

*APPENDIX N*  
*PERTINENT CORRESPONDENCE*







REPLY TO  
ATTENTION OF

**DEPARTMENT OF THE ARMY**  
FORT WORTH DISTRICT, CORPS OF ENGINEERS  
P. O. BOX 17300  
FORT WORTH, TEXAS 76102-0300

4 December 2003

Planning, Environmental, and Regulatory Division

**SUBJECT: Draft Biological Assessment for the Spring Lake Section 206 Aquatic Ecosystem Restoration Project, Spring Lake, San Marcos, Texas**

U.S. Fish and Wildlife Service  
Attn: Robert T. Pine  
Field Supervisor  
10711 Burnet Road, Suite 200  
Austin, TX 78758

Dear Mr. Pine:

The U.S. Army Corps of Engineers (USACE), Fort Worth District is pleased to submit a Biological Assessment (BA) in partial fulfillment of the U.S. Fish and Wildlife Service's (USFWS) requirements under Section 7 of the Endangered Species Act. Through informal consultation with the USFWS, five Federally protected species were identified within the Section 206 Aquatic Ecosystem Restoration Project area at Spring Lake, San Marcos, Texas. The enclosed BA discloses the beneficial or adverse effects through direct and/or indirect effects of the proposed restoration project on the San Marcos salamander, Texas blind salamander, fountain darter, San Marcos gambusia, Texas wild-rice, and their associated critical habitats. As indicated in the BA, the proposed restoration project would directly and/or indirectly impact areas of Spring Lake and the San Marcos River from construction related activities associated with dam reinforcement, aquatic debris removal, terrestrial debris removal, exotic plant removal, re-vegetation plantings, and installation of recreational trails. The area of impact for Spring Lake Dam reinforcement activities is estimated at approximately 4,440 square feet. The area of impact for removal of aquatic debris and ingress/egress of barge equipment is estimated at 10,000 square feet. The area of impact for activities associated with restoration of the Aquarena Center peninsula (i.e., terrestrial debris removal, exotic plant removal, re-vegetation plantings, and installation of recreational trails) is estimated at 20 acres.

Construction related activities at the Spring Lake Dam and Aquarena Center have the potential for direct take of the San Marcos salamander. It is estimated that no more than 150 salamanders would be lost during dam reinforcement work. Likewise, direct take of the San Marcos salamander from removal of submerged debris within Spring Lake is estimated at less than 100 individuals. To reduce the potential for direct take, prior to construction salamanders would be removed from impact areas by a qualified biologist and relocated to USFWS approved release sites. Potential indirect impacts from short-term sedimentation and temporary vegetation removal during dam reinforcement and submerged debris removal activities would be minimized through the use of silt fences, a Storm Water Pollution Prevention Plan (SWPPP), and general/site specific Best Management Practices (BMPs). Overall, restoration measures

associated with the proposed project would provide long-term beneficial impacts through preservation of existing habitat, creation of new habitat, and improved water quality. Therefore, it is determined that the proposed project may affect but is not likely to adversely affect the San Marcos salamander.

The proposed dam reinforcement activities would have no direct impacts to the Texas blind salamander because the species is not present at or near the Spring Lake Dam. During removal of submerged aquatic debris, direct take of the Texas blind salamander could occur near spring openings located adjacent to the underwater submarine theater. Due to unknown population numbers at this location, a determination of direct take was not estimated. Potential indirect impacts from short-term sedimentation due to removal of submerged debris could decrease water quality within Spring Lake. Installation of silt curtains would be used to restrict sedimentation to the immediate vicinity of the submerged aquatic debris removal area. The removal of terrestrial buildings and subsequent re-vegetation of the Aquarena Center peninsula would improve water quality in Spring Lake and provide long-term benefits to the Texas blind salamander. Due to the potential sedimentation of spring vents near the submarine theater, it is determined that the proposed project will affect but is not likely to adversely affect the Texas blind salamander.

Construction activities associated with the Spring Lake Dam reinforcement could result in the direct take of fountain darters. It is estimated that no more than 100 fountain darters would be lost during dam reinforcement work. Likewise, direct take of fountain darters during the removal of submerged aquatic debris is estimated at no more than 316 individuals. Potential indirect effects include increased siltation to fountain darter habitat in the San Marcos River downstream of the Spring Lake Dam, increased sedimentation within Spring Lake near the submarine theater, and damage to aquatic plants and habitat within and near the submarine theater. First, to limit direct and indirect impacts to individuals, fountain darters would be removed from the impact areas and relocated at a USFWS approved release site. Second, underwater divers would remove aquatic vegetation located within and adjacent to submerged debris. Third, potential indirect impacts from short-term sedimentation and temporary vegetation removal would be minimized through the use of silt fences, a SWPPP, and general/site specific BMPs. Restoration measures associated with the re-vegetation of the Aquarena Center peninsula would provide long-term beneficial impacts through improved water quality. Therefore, it is determined that the proposed project will affect but is not likely to adversely affect the San Marcos salamander.

Since the San Marcos gambusia is thought to be extinct, the proposed project would not likely affect the species. The last collected specimens of San Marcos gambusia were found nearly one mile downstream from the Spring Lake Dam in 1983. At this distance from the project area, the San Marcos gambusia would not be subjected to direct take. However, project construction activities could result in temporary increased turbidity and sedimentation within the San Marcos River downstream of the Spring Lake Dam. Silt fences, a SWPPP, and BMPs would be implemented within the project area to reduce potential indirect impacts associated with increased turbidity and sedimentation. Due to the current status of the San Marcos gambusia, location of sampled specimens from impact sites, and implementation of conservation measures, it is determined that the proposed project will not adversely affect the San Marcos gambusia.

Construction activities associated with the reinforcement of Spring Lake Dam could result in direct take of Texas wild-rice located downstream of the dam. However, areas of existing Texas wild-rice populations located near the Spring Lake Dam would be identified and staked prior to construction and avoided during project implementation. Likewise, water flow over the eastern and western spillways would be uninterrupted, eliminating the threat of drying out any areas populated with Texas wild-rice below the Spring Lake Dam. No populations of Texas wild-rice have been identified within Spring Lake; therefore, construction activities associated with the Aquarena Center peninsula would not directly affect the species. The use of equipment and construction activities on the Spring Lake Dam could result in temporary increased siltation below the dam, which could indirectly impact Texas wild-rice populations. Silt fences, a SWPPP, and BMPs would be implemented within the project area to reduce potential indirect impacts associated with sedimentation. Indirect beneficial impacts associated with increased water quality would also likely occur for Texas wild-rice populations with implementation of the proposed project. Therefore, it is determined that the proposed project will not adversely affect Texas wild-rice.

Fort Worth District representatives have coordinated with the USFWS since the inception of the proposed restoration project. A project kick-off meeting was held on 30 May 2002, in which USFWS representatives attended to discuss the different actions of the restoration project, such as dam repairs, terrestrial building demolition, and Aquarena Center peninsula re-vegetation. With the submittal of the BA, the USACE is requesting that the USFWS initiate the formal consultation process for the proposed restoration project. We have enclosed three (3) copies of the BA, which addresses impacts to the five Federally protected species for your consideration. If you have any questions regarding the BA, please feel free to contact our project manager, Mr. Jeffry Tripe at (817) 886-1716.

Sincerely,

A handwritten signature in black ink that reads "William Fickel, Jr." The signature is written in a cursive style and is positioned to the left of a vertical red line.

William Fickel, Jr.  
Planning, Environmental and  
Regulatory Division

Enclosures



# United States Department of the Interior

FISH AND WILDLIFE SERVICE  
10711 Burnet Road, Suite 200  
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512 490-0057  
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JUN 22 2004

William Fickel, Jr.  
Chief, Planning, Environmental, and Regulatory Division  
U.S. Army Corps of Engineers  
819 Taylor Street Room 3A14  
Fort Worth, Texas 76102

02-15-04-I-0227

Dear Mr. Fickel:

This is in response to your request for comments on your December 2003 Draft Biological Assessment (BA) for the Spring Lake Section 206 Aquatic Restoration Project, San Marcos, Texas. We apologize for the delay in response.

The U.S. Army Corps of Engineers (USACE) proposes measures to repair an existing dam and restoration actions in and near Spring Lake and the Aquarena Center owned by Texas State University - San Marcos (TSU) at the headwaters of the San Marcos River. The U.S. Fish and Wildlife Service (Service) commends USACE's outreach in development of the restoration plan and its partnership with TSU to improve fish and wildlife resources at the head of the San Marcos River. We offer the following comments on issues related to section 7 consultation on the proposed project.

### Species and Critical Habitats

The federally listed endangered species known from Spring Lake include: Texas wild-rice (*Zizania texana*), Comal Springs riffle beetle (*Heterelmis comalensis*), fountain darter (*Etheostoma fonticola*), and Texas blind salamander (*Eurycea rathbuni*, = *Typhlomolge rathbuni*). The federally listed threatened species known from Spring Lake is the San Marcos salamander (*Eurycea nana*). In addition, federally designated critical habitat for Texas wild-rice, fountain darter, and San Marcos salamander includes Spring Lake.

The draft BA includes estimates of incidental take for a given species along with determinations "may affect but will not adversely affect" for that same species. When incidental take is likely to occur, the appropriate determination is "likely to adversely affect" whether the effects are long term or short term, or whether the ultimate result will benefit the species. If a final project is proposed and a "likely to adversely affect" determination is made by your agency, formal section 7 consultation would be required.

The Service plans to begin work on critical habitat determinations for the Comal Springs riffle beetle, Comal Springs dryopid beetle, and Peck's cave amphipod by October 1, 2005. The Comal Springs riffle beetle (*Heterelmis comalensis*) is a small, aquatic beetle known from Com

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Springs and San Marcos Springs. A single specimen was collected from a spring near the surface of Spring Lake just downstream of the former Aquarena Springs Inn (Barr 1993). Joe

Fries and Randy Gibson collected *H. comalensis* at Spring Lake near the same springs where Cheryl Barr collected them. Information gained from Landa Lake in New Braunfels indicates that this species occurs not only in springs along the margins of the lake but also in deeper springs in the lake / river bed. For this project, there may be incidental take of *H. comalensis*. Should springs be uncovered when submerged structures are removed, spring habitats may become available for colonization if they are not already occupied. If the Comal Springs riffle beetle critical habitat is designated at Spring Lake prior to implementation of repair and restoration measures, USACE will need to review the project effects for that species and include the species in any formal consultation on this proposed project.

#### Spring Lake Dam Repair

The dam repair will consist of removing all trees and vegetation from the crest and downstream slope of the dam. Trees will be cut and herbicide approved for aquatic use applied to the trunk. It would be helpful to provide more information on the herbicide proposed. In addition, a discussion of the fate of dead tree roots and potential for piping of water along the roots from Spring Lake to below the dam should be provided.

An inverted filter with riprap protection will be constructed on the downstream slope of the dam with a 6-inch drainage pipe that will connect to the existing Federal Emergency Management Agency (FEMA) system. It would be helpful to have an engineering diagram of the proposed means of reinforcement. To resolve the extent of incidental take of San Marcos salamanders and fountain darters, a detailed drawing to scale of the areas to be repaired is needed.

An access road would be constructed for the dam repairs between the eastern spillway and the apartment parking lot. Since the method to ford the eastern spillway may affect discharge, plans should be made to determine the baseline discharge before and during use of the access road.

#### Removal of structures and pavement and replacement with grassland habitats

The BA would benefit from a detailed figure where the structures/areas involved can be discerned. The BA mentions the eventual preparation of a Storm Water Pollution Prevention Plan (SWPPP). It would be helpful to have a description of the measures proposed to retain and treat stormwater and the design storm event. The best management practices (BMPs) for improving stormwater quality should be described in the BA, and to maximum practicable extent, permanent BMPs, such as treatment ponds and grassy swales, should be considered in lieu of temporary BMPs. In San Marcos, temporary BMPs such as silt fences have had a poor track record in terms of performance and protection of the San Marcos River.

The BA states that the current application of chemicals and fertilizers on the golf course is not a cause of significant impacts to water quality. However, data presented on chemical use are sparse. The proposed buffer around the slough of Spring Lake has a goal of improving runoff water quality. Appendix C of Claytor and Schueler (1996, enclosed) provides a list of

recommended herbaceous, shrub and tree species for use in bioretention. The list was created for application in the eastern United States and likely needs modification for use in south central Texas.

#### Removal of submerged structures from Spring Lake

Submerged structures such as the underwater theater will be removed and placed on barges to be offloaded onto trucks for disposal. The project description should include the dimensions of structures to be removed that rest on the lake bed/substrate in order to estimate the area that will be disturbed during removal and eventually available again as habitat. Any algae, moss, or macrophyte (native or not) attached to the submerged structures should be removed from the structure surface prior to removal from the water to avoid removal of fountain darters and San Marcos salamanders. The impacts of anchors and likelihood of heavy material falling to the bed during removal should be evaluated.

#### **Determinations of Potential Effects and Incidental Take**

We have some concerns regarding the areal extent of impacts to habitats and the estimations of incidental take for the fountain darter and San Marcos salamander. We need the following: (1) an accurate area estimate of disturbed habitat including the size of the structure to be removed plus the surrounding area impacted by the removal, (2) data on the aquatic plant coverage in areas of interest, (3) best estimates of fountain darter and salamander densities (from Janet Nelson's thesis, Bio/West surveys), and (4) some estimate of fraction of individuals present that are likely to die. Please be aware that we have field survey data related to point 3.

#### **Cumulative Effects**

The draft BA includes the San Marcos aquatic ecosystem restoration project in the cumulative effects section. In a section 7 consultation, this analysis needs to analyze future non-Federal actions /issues in the action area.

This section of the BA should discuss the apparent establishment of a gill parasite that attacks fountain darters in the upper San Marcos River. We are enclosing reprints on this parasite and its threat to the fountain darter (Mitchell et al. 2000, Salmon 2000, Cantu 2003, McDonald 2003, and Fleming 2002). The movement of birds, fish (including bait fish), snails, and plants (including plants from downstream reaches of the San Marcos River) increases the likelihood of this trematode becoming established in Spring Lake.

The transportation infrastructure of San Marcos and Hays County is growing, and master planning calls for new roads and widening existing roads around Spring Lake and the upper San Marcos River. To the best of our knowledge, none of the existing State, County, or City roads have adequate stormwater treatment facilities in place. The local municipal stormwater system in general is designed to drain streets and neighborhoods of runoff as quickly as possible transporting stormwater and attendant pollutants to Sink Creek, Sessoms Creek, Purgatory Creek, Willow Springs Creek, Spring Lake, and the upper San Marcos River. A summary of the system and potential effects would assist our cumulative effects analysis.

Discussion is made of hydrilla removal. Removal of macrophytes including non-native and exotic species, in and from Spring Lake and upper San Marcos River would impact fountain darters and their habitat. Currently, we have authorized removal of only one species of aquatic macrophyte in the San Marcos Springs ecosystem, water trumpet (*Cryptocoryne beckettii*).

Groundwater use in the San Marcos area is regulated in part by the Edwards Aquifer Authority. One issue that has not been addressed is the removal from their habitat of Texas blind

salamanders (and potentially, Pecks cave amphipod and the Comal Spring dryopid beetle) through entrainment into wells and subsequent mortality. A number of wells exist in San Marcos close to parts of the Edwards Aquifer known to support Texas blind salamanders.

A new major conference-resort center, 18 hole golf course, and residential development is being proposed immediately upstream of Spring Lake.

The Service is working with TSU and the San Antonio Water System (SAWS) to replace the structure above Diversion Springs to enable collection of Texas blind salamander. If the new Diversion Springs structure is not installed prior to letting the salvage work for this project, it would be advantageous to dovetail the efforts since it involves similar work. We have received information through e-mail that SAWS would need an agreement or Scope of Work with the contractor that is separate from the USACE contract/Scope of Work. This additional work should not detract from the original construction schedule for the section 206 Project.

#### **Possible conservation measures**

A problem best treated at its source is the generation of floating aquatic plant fragments which typically form mats. Some plants fragment naturally; others are generated by the cutter boat on Spring Lake. Recreationists also create fragments by wading, swimming, canoeing, tubing, and kayaking. These mats lodge on, shade, and harm macrophytes, including endangered Texas wild-rice, that provide habitat for fountain darters. A permanent structure could be installed in Spring Lake to direct floating plant fragments to a convenient shoreline location to be removed by an inclined conveyor belt, enabling trucks to haul mats to an appropriate upland site. One location to consider may be near the shed planned for demolition.

Another beneficial action would be the development of more flexible control at Spring Lake Dam to allow a range of future management options. One measure would involve creating a way to allow water to flow to / through / over Spring Lake Dam's eastern spillway area to sustain habitat when Spring Lake's stage (water surface elevation) is too low for its typical discharge. The habitat involved is pictured on the cover of the draft BA and it supports Texas wild-rice, fountain darters, and San Marcos salamanders. A waterman type gate installed in the dam near the eastern spillway could be tied to deeper parts of Spring Lake by developing a channel in Spring Lake. Some form of siphon has been also been suggested. Eventually, the Edwards Aquifer and San Marcos Springs discharge will fall and it may be necessary to lower Spring Lake's stage (head) to maintain springflows to support downstream endangered species habitats.

William Fickel, Jr.

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The stoplogs in the western spillway provide one means of controlling Spring Lake's stage. Another beneficial measure would be a commitment from the section 206 partner, TSU – San Marcos, to a Service approved management plan for Spring Lake/Dam that focuses on optimizing threatened and endangered species aquatic habitats in the upper San Marcos River, during normal and critically low levels of the Edwards Aquifer.

We appreciate the opportunity to comment on the draft BA. We look forward to the opportunity to help improve the incidental take estimates and the subsequent initiation of formal consultation.

If you have any questions regarding these comments, please contact Patrick Connor of my staff at (512) 490-0057.

Sincerely,

A handwritten signature in cursive script, appearing to read "Robert T. Pine".

Robert T. Pine  
Supervisor

Enclosures

**Literature Cited**

- Cantu, V. 2003. Spatial and temporal variation of *Centrocestus formosanus* in river water and endangered fountain darters (*Etheostoma fonticola*) in the Comal River, Texas. Master of Science thesis. Texas State University – San Marcos.
- Claytor, R.A. and T.R. Schueler. 1996. Design of stormwater filtering systems. Chesapeake Research Consortium, Solomons, Maryland. Available from The Center for Watershed Protection, 8737 Colesville Road, Silver Spring, Maryland 20910.
- Fleming, B.P. 2002. Downstream spread of the digenetic trematode, *Centrocestus formosanus*, into the Guadalupe River, Texas. Master of Science thesis. Texas State University – San Marcos.
- McDonald, D.L. 2003. Effects of fluctuating temperature and an introduced trematode on reproduction and mortality of *Etheostoma fonticola*. Master of Science thesis. Texas State University – San Marcos.
- Mitchell, A.J., M.J. Salmon, D.G. Huffman, A.E. Goodwin, and T.M. Brandt. 2000. Prevalence and pathogenicity of a heterophyid trematode infecting the gills of an endangered fish, the fountain darter, in two central Texas spring-fed rivers. *Journal of Aquatic Animal Health* 12:283-289.
- Salmon, M.J. 2000. Impact of an undescribed heterophyid trematode on the fountain darter *Etheostoma fonticola*. Master of Science thesis. Texas State University – San Marcos.



REPLY TO  
ATTENTION OF

**DEPARTMENT OF THE ARMY**  
FORT WORTH DISTRICT, CORPS OF ENGINEERS  
P. O. BOX 17300  
FORT WORTH, TEXAS 76102-0300

13 January 2005

Planning, Environmental, and Regulatory Division

SUBJECT: Final Biological Assessment for the Spring Lake Section 206 Aquatic Ecosystem Restoration Project, Spring Lake, San Marcos, Texas

U.S. Fish and Wildlife Service  
Attn: Robert T. Pine  
Field Supervisor  
10711 Burnet Road, Suite 200  
Austin, TX 78758

Dear Mr. Pine:

The U.S. Army Corps of Engineers (USACE), Fort Worth District is pleased to submit a Biological Assessment (BA) in partial fulfillment of the U.S. Fish and Wildlife Service's (USFWS) requirements under Section 7 of the Endangered Species Act. Through informal consultation with the USFWS, five Federally protected species were identified within the Section 206 Aquatic Ecosystem Restoration Project area at Spring Lake, San Marcos, Texas. The enclosed BA discloses the beneficial or adverse effects through direct and/or indirect effects of the proposed restoration project on the San Marcos salamander, fountain darter, Texas blind salamander, Comal Springs riffle beetle, Texas wild-rice, and their associated critical habitats. As indicated in the BA, the proposed restoration project would directly and/or indirectly impact areas of Spring Lake and the San Marcos River from construction related activities associated with submerged structure removal, terrestrial structure/debris removal, exotic plant removal, grassland habitat plantings, and installation of recreational trails.

Several independent construction activities and their related impacts would have no effect or beneficial effects to the five species and their critical habitat as outlined in the BA. The removal of the fountain structure and concrete debris on the south shoreline would have negligible, indirect effects to protected species within Spring Lake. The temporary increase in turbidity associated with these construction activities would not affect areas inhabited by protected species. The creation of the golf-course buffer zone and the restoration of native grassland habitat would not directly alter critical habitat or result in the incidental take of any of the five species reviewed in this BA. However, the creation of the buffer zone and grassland habitat would help reduce pollution entering Spring Lake from surface runoff and reduce shoreline disturbance from maintenance and recreation activities. The removal of exotic terrestrial vegetation from the project area would cause an indirect, temporary increase in turbidity and would have long-term benefits to the Spring Lake ecosystem and downstream watershed by reducing the exotic seedbank. Native vegetation, such as black willow, American sycamore, and baldcypress would benefit by gaining more area to inhabit and through reduced competition from non-native vegetation.

The removal of structures associated with the Aquarena Center would have the greatest potential to adversely affect the protected species and their critical habitat. Aquarena structures to be removed include both terrestrial and submerged structures. None of the species would be directly affected by the removal of terrestrial structures. However, during the construction period, when large amounts of bare earth are exposed, a large rain event could result in increased turbidity in Spring Lake. Terrestrial demolition would also include the removal of 250 parking spaces and the consequent diversion of vehicles to the parking lot

near the old swimming pool. The diversion of parking to the alternative location would relocate the source of pollution, but would not result in overall, increased pollution entering Spring Lake. The San Marcos salamander, Texas blind salamander, fountain darter, and Comal Springs riffle beetle are sensitive to changes in water quality, and could be indirectly affected by run-off related to the terrestrial demolition activities and from the concentration of polluted runoff from the diverted parking area.

The removal of submerged structures would have a total area of potential impact of 5,015 square feet. Of that total, 2,766 square feet is the actual footprint of the submerged structures and 2,250 square feet is the area that would be temporarily impacted by demolition activities. Submerged structure removal would have direct effects on all species reviewed in the BA, except for Texas wild-rice. The San Marcos salamander and fountain darter are found within vegetation growing on the surface of the submerged structures and within vegetation on the lakebed near spring openings. Both of these species could be affected by incidental take and increased turbidity during the removal of submerged structures. The Texas blind salamander and Comal Springs riffle beetle are closely associated with spring openings near the submerged structures and could be affected by increased turbidity and disturbance to the lakebed.

The removal of submerged structures, with the exception of the fountain structure, has the potential to affect San Marcos salamanders within the area of potential impact. The area of potential impact for removal of aquatic debris and structures is estimated at 2,250 square feet. Based on the estimated density of salamanders in the area, their small size, and ability to avoid impacts, the probability for incidental take of San Marcos salamanders was estimated at 1 percent. Therefore, the removal of submerged structures could potentially result in the incidental take of up to 31 San Marcos salamanders. Prior to removal activities, salamanders would be removed from the area of impact, to the extent possible, by using seines and/or long-handled dip nets and relocated to USFWS approved areas. Floating algal mats would be pushed out of the area of potential impact and vegetation on the submerged structures would be removed. Cut submerged vegetation would be brought to the surface and inspected for the presence of fauna before disposal. The removal of submerged structures would occur within, and could potentially result in temporary impacts to 2,250 square feet of existing, San Marcos salamander critical habitat. Disturbance to the degrading structures, as well as disturbance from divers and falling debris could result in a temporary increase in turbidity within the area of potential impact. The removal of submerged structures would restore approximately 2,766 square feet of lakebed within San Marcos salamander critical habitat and could potentially uncover more spring openings. The removal of degrading, submerged structures from Spring Lake is likely to adversely affect San Marcos salamanders, but is not likely to adversely affect salamander critical habitat.

The removal of the submerged structures would potentially affect approximately 2,766 square feet of fountain darter habitat within Spring Lake. The potential for incidental take was estimated at 1 percent due to the estimated density of darter's within the area, the darter's avoidance ability during removal activities, efforts to remove and relocate individuals found within vegetation covering submerged structures, and the low probability of divers or falling debris contacting individual fountain darters in lakebed vegetation. Therefore, the removal of submerged structures would potentially result in the take of up to 140 fountain darters. Efforts to remove fountain darters from the area of potential impact would be identical to those used to remove and relocate San Marcos salamanders. The removal of submerged structures would occur within, and could potentially result in temporary impacts to 2,250 square feet of existing, fountain darter critical habitat. Temporary disturbance to the lakebed and an increase in turbidity would occur within the area of potential impact. The removal of submerged structures would restore approximately 2,766 square feet of lakebed within fountain darter critical habitat and result in long-term water quality improvements. The removal of degrading, submerged structures from Spring Lake is likely to adversely affect fountain darters, but is not likely to adversely affect darter critical habitat.

Because of the Texas blind salamander's subterranean existence, the potential for incidental take of this species is negligible. The two spring openings located near the submerged structures are approximately 20 feet away from the area of potential impact and are not likely to be disturbed by divers or falling debris. The spring openings would be marked and avoided during construction activities to prevent incidental take of Texas blind salamanders or disturbance of their critical habitat. A silt curtain would also be installed around the submerged structures to restrict sediment movement and avoid turbidity impacts to the two spring openings. There is also the potential to uncover new spring openings below the submerged structures, which would result in more habitat for the Texas blind salamander. The removal of submerged structures is not likely to adversely affect the Texas blind salamander.

The two springs located near the area of potential impact may contain Comal Springs riffle beetles. However, since the Comal Springs riffle beetle is usually found within the immediate vicinity of spring openings, direct take is not likely to occur during the removal of the submerged structures. Also, since the primary habitat for the beetle is in the upper portion of Spring Lake near the Aquarena Inn, an increase in turbidity is not likely to affect the species. Before removal of structures, the area would be surveyed for Comal Springs riffle beetles. Efforts to minimize disturbance and turbidity impacts to spring openings would be identical to those discussed for the Texas blind salamander. The removal of submerged structures is not likely to adversely affect the Comal Springs riffle beetle.

Texas wild-rice is present in Spring Lake only at locations adjacent to the spillways of the Spring Lake Dam. A temporary boom located upstream of the dam would be designed to collect and prevent any project related vegetation mats from impacting Texas wild-rice populations located downstream of the Spring Lake Dam. Construction related activities at the Aquarena Center would have no direct effect on this species.

Fort Worth District representatives have coordinated with the USFWS since the inception of the proposed restoration project. The species determinations and project construction activities discussed in the BA are based on the most current and available information and data. With the submittal of the BA, the USACE is requesting that the USFWS initiate the formal consultation process for the proposed restoration project. We have enclosed a copy of the BA, which addresses impacts to the five Federally protected species for your consideration. If you have any questions regarding the BA, please feel free to contact our project manager, Mr. Jeffry Tripe at (817) 886-1716.

Sincerely,



For William Fickel, Jr.  
Planning, Environmental and  
Regulatory Division

Enclosure



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

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JAN 27 2005

WF  
PED-EM

William Fickel, Jr.  
Planning, Environmental, and  
Regulatory Division  
U.S. Army Corps of Engineers  
P.O. Box 17300  
Fort Worth, Texas 76102-0300

Consultation 2-15-F-2005-0087

Dear Mr. Fickel:

This letter acknowledges the U.S. Fish and Wildlife Service's receipt of your January 13, 2005, letter requesting formal section 7 consultation under the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 *et seq.*) for the proposed section 206 Aquatic Ecosystem Restoration Project at Spring Lake, San Marcos, Hays County, Texas. We also received the biological assessment (December 2004). The consultation will cover the following federally listed threatened and endangered species in Spring Lake:

<u>Common Name</u>	<u>Scientific Name</u>	<u>Federal Status</u>
Texas wild-rice	<i>Zizania texana</i>	Endangered
Comal Springs riffle beetle	<i>Heterelmis comalensis</i>	Endangered
fountain darter	<i>Etheostoma fonticola</i>	Endangered
San Marcos salamander	<i>Eurycea nana</i>	Threatened
Texas blind salamander	<i>Eurycea rathbuni</i>	Endangered

In addition, Spring Lake is federally designated critical habitat for Texas wild-rice, fountain darter, and San Marcos salamander.

The Service received all of the information necessary to initiate formal consultation on the proposed project as outlined in the regulations governing interagency consultations (50 CFR §402.14) on January 13, 2005. The consultation number in the upper right corner of this page should be referenced in any further correspondence on this consultation. Section 7 allows the Service up to 90 days to conclude formal consultation with federal agencies and an additional 45 days to prepare our biological opinion (unless we mutually agree to an extension).

As a reminder, the Act requires that after initiation of formal consultation, the federal action agency should make no irreversible or irretrievable commitment of resources that limits future options. This practice insures agency actions do not preclude the formulation or implementation of reasonable and



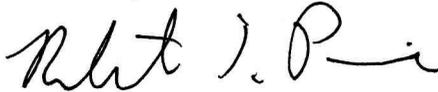
William Fickel, Jr.

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prudent alternatives that avoid jeopardizing the continued existence of endangered or threatened species or destroying or modifying their critical habitats.

If you have any questions or concerns about this consultation or the consultation process in general, please contact Dawn Whitehead of this office at 512 490-0057, extension 222 or the above address.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert T. Pine". The signature is written in a cursive style with a large, prominent "P" at the end.

Robert T. Pine  
Supervisor



REPLY TO  
ATTENTION OF

**DEPARTMENT OF THE ARMY**  
FORT WORTH DISTRICT, CORPS OF ENGINEERS  
P. O. BOX 17300  
FORT WORTH, TEXAS 76102-0300

26 April 2005

Planning, Environmental, and Regulatory Division

U.S. Fish and Wildlife Service  
Attn: Robert T. Pine  
Field Supervisor  
10711 Burnet Road, Suite 200  
Austin, TX 78758

Dear Mr. Pine:

The U.S. Army Corps of Engineers (USACE), Fort Worth District has reviewed the Draft Biological Opinion (BO) that was submitted by the U.S. Fish and Wildlife Service (USFWS) for the Section 206 Aquatic Ecosystem Restoration Project at Spring Lake, San Marcos, Texas. Based on review of the Draft BA, the USACE has the following comments:

- 1) On Page 17, under the section entitled "Fountain Darter Incidental Take", the Draft BO identifies the total number of fountain darters associated with impacted areas of Spring Lake as 9,646. The Draft BO indicates that 10 percent of this number may be harmed, harassed, or killed by restoration efforts, yielding an incidental take of 965 fountain darters. On page 19, under the section entitled "Effects Summary", the Draft BO states that the number of fountain darters that may be incidentally taken during restoration efforts is 9,646. This value should reflect the 10 percent that may be harmed, harassed, or killed (i.e., 965 fountain darters) as identified on Page 17.
- 2) On Page 21, under the section entitled "**Amount or Extent of Take Anticipated**". The first sentence indicates that the USFWS anticipates that no more than 9,646 fountain darters would be incidentally taken during construction. This value should reflect the 10 percent that may be harmed, harassed, or killed (i.e., 965 fountain darters) as identified on Page 17.
- 3) On Page 22, under the section entitled "**Terms and Conditions**", in RPM #1, item (1). The Draft BO states "Work will be actively monitored by a representative of Texas State University (TxSTU)...". Please change the sentence to read "Work will be actively monitored by a representative from the USACE and/or TxStU..."
- 4) On Page 23, under the section entitled "**Terms and Conditions**", in RPM #2, item (2), sentences 2, 3, and 4. These sentences address USFWS concerns regarding water flow through the cavity and siphon bypass of Spring Lake Dam. The USACE and Texas State University (TxSt) will not be conducting any dam strengthening measures (i.e., grouting) in conjunction with the Section 206 Project. Therefore, no interruption in existing flow over Spring Lake Dam is anticipated. At this time, the USACE does not anticipate the need for Spring Lake water level adjustments for the other proposed project restoration measures (i.e., barge operations).
- 5) On Page 23/24, under the section entitled "**Terms and Conditions**", in RPM #2, item (3). The USACE anticipates close coordination with the USFWS in implementing the appropriate

survey personnel, techniques, equipment, and required authorizations/permits.

If you have any questions regarding the above comments, please contact Mr. Jeffry Tripe at (817) 886-17616. Following revision of the Draft BO, please forward a digital and/or hard copy of the BO to the USACE and the non-Federal project sponsor. The non-Federal sponsor contact information is: Mr. Pat Fogarty, Assistant Vice President Facilities, Texas State University, 601 University Drive, San Marcos, Texas 78666-4615; phone (512) 245-2820; Fax (512) 245-1466; e-mail [WF10@swt.edu](mailto:WF10@swt.edu). Following further review by the non-Federal sponsor and responses to potential comments, the USACE anticipates completion of the Final BO.

Sincerely,

A handwritten signature in black ink that reads "William Fickel, Jr." The signature is written in a cursive style with a vertical line to the right of the name.

William Fickel, Jr.  
Planning, Environmental and  
Regulatory Division



United States  
Department of  
the Interior

FISH AND WILDLIFE  
SERVICE  
Austin Ecological Services  
Office  
10711 Burnet Road, Suite 200  
Austin, Texas 78758  
(512) 490-0057



May 16, 2005

Consultation # 2-15-F-2005-0087

William Fickel, Jr.  
Planning, Environmental, and  
Regulatory Division  
Fort Worth District, Corps of Engineers  
P.O. Box 17300  
Fort Worth, Texas 76102-0300

Dear Mr. Fickel:

We received your April 26, 2005 letter with recommended changes for the draft biological opinion for the proposed aquatic ecosystem restoration project at Spring Lake, in San Marcos, Hays County, Texas in partnership with Texas State University – San Marcos. We made the suggested changes and enclose a copy of the revised draft biological opinion for your review. Also, per your request, we have mailed and e-mailed copies of the revised draft biological opinion to Mr. Pat Fogarty, Assistant Vice President Facilities at Texas State University – San Marcos.

After we receive any additional comments from the Corps of Engineers, we will finalize the biological opinion. If you have any questions regarding this revised draft biological opinion, please contact Dawn Whitehead at (512) 490-0057, extension 222.

Sincerely,

/s/ Robert T. Pine

Robert T. Pine  
Supervisor

Enclosure

cc: Regional Director, Service, Albuquerque  
Pat Fogarty, Texas State University – San Marcos





REPLY TO  
ATTENTION OF

**DEPARTMENT OF THE ARMY**  
FORT WORTH DISTRICT, CORPS OF ENGINEERS  
P. O. BOX 17300  
FORT WORTH, TEXAS 76102-0300

June 28, 2004

Planning, Environmental and Regulatory Division

Mr. Pat Fogarty  
Texas State University  
601 University Drive  
San Marcos, TX 78666-4615

Dear Mr. Fogarty,

Enclosed is the United States Fish and Wildlife Service (USFWS) response letter regarding the December 2003 Draft Biological Assessment (BA) for the Spring Lake Section 206 Aquatic Ecosystem Restoration Project, San Marcos, Texas. The USFWS response letter provides informal Section 7 consultation comments for the proposed U.S. Army Corps of Engineers (USACE) and Texas State University (TSU) restoration measures at Spring Lake.

To address the USFWS comments and concerns regarding the BA, please review the enclosed USFWS response letter and respond to the following items as soon as possible:

- (1) Page 3 of the USFWS response letter, Cumulative Impacts Section – Provide a summary description and map outlining the local storm water system around Spring Lake. This will help USFWS address storm water discharge points into Sink Creek, Spring Lake, and the upper San Marcos River.
- (2) Page 4 of the USFWS response letter, Cumulative Impacts Section – Provide a description of proposed TSU and City of San Marcos plans for future aquatic macrophyte removal in Spring Lake. This will help the USFWS identify potential adverse impacts to the federally listed endangered fountain darter.
- (3) Page 4 of the USFWS response letter, Cumulative Impacts Section – Provide information regarding existing water wells in the city of San Marcos that are located near the Edwards Aquifer. This will help the USFWS address potential adverse impacts to the federally listed endangered Texas blind salamander.
- (4) Page 4 of the USFWS response letter, Cumulative Impacts Section – Provide information regarding proposed construction of the new conference-resort center, 18 hole golf course, and residential development. This will help the USFWS identify any potential adverse impacts to Spring Lake due to proposed new development in the area.

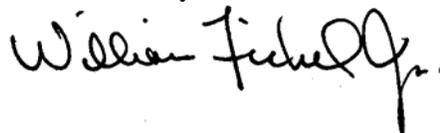
(5) Page 4 of the USFWS response letter, Possible Conservation Measures Section – Provide TSU’s viewpoint on the potential implementation of a permanent structure to remove floating aquatic plant fragments in Spring Lake. Incorporation of this restoration measure would help reduce floating aquatic plant fragments that impact Texas wild-rice population located downstream. To incorporate this restoration alternative into the Spring Lake Restoration Project, we would need to identify feasible restoration measures, develop conceptual designs, develop conceptual costs, and determine habitat benefits. If this restoration measure were implemented, TSU would be responsible for the long-term operation and maintenance (O&M) throughout the project life.

(6) Page 4 of the USFWS response letter, Possible Conservation Measures Section – Provide TSU’s viewpoint on the potential implementation of an eastern Spring Lake Dam spillway control structure. Incorporation of the restoration measure could allow more flexible control of Spring Lake water levels during reduced Edwards Aquifer discharge periods. This measure could help maintain spring flows that benefit downstream Texas wild-rice, fountain darter, and San Marcos salamander populations. To incorporate this restoration alternative into the Spring Lake Project, we would need to identify feasible restoration measures, develop conceptual designs, develop conceptual costs, and determine habitat benefits. If this restoration measure were implemented, TSU would be responsible for the long-term O&M throughout the project life.

(7) Page 5 of the USFWS response letter, Possible Conservation Measures Section – Provide TSU’s viewpoint on the implementation of an aquatic habitat management plan with the USFWS to optimize threatened and endangered species aquatic habitats in the upper San Marcos River, during normal and critically low levels of the Edwards Aquifer. If this restoration measure were implemented, the USFWS operation and maintenance language would be incorporated into the final O&M plan and TSU would be responsible for the plan conditions throughout the project life.

We are currently finalizing the incremental cost analysis process and anticipate a team/sponsor meeting in the next month to review the recommended restoration plan. Once we have identified the recommended restoration plan and have addressed the USFWS BA concerns, we will finalize the Section 7 process through formal consultation. If you have any questions regarding the BA, the USFWS response letter, or the Section 7 consultation process, please contact Mr. Jeffrey A. Tripe of my staff at 817-886-1716 or by e-mail at [Jeffrey.A.Tripe@SWF02.usace.army.mil](mailto:Jeffrey.A.Tripe@SWF02.usace.army.mil). We look forward to finalizing the Section 7 process and continued work on the Spring Lake restoration project.

Sincerely,



William Fickel, Jr.  
Chief, Environmental Division

Enclosure



Texas State University | SAN MARCOS

*Vice President for Finance  
and Support Services*

601 University Drive  
San Marcos, Texas 78666-4615  
office: 512.245.2244  
fax: 512.245.2033  
www.vpfss.txstate.edu

September 15, 2004

Mr. William Fickel, Jr.  
Chief, Planning, Environmental and Regulatory Division  
Department of the Army  
Fort Worth District  
Corps of Engineers  
P. O. Box 17330  
Forth Worth, Texas 76102-0300

Dear Mr. Fickel:

I am writing to you regarding the status of the Spring Lake Section 206 Aquatic Ecosystem Restoration Project at Texas State University-San Marcos. On September 13, 2004, Mr. Jeff Tripe of your office advised Pat Fogarty, my Facilities Department Head, of the Corps of Engineers' (COE) decision to eliminate from the project the restoration measure related to dam repairs. I understand that the COE is concerned about the liability it may incur as a result of not repairing the dam to COE standards.

While the university wants to proceed with the project even if this restoration measure is eliminated I would like to ask if there are any circumstances under which we could include this measure in the project. It was indeed the needed repairs to the dam that led us to enter into the current partnership with the COE. For example, if the University provides the COE with a letter holding it harmless from any consequences should the dam fail, could the dam repairs be put back into the project? If this is not acceptable, are there other alternatives to get the dam repaired?

Please explore what may be possible and, at your convenience, give me a call at (512) 245-2244.

Sincerely,

William A. Nance  
Vice President for Finance  
and Support Services

WAN:pp

cc: Mr. Jeff Tripe  
Mr. Pat Fogarty



REPLY TO  
ATTENTION OF

**DEPARTMENT OF THE ARMY**  
FORT WORTH DISTRICT, CORPS OF ENGINEERS  
P. O. BOX 17300  
FORT WORTH, TEXAS 76102-0300

September 29, 2004

Planning, Environmental and Regulatory Division

Mr. William A. Nance  
Vice President for Finance and Support Services  
601 University Drive  
San Marcos, Texas 78666-4615

Dear Mr. Nance,

I am writing in response to the Texas State University (TxSt) letter dated 15 September 2004, regarding the Spring Lake Section 206 Aquatic Ecosystem Restoration Project at Texas State University, San Marcos, Texas.

Based on recent information and guidance from our Geotechnical and Office of Counsel staff, there are several items that inhibit the Fort Worth District, U.S. Army Corps of Engineers (USACE) from participating in the rehabilitation of the Spring Lake Dam, even with the issuance of a hold harmless agreement by TxSt.

- (1) Even though the proposed dam rehabilitation measures may provide some benefits through increased global stability and protection of exposed timber cribs, these measures alone would be considered temporary and would not bring the structure into compliance with state of Texas dam safety standards. Extensive hydrologic, structural, and geotechnical investigations and analyses of the existing dam and its foundation and structural components would be required to characterize design flood events and enable development of a rehabilitation plan that would ensure the dam's performance at the required compliance level. The required studies and remedial rehabilitation measures are not within the USACE's authority under the Section 206 Program.
- (2) The lack of compliance with the state of Texas dam safety standards and potential future failure of the Spring Lake Dam would represent a potentially significant liability issue. The primary liability that the USACE is concerned with relates to dam safety issues and the potential for catastrophic loss of life should the dam fail during the 50-year project life. The USACE is concerned with potential lawsuits from families of people injured or killed that are located downstream of the dam.

- (3) The proposed indemnity agreement by TxSt could not be used to hold the USACE harmless from any consequences should the dam fail. The Texas Attorney General has issued a decision that public universities cannot legally enter into an indemnity agreement that “purports to create liability or potential liability on the part of the university beyond its statutory or constitutional powers to incur liability” or the agreement is invalid. Also, the state is not subject to the Federal Tort Claims Act, as the USACE is, so the agreement would be invalid.

The revised geotechnical appendix that will be included in the final Detailed Project Report and integrated Environmental Assessment (DPR/EA) is enclosed for your review. Please refer to sections 6 and 7 of the geotechnical appendix, which outlines the USACE observations, proposed remedial actions, and recommendations for bringing the Spring Lake Dam into compliance with state of Texas dam safety standards. Future remedial actions for the Spring Lake Dam would be the full responsibility of TxSt, however, the USACE could still provide technical review and oversight assistance through an agreement under the Interagency and International Services Program (IISP). Information regarding the IISP is outlined in the geotechnical appendix and can be obtained at the following website:  
<http://www.hq.usace.army.mil/comp/cn/iishmpg.htm>.

The USACE is committed to providing the remaining components associated with the restoration project and looks forward to continued coordination with TxSt and development of this important restoration project. If you have any questions or concerns please contact the Project Manager, Mr. Jeffrey A. Tripe of my staff at 817-886-1716 or through e-mail at [Jeffrey.A.Tripe@swf02.usace.army.mil](mailto:Jeffrey.A.Tripe@swf02.usace.army.mil).

Sincerely,



William Fickel Jr.  
Chief, Planning Environmental, and  
Regulatory Division

Enclosure

CC: Mr. Pat Fogarty