

295

Respectfully submitted,  
MYLES E. FLINT  
Acting Assistant Attorney General  
RONALD F. EDERER  
United States Attorney  
ELLEN LOCKWOOD  
Assistant U.S. Attorney

February 1, 1993.

The federal defendants hereby give notice that they are filing the attached document entitled, "Springflow Determinations Regarding 'Take' of Endangered and Threatened Species," which has been prepared by the United States Fish and Wildlife Service in accordance with this court's judgement of February 1, 1993.

NOTICE OF FILING

SIERRA CLUB,  
Plaintiff,  
and  
GUADALUPE-BLANCO RIVER AUTHORITY,  
Plaintiff-Intervenor,  
v.  
BRUCE BABBITT, et al.,  
Defendants,  
and  
DANNY MCFADIN, et al.,  
Defendant-Intervenor.

CIVIL ACTION NO. MO-91-CA-069

UNITED STATES DISTRICT COURT  
WESTERN DISTRICT OF TEXAS  
MIDLAND/ODESSA DIVISION

DATED: April 15, 1993

JAMES C. KILBOURNE, Attorney  
CHARLES R. SHOCKEY, Attorney  
D.C. Bar No. 914879  
Wildlife & Marine Resources Section  
Environment & Natural Resources  
Division  
U.S. Department of Justice  
Benjamin Franklin Station  
P.O. Box 7369  
Washington, D.C. 20044-7369  
(202) 272-4463

*Charles R. Shockey*  
Charles R. Shockey, Attorney

APR-15-1993 12:04 FROM TO C. SHOCKEY P.02

**Springflow Determinations Regarding "Take" of Endangered and Threatened Species**

**I. Introduction**

As part of the judgment in the Sierra Club vs. Secretary of the Interior lawsuit on the Edwards Aquifer, the U.S. Fish and Wildlife Service (Service) has been ordered to exercise its best professional judgment to determine:

- 1) the springflow at Comal Springs at which Fountain Darters begin to be "taken" as springflow drops!
- 2) the springflow at San Marcos Springs at which any listed wildlife species begins to be "taken" as the springflow drops!
- 3) the minimum springflows or minimum water levels in the Edwards at which Texas Blind Salamanders begin to be "taken" as springflows and water levels drop.

In reviewing available information and interviewing various experts, the Service found more data available for basing flow level determinations for some of the listed species than for others. In addition, there are significant gaps in knowledge upon which to base minimum flow level findings for all of the species. Because this evaluation was conducted with much less data than are normally available, this document renders the Service's best professional judgement on the levels where "take" occurs. If sufficient data are not available, the Service acts conservatively to be certain that irrevocable harm to listed species is unlikely to occur from the action(s) being evaluated.

The knowledge upon which to base these determinations can be improved greatly with additional research and data collection. The Service has recently begun a multi-year study to collect such data for the Comal ecosystem. The Service is also planning to initiate a similar study for the San Marcos ecosystem later this year. Completion of these studies should greatly improve our ability to determine the flow levels where listed species are necessary to protect the chances of long-term survival of the listed species and the ecosystems upon which they depend. As more information becomes available, the numbers identified in this document may change to more accurately reflect that best available scientific and commercial information.

**II. Requirements of the Endangered Species Act (Section 9)**

Section 9 of the Endangered Species Act (Act) states that it is unlawful to "take" any endangered species of fish or wildlife or

APR-15-1993 12:05 FROM TO C. SHOCKEY P.03

violate any regulation pertaining to any endangered or threatened species of fish or wildlife listed pursuant to Section 4 of the Act. This prohibition against "take" applies to everyone including private citizens, agencies, and any other individual or group.

"Take" in the Act "means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct (18 U.S.C. §1532(19))." "Harass" and "harm" are further defined in the regulations (50 CFR 17.3) as follows:

Harass - "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering."

Harm - "an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."

"Take" determinations apply only to listed animal species and not to listed plants.

In determining whether a specific action will result in "take" of a listed species, the Service considers all factors of the environment affecting the species and its habitat (the environmental baseline) and the direct and indirect effects of the action. The environmental baseline for the ecosystems being reviewed under this judgment includes such factors as water quality and temperature, the presence of exotic species, recreational activities, existing and historic streamflow patterns, and similar interrelated factors.

Springflow levels where "take" begins to occur vary from species to species depending upon the species' unique requirements, ecology, and life history. In determining where "take" of a listed species occurs it is necessary to determine how springflow would impact a species or modify habitat for the species in such a way that it would cause loss or injury of an individual or individuals. The following flow determinations (Section IV), are based upon the Service's best professional judgment of where "take" would begin to occur for each of the four listed animal species.

Determinations of springflow levels at which "take" is deemed to occur should be distinguished from the level where "jeopardy" to the species occurs. "Take" is an event that may involve only one individual specimen of a species, whereas jeopardy involves the status of the species as a whole. Thus, "take" numbers are

typically higher than "jeopardy" numbers. Although "take" of a listed species is a violation of federal law, some "take" may be allowed if an "incidental take" permit is issued by the Service pursuant to Section 10(a) of the Act or an "incidental take" statement is issued under formal Section 7 consultation with a Federal agency.

### III. Incidental Take Permits and Federal Agency Consultation

There are two instances where "take" can be authorized: Section 10 (non-federal) and Section 7 (federal). Section 10 and Section 7 authorizations are discussed in more detail below.

#### Non-Federal (Section 10 Incidental Take Permit):

The Endangered Species Act provides a permitting process under Section 10 of the Act to allow some "take" of listed species if, among other things, the "take" is incidental to an otherwise lawful activity and the "take" would not appreciably reduce the likelihood of the survival and recovery of listed species in the wild.

This permitting process provides a high degree of flexibility in implementing the Endangered Species Act. In the case of the Edwards Aquifer, it could enable the development and implementation of plans that would allow reduced flows (flows lower than those required to avoid any "take" of listed species in these ecosystems) to occur while also assuring the likelihood of survival and recovery of listed species in the wild.

To obtain a Section 10(a) permit to "take" listed species, the permit applicant must prepare a Habitat Conservation Plan (HCP) that outlines steps that would be followed to offset losses of listed species that would occur. These HCPs are usually developed in close coordination with the Service so that the Service can give input throughout the process as to what would likely result in a successful permit application. Relative to the Edwards Aquifer, the permit applicant would have to assure that they have the ability to carry out the HCP and other conditions of the permit, including the appropriate authority and funds. It is essential that the permit holder have the regulatory authority to ensure permit conditions are met. Because so many individuals and groups rely on withdrawal from the aquifer, a regionwide approach to development of the Habitat Conservation Plan would be easier, more efficient, and more likely to be successful.

Development and implementation of a regionwide Habitat Conservation Plan for the Comal, San Marcos, and Edwards Aquifer ecosystems could be an effective tool that provides for water

9PR-15-1993 12:06 FROM TO C. SHOCKEY P.05

supply certainty in the Edwards Aquifer region, as well as, providing for protection of all of the listed species.

Federal (Section 7 Consultation):

Section 7 of the Act requires Federal action agencies to ensure that their activities are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. Examples of some of the Federal activities that could be involved include NPDES (National Pollutant Discharge Elimination System) permits administered by the Environmental Protection Agency (EPA), transportation projects, Department of Defense activities, and agricultural programs. If an action "may affect" listed species or critical habitat, formal consultations are conducted unless all adverse effects can be avoided.

Formal consultation is initiated by a written request from an action agency to the Service. The request must include a description of the action being considered, a description of the specific area that may be affected by the action, a description of any listed species or critical habitat that may be affected by the action, a description of the action, a description of the critical habitat, and an analysis of any cumulative effects (all non-federal actions), and relevant reports or information prepared or available on the action.

The Service is required to issue a biological opinion on agency actions that "may affect" listed species or critical habitat. Biological opinions determine if the action is likely to jeopardize the continued existence of listed species or destroy or adversely modify critical habitat. In addition, the Service is required to provide an "incidental take" statement in biological opinions for any action that is likely to adversely affect listed animal species. "Incidental take" statements allow Federal action agencies to lawfully "take" listed animal species if they comply with the terms and conditions of the "incidental take" statement and reasonable and prudent measures. Because the "incidental take" statement effectively permits action agencies to "take" listed fish and wildlife species, it is considered a permit. The terms and conditions and reporting requirements contained in the "incidental take" statement are binding on the Federal action agency.

Since all Federal agencies are required to comply with Section 7 of the Act, those agencies whose activities result in the withdrawal of water from the Edwards Aquifer (greater than 30 agencies) should enter formal consultation for any activity that "may affect" listed species. Because of the magnitude and complexity of the Federal governments programs over the Edwards Aquifer region, a comprehensive Federal consultation would

APR-15-1993 12:07 FROM TO C. SHOCKEY P.06

provide for a more efficient and orderly means of addressing endangered species needs in the region.

IV. Flow Determinations

For the purposes of these flow determinations, the Service assumed that Comal springflows would be measured at the USGS gaging station near the San Antonio Street bridge. Flows for the San Marcos ecosystem would be estimated based on levels in the index well in San Marcos. Ideally, an actual gaging station should be installed on the San Marcos River.

Fountain Darter (*Pitheostoma fonticola*)

The fountain darter is an endangered fish that occurs in all of the Comal River upstream of the San Antonio Street bridge and all of the San Marcos River upstream of the San Marcos City Wastewater Treatment Plant's outfall. Historically the fountain darter occurred downstream to below the San Marcos River's confluence with the Blanco River. Critical habitat is designated as Spring Lake and its outflow, the San Marcos River, downstream about 0.5 miles below Interstate Highway 35 bridge. No critical habitat is designated for the Comal ecosystem. Primary threats include loss of springflows, habitat alteration, impacts associated with exotic species (e.g. the giant ramshorn snail and several exotic fish species), and degradation of water quality and temperature.

"Take"

Based on loss of vegetation in 1989 and 1990 in Comal Springs associated with damage by the ramshorn snail, the Service believes that "take" currently begins to occur in the Comal ecosystem at 200 cfs. If effective control of the giant ramshorn snail could be accomplished, flow levels could be reduced to 150 cfs without resulting in "take" of the fountain darters. Flows below 150 cfs result in loss of water surface area which correlates with loss of fountain darter habitat. It is possible to maintain fountain darter habitat at lower flows in the San Marcos ecosystem. The Service believes springflows of 100 cfs from San Marcos Springs are required to prevent "take" of fountain darters. This correlates with flows needed to maintain habitat availability and to avoid extreme temperature fluctuations downstream in the summer or winter.

RR-15-1993 12:07 FROM TO C. SHOCKEY P.07

**San Marcos Salamander (*Eurycea hana*)**

The San Marcos salamander is a threatened species with critical habitat designated as Spring Lake and downstream about 50 meters from Spring Lake Dam. This species is limited primarily to the areas around spring openings in Spring Lake and to the rocky areas just below the Spring Lake dam. The primary threats to the species include degradation of water quantity and quality, changes in water temperature, and impacts associated with predators in the ecosystem.

**"Take"**

San Marcos salamanders are very sensitive to temperature increases, and mortality has been shown to occur at temperatures above 25°C. Reductions in springflows that would cause temperatures to exceed 25°C would result in "take" of individuals.

Water temperature in Landa Lake in the Comal ecosystem warmed to above 25°C in 1990 when flows at Comal Springs decreased to 60 cfs. Spring Lake contains less water and is deeper than Landa Lake. Spring Lake's faster exchange rate means lake temperatures will remain constant at lower flows than in the Comal system.

The Service believes that as long as springflows from San Marcos Springs exceed 60 cfs that "take" of San Marcos salamanders due to flows will not occur.

**San Marcos Gambusia (*Gambusia georgei*)**

The San Marcos gambusia is an endangered fish with critical habitat designated as the San Marcos River from the Hopkins Street (Highway 12) bridge downstream to a point about 0.5 miles below the Interstate Highway 35 bridge. This species has not been collected from the San Marcos River since 1983 although several search efforts have been undertaken. It may now be extinct. Primary threats to this species include its extremely low population size and associated problems with hybridization with gambusia affinis, competition with exotic fishes, and habitat degradation due to the occurrence of the exotic elephant ears plant.

Flow determinations were based on the assumption that the San Marcos gambusia still exists in the wild.

**"Take"**

The Service believes "take" of San Marcos gambusia would occur when springflow at San Marcos Springs reaches 100 cfs. Temperature regime changes resulting from springflows under 100



cts would result in harm to individuals by increasing water temperatures in this species' range. Consequently, conditions would be more advantageous for gambusia attinis and may result in thermal stress to the San Marcos gambusia. This could adversely affect San Marcos gambusia growth, feeding behavior, survivorship, and reproduction.

Texas blind salamander (Typhlotriton rathbunii)

This endangered salamander has been collected at several locations including an artesian well on southwest Texas state University's campus, San Marcos Springs, Wonder (Beaver) Cave, Ezell's Cave, and Rattlesnake Cave. It is presently thought that the Texas blind salamander is distributed throughout the Edwards Aquifer in the San Marcos area in the same range as originally described in 1921. No critical habitat is designated for this species.

The Texas blind salamander is aquatic throughout its life and lives in the water-filled cavernous areas of the Edwards Aquifer in the San Marcos Region. Primary threats include degradation in water quality and quantity. One of the characteristics of a cavernous aquifer like the Edwards Aquifer is rapid recharge with little or no filtration of pollutants. Thus, pollution on the surface will make its way into the subsurface rapidly with potentially devastating consequences on subterranean organisms. Movement of the "bad water line" is also a concern. A recent study conducted by the Edwards Underground Water District found that the fresh/saline boundary was much closer to the major springs than previously believed. These results highlight the concern relative to the possibility of saline water movement and the potential deterioration of the salamander's habitat during periods of drought and heavy pumping.

"Take"

Little is known of the actual extent and health of this subterranean population of salamanders. The Texas blind salamander did survive the drought of record in the mid-1950's when flow levels at San Marcos Springs dropped briefly to 46 cfs. However, there may have been some movement of the bad water line at that time. The Service believes aquifer levels should be maintained so there is a flow above 50 cfs from San Marcos Springs to avoid "take" of this species.

V. Summary

The "take" numbers referenced in this report reflect the Service's best professional judgement based upon data available at this time. Because there is a lack of data to base these

determinations on, the Service has taken a conservative approach to this analysis. As additional data are obtained, the Service plans to modify its recommendations to the court.

"Take" of endangered species is unlawful without authorization from the Fish and Wildlife Service. "Take" not only applies to Federal, State, and local governments, but also private individuals. Section 10(a) of the Act allows for the "incidental taking" of endangered species. A section 10(a) permit could allow for greater flexibility in managing the Edwards Aquifer by allowing for water withdrawals beyond the "take" levels that are referenced in this report. Issuance of a section 10(a) permit would be predicated on the need for the state to designate an entity that has regulatory jurisdiction over groundwater withdrawal from the entire Edwards Aquifer.

Absent State action to manage the water resources of the Edwards Aquifer, the federal government will have to step up its involvement in resolution of endangered and threatened species issues relative to groundwater withdrawal from the Edwards Aquifer. Our preliminary assessment indicates the scope of Federal involvement in the Edwards Aquifer region may be substantial. If Federal programs (actions) are determined to be jeopardizing the continued existence of endangered species or resulting in destruction or adverse modification to critical habitat, significant steps will have to be taken to alter the programs so as to remove jeopardy to the species.

I certify that, on the 15th day of April, 1993, a true and correct copy of the federal defendants' Notice of Filing was served by U.S. first class mail, postage prepaid, on the counsel of record as listed below:

CERTIFICATE OF SERVICE

SIERRA CLUB:  
STUART N. HENRY  
HENRY, LOWMERE & TAYLOR  
202 West 17th Street  
Austin, Texas 78701

DANNY McFADIN, et al.:

DOUGLAS L. CAROOM  
BICKERSTAFF, HEATH & SMILEY  
San Jacinto Center  
Suite 1800  
98 San Jacinto Boulevard  
Austin, Texas 78701-4039

CITY OF SAN ANTONIO:

JIM MATHEWS  
LLOYD, GOSSSELINK, FOWLER,  
BLEVINS & MATHEWS, P.C.  
111 Congress, Suite 1800  
Austin, Texas 78701

LIVING WATERS ARTESIAN SPRINGS:

C.C. SMALL, JR.  
SMALL, CRAIG & WERKENTHIN  
100 Congress, Suite 1100  
Austin, Texas 78701

STATE OF TEXAS:

PETER A. WINN  
Special Assistant Attorney General  
Administration  
714 Jackson, Suite 700  
Dallas, Texas 75202

MARTHA S. DICKIE

Hinton, Burton, Foster & Collins  
1100 Guadalupe  
Austin, Texas 78701

CITY OF SAN MARCOS:

JOHN R. BREIHAN  
MCGINNIS, LOCHRIDGE & KILGORE  
1300 Capitol Center  
919 Congress Avenue  
Austin, Texas 78701

BEXAR METROPOLITAN WATER DISTRICT:

NORTH O. WEST  
BEXAR METROPOLITAN WATER DISTRICT  
c/o West & West  
8000 Vantage, Building A  
San Antonio, Texas 78230-4710

EDWARDS UNDERGROUND WATER DISTRICT:

GILBERT F. VAZQUEZ  
AKIN, GUMP, HAUER & FELD  
300 Convent Street, Suite 1500  
San Antonio, Texas 78205

GUADALUPE-BLANCO RIVER AUTHORITY:  
ROGER P. NEVOLA  
VINSON & ELKINS  
1800 First City Centre  
816 Congress Avenue  
Austin, Texas 78701-2496

INDUSTRIAL WATER USERS:

CATHERINE W. CRALLE  
HAYNES AND BOONE  
112 East Pecan Street  
Suite 1600  
San Antonio, Texas 78205-1540

UNION CARBIDE CHEMICALS & PLASTICS CO., INC.

LARRY F. YORK  
BAKER & BOTTS  
98 San Jacinto Center, Suite 1600  
Austin, Texas 78701

GREATER SAN ANTONIO BUILDERS ASSOCIATION:

MARY O. KELLY  
FULBRIGHT & JAWORSKI  
300 Convent Street, Suite 2200  
San Antonio, Texas 78205

JAVIER ACUILAR

Special Assistant Attorney General  
1019 Congress Avenue, Suite 1550  
Houston, Texas 77002

CITY OF NEW BRAUNFELS AND NEW BRAUNFELS UTILITIES:

ELBERT HOOPER  
HUTCHESON & GRUNDY, L.L.P.  
2700 Franklin Plaza  
111 Congress Avenue  
Austin, Texas 78701-4043

GREEN VALLEY & ATASCOSA WATER SUPPLY CORPORATIONS:

LOUIS T. ROSENBERG, P.C.  
De Matieres Building  
322 Martinez Street  
San Antonio, Texas 78205-3407

THELMA AREA NEIGHBORHOOD ASSN.:

LES MENDELSON  
SPEISER, KRAUSE, MADOLE & MENDELSON, MATA  
2600 NCM8 Plaza, 300 Convent Street  
San Antonio, Texas 78205

Charles R. Shockey

Attorney for Federal Defendants

(202) 272-4463

