do not use the specific 0.3-mi (0.5-km) as a criterion for delineating specific mesocavern distance in this final critical habitat rule.

(13) *Comment*: The manner in which White (2006) is cited in the proposed rule seems to indicate that the author determined that this distance was appropriate for use in a critical habitat context and that it can be appropriately applied to sites other than those that were studied in detail. This is misleading.

Our Response: We have revised the wording in this final rule to clarify this issue.

(14) *Comment:* White's (2006) research was not intended to yield a buffer such as the 0.3-mi (0.5-km) distance. The distance was derived by the Service indirectly from the results of that research.

Our Response: The Service acknowledges that the 0.3-mi (0.5-km) distance was based on White's research, and that his research did not specifically suggest using this distance in this way. See our responses to comments (12) and (13), above.

(15) *Comment:* The Service's 0.3-mi (0.5-km) distance was derived from a site located within the Edwards karst, which is highly modified by the tremendous volume of fresh water that formed the Edwards Aquifer and is quite different from geology and hydrologic conditions in many other proposed units in Bexar County. A two-dimensional buffer cannot be applied to a three-dimensional landscape without misrepresenting the potential for gene flow through the karst. This is especially true in the older, more eroded karst landscapes of the Helotes area where many small islands of karst occur on hilltops. The distribution of genetic diversity was found to be controlled by geologic structure

(primarily by faults), which imposes a linear, not radial, geometry on available habitat. Ignoring site-specific geologic structure nearly guarantees that a blanket radial buffer incorrectly represents the spatial distribution of habitat.

Our Response: We acknowledge there are problems with applying the 0.3-mi (0.5-km) distance to all units, and, ideally, the distance would be based on site-specific data or information. We have removed the 0.3-mi (0.5-km) distance from this final rule. See our reponses to comments (12), (13), and (14), above.

(16) *Comment:* We believe the Service is misapplying the conclusions in White (2006). If the species did travel 0.3-mi (0.5-km) through connected mesocaverns, the genetics of *Cicurina madla* would be identical in Robbers Cave and Hills and Dales Pit.

(17) *Comment:* Even with identical signatures in separate caves, it is not possible to determine when that contact happened because it is not known how long it would take two isolated populations to become genetically different.

(18) *Comment:* The conclusion drawn by White (2006) is that, in general, gene flow is not occurring between troglobite populations and has not likely occurred in recent evolutionary timescale.

Our Response to Comments (16), (17), and (18): We agree that similar genetic signatures do not demonstrate positively that the Madla Cave meshweavers in the two

caves we cited are not identical. We acknowledge the limitations on the use of data from Hedin and Paquin (2004, p. 3243) for this purpose. The question of whether identical signatures demonstrate current connectivity is dependent on the specific techniques used, sample sizes, and whether the genes being examined are slowly or quickly evolving genes. We clarified these points in, and removed any specific distance for mesocavern connectivity from, this final rule.

(19) *Comment:* Several commenters stated that we inappropriately used justification of genetic similarity of *Cicurina* in two caves to justify use of the 0.3-mi (0.5-km) mesocavern distance.

Our Response: We stated in our proposed rule that White (2006, pp. 97-99) indicated the species were similar, not identical, and we used this only as partially supporting information. Based on this and other comments, we removed the mesocavern distance from this final rule.

(20) *Comment:* Occurrence of many caves with the same or similar suites of species beyond the 0.3-mi (0.5-km) distance suggests that using the mesocavemous distances at Camp Bullis is in fact more representative of the distances of mesocavernous connectivity and perhaps conservative at that. I strongly suggest reevaluating and redrawing the proposed critical habitat areas with distances no less than those demonstrated at Camp Bullis.

Our Response: While the mesocaverns may be connected to the 0.3-mi (0.5-km) distance in some units, we are unable to find genetic information that is adequate to determine maximum distance over which population-level genetic exchange may occur. In the absence of that information, and due to differences in site-specific geological influences on connectivity, we decided not to use the 0.3-mi (0.5-km) distance as a criterion for delineation.

Issue 2: Amount and type of vegetation needed.

(21) *Comment:* For critical habitat areas that contain healthy native vegetation, a circular area of approximately 40 ac (16 ha) in size (assuming one cave per preserve) would incorporate the biological elements necessary to provide nutrient input into the caves and protect the surface component of the karst ecosystem from edge effects and fire ant infestation.

Our Response: We believe an area of 100 ac (40 ha) provides a higher probability of species survival and conservation. We base this on the expert opinion of the Bexar County Karst Invertebrates Recovery Team (Service 2008, pp. B-1–B-5), and on the size of area needed to meet certain conservation objectives. The area needed is based in part on the fact that we believe the karst invertebrates occupy a larger area than the caves, may be using mesocaverns more than caves, and may spend the majority of their time in such retreats, only leaving the mesocaverns during temporary forays into the larger cave passages to forage (Howarth 1987, p. 377). We modified the justification for the area

needed to provide for the conservation of the species, focusing on overall need for nutrient input, moisture, and mesocaverns.

(22) *Comment:* Several commenters stated that the 10-ac (4-ha) grassland component was not present in some units and should not be included as a component for all units.

Our Response: We modified the justification for the area needed to provide for the conservation of the species, focusing on overall need for nutrient input, moisture, and mesocaverns, rather than on specific vegetation components.

(23) *Comment:* Comments on several units stated that site-specific plant survey data should be utilized when available. In the absence of this data, commenters suggest an area of roughly 33 ac (13 ha) would be required to include 15 to 20 species of the Edwards plateau at a population size of 80 individuals plus a distance of 66 feet (ft) (20 meters (m)) to protect against edge effects.

Our Response: We revised the criteria for designating critical habitat by using an area with an overall size of 100 ac (40 ha) to provide for the conservation of the species, focusing on overall need for nutrient input, moisture, and mesocaverns, rather than on specific vegetation components.

Issue 3: Cave cricket foraging area.

(24) *Comment:* Given the extremely low expected density of foraging crickets in the outer 42 percent of cave cricket foraging distance, and given the distance fire ants are known to travel from a mound, a continuous woody canopy within 344 ft (105 m) of a cave is sufficient to protect cave crickets from adjacent disturbance activities.

Our Response: We have revised this final rule to be consistent with the final Bexar County Karst Invertebrates Recovery Plan's Karst Invertebrates Preserve Design Recommendations Document (Service 2011a, p. 4).

Issue 4: Amount of critical habitat proposed.

(25) *Comment:* All of Karst Zones 1 and 2 should be included in critical habitat because long-term stewardship necessitates that protected karst formations and associated mesocaverns contiguous to occupied features be larger to provide microclimate refugia to counter the adverse impacts of climate change, pollution, invasive species, and stochastic events.

Our Response: While we agree that additional mesocavernous areas may be desirable for species conservation, we lack adequate data to justify designating as critical habitat all of Karst Zones 1 and 2. We made our final critical habitat designation consistent with recovery criteria for high-quality KFRs in the final Bexar County Karst Invertebrates Recovery Plan's Karst Invertebrates Preserve Design Recommendations

Document (Service 2011a, pp. 3-5).

(26) *Comment:* The Service seems to be ignoring the 2008 Draft Recovery Plan for the Bexar County Invertebrates. An analysis of the required KFAs across each KFR for the species indicates that 4,350 ac (1,760 ha) would be required to meet downlisting criteria. The Service now proposes 6,906 ac (2,795 ha) that, when combined with the Camp Bullis Karst Management Areas, now totals 8,976 ac (3,632 ha). We do not understand why, if 4,350 ac (1,760 ha) can result in downlisting of the species, 8,976 ac (3,632 ha) are essential for the conservation of the species.

Our Response: In this final critical habitat designation, we relied heavily on the 2011 Final Recovery Plan for the nine Bexar County invertebrates (Service 2011). Because we have a final recovery plan, the recommendations to use the draft recovery plan are not followed. Also, we designated low-quality units that do not count for the recovery of individual species, because not enough high- and medium-quality KFAs are available in the proper configuration to meet recovery criteria for some KFRs. In addition, none of the KFAs is currently fully protected, and we have no way of predicting which, if any, will be fully protected in the future. Therefore, we believe all areas designated meet the definition of critical habitat and are necessary for the conservation of the species. The total area designated in this rule, however, has been reduced to 4,216 ac (1,706 ha) as a result of exemptions and exclusions (explained later in this rule).

Issue 5: Information quality and general comments.

(27) *Comment:* The Service has created critical habitat units that, in many cases, may only include one of the primary constituent elements, with no hope of ever creating the other two. This seriously calls into question the method used to develop areas of critical habitat.

Our Response: We acknowledged in the proposed rule that not all units contain all the PCEs. For some species, we believed it was appropriate to propose some units that did not have all of the PCEs. For species that occur in only a few locations that have had substantial negative impacts to one or more of the PCEs, we still proposed to designate critical habitat, because the PCEs that are present can support the listed species to some extent. For example, surface habitat without a healthy plant and animal community can continue to support listed invertebrates below the surface, and clean water from modified surface areas can provide the humidity needed by the listed invertebrates. However, in this final rule, we have reduced the number of PCEs to two and only included areas in the critical habitat designation that contain both PCEs in close enough proximity to each other to be used by the invertebrate population in the area.

(28) *Comment:* Cave crickets and fire ants do not have significant overlap and are not competitive in their natural environment.

Our Response: We have evaluated the available information and believe that the preponderance of information on the topic indicates there is some overlap. We added

language to this final rule to acknowledge the information submitted by the commenter and to explain the reason for our conclusion.

(29) *Comment:* It appears certain boundaries have been intentionally drawn to create a negative impact on property owners and the State of Texas, with no conservation or recovery benefit to the species.

Our Response: We had no agenda in proposing certain areas as critical habitat except to designate the appropriate areas essential for conservation of the species. We based the proposed boundaries on the best available information. We have revised the boundaries of critical habitat designation in this final rule based on the best available scientific and commercial data available, including comments we received as a result of our proposed rule.

(30) *Comment:* The proposed rule is legally insufficient. The Service has insufficiently identified critical habitat. The Service has not demonstrated that the proposed critical habitat is occupied.

Our Response: We believe the proposed rule was legally sufficient. As part of section 3(5)(A)(ii) of the Act's definition of critical habitat, proposed areas do not have to be occupied at the time of listing if such areas are essential for the conservation of the species. Additional descriptions of the criteria used to designate critical habitat and the PCEs have been added to this final rule.

(31) *Comment:* The Service's approach circumvents the additional findings that the Service is required to make before designating unoccupied habitat (see *Cape Hatteras Access Preservation Alliance* v. *Dep't of Interior*, 344 F.Supp.2d 108, 124 (D.D.C. 2004)("Cape Hatteras"); *Home Builders Ass'n of Northern California* v. *U.S. Fish and Wildlife Serv*., 268 F.Supp.2d 1197 (E.D. Cal. 2002)).

Our Response: We believe that all units we are designating are currently occupied and contain the physical and biological features essential to the conservation of the species, which may require special management considerations or protection. Even though recent survey efforts have failed to detect a listed invertebrate species in one or more of the units, the lack of positive survey results does not indicate with reasonable certainty that a listed species is absent from a cave. In many cases, it takes intensive survey efforts conducted over several years to find a specimen. At one time or another, a specimen has been documented in all the units we are designating, and at this time, we lack substantial evidence to indicate that certain units are no longer occupied. Therefore, we consider all critical habitat units as being occupied at the time of listing.

(32) *Comment:* The Service has insufficiently identified the PCEs. The Service does not "identify the physical or biological features essential to the conservation [of the species] in a meaningful way" (*Homebuilders Association of Northern California* v. *U.S. Fish and Wildlife Serv*., 268 F.Supp.2d 1197, 1213 (E.D. Ca. 2003). The court in the 2003 Homebuilder's case (hereinafter referred to as the Whipsnake case) found that very

similar PCE descriptions were insufficient.

Our Response: We added additional language to this final rule to describe why the PCEs are essential to the conservation of the species.

(33) *Comment:* The Whipsnake case also criticized the Service for designating areas that were without one or more PCEs within the designated boundaries. Throughout the proposed rule there are units proposed in heavily developed areas that cannot be assumed to contain the necessary elements for the conservation of the karst species. The Service gives only a generic, cursory indication of how these proposed units provide the PCEs identified in the proposed rule.

Our Response: See our response to comment (27), above. In this final rule, we have reduced the number of PCEs to two and only included areas in the critical habitat designation that contain both PCEs in close enough proximity to each other to be used by the invertebrate population in the area.

(34) *Comment:* The Service does not provide information as to why each identified PCE would need special management or protection at the unit. Courts have required that the Service, in demonstrating that the designated areas meet the statutory requirements, provide an analysis for why the proposed critical habitat may require special management (Cape Hatteras, 344 F.Supp.2d at 124). Courts have found that the Service did not meet its burden where the Service did not provide analysis: "Rather than

discuss how each identified PCE would need management or protection, the Service lists activities that once resulted in consultations and makes a conclusory statement that dredging or shoreline management could result in permanent habitat loss. This does not meet the Service's burden" (Cape Hatteras, 344 F.Supp.2d at 124; Whipsnake case, 268 F.Supp.2d. at 1218).

(35) *Comment:* It is hard to imagine, for example, what special management may be required for those units proposed in heavily developed areas that do not contain PCEs for surface water or a healthy surface native plants, but rather have been designated solely for the area's subterranean spaces. With that sort of development and lack of surface PCEs, how can the Service reasonably state that special management may be required? The Service is statutorily required to provide this analysis, and the designation is legally deficient without it.

Our Response to Comments (34) and (35): We added language to the section on special management to describe specifically why such management was required for each PCE. Because of the changes in criteria for delineation, we have revised some of the boundaries of critical habitat for low-quality units and added additional description of the special management and protection needs.

(36) *Comment:* The Service has not complied with the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 *et seq.*). The Service has not prepared an environmental impact statement in accordance with the National Environmental Policy

Act (NEPA). The U.S. Court of Appeals for the 10th Circuit and the U.S. District Court of the District of Columbia have both held that the Service must comply with NEPA when designating critical habitat.

Our Response: As we stated in the proposed rule, it is our position that, outside the jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses as defined by NEPA in connection with designating critical habitat under the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244). This position was upheld by the U.S. Court of Appeals for the Ninth Circuit (*Douglas County* v. *Babbitt*, 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)).

(37) *Comment:* In general, it appears that some delineation may not adequately consider hydrogeologic conditions that may affect the boundaries. If the comment suggesting that the distances demonstrated at Camp Bullis is accepted and the unit boundaries reevaluated on that basis, I suggest that geologic maps and previous reports on the hydrogeology of the all of the caves be re-examined.

Our Response: For this final rule, we reevaluated the available information, eliminated the 0.3-mi (0.5-km) distance, and did not accept the distance of mesocaverns for Camp Bullis to apply as a rule of thumb for designation of critical habitat.

(38) *Comment:* Please update your information at the bottom of the page on the

number of caves in Bexar County at the time of listing. In September 2000, 437 caves were known in Bexar County. More significantly, about 25 percent had been sealed or destroyed, including some that had not been biologically studied but which by observation of fauna had likely contained some of the listed species. As of today, 523 caves are registered in the county (the actual number is probably about 530) with 103 confirmed as sealed or destroyed and about 40 suspected as sealed or destroyed but which need to be visited for confirmation.

Our Response: We have modified this final rule accordingly.

Issue 6: Exclusions.

(39) *Comment:* The designation of Unit 1e is imprudent under 16 U.S.C. 1533(a)(3). The Act's regulations provide that, "A designation of critical habitat is not prudent when one or both of the following situations exist: (i) The species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of such threat to the species, or (ii) Such designation of critical habitat would not be beneficial to the species" (50 CFR 424.12(a)(1)).

Our Response: We do not believe either situation applies to Unit 1e. This unit contains the physical or biological features essential to the conservation of the species and which may require special management or protection, thus meeting definition of critical habitat in accordance with section 3(5)(A)(i) of the Act. Also, proposed critical

habitat was published for the unit, so designation is not likely to increase the threats from human activity. Designation of critical habitat will provide additional protection from future Federal activities that would adversely modify critical habitat and help to educate Federal agencies and the public about the sensitivity of the area.

(40) *Comment:* Proposed Unit 1e should not be included in the designation of critical habitat for the nine karst invertebrate species of Bexar County, Texas. The benefits of excluding Unit 1e far outweigh the benefits of its inclusion. The economic taint of the designation is far more powerful than any unnecessary conservation benefit conferred by a designation. The benefits of promoting voluntary conservation efforts far outweigh the benefit of including Unit 1e as designated critical habitat.

Our Response: Under section 4(b)(2) of the Act, we are exluding approximately 64 ac (26 ha) of preserve land in Unit 1e, which is being managed in perpetuity under the La Cantera Habitat Conservation Plan (HCP) for the conservation of the listed species. Also, an economic analysis was performed and did not demonstrate substantial economic impacts from critical habitat designation. Finally, the remaining 410 ac (166 ha) of critical habitat in Unit 1e does provide additional protection for the listed species and their habitat.

Comments on Developmental Impacts

(41) *Comment:* The draft economic analysis (DEA) underestimates potential economic impacts of critical habitat on development in Unit 1e. The comment states that the Canyon Ranch parcel is well-suited for development and that the developer has already obtained a Water Pollution Abatement Plan from the Texas Commission on Environmental Quality, a Utility Service Agreement with the San Antonio Water System, and an approved Master Development Plan from the City of San Antonio. In addition, substantial engineering, soil testing, surveying, staking, and construction of a portion of Phase I water line has also been completed. The commenter estimates that undiscounted losses would range between $2.90 million (based on an undeveloped land value of $24,744 per acre) to $7.83 million (based on the sales price of lots less cost of development).

Our Response: The draft economic analysis (DEA) evaluates two scenarios with respect to development impacts. Scenario 1 assumes that the project reduces habitat quality to the extent that jeopardy is a concern and therefore development restrictions are recommended regardless of critical habitat designation (i.e., impacts are baseline). Scenario 2 assumes that the project has a lesser effect on habitat quality (i.e., reducing it from high to medium) and therefore development is precluded because of critical habitat designation (jeopardy is not a concern). Under scenario 2, impacts to development are incremental. For the 118 acres within Unit 1e, the DEA applied a per-acre land value of $6,900 as determined from review of county land appraisal data. In response to this comment, however, we followed up with the Bexar Appraisal District to affirm the statement in the comment that land value in this unit is underestimated. The Appraisal

District indicated that the land value in the unit is likely between $14,000 and $17,000 per acre. Consequently, the final economic analysis (FEA) revises the land value loss estimate from that provided in the DEA. Specifically, the FEA applies a range of per-acre land values from a low end of $14,000 as suggested by the Appraisal District, to a high end of $24,700 as suggested in the public comment. This change results in the estimated present value incremental impacts to development in Unit 1e under scenario 2 being revised from $770,000 in the DEA to between $1,550,000 and $2,740,000 in the FEA. This revision is discussed in detail in section 4.2 of the FEA.

(42) *Comment:* The use of appraisal data to determine land values results in an underestimate of impacts to development. Appraisal data does not take into consideration land development entitlements, master plan approvals, offsite infrastructure improvements, utility agreements, onsite road extensions, or the highest and best use for the property. The commenter estimates that land values are off by a factor of four for Unit 14, a factor of 10 for Unit 21, and a factor of 4 for Unit 26.

Our Response: In general, appraisal data reflect the best available information regarding the potential value of parcels within the critical habitat. The appraised estimates are based on the information available regarding future uses of the parcel at the time of the appraisal (including any ongoing master plan efforts, land use agreements, and entitlements). To the extent that the latest assessment of a parcel occurred prior approval of a master plan, utility agreement, or other such improvements, the assessed value may underestimate the value of a parcel. Exhibit 4-5 in the DEA presents the

appraised, average per-acre land values of $10,500 in Unit 14, $43,100 in Unit 21, and $34,500 in Unit 26 applied in the DEA. In response to this comment, we followed up with the Bexar Appraisal District and an independent broker to affirm the statement in the comment that the land values in these units are underestimated. The broker indicated that the land value in Unit 14 is approximately $43,600 per acre and land value in Unit 26 is $87,100 per acre. The appraiser and broker provided average land values for the developable portion of Unit 21 located outside of the 100-year flood plain ranging from $174,000 to $218,000. Consequently, the FEA revises the land value loss estimates from those provided in the DEA. Specifically, the FEA applies a range of per-acre land values from a low end of $42,100 to a high end of $43,600 in Unit 14, $174,000 to $431,000 in Unit 21, and $87,100 to $138,000 in Unit 26. These changes result in the estimated present value incremental impacts to development in Unit 14 under scenario 2 being revised from $3,250,000 in the DEA to between $13,000,000 and $13,400,000 in the FEA; from $12,000,000 to between $3,260,000 and $8,050,000 in Unit 21; and from $3,790,000 to between $9,530,000 and $15,100,000 in Unit 26. This revision is discussed in detail in section 4.2 of the FEA.

(43) *Comment:* The DEA underestimates potential economic impacts of critical habitat on development within Unit 13. The comment asserts that the designation would eliminate the development value of these parcels, resulting in a direct impact on the landowners' revenues in excess of $6 million. Similarly, another comment states that incremental impacts on future development in Unit 25 would be $20 million, taking into account land value and the future value of development. A third similar comment states

that the DEA does not include impacts to development in Units 12 and 16. The comment asserts that multi-family sites in these units subject to Housing and Urban Development (HUD) financing have already lost sales to apartment developers as a result of the proposed critical habitat designation.

Our Response: Chapter 4 of the DEA describes that development would be precluded in Units 12, 13, 16, and 25 regardless of critical habitat designation because they are low-quality units in Karst Zones 1 and 2. As described in Section 3.7 of the DEA, in low-quality units, the Service anticipates recommending development be precluded in order to avoid jeopardy. Therefore, development restrictions are anticipated regardless of critical habitat designation, and incremental impacts of critical habitat designation are expected to be limited to additional administrative effort during consultation.

(44) *Comment:* Two comments assert that the DEA underestimates potential economic impacts of critical habitat designation on development in Unit 8. One commenter estimates the lost development value to 200 single-family lots in the Cedar Creek Development to be $4.5 million. These lots have been engineered and entitled at Cedar Creek over the past 6 years. Another commenter estimates that the development site is worth $7 million. In addition, the commenter estimates a loss of $35 million in construction-related expenditures and $200 million in home and business sales. Similarly, multiple comments assert that the DEA underestimates impacts to development by not including the loss of taxes to local governments and by failing to

include the "multiplier effect" of development, such as the increase in demand for furniture and landscaping.

Our Response: Chapter 4 of the DEA estimates incremental impacts to development in Unit 8 ranging from $0 (scenario 1) to $5,590,000 (scenario 2) in the first 20 years and $0 to $17,100 after 20 years. Scenario 2 assumes development restrictions on 299.5 acres of developable land in Unit 8 will reduce the land value by $19,600 per acre based on county appraisal data. The DEA estimate of land value losses of $5.59 million is within the range of the value losses described by these comments ($4.5 million to $7 million).

As explained in paragraphs 154 and 155 of the DEA, the proposed critical habitat area accounts for only 1.6 percent of the total land area projected for development within the next 29 years within the northern portion of Bexar County. Consequently, the designation of critical habitat is not expected to have an effect on broader regional real estate demand and supply due to the existence of substitute sites for development activities. As a result, impacts to the regional construction industry and loss in revenue associated with home and business sales (estimated in a comment at $200 million) are not anticipated to occur. In addition, a reduction in housing supply is unlikely due to the existence of substitute sites, and a measurable loss of tax revenue is not expected to result from critical habitat designation.

(45) *Comment:* Multiple comments state that, unrelated to the designation of critical habitat for the invertebrates, recent undertakings will decrease land values in northwest Bexar County (in particular Unit 3). These undertakings include: (1) San Antonio Water System's decision to abandon all plans to extend water and sewer services into northwest Bexar County and (2) a recent decision to allow properties within a 5-mile buffer of the Edwards Aquifer recharge zone to be purchased using Proposition 1 funds.

Our Response: The DEA estimates the average per-acre value of unimproved, developable land within each unit using Bexar County land value appraisal data. These data represent the best available information regarding land values. To the extent that recent decisions may impact the value of land in northwest Bexar County, these values may be over- or understated.

(46) *Comment:* The DEA should reassess the incremental impacts of the proposed rule by carefully measuring the impact of critical habitat designation on the areas covered by the La Cantera HCP, including the acres of the La Cantera development land in Unit 9.

Our Response: The areas preserved as part of the La Cantera HCP in Units 1e, 3, 6, 8, and 17 are being excluded from critical habitat, and the areas authorized for development under the La Cantera HCP in Unit 9 are excluded as well in this final designation.

(47) *Comment:* The DEA underestimates the impacts of the expansion of several proposed critical habitat units from the previous 2003 critical habitat for these species.

Our Response: The DEA estimates impacts associated with the revised proposed critical habitat designation. This revised designation includes a number of proposed revised units that are larger than they were in the 2003 designation. Section 3.7 of the DEA describes the Service's approach to section 7 consultation in these expanded units, as evaluated in the DEA. Currently, the Service notifies project proponents of the need to consult on the impacts to the invertebrate species of activities with a Federal nexus within Karst Zones 1 and 2 regardless of critical habitat designation. Consultation on projects within Karst Zone 3 would not occur absent critical habitat designation, and therefore these impacts are considered incremental of the designation.

(48) *Comment:* The third party and biological assessment incremental administrative costs applied in the DEA are underestimated. The commenter believes that third party and biological assessment costs should be at least 10 times greater due to the amount of time and effort necessary to analyze potential impacts within a critical habitat unit.

Our Response: The administrative costs applied in the DEA are based on a review of consultation records from several Service field offices across Bexar County conducted in 2002. For consultations that would occur absent critical habitat designation (i.e., those in Karst Zones 1 and 2), the incremental administrative cost only represents

the additional effort needed to address adverse modification of critical habitat. As the Service is not expected to request any additional conservation efforts as a result of the adverse modification analysis (which arises from a critical habitat designation), we anticipate that the additional effort necessary to address this standard within any biological assessments is relatively minimal compared to the effort required to consider jeopardy to the species (which arises from the listing of the nine invertebrate species).

(49) *Comment:* Two comments state that even absent a Federal nexus, the sigma of critical habitat will eliminate the development value of properties located within Units 13 and 25.

Our Response: The potential for critical habitat to result in a stigma effect, for example, on property values, is described on page 2-17 of the DEA. In some cases, the public may perceive that critical habitat designation results in limitations on private property uses above and beyond those associated with anticipated project modifications. The DEA assumes that all future development projects within the proposed critical habitat would be subject to a Federal nexus and therefore section 7 consultation regarding the invertebrates. Because scenario 2 of the DEA assumes a complete loss in development value for developable lands, further reductions in land value due to stigma are not expected.

Comments on the DEA's Small Business Analysis

(50) *Comment:* Two comments note that the developers in Units 1e and 13 are not accounted for in Exhibit A-1 as the number of private landowners is zero.

Our Response: As described in paragraph 1 of Appendix A of the DEA, this appendix considers the extent to which incremental impacts from critical habitat designation may be borne by small entities. Exhibit A-1 of the DEA highlights the number of private landowners of parcels for which incremental impacts to development are estimated. The DEA analyzes two scenarios, in the first scenario, no incremental impacts are expected in Unit 1e and therefore no landowners are affected. In the second scenario, the analysis assumes that five landowners are affected in Unit 1e. If the developer in Unit 1e is also the landowner, then the developer would be included in this number. Because Unit 13 is of low quality and located in Karst Zones 1 and 2, all impacts are expected to be baseline. No incremental impacts are forecast in Unit 13, and therefore no landowners are affected.

(51) *Comment:* Exhibit A-1 inappropriately omits those lands that are being considered for exclusion.

Our Response: The areas being excluded are preserved as part of the La Cantera Habitat Conservation Plan. These areas are not considered developable lands and therefore no impacts to future development are anticipated. The footnote to Exhibit A-1 has been revised in the FEA to better explain why lands considered for exclusion are not included in the FEA's small business analysis.

Comments on Biological Issues that Inform the DEA

(52) *Comment:* Two comments state that the assumption that there are no incremental impacts in areas that are presently low-quality habitat is incorrect. The commenters assert that because these areas do not fit into the "minimum conservation criteria" described in the DEA, the Service could not sustain a jeopardy determination and therefore any project modifications requested by the Service would be due to critical habitat designation.

Our Response: As described in section 3.7 of the DEA, the Service anticipates that a jeopardy finding is likely in low-quality units in Karst Zones 1 and 2 if the project further reduces the habitat quality. Projects that would further reduce quality include those that fill in cave entrances or those that substantially reduce the remaining cave cricket foraging area. Such actions would likely result in jeopardy because they would appreciably reduce the likelihood that the species would persist in that unit. If the recovery criteria have not been met for the species (and they have not for any of the KFRs where low-quality units are being designated), recovery would also be substantially reduced. Therefore, the action would likely result in a jeopardy determination.

(53) *Comment:* Two comments state that the previous protocols issued by the Service on March 8, 2006, indicate that projects that may affect the listed species can avoid doing so by preserving the cave entrance and as little as nine acres of "core habitat"

around the entrance. The DEA assumes that complete avoidance of critical habitat would be recommended to avoid jeopardy or adverse modification in Karst Zones 1 and 2. Assuming that complete avoidance of critical habitat would be recommended to avoid jeopardy leads to an overstatement of baseline impacts.

Our Response: As described in section 3.7 of the DEA, the Service has recommended the minimum conservation criteria as outlined in the Recovery Plan as part of section 7 consultation on past development projects. Following these past examples, the Service anticipates making these recommendations to future projects that may jeopardize the species. The document issued on March 8, 2006, United States Fish and Wildlife Service, Section 10(a)(1)(A) Scientific Permit Requirements for Conducting Presence/Absence Surveys for Endangered Karst Invertebrates in Central Texas, makes no statements about effects of development to listed species or to core habitat that should be preserved. These recommendations were updated on September 8, 2011.

Other Economic-related Comments

(54) *Comment:* In exhibit ES-4, it appears that the minimum conservation criteria have only been met in one unit (Unit 22), while according to exhibit 4-2, the minimum conservation criteria have been met in three units (Units 7, 22, and 23).

Our Response: Exhibit ES-4 presents key uncertainties associated with the estimated incremental impacts of critical habitat designation for the invertebrates. While the minimum conservation criteria have been met in three units (Units 7, 22, and 23), incremental impacts are only anticipated in Unit 22, as Unit 22 is the only high-quality unit of the three. Units 7 and 23 are low-quality units, and thus the Service anticipates recommending development be precluded in order to avoid jeopardy (i.e., they are included in the baseline). Text has been added to exhibit ES-4 in the FEA to clarify this point.

(55) *Comment:* One comment requests that better explanation be given to if and how habitat quality and project modification relate.

Our Response: As described in section 3.7 of the DEA, the project modifications recommended to avoid jeopardy and adverse modification are the same. The initial habitat quality of a unit, along with how the project impacts the unit's quality and the project's location within a Karst Zone, affects whether the request for the project modification is generated by jeopardy concerns (i.e., the recommendation would be made regardless of critical habitat designation) or by adverse modification concerns (i.e., specifically because of critical habitat designation).

Summary of Changes from Proposed Rule

In the February 22, 2011, proposed rule (76 FR 9872), we delineated critical habitat boundaries on the basis of the following criteria: (1) Known occupied caves; (2) the cave footprint with surface and subsurface drainage areas associated with the occupied cave; (3) the cave cricket foraging area that is a 344-ft (105-m) circle around the cave entrance, plus an additional 330-ft (100-m) distance to protect against edge effects from invasive species; (4) contiguous geological formations of Karst Zone 1 to protect mesocaverns likely connected to the caves to a distance of 0.3 mi (0.5 km) from the cave entrance; and (5) native vegetation of an area of at least 100 ac (40 ha) needed to support the diversity of native plant species normally found in the Edwards Plateau communities.

Based on the best available scientific and commercial information and information provided from the public and peer reviews, we reviewed our methodology for determining the extent of critical habitat designation for the Bexar County karst invertebrates. We refined the boundaries of our proposed critical habitat units for this final designation and revised our description of the methodology and rationale used in defining the critical habitat boundaries. We made several changes from the proposed rule in this final rule. The changes include: (1) Modifying and reducing the number of PCEs from three to two; (2) removing the 0.3–mi (0.5-km) mesocavern protection area; (3) removing the additional 330-ft (100-m) distance beyond the 344-ft (105-m) cave cricket foraging area to protect against edge effects from invasive species (the 344-ft (105-m) cave cricket foraging area remains a criterion); (4) changing the justification for 100 ac (40 ha) needed around a cave; and (5) removing five previously proposed units that no

longer meet the revised criteria used to designate critical habitat. Overall, these changes result in our designation of 4,216 ac (1,706 ha) in 30 units as critical habitat, as compared to our proposed designation of 6,906 ac (2,795 ha) in 35 units. Table 1 provides a unit-by-unit list of the changes in this final rule. The changes are described in more detail below.

TABLE 1. Comparison of proposed and final critical habitat unit sizes for the nine Bexar County invertebrates.

Unit	**Size of Proposed Units in Acres (Hectares)**	**Size of Final Units in Acres (Hectares)**	**Land Owner-ship Type**	**Listed species in Unit**
1a	238 ac (96 ha)	144 ac (58 ha)	State	*R. infernalis* *C. madla*
1b	178 ac (72 ha)	100 ac (40 ha)	State	*C. vespera* *N. microps* *R. exilis* *R. infernalis*
1c	178 ac (72 ha)	100 ac (40 ha)	State	*C. madla*
1d	349 ac (141 ha)	225 ac (91 ha)	State	*C. madla* *R. exilis* *R. infernalis*
1e*	690 ac (279 ha)	410 ac (166 ha)	State City Private	*R. infernalis* *R. exilis* *B. venyivi* *C. madla*
1f	178 ac (72 ha)	100 ac (40 ha)	State	*R. infernalis*
2	252 ac (102 ha)	180 ac (73 ha)	Private	*C. madla* *R. exilis* *R. infernalis*

Unit	Size of Proposed Units in Acres (Hectares)	Size of Final Units in Acres (Hectares)	Land Owner-ship Type	Listed species in Unit
3*	125 ac (51 ha)	85 ac (34 ha)	Private	*C. madla* *R. exilis* *R. infernalis* *B. venyivi*
4	255 ac (103 ha)	210 ac (85 ha)	Private	*R. exilis* *R. infernalis*
5	117 ac (47 ha)	100 ac (40 ha)	Private	*C. madla* *R. exilis* *R. infernalis* *B. venyivi*
6*	105 ac (42 ha)	96 ac (39 ha)	Private City	*C. madla* *R. exilis* *R. infernalis*
7	158 ac (64 ha)	100 ac (40 ha)	Private	*R. exilis*
8*	471 ac (191 ha)	243 ac (98 ha)	Private City	*C. madla* *R. infernalis* *R. exilis*
9	286 ac (116 ha)	105 ac (42 ha)	State Private	*C. madla* *R. exilis*
10a[1]	67 ac (27 ha)	38 ac (15 ha)	City Private	*R. infernalis*
10b[1]	66 ac (27 ha)	35 ac (14 ha)	City	*R. infernalis*
11a[1]	21 ac (8.5 ha)	Removed (0 ac, 0 ha)	Private	*R. exilis*
11b[1]	16 ac 6.5 ha	Removed (0 ac, 0 ha)	Private	*R. exilis*
11c[1]	21 ac 8.5 ha	Removed (0 ac, 0 ha)	Private	*R. exilis*
11d[1]	52 ac 21 ha	Removed (0 ac, 0 ha)	Private	*R. exilis*
11e	102 ac (41 ha)	89 ac (36 ha)	Private	*R. exilis*
12	371 ac (150 ha)	166 ac (67 ha)	Private	*R. exilis*
13	187 ac (76 ha)	100 ac (41 ha)	Private	*R. exilis*

Unit	Size of Proposed Units in Acres (Hectares)	Size of Final Units in Acres (Hectares)	Land Owner-ship Type	Listed species in Unit
14	330 ac (134 ha)	292 ac (118 ha)	Private	*R. infernalis*
15	339 ac (137 ha)	217 ac (88 ha)	Private	*C. venii* *R. infernalis*
16	194 ac (76 ha)	103 ac (42 ha)	Private	*R. infernalis*
17*	114 ac (46 ha)	96 ac (39 ha)	Private	*C. madla* *R. infernalis*
19	142 ac (57 ha)	81 ac (33 ha)	Private	*R. infernalis*
20	247 ac (100 ha)	247 ac (100 ha)	Private	*T. cokendolpheri* *C. baronia*
21	396 ac (160 ha)	154 ac (62 ha)	City Private	*R. exilis*
22	178 ac (72 ha)	100 ac (40 ha)	City Private	*C. madla*
23	178 ac (72 ha)	100 ac (40 ha)	City Private	*R. infernalis*
24[1]	11 ac (4.5 ha)	Removed (0 ac, 0 ha)	Private	*R. exilis*
25	177 ac (72 ha)	100 ac (41 ha)	Private	*C. baronia*
26	117 ac (47 ha)	100 ac (41 ha)	Private	*R. infernalis*
Totals	6,906 ac (2,795 ha)	4,365 ac (1,766 ha)		

***** Indicates unit where lands managed under the La Cantera HCP have been excluded in accordance with section 4(b)(2) of the Act.

[1.] Cave is located on Camp Bullis; final critical habitat is outside Camp Bullis.

Note: Area sizes may not sum due to rounding.

Based on information we received in comments regarding the clarity of the PCEs necessary to provide for conservation of the species, we reduced the number of PCEs from three to two. In this final rule, we omit proposed PCE 2 (surface water free of pollutants that flows into the karst features) and include pollutant-free moisture as a component of karst (PCE 1), because the function of surface water free of pollutants is to maintain the high humidity needed by the invertebrates in the karst features, and this is now described in PCE 1. We also change proposed PCE 3 to include more general sources of nutrient input, rather than focusing on native plant communities, because we do not know the precise vegetative community requirements needed for the conservation of the species. Although we believe that native plant communities are preferred, are important, and can increase the long-term stability of habitat, nonnative plant species may also serve as sources of nutrients, particularly in units that are partially developed.

In the proposed rule, we delineated unit boundaries to a distance of 0.3 mi (0.5 km) from the caves to capture the amount of contiguous karst deposit we estimated was necessary to provide for subsurface movement of listed species through mesocaverns between and around occupied caves. However, because of comments we received and an internal review of the available information on the reliability of the genetic and geologic studies information, upon which we relied to propose this distance, we determined that we did not have sufficient information to justify this distance as a criterion. We also removed the justification of an area needed to support an assemblage of vegetation native to the Edwards Plateau. Instead, we used the Bexar County Karst Invertebrates Recovery Team's expert opinion (Service 2008, pp. B-1–B-5) that an area of 100 ac (40 ha)

provides a higher probability of species survival and conservation, including nutrient input, moisture, and mesocaverns. Therefore, in this final rule, we delineate the boundaries to include an area of about 100 ac (40 ha) that includes subsurface karst deposits, the cave footprint, surface and subsurface drainage areas, a cave cricket foraging area, and, where possible, at least 100 ac (40 ha) of undisturbed or restorable vegetation. Because of these revisions, the size of many units is reduced substantially (see Table 1, above). See the *Criteria Used to Identify Critical Habitat* section for additional details.

As a result in these changes in criteria used to identify critical habitat, we completely removed five units from this final designation that had been proposed for designation (Units 11a, 11b, 11c, 11d, and 24). All of these units were located adjacent to Department of Defense lands (Camp Bullis Military Reservation (Camp Bullis)), and because applying the new criteria for delineation left little or no habitat associated with the occupied cave and associated karst on Camp Bullis, the lands are not designated as critical habitat in this rule. In addition, a large portion of Unit 9 north of highway Loop 1604 is not included in this final designation because most of the property was authorized for development under La Cantera's HCP, and the small, undisturbed area around the remaining features is not considered to be essential to the conservation of the species because of its small size and because highly impervious cover in the surrounding area has reduced the input of nutrients and moisture (see **Exclusions** section for more details).

Critical Habitat

Background

Critical habitat is defined in section 3 of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features

(a) Essential to the conservation of the species and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the

requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the consultation requirements of section 7(a)(2) of the Act would apply; even in the event of a destruction or adverse modification finding, however, the obligation of the Federal action agency and the landowner is not to restore or recover the species, but to implement reasonable and prudent alternatives to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act's definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat). In identifying those physical and biological features within an area, we focus on the principal biological or physical

constituent elements (primary constituent elements such as roost sites, nesting grounds, seasonal wetlands, water quality, tide, soil type) that are essential to the conservation of the species. Primary constituent elements are the elements of physical or biological features that together provide for a species' life-history processes and are essential to the conservation of the species.

Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. For example, an area currently occupied by the species but that was not occupied at the time of listing may be essential to the conservation of the species and may be included in the critical habitat designation. We designate critical habitat in areas outside the geographical area occupied by a species only when a designation limited to its range would be inadequate to ensure the conservation of the species.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific and commercial data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the **Federal Register** on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R. 5658)), and our associated Information Quality Guidelines, provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act

and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information developed during the listing process for the species. Additional information sources may include the recovery plan for the species, articles in peer-reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, biological assessments, other unpublished materials, or experts' opinions or personal knowledge.

Habitat is dynamic, and species may move from one area to another over time. In addition, our knowledge of species' locations and habitat requirements are incomplete. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) Conservation actions implemented under section 7(a)(1) of the Act, (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to insure their actions are not likely to jeopardize the continued existence of any endangered or threatened species, and (3) the prohibitions of section 9 of the Act if actions occurring in these areas may affect the species. Federally funded or permitted projects affecting listed

species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of this species. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome.

Physical or Biological Features

In accordance with sections 3(5)(A)(i) and 4(b)(1)(A) of the Act and regulations at 50 CFR 424.12, in determining which areas within the geographical area occupied by the species at the time of listing to designate as critical habitat, we consider the physical or biological features essential to the conservation of the species and which may require special management considerations or protection. These include, but are not limited to:

(1) Space for individual and population growth and for normal behavior;

(2) Food, water, air, light, minerals, or other nutritional or physiological requirements;

(3) Cover or shelter;

(4) Sites for breeding, reproduction, or rearing (or development) of offspring; and

(5) Habitats that are protected from disturbance or are representative of the historical, geographical, and ecological distributions of a species.

We derive the specific physical or biological features essential for the nine Bexar

County invertebrates from studies of this species' habitat, ecology, and life history as described in the *Critical Habitat* section of the proposed rule to designate critical habitat published in the **Federal Register** on February 22, 2011 (76 FR 9872), and in the information presented below. Additional information can be found in the final listing rule published in the **Federal Register** on December 26, 2000 (65 FR 81419), and the Bexar County Karst Invertebrates Recovery Plan (Service 2011). We have determined that each of the nine Bexar County invertebrates require the physical or biological features described below.

Space for Individual and Population Growth and for Normal Behavior

The nine Bexar County invertebrates are terrestrial troglobites that require underground passages with stable temperatures (Howarth 1983, p. 373; Dunlap 1995, p. 76) and constant, high humidity (Barr 1968, p. 47; Mitchell 1971a, p. 250). In addition to the larger cave passages that are accessible by humans where the species are collected, the species also need mesocaverns (tiny voids that are connected to larger cave passages) (Howarth 1983, p. 371), which provide additional habitat to sustain viable populations of the species (White 2006, pp. 100–101). During temperature extremes, small mesocavernous spaces connected to caves may have more favorable humidity and temperature levels than the cave (Howarth 1983, p. 371); however, the abundance of food may be less in mesocaverns than in the larger cave passages. Therefore, the nine Bexar County invertebrates may spend the majority of their time in mesocaverns, only leaving during temporary forays into the larger cave passages to forage (Howarth 1987, p. 377). Based on the information above, we identify karst-forming rock containing subterranean

spaces (caves and connected mesocaverns) with stable temperatures, high humidities (near saturation), and suitable substrates (spaces between and underneath rocks for foraging and sheltering) to be a physical and biological feature needed by these species.

Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements

Water

The nine Bexar County invertebrates need clean water that is free of pollutants to maintain stable humidity and temperatures. To maintain stable humidity, the amount of clean water varies depending on the size of the drainage basin, caves, and mesocaverns. Water enters the karst ecosystem through surface and subsurface drainage basins. Well-developed pathways, such as cave openings and fractures, rapidly transport water through the karst with little or no purification. Caves are susceptible to pollution from contaminated water entering the ground because karst has little capacity for self-purification. The route that has the greatest potential to carry water-borne contaminants into the karst ecosystem is through the drainage basins that supply water to the ecosystem. Because cave fauna require material washed in through entrances (including human inaccessible cracks), and because they require generally high humidity, it is essential to have drainage basins with unpolluted water. The surface drainage basin consists of the cave entrance and other surface input sources, such as neighboring sinkholes and soil percolation. The subsurface or groundwater drainage basin includes mesocaverns, as well as subterranean streams that have a connection to the surface but that connection is often not observable from the surface. The surface and subsurface

drainage basins do not necessarily overlap, and they may be of different size and direction (Veni 2003, pp. 7–8).

In conclusion, we identify clean surface water that flows into the karst features to be a physical and biological feature needed by these species. Sources may include runoff that flows into the caves' entrances or associated features through sinkholes or fractures, and through-ground flows via fractures, conduits, and passages.

Surface Plant and Animal Communities

The nine Bexar County invertebrates need healthy surface plant and animal communities in areas around and over the karst they occupy (see discussion under **Background**). Surface vegetation provides nutrients that support trogloxene (species that regularly inhabit caves for refuge, but return to the surface to feed) and accidental species (those that wander in or are trapped in a cave) and provides nutrients through leaf litter and root masses that grow directly into caves (Howarth 1983, p. 373; Jackson *et al*. 1999, p. 11387). Because the nine Bexar County invertebrates are at the top of their food chain (Service 2011c, p.7), habitat changes that affect their food sources (including plants and cave crickets) can affect them (Culver *et al*. 2000, p. 395).

Surface vegetation also protects the subsurface environment against drastic changes in the temperature and moisture regime. It serves to filter pollutants (to a limited degree) before they enter the karst system and protects against nonnative species

invasions (Biological Advisory Team 1990, p. 38).

Surface invertebrates provide food for trogloxenes, such as cave crickets, bats, toads, and frogs. Other animals wash or accidentally stumble into caves and are food sources for cave-limited species. A healthy, native arthropod community may also better stave off fire ants (Porter *et al*. 1988, p. 914), which pose a threat to the karst ecosystem.

Cave crickets are an important source of nutrient input for karst ecosystems (Barr 1968, p. 48; Reddell 1993, p. 2). The cave crickets forage on the surface at night and roost in the cave during the day. Cave crickets provide food for karst species, which feed on their eggs, young, and feces (Mitchell 1971b, p. 250; Barr 1968, pp. 51–53; Poulson *et al*. 1995, p. 26). Many of the vertebrate species that occasionally use caves bring in a significant amount of energy in the form of scat, nesting material, and carcasses.

Natural quantities of plants and animals are an important part of a functioning ecosystem. Therefore, based on the information above, we identify a healthy surface community of plants (for example, juniper-oak woodland) and animals (for example, cave crickets) living in and near the karst feature that provides nutrient input and protects the karst ecosystem from adverse effects (nonnative species invasions, contaminants, and fluctuations in temperature and humidity), as being a essential biological feature.

Primary Constituent Elements for the Nine Bexar County Invertebrates

Under the Act and its implementing regulations, we are required to identify the physical or biological features essential to the conservation of the nine Bexar County invertebrates in areas occupied at the time of listing, focusing on the features' primary constituent elements. We consider primary constituent elements (PCEs) to be the elements of physical or biological features that together provide for a species' life-history processes and are essential to the conservation of the species.

Based on our current knowledge of the physical or biological features and habitat characteristics required to sustain the species' life-history processes, we determine that the PCEs specific to each of the nine Bexar County invertebrates are:

(1) Karst-forming rock containing subterranean spaces (caves and connected mesocaverns) with stable temperatures, high humidities (near saturation), and suitable substrates (for example, spaces between and underneath rocks for foraging and sheltering) that are free of contaminants and

(2) Surface and subsurface sources (such as plants and their roots, fruits, and leaves, and animal (e.g., cave cricket) eggs, feces, and carcasses) that provide nutrient input into the karst ecosystem.

With this designation of critical habitat, we intend to identify the physical or biological features essential to the conservation of the species, through the identification of the appropriate existing or restorable quantity and spatial arrangement of the features' primary constituent elements sufficient to support the life-history processes of the

species. All units designated as critical habitat are currently occupied by one or more of the nine Bexar County invertebrates and some contain the primary constituent elements in the appropriate quantity and spatial arrangement sufficient to support the life-history needs of the species. Others are degraded, and some may never reach recovery criteria for the species.

Special Management Considerations or Protection

When designating critical habitat, we assess the physical or biological features within the geographical area occupied by the species at the time of listing that are essential to the conservation of the species and which may require special management considerations or protection.

The Bexar County human population is projected to increase 13.8 percent from 2010 to 2020, and 45.2 percent by 2050 (San Antonio Planning Department 2005, p. 1). Most of the threats to the nine Bexar County invertebrates and their PCEs are the result of this continued rapid population growth and associated urbanization. Threats include: Filling and collapsing caves; altering drainage patterns, decreasing water infiltration, and drying karst or increasing flooding; removing native vegetation and replacing it with impervious cover and nonnative plants; reducing nutrient input into caves; changing temperatures; decreasing humidity; contaminating habitat as a result of human activities in the surface and subsurface drainage basins of caves and in adjacent karst areas; increasing human visitation, resulting in alteration of the cave habitat and direct mortality

of listed species; and increasing infestation by fire ants, a predator and competitor that can cause direct predation on and competition with trogloxenes like cave crickets, ultimately reducing nutrient input into the cave.

In 2000, 437 caves were known in Bexar County, and about 109 of the 437 had been sealed or destroyed, including some that had not been biologically studied, but by observation of fauna, had likely contained some of the listed species. Currently, 523 caves are registered in Bexar County, with 103 of those confirmed as sealed or destroyed, and about 40 more suspected as sealed or destroyed, but which need to be visited for confirmation (Veni 2011, pers. comm.).

Construction and development activities that may not destroy a cave entrance can still result in collapse of the cave ceiling or other adverse effects on the karst environment. On ranch land or in rural areas, it is not uncommon to use caves as trash dumps (Culver 1986, p. 434; Reddell 1993, p. 2) or to cover the entrances to prevent livestock from falling in (Elliott 2000, pp. 374–375). These activities can be detrimental to the karst ecosystem by causing direct destruction of habitat or altering the natural passage of organisms, water, detritus, and other organic matter into a cave. Quarrying of limestone and road base material is a widespread activity that can remove vegetation and destroy karst habitat. A number of occupied caves in Bexar County have been severely impacted in the past, and an examination of recent aerial photography reveals recent impacts to karst habitat near several other occupied caves.

Cave organisms are adapted to live in a narrow range of temperature and humidity. To sustain these conditions, both natural surface and subsurface flow of water and nutrients should be maintained. Decreases in water flow or infiltration can result in excessive drying and may slow decomposition of organic matter, while increases can cause flooding that drowns air-breathing species and carries away available nutrients. Alterations to surface topography, including decreasing or increasing soil depth or adding nonnative fill, can change the nutrient flow into the cave, and affect the cave community (Howarth 1983, p. 381). Changes in the amount of impermeable cover, collection of water in devices like storm sewers, increased erosion and sedimentation, and irrigation and sprinkler systems can affect water flow to caves and the surrounding karst. Changes in the quantity of water, its organic content, the timing and extent of flood pulses, or droughts may negatively impact the listed species.

Karst ecosystems are heavily reliant on surface plant and animal communities to maintain nutrient input, reduce sedimentation (in the case of plants), and resist exotic and invasive species. As the surface around a cave entrance or over the associated karst ecosystem is developed, native plant communities are often replaced with impermeable cover or exotic plants from nurseries. The abundance and diversity of native animals may decline due to decreased food and habitat, combined with increased competition and predation from urban, exotic, and pet species. As surface plant and animal communities are destroyed, food and habitat once available to trogloxenes decreases. Destruction of plant communities can lead to increased erosion that causes sedimentation within caves. Where native woodland and grassland communities are present, a perimeter area is

needed to shield the core vegetation habitat from impacts associated with edge effects or disturbance from adjacent urban development (Lovejoy *et al*. 1986, p. 284; Yahner 1988, pp. 333–334). Effects from such impacts can include increases in invasive species and pollutants, and changes in microclimates, which can adversely affect the listed species by impacting nutrient cycling processes important in cave/karst dynamics.

Much of the habitat occupied by the Bexar County invertebrates is particularly sensitive to groundwater contamination, because little or no filtration occurs, and water penetrates rapidly through bedrock conduits (White 1988, p. 149). The ranges of these species are becoming increasingly urbanized, and, thereby, they are becoming more susceptible to contaminants including sewage, oil, fertilizers, pesticides, herbicides, seepage from landfills, pipeline leaks, or leaks in storage structures and retaining ponds. Activities on the surface, such as disposing of toxic chemicals or motor oil, can contaminate caves (White 1988, p. 388). Materials like cleaning agents, industrial chemicals, and heavy metals can also easily infiltrate subterranean ecosystems by the pollutants leaching into the karst, for example, from leaking underground storage tanks, or by being washed into the surface or subsurface drainage area. Contamination of karst habitat can also occur from the deposition of air pollutants in the surface or subsurface drainage area and improper disposal of litter, motor oil, batteries, or other household products in or near caves (White 1988, pp. 399–400).

Continued urbanization will increase the likelihood that karst ecosystems are polluted by contamination from leaks and spills, which often have occurred in Bexar

County. The Texas Commission on Environmental Quality (TCEQ 2010, pp. TCEQ – 5 to TCEQ – 8) summarized information on groundwater contamination reported by a number of agencies, and listed 109 groundwater contamination cases that occurred in Bexar County between 1980 and 2000; the majority of them were spills or leaks of petroleum products. Groundwater contamination poses a threat to entire karst ecosystems and is particularly difficult to manage because pollutants can originate far from the sensitive karst site and flow rapidly through the subsurface (White 1988, pp. 387–388).

Fire ants are a pervasive, nonnative ant species originally introduced to the United States from South America over 50 years ago and are an aggressive predator and competitor that has spread across the southern United States. They often replace native species, and evidence shows that overall arthropod diversity, as well as species richness and abundance, decreases in infested areas. Fire ants pose a threat to the listed invertebrates in Bexar County through direct predation and competition with native species (such as cave crickets) for food resources. This threat is exacerbated by activities that accompany urbanization and that result in soil disturbance and disruption to native ant communities (refer to previous detailed discussion in **Background**).

Maintaining native vegetation communities greater than 12 ac (5 ha) may help sustain native ant populations and further deter fire ant infestations (Porter *et al*. 1988, p. 914; 1991, p. 869). On Camp Bullis Military Reservation, in Bexar and Comal Counties, Texas, caves are located in large expanses of undeveloped land. Although there is some ground disturbance in portions of the area, caves on Camp Bullis had less fire ant

infestation than caves in more urbanized areas, even prior to beginning a fire ant treatment regime (Veni and Associates 1999, p. 55). In addition, Suarez *et al*. (1998, p. 2047) found that protection of a core area zone that is at least 330 ft (100 m) wide helps to reduce the severity of infestations of Argentine ant (*Linepithema humile*), a species similar to the fire ant.

Karst invertebrates in central Texas are especially susceptible to fire ant predation because most caves are relatively short and shallow. Fire ants have been found within and near many caves in central Texas and have been observed feeding on dead troglobites, cave crickets, and other species within caves (Elliott 1992, p. 13; 1994, p. 15; 2000, pp. 668, 678; Reddell 1993a, p. 10; Taylor *et al*. 2003, p. 3). Hot and dry weather may also encourage fire ants to move into caves during summer months, and cold weather may cause them to seek refuge or prey in the caves during the winter. Besides direct predation, fire ants threaten listed invertebrates by reducing the nutrient input that fuels the karst ecosystem. Taylor *et al*. (2003, p. 3) found that cave crickets often arrived before fire ants at baits placed above ground at night, but the arrival of fire ants corresponded to the departure of cave crickets, indicating competition for at least some food resources. Lavoie *et al*. (2007, p. 126) also reported that cave crickets and fire ants ate the same baits. Of 36 caves visited during status surveys for the nine Bexar County karst invertebrates, fire ants were found in 26 of them (Reddell 1993a, p. 32).

Models suggest climate change may cause the southwestern United States to experience the greatest temperature increase of any area in the lower 48 States (IPCC

2007, p. 15). There is also high confidence that many semi-arid areas like the western United States will suffer a decrease in water resources due to climate change (IPCC 2007, p. 16), as a result of less annual mean precipitation and reduced length of snow season and snow depth (Christensen *et al.* 2007, p. 850). These predictions underscore the importance of special management to maintain karst moisture levels to ensure survival of the nine invertebrates.

In summary, threats to the nine Bexar County invertebrates include clearing of vegetation for commercial or residential development, road building, quarrying, or other purposes. Infestation by nonnative vegetation causes adverse changes in the plant and animal community and possibly in moisture availability. An increase in fire ants can occur with development and cause competition with and predation on other invertebrates in the karst ecosystem. In addition, filling cave features for construction, ranching, or other purposes can adversely affect the listed invertebrate species by reducing nutrient input, reducing small mammal access, and changing moisture regimes. Excavation for construction or operation of quarries can directly destroy karst features occupied by any of the nine Bexar County invertebrates, including the mesocaverns they use. Examples of management that would alleviate these threats include: (1) Protecting vegetation around occupied karst features and overlying connected mesocaverns; (2) protecting subsurface karst habitat to allow movement of karst invertebrates through caves and mesocaverns; (3) controlling nonnative fire ants around cave features and within the karst cricket foraging area; (4) preventing unauthorized access to karst features by installing

fencing and cave gates; and (5) keeping the surface and subsurface areas surrounding cave features and associated mesocaverns free from sources of contamination.

Criteria Used To Identify Critical Habitat

As required by section 4(b)(1)(A) of the Act, we used the best scientific and commercial data available to designate critical habitat. We reviewed available information pertaining to the habitat requirements of these species. In accordance with the Act and its implementing regulation at 50 CFR 424.12(e), we considered whether designating additional areas—outside those currently occupied as well as those occupied at the time of listing—are necessary to ensure the conservation of the species. We are designating critical habitat in areas within the geographical area occupied by the species at the time of listing in 2000. We also are designating specific areas outside the geographical area known to be occupied by the species at the time of listing, which are currently occupied, because we have determined that such areas are essential for the conservation of the species.

We relied on information in presence/absence survey reports submitted during project consultations with the Service, annual reports on research and recovery activities conducted under section 10(a)(1)(A) scientific permits, annual section 10(a)(1)(B) reports, section 6 species status reports, and literature published in peer-reviewed journals. We also used information from the proposed (67 FR 55063; August 27, 2002) and final (68 FR 17155; April 8, 2003) critical habitat rules, draft recovery plan (Service 2008), final recovery plan (Service 2011), and other information in our files. Critical

habitat units were delineated by creating approximate areas for the units by screen-digitizing polygons (map units) using ArcMap (Environmental Systems Research Institute, Inc.). We defined the boundaries of each unit based on the criteria below:

(1) We identified all areas known to be occupied by the species. We used verified identifications of specimens by recognized species experts. In the case of Madla Cave meshweaver, we also used genetic identification (Paquin and Hedin 2004, p. 3244).

(2) We included the cave footprint with the surface and subsurface drainage areas of the cave, where known.

(3) We included a cave cricket foraging area that is a 344-ft (105-m) circle around the cave entrance (Taylor *et al*. 2005, p. 97).

(4) We also included an area of at least 100 ac (40 ha) around the cave footprint of undisturbed or restorable vegetation as recommended by the Bexar County Karst Invertebrates Recovery Team (Recovery Team) (Service 2008, pp. B1-5). The Recovery Team used an expert opinion poll to query members about species conservation needs, relying on goals identified by the recovery team for maintaining a healthy karst ecosystem for the nine invertebrates. Recovery Team members ranked a preserve size of 60 to 90 ac (16 to 36 ha) with the occupied karst feature near its center as having the highest probability of achieving each goal (Service 2008, p. B-5). Specified goals included maintaining high humidity, stable temperatures, high water quality of surface

and subsurface drainage basins, and good connectivity with mesocaverns for population dynamics of troglobites. The Preserve Design Recommendations document cited in the final recovery plan increased the preserve size to a minimum of 100 ac (40 ha) for a high-quality KFA based on peer-review comments (Service 2011, p. 3). Therefore, we used a circle encompassing 100 ac (40 ha), with the occupied feature near the center as a guide, for delineation of critical habitat, because that area and configuration are likely to provide the necessary nutrient input, maintain moisture, protect a substantial amount of the mesocaverns that are likely connected to the occupied karst feature, and remain viable over the long term. In units that are undeveloped, it will also protect a diverse assemblage of vegetation. We also used this target size for units that are at least partially developed because we believe that remaining vegetation can provide nutrients, moisture, and mesocavern protection for the listed species. Although such low-quality units may not count toward the recovery of the species, they do serve to increase the probability the species is likely to survive.

We used a circle with an area of 100 ac (40 ha) as a guide for mapping the physical or biological features essential to the conservation of the nine Bexar County invertebrates. We positioned the circle with the occupied feature at the center. Then we changed the shape of the edge to maintain at least 100 ac (40 ha). We gave preference to including undisturbed, existing or restorable vegetation in Karst Zone 1; the surface and subsurface drainage basins; and the cave cricket foraging areas of the occupied features. We did not include area for cave cricket foraging if it was on the other side of an urban edge, such as a major roadway, because such edges act as barriers to cricket movement.

When the delineations around individual caves overlapped, we included those caves in the same unit.

In this designation, we included areas that possess those physical or biological features essential to the conservation of each of the species and that may require special management considerations or protection. Even though the nine Bexar County invertebrates spend their entire lives underground, we included specific surface features when identifying critical habitat units, because they are important drainage links into the caves, and because surface habitat is needed to support the plant and animal communities upon which the invertebrates depend for nutrients.

We identified critical habitat units that are known to be occupied based on one or more surveys that resulted in the collection of a specimen from the karst feature and verification of a species' identity by a taxonomic expert. Some of the rarer species are difficult to collect, and it may take many surveys over multiple years to detect even the more common species (Krejca and Weckerly 2007, p. 286). Therefore, we included all locations with historic records of species occupancy, regardless of date.

We determined the units based on the presence of both of the defined PCEs and the kind, amount, and quality of habitat associated with those occurrences. We only designated areas that include both PCEs in close enough proximity to each other to be used by the invertebrate population in the area. Some of the units contain the appropriate quantity and distribution of PCEs to support the life cycle stages we have determined as

essential to the conservation of the species. In other units or portions of units, one or both of the PCEs have been degraded. We included such units because the portion of the PCEs that are present can support the listed species to some extent, even though the PCEs have been degraded. For example, surface habitat without a healthy plant and animal community can continue to support listed invertebrates below the surface for a limited time, and clean water from modified surface areas can provide the humidity needed by the listed invertebrates.

When determining critical habitat boundaries within this final rule, we made every effort to avoid including developed areas, such as lands covered by buildings, pavement, and other structures that lack the surface physical or biological features for the nine Bexar County invertebrates, and which do not contain the subsurface physical or biological features to support life-history processes essential for the conservation of the invertebrates. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the non-inclusion of such developed lands in critical habitat. Therefore, a Federal action involving these lands will not trigger section 7 consultations with respect to critical habitat and the requirement of no adverse modification unless the specific action would affect the physical or biological features in the adjacent critical habitat.

However, in some instances, we included some developed areas that had partially degraded surface features. We included these developed lands because they contain the subsurface physical or biological features, such as karst-forming rock containing

subterranean spaces, and enough of the surface physical or biological features in close enough proximity to support life-history processes essential for the conservation of the invertebrates. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the non-inclusion of developed lands.

We are designating as critical habitat lands that we have determined were occupied at the time of listing and contain sufficient physical or biological features to support life-history processes essential for the conservation of the species, and lands outside of the geographical area not known to be occupied at the time of listing, which are currently occupied, and which we have determined are essential for the conservation of Bexar County invertebrates.

Final Critical Habitat Designation

We are designating 30 units as critical habitat for the nine Bexar County invertebrates. The critical habitat areas described below constitute our best assessment at this time of areas that meet the definition of critical habitat. Table 2 lists the occupied units.

TABLE 2. Occupancy by one or more of the nine by designated critical habitat units.

Unit	Known to be Occupied at Time of	Currently Occupied?

	Listing?	
1a	Yes	Yes
1b	Yes	Yes
1c	Yes	Yes
1d	Yes	Yes
1e	No	Yes
1f	No	Yes
2	Yes	Yes
3	Yes	Yes
4	Yes	Yes
5	Yes	Yes
6	Yes	Yes
7	Yes	Yes
8	Yes	Yes
9	Yes	Yes
10a	Yes	Yes
10b	Yes	Yes
11e	No	Yes
12	Yes	Yes
13	Yes	Yes
14	Yes	Yes
15	Yes	Yes
16	Yes	Yes
17	Yes	Yes
19	Yes	Yes
20	Yes	Yes
21	No	Yes
22	No	Yes

23	No	Yes
25	No	Yes
26	No	Yes

The approximate area of each critical habitat unit is shown in Table 3.

TABLE 3. Unit number, known occupied caves, unit size, land ownership, and listed species that are known to occur within each critical habitat unit.

Unit	Known occupied caves in Unit	Size of Unit in Acres (Hectares)	Land Owner-ship Type	Listed species in Unit
1a	Bone Pile Cave Surprise Sink	144 ac (58 ha)	State	*R. infernalis* *C. madla*
1b	Government Canyon Bat Cave	100 ac (40 ha)	State	*C. vespera* *N. microps* *R. exilis* *R. infernalis*
1c	Lost Pothole Cave	100 ac (40 ha)	State	*C. madla*
1d	Dancing Rattler Cave Lithic Ridge Cave Hackberry Sink	225 ac (91 ha)	State	*C. madla* *R. exilis* *R. infernalis*
1e	Canyon Ranch Pit* Continental Park Cave Creek Bank Cave Fat Man's Nightmare Cave* Pig Cave San Antonio Ranch Pit Scenic Overlook Cave* Tight Cave	410 ac (166 ha)	State Private City	*R. infernalis* *R. exilis* *B. venyivi* *C. madla*
1f	10K Cave	100 ac (40 ha)	State	*R. infernalis*
2	Logan's Cave Madla's Drop Cave	180 ac (73 ha)	Private	*C. madla* *R. exilis* *R. infernalis*
3	Helotes Blowhole* Helotes Hilltop Cave*	85 ac (34 ha)	Private	*C. madla* *R. exilis* *R. infernalis* *B. venyivi*
4	Kamikazi Cricket Cave Mattke Cave Scorpion Cave	210 ac (85 ha)	Private	*R. exilis* *R. infernalis*
5	Christmas Cave	100 ac (40 ha)	Private	*C. madla* *R. exilis* *R. infernalis* *B. venyivi*

Unit	Known occupied caves in Unit	Size of Unit in Acres (Hectares)	Land Owner-ship Type	Listed species in Unit
6	John Wagner Ranch Cave No. 3*	96 ac (39 ha)	Private City	*C. madla* *R. exilis* *R. infernalis*
7	Young Cave No. 1	100 ac (40 ha)	Private	*R. exilis*
8	Three Fingers Cave Hills and Dales Pit* Robber's Cave	243 ac (98 ha)	Private City	*C. madla* *R. infernalis* *R. exilis*
9	Mastodon Pit Feature No. 50 La Cantera Cave No.1* La Cantera Cave No. 2*	105 ac (42 ha)	State Private	*C. madla* *R. exilis*
10a	Low Priority Cave[1]	38 ac (15 ha)	City Private	*R. infernalis*
10b	Flying Buzzworm Cave[1]	35 ac (14 ha)	City	*R. infernalis*
11e	Blanco Cave	89 ac (36 ha)	Private	*R. exilis*
12	Hairy Tooth Cave Ragin' Cajun Cave	166 ac (67 ha)	Private City	*R. exilis*
13	Black Cat Cave	100 ac (41 ha)	Private	*R. exilis*
14	Game Pasture Cave No. 1 King Toad Cave Stevens Ranch Trash Hole Cave F2 F4	292 ac (118 ha)	Private	*R. infernalis*
15	Braken Bat Cave Isopit Obvious Little Cave Wurzbach Bat Cave	217 ac (88 ha)	Private	*C. venii* *R. infernalis*
16	Caracol Creek Coon Cave	103 ac (42 ha)	Private	*R. infernalis*
17	Madla's Cave*	96 ac (39 ha)	Private	*C. madla* *R. infernalis*
19	Genesis Cave	81 ac (33 ha)	Private	*R. infernalis*

Unit	Known occupied caves in Unit	Size of Unit in Acres (Hectares)	Land Owner-ship Type	Listed species in Unit
20	Robber Baron Cave	247 ac (100 ha)	Private	*T. cokendolpheri* *C. baronia*
21	Hornet's Last Laugh Pit Kick Start Cave Springtail Crevice	154 ac (62 ha)	City Private	*R. exilis*
22	Breathless Cave	100 ac (40 ha)	City Private	*C. madla*
23	Crownridge Canyon Cave	100 ac (40 ha)	City Private	*R. infernalis*
25	OB3	100 ac (40 ha)	Private	*C. baronia*
26	Max and Roberts Cave	100 ac (40 ha)	Private	*R. infernalis*
Totals	59 caves 30 Units	4,216 ac (1,706 ha)		

***** Indicates caves and associated lands excluded from critical habitat designation under the La Cantera HCP in accordance with section 4(b)(2) of the Act.

[1.] Cave is located on Camp Bullis; critical habitat is outside Camp Bullis.

Note: Area sizes may not sum due to rounding.

We present brief descriptions of the units, and reasons why they meet the definition of critical habitat for each of the nine Bexar County invertebrates, below.

Unit 1a

Unit 1a consists of 144 ac (58 ha) of State-owned land located in northwestern Bexar County in the northwestern part of Government Canyon State Natural Area (GCSNA) in the Government Canyon KFR. The GCSNA is an area of approximately 8,622 ac (2,688 ha) owned and managed by the Texas Parks and Wildlife Department (TPWD). The GCSNA is accessible to the public under certain restrictions. This unit is all undeveloped woodland and is crossed by a wet weather stream and a trail. Unit 1a contains Surprise Sink, which is occupied by Madla Cave meshweaver and *R. infernalis*, and Bone Pile Cave, which is occupied by *R. infernalis*. Surprise Sink was believed to be occupied by Government Canyon Bat Cave spider, but further investigation showed that this identification could not be confirmed (Ledford 2011, pp. 160-161). The caves in this unit were occupied at the time of listing by each of the species listed above, and the unit contains the features essential to the conservation of each species (PCEs 1 and 2).

The features essential to the conservation of the species in this unit may require special management considerations or protection to address the main threat in this unit, which is infestation of fire ants. The GCSNA currently has a management plan in place that includes treating for fire ants and managing for the benefit of the Madla Cave meshweaver and *R. infernalis*. The treatment of fire ants only temporarily alleviates the

threat, so special management is required in perpetuity to remove the threat.

The unit was delineated by drawing a circle with an area of 100 ac (40 ha) around each of the two caves and connecting the edges of the overlapping circles. Unit 1a is all Karst Zone 1.

Unit 1b

Unit 1b consists of 100 ac (40 ha) of State-owned land located in northwest Bexar County in the western portion of the GCSNA in the Government Canyon KFR. Land within the unit consists of undeveloped woodland. However, there are several one-lane gravel roads that serve primarily as pedestrian trails within the State natural area. A small portion of the vegetation appears to have been cleared for ranching prior to TPWD ownership. The unit contains one cave, Government Canyon Bat Cave, which is the only cave known to be occupied by the Government Canyon Bat Cave meshweaver. The cave is also occupied by Government Canyon Bat Cave spider, *R. exilis*, and *R. infernalis*. The Government Canyon Bat Cave was occupied at the time of listing, and the unit contains all the PCEs.

The main threat to species in this unit is infestation of fire ants. The GCSNA currently has a management plan in place that includes treating for fire ants and managing for the benefit of the species. Because the treatment for fire ants only temporarily alleviates the threat, special management is required in perpetuity.

The unit was delineated by drawing a circle with an area of 100 ac (40 ha) around the cave. A small piece of Karst Zone 2 on the northern part of the circle is included because removing it would increase the edge effects. The remainder of Unit 1b is Karst Zone 1.

Unit 1c

Unit 1c consists of 100 ac (40 ha) of State-owned land located in northwestern Bexar County in the central part of GCSNA in the Government Canyon KFR. This unit is primarily undeveloped native woodland that is crossed by a hiking trail. There is only one cave in this unit, Lost Pothole Cave. The cave was occupied at the time of listing, and the unit contains all the PCEs for the species. A small amount of the woody vegetation in this unit has been cleared in the past for ranching prior to TPWD ownership.

The main threat to species in the unit is infestation of fire ants. GCSNA currently has a management plan in place that includes treating for fire ants and managing for the benefit of the species. Because the treatment for fire ants only temporarily alleviates the threat, special management is required in perpetuity.

This unit was delineated by drawing a circle with an area of 100 ac (40 ha) around the cave. Unit 1c is all Karst Zone 1.

Unit 1d

Unit 1d consists of 225 ac (91 ha) of State-owned land located in northwestern Bexar County in the central part of the GCSNA in the Government Canyon KFR. This unit is wooded and undeveloped. The unit is primarily native vegetation, but small portions of the unit appear to have been thinned in the past for ranching prior to TPWD ownership. Unit 1d contains three caves: Dancing Rattler Cave, Lithic Ridge Cave, and Hackberry Sink. The Lithic Ridge Cave is occupied by Madla Cave meshweaver, *R. exilis*, and *R. infernalis*. The Dancing Rattler Cave and Hackberry Sink are occupied by *R. infernalis*. The caves in this unit were occupied at the time of listing, and the unit contains all the PCEs for the species.

The main threat to the unit is infestation of fire ants. The GCSNA currently has a management plan in place that includes treating for fire ants. Because the treatment for fire ants only temporarily alleviates the threat, special management is required in perpetuity.

This unit was delineated by drawing a circle with an area of 100 ac (40 ha) around each of the caves and connecting the edges of the overlapping circles. Unit 1d is all Karst Zone 1.

Unit 1e

Unit 1e consists of 410 ac (166 ha) in northwestern Bexar County that includes the northeastern part of State-owned GCSNA, adjacent City of San Antonio-owned land, and private land in the Government Canyon KFR for the Madla Cave meshweaver, *R. infernalis*, *R. exilis*, and Helotes mold beetle. About 64 ac (26 ha) of land managed under the La Cantera HCP are not included in this designation of critical habitat (see explanation below). The majority of Unit 1e consists of undeveloped land, with the exception of several small private and county roads. Woody vegetation has been thinned for ranching on a small area of the northeastern part of the unit. Unit 1e contains eight caves. Four caves are occupied by Madla Cave meshweaver (Fat Man's Nightmare Cave, Pig Cave, San Antonio Ranch Pit, and Scenic Overlook Cave). Fat Man's Nightmare Cave is also occupied by *R. infernalis*; Pig Cave is also occupied by *R. infernalis* and *R. exilis*; San Antonio Ranch Pit is occupied by *R. infernalis*, *R. exilis*, and Helotes mold beetle; and Scenic Overlook Cave is occupied by *R. infernalis* and Helotes mold beetle. The unit also contains Canyon Ranch Pit and Continental Park Cave, which are occupied by *R. infernalis;* Creek Bank Cave, which is occupied by *R. exilis*; and Tight Cave, which is occupied by *R. exilis* and Helotes mold beetle.

The caves were likely occupied at the time of listing, but surveys sufficient to detect the species were not conducted before the time of listing. Since listing, the species has been found in the caves. Due to the long lifespan of these critters, or lack of dispersal that occurs, we assume they must have been there all along. Therefore, we are considering these caves to be occupied at the time of listing. The unit contains all the

PCEs for the species. In addition, populations and known occurrences are so low that all need to be conserved.

Special management is needed in this unit because of infestation of fire ants and vandalism from unauthorized access. Five of the caves in this unit are owned by GCSNA, and they currently have a management plan in place that includes treating for fire ants and managing for the benefit of the species. These five caves are San Antonio Ranch Pit, Pig Cave, Creek Bank Cave, Tight Cave, and Continental Park Cave.

Three of the eight known occupied caves within this unit and their associated preserve lands are part of the 75-ac (30-ha) Canyon Ranch Preserve. The Canyon Ranch Preserve, which was acquired and is managed by La Cantera under their HCP, contains Canyon Ranch Pit, Fat Man's Nightmare Cave, and Scenic Overlook Cave. In accordance with the La Cantera HCP, these three caves and the surrounding preserve lands will be managed in perpetuity for the conservation of the species. In accordance with section 4(b)(2) of the Act, we excluded from critical habitat designation approximately 64 ac (26 ha) of the preserve from this unit (see **Exclusions** section). When this unit was delineated, there was an 11-ac (4-ha) portion of the 75-ac (30-ha) preserve that fell outside the boundaries. Therefore, we excluded the approximately 64-ac (26-ha) portion of the preserve land that fell within the unit boundary.

This unit was delineated by drawing a circle with an area of 100 ac (40 ha) around each of the caves and generally connecting the edges of the overlapping circles. Unit 1e

is all Karst Zone 1.

Unit 1f

Unit 1f consists of 100 ac (40 ha) of State-owned land in northwest Bexar County in the southeastern part of the GCSNA in the Government Canyon KFR for *R. infernalis*. The unit is entirely native woodland, but a small amount appears to have been cleared in the past for ranching prior to TPWD ownership. It contains only one cave, which is named 10K Cave. The cave was likely occupied at the time of listing, but surveys sufficient to detect the species were not conducted prior to listing *R. infernalis*. Since the time of listing, the species has been found in the cave. Therefore, we are considering it to be occupied at the time of listing. The unit contains both PCEs for the species. In addition, populations and known occurrences are so low that all need to be conserved. We believe 10K Cave is essential for the conservation of the species. The unit contains all the PCEs for the species.

The major threat to Unit 1f is fire ant infestation. The GCSNA currently has a management plan in place that includes controlling fire ants, limiting access, monitoring the status of habitat, prohibiting the use pesticides, and constructing gates and fences.

This unit was delineated by drawing a circle with an area of 100 ac (40 ha) around the cave. Unit 1f is all Karst Zone 1.

Unit 2

Unit 2 consists of 180 ac (73 ha) of private land in located in northwestern Bexar County north of Bandera Road and southeast of High Bluff Road in the Helotes KFR. This unit contains a mix of large, wooded tracts with several residential buildings, cleared areas, a quarry on the southeastern edge, and private or county roads.

Unit 2 contains two caves. Madla's Drop Cave is occupied by Madla Cave meshweaver and *R. infernalis*. Logan's Cave is occupied by *R. infernalis* and *R. exilis*. These caves were occupied at the time of listing, and the unit contains all the PCEs for the species. Two paved roads cross the cave cricket foraging area of this unit and act as barriers to cricket movement.

The features essential to the conservation of the species may require special management considerations or protection, because of residential development. Threats include the potential for destruction of habitat from vandalism, contamination of the subsurface drainage area of the unit, drying of karst, reduction of nutrient input, and infestation of fire ants.

This unit was delineated by drawing a circle with an area of 100 ac (40 ha) around each of the caves and generally connecting the edges of the overlapping circles. Areas of Karst Zone 3 karst along the southern portion of the unit were left out, and the unit was expanded outside the circles in a small area to the east and to the southwest to include the

estimated subsurface drainage basin. Unit 2 is all Karst Zone 1.

Unit 3

Unit 3 consists of 110 ac (45 ha) of private land in northwestern Bexar County, east of Bandera Road and northwest of Scenic Loop in the Helotes KFR. About 25 ac (10 ha) of lands managed under the La Cantera HCP are not included in this designation of critical habitat (see explanation below). The unit contains relatively large, wooded tracts. This unit contains two caves, Helotes Blowhole and Helotes Hilltop Cave. Helotes Blowhole is occupied by Madla Cave meshweaver, *R. infernalis*, and *R. exilis*. The Helotes Hilltop Cave is occupied by Madla Cave meshweaver, *R. exilis*, and Helotes mold beetle. Both caves were occupied at the time of listing, and the unit contains all the PCEs for the species.

Special management is needed in this unit because of the potential for destruction of habitat from vandalism, contamination of the subsurface drainage area of the unit, and infestation of fire ants. In addition, a small portion of the northern side of the unit has been developed with residential homes. Unit 3 contains several small residential roads and is bordered on its southwestern edge by Bandera Road, a four-lane divided highway. This unit does not include the entire 344-ft (105-m) cave cricket foraging area around Helotes Hilltop Cave in Karst Zone 3, because a paved road creates a barrier to cave cricket movement. The road is located in Karst Zone 3, and the area east of the road is not included in critical habitat.

This unit was delineated by drawing a circle with an area of 100 ac (40 ha) around each of the caves and generally connecting the edges of the overlapping circles. Because of the large amount of Karst Zone 3 to the east was left out, we expanded the western circle to the north and northwest in Karst Zone 1 to the boundary proposed for the unit. Some areas of Zone 3 are included along the eastern boundary of the unit to include more of the cave cricket foraging area for Helotes Hilltop Cave. Areas of Zone 3 along all but a part of the northern portion of the unit were left out of this designation. The rest of Unit 3 is Karst Zone 1.

In accordance with section 4(b)(2) of the Act, we excluded from critical habitat designation approximately 25 ac (10 ha) of land surrounding the caves under the La Cantera HCP (see **Exclusions** section). These caves and the surrounding preserve lands will be managed in perpetuity for the conservation of the species. The remainder of the unit needs special management because of the presence of roads and residential development.

Unit 4

Unit 4 consists of 210 ac (85 ha) of private land in northwestern Bexar County, west of the intersection of Scenic Loop and Cross XD Road in the UTSA KFR. Tower View Road and Cash Mountain Road cross the northern part of the unit, and Rafter S and Cross XD cross the southern part. Unit 4 contains three caves. Kamikazi Cricket Cave is

occupied by *R. exilis* and *R. infernalis*. Mattke and Scorpion Caves are occupied by *R. infernalis*. These three caves were occupied at the time of listing, and parts of the unit contain all the PCEs for the species.

Special management is needed in this unit because of the potential for destruction of habitat from vandalism and potential future development, contamination of the subsurface drainage area of the unit, drying of karst areas, reduction of nutrient input, and infestation of fire ants. In addition, this unit contains several residential roads, but no major roadways or highways. Lands surrounding Unit 4 consist mainly of relatively large, residential tracts. The unit requires special management because of threats from existing and potential future residential development.

This unit was delineated by drawing a circle with an area of 100 ac (40 ha) around each of the caves and generally connecting the edges of the overlapping circles. Portions on the western edges of the circles were cut out because they are Karst Zone 3. The circles were extended outside the circles to the east and northeast to include undisturbed vegetation. Some areas of Karst Zone 3 are included along the western edges of the cave cricket foraging areas of Kamikaze Cricket and Mattke Caves. The remainder of the unit is Karst Zone 1 except for a small finger of Karst Zone 3, which is included to reduce edge effects.

Unit 5

Unit 5 consists of 100 ac (40 ha) of private land in northwestern Bexar County, northwest of Cedar Crest Drive and north of Madla Ranch Road in the Helotes KFR. The unit contains a large tract of undeveloped woodland and several smaller, wooded tracts developed with homes and associated residential roads. This unit contains one cave, Christmas Cave, which is occupied by *R. exilis*, *R. infernalis,* Helotes mold beetle, and Madla Cave meshweaver. The cave was occupied at the time of listing, and the unit contains all the PCEs for the species.

The unit requires special management because of the presence of residential development and impending future development. Threats include the potential for destruction of habitat from development and vandalism, contamination of the subsurface drainage area of the unit, reduction of moisture and nutrients, and infestation of fire ants.

The unit was delineated by drawing a circle with an area of 100 ac (40 ha) around the cave. Large areas of Zone 3 were then removed from the southeast portion, but a small amount of Karst Zone 3 is included along the southeastern boundary of the unit to include the cave cricket foraging area for Christmas Cave. The rest of Unit 5 is Karst Zone 1. The boundary circle was expanded to include more Karst Zone 1 along its northeast edge, around the northwest side, and to the southwest edge to include 100 ac (40 ha) of undisturbed vegetation. However, there are homes and associated roads within the cave cricket foraging area of the cave.

Unit 6

Unit 6 consists of 96 ac (39 ha) of private and City of San Antonio-owned land located in northwestern Bexar County, bordered to the south by Menchaca Road and to the west by Morningside Drive in the UTSA KFR. About 4 ac (1.6 ha) of land managed under the La Cantera HCP are not included in this designation of critical habitat (see explanation below). Unit 6 consists primarily of large, undeveloped, woodland tracts with several smaller areas developed with homes. John Wagner Ranch Cave No. 3 is the only cave in this unit, and it is occupied by Madla Cave meshweaver, *R. exilis*, and *R. infernalis*. The cave was occupied at the time of listing, and the unit contains all the PCEs for the species.

Special management is needed in this unit because of the destruction of habitat from development and vandalism, contamination of the subsurface drainage area of the unit, and infestation of fire ants.

The unit was delineated by drawing a circle with an area of 100 ac (40 ha) around the cave and then cutting most of Karst Zone 3 out of the circle, which is primarily the southern portion of the circle. A small portion of Karst Zone 3 is included in the unit to include the cave cricket foraging area on the south side. The unit was expanded outside the remaining circle on the northeastern side to include a minimum of 100 ac (40 ha) of native vegetation. The majority of land included in Unit 6 is in Karst Zone 1.

In accordance with section 4(b)(2) of the Act, we excluded from critical habitat

designation in this unit the John Wagner Ranch Cave No. 3 and approximately 4 ac (1.6 ha) surrounding the cave under the La Cantera HCP (see **Exclusions** section). The cave and surrounding preserve lands will be managed in perpetuity for the conservation of the species.

Unit 7

Unit 7 consists of 100 ac (40 ha) of private land located in northwestern Bexar County, south of Babcock Road near the intersection of Cielo Vista Drive and Luna Vista in the UTSA KFR. The unit is largely wooded, but there is some development in the extreme northern and eastern parts of the unit. Unit 7 contains one cave known as Young Cave No. 1, and it is occupied by *R. exilis*. The cave was occupied at the time of listing, and the unit contains all the PCEs for the species.

This unit requires special management because of residential development. There is a new road, Camino del Sol, which ends east of Young Cave No. 1 and is located within the cave cricket foraging area. Other threats include the potential for destruction of habitat from vandalism and new construction, contamination of the subsurface drainage area, drying of karst, reduction of nutrient input, and infestation of fire ants.

The unit was delineated by drawing a circle with an area of 100 ac (40 ha) around Young Cave No. 1. The circle was moved slightly to the southeast to avoid Karst Zone 3. A small finger in the northeast portion of the unit is Karst Zone 3. The remainder of the

unit is entirely in Karst Zone 1.

Unit 8

Unit 8 consists of 243 ac (98 ha) of private and City of San Antonio's Thrift Tract land located in northwestern Bexar County in the UTSA KFR. About 52 ac (21 ha) of land managed under the La Cantera HCP are not included in this designation of critical habitat (see explanation below). The unit is bordered by Kyle Seale Parkway on the northwest, by Moss Brook Drive on the northeast, and by Cotton Trail Lane on the south. Some of the land is undeveloped woodland, but some areas on the edges of the unit have been developed or have been cleared for future development. This unit contains three caves: Three Fingers Cave, Hills and Dales Pit, and Robber's Cave. Hills and Dales Pit and Robber's Cave are occupied by Madla Cave meshweaver, *R. exilis*, and *R. infernalis*. Three Fingers Cave is occupied by *R. exilis* and *R. infernalis*. This unit was occupied at the time of listing, and the unit contains all the PCEs for the species.

The extreme southern portions of this unit have been subdivided and developed with homes. Several roads cross the unit. Threats in this unit include the potential for destruction of habitat from vandalism and development, contamination of the subsurface drainage area of the unit, drying of karst, reduction of nutrient input, and infestation of fire ants.

The unit was delineated by drawing a circle with an area of 100 ac (40 ha) around

each of the three caves and generally connecting the edges of the resulting circles. Areas with dense development were cut out of the circle along the northeastern and extreme southern edges. A quarry was cut out from the northwestern portion. The unit is entirely in Karst Zone 1.

In accordance with section 4(b)(2) of the Act, we excluded from critical habitat designation in this unit the Hills and Dales Pit and approximately 52 ac (21 ha) surrounding the cave under the La Cantera HCP (see **Exclusions** section). The cave and surrounding preserve lands will be managed in perpetuity for the conservation of the species. There is a total of approximately 70 ac (28 ha) of preserve area surrounding the cave and being managed under the La Canter HCP. However, approximately 18 ac (7 ha) of the 70 ac (28 ha) preserve fell outside the boundaries of this unit when the unit was delineated. Therefore, we excluded the approximately 52-ac (21-ha) portion of the preserve land that fell within the unit boundary.

Unit 9

Unit 9 consists of 105 ac (42 ha) of State and private land in north-central Bexar County on the South side of Loop 1604 and east of the Loop 1604 intersection with IH 10 in the UTSA KFR. This unit is primarily a large tract of undeveloped woodland. The unit is bordered to the west by the University of Texas at San Antonio campus and to the east by Valero Way. Unit 9 has two caves: Mastodon Pit and Feature No. 50. Feature No. 50 is occupied by Madla Cave meshweaver, and Mastodon Pit is occupied by *R.*

exilis. Both caves were occupied at the time of listing, and the unit has all of the PCEs for the species.

Threats include the potential for destruction of habitat from vandalism and development, contamination of the subsurface drainage area of the unit, drying of karst, reduction of nutrient input, and infestation of fire ants.

The unit was delineated by drawing a circle with an area of 100 ac (40 ha) around the two caves and generally connecting the edges of the resulting circles. The majority of the land included in Unit 9 is Karst Zone 1 or Karst Zone 2 (because Feature No. 50 was found to be occupied after Veni (2003) delineated the zones). We stopped the boundary of the unit on the north side at the southern edge of Loop 1604, because this major roadway and the major shopping mall north of it do not have one or more of the PCEs, including sources of nutrient input. The western edge generally follows the edge of development. The area to the north of Loop 1604 is not included in this final critical habitat designation, because it was authorized for adverse impacts under La Cantera's HCP (see **Exclusions** section). We expanded the edge of the circles to the south to include 100 ac (40 ha) of undisturbed vegetation and contiguous karst.

Unit 10a

Unit 10a consists of 38 ac (15 ha) of private and City of San Antonio land. The unit is located in north central Bexar County outside the southern boundary of the

western portion of Camp Bullis (a military reservation) in the Stone Oak KFR. The eastern part of the unit is in Eisenhower Park, operated by the City of San Antonio for picnicking, jogging, and nature study. The remainder of the unit is in private ownership. The unit is almost entirely undeveloped, but contains some unpaved roads and hiking trails. This unit was occupied at the time of listing and contains all the PCEs of the species.

Low Priority Cave is located on Camp Bullis and contains *R. infernalis*. However, the Low Priority Cave's entrance is not included in the unit (because it is exempt under section 4(a)(3) of the Act; see **Exemptions** below), but part of its cave cricket foraging area and mesocaverns likely connected to the cave are included in this unit.

The unit requires special management because of human use of the park, possible future development on private land, and the presence of trails and a secondary roadway in the unit. Main threats include the potential for destruction of surface vegetation, contamination of the subsurface drainage area of the unit, and infestation of fire ants.

The unit was delineated by drawing a circle with an area of 100 ac (40 ha) around the cave entrance and removing the portion of the circle within Camp Bullis. The unit is all Karst Zone 1 except for a small portion of Karst Zone 3 in the northwest corner of the unit, which is included because removing it would increase the edge effect.

Unit 10b

Unit 10b consists of 35 ac (14 ha) of Eisenhower Park, operated on Federal land by the City of San Antonio in north-central Bexar County, east of Unit 10a and along the southern boundary of Camp Bullis in the Stone Oak KFR. The unit is mostly wooded and is entirely in Eisenhower Park. Flying Buzzworm Cave, which contains *R. infernalis*, is located on Camp Bullis. An immature blind *Cicurina* has been collected from the cave, but has not been identified to species. The cave was occupied at the time of listing. Unit 10b contains the PCEs for the species.

The unit requires special management because of human use of the park and the presence of trails and a secondary roadway in the unit. Threats include the potential for destruction of surface vegetation, contamination of the subsurface drainage area of the unit, and infestation of fire ants.

The unit was delineated by drawing a circle with an area of 100 ac (40 ha) around the cave entrance and removing the portion of the circle within Camp Bullis according to section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) (see **Exemptions** section, below). Unit 10b contains contiguous Karst Zone 1.

Unit 11e

Unit 11e consists of 89 ac (36 ha) of private land outside the eastern boundary of

Camp Bullis in north-central Bexar County. Unit 11e contains a substantial amount of residential development with landscaped areas and is crossed by Blanco Road on its western edge, Cardigan Chase Road near its eastern edge, and Calico Chase Road across its central portion. Blanco Cave, located in the Blanco Road right-of-way, contains *R. exilis*. Blanco Road was included in the unit because it is so close to the cave opening (it is located in Blanco Road right of way) and because it likely crosses mesocaverns connected to the feature. The cave was not known to be occupied at the time of listing, but it is currently occupied, and likely was at the time of listing because *R. exilis* likely has inhabited the Bexar County features for thousands of years, and surveys sufficient to detect the species were not conducted before the listing. Therefore, we are considering it to be occupied at the time of listing. In addition, populations and known occurrences are so low that all need to be conserved. The area within Camp Bullis is exempt under section 4(a)(3) of the Act (see **Exemptions**). This unit contains both PCEs, although nutrient and moisture input have been altered by development in portions of the remainder of the unit. We believe Blanco Cave is essential for the conservation of the species.

Major threats to physical or biological features in Unit 11e include destruction of habitat from vandalism and potential future development, contamination of the subsurface drainage area of the unit, drying of karst, reduced nutrient input, and infestation of fire ants.

This unit was delineated by drawing a 100-ac (40-ha) circle around the cave and

including all Karst Zone 1 outside of Camp Bullis within the resulting circle. The edge of the circle was expanded to the south and to the northeast to include undisturbed vegetation overlying Karst Zone 1. Camp Bullis was exempted according to section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) (see **Exemptions** section, below). The unit is all Karst Zone 1.

Unit 12

Unit 12 consists of 166 ac (67 ha) of mainly private land in north-central Bexar County, southwest of the intersection of U.S. Highway 281 and Evans Road in the Stone Oak KFR. The unit is bordered to the east by U.S. Highway 281, to the south by a quarry, and to the west by a school and some residential development. Evans Road, another major roadway, crosses the north-central part of the unit. With the exception of floodway and part of a middle school in the western part, the unit is in private ownership. Most of the unit has been developed as a single-family homes subdivision. The unit also includes some commercial development in the northeast portion. However, small amounts of undeveloped land are located in the southern, western, and extreme northern parts of the unit.

Unit 12 contains the Hairy Tooth and Ragin' Cajun Caves, which are occupied by *R. exilis*. Both caves were occupied at the time of listing. This unit contains the PCEs for the species, but sources of nutrient input are degraded through most of the unit. Houses and streets impact the cave cricket foraging areas. However, some vegetation

remains over much of the unit and serves to provide a source of nutrients to the karst ecosystem. Mesocaverns likely connected to the two caves are also present in the unit. Because of the absence of KFAs for the potential to meet recovery criteria for *Rhadine exilis* in Stone Oak KFR, this low-quality unit is needed to assure long-term survival of the species.

Threats include the potential for destruction of habitat from vandalism, development, operation of a quarry, contamination of the subsurface drainage area of the unit, karst drying, reduction of nutrient input, and infestation of fire ants. The unit requires special management because of the commercial development and roadways that border and cross the unit.

This unit was delineated by drawing a 100-ac (40-ha) circle around each of the two caves and joining the edges of the two overlapping circles. A portion of the extreme southern area was removed from the unit because it contains an active quarry, which has removed some of the karst, as the karst is covered only by a thin layer of soil in Karst Zone 1. All of Unit 12 is Karst Zone 1.

Unit 13

Unit 13 consists of 100 ac (41 ha) of developed and undeveloped private land located in northeastern Bexar County in the Stone Oak KFR. The unit is located south of the intersection of Menger Road and Bulverde Road. This unit contains one cave named

Black Cat Cave. The cave opening is a short distance from Bulverde Road, which crosses its cave footprint and cave cricket foraging area. The northern part of the unit includes a small amount of dense development on the northwest and borders less dense development on the northeast. Bulverde Road, a major two-lane roadway, crosses the middle of the unit from north to south. In preparation for widening the road, the City of San Antonio has modified the cave entrance. The southern part of the unit on both sides of Bulverde road is undeveloped. The cave was occupied by *R. exilis* at the time of listing, and the unit contains both PCEs.

This unit requires special management because of residential development and roadways that border and cross the unit. Threats include the potential for destruction of habitat from vandalism, potential future development, contamination of the subsurface drainage area of the unit, drying of karst from impervious cover and storm water diversion, reduced nutrient input, and infestation of fire ants.

This unit was delineated by drawing a 100-ac (40-ha) circle around the cave. We moved the circle to avoid development in the northern part of the unit. Additional undeveloped land outside the circle, but inside the area proposed, is included in the unit on the eastern and southern edge to include at least 100 ac (40 ha) of surface vegetation, as described in the *Criteria Used To Identify Critical Habitat* section above. All of Unit 13 is Karst Zone 1. Part of the cave cricket foraging area is not included in the unit because it is either across the road or across other features that restrict cave cricket movement.

Unit 14

Unit 14 consists of 292 ac (118 ha) of private land in western Bexar County, west of the end of Louis Agusta Drive in the Culebra Anticline KFR. The unit includes several large tracts of undeveloped woodland. There is a major roadway, Stevens Parkway, in this unit, and it is in the process of being extended from the southwestern to western part of the unit. Some of the vegetation has been cleared in the past for ranching. Three caves occur in this unit: Game Pasture Cave No. 1, Stevens Ranch Trash Hole Cave, and King Toad Cave. During the comment period, we learned of two additional occupied features on the property (F2 and F4). In addition, we obtained more precise information on the locations and the surface and subsurface drainage areas of all features in this unit. All five caves and features are known to contain *R. infernalis*, and all except F2 and F4 were known to be occupied at the time of listing; however, all were likely occupied at that time. This unit contains all the PCEs of the species.

The unit requires special management because of potential future residential and commercial development and trespassing. Threats include the potential for destruction of surface vegetation and karst habitat, contamination of the subsurface drainage area of the unit, drying of karst, reduction of nutrient input, and infestation of fire ants.

This unit was delineated by drawing a 100-ac (40-ha) circle around each of the five caves and features. We were unable to include all of the edges of the overlapping

circles because we added two new features to this unit and because we received additional information about the locations of the features listed for this unit in proposed critical habitat. As a result, portions of the circles in the southern, western, and northwestern portion fell outside the area proposed for critical habitat, and those portions were not therefore included inside the final unit boundaries. All of the cave cricket foraging areas are within the unit boundaries. Unit 14 is all Karst Zone 1.

Unit 15

Unit 15 consists of 217 ac (88 ha) of private land located in western Bexar County, west of Talley Road and north of Farm to Market Road 1957 in the Culebra Anticline KFR. The majority of the lands within Unit 15 are within a subdivision, and all are privately owned. Tracts in the subdivision are relatively large and still contain wooded vegetation, but roads and houses have fragmented the cave cricket foraging areas around all of the occupied caves. There is a substantial amount of the vegetation in the unit. This unit contains four caves: Braken Bat Cave, Isopit, Obvious Little Cave, and Wurzbach Bat Cave. Bracken Bat Cave is the only one that contains the Bracken Bat Cave meshweaver. All four caves are known to contain *R. infernalis,* and all were occupied at the time of listing. This unit contains all the PCEs for the species.

The unit requires special management because of the proximity of development, the potential for destruction of habitat from vandalism, and the fragmentation of the surface community of plants and animals. Threats include potential future development,

contamination of the subsurface drainage area of the unit, drying of karst, reduction of nutrient input, and infestation of fire ants.

This unit was delineated by drawing a 100-ac (40-ha) circle around each of the four caves and connecting the edges of the overlapping circles. A small portion of the circle on the eastern edge in a high-density development was removed from the unit. All of Unit 15 is Karst Zone 1.

Unit 16

Unit 16 consists of 103 ac (42 ha) of private land in western Bexar County in the Culebra Anticline KFR. The unit contains several large, primarily undeveloped tracts of woodland, with Loop 1604, a major highway, to its east. With the exception of the cleared right-of–way of Loop 1604, most of the remainder of the unit is vegetated. However, some vegetation in the northern and northwestern part of the unit appears to have been cleared for livestock grazing. The area to the south of the unit is operated as a quarry. Caracol Creek Coon Cave is the only cave in this unit, and it is occupied by *R. infernalis*. The unit was occupied at the time of listing, and the unit contains all the PCEs for the species.

The unit requires special management because of the proximity of roads and potential future development. Threats include potential for destruction of habitat from vandalism, quarry operation, and potential new development; contamination of the

subsurface drainage area of the unit; drying of karst; reduction of nutrient input; and infestation of fire ants.

This unit was delineated by drawing a 100-ac (40-ha) circle around the cave. The eastern part of the circle is not included in the unit because of the effects of Loop 1604 and the dense development to the east on nutrient input and mesocaverns, and we instead include undeveloped areas to the west. In addition, during the comment period, we received information that the subsurface drainage of the cave did not extend underneath Loop 1604, but inside the proposed area as previously thought. This information was credible and based on on-site studies. We expanded the unit outside the circle to the west and northwest to include at least 100 ac (40 ha) of vegetation adjacent to the cave opening. Most of Unit 16 is Karst Zone 1, except a small part of Karst Zone 2 on its western edge.

Unit 17

Unit 17 consists of 96 ac (39 ha) of private land in northwest Bexar County east of Scenic Loop Road and south of Madla Ranch Road in the Helotes KFR. About 5 ac (2 ha) within this unit's boundary are not included in this designation of critical habitat (see explanation below). The unit contains some houses and paved roads in the eastern portion and one house in the southeastern portion. The unit contains one cave, Madla's Cave, which is occupied by Madla Cave meshweaver and *R. infernalis*. The cave was occupied at the time of listing, and the unit has all the PCEs of the species.

In accordance with section 4(b)(2) of the Act, we excluded from critical habitat designation in this unit Madla's Cave and the surrounding approximately 5 ac (2 ha), which has been acquired as a preserve in accordance with the La Cantera HCP (see **Exclusions** section). The cave and surrounding preserve land will be managed in perpetuity for the conservation of the species.

The unit requires special management, because of the presence of residential development and potential future development within the unit. Threats include the potential for destruction of habitat from new development and vandalism, contamination of the subsurface drainage area of the unit from future development, reduction of moisture and nutrient input, and infestation of fire ants.

The unit was delineated by drawing a circle with an area of 100 ac (40 ha) around the cave and removing areas that are not Karst Zone 1 from the northern and southwestern parts of the resulting circle. The southern, eastern, and western portions of the circle were expanded to include 101 ac (40 ha) of undisturbed surface vegetation. However, we subtracted the 5-ac (2-ha) portion that we excluded under the La Cantera HCP in the middle of this unit to arrive at approximately 96 ac (39 ha) of designated critical habitat. A small area of Karst Zone 3 is included in the southwestern portion of the unit to reduce edge effects of drawing the boundary along Karst Zone 1.

Unit 19

Unit 19 consists of 81 ac (33 ha) of private land in north-central Bexar County north of Loop 1604 and east of Oak Road in the Stone Oak KFR. A large part of the area surrounding the cave has been developed for residential and/or commercial uses. Several other minor roadways and parking lots are scattered through the unit, and part of a golf course is in the northwestern section of the unit. Some trees are left in a neighborhood in the northern part of the unit, and a few trees are on the golf course. In addition, there is some landscaped grass surrounding Genesis Cave, the only cave in this unit. This cave is occupied by *R. infernalis* and was occupied at the time of listing. This unit contains both PCEs.

The unit requires special management, because of the high levels of residential and commercial development and the large amount of impervious cover in the unit. Threats include the potential for destruction of habitat from vandalism and future development, contamination of the subsurface drainage area of the unit, drying of karst from impervious cover and storm water diversion, reduced nutrient input, and infestation of fire ants.

The unit was delineated by drawing a circle with an area of 100 ac (40 ha) around the cave entrance and removing areas of Karst Zone 2 from the southeastern part of the circle. Areas of Karst Zone 1 that have a large amount of impervious cover (close to 100 percent) and do not contain the PCE of sources of nutrient input were also removed from a large part of the southern portion of the circle, including part of the cave cricket

foraging area. The portion of the subsurface drainage basin with high impervious cover was left in the circle because there are some entries for water and nutrients into the karst in that area. The circle was expanded to the north and west (out to the previous edge of proposed critical habitat) to include more sources of nutrients (vegetated areas); however, some of the area has a fairly high density of buildings. The unit is all Karst Zone 1.

Unit 20

Unit 20 consists of 247 ac (100 ha) of private land located in north-central San Antonio, south of Loop 410 West, and primarily along Nacogdoches Road northeast of Broadway in the Alamo Heights KFR. This unit contains one known occupied cave, Robber Baron Cave, which is the only known cave for the Cokendolpher Cave harvestman. It is also one of only two caves known to be occupied by the Robber Baron Cave meshweaver (OB3 in Unit 25 is the other cave). Robber Baron Cave was occupied at the time of listing and is the longest cave in Bexar County, consisting of approximately 0.9 mi (1.5 km) of passages (Veni 2003, p. 19). The estimated footprint of the cave now underlies numerous residential and commercial developments. Veni (1997, p. 29) reported a slow decline in moisture in the cave over time. The Texas Cave Management Association (TCMA) now owns and manages the cave and about 0.5 ac (0.2 ha) surrounding the opening. The TCMA is a nonprofit organization dedicated to the study and management of Texas cave resources. Cave gates and modifications to the cave entrance have reduced airflow into the cave and the opportunity for cave crickets to move into and out of the cave. Installation of a new cave gate, removal of trash, and

revegetation of a small area surrounding the entrance was completed in 2008 by TCMA (TCMA 2011, pp 2-3) and improved these issues for a portion of the cave. This unit was occupied at the time of listing and contains both PCEs.

Surface vegetation within Unit 20 has been significantly reduced and degraded by urban development, although portions of primarily landscaped areas remain. The unit requires special management because of the high levels of residential and commercial development within the unit. Threats include the potential for destruction of habitat from vandalism, soil compaction from cave visitation, lack of a nutrient sources, contamination of the subsurface drainage area of the unit, drying of karst, and infestation of fire ants. Because of the extensive development, high levels of impervious cover, and diversion of storm water over the cave, intensive management may be needed to provide nutrients and water to the karst environment.

The unit was delineated to encompass the estimated extent of the surface and subsurface drainage and all of the contiguous Karst Zone 1. We did not use the standard procedure that we used to delineate other units because the cave footprint and contiguous Karst Zone 1 are long and narrow, and because the overall size exceeds 100 ac (40 ha).

Unit 21

Unit 21 consists of 154 ac (62 ha) of private and City of San Antonio-owned land in northeast Bexar County, northeast of the intersection of Evans Road and Stone Oak

Parkway. The unit contains several large tracts of undeveloped land. Mud Creek runs through the unit, and the majority of Unit 21 is the pool area of a flood control reservoir owned by the City of San Antonio. The rest of the unit is in private ownership. Vegetation in the lower elevations of the flood pool area is modified by periodic inundation and/or mechanical control by the City of San Antonio. Unit 21 contains three caves: Hornet's Last Laugh Pit, Kick Start Cave, and Springtail Crevice. All are currently occupied by *R. exilis*. While they were not known to be occupied at the time of listing, they likely were occupied at that time. Parts of the unit contain all the PCEs for the species.

The unit requires special management because of adjacent residential development, surface contamination from runoff from urban areas in the surface watershed roadways, periodic inundation, and potential for new construction in the unit. The main threats include the potential for destruction of habitat from vandalism, potential future development, contamination of the subsurface drainage area of the unit, periodic flooding of caves and mesocaverns from stormwater retention, and infestation of fire ants.

The unit was delineated by drawing a circle with an area of 100 ac (40 ha) around each of the three caves and joining the edges of the three overlapping circles. Some areas on the western side within the circles were removed from the designation, as they are developed. The entire unit is Karst Zone 1. One of three caves (Springtail Crevice) is located in the lower pool area of a flood control reservoir, and its surface drainage basin

covers the entire watershed of Mud Creek upstream of the cave, which includes 5,675 ac (2,297 ha) of land and extends about 4.3 mi (6.9 km) upstream. We do not include the entire surface drainage area for the unit, as it is so large and extends so far from the cave and the 100 ac (40 ha) area around it. The unit designation includes about 2.7 percent of the entire surface watershed.

Unit 22

Unit 22 consists of 100 ac (40 ha) of private and City of San Antonio's Woodland Hills land located in northwestern Bexar County, northeast of Babcock Road and northwest of Heuermann Road in the UTSA KFR. There are several unpaved roads and trails, including one within the cave cricket foraging area. The unit is mostly undeveloped woodland, but some areas appear to have been cleared in the past for ranching. Unit 22 is a combination of private land and the City of San Antonio's Woodland Hills Preserve for protection of the Edwards Aquifer recharge. Breathless Cave is the only cave in this unit. Breathless Cave is occupied by Madla Cave meshweaver. The cave was not known to be occupied at the time of listing, but it is currently occupied. The cave was likely was at the time of listing, but surveys sufficient to detect the species were not conducted before the listing. Therefore, we are considering it to be occupied at the time of listing. In addition, populations and known occurrences are so low that all need to be conserved. The unit contains all the PCEs for the species.

The major threat in this unit is potential future development within the unit.

Threats include the potential for destruction of habitat from new development and vandalism, contamination of the subsurface drainage area of the unit from future development, reduction of moisture and nutrient input, and infestation of fire ants.

The unit was delineated by drawing a circle with an area of 100 ac (40 ha) around Breathless Cave. The resulting unit is mostly Karst Zone 1, except for a small sliver of Karst Zone 3 in its western portion, which we include because of its narrow width and the increased edge effects associated with removing this area.

Unit 23

Unit 23 consists of 100 ac (40 ha) of private land and City of San Antonio's Crownridge Canyon Natural Area in northwestern Bexar County northeast of Luskey Road and east of the end of Fiesta Grande in the UTSA KFR. A large portion of the unit is the City of San Antonio's Crownridge Canyon Natural Area, which is open to hiking, nature study, and wildlife observation. Parts of the northern and northwestern edges of the unit are privately owned. Most of Unit 23 is in native woodland vegetation. The area west and southwest of the unit has been cleared for a residential subdivision, and some houses have been constructed. The clearing extends more than halfway into the western portion of the Crownridge Canyon Cave's cave cricket foraging area. Crownridge Canyon Cave is the only cave in this unit, and it is occupied by *R. infernalis*.

The cave was not known to be occupied at the time of listing, but it is currently

occupied. The cave was likely occupied at the time of listing, because surveys sufficient to detect the species had not yet been conducted by the time of listing. Therefore, we are considering it to be occupied at the time of listing. In addition, populations and known occurrences are so low that all need to be conserved. The unit contains all the PCEs for the species.

The unit is primarily threatened by adjacent residential development, roadways, and potential for new construction in the unit. Threats include the potential for destruction of habitat from vandalism and future development, contamination of the subsurface drainage area of the unit, drying of karst from impervious cover and diversion of storm water, reduced nutrient input, and infestation of fire ants.

The unit was delineated by drawing a circle with an area of 100 ac (40 ha) around the cave. The area of the subdivision was removed from the western and southwestern parts of the circle. The remaining circle was expanded in all other directions to include 100 ac (40 ha) of vegetation. The unit is all Karst Zone 1.

Unit 25

Unit 25 consists of 100 ac (41 ha) of private land located in north central San Antonio near the intersection of Shook Avenue and East Kings Highway in the Alamo Heights KFR. This unit contains cave OB3, occupied by the Robber Baron Cave meshweaver. The cave feature was discovered during excavation in 2009, after the

Robber Baron Cave meshweaver had already been listed. However, the cave was likely occupied at the time of listing because surveys to detect the species had not been conducted prior to listing. Therefore, we are considering it to be occupied at the time of listing, and we believe it is essential for the conservation of the species, because a total of only two locations are known for the species and both have impacts to the surface habitat. The surface habitat around this feature has been highly modified and is covered with residential and commercial development, including numerous streets. Unit 25 also contains landscaped lawns and residential and commercial development. The vegetation within the unit provides nutrient input into the area occupied by the species and to features and mesocaverns.

The unit is primarily threatened by high levels of residential and commercial development within the unit. Threats include the potential for destruction of habitat from vandalism and potential new development, contamination of the subsurface drainage area of the unit, drying of the karst feature, reduction of nutrient input, and infestation of fire ants.

The unit was delineated by drawing a circle with an area of 100 ac (40 ha) around the feature. A small area of the south-central portion of the unit around a large church and parking lot and part of the west-central portion of the circle around an athletic field and parking lots were removed because they contain a large amount of impervious cover and do not contain sources of nutrients. Because no listed species were known from this area of the Alamo Heights KFR when Karst Zones were delineated by Veni (2003, p. 12),

the entire unit is located in Karst Zone 2.

Unit 26

Unit 26 is 100 ac (40 ha) of private land in western Bexar County southwest of the extension of Stevens Ranch Parkway and south of Unit 14 in the Culebra Anticline KFR. This unit is all undeveloped land. Woody vegetation has been thinned for ranching in the eastern portion of the unit, while the western portion has been more heavily cleared. There is one cave in this unit with two entrances, Max and Roberts Cave, and it currently contains *R. infernalis*. The cave was not known to be occupied at the time of listing, but it is currently occupied, and likely was at the time of listing, because surveys to detect the species had been not conducted prior to listing. Therefore, we are considering it to be occupied at the time of listing. In addition, populations and known occurrences are so low that all need to be conserved. The unit contains both PCEs for the species. Also, we believe the cave is essential for the conservation of the species, because only a small number of locations sufficient to recover the species are known within the Culebra Anticline KFR.

The primary threats in this unit are potential future residential and commercial development and trespassing. Specific threats include the potential for destruction of surface vegetation and karst habitat from vandalism, contamination of the surface and subsurface drainage area of the unit, drying of karst habitat, reduction of nutrient input, and infestation of fire ants.

The unit was delineated by drawing a circle with an area of 100 ac (40 ha) around the cave entrance. Areas of Karst Zone 3 on the western and southern portions of the circle outside the boundaries are not included. Also, the entire surface drainage area of the cave is not entirely included in the unit, because it could not be delineated at the time of the proposed rule. Unit 26 is primarily Karst Zone 1, but the cave cricket foraging area and part of the surface drainage basin on the western part of the unit in Karst Zone 3 are included.

Effects of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. In addition, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under the Act or result in the destruction or adverse modification of proposed critical habitat.

Decisions by the 5th and 9th Circuit Courts of Appeals have invalidated our

regulatory definition of "destruction or adverse modification" (50 CFR 402.02) (see *Gifford Pinchot Task Force* v. *U.S. Fish and Wildlife Service*, 378 F. 3d 1059 (9th Cir. 2004) and *Sierra Club* v. *U.S. Fish and Wildlife Service et al*., 245 F.3d 434, 442 (5th Cir. 2001)), and we do not rely on this regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Under the statutory provisions of the Act, we determine destruction or adverse modification on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species.

If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Examples of actions that are subject to the section 7 consultation process are actions on State, tribal, local, or private lands that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq*.) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat, and actions on State, tribal, local, or private lands that are not federally funded or authorized, do not require section 7 consultation.

As a result of section 7 consultation, we document compliance with the requirements of section 7(a)(2) through our issuance of:

(1) A concurrence letter for Federal actions that may affect, but are not likely to

adversely affect, listed species or critical habitat; or

(2) A biological opinion for Federal actions that may affect, or are likely to adversely affect, listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species and/or destroy or adversely modify critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy and/or destruction or adverse modification of critical habitat. We define "reasonable and prudent alternatives" (at 50 CFR 402.02) as alternative actions identified during consultation that:

(1) Can be implemented in a manner consistent with the intended purpose of the action,

(2) Can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction,

(3) Are economically and technologically feasible, and

(4) Would, in the Director's opinion, avoid the likelihood of jeopardizing the continued existence of the listed species and/or avoid the likelihood of destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where we have listed a new species or subsequently designated critical habitat that may be affected and the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law). Consequently, Federal agencies sometimes may need to request reinitiation of consultation with us on actions for which formal consultation has been completed, if those actions with discretionary involvement or control may affect subsequently listed species or designated critical habitat.

Application of the "Adverse Modification" Standard

The key factor related to the adverse modification determination is whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species. Activities that may destroy or adversely modify critical habitat are those that alter the physical or biological features to an extent that appreciably reduces the conservation value of critical habitat for nine Bexar County invertebrates. As discussed above, the role of critical habitat is to support life-history needs of the species and provide for the conservation of the species.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may destroy or adversely modify such habitat, or that may be affected by such

designation.

Activities that may affect critical habitat, when carried out, funded, or authorized by a Federal agency, should result in consultation for the nine Bexar County invertebrates. These activities include, but are not limited to:

(1) Actions that would result in removing, thinning, or destroying perennial surface vegetation. Such activities could include, but are not limited to, burning, wood cutting or other mechanical removal, grading, livestock practices that lead to excessive overgrazing, construction, road building, mining, and herbicide application. These activities could destroy or damage the native plant community and increase the number of nonnative plants and animals, including fire ants. The actions could also adversely affect cave crickets and other native animals on the surface that provide nutrients to the karst ecosystem, reduce other nutrient input (for example, leaf litter and roots), reduce water quality, reduce humidity of the cave, and change subterranean temperatures.

(2) Actions that would alter the surface topography or subsurface geology, resulting in a disruption of ecosystem processes necessary to sustain the karst environment. Such activities could include, but are not limited to, filling cave entrances or otherwise reducing airflow in a way that limits oxygen availability; modifying cave entrances or creating new entrances that increase airflow in a way that results in drying of the karst features; altering natural drainage patterns, surface or subsurface, in a manner that alters the amount or quality or both of water entering the cave, karst feature, or

mesocaverns; removing or disturbing native surface vegetation so that it alters the quality or quantity of water entering the karst environment; disturbing soil in such a way that it results in increased sedimentation in the karst environment or increased numbers of fire ants; increasing impervious cover that may decrease water quantity entering the karst environment or affect the temperature of karst below it or both within any critical habitat unit, such as paving over a vegetated area; building roads or other features that block movements of cave crickets, thereby reducing the available foraging area; and altering the entrance or opening of a cave or karst feature in a way that would disrupt movements of cave crickets or other animals that provide nutrient input or otherwise negatively altering the movement of nutrients into the cave or karst feature.

(3) Actions that would introduce pollutants to the occupied features themselves, the surface and subsurface drainage basins, or the surrounding mesocaverns. Such activities could include, but are not limited to, discharge or dumping of chemicals, silt, pollutants, household or industrial waste, pesticides or herbicides, or other harmful material into or near critical habitat units that may affect surface plant and animal communities or that may affect the subsurface karst ecosystem or degrade subsurface water quality.

(4) Activities within caves that would lead to soil compaction, changes in atmospheric conditions, or abandonment of the cave by bats or other fauna. Such activities could include, but are not limited to, excessive human traffic, destruction of

cave features, enlargement of existing entrances, or creation of new entrances to karst features.

(5) Activities that would attract or increase fire ants, cockroaches, or other invasive predators, competitors, parasites, or potential vectors for diseases into caves or karst features within the critical habitat units. Such activities could include, but are not limited to, dumping of garbage in or around caves or karst features.

Exemptions

Application of Section 4(a)(3) of the Act

The Sikes Improvement Act of 1997 (Sikes Act) (16 U.S.C. 670a) required each military installation that includes land and water suitable for the conservation and management of natural resources to complete an integrated natural resources management plan (INRMP) by November 17, 2001. An INRMP integrates implementation of the military mission of the installation with stewardship of the natural resources found on the base. Each INRMP includes:

(1) An assessment of the ecological needs on the installation, including the need to provide for the conservation of listed species;

(2) A statement of goals and priorities;

(3) A detailed description of management actions to be implemented to provide for these ecological needs; and

(4) A monitoring and adaptive management plan.

Among other things, each INRMP must, to the extent appropriate and applicable, provide for fish and wildlife management; fish and wildlife habitat enhancement or modification; wetland protection, enhancement, and restoration where necessary to support fish and wildlife; and enforcement of applicable natural resource laws.

The National Defense Authorization Act for Fiscal Year 2004 (Pub. L. 108-136) amended the Act to limit areas eligible for designation as critical habitat. Specifically, section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) now provides: "The Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation."

We consult with the military on the development and implementation of INRMPs for installations with listed species. We analyzed INRMPs developed by military installations located within the range of the critical habitat designation for *Rhadine exilis*, *R. infernalis*, and Madla Cave meshweaver to determine if they are exempt under section 4(a)(3) of the Act. Only these three species occur on Department of Defense lands and are included in the military's INRMP. The following areas are Department of Defense lands with completed, Service-approved INRMPs within the proposed critical habitat

designation.

Approved INRMPs

Camp Bullis Military Reservation

Camp Bullis Military Reservation (Camp Bullis) has an approved INRMP in place that provides benefits to *Rhadine exilis*, *R. infernalis*, and Madla Cave meshweaver. Again, only these three species occur on Camp Bullis' lands. Camp Bullis is a 43.7-square-mile (mi^2) (113.3–square-kilometer (km^2)) facility under the command of Fort Sam Houston, U.S. Army, Texas. The area contains 26 caves with 1 or more of the 3 listed species. After the species were petitioned for listing, Camp Bullis began karst investigations to determine the extent of these species on their property and how best to manage them. A management plan was developed in 1999 (Veni and Associates 1999) and revised in 2002 (Veni *et al*. 2002a and 2002b) to eliminate, mitigate, and prevent harm to these and other rare species on Camp Bullis in perpetuity. The Veni *et al*. 2002a and 2002b reports became part of an INRMP in 2005. The INRMP was revised in 2007, and underwent an annual review and update in 2010.

The INRMP provides for management of all caves occupied by *Rhadine exilis*, *R. infernalis*, and Madla Cave meshweaver. The Madla Cave meshweaver is only found in one cave within the interior of Camp Bullis. Management actions include protecting the cave footprint, surface and subsurface drainage areas associated with the occupied cave,

cave cricket foraging area, and surface plant and animal community, and controlling fire ants. The plan includes in-cave biological surveys, cave gate construction, and preservation of karst management areas (KMAs) around cave entrances. The KMAs will be preserved in perpetuity within the limits possible through the authority of Camp Bullis and its operational and mission requirements. The INRMP stipulates that should Camp Bullis ever be transferred in whole or in part, local Army officials will request that the Secretary of the Army, or other appropriate authority, review and incorporate provisions from this management plan into the property disposal procedures. Those provisions would transfer responsibility for appropriate management of any former Camp Bullis karst management areas to all subsequent owners by deed recordation or other binding instrument.

Based on the above considerations, and in accordance with section 4(a)(3)(B)(i) of the Act, we have determined that the identified lands are subject to the Camp Bullis INRMP and that conservation efforts identified in the INRMP will provide a benefit to *Rhadine exilis*, *R. infernalis*, and Madla Cave meshweaver occurring in habitats within or adjacent to Camp Bullis. Therefore, lands within this installation are exempt from critical habitat designation under section 4(a)(3) of the Act. We are not including approximately 4,104 ac (1,660 ha) of habitat in this final critical habitat designation because of this exemption.

Exclusions

Application of Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making that determination, the statute on its face, as well as the legislative history are clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor.

In considering whether to exclude a particular area from the designation, we identify the benefits of including the area in the designation, identify the benefits of excluding the area from the designation, and evaluate whether the benefits of exclusion outweigh the benefits of inclusion. If the analysis indicates that the benefits of exclusion outweigh the benefits of inclusion, the Secretary may exercise his discretion to exclude the area only if such exclusion would not result in the extinction of the species.

When identifying the benefits of inclusion for an area, we consider the additional regulatory benefits that area would receive from the protection from adverse modification or destruction as a result of actions with a Federal nexus; the educational benefits of

mapping essential habitat for recovery of the listed species; and any benefits that may result from a designation due to State or Federal laws that may apply to critical habitat.

When identifying the benefits of exclusion, we consider, among other things, whether exclusion of a specific area is likely to result in conservation; the continuation, strengthening, or encouragement of partnerships; or implementation of a management plan that provides equal to or more conservation than a critical habitat designation would provide. We also consider whether the plan protects the area from all threats, particularly those with a Federal nexus and whether additional protection would be provided with critical habitat.

In the case of the nine Bexar County invertebrates, the benefits of critical habitat include public awareness of the invertebrates' presence and the importance of areas that need special management or protection for recovery of species survival, and, in cases where a Federal nexus exists, increased habitat protection for the nine Bexar County invertebrates due to the protection from adverse modification or destruction of critical habitat.

When we evaluate the existence of a conservation plan when considering the benefits of exclusion, we consider a variety of factors, including but not limited to, whether the plan is finalized; how it provides for the conservation of the essential physical or biological features; whether there is a reasonable expectation that the conservation management strategies and actions contained in a management plan will be

implemented into the future; whether the conservation strategies in the plan are likely to be effective; and whether the plan contains a monitoring program or adaptive management to ensure that the conservation measures are effective and can be adapted in the future in response to new information.

After identifying the benefits of inclusion and the benefits of exclusion, we carefully weigh the two sides to evaluate whether the benefits of exclusion outweigh those of inclusion. If our analysis indicates that the benefits of exclusion outweigh the benefits of inclusion, we then determine whether exclusion would result in extinction. If exclusion of an area from critical habitat would result in extinction, we will not exclude it from the designation.

Based on the information provided by entities seeking exclusion, as well as additional public comments we received, we evaluated whether certain lands in the proposed critical habitat Units 1e, 3, 6, 8, 9, and 17 were appropriate for exclusion from this final designation pursuant to section 4(b)(2) of the Act. We are excluding from critical habitat designation approximately 232 ac (94 ha) in portions of Units 1e, 3, 6, 8, 9, and 17 that are covered under the La Cantera HCP. Table 4 below provides approximate areas (ac, ha) of lands that meet the definition of critical habitat but are being excluded under section 4(b)(2) of the Act from the final critical habitat rule. We are excluding these areas because we believe that they are appropriate for exclusion under the "other relevant factor" provisions of section 4(b)(2) of the Act.

TABLE 4. Areas excluded from critical habitat designation by critical habitat unit.

Unit	Specific Area	Areas Meeting the Definition of Critical Habitat, in Acres (Hectares)	Areas Excluded from Critical Habitat, in Acres (Hectares)
1e	La Cantera HCP Canyon Ranch Preserve	64 ac (26 ha)	64 ac (26 ha)
3	La Cantera HCP Helotes Blowhole/Helotes Hilltop Preserve	25 ac (10 ha)	25 ac (10 ha)
6	La Cantera HCP John Wagner Ranch Cave Preserve	4 ac (1.6 ha)	4 ac (1.6 ha)
8	La Cantera HCP Hills and Dales Pit Preserve	52 ac (21 ha)	52 ac (21 ha)
9	Area north of Highway 1604 covered by the La Cantera HCP	82 ac (33 ha)	82 ac (33 ha)
17	La Cantera HCP Madla's Cave Preserve	5 ac (2 ha)	5 ac (2 ha)
Total		232 ac (94 ha)	232 ac (94 ha)

Exclusions Based on Economic Impacts

Under section 4(b)(2) of the Act, we consider the economic impacts of specifying any particular area as critical habitat. In order to consider economic impacts, we prepared a draft economic analysis of the proposed critical habitat designation and related factors (Industrial Economics 2011). The draft analysis, dated June 24, 2011, was made available for public review and comment from August 2, 2011, through September 1, 2011 (76 FR 46234). Following the close of the comment period, a final analysis (dated November 14, 2011) of the potential economic effects of the designation was

developed taking into consideration the public comments and any new information (Industrial Economics 2011).

The intent of the final economic analysis (FEA) is to quantify the economic impacts of all potential conservation efforts for the nine Bexar County invertebrates; some of these costs will likely be incurred regardless of whether we designate critical habitat (baseline). The economic impact of the final critical habitat designation is analyzed by comparing scenarios both "with critical habitat" and "without critical habitat." The "without critical habitat" scenario represents the baseline for the analysis, considering protections already in place for the species (e.g., under the Federal listing and other Federal, State, and local regulations). The baseline, therefore, represents the costs incurred regardless of whether critical habitat is designated. The "with critical habitat" scenario describes the incremental impacts associated specifically with the designation of critical habitat for the species. The incremental conservation efforts and associated impacts are those not expected to occur absent the designation of critical habitat for the species. In other words, the incremental costs are those attributable solely to the designation of critical habitat beyond the baseline costs; these are the costs we consider in the final designation of critical habitat. The analysis looks retrospectively at baseline impacts incurred since the species was listed, and forecasts both baseline and incremental impacts likely to occur with the designation of critical habitat.

The FEA also addresses how potential economic impacts are likely to be distributed, including an assessment of any local or regional impacts of habitat

conservation and the potential effects of conservation activities on government agencies, private businesses, and individuals. The FEA measures lost economic efficiency associated with residential and commercial development and public projects and activities, such as economic impacts on water management and transportation projects, Federal lands, small entities, and the energy industry. Decision-makers can use this information to assess whether the effects of the designation might unduly burden a particular group or economic sector. Finally, the FEA looks retrospectively at costs that have been incurred since 2000 (year of the species' listing) (65 FR 81419), and considers those costs that may occur in the 20 years following the designation of critical habitat, which was determined to be the appropriate period for analysis because limited planning information was available for most activities to forecast activity levels for projects beyond a 20-year timeframe. The FEA quantifies economic impacts of nine Bexar County invertebrates conservation efforts associated with the following categories of activity:

(1) Development. The potential for future residential and commercial development constitutes a primary threat to invertebrate habitat. A healthy surface community of native plants and animals and surface water free of pollutants are primary constituent elements for the species that can be adversely affected by development activity.

(2) Transportation projects. Road construction and improvement projects may negatively affect surface animal and plant communities and surface water quality within

the habitat area.

(3) Utility projects. Utility projects, including pipeline, water system, and transmission line construction/maintenance, may affect critical habitat by degrading the karst forming rock where the species live.

(4) Species/habitat management. The invertebrates and their habitat are currently afforded some level of protection under various management plans, including the La Cantera HCP, Government Canyon State Natural Area Karst Management and Maintenance Plan, and Robber Baron Preserve Management Plan.

The FEA estimates the incremental impact of designation for two scenarios. Under Scenario 1, all development projects in Karst Zones 1 and 2 are assumed to reduce quality to low, and thus project modifications requested during consultation are considered baseline. Under Scenario 2, all development projects in Karst Zones 1 and 2 are assumed to reduce quality to medium, and thus project modifications requested during consultation are considered incremental. Impacts to development activities represent approximately 99.5 to 99.6 percent in Scenario 1, and 94 to 95 percent in Scenario 2, of the overall impacts to areas proposed for designation during the first 20 years. Between years 21 and 29, all incremental impacts are associated with development activities (as the timeframe for the analysis of impacts to other activities extends only through 20 years).

Total incremental costs for 2012 to 2031 ranged from $2,590,000 to $3,530,000 for Scenario 1, and from $43,100,000 to $55,100,000 for Scenario 2. Annualized costs during that timeframe were $244,000 to $333,000 for Scenario 1, and $4,070,000 to $$5,200,000 for Scenario 2. Total estimated incremental costs for years 2032 to 2040 were $24,100 for Scenario 1, and $65,800 for Scenario 2. Estimated annualized costs were $3,700 and $10,100, respectively.

The majority of the impacts to development activities are land value losses due to restrictions on future development (91.0 to 93.4 percent of Scenario 1 development impacts and 96.5 to 97.3 percent of Scenario 2 development value impacts). The present value incremental impact to transportation activities in the areas proposed for designation range from $13,400 in Scenario 1 to $2,770,000 in Scenario 2 (assuming a 7 percent discount rate). These figures represent an annualized impact of approximately $1,270 to $262,000. No incremental impacts are expected to utility project and species and habitat management.

Our economic analysis did not identify any disproportionate costs that are likely to result from the designation of critical habitat for the nine Bexar County invertebrates. Consequently, we have determined not to exert our discretion to exclude any areas from this designation of critical habitat based on economic impacts. A copy of the FEA with supporting documents may be obtained by contacting the Austin Ecological Services Field Office (see **ADDRESSES**) or by downloading them from the Internet at *http://www.regulations.gov*.

Exclusions Based on National Security Impacts

Under section 4(b)(2) of the Act, we consider whether there are lands owned or managed by the Department of Defense (DOD) where a national security impact might exist. In preparing this final rule, we have determined that the lands within the designation of critical habitat for the nine Bexar County invertebrates are not owned or managed by the Department of Defense, and, therefore, we anticipate no impact on national security. Consequently, the Secretary is not exercising his discretion to exclude any areas from this final designation based on impacts on national security.

Exclusions Based on Other Relevant Impacts – Habitat Conservation Plans

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts on national security. We consider a number of factors including whether the landowners have developed any HCPs or other management plans for the area, or whether there are conservation partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at any Tribal issues, and consider the government-to-government relationship of the United States with Tribal entities. We also consider any social impacts that might occur because of the designation.

Land and Resource Management Plans, Conservation Plans, or Agreements Based on Conservation Partnerships

We consider a current land management or conservation plan (HCPs as well as other types) to provide adequate management or protection if it meets the following criteria:

(1) The plan is complete and provides the same or better level of protection from adverse modification or destruction than that provided through a consultation under section 7 of the Act.

(2) There is a reasonable expectation that the conservation management strategies and actions will be implemented for the foreseeable future, based on past practices, written guidance, or regulations.

(3) The plan provides conservation strategies and measures consistent with currently accepted principles of conservation biology.

We believe that portions of Units 1e, 3, 6, 8, 9, and 17 under the La Cantera Habitat Conservation Plan (HCP), which provides for the conservation of Madla Cave meshweaver and *Rhadine exilis*, fulfills the above criteria. Thus, we are excluding approximately 232 ac (94 ha) of non-Federal lands in portions of Units 1e, 3, 6, 8, 9, and 17 under this HCP.

La Cantera Habitat Conservation Plan

The goals of the La Cantera HCP are to minimize and mitigate for the potential negative effects of constructing and operating commercial, light industrial, recreational,

and residential development near and adjacent to currently occupied habitat of the endangered karst invertebrates, and to contribute to conservation of the covered species and other listed and non-listed cave or karst fauna.

The La Cantera HCP authorizes take of listed species in La Cantera Cave No. 1 and La Cantera Cave No. 2 by allowing development to occur in areas surrounding these caves, which are adjacent to Unit 9. However, under the La Cantera HCP, mitigation for take within these caves was implemented by purchasing and conserving eight caves known to contain one or more of the nine Bexar County invertebrates. These mitigation caves are Canyon Ranch Pit, Fat Man's Nightmare Cave, Scenic Overlook Cave and the surrounding approximately 75 ac (30 ha) adjacent to Unit 1e; Helotes Blowhole and Helotes Hilltop Caves and the surrounding approximately 25 ac (10 ha) adjacent to Unit 3; John Wagner Ranch Cave No. 3 and the surrounding approximately 4 ac (1.6 ha) adjacent to Unit 6; Hills and Dales Pit and the surrounding approximately 70 ac (28 ha) adjacent to Unit 8; and Madla's Cave and the surrounding approximately 5 ac (2 ha) within Unit 17 (through purchase of a conservation easement). As part of their HCP, La Cantera is required to protect and manage these areas in perpetuity in accordance with the conservation needs of the species.

All of the approximately 232 ac (94 ha) of non-Federal lands under the La Cantera HCP in Units 1e, 3, 6, 8, 9, and 17 that we are excluding have either been authorized for development or preserved in perpetuity for the conservation of Madla Cave meshweaver and *Rhadine exilis*. We did include in this critical habitat designation

lands surrounding these occupied caves and associated management areas, as these lands provide physical and biological features that are essential to the conservation of the species.

The Benefits of Inclusion

The principle benefit of including an area in critical habitat designation is the requirement of Federal agencies to ensure that actions that they fund, authorize, or carry out are not likely to result in the destruction or adverse modification of any designated critical habitat, which is the regulatory standard of section 7(a)(2) of the Act under which consultation is completed. Federal agencies must consult with the Service on actions that may affect a listed species, and refrain from actions that are likely to jeopardize the continued existence of such species. The analysis of effects to critical habitat is a separate and different analysis from that of the effects to the species. Therefore, the difference in outcomes of these two analyses represents the regulatory benefit of critical habitat. For some cases, the outcome of these analyses will be similar, because effects to habitat will often result in effects to the species. However, the regulatory standard is different, as the jeopardy analysis investigates the action's impact to survival and recovery of the species, while the adverse modification analysis investigates the action's effects to the designated habitat's contribution to conservation. This will, in many cases, lead to different results and different regulatory requirements. Thus, critical habitat designation may provide greater benefits to the recovery of a species than listing would alone. Therefore, critical habitat designation may provide a regulatory benefit for the

Madla Cave meshweaver and *Rhadine exilis* on lands covered under the La Cantera HCP when there is a Federal nexus present for a project that might adversely modify critical habitat.

Another possible benefit of including lands in critical habitat is public education regarding the potential conservation value of an area that may help focus conservation efforts on areas of high conservation value for certain species. We consider any information about the nine Bexar County invertebrates and their habitats that reaches a wide audience, including parties engaged in conservation activities, is valuable. Designation as critical habitat of the preserve areas would provide educational benefits by informing Federal agencies and the public about presence of listed species for all units, including lands surrounding the La Cantera preserves. The process of designating critical habitat is valuable in prioritizing conservation and management of identified areas.

In summary, we believe that the benefits of inclusion of lands under the La Cantera HCP are a regulatory benefit when there is a Federal nexus present for a project that might adversely modify critical habitat and educational benefits about the listed invertebrates and their habitat.

Benefits of Exclusion

The benefits of excluding lands from critical habitat designation with properly implemented HCPs, such as the La Cantera HCP, include relieving landowners,

communities, and counties of any additional regulatory burden that might be imposed as a result of the critical habitat designation. A related benefit of exclusion is the continued ability to maintain existing and seek new partnerships with future plan participants, including States, counties, local jurisdictions, conservation organizations, private landowners, and developers, which together can implement conservation actions that we would be unable to accomplish without these partners. Not only are HCPs important for listed species, but they can help conserve many species that are not State or federally listed, which might not otherwise receive protection absent the HCPs. In most HCP cases, permittees agree to do more for the conservation of the species and their habitats on private lands than designation of critical habitat would provide alone. Therefore, we place great value on the partnerships that are developed with HCPs.

We believe that the exclusion of La Cantera HCP lands from critical habitat will help preserve the partnership we have developed with the La Cantera Development Company, reinforce those relationships we are building with other developers, and foster future partnerships and development of future management plans. The La Cantera HCP was developed to provide specific protection and management for the conservation of Madla Cave meshweaver and *Rhadine exilis* by purchasing and conserving eight caves known to contain one or more of the nine Bexar County invertebrates for which take was being permitted. The preserve lands under the La Cantera HCP are providing protection for the physical and biological features essential to the conservation of the species in a way that is equal to or better than designation of critical habitat would provide. Therefore, exclusion of these lands under the La Cantera HCP from critical habitat will

help preserve the partnerships, and will foster future partnerships, and thus future conservation efforts.

Additionally, the La Cantera Development Company has expressed a desire to not have lands under their HCP included in our critical habitat designation. The La Cantera Development Company asked specifically for the preserve lands to be excluded, because the lands do not require additional special protection or management. We believe that exclusion of the preserve areas will help maintain a good relationship with the preserve owner. Also, excluding lands under the La Cantera HCP will show that we are committed to our partners to further the conservation for the nine Bexar County invertebrates and other endangered and threatened species.

Benefits of Exclusion Outweigh the Benefits of Inclusion

We reviewed and evaluated the benefits of inclusion and the benefits of exclusion as critical habitat those lands included in the La Cantera HCP. We acknowledge that the La Cantera HCP provides authorization of incidental take caused by development in areas around La Cantera Cave No. 1 and La Cantera Cave No. 2, but we believe that there were greater long-term conservation benefits that resulted from the implementation of this HCP, because eight cave areas were bought and are being managed in perpetuity as preserve areas for conservation of the species. Implementation of the La Cantera HCP will occur regardless of critical habitat designation. We believe that including La Cantera HCP lands in the critical habitat designation will provide little additional regulatory

protection under section 7(a) of the Act when there is a Federal nexus, and educational benefits will be redundant with those already achieved through listing, the previous critical habitat designation, and areas surrounding the La Cantera HCP lands that are being designated as critical habitat by this rule. Therefore, we see very little benefit to including the La Cantera HCP lands in the critical habitat designation.

Subsequently, critical habitat may provide a regulatory benefit for the Madla Cave meshweaver and *Rhadine exilis* on lands covered under the La Cantera HCP when there is a Federal nexus present for a project that might adversely modify critical habitat. Thus, critical habitat designation could provide additional protection to the preserve areas from adverse impacts of future Federal actions (for example, condemnation by a federally funded road expansion project). Without this protection, Federal projects that would result in adverse modification could be allowed to degrade habitat in the preserves. However, the preserve areas under the La Cantera HCP are managed in perpetuity for the conservation of the Madla Cave meshweaver and *Rhadine exilis*. Also, the preserve areas are privately owned, and at this time, we do not anticipate any future projects that would involve a Federal nexus. Therefore, we believe that including the lands covered under the La Cantera HCP as critical habitat would provide very little regulatory protection.

Additionally, once an HCP is permitted, implementation of conservation measures will occur, regardless of whether critical habitat is designated within its plan boundaries, and excluding the development areas will clarify the message to Federal agencies and to the public that these impacts have already been authorized. Designation

would confuse Federal agencies and the public about the value of the area without providing any meaningful benefits. Designation as critical habitat would also mislead Federal agencies and the public that the development areas are essential for conservation of the species, while providing minimal protection from a Federal project involving land condemnation.

Furthermore, we believe that the educational benefits of critical habitat designation on La Cantera HCP lands are not significant due to extensive past outreach and ongoing conservation efforts. Also, we are designating as critical habitat those lands surrounding lands covered by the La Cantera HCP, which already results in educational benefits for the listed invertebrates and their habitats without designating the La Cantera HCP lands as critical habitat. Thus, an inclusion of the La Cantera HCP lands would not provide any additional educational benefits.

In summary, we find that the benefits of excluding the La Cantera HCP lands from critical habitat outweigh the benefits of inclusion, based on the conservation values outlined in the HCP and summarized above. In consideration of the relevant impacts to our relationships with non-Federal partners to develop effective management plans that provide benefits to species, we determined that the benefits of exclusion outweigh the benefits of inclusion in critical habitat. We find that excluding lands under the La Cantera HCP will preserve our partnership and foster future habitat management and species conservation efforts with non-Federal entities. These partnership benefits are significant, because they provide protection and conservation of species on private lands

that would not otherwise occur even with critical habitat designation. We believe that these partnership benefits outweigh the limited regulatory and educational benefits of including these lands in the final critical habitat designation.

Exclusion Will Not Result in Extinction of the Species

We determined that the exclusion from critical habitat designation for Madla Cave meshweaver and *Rhadine exilis* of approximately 232 ac (94 ha) of non-Federal land in Units 1e, 3, 6, 8, 9, and 17, which are covered under the La Cantera HCP, will not result in extinction of these species. Under the La Cantera HCP, eight caves containing one or more of the nine Bexar County invertebrates has been purchased and will be managed in perpetuity for the conservation of these species. Additionally, the jeopardy standard of section 7 of the Act and routine implementation of conservation measures through the section 7 process due to these species' occupancy and protection provided by the La Cantera HCP provide assurances that these species will not go extinct as a result of excluding these lands from the critical habitat designation. Therefore, based on the above discussion, the Secretary is exercising his discretion to exclude approximately 232 ac (94 ha) of lands managed by the La Cantera HCP from this final critical habitat designation.

Required Determinations

Regulatory Planning and Review—Executive Order 12866

The Office of Management and Budget (OMB) has determined that this rule is not significant and has not reviewed this rule under Executive Order 12866 (Regulatory Planning and Review). OMB bases its determination upon the following four criteria:

(1) Whether the rule will have an annual effect of $100 million or more on the economy or adversely affect an economic sector, productivity, jobs, the environment, or other units of the government.

(2) Whether the rule will create inconsistencies with other Federal agencies' actions.

(3) Whether the rule will materially affect entitlements, grants, user fees, loan programs or the rights and obligations of their recipients.

(4) Whether the rule raises novel legal or policy issues.

Regulatory Flexibility Act (5 U.S.C. 601 et seq.*)*

Under the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 *et seq*.), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 (5 U.S.C 801 *et seq.*), whenever an agency must publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of an agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide a certification

statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities. In this final rule, we are certifying that the critical habitat designation for the nine Bexar County invertebrates will not have a significant economic impact on a substantial number of small entities. The following discussion explains our rationale.

According to the Small Business Administration, small entities include small organizations, such as independent nonprofit organizations; small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; as well as small businesses. Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than $5 million in annual sales, general and heavy construction businesses with less than $27.5 million in annual business, special trade contractors doing less than $11.5 million in annual business, and agricultural businesses with annual sales less than $750,000. To determine if potential economic impacts on these small entities are significant, we consider the types of activities that might trigger regulatory impacts under this rule, as well as the types of project modifications that may result. In general, the term "significant economic impact" is meant to apply to a typical small business firm's business operations.

To determine if the rule could significantly affect a substantial number of small entities, we consider the number of small entities affected within particular types of

economic activities (e.g., small construction, housing builders, or subdividers). We apply the "substantial number" test individually to each industry to determine if certification is appropriate. However, the SBREFA does not explicitly define "substantial number" or "significant economic impact." Consequently, to assess whether a "substantial number" of small entities are affected by this designation, this analysis considers the relative number of small entities likely to be impacted in an area. In some circumstances, especially with critical habitat designations of limited extent, we may aggregate across all industries and consider whether the total number of small entities affected is substantial. In estimating the number of small entities potentially affected, we also consider whether their activities have any Federal involvement.

Designation of critical habitat only affects activities authorized, funded, or carried out by Federal agencies. Some kinds of activities are unlikely to have any Federal involvement and so will not be affected by critical habitat designation. In areas where the species is present, Federal agencies already are required to consult with us under section 7 of the Act on activities they authorize, fund, or carry out that may affect the nine Bexar County invertebrates. Federal agencies also must consult with us if their activities may affect critical habitat. Designation of critical habitat, therefore, could result in an additional economic impact on small entities due to the requirement to reinitiate consultation for ongoing Federal activities (see *Application of the "Adverse Modification" Standard* section).

In our final economic analysis (FEA) of the critical habitat designation, we

evaluated the potential economic effects on small business entities resulting from conservation actions related to the listing of the nine Bexar County invertebrates and the designation of critical habitat. The analysis is based on the estimated impacts associated with the rulemaking as described in Chapters 1 through 4 and Appendix A.1 of the FEA and evaluates the potential for economic impacts related to landowners that are small developers, including: (1) New single-family housing builders, (2) new multiple housing builders, (3) new housing operative builders, and (4) land subdividers.

The FEA estimates that 20 to 149 small developers (up to 4.5 percent) may be affected by this rule. Annualized perpetuity impacts per entity range from $8,910 to $15,500. This impact is less than 0.25 percent of average annual sales of these businesses (average annual sales are $6.36 million) (Industrial Economics 2011, p. A-7).

In summary, we considered whether this designation will result in a significant economic effect on a substantial number of small entities. Based on the above reasoning and currently available information, we conclude that this rule will not result in a significant economic impact on a substantial number of small entities. Therefore, we are certifying that the designation of critical habitat for nine Bexar County invertebrates will not have a significant economic impact on a substantial number of small entities, and a regulatory flexibility analysis is not required.

Energy Supply, Distribution, or Use—Executive Order 13211

Executive Order 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare Statements of Energy Effects when undertaking certain actions. The Office of Management and Budget (OMB) has provided guidance for implementing this Executive Order that outlines nine outcomes that may constitute "a significant adverse effect" when compared to not taking the regulatory action under consideration.

As described in Chapter 4 of the FEA, critical habitat designation for the nine Bexar County invertebrates is anticipated to impact development and transportation activities. Resource extraction, energy production, and distribution are not expected to be affected. Because none of the outcomes that may constitute "a significant adverse effect" are relevant to this analysis, energy-related impacts within the critical habitat designation are not anticipated.

The economic analysis finds that extraction, energy production, and distribution are not expected to be affected (Industrial Economics 2011, p. A-8) and that none of the nine outcomes in OMB's guidance are relevant to this analysis. Thus, based on information in the economic analysis, energy-related impacts associated with nine Bexar County invertebrates' conservation activities within critical habitat are not expected. As such, the designation of critical habitat is not expected to significantly affect energy supplies, distribution, or use. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.*)*

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 *et seq*.), we make the following findings:

(1) This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or Tribal governments, or the private sector, and includes both "Federal intergovernmental mandates" and "Federal private sector mandates." These terms are defined in 2 U.S.C. 658(5)–(7). "Federal intergovernmental mandate" includes a regulation that "would impose an enforceable duty upon State, local, or Tribal governments" with two exceptions. It excludes "a condition of Federal assistance." It also excludes "a duty arising from participation in a voluntary Federal program," unless the regulation "relates to a then-existing Federal program under which $500,000,000 or more is provided annually to State, local, and Tribal governments under entitlement authority," if the provision would "increase the stringency of conditions of assistance" or "place caps upon, or otherwise decrease, the Federal Government's responsibility to provide funding," and the State, local, or Tribal governments "lack authority" to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. "Federal private sector mandate" includes a regulation that

"would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program."

The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act does not apply, nor will critical habitat shift the costs of the large entitlement programs listed above onto State governments.

(2) We do not believe that this rule will significantly or uniquely affect small governments because the designation of critical habitat imposes no obligations on State or local governments. By definition, Federal agencies are not considered small entities, although the activities they fund or permit may be proposed or carried out by small entities. Consequently, we do not believe that the critical habitat designation will significantly or uniquely affect small government entities. As such, a Small Government

Agency Plan is not required.

Takings—Executive Order 12630

In accordance with Executive Order 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating critical habitat for the nine Bexar County invertebrates in a takings implications assessment. As discussed above, the designation of critical habitat affects only Federal actions. Although private parties that receive Federal funding, assistance, or require approval or authorization from a Federal agency for an action may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. The FEA found that this designation will not affect a substantial number of small entities, but there could be costs of development restrictions in the form of reduced land values. A number of the private landowners are not small businesses. However, we found that 20 of 149 small developers may be affected by this designation, but the impact is less than 0.25 percent of average annual sales of these businesses. However, based on information contained in the FEA and described within this document, it is not likely that economic impacts to a property owner will be of a sufficient magnitude to support a takings action. We anticipate that this critical habitat designation will result in insignificant takings implications on these lands. Therefore, the takings implications assessment concludes that this designation of critical habitat for nine Bexar County invertebrates does not pose significant takings implications for lands

within or affected by the designation.

Federalism—Executive Order 13132

In accordance with Executive Order 13132 (Federalism), this rule does not have significant Federalism effects. A federalism impact summary statement is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of, this critical habitat designation with appropriate State resource agencies in Texas. We received comments from the Texas State Comptroller and Texas Department of Transportation and have addressed them in the **Summary of Comments and Recommendations** section of this rule. The designation of critical habitat in areas currently occupied by the nine Bexar County invertebrates imposes no additional restrictions to those currently in place and, therefore, has little incremental impact on State and local governments and their activities. The designation may have some benefit to these governments in that the areas that contain the physical or biological features essential to the conservation of the species are more clearly defined, and the elements of the features of the habitat necessary to the conservation of the species are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist local governments in long-range planning (rather than having them wait for case-by-case section 7 consultations to occur).

Where State and local governments require approval or authorization from a

Federal agency for actions that may affect critical habitat, consultation under section 7(a)(2) would be required. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency.

Civil Justice Reform—Executive Order 12988

In accordance with Executive Order 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule does not unduly burden the judicial system and that it meets the applicable standards set forth in sections 3(a) and 3(b)(2) of the Order. We are designating critical habitat in accordance with the provisions of the Act. This final rule uses standard property descriptions and identifies the elements of physical or biological features essential to the conservation of the nine Bexar County invertebrates within the designated areas to assist the public in understanding the habitat needs of the species.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.*)*

This rule does not contain any new collections of information that require approval by OMB under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq*.). This rule will not impose recordkeeping or reporting requirements on State or local

governments, individuals, businesses, or organizations. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act (42 U.S.C. 4321 et seq.*)*

It is our position that, outside the jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses pursuant to the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*) in connection with designating critical habitat under the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244). This position was upheld by the U.S. Court of Appeals for the Ninth Circuit (*Douglas County* v. *Babbitt*, 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)). The designation of critical habitat for the nine Bexar County invertebrates is entirely within the 5th Circuit jurisdiction; therefore, we did not prepare an environmental analysis in connection with this critical habitat designation.

Government-to-Government Relationship with Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily

acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to tribes.

We determined that there are no Tribal lands occupied by the nine Bexar County invertebrates at the time of listing that contain the features essential for conservation of the species, and no Tribal lands unoccupied by the invertebrates that are essential for the conservation of the species. Therefore, we are not designating critical habitat for the nine Bexar County invertebrates on Tribal lands.

References Cited

A complete list of all references cited is available on the Internet at *http://www.regulations.gov* and upon request from the Austin Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this rulemaking are the staff members of the Austin

Ecological Services Field Office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17--[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99-625, 100 Stat. 3500; unless otherwise noted.

2. Amend § 17.11(h) by revising the entries for "Meshweaver, Government Canyon Bat Cave" and "Spider, Government Canyon Bat Cave" under ARACHNIDS in the List of Endangered and Threatened Wildlife to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						

* * * * * * *

ARACHNIDS

* * * * * * *

Meshweaver, Government Canyon Bat Cave	*Cicurina vespera*	U.S.A. (TX)	NA	E	706	17.95(g)	NA
* * * * * * *							
Spider, Government Canyon Bat Cave	*Neoleptoneta microps*	U.S.A. (TX)	NA	E	706	17.95(g)	NA
* * * * * * *							

3. Amend § 17.95 by:

a. In paragraph (g), revising the critical habitat entry for the Cokendolpher Cave Harvestman (*Texella cokendolpheri*);

b. In paragraph (g), revising the critical habitat entry for the Braken Bat Cave Meshweaver (*Cicurina venii*);

c. In paragraph (g), redesignating the critical habitat entry for the Kauai Cave Wolf Spider (*Adelocosa anops*) so that it is in the order in which it appears in the table at § 17.11(h);

d. In paragraph (g), adding a critical habitat entry for the Government Canyon Bat Cave Meshweaver (*Cicurina vespera*) in the same alphabetical order in which the species appears in § 17.11(h);

e. In paragraph (g), revising the critical habitat entry for the Madla Cave Meshweaver (*Cicurina madla*);

f. In paragraph (g), revising the critical habitat entry for the Robber Baron Cave Meshweaver (*Cicurina baronia*);

g. In paragraph (g), adding a critical habitat entry for the Government Canyon Bat Cave Spider (*Neoleptoneta microps*) in the same alphabetical order in which the species appears in § 17.11(h);

h. In paragraph (i), revising the critical habitat entry for the Helotes Mold Beetle (*Batrisodes venyivi*);

i. In paragraph (i), revising the critical habitat entry for the Beetle (no common name) (*Rhadine exilis*); and

j. In paragraph (i), revising the critical habitat entry for the Beetle (no common

name) (*Rhadine infernalis*), to read as follows.

§ 17.95 Critical habitat—fish and wildlife.

* * * * *

(g) *Arachnids.*

Cokendolpher Cave Harvestman (*Texella cokendolpheri*)

(1) Critical habitat for the Cokendolpher Cave harvestman in Bexar County, Texas, occurs in Unit 20 as described in this entry and depicted on Map 1 (index map) and Map 2 in this entry.

(2) The primary constituent elements of critical habitat for the Cokendolpher Cave harvestman are:

(i) Karst-forming rock containing subterranean spaces (caves and connected mesocaverns) with stable temperatures, high humidities (near saturation), and suitable substrates (for example, spaces between and underneath rocks for foraging and sheltering) thatare free of contaminants; and

(ii) Surface and subsurface sources (such as plants and their roots, fruits, and

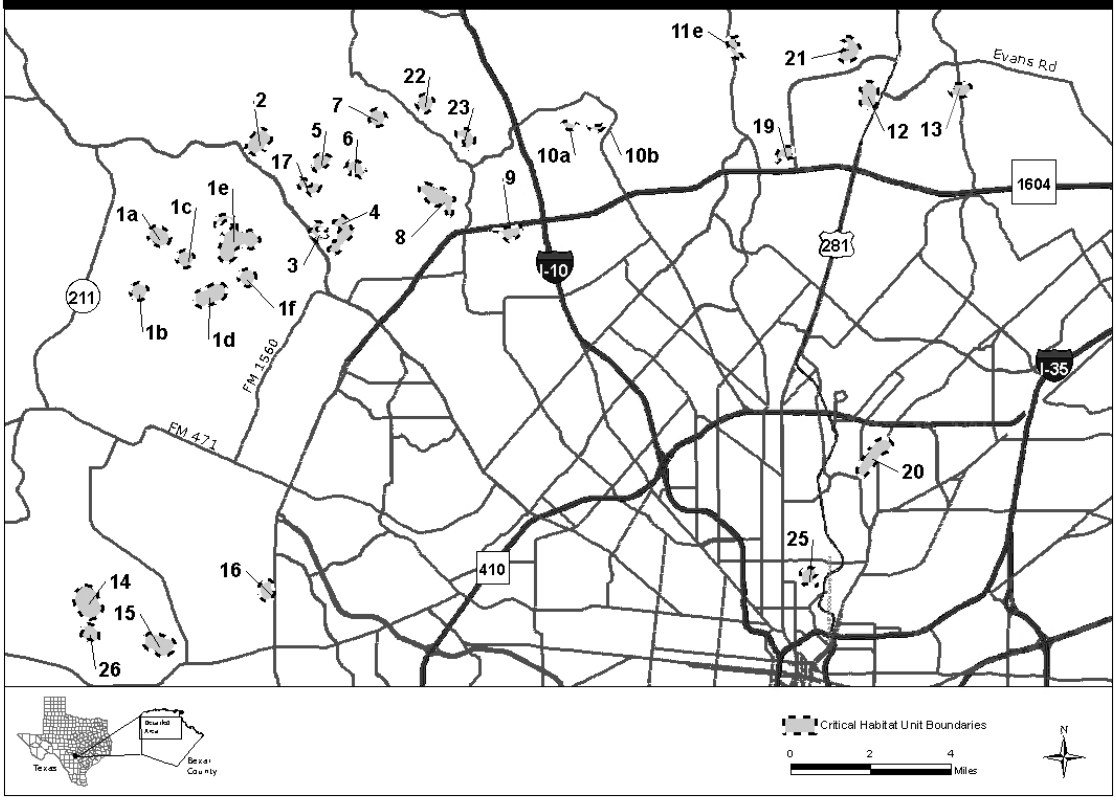
leaves, and animal (e.g., cave cricket) eggs, feces, and carcasses) that provide nutrient input into the karst ecosystem.

(3) Developed lands that do not contain the subsurface primary constituent elements (see paragraph (2)(i) of this entry) and that existed on the effective date of this rule are not considered to be critical habitat.

(4) Data layers defining this map unit were created using a geographic information system (GIS), which included cave locations, karst zone maps, roads, property boundaries, 2010 aerial photography, and USGS 7.5′ quadrangles. Points were placed on the GIS.

(5) Index map of Bexar County invertebrates critical habitat units, Bexar County, Texas, follows:

Map 1. Bexar County, Texas, Karst Invertebrate Critical Habitat Units Overview

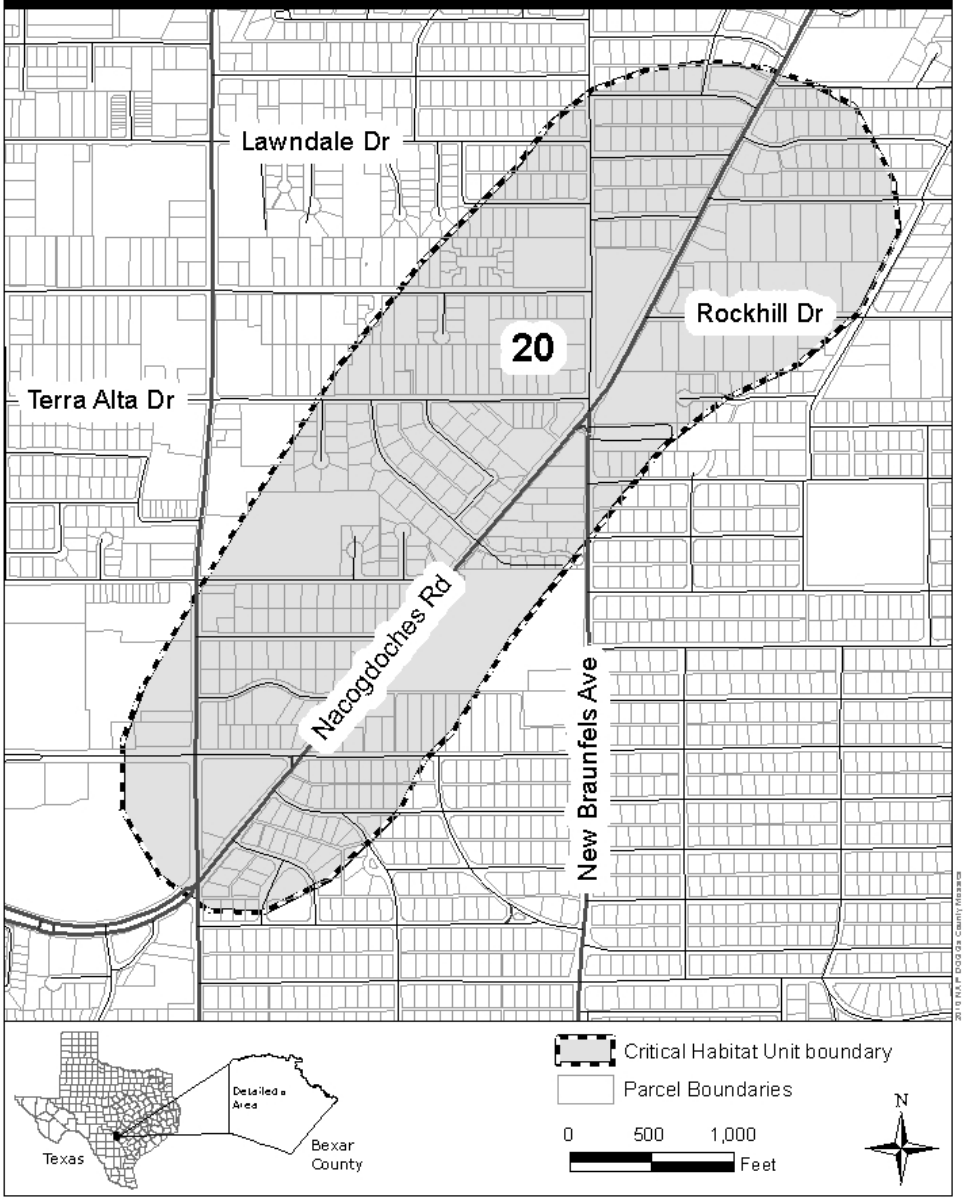


(6) Unit 20: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 552126, 3264361; 552287, 3264522; 552357, 3264610; 552436, 3264673; 552536, 3264710; 552654, 3264726; 552756, 3264714; 552840, 3264685; 552920, 3264644; 552991, 3264506; 553001, 3264408; 552930, 3264263; 552813, 3264165; 552683, 3264104; 552571, 3264018; 552485, 3263914; 552285, 3263659; 552175, 3263484; 552124, 3263435; 552081, 3263341; 551949, 3263214; 551826, 3263155; 551728, 3263159; 551639, 3263221; 551567, 3263343; 551569, 3263474; 551606, 3263569; 551704, 3263739; 551777, 3263863; 551969, 3264165; 552126, 3264361.

(ii) Note: Map 2 of Unit 20 follows:

Map 2. Bexar County, Texas, Karst Invertebrates Critical Habitat Unit 20



Braken Bat Cave Meshweaver (*Cicurina venii*)

(1) Critical habitat for the Braken Bat Cave meshweaver in Bexar County, Texas, occurs in Unit 15, as described in this entry and depicted on Map 2 in this entry. Unit 15 is also depicted on Map 1 (index map) provided at paragraph (5) of the entry for the Cokendolpher Cave harvestman in this paragraph (g).

(2) The primary constituent elements of, and the statements regarding developed lands in, critical habitat for the Braken Bat Cave meshweaver are identical to those set forth at paragraphs (2) and (3) of the entry for the Cokendolpher Cave harvestman in this paragraph (g).

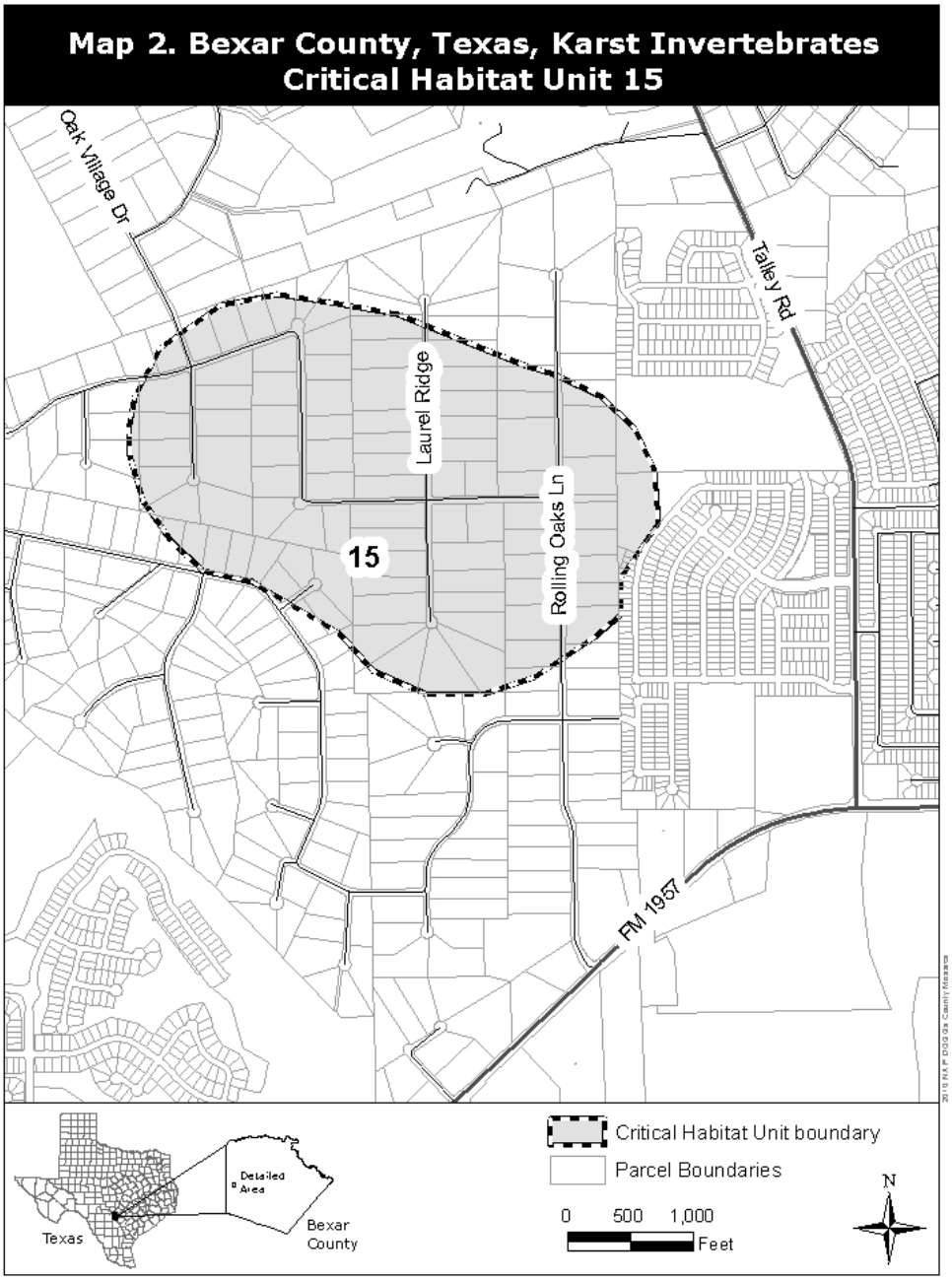
(3) Data layers defining this map unit were created using a geographic information system (GIS), which included cave locations, karst zone maps, roads, property boundaries, 2010 aerial photography, and USGS 7.5′ quadrangles. Points were placed on the GIS.

(4) Unit 15: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 522689, 3256455; 522687, 3256517; 522703, 3256601; 522765, 3256718; 522911, 3256823; 523046, 3256851; 523177, 3256830; 523344, 3256801; 523479, 3256747; 523658, 3256674; 523725, 3256656; 523834,

3256603; 523918, 3256523; 523969, 3256419; 523978, 3256293; 523885, 3256159; 523885, 3256069; 523822, 3256015; 523674, 3255915; 523547, 3255873; 523414, 3255874; 523281, 3255933; 523201, 3256024; 523017, 3256131; 522987, 3256149; 522940, 3256160; 522894, 3256168; 522869, 3256174; 522790, 3256246; 522722, 3256345; 522689, 3256455.

(ii) Note: Map 2 of Unit 15 follows:


Map 2. Bexar County, Texas, Karst Invertebrates
Critical Habitat Unit 15
Oak Village Dr
Talley Rd
Laurel Ridge
Rolling Oaks Ln
15
FM 1957
Texas
Detailed Area
Bexar County
Critical Habitat Unit boundary
Parcel Boundaries
0 500 1,000
Feet
N

Government Canyon Bat Cave Meshweaver (*Cicurina vespera*)

(1) Critical habitat for the Government Canyon Bat Cave meshweaver in Bexar County, Texas, occurs in Unit 1b, as described in this entry and depicted on Map 2 in this entry. Unit 1b is also depicted on Map 1 (index map) provided at paragraph (5) of the entry for the Cokendolpher Cave harvestman in this paragraph (g).

(2) The primary constituent elements of, and the statements regarding developed lands in, critical habitat for the Government Canyon Bat Cave meshweaver are identical to those set forth at paragraphs (2) and (3) of the entry for the Cokendolpher Cave harvestman in this paragraph (g).

(3) Data layers defining this map unit were created using a geographic information system (GIS), which included cave locations, karst zone maps, roads, property boundaries, 2010 aerial photography, and USGS 7.5′ quadrangles. Points were placed on the GIS.

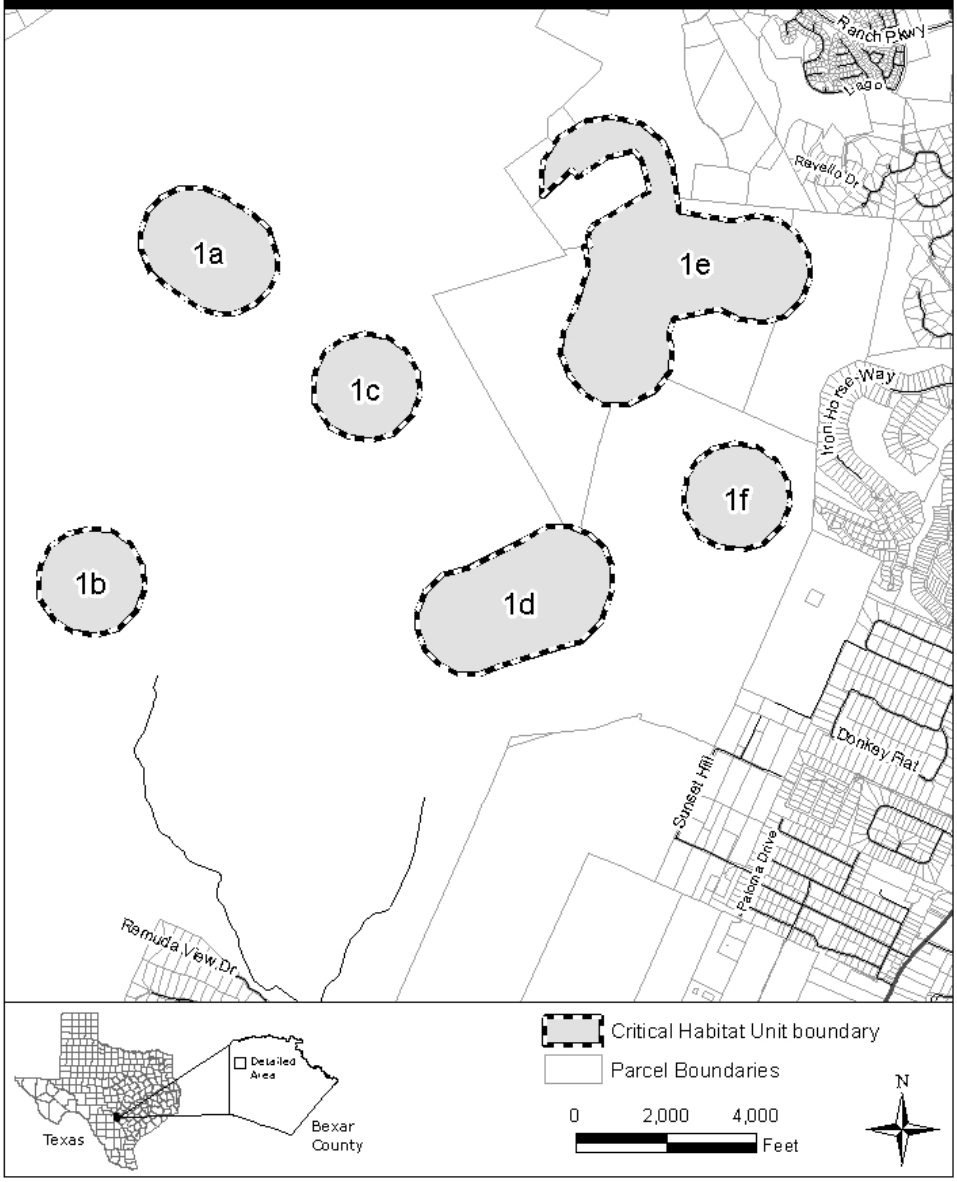
(4) Unit 1b: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 522172, 3270656; 522202, 3270794; 522259, 3270889; 522375, 3270977; 522521, 3271014; 522677, 3270988; 522793, 3270905; 522880, 3270758; 522894, 3270605; 522843, 3270457; 522724, 3270335; 522571,

3270287; 522401, 3270312; 522280, 3270382; 522186, 3270538; 522172, 3270656.

(ii) Note: Map 2 of Units 1a, 1b, 1c, 1d, 1e, and 1f follows:

Map 2. Bexar County, Texas, Karst Invertebrates Critical Habitat Units 1a, 1b, 1c, 1d, 1e, and 1f



Madla Cave Meshweaver (*Cicurina madla*)

(1) Critical habitat for the Madla Cave meshweaver in Bexar County, Texas, occurs in Units 1a, 1c, 1d, 1e, 2, 3, 5, 6, 8, 9, 17, and 22, as described in this entry and depicted on Maps 3, 4, 5, 6, 7, and 8 in this entry. Units 1a, 1c, 1d, and 1e are depicted on Map 2, which is provided at paragraph (4)(ii) of the entry for the Government Canyon Bat Cave meshweaver in this paragraph (g). Units 1a, 1c, 1d, 1e, 2, 3, 5, 6, 8, 9, 17, and 22 are also depicted on Map 1 (index map) provided at paragraph (5) of the entry for the Cokendolpher Cave harvestman in this paragraph (g).

(2) Eight caves and their associated karst management areas established under the La Cantera Habitat Conservation Plan section 10(a)(1)(B) permit are adjacent to or within the boundaries of Units 1e, 3, 6, 8, and 17, but are not designated as critical habitat. These caves are Canyon Ranch Pit, Fat Man's Nightmare Cave, Scenic Overlook Cave and the surrounding approximately 75 ac (30 ha) adjacent to Unit 1e; Helotes Blowhole and Helotes Hilltop Caves and the surrounding approximately 25 ac (10 ha) adjacent to Unit 3; John Wagner Cave No. 3 and the surrounding approximately 4 ac (1.6 ha) adjacent to Unit 6; Hills and Dales Pit and the surrounding approximately 70 ac (28 ha) adjacent to Unit 8; and Madla's Cave and the surrounding approximately 5 ac (2 ha) within Unit 17.

(3) The primary constituent elements of, and the statements regarding developed lands in, critical habitat for the Madla Cave meshweaver are identical to those set forth at

paragraphs (2) and (3) of the entry for the Cokendolpher Cave harvestman in this paragraph (g).

(4) Data layers defining this map unit were created using a geographic information system (GIS), which included cave locations, karst zone maps, roads, property boundaries, 2010 aerial photography, and USGS 7.5′ quadrangles. Points were placed on the GIS.

(5) Unit 1a: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 522870, 3272900; 522872, 3273024; 522919, 3273156; 523000, 3273241; 523124, 3273312; 523284, 3273323; 523438, 3273258; 523618, 3273132; 523729, 3273041; 523797, 3272836; 523784, 3272720; 523724, 3272603; 523633, 3272522; 523515, 3272464; 523406, 3272460; 523276, 3272492; 523041, 3272654; 522939, 3272737; 522870, 3272900.

(ii) Note: Unit 1a is depicted on Map 2, provided at paragraph (4)(ii) of the entry for the Government Canyon Bat Cave meshweaver in this paragraph (g).

(6) Unit 1c: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of

1983 (NAD83) coordinates (E, N): 524033, 3271973; 524063, 3272110; 524119, 3272206; 524235, 3272294; 524382, 3272331; 524537, 3272305; 524654, 3272222; 524740, 3272075; 524754, 3271922; 524703, 3271773; 524585, 3271652; 524431, 3271604; 524262, 3271629; 524140, 3271699; 524047, 3271855; 524033, 3271973.

(ii) Note: Unit 1c is depicted on Map 2, provided at paragraph (4)(ii) of the entry for the Government Canyon Bat Cave meshweaver in this paragraph (g).

(7) Unit 1d: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 524739, 3270323; 524739, 3270454; 524798, 3270590; 524917, 3270699; 525091, 3270744; 525462, 3270937; 525613, 3271016; 525757, 3271026; 525893, 3270977; 526000, 3270883; 526059, 3270741; 526062, 3270603; 525980, 3270370; 525836, 3270243; 525700, 3270206; 525289, 3270072; 525153, 3270020; 525016, 3270023; 524883, 3270092; 524788, 3270191; 524739, 3270323.

(ii) Note: Unit 1d is depicted on Map 2, provided at paragraph (4)(ii) of the entry for the Government Canyon Bat Cave meshweaver in this paragraph (g).

(8) Unit 1e: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 526403, 3273634; 526465, 3273472; 526487, 3273282; 526506, 3273157; 526879, 3273092; 527025, 3273129; 527180, 3273102; 527297, 3273019; 527383, 3272873; 527398, 3272719; 527346, 3272571; 527228, 3272449; 527075, 3272402; 526905, 3272426; 526783, 3272497; 526472, 3272434; 526435, 3272318; 526460, 3272223; 526443, 3272077; 526356, 3271945; 526158, 3271842; 525997, 3271842; 525854, 3271930; 525762, 3272044; 525703, 3272205; 525729, 3272352; 525802, 3272494; 525890, 3272776; 525876, 3272894; 525858, 3272918; 525912, 3272925; 525904, 3272945; 525903, 3272947; 525903, 3272949; 525902, 3272950; 525902, 3272952; 525901, 3272954; 525901, 3272956; 525900, 3272957; 525900, 3272959; 525899, 3272961; 525899, 3272963; 525898, 3272965; 525898, 3272966; 525898, 3272968; 525898, 3272970; 525897, 3272972; 525897, 3272974; 525897, 3272975; 525897, 3272977; 525897, 3272979; 525897, 3272981; 525897, 3272983; 525897, 3272985; 525897, 3272986; 525897, 3272988; 525897, 3272990; 525897, 3272992; 525897, 3272994; 525897, 3272996; 525897, 3272997; 525898, 3272999; 525898, 3273001; 525898, 3273003; 525899, 3273005; 525899, 3273007; 525899, 3273008; 525900, 3273010; 525900, 3273012; 525901, 3273014; 525901, 3273015; 525902, 3273017; 525902, 3273019; 525903, 3273021; 525904, 3273022; 525904, 3273024; 525905, 3273026; 525906, 3273027; 525906, 3273029; 525907, 3273031; 525908, 3273032; 525909, 3273034; 525910, 3273036; 525911, 3273037; 525912, 3273039; 525913, 3273040; 525914, 3273042; 525915, 3273044; 525916, 3273045; 525917, 3273047; 525918, 3273048; 525919, 3273049; 525920, 3273051; 525921, 3273052; 525923, 3273054; 525924, 3273055; 525925, 3273056;

525926, 3273058; 525928, 3273059; 525929, 3273060; 525930, 3273062; 525932, 3273063; 525933, 3273064; 525934, 3273065; 525936, 3273066; 525937, 3273068; 525939, 3273069; 525940, 3273070; 525942, 3273071; 525943, 3273072; 525945, 3273073; 525946, 3273074; 525948, 3273075; 525949, 3273076; 525951, 3273077; 525953, 3273078; 525954, 3273078; 525956, 3273079; 525958, 3273080; 526305, 3273293; 526303, 3273302; 526276, 3273412; 526276, 3273412; 526254, 3273499; 526202, 3273564; 526023, 3273523; 525917, 3273448; 525824, 3273382; 525786, 3273440; 525587, 3273259; 525586, 3273260; 525572, 3273363; 525594, 3273505; 525693, 3273659; 525876, 3273765; 526048, 3273798; 526253, 3273754; 526403, 3273634.

(ii) Note: Unit 1e is depicted on Map 2, provided at paragraph (4)(ii) of the entry for the Government Canyon Bat Cave meshweaver in this paragraph (g).

(9) Unit 2: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 527508, 3276359; 527444, 3276287; 527343, 3276226; 527229, 3276204; 527117, 3276216; 527116, 3276253; 527085, 3276279; 527003, 3276270; 526933, 3276334; 526905, 3276386; 526783, 3276386; 526851, 3276555; 526850, 3276556; 526864, 3276662; 526908, 3276736; 526960, 3276801; 527010, 3276865; 527213, 3277098; 527281, 3277166; 527392, 3277230; 527536, 3277252; 527711, 3277190; 527805, 3277102; 527857, 3277003; 527869, 3276903;

527861, 3276787; 527803, 3276674; 527699, 3276578; 527644, 3276515; 527643, 3276397; 527630, 3276386; 527530, 3276384; 527508, 3276359.

(ii) Note: Map 3 of Unit 2 follows:

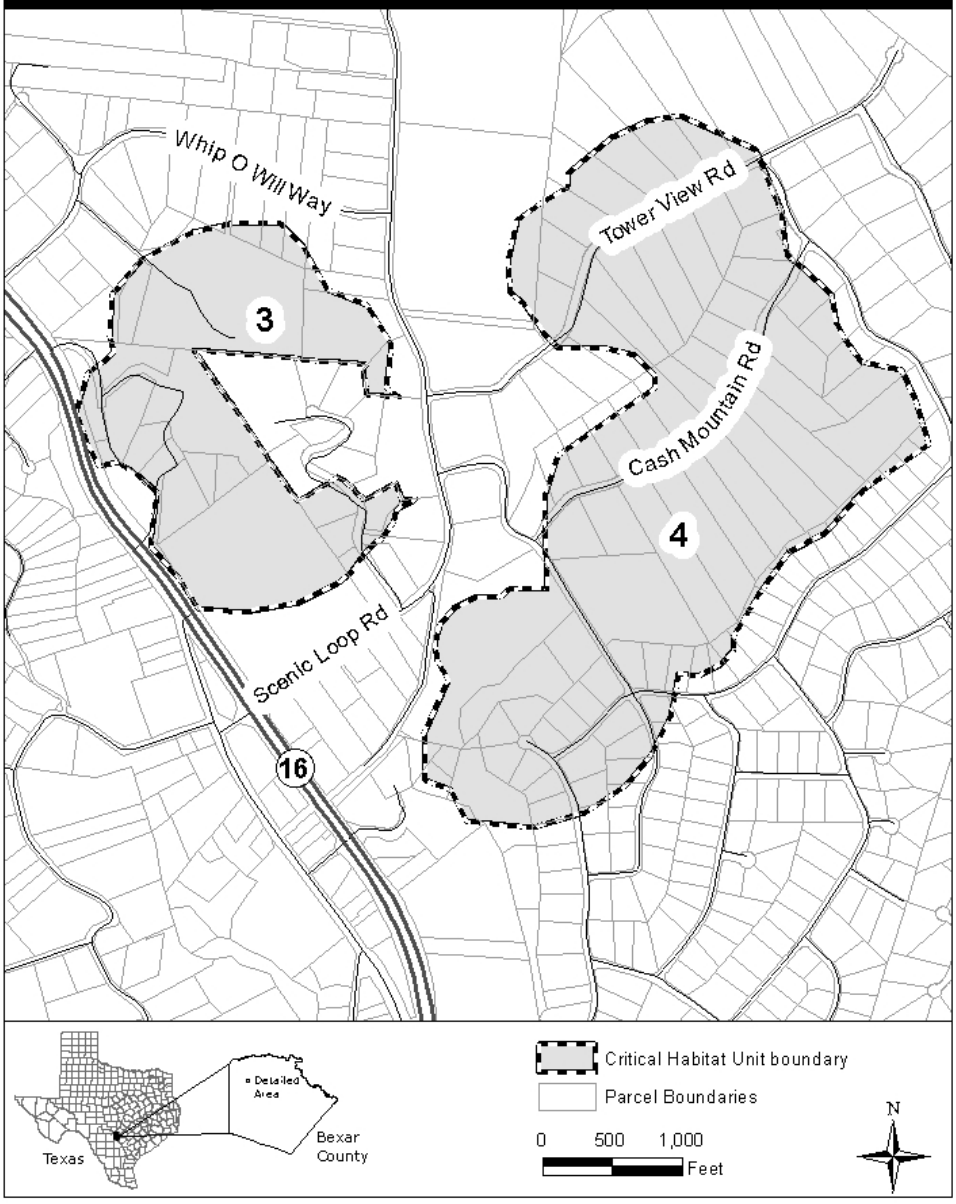

Map 3. Bexar County, Texas, Karst Invertebrates
Critical Habitat Unit 2
Chimney Creek Rd
High Bluff Rd
2
16
Detailed Area
Texas
Bexar County
Critical Habitat Unit boundary
Parcel Boundaries
0 500 1,000
Feet
N

(10) Unit 3: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 529906, 3272892; 529975, 3272934; 529993, 3272946; 529996, 3272945; 529998, 3272943; 530001, 3272942; 530004, 3272940; 530006, 3272938; 530007, 3272938; 530020, 3272926; 530026, 3272920; 530030, 3272917; 530032, 3272915; 530043, 3272905; 530045, 3272903; 530045, 3272902; 530046, 3272901; 530047, 3272900; 530049, 3272897; 530050, 3272895; 530050, 3272895; 530120, 3272932; 530134, 3272895; 530165, 3272898; 530159, 3272895; 530124, 3272875; 530112, 3272843; 530083, 3272805; 530081, 3272805; 530049, 3272774; 530020, 3272734; 529995, 3272714; 529909, 3272671; 529790, 3272649; 529688, 3272658; 529646, 3272723; 529589, 3272792; 529584, 3272798; 529600, 3272911; 529558, 3272947; 529514, 3272978; 529473, 3272968; 529445, 3273019; 529423, 3273086; 529449, 3273173; 529482, 3273196; 529507, 3273216; 529496, 3273253; 529504, 3273344; 529564, 3273416; 529676, 3273477; 529771, 3273499; 529870, 3273496; 529918, 3273447; 529970, 3273351; 530058, 3273320; 530110, 3273233; 530105, 3273183; 530099, 3273138; 530128, 3273120; 530096, 3273123; 530057, 3273126; 530055, 3273143; 530048, 3273180; 530057, 3273190; 530057, 3273190; 530049, 3273191; 530038, 3273192; 530002, 3273195; 529946, 3273200; 529916, 3273202; 529898, 3273204; 529897, 3273204; 529680, 3273221; 529753, 3273117; 529764, 3273100; 529836, 3272993; 529845, 3272981; 529906, 3272892.

(ii) Note: Map 4 of Units 3 and 4 follows:

Map 4. Bexar County, Texas, Karst Invertebrates Critical Habitat Units 3 and 4



(11) Unit 5: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 529536, 3275753; 529533, 3275931; 529585, 3276056; 529741, 3276191; 529927, 3276249; 530112, 3276208; 530275, 3276093; 530350, 3275987; 530318, 3275927; 530238, 3275838; 530169, 3275776; 530109, 3275735; 529970, 3275629; 529950, 3275603; 529936, 3275565; 529781, 3275523; 529719, 3275529; 529621, 3275548; 529566, 3275611; 529536, 3275753.

(ii) Note: Map 5 of Units 5, 6, and 17 follows:


Map 5. Bexar County, Texas, Karst Invertebrates
Critical Habitat Units 5, 6, and 17
Scenic Loop Rd
5
6
Madla Ranch Rd
Menchaca Rd
17
Low Rd
Scenic Loop Rd
Texas
Detailed Area
Bexar County
Critical Habitat Unit boundary
Parcel Boundaries
0 500 1,000
Feet
N

(12) Unit 6: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 531676, 3275515; 531639, 3275342; 531576, 3275302; 531483, 3275283; 531331, 3275337; 531242, 3275350; 531189, 3275346; 531193, 3275501; 531094, 3275501; 531094, 3275378; 531072, 3275398; 530953, 3275478; 530909, 3275521; 530851, 3275661; 530871, 3275702; 530981, 3275903; 531119, 3275970; 531335, 3275950; 531512, 3275851; 531615, 3275701; 531676, 3275515.

(ii) Note: Unit 6 is depicted on Map 5, provided at paragraph (10)(ii) of this entry.

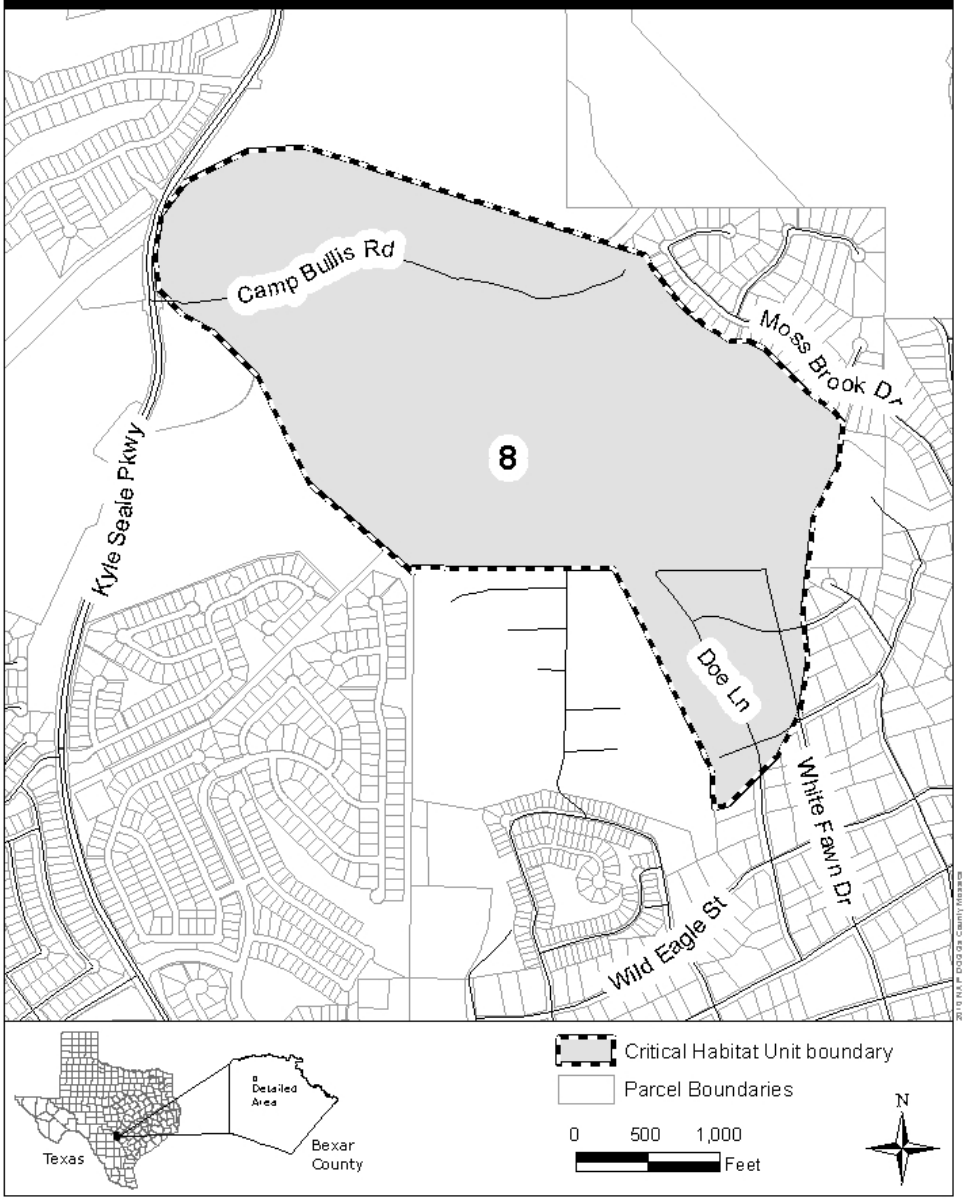
(13) Unit 8: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 535007, 3274657; 535063, 3274624; 535096, 3274626; 535133, 3274610; 535173, 3274570; 535222, 3274516; 535282, 3274478; 535302, 3274450; 535290, 3274359; 535238, 3274250; 535215, 3274045; 535226, 3273947; 535209, 3273836; 535160, 3273741; 535056, 3273640; 535027, 3273631; 535026, 3273654; 535022, 3273714; 535018, 3273721; 535013, 3273730; 534992, 3273775; 534988, 3273784; 534962, 3273838; 534962, 3273838; 534936, 3273892; 534909, 3273947; 534909, 3273947; 534883, 3274002; 534856, 3274057; 534856,

3274057; 534813, 3274142; 534708, 3274141; 534625, 3274140; 534519, 3274140; 534389, 3274145; 534389, 3274132; 534168, 3274322; 534058, 3274551; 533966, 3274645; 533893, 3274683; 533848, 3274736; 533839, 3274809; 533853, 3274895; 533905, 3274965; 534037, 3275030; 534156, 3275037; 534290, 3274997; 534292, 3274995; 534881, 3274809; 534894, 3274782; 534931, 3274737; 534962, 3274695; 535007, 3274657.

(ii) Note: Map 6 of Unit 8 follows:

Map 6. Bexar County, Texas, Karst Invertebrates Critical Habitat Unit 8

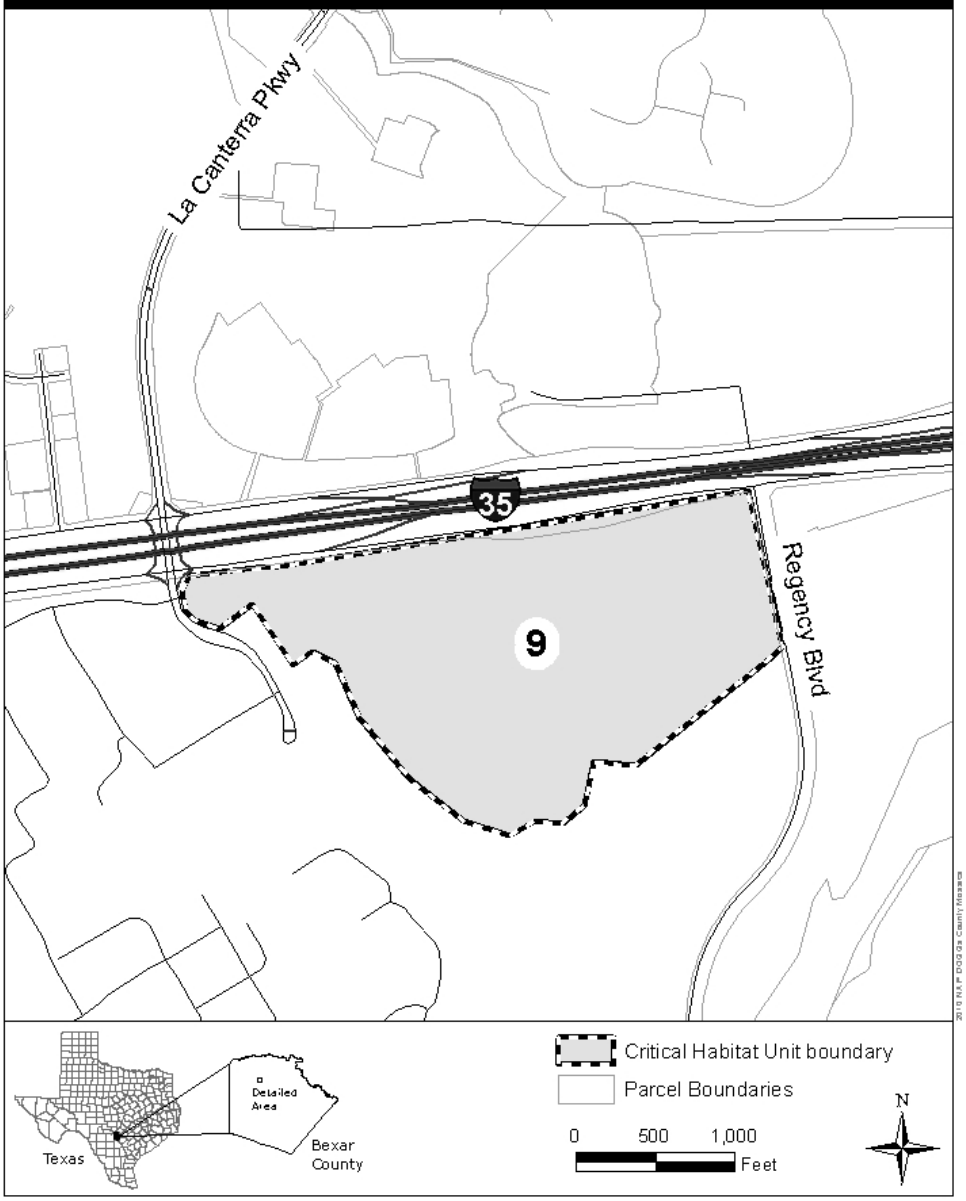


(14) Unit 9: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 536971, 3273194; 537058, 3273204; 537958, 3273349; 538025, 3273049; 538011, 3273033; 537743, 3272819; 537663, 3272828; 537645, 3272742; 537602, 3272707; 537551, 3272712; 537500, 3272684; 537412, 3272713; 537309, 3272793; 537213, 3272912; 537167, 3273017; 537121, 3273038; 537084, 3273013; 537008, 3273129; 536943, 3273082; 536897, 3273099; 536879, 3273117; 536871, 3273154; 536887, 3273183; 536971, 3273194.

(ii) Note: Map 7 of Unit 9 follows:

Map 7. Bexar County, Texas, Karst Invertebrates Critical Habitat Unit 9



(15) Unit 17: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 528980, 3275191; 529043, 3275247; 529120, 3275242; 529245, 3275219; 529327, 3275184; 529348, 3275167; 529492, 3275167; 529613, 3275113; 529800, 3275081; 529870, 3274953; 529819, 3274777; 529698, 3274627; 529486, 3274528; 529360, 3274615; 529335, 3274712; 529174, 3274840; 528968, 3274859; 528957, 3275049; 528980, 3275191.

(ii) Not including land within and bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 529490, 3275008; 529490, 3275006; 529490, 3275005; 529490, 3275003; 529490, 3275002; 529489, 3275001; 529489, 3274999; 529489, 3274998; 529489, 3274997; 529489, 3274995; 529489, 3274994; 529488, 3274993; 529488, 3274992; 529489, 3274991; 529489, 3274986; 529489, 3274983; 529489, 3274982; 529482, 3274919; 529329, 3274930; 529337, 3274993; 529337, 3274993; 529337, 3274994; 529336, 3274995; 529337, 3274997; 529337, 3274998; 529336, 3274999; 529336, 3275001; 529336, 3275002; 529336, 3275003; 529336, 3275005; 529336, 3275006; 529336, 3275008; 529336, 3275009; 529336, 3275010; 529336, 3275012; 529336, 3275013; 529336, 3275014; 529336, 3275016; 529337, 3275017; 529337, 3275018; 529337, 3275020; 529337, 3275021; 529337, 3275022; 529338, 3275023; 529338, 3275025; 529338, 3275026; 529339, 3275027; 529339, 3275029; 529339, 3275030; 529340, 3275031; 529340, 3275033; 529341, 3275034; 529341, 3275035; 529342, 3275036; 529342, 3275038;

529343, 3275039; 529343, 3275040; 529344, 3275041; 529344, 3275042; 529345, 3275044; 529346, 3275045; 529346, 3275046; 529347, 3275047; 529348, 3275048; 529348, 3275049; 529349, 3275050; 529350, 3275052; 529351, 3275053; 529351, 3275054; 529352, 3275055; 529353, 3275056; 529354, 3275057; 529355, 3275058; 529356, 3275059; 529357, 3275060; 529358, 3275061; 529359, 3275062; 529359, 3275063; 529360, 3275064; 529361, 3275065; 529362, 3275066; 529363, 3275066; 529364, 3275067; 529366, 3275068; 529367, 3275069; 529368, 3275070; 529369, 3275070; 529370, 3275071; 529371, 3275072; 529372, 3275073; 529373, 3275073; 529374, 3275074; 529376, 3275075; 529377, 3275075; 529378, 3275076; 529379, 3275077; 529380, 3275077; 529382, 3275078; 529383, 3275078; 529384, 3275079; 529385, 3275079; 529387, 3275080; 529388, 3275080; 529389, 3275081; 529390, 3275081; 529392, 3275081; 529393, 3275082; 529394, 3275082; 529396, 3275082; 529397, 3275083; 529398, 3275083; 529399, 3275083; 529401, 3275083; 529402, 3275084; 529403, 3275084; 529405, 3275084; 529406, 3275084; 529407, 3275084; 529409, 3275084; 529410, 3275084; 529412, 3275084; 529413, 3275084; 529414, 3275084; 529416, 3275084; 529417, 3275084; 529418, 3275084; 529420, 3275084; 529421, 3275084; 529422, 3275084; 529424, 3275084; 529425, 3275083; 529426, 3275083; 529428, 3275083; 529429, 3275083; 529430, 3275082; 529431, 3275082; 529433, 3275082; 529434, 3275081; 529435, 3275081; 529437, 3275081; 529438, 3275080; 529439, 3275080; 529440, 3275079; 529442, 3275079; 529443, 3275078; 529444, 3275078; 529445, 3275077; 529447, 3275077; 529448, 3275076; 529449, 3275075; 529450, 3275075; 529451, 3275074; 529452, 3275073; 529454, 3275073; 529455, 3275072; 529456, 3275071; 529457, 3275070; 529458, 3275070; 529459,

3275069; 529460, 3275068; 529461, 3275067; 529462, 3275066; 529463, 3275066; 529464, 3275065; 529465, 3275064; 529466, 3275063; 529467, 3275062; 529468, 3275061; 529469, 3275060; 529470, 3275059; 529471, 3275058; 529472, 3275057; 529473, 3275056; 529473, 3275055; 529474, 3275054; 529475, 3275053; 529476, 3275052; 529477, 3275050; 529477, 3275049; 529478, 3275048; 529479, 3275047; 529479, 3275046; 529480, 3275045; 529481, 3275044; 529481, 3275042; 529482, 3275041; 529482, 3275040; 529483, 3275039; 529484, 3275038; 529484, 3275036; 529485, 3275035; 529485, 3275034; 529486, 3275033; 529486, 3275031; 529486, 3275030; 529487, 3275029; 529487, 3275027; 529487, 3275026; 529488, 3275025; 529488, 3275023; 529488, 3275022; 529489, 3275021; 529489, 3275020; 529489, 3275018; 529489, 3275017; 529489, 3275016; 529489, 3275014; 529490, 3275013; 529490, 3275012; 529490, 3275010; 529490, 3275009; 529490, 3275008.

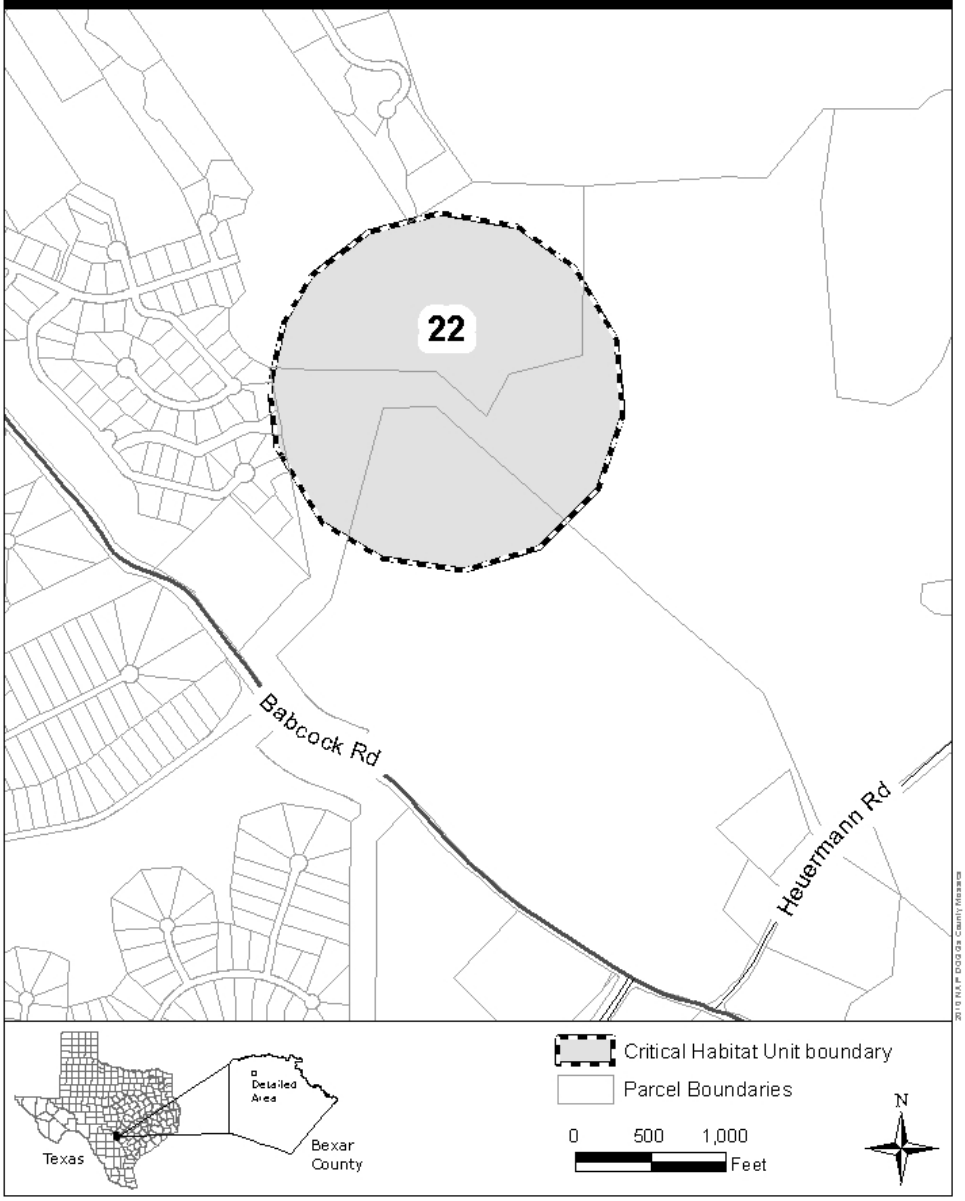
(iii) Note: Unit 17 is depicted on Map 5, provided at paragraph (11)(ii) of this entry.

(16) Unit 22: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 533735, 3278278; 533765, 3278416; 533821, 3278511; 533938, 3278599; 534084, 3278636; 534240, 3278610; 534356, 3278527; 534443, 3278380; 534457, 3278227; 534406, 3278079; 534287, 3277957; 534134, 3277909; 533964, 3277934; 533843, 3278004; 533749, 3278160; 533735, 3278278.

(ii) Note: Map 8 of Unit 22 follows:

Map 8. Bexar County, Texas, Karst Invertebrates Critical Habitat Unit 22



Robber Baron Cave Meshweaver (*Cicurina baronia*)

(1) Critical habitat for the Robber Baron Cave meshweaver in Bexar County, Texas, occurs in Units 20 and 25. Unit 20 is described as set forth, and depicted on Map 2 provided at paragraph (6)(ii) of the entry for the Cokendolpher Cave harvestman in this paragraph (g). Unit 25 is described in this entry and depicted on Map 3 in this entry. Units 20 and 25 are also depicted on Map 1 (index map) provided in paragraph (5) of the entry for the Cokendolpher Cave harvestman in this paragraph (g).

(2) The primary constituent elements of, and the statements regarding developed lands in, critical habitat for the Robber Baron Cave meshweaver are identical to those set forth in paragraphs (2) and (3) of the entry for the Cokendolpher Cave harvestman in this paragraph (g).

(3) Data layers defining this map unit were created using a geographic information system (GIS), which included cave locations, karst zone maps, roads, property boundaries, 2010 aerial photography, and USGS 7.5′ quadrangles. Points were placed on the GIS.

(4) Unit 20: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 552126, 3264361; 552287, 3264522; 552357,

3264610; 552436, 3264673; 552536, 3264710; 552654, 3264726; 552756, 3264714; 552840, 3264685; 552920, 3264644; 552991, 3264506; 553001, 3264408; 552930, 3264263; 552813, 3264165; 552683, 3264104; 552571, 3264018; 552485, 3263914; 552285, 3263659; 552175, 3263484; 552124, 3263435; 552081, 3263341; 551949, 3263214; 551826, 3263155; 551728, 3263159; 551639, 3263221; 551567, 3263343; 551569, 3263474; 551606, 3263569; 551704, 3263739; 551777, 3263863; 551969, 3264165; 552126, 3264361.

(ii) Note: Map 2 of Unit 20 is provided at paragraph (6)(ii) of the entry for the Cokendolpher Cave harvestman in this paragraph (g).

(5) Unit 25: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 549856, 3258720; 549779, 3258722; 549776, 3258797; 549750, 3258818; 549485, 3258818; 549451, 3258796; 549450, 3258759; 549391, 3258759; 549302, 3258907; 549288, 3259025; 549281, 3259323; 549294, 3259345; 549486, 3259471; 549700, 3259499; 549933, 3259412; 549943, 3259217; 549819, 3259100; 549840, 3259045; 549869, 3259019; 549861, 3258961; 549846, 3258934; 549846, 3258909; 549891, 3258888; 549961, 3258869; 549968, 3258839; 549972, 3258752; 549856, 3258720.

(ii) Note: Map 3 of Unit 25 follows:

Map 3. Bexar County, Texas, Karst Invertebrates Critical Habitat Unit 25

Government Canyon Bat Cave Spider (*Neoleptoneta microps*)

(1) Critical habitat for the Government Canyon Bat Cave spider in Bexar County, Texas, occurs in Unit 1b, as described at paragraph (4)(i) of the entry for the Government Canyon Bat Cave meshweaver in this paragraph (g). Unit 1b is also depicted on Map 1 (index map) provided at paragraph (5) of the entry for the Cokendolpher Cave harvestman in this paragraph (g), and on Map 2 (Unit 1b) provided at paragraph (4)(ii) of the entry for the Government Canyon Bat Cave meshweaver in this paragraph (g).

(2) The primary constituent elements of, and statements regarding developed lands in, critical habitat for the Government Canyon Bat Cave spider are identical to those set forth at paragraphs (2) and (3) of the entry for the Cokendolpher Cave harvestman in this paragraph (g).

(3) Data layers defining this map unit were created using a geographic information system (GIS), which included cave locations, karst zone maps, roads, property boundaries, 2010 aerial photography, and USGS 7.5′ quadrangles. Points were placed on the GIS.

(4) Unit 1b: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 522172, 3270656; 522202, 3270794; 522259,

3270889; 522375, 3270977; 522521, 3271014; 522677, 3270988; 522793, 3270905; 522880, 3270758; 522894, 3270605; 522843, 3270457; 522724, 3270335; 522571, 3270287; 522401, 3270312; 522280, 3270382; 522186, 3270538; 522172, 3270656.

(ii) Note: Map 2 of Unit 1b is provided at paragraph (4)(ii) in the entry for the Government Canyon Cave meshweaver in this paragraph (g).

* * * * *

(i) *Insects*.

* * * * *

Helotes Mold Beetle (*Batrisodes venyivi*)

(1) Critical habitat for the Helotes mold beetle in Bexar County, Texas, occurs in Units 1e, 3, and 5 as described in this entry and depicted on Maps 1 (index map), 2, 4, and 5 of this entry.

(2) The primary constituent elements of critical habitat for *Batrisodes venyivi* are:

(i) Karst-forming rock containing subterranean spaces (caves and connected mesocaverns) with stable temperatures, high humidities (near saturation), and suitable substrates (for example, spaces between and underneath rocks for foraging and

sheltering) that are free of contaminants; and

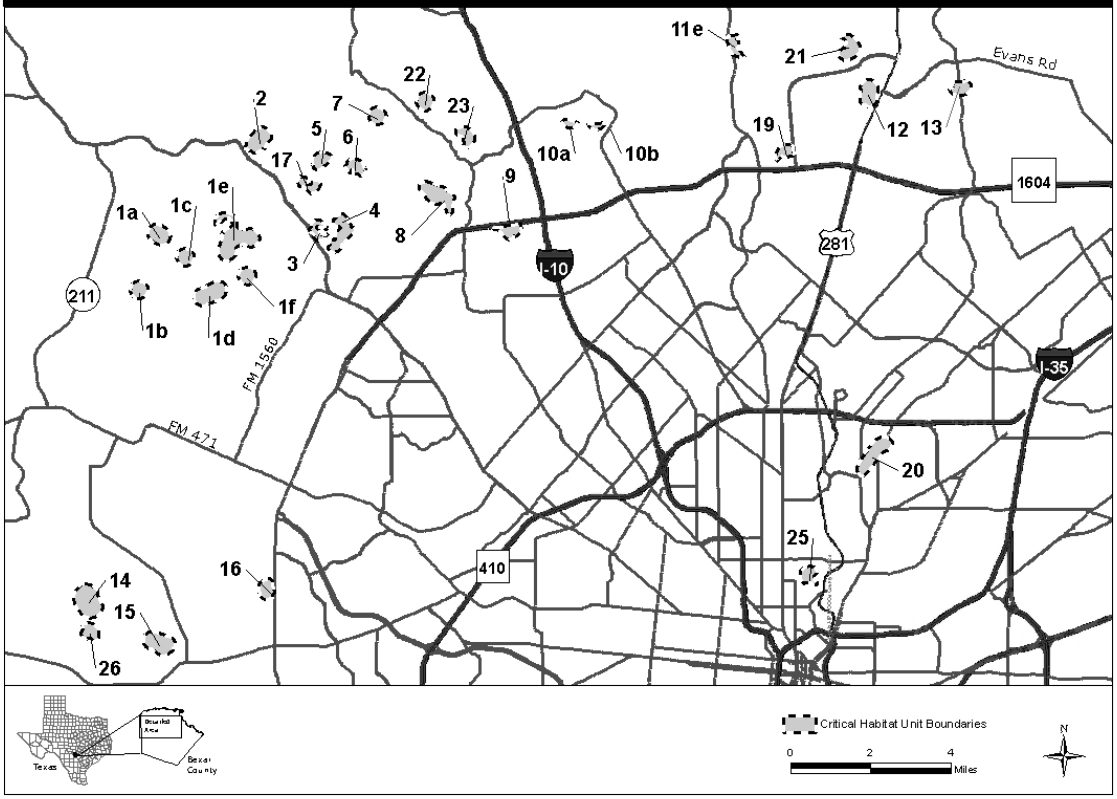
(ii) Surface and subsurface sources (such as plants and their roots, fruits, and leaves, and animal (e.g., cave cricket) eggs, feces, and carcasses) that provide nutrient input into the karst ecosystem.

(3) Developed lands that do not contain the subsurface primary constituent elements (see paragraph (2)(i) of this entry) and that existed on the effective date of this rule are not considered to be critical habitat.

(4) Data layers defining this map unit were created using a geographic information system (GIS), which included cave locations, karst zone maps, roads, property boundaries, 2010 aerial photography, and USGS 7.5′ quadrangles. Points were placed on the GIS.

(5) Index map of Bexar County invertebrates critical habitat units, Bexar County, Texas, follows:

Map 1. Bexar County, Texas, Karst Invertebrate Critical Habitat Units Overview



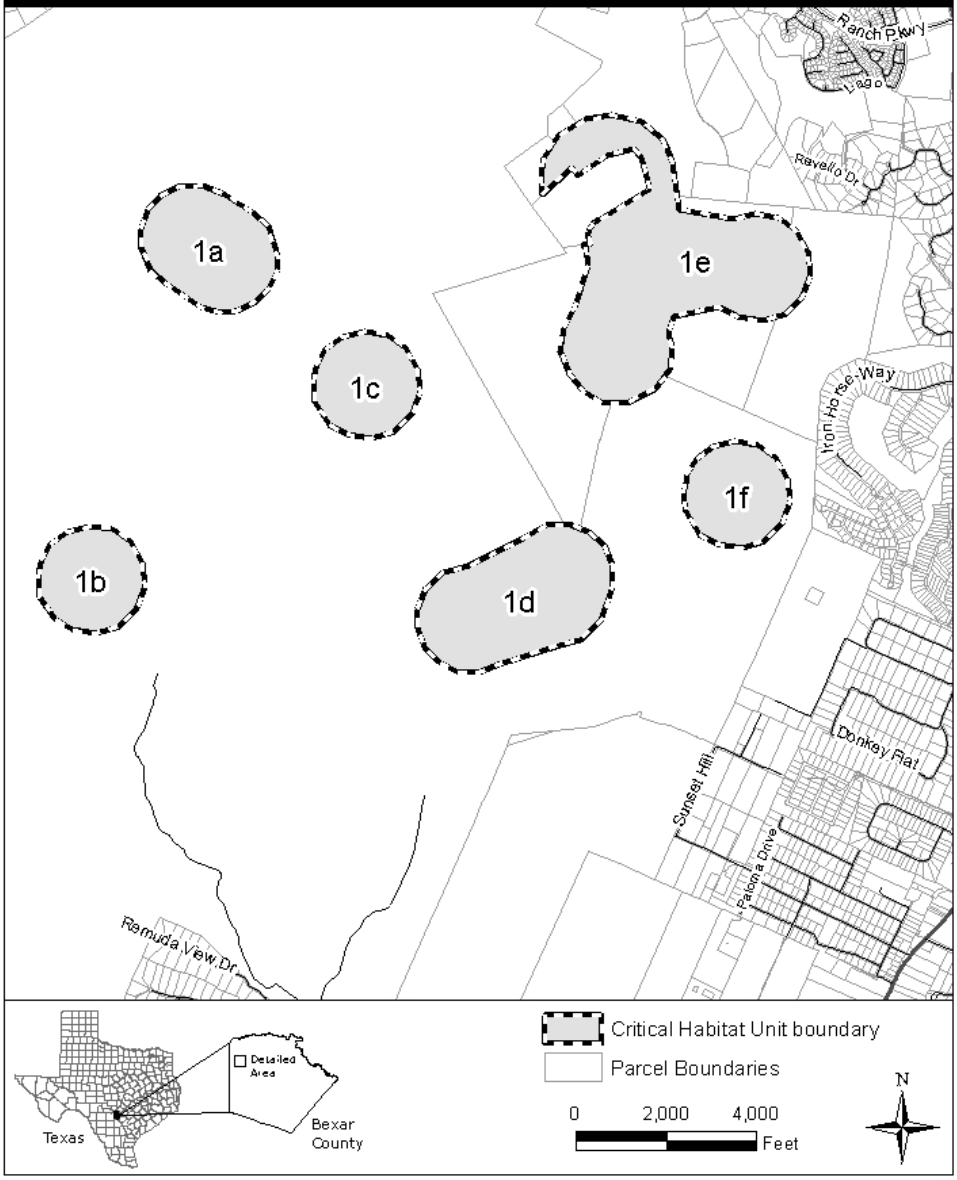
(6) Unit 1e: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 526403, 3273634; 526465, 3273472; 526487, 3273282; 526506, 3273157; 526879, 3273092; 527025, 3273129; 527180, 3273102; 527297, 3273019; 527383, 3272873; 527398, 3272719; 527346, 3272571; 527228, 3272449; 527075, 3272402; 526905, 3272426; 526783, 3272497; 526472, 3272434; 526435, 3272318; 526460, 3272223; 526443, 3272077; 526356, 3271945; 526158, 3271842; 525997, 3271842; 525854, 3271930; 525762, 3272044; 525703, 3272205; 525729, 3272352; 525802, 3272494; 525890, 3272776; 525876, 3272894; 525858, 3272918; 525912, 3272925; 525904, 3272945; 525903, 3272947; 525903, 3272949; 525902, 3272950; 525902, 3272952; 525901, 3272954; 525901, 3272956; 525900, 3272957; 525900, 3272959; 525899, 3272961; 525899, 3272963; 525898, 3272965; 525898, 3272966; 525898, 3272968; 525898, 3272970; 525897, 3272972; 525897, 3272974; 525897, 3272975; 525897, 3272977; 525897, 3272979; 525897, 3272981; 525897, 3272983; 525897, 3272985; 525897, 3272986; 525897, 3272988; 525897, 3272990; 525897, 3272992; 525897, 3272994; 525897, 3272996; 525897, 3272997; 525898, 3272999; 525898, 3273001; 525898, 3273003; 525899, 3273005; 525899, 3273007; 525899, 3273008; 525900, 3273010; 525900, 3273012; 525901, 3273014; 525901, 3273015; 525902, 3273017; 525902, 3273019; 525903, 3273021; 525904, 3273022; 525904, 3273024; 525905, 3273026; 525906, 3273027; 525906, 3273029; 525907, 3273031; 525908, 3273032; 525909, 3273034; 525910, 3273036; 525911, 3273037; 525912, 3273039; 525913, 3273040; 525914, 3273042; 525915, 3273044;

525916, 3273045; 525917, 3273047; 525918, 3273048; 525919, 3273049; 525920, 3273051; 525921, 3273052; 525923, 3273054; 525924, 3273055; 525925, 3273056; 525926, 3273058; 525928, 3273059; 525929, 3273060; 525930, 3273062; 525932, 3273063; 525933, 3273064; 525934, 3273065; 525936, 3273066; 525937, 3273068; 525939, 3273069; 525940, 3273070; 525942, 3273071; 525943, 3273072; 525945, 3273073; 525946, 3273074; 525948, 3273075; 525949, 3273076; 525951, 3273077; 525953, 3273078; 525954, 3273078; 525956, 3273079; 525958, 3273080; 526305, 3273293; 526303, 3273302; 526276, 3273412; 526276, 3273412; 526254, 3273499; 526202, 3273564; 526023, 3273523; 525917, 3273448; 525824, 3273382; 525786, 3273440; 525587, 3273259; 525586, 3273260; 525572, 3273363; 525594, 3273505; 525693, 3273659; 525876, 3273765; 526048, 3273798; 526253, 3273754; 526403, 3273634.

(ii) Note: Map 2 of Units 1a, 1b, 1c, 1d, 1e, and 1f follows:

Map 2. Bexar County, Texas, Karst Invertebrates Critical Habitat Units 1a, 1b, 1c, 1d, 1e, and 1f

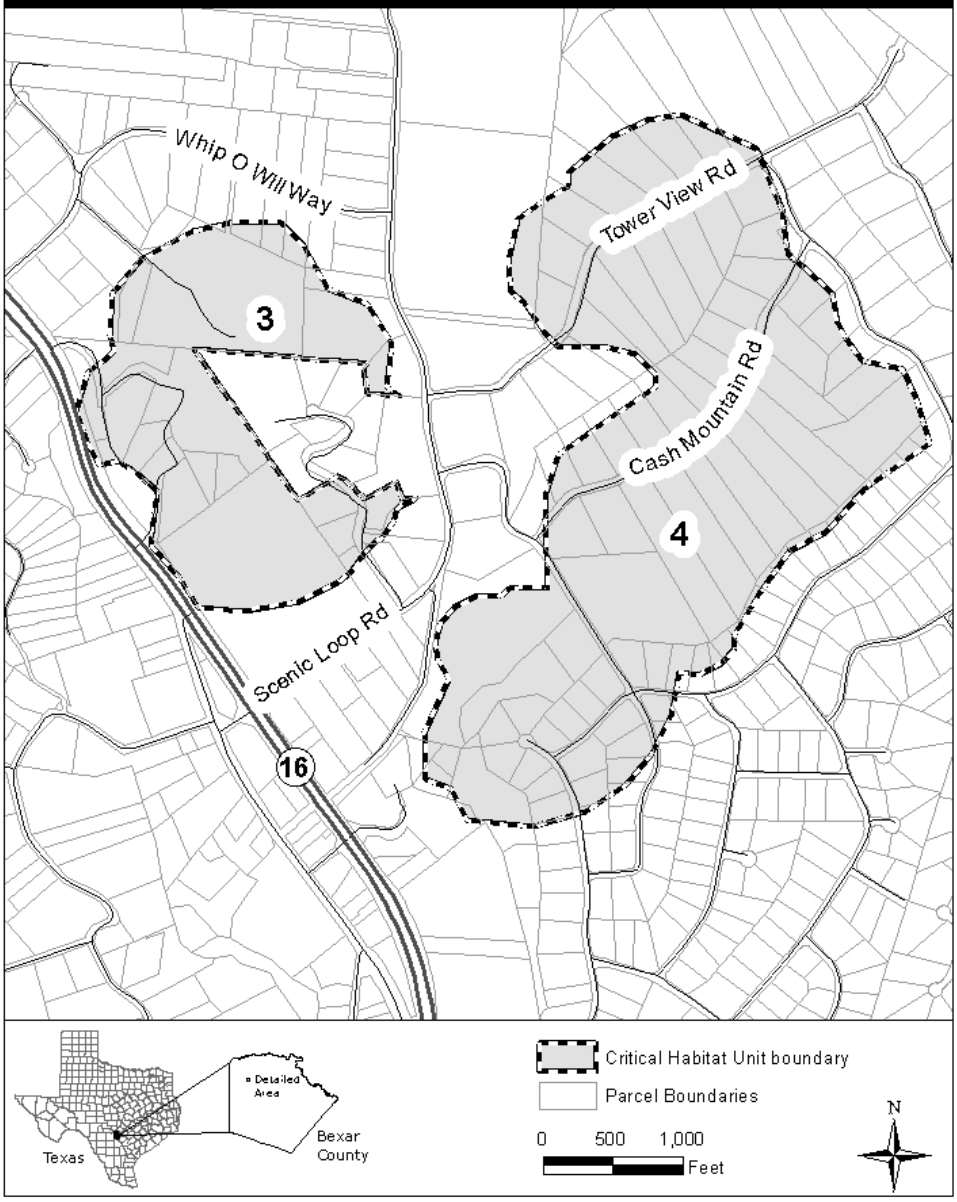


(7) Unit 3: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 529906, 3272892; 529975, 3272934; 529993, 3272946; 529996, 3272945; 529998, 3272943; 530001, 3272942; 530004, 3272940; 530006, 3272938; 530007, 3272938; 530020, 3272926; 530026, 3272920; 530030, 3272917; 530032, 3272915; 530043, 3272905; 530045, 3272903; 530045, 3272902; 530046, 3272901; 530047, 3272900; 530049, 3272897; 530050, 3272895; 530050, 3272895; 530120, 3272932; 530134, 3272895; 530165, 3272898; 530159, 3272895; 530124, 3272875; 530112, 3272843; 530083, 3272805; 530081, 3272805; 530049, 3272774; 530020, 3272734; 529995, 3272714; 529909, 3272671; 529790, 3272649; 529688, 3272658; 529646, 3272723; 529589, 3272792; 529584, 3272798; 529600, 3272911; 529558, 3272947; 529514, 3272978; 529473, 3272968; 529445, 3273019; 529423, 3273086; 529449, 3273173; 529482, 3273196; 529507, 3273216; 529496, 3273253; 529504, 3273344; 529564, 3273416; 529676, 3273477; 529771, 3273499; 529870, 3273496; 529918, 3273447; 529970, 3273351; 530058, 3273320; 530110, 3273233; 530105, 3273183; 530099, 3273138; 530128, 3273120; 530096, 3273123; 530057, 3273126; 530055, 3273143; 530048, 3273180; 530057, 3273190; 530057, 3273190; 530049, 3273191; 530038, 3273192; 530002, 3273195; 529946, 3273200; 529916, 3273202; 529898, 3273204; 529897, 3273204; 529680, 3273221; 529753, 3273117; 529764, 3273100; 529836, 3272993; 529845, 3272981; 529906, 3272892.

(ii) Note: Map 4 of Units 3 and 4 follows:

Map 4. Bexar County, Texas, Karst Invertebrates Critical Habitat Units 3 and 4



(8) Unit 5: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 529536, 3275753; 529533, 3275931; 529585, 3276056; 529741, 3276191; 529927, 3276249; 530112, 3276208; 530275, 3276093; 530350, 3275987; 530318, 3275927; 530238, 3275838; 530169, 3275776; 530109, 3275735; 529970, 3275629; 529950, 3275603; 529936, 3275565; 529781, 3275523; 529719, 3275529; 529621, 3275548; 529566, 3275611; 529536, 3275753.

(ii) Note: Map 5 of Units 5, 6, and 17 follows:


Map 5. Bexar County, Texas, Karst Invertebrates
Critical Habitat Units 5, 6, and 17
Scenic Loop Rd
5
6
Madla Ranch Rd
Menchaca Rd
17
Low Rd
Scenic Loop Rd
Texas
Detailed Area
Bexar County
Critical Habitat Unit boundary
Parcel Boundaries
0 500 1,000
Feet
N

Beetle (No Common Name) (*Rhadine exilis*)

(1) Critical habitat for the beetle (*Rhadine exilis*) in Bexar County, Texas, occurs in Units 1b, 1d, 1e, 2, 3, 4, 5, 6, 7, 8, 9, 11e, 12, 13, and 21, and is depicted on Maps 3, 6, 7, 8, 10, 11, 12, and 18 in this entry, and on Maps 2, 4, and 5, provided at paragraphs (6), (7), and (8) of the entry for the Helotes mold beetle in this paragraph (i). The units are also depicted on Map 1 (index map) provided in paragraph (5) of the entry for the Helotes mold beetle in this paragraph (i).

(2) Eight caves and their associated karst management areas established under the La Cantera Habitat Conservation Plan section 10(a)(1)(B) permit are adjacent to or within the boundaries of Units 1e, 3, 6, 8, and 17, but are not designated as critical habitat. These caves are Canyon Ranch Pit, Fat Man's Nightmare Cave, Scenic Overlook Cave and the surrounding approximately 75 ac (30 ha) adjacent to Unit 1e; Helotes Blowhole and Helotes Hilltop Caves and the surrounding approximately 25 ac (10 ha) adjacent to Unit 3; John Wagner Cave No. 3 and the surrounding approximately 4 ac (1.6 ha) adjacent to Unit 6; Hills and Dales Pit and the surrounding approximately 70 ac (28 ha) adjacent to Unit 8; and Madla's Cave and the surrounding approximately 5 ac (2 ha) within Unit 17.

(3) The primary constituent elements of, and the statements regarding developed lands in, critical habitat for *Rhadine exilis* are identical to those set forth at paragraphs (2) and (3) of the entry for the Helotes mold beetle in this paragraph (i).

(4) Data layers defining map units were created using a geographic information system (GIS), which included cave locations, karst zone maps, roads, property boundaries, 2010 aerial photography, and USGS 7.5' quadrangles. Points were placed on the GIS.

(5) Unit 1b: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 522172, 3270656; 522202, 3270794; 522259, 3270889; 522375, 3270977; 522521, 3271014; 522677, 3270988; 522793, 3270905; 522880, 3270758; 522894, 3270605; 522843, 3270457; 522724, 3270335; 522571, 3270287; 522401, 3270312; 522280, 3270382; 522186, 3270538; 522172, 3270656.

(ii) Note: Map 2 of Unit 1b is provided at paragraph (6)(ii) of the entry for the Helotes mold beetle in this paragraph (i).

(6) Unit 1d: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 524739, 3270323; 524739, 3270454; 524798, 3270590; 524917, 3270699; 525091, 3270744; 525462, 3270937; 525613, 3271016; 525757, 3271026; 525893, 3270977; 526000, 3270883; 526059, 3270741; 526062,

3270603; 525980, 3270370; 525836, 3270243; 525700, 3270206; 525289, 3270072; 525153, 3270020; 525016, 3270023; 524883, 3270092; 524788, 3270191; 524739, 3270323.

(ii) Note: Map 2 of Unit 1d is provided at paragraph (6)(ii) of the entry for the Helotes mold beetle in this paragraph (i).

(7) Unit 1e: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 526403, 3273634; 526465, 3273472; 526487, 3273282; 526506, 3273157; 526879, 3273092; 527025, 3273129; 527180, 3273102; 527297, 3273019; 527383, 3272873; 527398, 3272719; 527346, 3272571; 527228, 3272449; 527075, 3272402; 526905, 3272426; 526783, 3272497; 526472, 3272434; 526435, 3272318; 526460, 3272223; 526443, 3272077; 526356, 3271945; 526158, 3271842; 525997, 3271842; 525854, 3271930; 525762, 3272044; 525703, 3272205; 525729, 3272352; 525802, 3272494; 525890, 3272776; 525876, 3272894; 525858, 3272918; 525912, 3272925; 525904, 3272945; 525903, 3272947; 525903, 3272949; 525902, 3272950; 525902, 3272952; 525901, 3272954; 525901, 3272956; 525900, 3272957; 525900, 3272959; 525899, 3272961; 525899, 3272963; 525898, 3272965; 525898, 3272966; 525898, 3272968; 525898, 3272970; 525897, 3272972; 525897, 3272974; 525897, 3272975; 525897, 3272977; 525897, 3272979; 525897, 3272981; 525897, 3272983; 525897, 3272985; 525897, 3272986; 525897, 3272988; 525897,

3272990; 525897, 3272992; 525897, 3272994; 525897, 3272996; 525897, 3272997; 525898, 3272999; 525898, 3273001; 525898, 3273003; 525899, 3273005; 525899, 3273007; 525899, 3273008; 525900, 3273010; 525900, 3273012; 525901, 3273014; 525901, 3273015; 525902, 3273017; 525902, 3273019; 525903, 3273021; 525904, 3273022; 525904, 3273024; 525905, 3273026; 525906, 3273027; 525906, 3273029; 525907, 3273031; 525908, 3273032; 525909, 3273034; 525910, 3273036; 525911, 3273037; 525912, 3273039; 525913, 3273040; 525914, 3273042; 525915, 3273044; 525916, 3273045; 525917, 3273047; 525918, 3273048; 525919, 3273049; 525920, 3273051; 525921, 3273052; 525923, 3273054; 525924, 3273055; 525925, 3273056; 525926, 3273058; 525928, 3273059; 525929, 3273060; 525930, 3273062; 525932, 3273063; 525933, 3273064; 525934, 3273065; 525936, 3273066; 525937, 3273068; 525939, 3273069; 525940, 3273070; 525942, 3273071; 525943, 3273072; 525945, 3273073; 525946, 3273074; 525948, 3273075; 525949, 3273076; 525951, 3273077; 525953, 3273078; 525954, 3273078; 525956, 3273079; 525958, 3273080; 526305, 3273293; 526303, 3273302; 526276, 3273412; 526276, 3273412; 526254, 3273499; 526202, 3273564; 526023, 3273523; 525917, 3273448; 525824, 3273382; 525786, 3273440; 525587, 3273259; 525586, 3273260; 525572, 3273363; 525594, 3273505; 525693, 3273659; 525876, 3273765; 526048, 3273798; 526253, 3273754; 526403, 3273634.

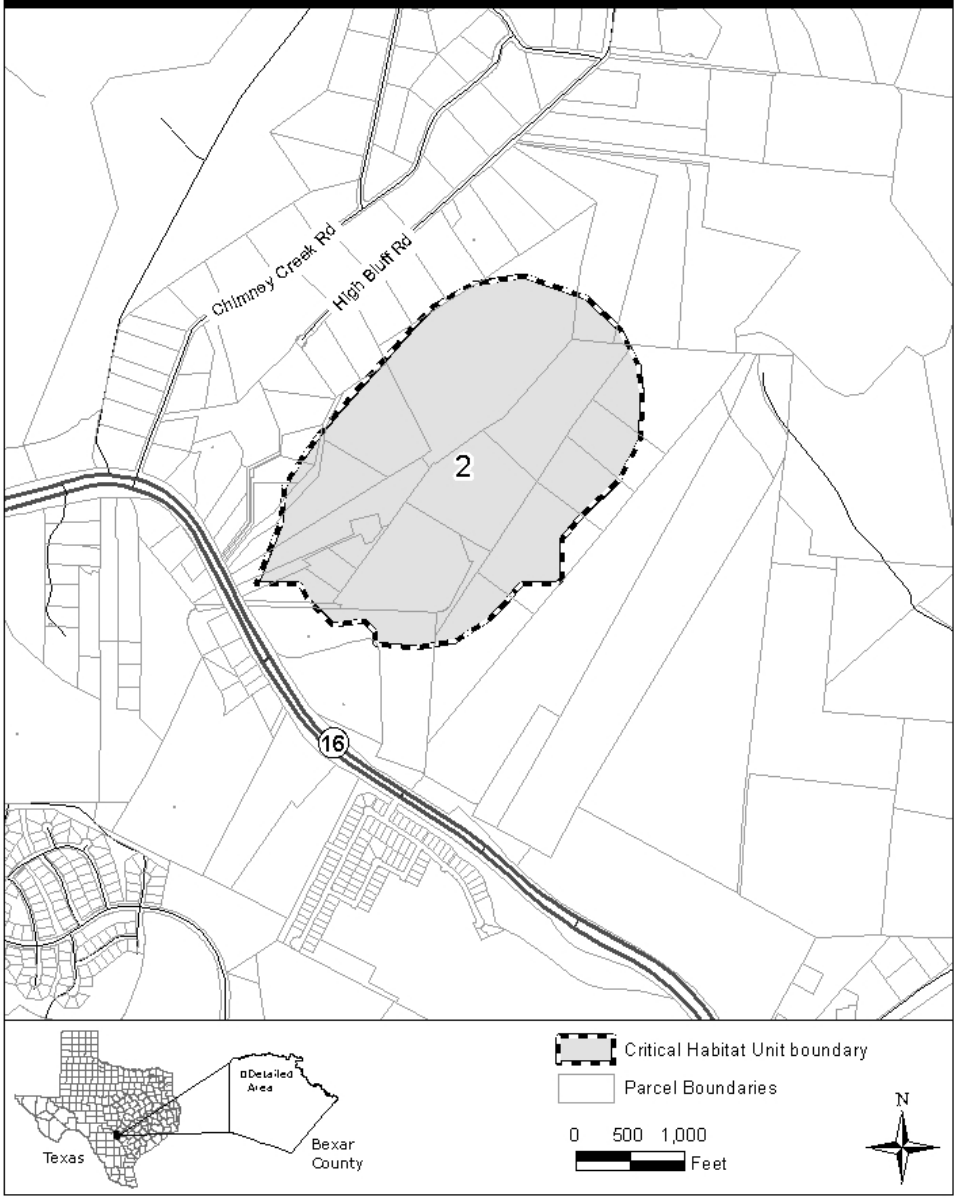
(ii) Note: Map 2 of Unit 1e is provided at paragraph (6)(ii) of the entry for the Helotes mold beetle in this paragraph (i).

(8) Unit 2: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 527508, 3276359; 527444, 3276287; 527343, 3276226; 527229, 3276204; 527117, 3276216; 527116, 3276253; 527085, 3276279; 527003, 3276270; 526933, 3276334; 526905, 3276386; 526783, 3276386; 526851, 3276555; 526850, 3276556; 526864, 3276662; 526908, 3276736; 526960, 3276801; 527010, 3276865; 527213, 3277098; 527281, 3277166; 527392, 3277230; 527536, 3277252; 527711, 3277190; 527805, 3277102; 527857, 3277003; 527869, 3276903; 527861, 3276787; 527803, 3276674; 527699, 3276578; 527644, 3276515; 527643, 3276397; 527630, 3276386; 527530, 3276384; 527508, 3276359.

(ii) Note: Map 3 of Unit 2 follows:

Map 3. Bexar County, Texas, Karst Invertebrates Critical Habitat Unit 2



(9) Unit 3: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 529583, 3272798; 529599, 3272911; 529557, 3272947; 529513, 3272978; 529473, 3272967; 529445, 3273019; 529422, 3273086; 529448, 3273172; 529481, 3273196; 529507, 3273216; 529496, 3273252; 529503, 3273343; 529563, 3273415; 529676, 3273477; 529771, 3273498; 529870, 3273496; 529917, 3273446; 529970, 3273350; 530057, 3273319; 530110, 3273232; 530104, 3273182; 530099, 3273138; 530147, 3273107; 530178, 3273102; 530182, 3273047; 530190, 3273009; 530208, 3272933; 530211, 3272920; 530159, 3272895; 530123, 3272875; 530112, 3272843; 530083, 3272804; 530081, 3272804; 530049, 3272773; 530020, 3272733; 529995, 3272713; 529909, 3272670; 529790, 3272648; 529687, 3272657; 529646, 3272722; 529588, 3272791; 529583, 3272798.

(ii) Note: Units 3 and 4 are depicted on Map 4, which is provided at paragraph (7)(ii) of the entry for the Helotes mold beetle in this paragraph (i).

(10) Unit 4: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 530856, 3272567; 530829, 3272537; 530779, 3272510; 530734, 3272516; 530717, 3272422; 530676, 3272341; 530620, 3272272;

530531, 3272213; 530417, 3272180; 530271, 3272194; 530240, 3272264; 530185, 3272283; 530180, 3272385; 530234, 3272501; 530209, 3272542; 530206, 3272578; 530217, 3272624; 530247, 3272658; 530294, 3272681; 530349, 3272685; 530367, 3272699; 530396, 3272702; 530448, 3272698; 530442, 3272851; 530447, 3272909; 530473, 3272992; 530595, 3273076; 530685, 3273138; 530683, 3273167; 530640, 3273210; 530578, 3273224; 530471, 3273226; 530441, 3273259; 530396, 3273326; 530369, 3273344; 530362, 3273412; 530385, 3273503; 530436, 3273540; 530493, 3273576; 530498, 3273608; 530591, 3273684; 530668, 3273720; 530738, 3273733; 530903, 3273657; 530959, 3273526; 530967, 3273452; 530973, 3273424; 531003, 3273401; 531069, 3273343; 531081, 3273277; 531099, 3273245; 531134, 3273194; 531222, 3273176; 531252, 3273111; 531282, 3273015; 531205, 3272961; 531135, 3272916; 531056, 3272822; 530975, 3272780; 530909, 3272689; 530855, 3272599; 530856, 3272567.

(ii) Note: Units 3 and 4 are depicted on Map 4, which is provided at paragraph (7)(ii) of the entry for the Helotes mold beetle in this paragraph (i).

(11) Unit 5: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 529536, 3275753; 529533, 3275931; 529585, 3276056; 529741, 3276191; 529927, 3276249; 530112, 3276208; 530275, 3276093; 530350, 3275987; 530318, 3275927; 530238, 3275838; 530169, 3275776; 530109,

3275735; 529970, 3275629; 529950, 3275603; 529936, 3275565; 529781, 3275523; 529719, 3275529; 529621, 3275548; 529566, 3275611; 529536, 3275753.

(ii) Note: Units 5, 6, and 17 are depicted on Map 5, which is provided at paragraph (8)(ii) of the entry for the Helotes mold beetle in this paragraph (i).

(12) Unit 6: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 531676, 3275515; 531639, 3275342; 531576, 3275302; 531483, 3275283; 531331, 3275337; 531242, 3275350; 531189, 3275346; 531193, 3275501; 531094, 3275501; 531094, 3275378; 531072, 3275398; 530953, 3275478; 530909, 3275521; 530851, 3275661; 530871, 3275702; 530981, 3275903; 531119, 3275970; 531335, 3275950; 531512, 3275851; 531615, 3275701; 531676, 3275515.

(ii) Note: Units 5 and 6 are depicted on Map 5, which is provided at paragraph (8)(ii) of the entry for the Helotes mold beetle in this paragraph (i).

(13) Unit 7: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 531798, 3277694; 531828, 3277832; 531885,

3277927; 532001, 3278016; 532148, 3278053; 532303, 3278026; 532420, 3277943; 532506, 3277797; 532520, 3277643; 532469, 3277495; 532351, 3277373; 532197, 3277326; 532028, 3277350; 531906, 3277421; 531812, 3277576; 531798, 3277694.

(ii) Note: Map 6 of Unit 7 follows:

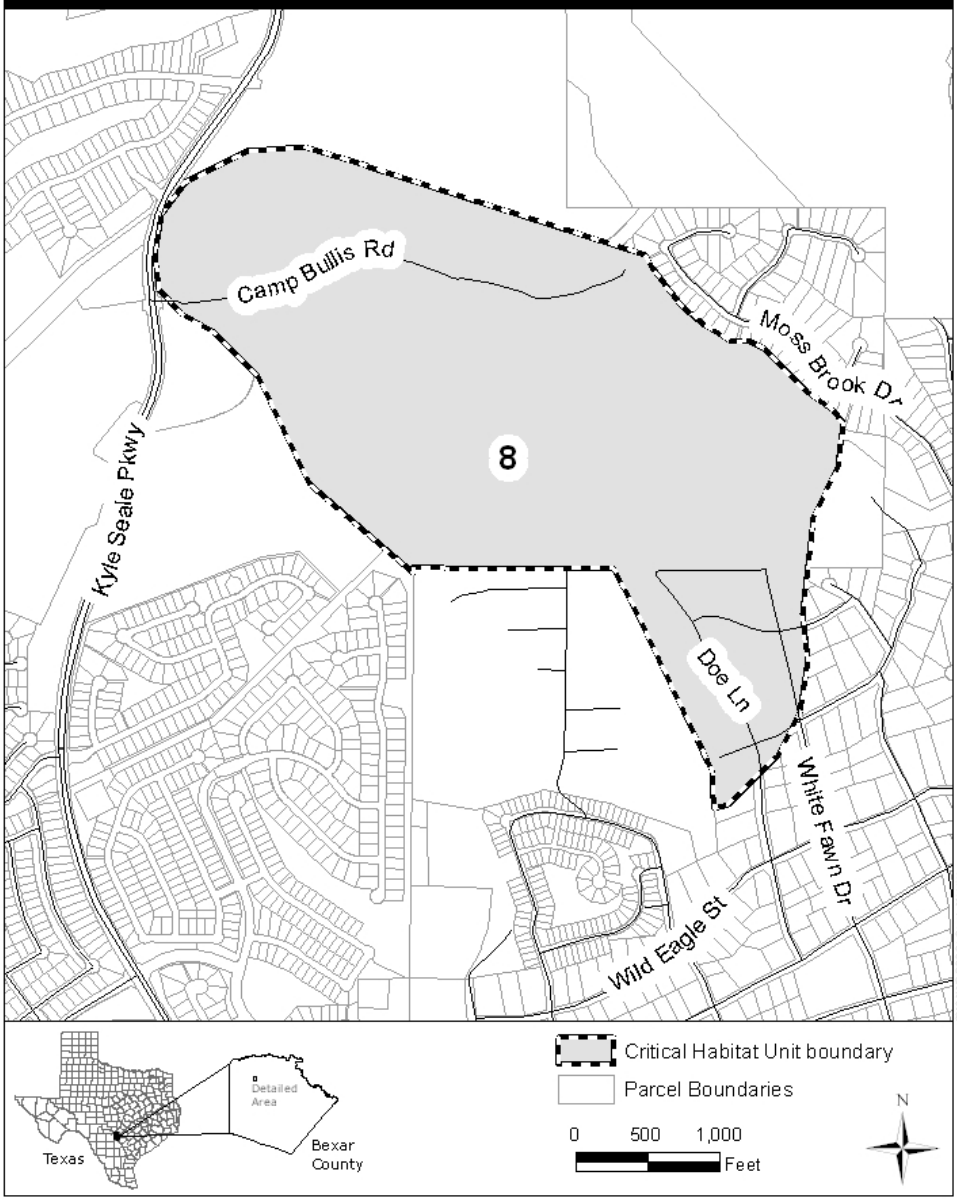

Map 6. Bexar County, Texas, Karst Invertebrates
Critical Habitat Unit 7
Babcock Rd
Scenic Loop Rd
Vista Verde
7
Texas
Detailed Area
Bexar County
Critical Habitat Unit boundary
Parcel Boundaries
0 500 1,000
Feet
N

(14) Unit 8: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 535007, 3274657; 535063, 3274624; 535096, 3274626; 535133, 3274610; 535173, 3274570; 535222, 3274516; 535282, 3274478; 535302, 3274450; 535290, 3274359; 535238, 3274250; 535215, 3274045; 535226, 3273947; 535209, 3273836; 535160, 3273741; 535056, 3273640; 535027, 3273631; 535026, 3273654; 535022, 3273714; 535018, 3273721; 535013, 3273730; 534992, 3273775; 534988, 3273784; 534962, 3273838; 534962, 3273838; 534936, 3273892; 534909, 3273947; 534909, 3273947; 534883, 3274002; 534856, 3274057; 534856, 3274057; 534813, 3274142; 534708, 3274141; 534625, 3274140; 534519, 3274140; 534389, 3274145; 534389, 3274132; 534168, 3274322; 534058, 3274551; 533966, 3274645; 533893, 3274683; 533848, 3274736; 533839, 3274809; 533853, 3274895; 533905, 3274965; 534037, 3275030; 534156, 3275037; 534290, 3274997; 534292, 3274995; 534881, 3274809; 534894, 3274782; 534931, 3274737; 534962, 3274695; 535007, 3274657.

(ii) Note: Map 7 of Unit 8 follows:

Map 7. Bexar County, Texas, Karst Invertebrates
Critical Habitat Unit 8

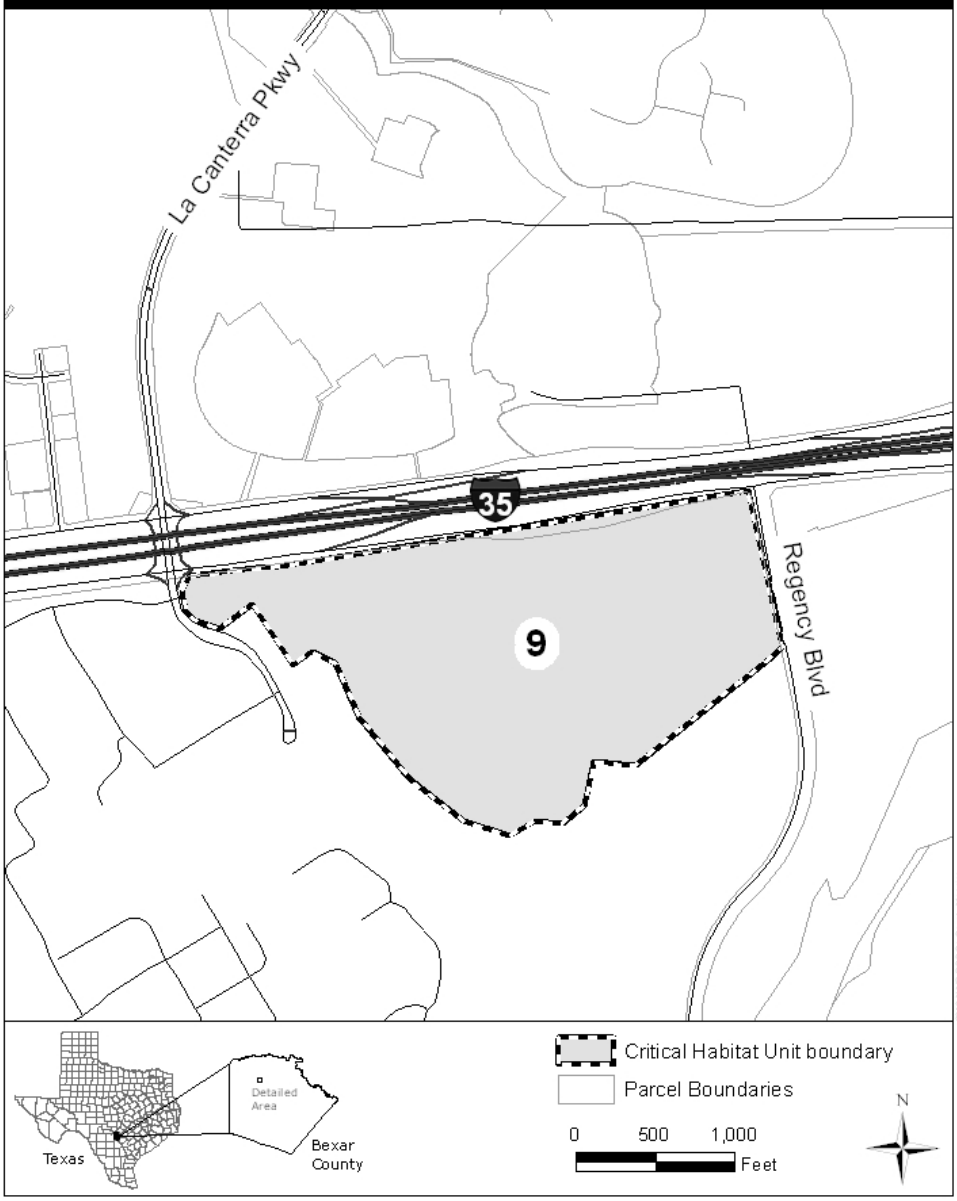


(15) Unit 9: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 536971, 3273194; 537058, 3273204; 537958, 3273349; 538025, 3273049; 538011, 3273033; 537743, 3272819; 537663, 3272828; 537645, 3272742; 537602, 3272707; 537551, 3272712; 537500, 3272684; 537412, 3272713; 537309, 3272793; 537213, 3272912; 537167, 3273017; 537121, 3273038; 537084, 3273013; 537008, 3273129; 536943, 3273082; 536897, 3273099; 536879, 3273117; 536871, 3273154; 536887, 3273183; 536971, 3273194.

(ii) Note: Map 8 of Unit 9 follows:

Map 8. Bexar County, Texas, Karst Invertebrates
Critical Habitat Unit 9

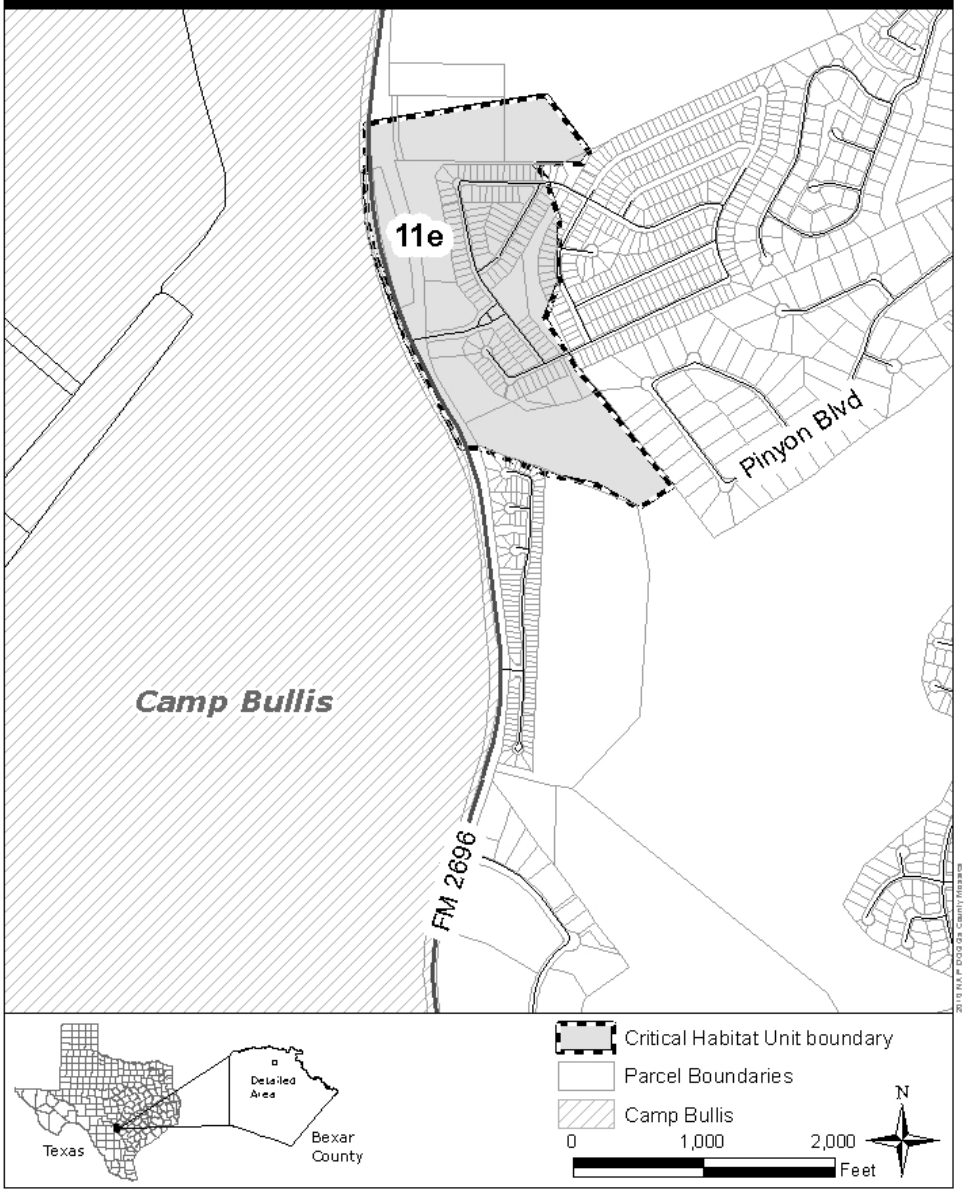


(16) Unit 11e: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 546476, 3280267; 546413, 3280397; 546339, 3280604; 546323, 3280672; 546318, 3280792; 546318, 3280907; 546549, 3280944; 546741, 3280974; 546842, 3280841; 546822, 3280811; 546712, 3280817; 546741, 3280776; 546771, 3280674; 546768, 3280534; 546737, 3280452; 546810, 3280337; 547036, 3280060; 546957, 3280008; 546861, 3280061; 546745, 3280087; 546590, 3280148; 546541, 3280150; 546515, 3280201; 546476, 3280267.

(ii) Note: Map 10 of Unit 11e follows:

Map 10. Bexar County, Texas, Karst Invertebrates
Critical Habitat Unit 11e

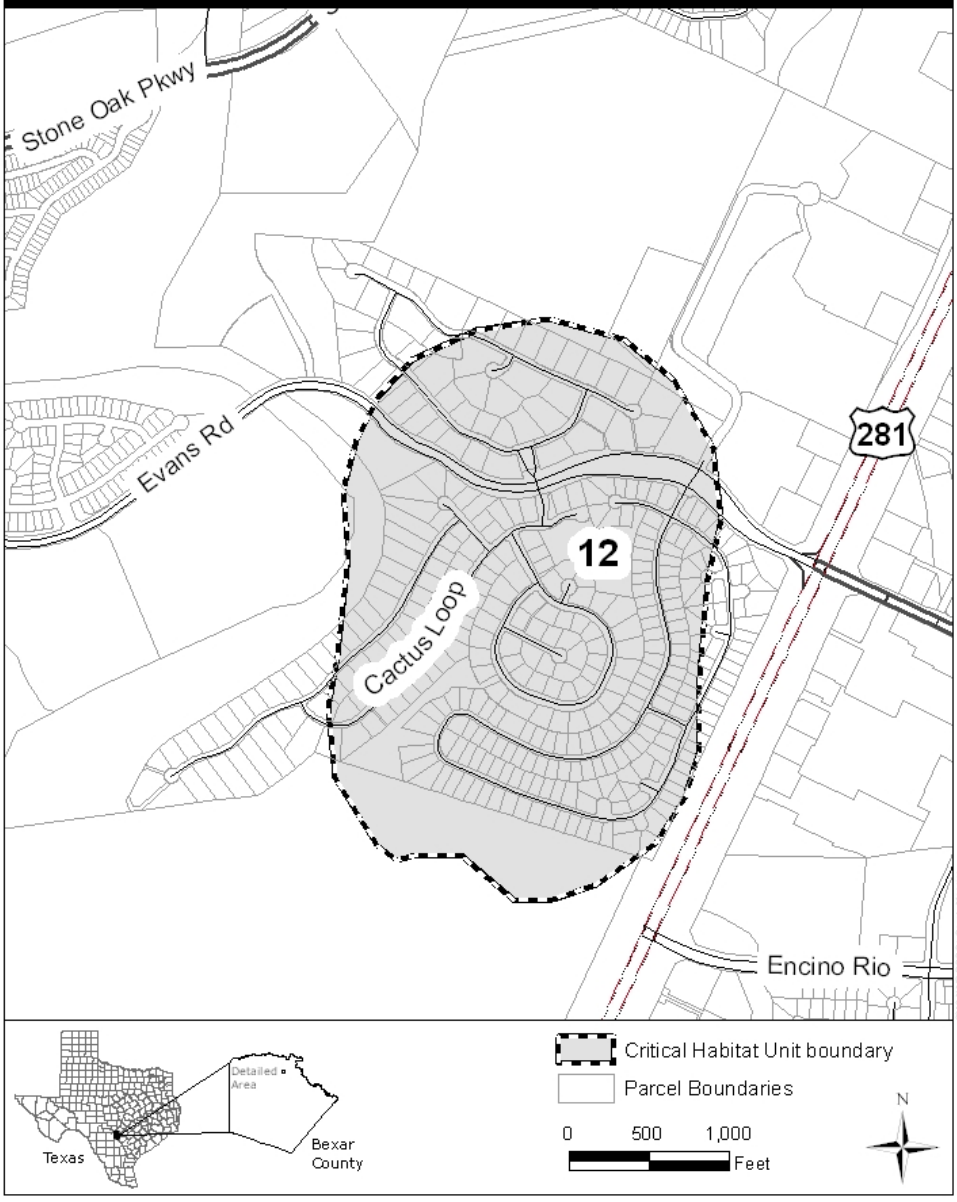


(17) Unit 12: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 552033, 3278053; 551928, 3278141; 551834, 3278139; 551807, 3278130; 551766, 3278160; 551687, 3278290; 551673, 3278422; 551692, 3278521; 551714, 3278718; 551702, 3278837; 551730, 3278937; 551771, 3279018; 551835, 3279091; 551959, 3279147; 552097, 3279168; 552239, 3279127; 552334, 3279050; 552409, 3278920; 552425, 3278785; 552399, 3278671; 552385, 3278483; 552385, 3278343; 552354, 3278249; 552300, 3278162; 552188, 3278085; 552105, 3278057; 552033, 3278053.

(ii) Note: Map 11 of Unit 12 follows:

Map 11. Bexar County, Texas, Karst Invertebrates Critical Habitat Unit 12

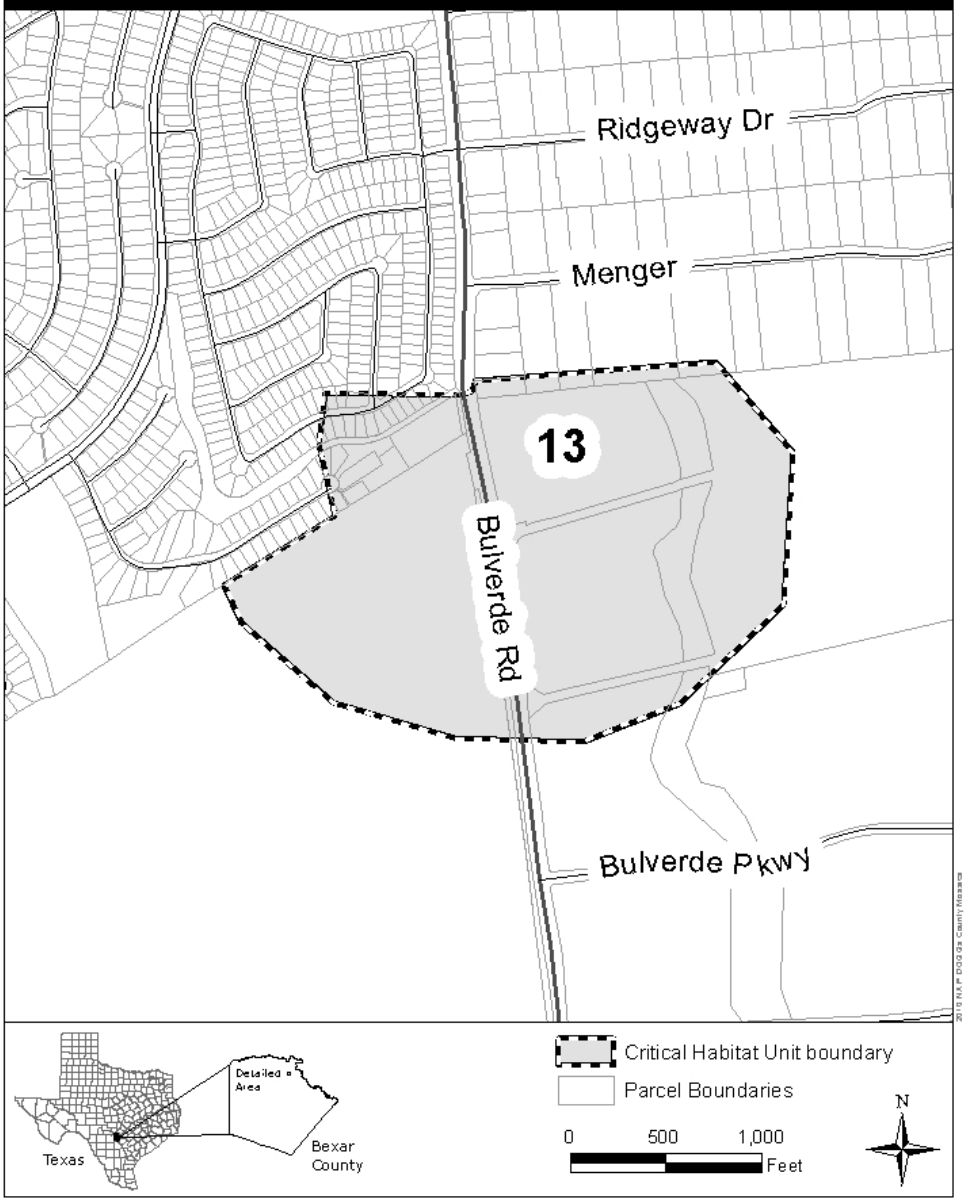


(18) Unit 13: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 555466, 3278873; 555441, 3278986; 555451, 3279067; 555662, 3279064; 555683, 3279069; 555689, 3279087; 556071, 3279116; 556194, 3278972; 556178, 3278730; 556012, 3278573; 555860, 3278513; 555655, 3278520; 555463, 3278576; 555318, 3278702; 555289, 3278762; 555466, 3278873.

(ii) Note: Map 12 of Unit 13 follows:

Map 12. Bexar County, Texas, Karst Invertebrates Critical Habitat Unit 13

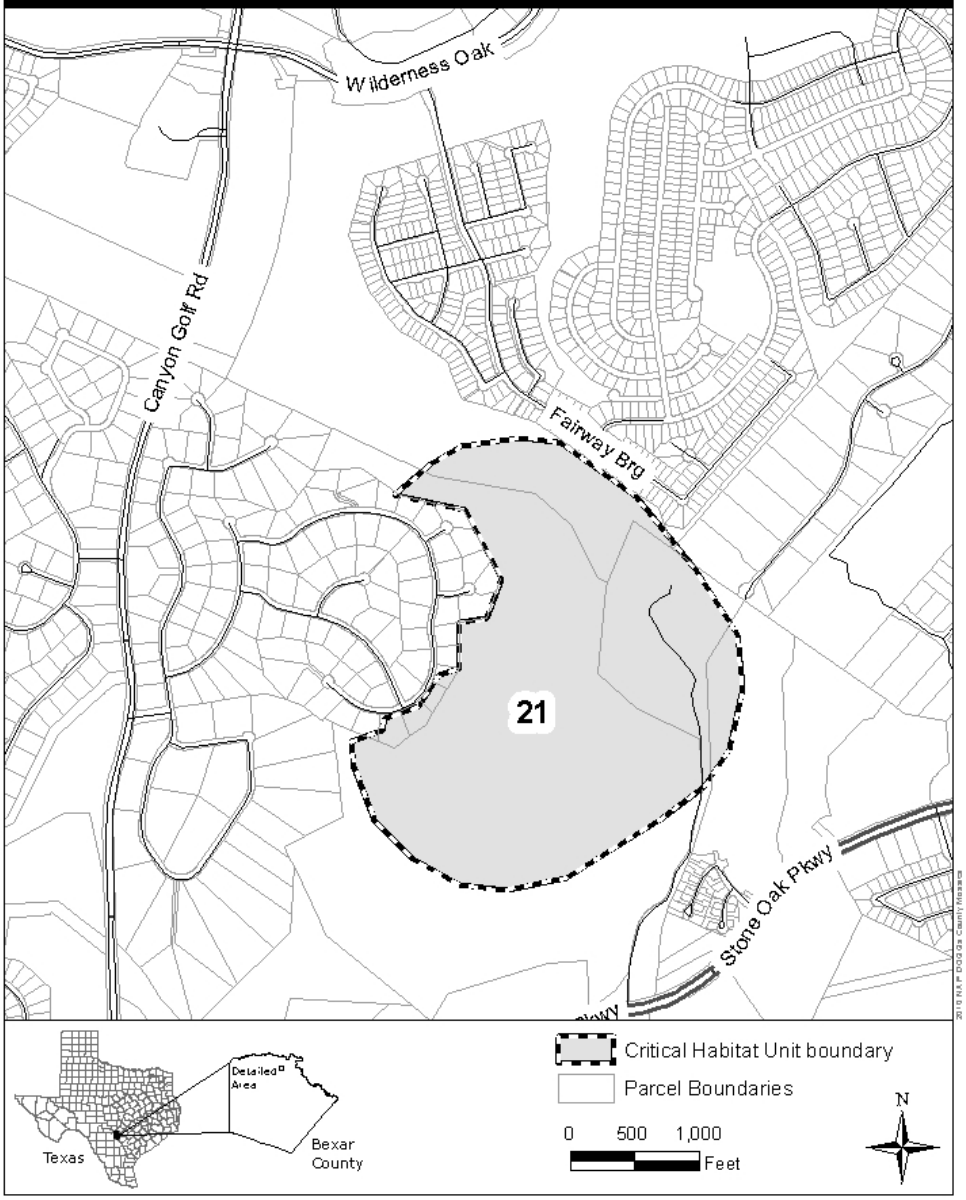


(19) Unit 21: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 533735, 3278278; 533765, 3278416; 533821, 3278511; 533938, 3278599; 534084, 3278636; 534240, 3278610; 534356, 3278527; 534443, 3278380; 534457, 3278227; 534406, 3278079; 534287, 3277957; 534134, 3277909; 533964, 3277934; 533843, 3278004; 533749, 3278160; 533735, 3278278.

(ii) Note: Map 18 of Unit 21 follows:

Map 18. Bexar County, Texas, Karst Invertebrates Critical Habitat Unit 21



Beetle (No Common Name) (*Rhadine infernalis*)

(1) Critical habitat for the beetle (*Rhadine infernalis*) in Bexar County, Texas, occurs in Units 1a, 1b, 1d, 1e, 1f, 2, 3, 4, 5, 6, 8, 10a, 10b, 14, 15, 16, 17, 19, 23, and 26. These units are depicted on Maps 9, 13, 14, 15, 16, 20, and 22 in this entry; on Maps 2, 4, and 5 provided at paragraphs (6)(ii), (7)(ii), and (8)(ii) of the entry for the Helotes mold beetle in this paragraph (i); and on Maps 3 and 7 provided at paragraphs (8)(ii) and (14)(ii) of the entry for the beetle (*Rhadine exilis*) in this paragraph (i). The units are also depicted on Map 1 (index map) provided in paragraph (5) of the entry for the Helotes mold beetle in this paragraph (i).

(2) Eight caves and their associated karst management areas established under the La Cantera Habitat Conservation Plan section 10(a)(1)(B) permit are adjacent to or within the boundaries of Units 1e, 3, 6, 8, and 17, but are not designated as critical habitat. These caves are Canyon Ranch Pit, Fat Man's Nightmare Cave, Scenic Overlook Cave and the surrounding approximately 75 ac (30 ha) adjacent to Unit 1e; Helotes Blowhole and Helotes Hilltop Caves and the surrounding approximately 25 ac (10 ha) adjacent to Unit 3; John Wagner Cave No. 3 and the surrounding approximately 4 ac (1.6 ha) adjacent to Unit 6; Hills and Dales Pit and the surrounding approximately 70 ac (28 ha) adjacent to Unit 8; and Madla's Cave and the surrounding approximately 5 ac (2 ha) within Unit 17.

(3) The primary constituent elements of, and the statements regarding developed

lands in, critical habitat for the *Rhadine exilis* are identical to those set forth at paragraphs (2) and (3) of the entry for the Helotes mold beetle in this paragraph (i).

(4) Data layers defining map units were created using a geographic information system (GIS), which included cave locations, karst zone maps, roads, property boundaries, 2010 aerial photography, and USGS 7.5' quadrangles. Points were placed on the GIS.

(5) Unit 1a: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 522870, 3272900; 522872, 3273024; 522919, 3273156; 523000, 3273241; 523124, 3273312; 523284, 3273323; 523438, 3273258; 523618, 3273132; 523729, 3273041; 523797, 3272836; 523784, 3272720; 523724, 3272603; 523633, 3272522; 523515, 3272464; 523406, 3272460; 523276, 3272492; 523041, 3272654; 522939, 3272737; 522870, 3272900.

(ii) Note: Map 2 of Unit 1a is provided at paragraph (6)(ii) of the entry for the Helotes mold beetle in this paragraph (i).

(6) Unit 1b: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of

1983 (NAD83) coordinates (E, N): 522172, 3270656; 522202, 3270794; 522259, 3270889; 522375, 3270977; 522521, 3271014; 522677, 3270988; 522793, 3270905; 522880, 3270758; 522894, 3270605; 522843, 3270457; 522724, 3270335; 522571, 3270287; 522401, 3270312; 522280, 3270382; 522186, 3270538; 522172, 3270656

(ii) Note: Map 2 of Unit 1b is provided at paragraph (6)(ii) of the entry for the Helotes mold beetle in this paragraph (i).

(7) Unit 1d: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 524739, 3270323; 524739, 3270454; 524798, 3270590; 524917, 3270699; 525091, 3270744; 525462, 3270937; 525613, 3271016; 525757, 3271026; 525893, 3270977; 526000, 3270883; 526059, 3270741; 526062, 3270603; 525980, 3270370; 525836, 3270243; 525700, 3270206; 525289, 3270072; 525153, 3270020; 525016, 3270023; 524883, 3270092; 524788, 3270191; 524739, 3270323.

(ii) Note: Map 2 of Unit 1d is provided at paragraph (6)(ii) of the entry for the Helotes mold beetle in this paragraph (i).

(8) Unit 1e: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 526878, 3273091; 527025, 3273128; 527180, 3273102; 527296, 3273019; 527383, 3272872; 527397, 3272719; 527346, 3272571; 527228, 3272449; 527074, 3272401; 526905, 3272426; 526783, 3272496; 526471, 3272434; 526435, 3272317; 526459, 3272223; 526443, 3272076; 526355, 3271944; 526157, 3271842; 525996, 3271842; 525853, 3271930; 525762, 3272043; 525703, 3272205; 525729, 3272351; 525802, 3272494; 525890, 3272776; 525875, 3272893; 525758, 3273054; 525692, 3273095; 525586, 3273259; 525571, 3273362; 525593, 3273505; 525692, 3273659; 525875, 3273765; 526047, 3273798; 526252, 3273754; 526403, 3273633; 526465, 3273472; 526487, 3273281; 526505, 3273157; 526878, 3273091.

(ii) Note: Map 2 of Unit 1e is provided at paragraph (6)(ii) of the entry for the Helotes mold beetle in this paragraph (i).

(9) Unit 1f: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 526537, 3271231; 526567, 3271369; 526624, 3271464; 526740, 3271552; 526887, 3271589; 527042, 3271563; 527159, 3271480; 527245, 3271333; 527259, 3271180; 527208, 3271032; 527090, 3270910; 526936, 3270862; 526767, 3270887; 526645, 3270958; 526552, 3271113; 526537, 3271231.

(ii) Note: Map 2 of Unit 1f is provided at paragraph (6)(ii) of the entry for the Helotes mold beetle in this paragraph (i).

(10) Unit 2: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 527508, 3276359; 527444, 3276287; 527343, 3276226; 527229, 3276204; 527117, 3276216; 527116, 3276253; 527085, 3276279; 527003, 3276270; 526933, 3276334; 526905, 3276386; 526783, 3276386; 526851, 3276555; 526850, 3276556; 526864, 3276662; 526908, 3276736; 526960, 3276801; 527010, 3276865; 527213, 3277098; 527281, 3277166; 527392, 3277230; 527536, 3277252; 527711, 3277190; 527805, 3277102; 527857, 3277003; 527869, 3276903; 527861, 3276787; 527803, 3276674; 527699, 3276578; 527644, 3276515; 527643, 3276397; 527630, 3276386; 527530, 3276384; 527508, 3276359.

(ii) Note: Map 3 of Unit 2 is provided at paragraph (8)(ii) of the entry for the beetle (*Rhadine exilis*) in this paragraph (i).

(11) Unit 3: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 529583, 3272798; 529599, 3272911; 529557, 3272947; 529513, 3272978; 529473, 3272967; 529445, 3273019; 529422, 3273086;

529448, 3273172; 529481, 3273196; 529507, 3273216; 529496, 3273252; 529503, 3273343; 529563, 3273415; 529676, 3273477; 529771, 3273498; 529870, 3273496; 529917, 3273446; 529970, 3273350; 530057, 3273319; 530110, 3273232; 530104, 3273182; 530099, 3273138; 530147, 3273107; 530178, 3273102; 530182, 3273047; 530190, 3273009; 530208, 3272933; 530211, 3272920; 530159, 3272895; 530123, 3272875; 530112, 3272843; 530083, 3272804; 530081, 3272804; 530049, 3272773; 530020, 3272733; 529995, 3272713; 529909, 3272670; 529790, 3272648; 529687, 3272657; 529646, 3272722; 529588, 3272791; 529583, 3272798.

(ii) Note: Map 4 of Unit 3 is provided at paragraph (7)(ii) of the entry for the Helotes mold beetle in this paragraph (i).

(12) Unit 4: Bexar County, Texas

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 530856, 3272567; 530829, 3272537; 530779, 3272510; 530734, 3272516; 530717, 3272422; 530676, 3272341; 530620, 3272272; 530531, 3272213; 530417, 3272180; 530271, 3272194; 530240, 3272264; 530185, 3272283; 530180, 3272385; 530234, 3272501; 530209, 3272542; 530206, 3272578; 530217, 3272624; 530247, 3272658; 530294, 3272681; 530349, 3272685; 530367, 3272699; 530396, 3272702; 530448, 3272698; 530442, 3272851; 530447, 3272909; 530473, 3272992; 530595, 3273076; 530685, 3273138; 530683, 3273167; 530640, 3273210; 530578, 3273224; 530471, 3273226; 530441, 3273259; 530396, 3273326;

530369, 3273344; 530362, 3273412; 530385, 3273503; 530436, 3273540; 530493, 3273576; 530498, 3273608; 530591, 3273684; 530668, 3273720; 530738, 3273733; 530903, 3273657; 530959, 3273526; 530967, 3273452; 530973, 3273424; 531003, 3273401; 531069, 3273343; 531081, 3273277; 531099, 3273245; 531134, 3273194; 531222, 3273176; 531252, 3273111; 531282, 3273015; 531205, 3272961; 531135, 3272916; 531056, 3272822; 530975, 3272780; 530909, 3272689; 530855, 3272599; 530856, 3272567.

(ii) Note: Map 4 of Unit 4 is provided at paragraph (7)(ii) of the entry for the Helotes mold beetle in this paragraph (i).

(13) Unit 5: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 529536, 3275753; 529533, 3275931; 529585, 3276056; 529741, 3276191; 529927, 3276249; 530112, 3276208; 530275, 3276093; 530350, 3275987; 530318, 3275927; 530238, 3275838; 530169, 3275776; 530109, 3275735; 529970, 3275629; 529950, 3275603; 529936, 3275565; 529781, 3275523; 529719, 3275529; 529621, 3275548; 529566, 3275611; 529536, 3275753.

(ii) Note: Map 5 of Unit 5 is provided at paragraph (8)(ii) of the entry for the Helotes mold beetle in this paragraph (i).

(14) Unit 6: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 531676, 3275515; 531639, 3275342; 531576, 3275302; 531483, 3275283; 531331, 3275337; 531242, 3275350; 531189, 3275346; 531193, 3275501; 531094, 3275501; 531094, 3275378; 531072, 3275398; 530953, 3275478; 530909, 3275521; 530851, 3275661; 530871, 3275702; 530981, 3275903; 531119, 3275970; 531335, 3275950; 531512, 3275851; 531615, 3275701; 531676, 3275515.

(ii) Note: Map 5 of Unit 6 is provided at paragraph (8)(ii) of the entry for the Helotes mold beetle in this paragraph (i).

(15) Unit 8: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 535007, 3274657; 535063, 3274624; 535096, 3274626; 535133, 3274610; 535173, 3274570; 535222, 3274516; 535282, 3274478; 535302, 3274450; 535290, 3274359; 535238, 3274250; 535215, 3274045; 535226, 3273947; 535209, 3273836; 535160, 3273741; 535056, 3273640; 535027, 3273631; 535026, 3273654; 535022, 3273714; 535018, 3273721; 535013, 3273730; 534992, 3273775; 534988, 3273784; 534962, 3273838; 534962, 3273838; 534936, 3273892; 534909, 3273947; 534909, 3273947; 534883, 3274002; 534856, 3274057; 534856,

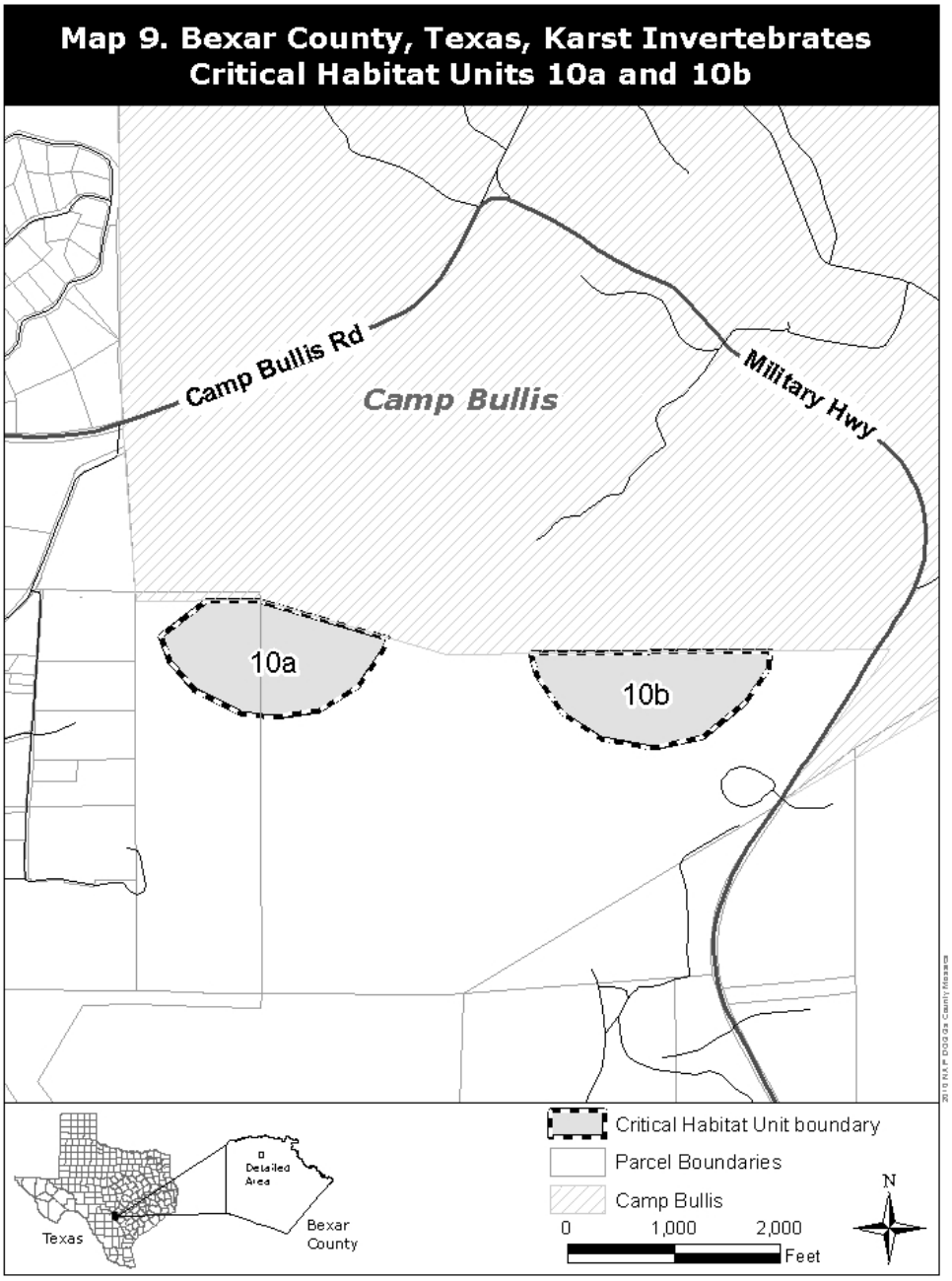
3274057; 534813, 3274142; 534708, 3274141; 534625, 3274140; 534519, 3274140; 534389, 3274145; 534389, 3274132; 534168, 3274322; 534058, 3274551; 533966, 3274645; 533893, 3274683; 533848, 3274736; 533839, 3274809; 533853, 3274895; 533905, 3274965; 534037, 3275030; 534156, 3275037; 534290, 3274997; 534292, 3274995; 534881, 3274809; 534894, 3274782; 534931, 3274737; 534962, 3274695; 535007, 3274657.

(ii) Note: Map 7 of Unit 8 is provided at paragraph (14)(ii) of the entry for the beetle (*Rhadine exilis*) in this paragraph (i).

(16) Unit 10a: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 540276, 3277443; 540255, 3277399; 540189, 3277302; 540076, 3277233; 539945, 3277214; 539851, 3277226; 539717, 3277295; 539645, 3277377; 539617, 3277449; 539650, 3277471; 539750, 3277551; 539905, 3277551; 540276, 3277443.

(ii) Note: Map 9 of Units 10a and 10b follows:


Map 9. Bexar County, Texas, Karst Invertebrates
Critical Habitat Units 10a and 10b
Camp Bullis Rd
Military Hwy
Camp Bullis
10a
10b
Texas
Detailed Area
Bexar County
Critical Habitat Unit boundary
Parcel Boundaries
Camp Bullis
0
1,000
2,000
Feet
N

(17) Unit 10b: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 540684, 3277399; 541377, 3277406; 541368, 3277355; 541302, 3277258; 541180, 3277158; 541037, 3277126; 540890, 3277155; 540777, 3277226; 540702, 3277336; 540684, 3277399.

(ii) Note: Map 9 of Unit 10b is provided at paragraph (16)(ii) of this entry.

(18) Unit 14: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 520081, 3258642; 520207, 3258774; 520339, 3258764; 520542, 3258723; 520744, 3258618; 520822, 3258502; 520847, 3258327; 521047, 3257873; 521048, 3257838; 521005, 3257658; 520885, 3257494; 520710, 3257405; 520503, 3257379; 520290, 3257468; 520158, 3257609; 520006, 3257810; 519891, 3257965; 519848, 3258183; 519911, 3258441; 520081, 3258642.

(ii) Note: Map 13 of Unit 14 follows:

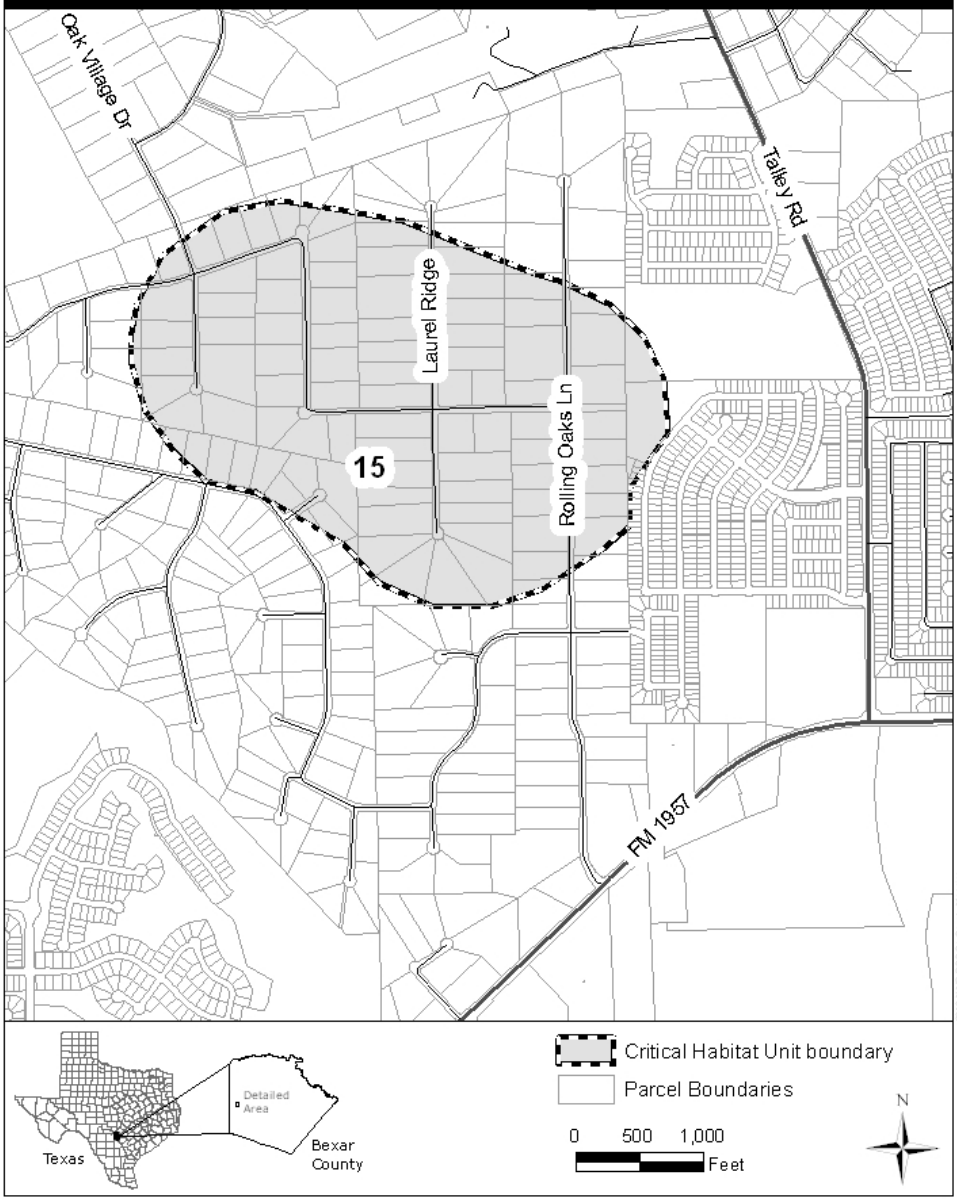
Map 13. Bexar County, Texas, Karst Invertebrates Critical Habitat Unit 14

(19) Unit 15: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 522689, 3256455; 522687, 3256517; 522703, 3256601; 522765, 3256718; 522911, 3256823; 523046, 3256851; 523177, 3256830; 523344, 3256801; 523479, 3256747; 523658, 3256674; 523725, 3256656; 523834, 3256603; 523918, 3256523; 523969, 3256419; 523978, 3256293; 523885, 3256159; 523885, 3256069; 523822, 3256015; 523674, 3255915; 523547, 3255873; 523414, 3255874; 523281, 3255933; 523201, 3256024; 523017, 3256131; 522987, 3256149; 522940, 3256160; 522894, 3256168; 522869, 3256174; 522790, 3256246; 522722, 3256345; 522689, 3256455.

(ii) Note: Map 14 of Unit 15 follows:

Map 14. Bexar County, Texas, Karst Invertebrates Critical Habitat Unit 15

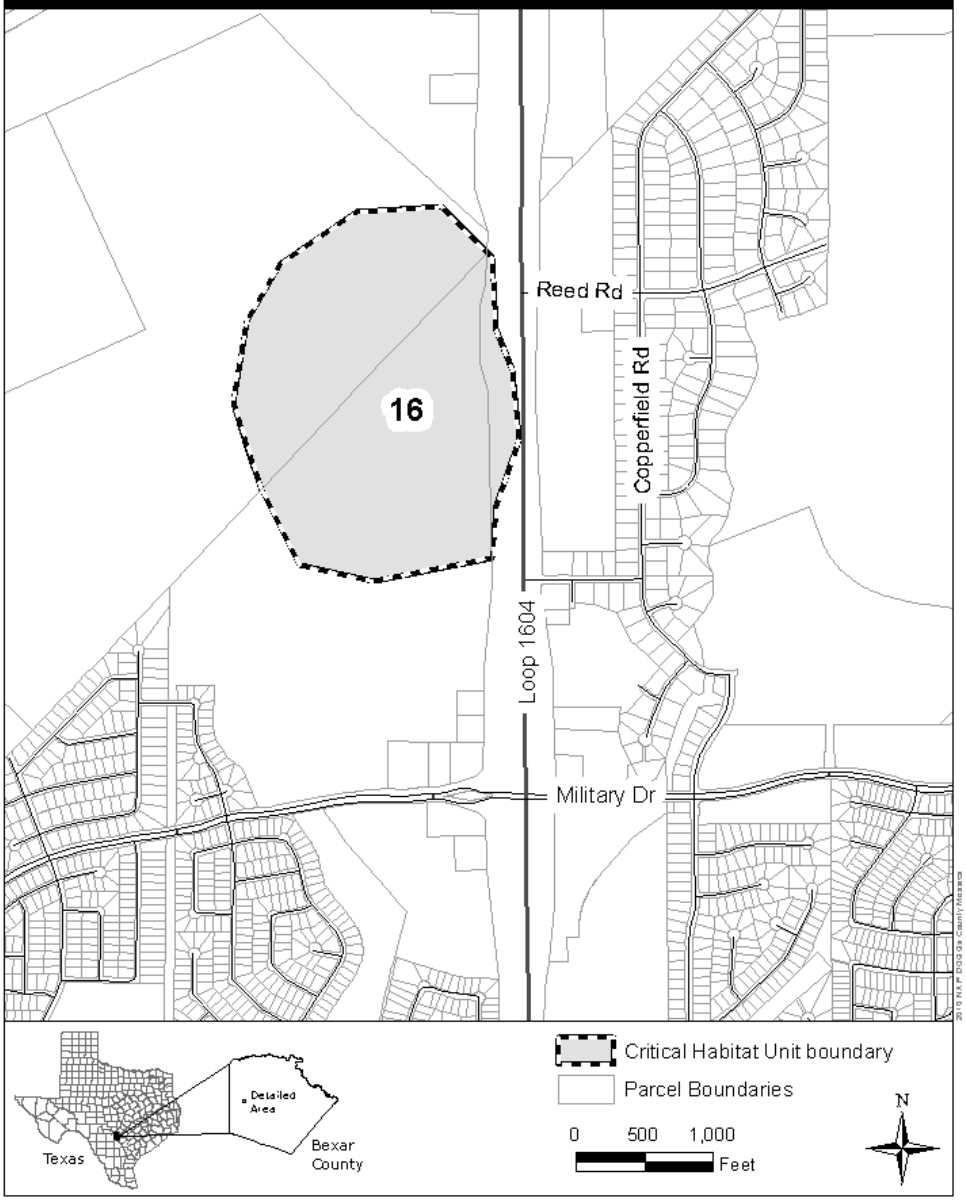


(20) Unit 16: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 527412, 3258337; 527348, 3258534; 527379, 3258716; 527456, 3258844; 527623, 3258959; 527815, 3258972; 527925, 3258857; 527933, 3258697; 527971, 3258605; 527986, 3258452; 527934, 3258303; 527925, 3258186; 527663, 3258134; 527498, 3258173; 527412, 3258337.

(ii) Note: Map 15 of Unit 16 follows:

Map 15. Bexar County, Texas, Karst Invertebrates Critical Habitat Unit 16



(21) Unit 17: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 528980, 3275191; 529043, 3275247; 529120, 3275242; 529245, 3275219; 529327, 3275184; 529348, 3275167; 529492, 3275167; 529613, 3275113; 529800, 3275081; 529870, 3274953; 529819, 3274777; 529698, 3274627; 529486, 3274528; 529360, 3274615; 529335, 3274712; 529174, 3274840; 528968, 3274859; 528957, 3275049; 528980, 3275191.

(ii) Not including land within and bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 529490, 3275008; 529490, 3275006; 529490, 3275005; 529490, 3275003; 529490, 3275002; 529489, 3275001; 529489, 3274999; 529489, 3274998; 529489, 3274997; 529489, 3274995; 529489, 3274994; 529488, 3274993; 529488, 3274992; 529489, 3274991; 529489, 3274986; 529489, 3274983; 529489, 3274982; 529482, 3274919; 529329, 3274930; 529337, 3274993; 529337, 3274993; 529337, 3274994; 529336, 3274995; 529337, 3274997; 529337, 3274998; 529336, 3274999; 529336, 3275001; 529336, 3275002; 529336, 3275003; 529336, 3275005; 529336, 3275006; 529336, 3275008; 529336, 3275009; 529336, 3275010; 529336, 3275012; 529336, 3275013; 529336, 3275014; 529336, 3275016; 529337, 3275017; 529337, 3275018; 529337, 3275020; 529337, 3275021; 529337, 3275022; 529338, 3275023; 529338, 3275025; 529338, 3275026; 529339, 3275027; 529339, 3275029; 529339, 3275030; 529340, 3275031; 529340, 3275033; 529341, 3275034; 529341, 3275035; 529342, 3275036; 529342, 3275038;

529343, 3275039; 529343, 3275040; 529344, 3275041; 529344, 3275042; 529345, 3275044; 529346, 3275045; 529346, 3275046; 529347, 3275047; 529348, 3275048; 529348, 3275049; 529349, 3275050; 529350, 3275052; 529351, 3275053; 529351, 3275054; 529352, 3275055; 529353, 3275056; 529354, 3275057; 529355, 3275058; 529356, 3275059; 529357, 3275060; 529358, 3275061; 529359, 3275062; 529359, 3275063; 529360, 3275064; 529361, 3275065; 529362, 3275066; 529363, 3275066; 529364, 3275067; 529366, 3275068; 529367, 3275069; 529368, 3275070; 529369, 3275070; 529370, 3275071; 529371, 3275072; 529372, 3275073; 529373, 3275073; 529374, 3275074; 529376, 3275075; 529377, 3275075; 529378, 3275076; 529379, 3275077; 529380, 3275077; 529382, 3275078; 529383, 3275078; 529384, 3275079; 529385, 3275079; 529387, 3275080; 529388, 3275080; 529389, 3275081; 529390, 3275081; 529392, 3275081; 529393, 3275082; 529394, 3275082; 529396, 3275082; 529397, 3275083; 529398, 3275083; 529399, 3275083; 529401, 3275083; 529402, 3275084; 529403, 3275084; 529405, 3275084; 529406, 3275084; 529407, 3275084; 529409, 3275084; 529410, 3275084; 529412, 3275084; 529413, 3275084; 529414, 3275084; 529416, 3275084; 529417, 3275084; 529418, 3275084; 529420, 3275084; 529421, 3275084; 529422, 3275084; 529424, 3275084; 529425, 3275083; 529426, 3275083; 529428, 3275083; 529429, 3275083; 529430, 3275082; 529431, 3275082; 529433, 3275082; 529434, 3275081; 529435, 3275081; 529437, 3275081; 529438, 3275080; 529439, 3275080; 529440, 3275079; 529442, 3275079; 529443, 3275078; 529444, 3275078; 529445, 3275077; 529447, 3275077; 529448, 3275076; 529449, 3275075; 529450, 3275075; 529451, 3275074; 529452, 3275073; 529454, 3275073; 529455, 3275072; 529456, 3275071; 529457, 3275070; 529458, 3275070; 529459,

3275069; 529460, 3275068; 529461, 3275067; 529462, 3275066; 529463, 3275066; 529464, 3275065; 529465, 3275064; 529466, 3275063; 529467, 3275062; 529468, 3275061; 529469, 3275060; 529470, 3275059; 529471, 3275058; 529472, 3275057; 529473, 3275056; 529473, 3275055; 529474, 3275054; 529475, 3275053; 529476, 3275052; 529477, 3275050; 529477, 3275049; 529478, 3275048; 529479, 3275047; 529479, 3275046; 529480, 3275045; 529481, 3275044; 529481, 3275042; 529482, 3275041; 529482, 3275040; 529483, 3275039; 529484, 3275038; 529484, 3275036; 529485, 3275035; 529485, 3275034; 529486, 3275033; 529486, 3275031; 529486, 3275030; 529487, 3275029; 529487, 3275027; 529487, 3275026; 529488, 3275025; 529488, 3275023; 529488, 3275022; 529489, 3275021; 529489, 3275020; 529489, 3275018; 529489, 3275017; 529489, 3275016; 529489, 3275014; 529490, 3275013; 529490, 3275012; 529490, 3275010; 529490, 3275009; 529490, 3275008.

(iii) Note: Map 5 of Unit 17 is provided at paragraph (8)(ii) of the entry for the Helotes mold beetle in this paragraph (i).

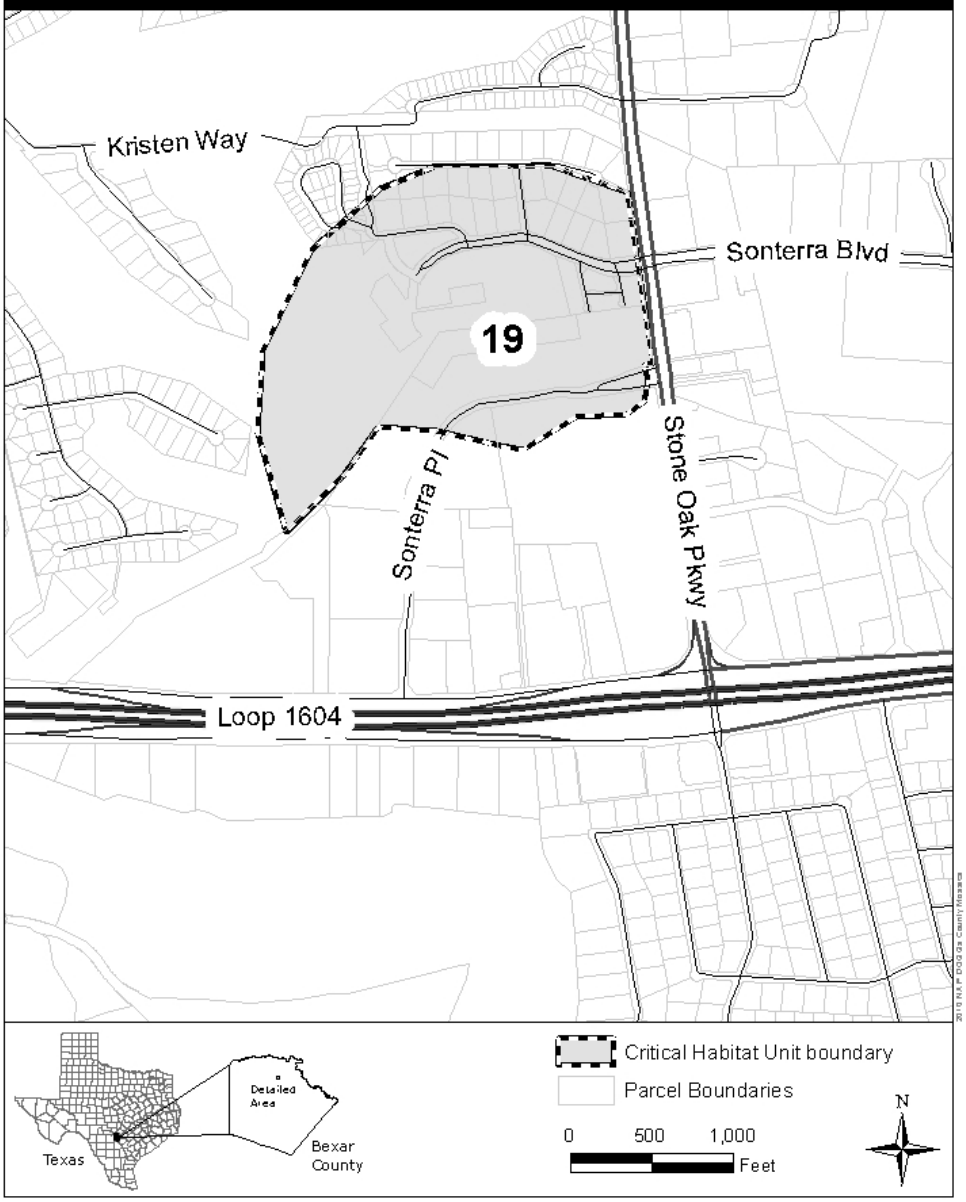
(22) Unit 19: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 548980, 3276370; 549011, 3276172; 548992, 3276167; 549001, 3276139; 548992, 3276099; 548960, 3276076; 548867, 3276071; 548767, 3276012; 548725, 3276018; 548608, 3276046; 548499, 3276055; 548429, 3275955; 548326, 3275856; 548274, 3276042; 548285, 3276194; 548374, 3276384;

548503, 3276497; 548601, 3276538; 548815, 3276541; 548963, 3276489; 548980, 3276370.

(ii) Note: Map 16 of Unit 19 follows:

Map 16. Bexar County, Texas, Karst Invertebrates Critical Habitat Unit 19

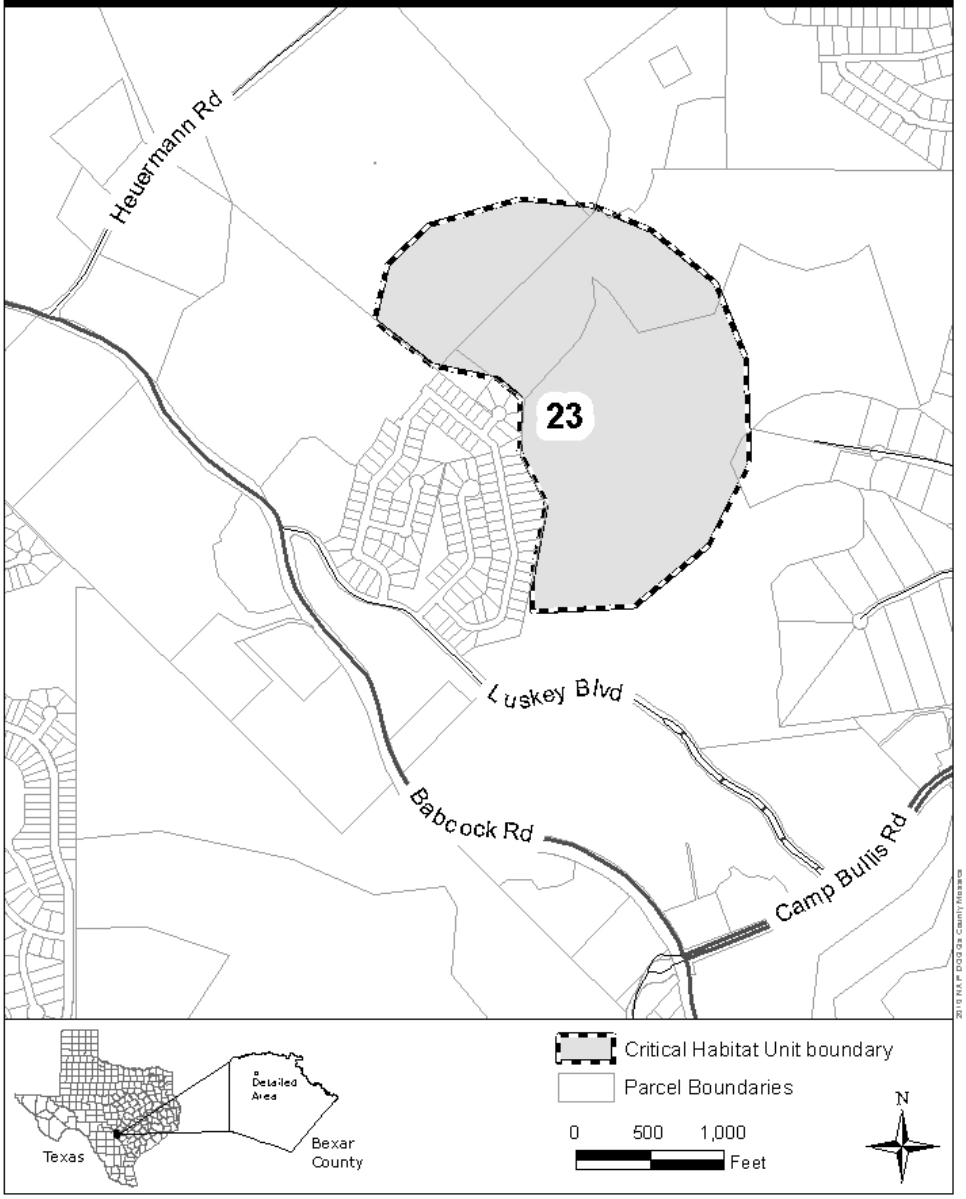


(23) Unit 23: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 535851, 3276414; 535640, 3276401; 535639, 3276467; 535670, 3276630; 535613, 3276734; 535616, 3276844; 535568, 3276883; 535433, 3276912; 535314, 3277003; 535342, 3277121; 535427, 3277203; 535617, 3277255; 535763, 3277242; 535884, 3277190; 536017, 3277082; 536080, 3276928; 536088, 3276708; 536003, 3276539; 535851, 3276414.

(ii) Note: Map 20 of Unit 23 follows:

Map 20. Bexar County, Texas, Karst Invertebrates
Critical Habitat Unit 23

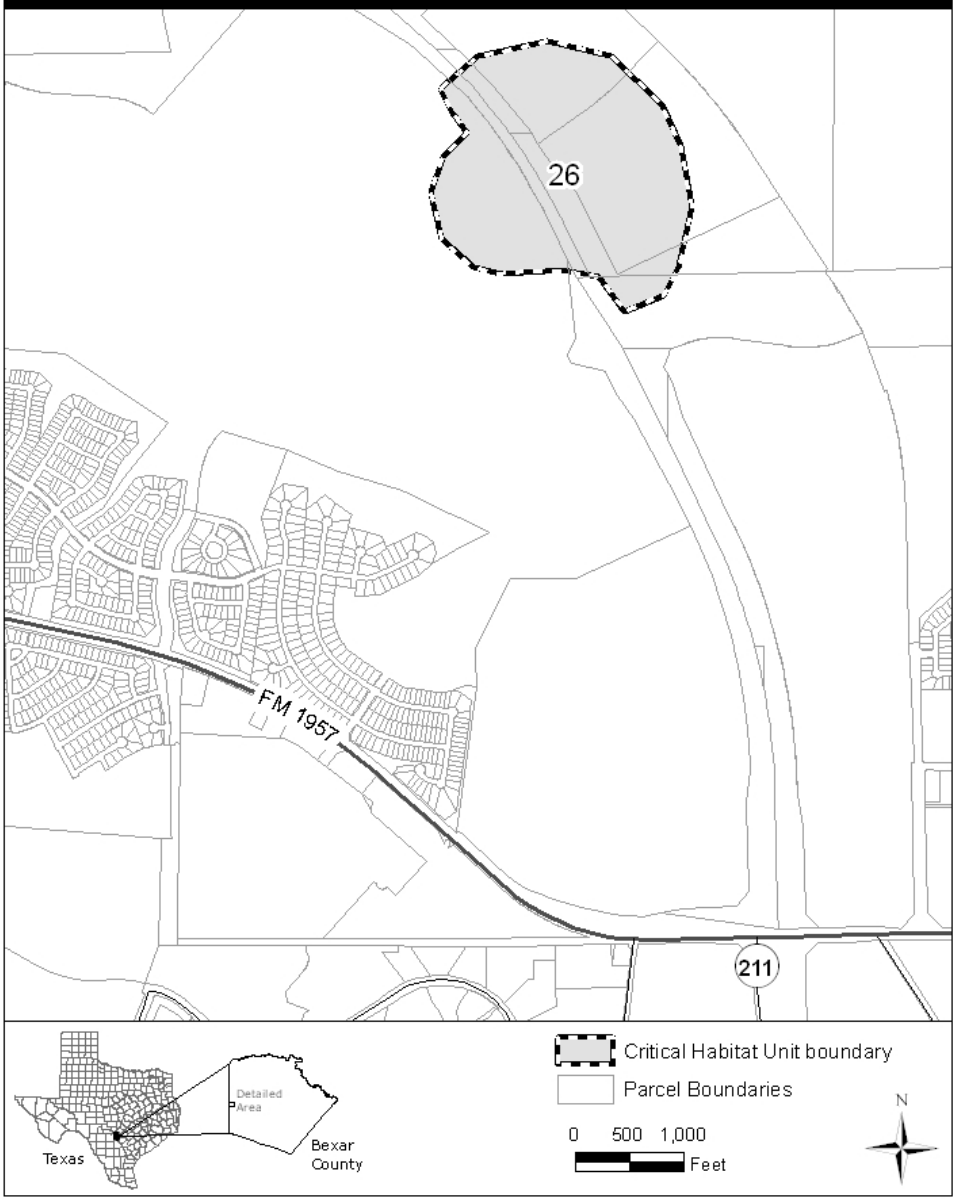


(24) Unit 26: Bexar County, Texas.

(i) Land bounded by the following UTM Zone 14N, North American Datum of 1983 (NAD83) coordinates (E, N): 520192, 3257071; 520300, 3257163; 520493, 3257203; 520672, 3257162; 520816, 3257024; 520870, 3256906; 520901, 3256737; 520865, 3256567; 520821, 3256487; 520710, 3256440; 520638, 3256540; 520556, 3256555; 520490, 3256557; 520363, 3256547; 520290, 3256566; 520195, 3256648; 520166, 3256776; 520200, 3256878; 520268, 3256943; 520228, 3257000; 520192, 3257071.

(ii) Note: Map 21 of Unit 26 follows:

Map 21. Bexar County, Texas, Karst Invertebrates Critical Habitat Unit 26



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Dated: _____January 24, 2012_____

_____ Rachel Jacobson_____

Acting Assistant Secretary for Fish and Wildlife and Parks

Billing Code 4310-55-P

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