United States Department of the Interior

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MAY 2 7 2005

Ted West, P.E.
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Federal Highway Administration
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Austin, Texas 78701

Consultation # 2-15-F-2005-0088

Presley Hatcher
Chief, Permits Section
Fort Worth District, Corps of Engineers
P.O. Box 17300
Fort Worth, Texas 76102-0300

Dear Mr. West and Mr. Hatcher:

This document transmits the U.S. Fish and Wildlife Service's (Service) Biological Opinion (Opinion) based on our review of the Texas Department of Transportation's (TxDOT) proposal to replace the Comal River bridge on Landa Park Drive in Landa Park, City of New Braunfels, Comal County, Texas and its effects on the federally listed endangered fountain darter (*Etheostoma fonticola*) in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 *et seq.*). The proposed project will receive federal funding through the Federal Highway Administration (FHWA) and requires authorization from the Corps of Engineers (Corps) under the Clean Water Act. Your January 12, 2005, request for formal consultation was received on January 13, 2005.

Ten additional federally listed species potentially occur in, or migrate through, Comal County: the endangered black-capped vireo (*Vireo atricapilla*), golden-cheeked warbler (*Dendroica chrysoparia*), Comal Springs riffle beetle (*Heterelmis comalensis*), Comal Springs dryopid beetle (*Stygoparnus comalensis*), Peck's cave amphipod (*Stygobromus (=Stygonectes) pecki*), least tern (*Sterna antillarum*), and whooping crane (*Grus americana*); the threatened bald eagle (*Haliaeetus leucocephalus*) and piping plover (*Charadrius melodus*); and one candidate species, Cagle's map turtle (*Graptemys caglei*). Habitat suitable to support these species is not present within the proposed project area. Thus, we do not expect them to be affected by the proposed action and they will not be considered further in this Opinion.

This Opinion is based on information provided in a December 2004 biological assessment (BA). It is also based on meetings, emails, and telephone conversations between individuals from TxDOT and the Service. A complete administrative record of this consultation is on file at this office.

Consultation History

On October 12, 2004, TxDOT staff began informal consultation with the Service by telephone. At an October 25, 2004, site visit, TxDOT staff (Valerie Collins, Barrlynn West, Bill Jordan, and Charlotte Kucera) and their consultants met with Service staff (Dawn Whitehead and Jenny Wilson) to discuss information to be included in the biological assessment for the proposed project. Additional discussions by telephone and email were conducted in late October and early November.

On January 13, 2005, the Service received the Federal Highway Administration's (FHWA) request for initiation of formal consultation and the December 2004 biological assessment. The Service acknowledged this request in a February 11, 2005, letter.

BIOLOGICAL OPINION

Description of the Proposed Action

Project Description

TxDOT proposes to replace an existing two-lane bridge on Landa Park Drive, which crosses the new channel of the Comal River immediately downstream from Landa Lake. The proposed project site includes the entire bridge and approximately 46 linear feet (14 meters) of Landa Park Drive on the west side of the bridge and approximately 74 linear feet (22.5 meters) on the east side of the bridge, for a total project length of 180 feet (55 meters). The proposed project is located on Landa Park Drive at the Comal River within the boundaries of Landa Park in the City of New Braunfels, Comal County, Texas (Figure 1).

Landa Park Drive is an east-west, two-lane road and the Comal River flows beneath the bridge from the north to the south. Elevation of the bridge is approximately 627 feet (191meters) above mean sea level and it slopes very gradually down from west to east.

Past bridge inspections and a recent underwater inspection (September 2004) reported severe deterioration of the bridge, settlement of the east abutment wingwall, undermined (scoured) abutment footings of four feet (1 meter), and a poor superstructure. According to a Bridge Inventory Inspection and Appraisal Program report, the National Sufficiency Rating for the bridge is 17.7 (out of a possible 100). This indicates that the bridge is structurally deficient where failure could occur. Thus, the bridge is not currently adequate to support the traffic that frequents the roadway.

Constructed in 1930, the existing structure is a one-span, 34-foot (10-meter) long reinforced concrete T-beam bridge with an overall width of approximately 37 feet (11 meters). It is comprised of two 10-foot (3-meter) wide traffic lanes with curbs and no shoulders, a 7-foot (2-meter) wide railroad track located on the upstream (north) side of the bridge, and a 7-foot (2-meter) wide sidewalk located between the railroad track and north side of the roadway. The existing roadway approaches consist of two varying width lanes (from 11 to 15 feet [3 to 4 meters] wide) with curbs and no shoulders. The railroad track, which is currently out of operation due to the structural deficiencies in the bridge, is smaller than the typical industrial railroad track and only carries a small train with passengers for recreational purposes. The posted speed limit for the roadway is 20 miles per hour (32 kilometers per hour).

The existing bridge would be replaced with a concrete box beam bridge consisting of one 60-foot (18-meter) span. The new bridge would have an overall width of 47 feet (14 meters) and would provide for two 12-foot (3.6 meter) lanes with curbs, a 6-foot (2-meter) wide railroad track opening located on the north side of the bridge, and two 6-foot (2-meter) wide sidewalks. One sidewalk would be located between the railroad tracks and the north side of the roadway and the other sidewalk would be located on the south side of the bridge. The proposed approach sections would provide for two 12-foot (3.6-meter) lanes with curbs and no shoulders and two 7-foot (2-meter) wide sidewalks located on either side of the roadway. The overall roadway width would be 39 feet (12 meters). No changes are proposed to the posted speed limit or to the horizontal or vertical alignment of the bridge from the proposed work.

Replacement of the bridge would be accomplished as follows:

- The contractor would install a temporary demolition debris protection system (e.g. tarp or similar containment barrier) under the bridge that would be strung from existing abutment to existing abutment to prevent any debris from falling into the river.
- The existing bridge abutments would be stabilized to prevent the potential for collapsing into the river once the bridge superstructure is removed.
- Soil and gravel immediately behind the existing retaining walls would be excavated and removed to place the rock-filled gabions.
- The existing bridge slab, beams, railing, and attached structural parts would be removed.
- The existing abutments would be removed.
- Rock gabions would be placed in the river within the same footprint previously occupied by the existing bridge abutments and wingwalls.
- New bridge abutments would be installed outside of the river to support the new bridge, box beams would be placed, and a new bridge slab would be poured.
- Concrete curbing would be constructed along the bridge and newly widened road to prevent roadway runoff from directly entering the river.
- The current rock flume that occurs south of the road and east of the river will be removed and replaced by sod. In addition, the area where the curbing stops and the runoff leaves the pavement will be reconfigured to spread the water over a larger area of the grassy slope to increase the amount of contact the water has with the vegetation prior to entering the river.

TxDOT anticipates beginning construction soon after receipt of this Opinion and completing construction within approximately 82 days. The construction occurring within the river is expected to require approximately 10 to 15 days. The estimated time schedule for construction is as follows:

(1)	Mobilization – includes installation of signage and erosion/sedimentation controls.	7 days
(2)	Removal of Structures – includes the removal of the bridge superstructure and abutments.	7 days
(3)	Construction of Bridge – includes the placement of drill shafts, installation of gabions and riprap, construction of abutments, placement of box beams, pouring of bridge deck, sidewalk, and railing.	37 days
(4)	Roadway Construction – includes roadway excavation; placement of asphalt stabilized base; and installation of concrete, sidewalk, final asphaltic surface mix, signage, and pavement markings.	24 days
(5)	Final – includes installation of final sod and clean up.	7 days

Species Description and Status

Fountain Darter

Description

The fountain darter, a small, reddish brown fish, averaging about 1¼ inch (29 millimeters) total length, was listed as endangered without critical habitat on October 13, 1970. The current range of the fountain darter is restricted to the Comal and upper San Marcos rivers in Hays and Comal counties, Texas (Figures 1 & 2). Critical habitat for the fountain darter was designated on July 14, 1980, in Hays County. It includes Spring Lake and its outflow and the San Marcos River downstream to about 0.5 mile (0.8 kilometers) below the Interstate Highway 35 bridge (Figure 2).

Life History

Fountain darters prefer a mix of submergent vegetation including algae, mosses, and higher plants such as Texas wild-rice (Schenck and Whiteside 1976, Linam et al. 1993, Linam 1993, Service Austin Field Office unpublished data). Schenck and Whiteside (1976) studied fountain darter habitat in the San Marcos River system and found darters most abundant in habitats with vegetation growing close to the substrate, such as filamentous algae (*Rhyzoclonium* sp.), Florida elodea (*Hydrilla* sp.), and water primrose (*Ludwigia* sp.) with a preference for habitats with filamentous algae. This same study also documented fountain darters, although in reduced numbers, occurring in species of plants that had long leaves which floated well above the substrate, such as pondweed (*Potamogeton* sp.), eelgrass (*Vallisneria* sp.) and wild rice (*Zizania* sp.), and in areas seasonally lacking in vegetation. Young fish were found to prefer vegetated habitats in areas with little water velocity. Habitat requirements for the fountain darter also

include: undisturbed stream floor habitats, clear and clean water, constant water temperatures within the natural and normal river gradients, and adequate springflows (Service 1996).

Fountain darters feed primarily during daylight in response to visual cues. Those held in aquaria fed on moving aquatic invertebrates while disregarding immobile ones. The species apparently does not chase food organisms but remains stationary until prey moves to within approximately 1 inch (3 centimeters) (Schenck and Whiteside 1977a). The food items selected depend on the size of the individual, but primarily included copepods, fly (*Dipteran*) larvae, and mayfly (*Ephemeropteran*) larvae (Bergin 1996).

Although natural populations of fountain darters appear to spawn year-round, increased ova development occurring in August and late winter to early spring indicates two peak spawning periods (Schenck and Whiteside 1977b). After depositing eggs in vegetation, adults provide no further care to the young (Strawn 1955, 1956). Dowden (1968) found fountain darter eggs attached to moss and to algae.

Bonner et al. (1998) described the effects of water temperature on egg production and early stages of the fountain darter. After studying temperatures from 57°F to 84°F (14°C to 29°C), they found egg production to be significantly higher at temperatures less than or equal to 77°F (25°C) and percent hatch and larval production were significantly higher between 57°F and 73°F (14°C and 23°C). They suggested that constant temperatures between 72°F and 75°F (22°C and 24°C) do not seem to be necessary for the short-term survival of fountain darters. However, constant temperatures in the this range may be important indirectly to the fountain darter by affecting invertebrate populations, plant growth and plant composition, and the growth and reproduction of other fish species in the Comal and San Marcos rivers.

Population Dynamics

Detailed demographic analyses have not been conducted for this species. However, Schenck and Whiteside (1976) noted a progressive decrease in fountain darter abundance from May through January which coincided with a decrease in the amount of filamentous algae and a corresponding increase in darter abundance with an increasing amount of filamentous algae. Similar fluctuations in fish abundance were noted in response to changes in the condition of other habitats to a lesser degree.

Status and Distribution

Historically, within the San Marcos River, the fountain darter was known from the headwaters down to the vicinity of Martindale (Service 1996). The current distribution extends from Spring Lake to a point between the San Marcos Waste Water Treatment Plant (WWTP) outfall and the confluence with the Blanco River (Service 1996).

The population of fountain darters in the San Marcos River was estimated to be about 103,000 by Schenck and Whiteside (1976) and 45,900 (downstream of, and excluding, Spring Lake) by

Linam (1993). Darter densities appear to be highest in the upper segments of the river and decrease markedly in an area below Cape's Dam (Linam 1993).

In the Comal River, the fountain darter was thought to be extirpated when extensive sampling in 1973 found no individuals. From February 1975 to March 1976, approximately 400 fountain darters from the San Marcos River were released into the Comal system at the headsprings area of the Comal River in Landa Park. Another 50 fish were released into the old channel area that flows though the golf course. An established reproducing population now occupies the entire Comal aquatic ecosystem from Landa Lake (inclusive) to the vicinity of the Comal/Guadalupe River confluence (Figure1). Linam et al. (1993) estimated that the Comal River population was about 168,078 individuals above Clemens Dam based on their 1990 survey.

The revised San Marcos and Comal recovery plan (Service 1996) identifies several local and regional threats to the aquifer and spring systems, and to the threatened and endangered species dependent on these ecosystems. The main regional threats are related to the quality and quantity of aquifer and spring water. Decreased and potential cessation of springflows threatens the survival of the aquatic species. Activities that may pollute the Edwards aquifer and its springs and streamflows may also threaten or harm the species.

Significant additional threats also occur on the more local scale level and include impacts from increased urbanization near the rivers, recreational activities (Breslin 1997), alteration of the rivers, habitat modification (for example, dams, bank stabilization, flood control), and predation, competition, introduced parasites, and habitat alteration by non-native species (for example, elephant ears, giant ramshorn snails, nutria, tilapia) (Service 1996).

USGS data have indicated a high (drinking) water quality for the springflows and aquifer in general. However, there are increasing risks of aquifer, springflow, and streamflow contamination. Pollution threats include:

(1) groundwater pollution of the Edwards aquifer from land-based hazardous material spills and leaking underground storage tanks;

(2) cumulative impact of urbanization (road runoff, leaking sewer lines, residential pesticide and fertilizer use, etc.);

(3) increased impact of contaminants due to decreased dilution from smaller volumes of water in the aquifer and springflows; and

(4) surface, stormwater, and point and non-point source discharges into the streamflows.

Although the aquifer is generally not contaminated to exceed Federal drinking water standards, certain contaminants have been found with greater frequency in the aquifer in recent years. Many of the threats by urbanization to aquifer water quality also threaten spring-based streamflows. Runoff from streets, highways, and commercial and residential landscapes, and

potential spills of hazardous materials (above and below ground) pose the greatest risks to streamflow quality. Ockerman et al. (1999) characterized stormwater runoff in the Edwards aquifer recharge zone in Bexar Co. (adjacent to Comal Co. on its southern border). Ogden et al. (1986) investigated stormwater runoff water quality including nutrients and fecal coliform bacteria. In general, the fecal group colony levels rose in response to rain events and the authors recommended that contact recreation in the San Marcos River be avoided for several days after a rain.

Finally, fountain darters of the Comal River currently suffer from an extensive system wide infestation of an unnamed trematode that attacks their gill. Since 1996, virtually every fountain darter collected in the Comal system is parasitized by this trematode which attacks the gills. To date, the San Marcos system has not seen the same widespread presence of this trematode with less than 5 percent parasitism rate among fountain darters examined. The risk posed by these parasites will likely increase during stressful periods of low spring discharge (Mitchell et al. 2000, Salmon 2000).

Analysis of Affected Species

The proposed project occurs within the Comal River population of fountain darters in the new channel, just downstream of Landa Lake (Figure 2). The total area within the Comal River that would be impacted as a result of the proposed project is approximately 1,100 square feet (102 square meters) with impacts expected to be limited to within approximately 35 feet (11 meters) upstream and downstream of the existing bridge.

Environmental Baseline

Status of the Species Within the Action Area

The Service considers the action area to be the bridge and approaches and the banks and bed of the river beneath the bridge and 35 feet (11 meters) up and downstream of the bridge. Approximately 35 percent of the riverine portion of the project area is vegetated with only one small area upstream (approximately 10 square feet [1 square meter]) containing *Riccia* sp.

Service data for the fountain darter densities indicates that when submergent plant cover exceeds 75 percent, fountain darter densities averaged approximately 3 individuals per square meter and when submergent plant cover is less than 25 percent, fountain darter densities averaged 0.34 individuals per square meter. However, in areas where certain preferred plant cover is available (for example, *Riccia* sp.), densities have been recorded at over 30 fountain darters per square meter.

In a March 2005 field visit, Valerie Collins from TxDOT observed the vegetation in the proposed project area. Within 15 feet (4.6 meters) up and downstream of the bridge, vascular vegetation in the water was scarce as most of this area is shaded by the bridge. Upstream of the bridge from about 15 feet (4.6 meters) to about 35 feet (11 meters) linearly along channel edges the vegetation is primarily *Vallisneria* sp. with little patches of *Hygrophila* sp.

Along the left bank of the river are an anacua (*Ehretia anacua*) and a bald cypress (*Taxodium distichum*) within 35 feet (11 meters) of the bridge. These can be seen in the BA in photo #6. The roots of these trees extend approximately 3 feet (1 meter) from the bank and are covered in algae and radial clumps of *Amblystegium* moss.

Downstream, *Vallisneria* increases in cover from about 5 percent at 15 feet (4.6 meters) downstream of the bridge, to about 80 percent about 50 feet (15 meters) from the bridge. There are trace amounts of *Hygrophila* sp. on the edges of the bank. On average for the entire area of the work area for the Landa Bridge project, the area contained about 35-40 percent vegetative cover. This includes the area beneath the bridge and includes algae. The total area of vascular plants is approximately 30 percent. Thus, based upon the aerial extent of vascular plants, we expect approximately 100 to 200 fountain darters (less than 0.1 percent of the Comal River population) to be within the project area.

Factors Affecting Species Environment Within the Action Area

The project area is underlain by Quaternary terrace alluvial deposits (Collins 2000). These deposits typically consist of gravel, sand, silt, and mud. Soils in the majority of the project area are Lewisville silty clay, one to three percent slopes. This soil is typically associated with stream terraces, consists of dark brown to yellowish brown silty clays up to approximately five feet thick, and is well drained with moderate permeability. Small portions of the eastern and western extremes of the project area may contain Krum clay, zero to one percent slope. This soil is typically associated with stream terraces and valley fills, consists of dark gray to brown clays up to approximately seven feet thick, and is well drained with moderately slow permeability (Soil Conservation Service 1984).

Water depth of the Comal River at the project area is approximately 4 to 5 feet (1.2 to 1.4 meters) along the banks and approximately 8 feet (2.4 meters) along the center of the channel based on a June 24, 2003 habitat assessment. The width of the Comal River averages 33 feet (10 meters) throughout the project area. The substrate of the river consists primarily of large cobbles and minor gravel with a thin layer of nacre silt and sediment. Remnants of man-made structures and tree roots are also present.

The land use adjacent to the existing roadway consists of City-owned parkland. Landa Park Lake is immediately upstream of the bridge, a playground and picnic areas are downstream of the bridge, and the Landa Park headquarters, public swimming pool, and Landa Park Railroad concession are located east of the bridge on the north side of Landa Park Drive. Vegetation in Landa Park generally consists of maintained lawns with scattered trees.

Upstream of the bridge, the west bank of the river is lined by bald cypress (*Taxodium distichum*) trees with buttressed roots. The east bank consists of a series of grassy terraces reinforced with stone walls. Similar reinforced grassy terraces are present on both banks downstream of the bridge.

Effects of the Action

The proposed project will result in a temporary increase in sedimentation and turbidity within the project area for approximately 10 to 15 days while construction occurs in the water. In addition, the new bridge will result in a small amount of new area shaded on the river bottom which will limit light penetration and thus plant growth in that area. Finally, the stormwater runoff from the new bridge and approaches, though filtered by the grassy slopes, will likely continue to contribute small amounts of roadway contaminants to the Comal River aquatic ecosystem.

Fountain darters or their eggs that are present within the project area will be impacted by changes to water quality such as turbidity, suspended sediment, and decreased dissolved oxygen while work is being conducted within the Comal River. Siltation and turbidity from activities in the water could cause the fountain darter to be unable to feed due to reduced sight distance, although some may temporarily relocate until clear conditions return. Siltation could also blanket eggs attached to submerged vegetation. In addition, any individual fountain darters present along the shoreline during the gabion placement may be crushed. Changes to the habitat in the area resulting from the additional shaded habitat would effect approximately 340 square feet (32 square meters) most of which has little or no vegetation presently and so likely will have no measurable impact on individuals of the species.

The new bridge will continue to be a source of roadway contaminants in the area and will continue to contribute to the overall degradation of water quality within the Comal River. However, the effects to individual fountain darters would be hard to estimate. It is difficult to know which of the potential contaminants are of concern for the fountain darter; however, copper, which is found in brake pad linings, is known to be of particular concern as fountain darters in the lab were found to be more sensitive than other fish (including other darters) to levels as low as 7.7 parts per billion (ppb) (Besser et al. 2001).

One study of highway runoff in the Austin, Texas area (Barrett et al. 1995), found levels of copper on a low traffic site (8,780 vehicles per day) ranging from 7 to 10 parts per billion. In contrast, the Landa Park Drive bridge traffic volume is about one third (3,150 vehicles per day) over a bridge that is half the size of the one in the study. In addition, TxDOT has proposed to reconfigure the site so that the runoff from the roadway is filtered across 60 to 70 feet (18 to 21 meters) of grassy slope prior to its reentry into the water. Thus, barring catastrophic spills, we believe that effects to the fountain darter from the runoff from this bridge would be insignificant or discountable based upon the available information. With respect to catastrophic contaminant spills in the area of the bridge, TxDOT believes that due to the slow traffic speed and the fact that no accidents have ever been recorded on or near this bridge, this event is extremely unlikely; these effects were not analyzed in this Opinion.

The number of fountain darters in the area likely ranges between 100 and 200 fish. We anticipate, with the exception of fountain darters killed by placement of the gabions, that

fountain darters will survive the construction related impacts and, if displaced, will recolonize the disturbed areas soon after construction related disturbances end.

Cumulative Effects

Cumulative effects include the effects of future State, local, or private actions that are reasonably certain to occur in the action area considered in this Opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

No known future state or private activities are projected to occur within the immediate project area. Land use in the area is a regional park. No changes to this use are anticipated. In addition, reconstruction of the bridge would not promote an increase in traffic to the area, because its current capacity is not expected to increase or otherwise be modified as a result of the proposed project. However, the population and development within the city of New Braunfels is projected to continue to grow in the future, and the use of Landa Park and the Comal River are likely to continue to increase.

CONCLUSION

After reviewing the current status of the fountain darter, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the project, as proposed, is not likely to jeopardize the continued existence of the fountain darter. No critical habitat has been designated for the fountain darter in the project area. Therefore, none will be affected.

INCIDENTAL TAKE STATEMENT

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

The measures described below are non-discretionary and must be undertaken by the Federal Highway Administration and the Corps so that they become binding conditions of any grant or

permit issued to TxDOT, as appropriate, for the exemption in section 7(o)(2) to apply. The FHWA and the Corps have a continuing duty to regulate the activity covered by this incidental take statement. If the FHWA and the Corps (1) fail to assume and implement the terms and conditions or (2) fail to require TxDOT to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the FHWA, or TxDOT must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50CFR §402.14(i)(3)].

Amount or Extent of Take Anticipated

The Service estimates that between 100 and 200 fountain darters are present within the area affected by the proposed activities. The majority of these (>100) will likely be harassed due to changes in water quality for the 10 to 15 days of work within the river. A small amount of darters (approximately 30) may be present within areas where a gabion is to be placed. These fish will likely be killed. Although unlikely due to the velocity of the water within the project area, it is possible that fountain darter eggs present on vegetation in the area may be killed due to sedimentation.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of take is not likely to result in jeopardy to the species.

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of fountain darters:

1. Since fountain darter densities have been noted to be highest within vegetated areas, avoid impacting these areas to the maximum extent possible.
2. Prevent contamination of riverine habitat from vehicle fueling and maintenance activities.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the FHWA and the Corps must comply with the following terms and conditions, which implement the reasonable and prudent measures described above, and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

(1) The following terms and conditions are necessary to implement Reasonable and Prudent Measure number 1:

(a) Prior to conducting any work in the water, gently detach any floating clumps of vegetation that have entered the project area and allow them to float downriver to areas outside those potentially affected by the proposed activities.
(b) Do not remove the vegetation from the water or disturb it any more than necessary.

(2) The following terms and conditions are necessary to implement Reasonable and Prudent Measure number 2:

(a) Designate vehicle fueling and maintenance sites in paved areas that do not drain directly to the river prior to project commencing.
(b) Require all contractors to utilize these sites for all vehicle fueling and maintenance activities.
(c) Wash vehicles or equipment that will be working in the water.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

Conservation Recommendations

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

- Work with the Service to fund completion and implementation of a comprehensive Comal River Management Plan to address local threats.
- Assist with eradication of non-native species in the Comal River ecosystem.

In order for the Austin Fish and Wildlife Service Office to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, we request notification of the implementation of any conservation recommendations.

Re-initiation-Closing Statement

This concludes formal consultation on the action outlined in the request. As provided in 50 CFR Sec. 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the

amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this Opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending re-initiation.

If you have any questions regarding this biological opinion, please contact Dawn Whitehead at (512) 490-0057, extension 222.

Sincerely,

Robert T. Pine
Supervisor

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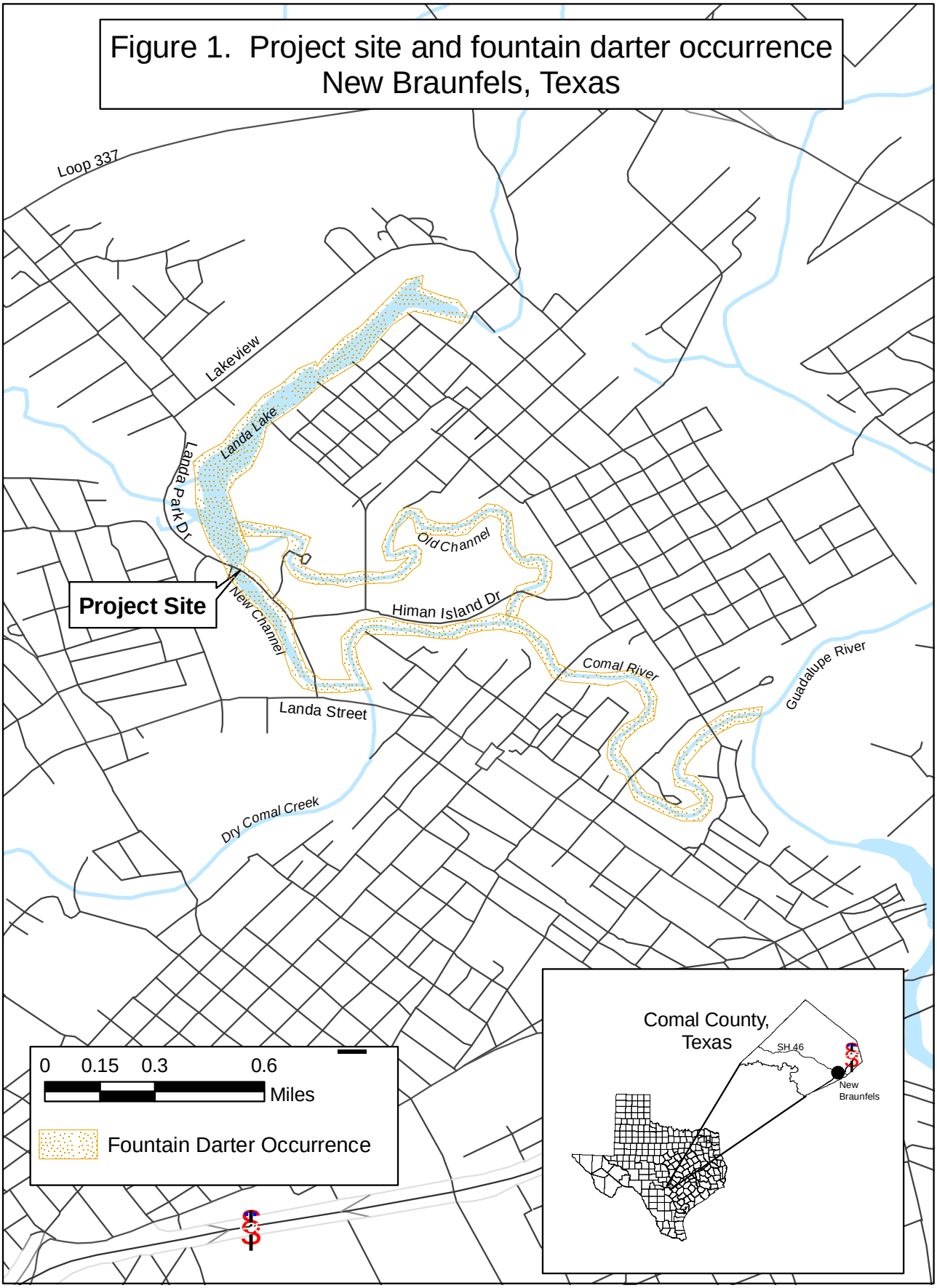
Figure 1. Project site and fountain darter occurrence
New Braunfels, Texas
Loop 337
Lakeview
Landa Lake
Landa Park Dr
Old Channel
Project Site
New Channel
Himan Island Dr
Comal River
Guadalupe River
Landa Street
Dry Comal Creek
0 0.15 0.3 0.6
Miles
Fountain Darter Occurrence
Comal County,
Texas
SH 46
New
Braunfels

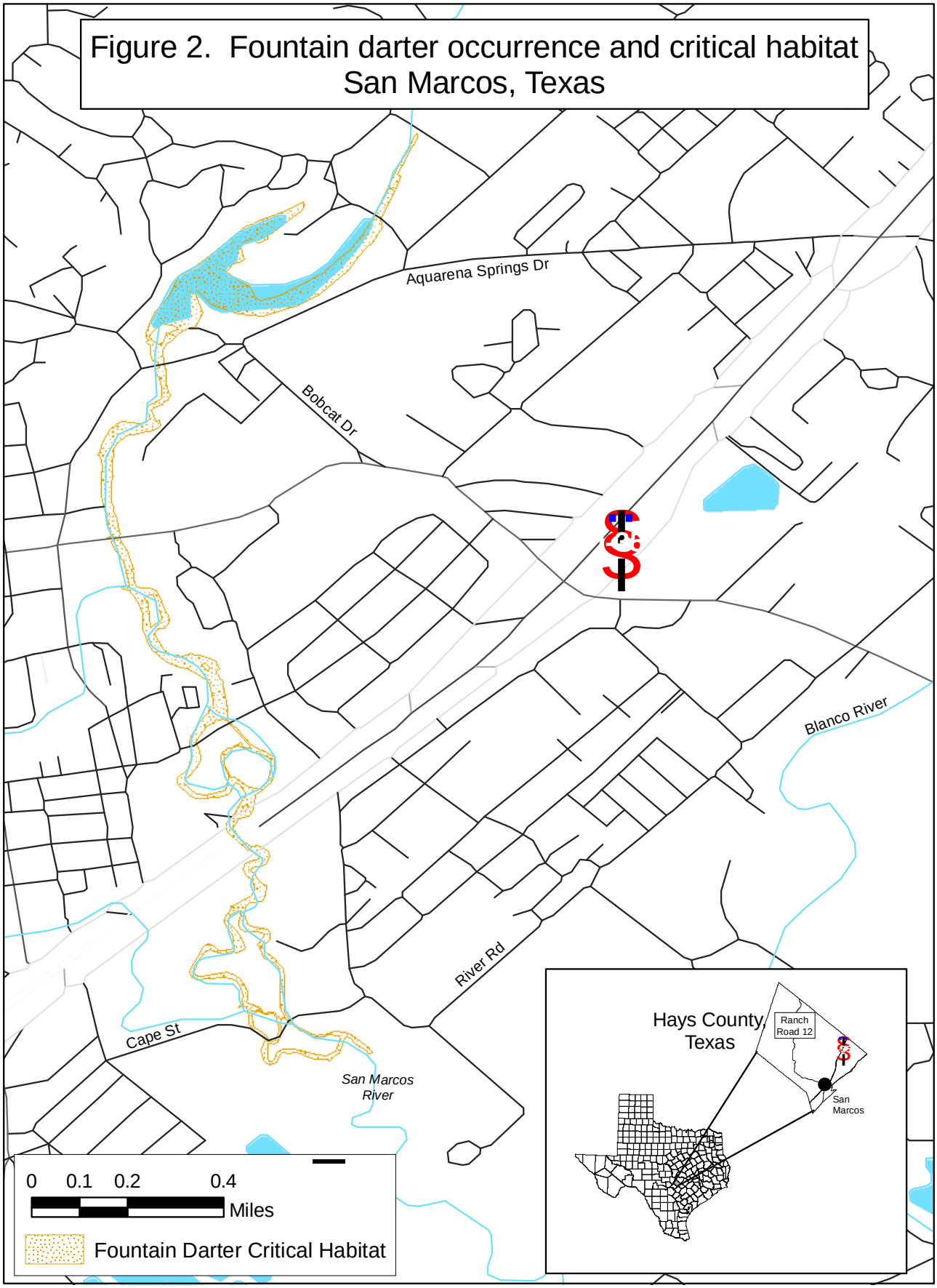
Figure 2. Fountain darter occurrence and critical habitat
San Marcos, Texas
Aquarena Springs Dr
Bobcat Dr
Blanco River
River Rd
Cape St
San Marcos
River
Hays County,
Texas
Ranch
Road 12
San
Marcos
0 0.1 0.2 0.4
Miles
Fountain Darter Critical Habitat