

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF TEXAS
CORPUS CHRISTI DIVISION

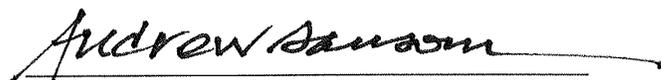
THE ARANSAS PROJECT,
Plaintiff,

v.

CIVIL ACTION NO. 2:10-cv-00075

BRYAN SHAW, ET AL.,
Defendants.

REPORT OF PLAINTIFF'S EXPERT ANDREW SANSOM
August 2, 2011



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INTRODUCTION

I was requested to review the expert reports prepared by Guadalupe Blanco River Authority (“GBRA”) experts Brian Perkins and David Sunding. I was requested to provide a responsive expert report on behalf of The Aransas Project.

QUALIFICATIONS, EDUCATION, & EXPERIENCE

I am the Executive Director of the River Systems Institute and Research Professor of Geography at Texas State University-San Marcos. Under my leadership, among other programs, Texas State University oversees the most extensive aquatic environmental education program in Texas. I am a former executive director of the Texas Parks and Wildlife Department, former executive director of the Texas Nature Conservancy, and founder of The Parks and Wildlife Foundation of Texas.

I have been involved in water issues for nearly 40 years. This involvement includes experience in water policy and water management issues in Texas: for example, I facilitated negotiations between environmentalists and water development interests that resulted in the environmental flows provisions of Senate Bill 3, which created a stakeholder and scientifically driven process for establishing these flows in Texas rivers, streams, bays and estuaries.

Additionally, my colleagues and I at the River Systems Institute have participated in the Edwards Aquifer Recovery Implementation Program (“EARIP”) from both scientific and policy perspectives since its inception. In the three years since this unique effort began, it has succeeded in identifying a strategy for protecting federally listed species while recognizing the growing need for water in the region. The plan, created by consensus among stakeholders and firmly grounded in science, will take the form of a Habitat Conservation Plan (HCP) as authorized by section 10(a)(1)(B) of the Endangered Species Act. In view of the fact that the Edwards Aquifer Region has been deeply divided for more than two decades as to how best to assure continued economic growth while protecting the endangered species, this achievement is noteworthy and a clear model for action in similar situations.

I have received numerous environmental stewardship awards, including the Chevron Conservation Award, The Chuck Yeager Award from the National Fish and Wildlife Foundation, The Pugsley Medal from the National Park Foundation, and the Seton Award from the International Association of Fish and Wildlife Agencies, the 2005 Harvey Weil Professional Conservationist Award, The Nature Conservancy Lifetime Achievement Award, the Houston Audubon Society President’s Award, and the Sierra Club Evelyn R. Edens Award for Rivers Protection.

I have published articles that have appeared in *Texas Monthly*, *The Texas Observer*, *Houston City Magazine*, *Politics Today*, *Texas Highways*, *Texas Parks and Wildlife*, and *Texas Town & City*. I am the author of five books including a book on water issues of Texas, *Water in Texas, An Introduction*, that is published by the University of Texas Press.

My Resume is attached at Exhibit A. I am being compensated for my time in preparing this report at a rate of \$250 per hour. I have not given court testimony in the past four years.

INFORMATION CONSIDERED

I reviewed the expert reports prepared by Brian Perkins and David Sunding. To form my opinions, I have relied on my professional and academic experience and my experience with the EARIP process, as well as my extensive participation in the environmental flows issue in Texas, in water policy in general and as a member of the Bay Basin Stakeholders Committee for the Colorado River. I have also been involved in scientific, policy, and management issues involving the Whooping Crane for nearly a half century. In the early 1970's, I performed a study which determined that military training exercises being conducted on Matagorda Island at the time had an adverse impact on the cranes. I was an employee of the Department of Interior at the time. Those operations were subsequently suspended and the island was transferred to the US Fish and Wildlife Service. Later, in the 1980's, as an employee of the Nature Conservancy, I purchased the remaining 13,000 acres of the island still in private ownership and arranged transfer of this property to the US Fish and Wildlife Service as well. As Executive Director of the Texas Parks and Wildlife Department, I had management responsibility for approximately two thirds of the island including substantial Whooping Crane habitat, for more than eleven years.

OPINIONS

OPINION 1: Setting aside 1.15 million acre feet from existing water use is the most extreme way to achieve the goals of water management in the Guadalupe System for the Whooping Crane, and it is not likely to be the chosen approach in any Habitat Conservation Plan.

Perkins and Sunding have demonstrated either a misunderstanding or an erroneous assumption that success by the Plaintiff in this litigation will result in the assignment of a priority date for 1.15 million acre feet of water for inflows to San Antonio Bay before all other permits in the basin. The conclusions in their reports are all based on the 1.15 million acre feet figure.

The historical record for flows in the Guadalupe System indicates that there are years in which less than 1.15 million acre feet of water reaches San Antonio Bay. The meaning of this fact is that Perkins and Sunding substantially exaggerate the potential negative economic impact by including in their analysis multiple years in which, through natural conditions, flows of this magnitude do not exist.

For this reason alone, in my opinion, any scenario which envisions 1.15 million acre feet of water dedicated to whooping crane needs on an annual, priority basis is not only unrealistic, it is a scenario solely designed to alarm economic interests in the basin.

To my knowledge and based on my review, no person or entity, including the Plaintiff, has determined the required amount of freshwater inflow needed to sustain the Whooping Crane. Indeed no one has attempted to determine the amount of freshwater inflow required based on a scientific understanding of the biology of the Whooping Cranes, including their feeding and

natural resources requirement; based on a study of the response of the marsh and bay ecosystems to salinity levels; and based on other factors. Further scientific investigation most certainly will provide deeper understanding of varying flow requirements based on climate shifts and seasonal nutritional needs.

In my opinion, a viable remedy should the Plaintiff be successful in the litigation is a reasoned, deliberative process based on science and with all stakeholders at the table. Through a Habitat Conservation Plan (HCP) or other such process, a management strategy can be designed and implemented to both protect the species and assure continued economic prosperity in the Guadalupe Basin. Certainly the HCP process would not presume a set-aside of 1.15 million acre feet of water. Instead, as its premise, the HCP process encourages consideration of multiple options precisely so as to find ways to protect endangered species in the context of other uses of natural resources.

OPINION 2: A practical and thoughtful approach for resolving the issues presented by this litigation would be a process that involves both the best science available and the participation of key stakeholders, such as is done in a “Recovery Implementation Program” that incorporates a Habitat Conservation Plan.

In some situations involving risk to endangered species, relevant involved parties can jointly develop programs and practices that facilitate recovery and avoid takes. To secure procedures thus developed get implemented, the federal government has authorized development of Recovery Implementation Programs (RIPs). However, in many situations involving endangered species – quite possibly including the situation of Whooping Cranes – it may not be possible to guarantee avoiding a take. In that case, the Endangered Species Act authorizes use of Habitat Conservation Plans (HCPs) and the issuance of Section 10 Incidental Take Permits (ITPs), which can be done on their own or can be done as part of RIPs.

To protect Whooping Cranes, there is a substantial basis for developing a RIP, including an HCP. Among other reasons, many of the stakeholders and vested interests in the issue of freshwater inflows to San Antonio Bay are currently signatories to a RIP being conducted in the upper reaches of the basin known as the Edwards Aquifer Recovery Implementation Program or EARIP. The EARIP process has included development of an HCP for eight listed species found in the Comal and San Marcos Springs. Before beginning the EARIP process, the Edwards Aquifer Region had been deeply divided for more than two decades as to how best to assure continued economic growth while protecting spring flows for the endangered species. The achievements of the EARIP are noteworthy and a clear model for action in similar situations, such as here.

The Endangered Species Act, as amended, directs the Secretary of Commerce and the Secretary of Interior to develop recovery plans for each species listed as endangered or threatened. The recovery plan, which is different from a recovery implementation program and is usually prepared by USFWS, sets forth the objectives and the methods for achieving recovery of the listed species. Sometimes, in order to implement recovery of a particular species, the USFWS authorizes multi-stakeholder initiatives, known as RIPs. RIPs are voluntary initiatives that

engage stakeholders representing all vested interests who consider both the best available science and human needs to balance water uses with requirements for the recovery of federally listed species. The approach must be long-term and include consideration of policy, scientific data, education, habitat restoration, and other pertinent input as defined by the participants. A central element of a RIP is the collaborative involvement of State and federal agencies, private individuals and organizations, academic institutions, commercial enterprises, and other affected parties. This is perhaps the most essential ingredient for implementing a program for successful recovery of a species. The stakeholders participating in the RIP develop a document outlining the goals, activities, timelines, measurements of success, and roles of the participants. This is finalized in a Cooperative Agreement (or Memorandum of Understanding) and submitted to USFWS for approval. The RIP stakeholders may also seek funding from USFWS.

With or without an HCP, participants in a RIP are expected to create, by consensus, in addition to their own roles, a comprehensive plan that lays out goals, necessary actions, timeline, and performance measures. This process depends on the examination of available science and consideration of competing interests. Once it is complete, the stakeholders who agree to implement the recommendations are expected to execute a cooperative agreement for that purpose. It is not mandatory that all stakeholders participating in the development of the plan become signatories to its implementation.

At this stage of the process, the Secretary of Interior will also become a signatory to the agreement in order to authorize implementation. This action further requires compliance with the National Environmental Policy Act or (NEPA) and section 7 of the Endangered Species Act.

Significantly, in appropriate cases federal funding may be authorized and appropriated for implementation and local matching funds can be secured. There is no RIP, and no HCP, that addresses deaths and other dangers caused to Whooping Cranes by low freshwater flow at Aransas National Wildlife Refuge, so starting the RIP/HCP process offers as yet untapped procedures and resources to protect the Whooping Cranes while taking into account concerns of relevant others.

The US Fish and Wildlife Service has used RIPs throughout the country to contribute to the recovery of listed species while resolving long-standing issues related to a economic and environmental needs for water. The successful completion of these processes has brought significant federal funding, preserved State participation in the decisions over the allocation of water resources, and protected economic interests from liability for "incidental take" of endangered or threatened species.

In the specific case of the Edwards Aquifer, participants in the RIP process are currently developing a Habitat Conservation Plan that they agree will satisfy the requirements of the Endangered Species Act, contribute to the recovery of the listed species, and ensure a stable water supply for economic activity. This process was initiated due to the fact that, though the Edwards Aquifer Authority was established in 1991 as a direct result of a federal Court order directing that pumping from the Aquifer be regulated to protect its endangered species, a workable plan for that protection had yet to be developed due to competing interests. After much deliberation, consensus has been reached on the creation of a workable plan. Among the

signatories to the Edwards Aquifer RIP implementing agreement are the Edwards Aquifer Authority, Texas Commission on Environmental Quality, Texas Parks and Wildlife Department, Texas Water Development Board, Texas Department of Agriculture, and numerous stakeholders including the San Antonio River Authority, Guadalupe-Blanco River Authority, several cities, environmental groups and other entities. (Full list attached as Exhibit B)

In my opinion, direction by this Court that a Recovery Implementation Program be developed for the Whooping Crane could be expected to have similar results. The RIP authorized for the Whooping Crane should have as its goal the creation of an HCP and application for a Section 10 permit. This would not be an unreasonable or unmanageable goal. The EARIP is instructive because it recognizes that the RIP alone will not eliminate all risk of a low-spring flow causing a take of an endangered species. Thus, recognizing this, the RIP participants are preparing an HCP and an application for a Section 10 Incidental Take Permit. When the Section 10 permit is issued, and the measures in the HCP are fully implemented, the parties will not be subject to ESA liability if a take were to occur (within the scope of the permit terms).

A Recovery Implementation Program does not require a federal Court to mandate details of how to protect Whooping Cranes. This science-based, consensus-driven process would have the promise of bringing innovative and strategic thinking about all water needs and availability to the table including integrated water resources management. Integrated water resources management is a coordinated approach to the development and management of water resources designed to ensure economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems. It is designed to replace the traditional, fragmented, sectoral approach suggested by Perkins and Sunding that has led to uncertainties in water availability, divisiveness, and unsustainable use.

This process is ideally suited to resolve the issues related to provision of sufficient freshwater inflows into San Antonio Bay for the needs of the Whooping Crane. First, many of the parties who would participate in the creation of a RIP for this purpose are currently engaged in a similar process to protect endangered species and provide for human water needs at the headwaters of the rivers that feed San Antonio Bay. Thus these institutions and their leaders are not only well familiar with the RIP process, they are party to a very successful outcome at this stage. In fact, a senior official of the Guadalupe-Blanco River Authority, Dr. Todd Votteler, is a participant in EARIP and co-author with its Program Manager of a comprehensive article on the process in “The Water Report” (Robert L. Gulley & Todd H. Votteler, Resolving ESA-Water Conflicts: The Edwards Aquifer Recovery Implementation program, *The Water Report*, 58 (Dec 15, 2008)).

Creation of a RIP for the Whooping Crane would be similar in character to that for the Edwards Aquifer in several key respects. First, there would be very little federal involvement from the standpoint that little of the watershed is managed by federal agencies. Second, where the Texas Legislature established a timeline for the completion of EARIP, a schedule could be established by the Court along with delineation of certain key tasks to be accomplished, based on input from the parties, ensuring a timely completion of the work and measurable success. Third, the Legislature will convene in 2013 and, with consensus of the stakeholders, could provide funding for the process, which might also be supported by federal funds. Finally, the consensus-based, “structured decision process” developed for EARIP is a model for the sort of systematic

approach to complex decisions likely to arise in consideration of a recovery plan for the Whooping Crane.

Employment of a Recovery Implementation Program for San Antonio Bay inflows would allow for the creation of subcommittees composed of scientists and stakeholders to manage public outreach ensuring full transparency for the process, all scientific issues, ecosystem restoration and other pertinent topics. The process would be aided by the development of agreed up goals and targets from the beginning. An equitable plan for the needs of the Whooping Crane which is sensitive to the agricultural, industrial, and municipal need for freshwater in the basin can only be possible if interests representing those needs engage in a constructive dialogue which is designed to consider all of them and to result in a workable plan which will conform to the requirements of the Endangered Species Act.

Initiation of a RIP for the Whooping Crane would create a process in which public involvement and participation would be assured. The likely outcome would be a program of phased, adaptive management given that, even upon completion of a plan, there would still be unknowns, due to the uncertainty of future drought, changes in the climate, and other factors. An integrated approach through the creation of a Recovery Implementation Plan would allow for holistic possibilities to be proposed, evaluated collaboratively, and agreed upon by consensus, including strategic management of environmental flows, increased conservation, and other measures traditionally minimized in the process of water planning. These include watershed protection, seasonal ecosystem needs, and hydrologic triggers.

The beauty of such an incremental, phased approach is that it can allow for adjustment in the process of implementation but still provide protection for economic interests from jeopardy under the Endangered Species Act.

OPINION 3: The San Antonio Bay ecosystem, including the Whooping Cranes, has significant economic value that was not considered by the Sunding Report.

In my opinion, Sunding has failed to consider any economic benefit from protection of freshwater inflows to San Antonio Bay when, in fact, there is available literature on the subject.

Consistent economic research has shown that recreational fishing, wildlife viewing and other forms of nature tourism generate over \$1 billion per year on the Texas Coast. In San Antonio Bay alone, recreational and commercial fishing which are dependent on freshwater inflows generate \$55 million per year in economic benefits, according to Texas Parks and Wildlife Department. Additionally, nature tourism, which includes the many thousands of people every year who come to San Antonio Bay to see the Whooping Cranes, is the fastest growing segment of the tourism industry in Texas. Further, Mathis, Yoskowitz and others have demonstrated that freshwater inflows have a very positive impact on the coastal economy (Mathis et al., 2008). Mathis (et al.) surveyed a large number of studies concerning the economic value of the San Antonio Bay.

“Specifically, the San Antonio Bay and Guadalupe Estuary support several commercial and recreational fisheries. Commercial fishing in the area provides over \$20 million in revenue, supporting hundreds of jobs, while recreational fishing also contributed thousands of dollars in revenue to the regional economy. The TWRI study approximated recreational and travel spending related to the Guadalupe Estuary, including recreational fishing and nature-based tourism, at around \$155 million in 1995. In 2000, 5 million people participated in fishing, hunting and wildlife watching in Texas. Nature-based tourism in the Guadalupe estuary alone generated \$11 million in revenue and created 275 full-time jobs.” (internal citations omitted).

The Mathis study also states: “A 1984 contingent valuation survey attempted to estimate the non-market value of Whooping Cranes and concluded that their value (including current use, anticipated future use and non-use value) ranged from \$1 billion to \$1.5 billion dollars annually for U.S. residents. This value does not “consider expenditures for tour boat rides and travel or indirect impacts of such expenditures”” citing Stoll, J. and L. Johnson, Concepts of Value, Non-Market Valuation, and the Case of the Whooping Crane, *Transactions of the North American Wildlife and Natural Resources Conference* 49: 382-393 (1984).

In terms of overall value of the coastal ecosystem, another economist, Robert Costanza, and his colleagues have concluded that the total economic value of ecosystem services provided by healthy estuaries is \$11,000 per acre per year. (Costanza et al., 1997). Using this formula, San Antonio Bay has a total area of approximately 130,000 acres, rendering its potential ecosystem value almost \$1.4 billion per year (see Blackburn, *Book of Texas Bays*, p. 179).

Finally, a diverse water resources management strategy removes much of the uncertainty from water management, thus producing further beneficial effects on the economy.

Exhibits

Exhibit A. Resume of Andrew Sansom

Exhibit B. List of participants in the Edwards Aquifer Recovery Implementation Program (May 27, 2009)

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EXHIBIT A

Andrew Sansom

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EXPERIENCE

**Present Executive Director, River Systems Institute and Research Professor
Geography, Texas State University, San Marcos, Texas**

- Coordinate university policy and research activities related to freshwater resource management, a multimillion dollar effort.
- Raise funds to support university freshwater resource management programs.
- Manage the most extensive aquatic environmental education program in Texas
- Train and coordinate the efforts of over one thousand volunteer water monitors in rivers and streams across the State.
- Manage the most extensive aquatic environmental education program in Texas
- Restore and protect the San Marcos Springs which are the second most prolific artesian springs in the Western United States.

1988 - 2001 Texas Parks and Wildlife Department, Austin, Texas

Executive Director, 1990-2001

Coordinator of Land Acquisition and Management, 1988-1990

- Served as Chief Executive Officer of this agency with a mission “to manage and conserve the natural and cultural resources of Texas for the use and enjoyment of present and future generations.”
- Managed 3000 employees, \$300 million annual expenditures, and over 200 sites including state parks, wildlife management areas, and hatcheries.
- Redirected the agency’s finances to reduce dependence on general tax revenues by using funding from users (hunting and fishing licenses, park entrance fees, and

sporting goods sales tax).

- Directed an 80% reduction in the backlog of deferred maintenance of the state park system with the most comprehensive repair program in the agency's history.
- Created (and served as an ex officio trustee of) the Parks and Wildlife Foundation of Texas, which has funded more than \$30 million for conservation projects and worked to establish an endowment for every park, wildlife management area, and fish hatchery in the system.
- Developed and opened two state-of-the-art fish hatcheries: Sea Center Texas, a marine hatchery, aquarium, and education center in Lake Jackson; and the Texas Freshwater Fisheries Center in Athens, a hatchery, research laboratory, aquarium, and education center.
- Created and directed the Texas Wildlife Expo, a tribute to hunters, anglers, and outdoor enthusiasts and the role they played in conservation; that in its ninth year attracted a record 46,000 people.
- Initiated new urban fish and wildlife programs to promote awareness of conservation issues in large urban areas (KIDFISH, Becoming an Outdoors Woman, Outdoor Kids, and the Buffalo Soldiers Program).
- Led development of the Conservation Work Corps, a unique partnership that puts inmates to work in Texas parks and wildlife management areas (an estimated \$2.1 million worth of labor annually).
- Improved customer service by installing several new high-tech systems including the Central Reservation Center (a system which allows visitors to book reservations at most state parks with one phone call) and the Texas Outdoor Connection (an automated system for the sale of hunting and fishing licenses and other products).
- Instrumental in the acquisition of Big Bend Ranch, originally a 215,000-acre tract that nearly doubled the state's land holdings.

1982 - 1987 Texas Nature Conservancy, San Antonio, Texas

Executive Director

- CEO for the Texas affiliate of the Nature Conservancy.
- Worked with a seven-employee team and a significant, statewide volunteer board.

- Directed fundraising, land acquisitions, stewardship, and general management of the organization
- Responsible for the protection of more than 300,000 acres of important lands in Texas.

1979 - 1982 The Old River Company, Freeport, Texas

Vice President

- Joined this start-up venture that constructed a 1.2 million-gallon marina petrochemical terminal at the Port of Freeport, TX
- Responsible for environmental affairs, public affairs, and marketing.

1977 - 1979 The Energy Institute, University of Houston, Houston, Texas

Deputy Director

- Served as COO of the University's principal energy research organization.
- Responsible for fundraising for research on solar energy, energy conservation, oil and gas policy, etc.
- Served as Director of the Houston office of the Texas Energy Extension Service.

1974 - 1976 Federal Energy Administration, Washington, DC

Director of Conservation Education

- Directed conservation education efforts at this agency, created during the energy crisis of the mid 1970s, which later became the Department of Energy.
- Administered programs such as the national public service advertising campaign "Don't Be Fuelish."

1971 - 1974 U.S. Department of the Interior, Washington, DC

Special Assistant to the Secretary

- Served as aide to the Secretary of the Interior, Rogers C. B. Morton.
- Traveled with the Secretary, wrote speeches, and served in the office of the Assistant

Secretary for Fish, Wildlife and Park.

1971 White House Conference on Youth, Washington, DC

Environment Coordinator

- Coordinated work of the Task Force on Environment for this conference, held in Estes Park, CO in April 1971.

1969 - 1971 National Student Recreation and Park Society, Washington, DC

Executive Secretary

- Administered student branch of national organization for professionals and volunteers involved in management of state and local park and recreation programs.

PUBLICATIONS

Texas Lost, photographs by Wyman Meinzer, The Publishing Partnership, 1995
Texas Past, photographs by Wyman Meinzer, The Publishing Partnership, 1997
Articles for Texas Monthly, The Texas Observer, Houston City Magazine, Politics Today, Texas Highways, Texas Parks and Wildlife, and Texas Town and City Scout, the Christmas Dog, Texas A&M University Press, 2006

CIVIC ACTIVITIES

Director, KLRU (public television station, Austin, TX)
Trustee, Texas Historical Foundation
Former Commissioner, Brazoria County Parks Board
Director, Bat Conservation International
Member, Advisory Board on Marine Protected Areas, NOAA

HONORS

Conservationist of the year--Sportsman's Clubs of Texas
Chevron Conservation Award
Cornelius Amory Pugsley Medal--National Parks Foundation
Chuck Yaeger Award--National Fish and Wildlife Foundation
Distinguished Alumnus, Texas Tech University and Austin College
Ernest Thompson Seton Award, International Association of Fish and Wildlife Agencies
2005 Harvey Weil Professional Conservationist Award

The Nature Conservancy – Lifetime Achievement Award
Houston Audubon Society – President’s Award
Sierra Club – Evelyn R. Edens Award for Rivers Protection

EDUCATION

Bachelor of Science, Park Administration and Recreation, 1969
Texas Tech University, Lubbock, TX

EXHIBIT B

PARTICIPANTS IN THE EDWARDS AQUIFER RECOVERY IMPLEMENTATION PROGRAM

The following thirty-nine Stakeholders have executed the 2007 Memorandum of Agreement with the United States Fish and Wildlife Service regarding participation in the Edwards Aquifer Recovery Implementation Program:

	Larry Hoffman
Aquifer Guardians in Urban Areas	Mary Q. Kelly
Alamo Cement Company	Nueces River Authority
Bexar County	New Braunfels Utilities
Bexar Metropolitan Water District	Preserve Lake Dunlap Association
Carol G. Patterson	Regional Clean Air and Water Association
City of Garden Ridge	San Antonio River Authority
City of New Braunfels	San Antonio Water System
City of San Marcos	San Marcos River Foundation
City of Victoria	South Central Texas Water Advisory Committee
Comal County	South Texas Farm and Ranch Club
CPS Energy	Texas Bass Federation
Dow Chemical	Texas Commission on Environmental Quality
East Medina Special Utility District	Texas Department of Agriculture
Edwards Aquifer Authority	Texas Living Waters Project
Gilleland Farms	Texas Parks and Wildlife Department
Greater Edwards Aquifer Alliance	Texas Water Development Board
Greater San Antonio Chamber of Commerce	Texas Wildlife Association
Guadalupe Basin Coalition	
Guadalupe-Blanco River Authority	
Guadalupe County Farm Bureau	
John M. Donahue, Ph.D.	