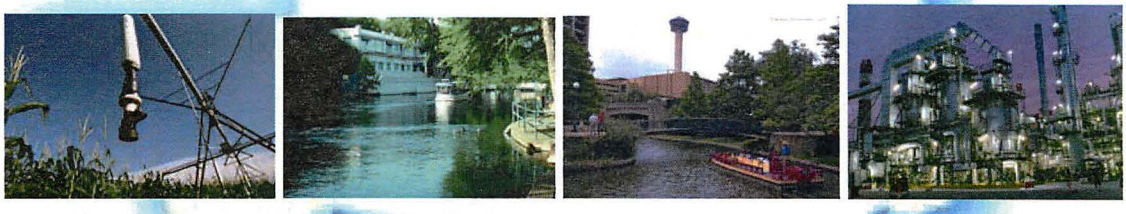
Fifth Biennial Report on the Effectiveness of the Edwards Aquifer Authority



Prepared by the

South Central Texas Water Advisory Committee

October 2006

Fifth Biennial Report on the Effectiveness of the Edwards Aquifer Authority

Prepared by the

South Central Texas Water Advisory Committee

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October 2006

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Acronyms and Defined Terms Used in the Report

Advisory Committee	South Central Texas Water Advisory Committee
AMSL	Above Mean Sea Level
Aquifer	Edwards Aquifer
ASR	Aquifer Storage and Recovery
Authority	Edwards Aquifer Authority
BMP	Best Management Practices
CWMP	Comprehensive Water Management Plan
DM/CPM	Demand Management/Critical Period Management
EAA	Edwards Aquifer Authority
EAA Act	Edwards Aquifer Authority Act
EAA Board	Edwards Aquifer Authority Board of Directors
ESA	Endangered Species Act
GCP	Groundwater Conservation Plan
GMP	Groundwater Management Plan
HCP	Habitat Conservation Plan
Implementation Rules	Junior-Senior Permit Implementation Rules
IRP	Initial Regular Permit
ITP	Incidental Take Permit
Junior-Senior Rules	Junior-Senior Permit Rules
OTS	Optimization Technical Studies
PEP	Precipitation Enhancement Program
R&R	Recharge and Recirculation
RIA	Regulatory Impact Assessment
SAWS	San Antonio Water System
SB1	Senate Bill 1
SCTRWPG	South Central Texas Regional Water Planning Group
TCEQ	Texas Commission on Environmental Quality
TWDB	Texas Water Development Board
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

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Executive Summary

The South Central Texas Water Advisory Committee submits a report assessing the effectiveness of the Edwards Aquifer Authority (EAA) every two years to the EAA Board of Directors and to the Texas Commission on Environmental Quality. This is the Advisory Committee's report on the effectiveness of the Edwards Aquifer Authority (EAA) during the period from October of 2004 through September of 2006.

Overview

During the period of review, the EAA has generally performed well in its planning and research activities. The EAA successfully accomplished a transition in its general manager position, and the EAA Board approved a new, flexible strategic plan.

In its regulatory role managing pumping from the Aquifer, the EAA reached a notable achievement by completing the review and issuance of initial regular permit applications. The EAA continued to deal with significant policy issues related to the annual limit on permitted withdrawals and the guaranteed permit minimums. The EAA Board's decisions on these issues continued to reflect a preference for protection of the interests that rely on pumping from the Aquifer over those that rely on springflow from the Aquifer. The backdrop to these decisions has been an extended period of relatively high Aquifer levels and the absence of low springflows such as in the summers of 1990, 1991 and 1996.

Summary of Report

Section 2– Introduction and Background

Since it began operations ten years ago, the EAA has faced monumental tasks to achieve the objectives identified in the EAA Act. The Legislature's fundamental charge to the EAA was to convert the Aquifer from an unregulated common resource to a finite resource subject to regulatory and market forces. Given the economic, political, and legal context in which the EAA has operate, its accomplishments have been remarkable. The Advisory Committee disagrees at times with policies pursued by the EAA, but the Advisory Committee is committed to the success of the EAA as the principal steward of the Aquifer.

The Edwards Aquifer is a karst limestone aquifer capable of producing large quantities of high quality water cheaply. It is also a part of a larger system that integrates surface water and groundwater and naturally transfers water from west to east in the region. The Aquifer was traditionally governed by laws that favored well pumping over springflow. The Texas Legislature altered these laws when it formed the Edwards Aquifer Authority. In doing so, the Legislature intended to strike an equitable balance among all the interests that depend on the Aquifer – it did not intend merely to protect endangered species.

The South Central Texas Water Advisory Committee was created by the Legislature to represent the interests in the area downstream from the Aquifer region. Those interests are diverse, and they comprise a geographic area larger than the Aquifer region itself.

Section 2 – Effectiveness Measures from the 2004 Report

Planning Effectiveness Measures: The EAA largely met these measures, including adoption of a Comprehensive Water Management Plan, support for regional water planning efforts, implementation of the Groundwater Conservation Plan, and updating the EAA's Strategic Plan. An exception to this progress was the habitat conservation plan prepared by the EAA and submitted to the U.S. Fish and Wildlife Service, which is deficient in significant respects.

Research Effectiveness Measures: The EAA largely met these measures, including quantifying recharge and withdrawal amounts, and completing the updated groundwater model. The Advisory Committee supports some of the EAA's continued research on "optimization" of the Aquifer; other studies are not supported by the Committee because they lack a threshold feasibility analysis, or they appear to overlook the fact that decreases and cessation of springflows impact a broad range of downstream interests, not just endangered species near the springs.

Regulatory Effectiveness Measures: The EAA reached a significant milestone when it completed the processing of initial regular permit applications and issued the final permit in April of 2006. The Advisory Committee heartily commends the EAA on this achievement. Some of the permits remain in litigation, presenting some of the thorniest legal issues faced by the EAA in achieving its regulatory objectives. The EAA has also pursued a program to register exempt wells. On the other hand, the EAA Board declined to follow the Advisory Committee's 2004 recommendations to repeal the Junior-Senior permit rules, and to revise the Demand Management/Critical Period Management (DM/CPM) Rules to achieve greater practical effect and enforceability. The Board has initiated a process to consider revisions to the DM/CPM Rules.

Financial Effectiveness Measures: The EAA, apparently for policy reasons, did not meet these effectiveness measures, which included gaining approval of legislation authorizing revenue bonds to finance the retirement of permit rights, and informing downstream water rights holders on contributions to the cost of permit retirements to achieve the 400,000 acre-foot cap on authorized withdrawals in 2008.

Other Effectiveness Measures: The EAA largely met these measures, which included hiring a new General Manager, promoting public awareness and information campaigns to support EAA programs, and consolidating office space.

Section 3 - Discussion of Key Issues

Junior-Senior Permits:

The EAA Board adopted the Junior-Senior Rules in December of 2003 in an attempt to reconcile the apparent conflict between the EAA Act's caps on authorized withdrawals and its minimum permit amounts for existing users. The Advisory Committee opposed the Junior-Senior Rules because they effectively increased the statutory caps on authorized withdrawals without following the process prescribed for such an action in the EAA Act, and because the resulting increase in Aquifer pumping would decrease flows in the Guadalupe River basin to the detriment of downstream interests. The Advisory Committee appealed the EAA Board's adoption of the Junior-Senior Rules to the TCEQ, and the TCEQ adopted a resolution in January of 2006 supporting the Advisory Committee's position.

The Junior-Senior Rules are the subject of an Attorney General opinion request by State Representative Harvey Hilderbran submitted in March of 2006. The EAA Board proceeded to adopt "Implementation Rules" for Junior-Senior permits on July 11, 2006, over the objections of the Advisory Committee. The Advisory Committee is concerned that the EAA Board adopted the Implementation Rules before responding to the TCEQ resolution, and before the Attorney General opinion was issued. The Advisory Committee is also concerned that the Implementation Rules will lead to further increases in Aquifer pumping and decreased flows in the Guadalupe River basin.

Demand Management/Critical Period Management Rules:

The DM/CPM Rules were not revised during the review period. The Advisory Committee continues to be concerned with three aspects of the rules: 1) the trigger levels for pumping reductions are set too low; 2) the required reductions in Aquifer use are insufficient to maintain springflow at Comal and San Marcos springs; and 3) the reporting and enforcement criteria do not allow the EAA to monitor compliance and enforce the rules in a timely manner. The new Junior-Senior Implementation Rules allow junior rights to be accrued at higher Aquifer levels and then used after the Aquifer drops below those levels, which heightens the concerns.

Habitat Conservation Plan:

A primary purpose for the formation of the EAA was to have it secure a permit under the Endangered Species Act (ESA) to provide certainty for management of the Aquifer and to insulate pumpers from liability under the ESA. To secure such a permit, the EAA must prepare a habitat conservation plan and obtain approval of the plan by the U.S. Fish and Wildlife Service (USFWS). The Advisory Committee is concerned with several aspects of the draft habitat conservation plan submitted by the EAA to the USFWS, which proposes a permit for a 50-year period. The plan should eventually ensure continuous springflows at Comal and San Marcos springs. It was revised at the last minute to delete all references to the statutory caps on authorized pumping. Rather than ensuring continuous springflows, it guarantees withdrawal amounts for pumpers and concedes that springflows will perodically cease, necessitating extraordinary measures to salvage endangered species.

Research Activities:

The Advisory Committee supports several of the EAA's current research initiatives, such as those focusing on flow patterns and similar aspects of how the Aquifer functions. The Advisory Committee is concerned with research efforts to identify alternatives to natural springflow which do not consider the broader implications of reducing or eliminating springflow on downstream interests.

Section 2– Effectiveness Measures for the 2008 Report

Regulatory Effectiveness Measures:

1. The EAA Board should repeal the Junior-Senior permit rules, and in their place adopt rules proportionately reducing regular permits.

2. The EAA should revise the Demand Management/Critical Period Management Rules so that they will achieve required critical period reductions in a timely manner.

3. The EAA should complete the program it has begun to register exempt wells.

4. The EAA should resolve all litigation related to applications for initial regular permits in a manner that preserves the EAA's regulatory authority.

5. The EAA should make regulatory impact assessments for significant changes to its regulations available before the public comment period closes.

6. The EAA should ensure that complete regulatory impact assessments are performed for proposed rules that relate to permit transfers.

Planning Effectiveness Measures:

1. The EAA should continue its active support and involvement in Region L and Groundwater Management Area planning efforts.
2. The EAA should continue to implement the approved Groundwater Conservation Plan.
3. The EAA should modify the habitat conservation plan and incidental take permit application submitted to the U.S. Fish and Wildlife Service.

Research Effectiveness Measures:

1. The EAA should complete and implement the MODFLOW Groundwater Model.
2. The EAA should continue research focusing on flow patterns and similar aspects of how the Aquifer functions.
3. The EAA should discontinue research efforts on alternatives to natural springflow which do not consider the impacts to downstream interests and listed species.

4. The EAA should approach with caution joint research initiatives with individual Aquifer stakeholders.

Financial Effectiveness Measures:

1. The EAA should be prepared to plan for the costs of EAA permit retirements to reduce permits to 400,000 a-f.
2. The EAA should secure approval of legislation clarifying that special permit fees assessed for EAA permit retirements apply to all EAA withdrawal permits equally.

Other Effectiveness Measures:

1. The EAA should respond to TCEQ recommendations promptly.
2. The EAA should work to enhance its organizational effectiveness.
3. The EAA should develop and implement a Comprehensive Public Information Plan.

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Section 1
Introduction and Background

1.1 Purpose of Report

The purpose of this report is to assess the effectiveness of the Edwards Aquifer Authority and the effect of the EAA's management of the Aquifer on downstream interests during the period from October of 2004 through September of 2006. Section 1.11(h) of the EAA Act requires the presiding officer of the Advisory Committee to submit this report to the EAA Board and to the Texas Commission on Environmental Quality.

This report is the fifth such report prepared by the Advisory Committee.

The Advisory Committee consists of representatives of interests downstream from the Edwards Aquifer region, primarily in the Guadalupe River basin, but also in the Nueces and San Antonio river basins. These river basins provide recharge to the Aquifer, and they also receive water from the Aquifer from natural spring discharges. The Comal Springs in New Braunfels and San Marcos Springs in San Marcos are the largest Aquifer springs – they create the crystal clear, constant temperature Comal and San Marcos rivers that provide a significant base flow for the Guadalupe River, upon which municipal, manufacturing, agricultural, tourism, instream, and coastal fishery interests in the basin depend, especially in times of drought.

This report is written from the perspective of the Advisory Committee, which emphasizes the protection of interests downstream from the Aquifer region. This perspective is fundamentally different from that of the municipal, industrial and agricultural interests which rely on pumping of Aquifer water. The downstream interests have a voice, but no vote, on the EAA Board. This report is an opportunity to communicate – it reflects the fact that, depending on the issue, consensus, a healthy tension, or honest disagreement exists between those who rely on the Aquifer's springs and those who rely on Aquifer wells. At times the report also reflects the fact that the structure for governance of the Aquifer in the EAA Act is weighted towards Aquifer pumpers, meaning that issues involving conflicts between the pumpers and downstream interests tend to be resolved in favor of the pumpers.

It will be obvious to the reader of this report that the Advisory Committee disagrees at times with policies pursued by the EAA, sometimes strongly so. It would be a serious

error to interpret this disagreement as a lack of support for the EAA. The Advisory Committee remains firmly committed to the success of the EAA as steward of the Aquifer, which the Committee regards as an invaluable resource in the South Central Texas region.

Since it began operation ten years ago, the EAA has faced monumental tasks to achieve the objectives identified in the EAA Act. The EAA's fundamental charge from the Legislature was to convert the Aquifer from an unregulated common resource to a finite resource subject to regulatory and market forces. Given the economic, political and legal context in which it operates, the EAA's accomplishments have been remarkable.

1.2 Characteristics of the Edwards Aquifer

The Edwards Aquifer is the primary source of water supply for an area of South Central Texas that extends from Uvalde in the west to Kyle and San Marcos in the east, and encompasses the San Antonio metropolitan area. The Aquifer is an essential foundation for economic activity in the area, including tourism, retail, manufacturing, agriculture, and medical industries.

The favorable characteristics of the Aquifer – abundance, high quality, low cost, and availability – have been well-known throughout recorded history. Of these characteristics, the abundance of the Aquifer has been the subject of sharp debate in the region since the time of the drought of record in the 1950s because the current and planned use of the Aquifer is surpassing its ability to supply all who rely on it.

The Edwards Aquifer is a porous karst limestone aquifer. Because of this, it recharges rapidly, water flows through it rapidly compared to other aquifers, and water can be withdrawn from it in large quantities with relative ease. In large part because of the karst nature of the Aquifer, it is the source of numerous prolific springs, including the two largest spring systems in Texas, Comal Springs in New Braunfels and San Marcos Springs in San Marcos. This karst character also gives rise to the Aquifer's primary vulnerability – water levels in the Aquifer can decline with alarming swiftness, especially in dry periods when recharge is limited and pumping increases to meet higher demands.

1.3 The Edwards Aquifer – Guadalupe River System – A Unified Hydrologic System; A Disjointed System of Laws

The Edwards Aquifer is often considered in isolation,[1] and without regard to the fact that it is but a part of a hydrologic system unique in Texas in which groundwater and surface water are highly interdependent. The Edwards Aquifer – Guadalupe River system begins when rain falls on the contributing and recharge zones of the Aquifer.

[1] Section 1.01 of the EAA Act includes a legislative finding that the Aquifer is "a unique and complex hydrological system".

The runoff gathers in streams and flows across recharge features, usually in the beds of creeks and rivers. There a portion of the streams enters the Aquifer. The water flows into and through the Aquifer, and once again becomes surface water upon discharge at the Aquifer's springs. In the Edwards Aquifer – Guadalupe River system, the Aquifer is a natural underground conduit that transports large quantities of water from the watersheds of the Nueces, San Antonio and Guadalupe rivers eastward, primarily to the Guadalupe River basin. If water is pumped from the Aquifer through wells, the flow of the springs is affected. In times of drought, pumping from the Aquifer can exceed recharge, and the result can be catastrophic for the springs and the Guadalupe River basin.

In spite of the obvious interdependence between the Aquifer and the Guadalupe River, use of water from the system has traditionally been governed by laws that treat the rights of some who rely on the Aquifer in a much different way than they treat the rights of others. This fundamental bias has no basis in science, hydrology, sound planning, or logic. Rather, it stems from the arbitrary distinction under Texas law between rights held in surface water and those held in groundwater.

Rights to groundwater in Texas are based on the English common law system predominant in the eastern United States, where water is plentiful. Under this system, water is owned by the owner of the land, and is subject to the "rule of capture," i.e., unlimited use by a landowner without regard to the impact on neighboring landowners. Rights to surface water in Texas, on the other hand, are based on the appropriation system predominant in the western United States, where water is generally scarce. Under this system, water is owned by the state, and the availability and reliability of water rights are determined by the purpose of use and the seniority of the water right.

The Edwards Aquifer – Guadalupe River system has squarely placed these two systems of water rights in sharp contrast. A drop of water that falls as rain in the recharge zone is owned by the state and subject to surface water laws as it flows in a creek to a recharge feature. When that same drop of water enters the Aquifer it becomes private water subject to withdrawal and ownership by landowners over the Aquifer. If that drop of water emerges at a spring, it becomes (once again) state water subject to surface water laws.

Generally in Texas, rights in groundwater trump rights in surface water, i.e., groundwater rights can be exercised even if the result is that springs dry up and surface water rights are rendered useless, and the holders of the surface rights have no legal remedy. The same courts that have reached this conclusion, however, have long pleaded for intervention by the legislature to arrive at more balanced solutions to conflicts involving water rights.[2]

[2] In *Sipriano v. Great Spring Waters of America, Inc.*, 1 S.W.3d 75 (Tex. 1999), the Texas Supreme Court, in a unanimous opinion, stated:

> Like the voters who passed the 1917 constitutional amendment [for natural resource conservation], this Court has consistently recognized "the need for legislative regulation of water." Today, again, we reiterate that the people have constitutionally empowered the Legislature to act in the best interest of the State to preserve our natural resources, including water. We see no reason,

As to the Edwards Aquifer, unregulated pumping from the 1950s through the early 1990s increasingly threatened the reliability of surface water rights and other interests in the Guadalupe River basin. These interests have depended most heavily on the Aquifer in times of drought, when 70% or more of the flow in the Guadalupe River at Victoria consists of Aquifer springflows. Experience has shown that Aquifer pumping peaks at the same time as springflows are most needed by the Guadalupe basin. But in the absence of regulation, Aquifer well production soared while springflows diminished and the Guadalupe basin suffered.

1.4 Creation of the EAA and the South Central Texas Water Advisory Committee

When the Texas Legislature enacted the Edwards Aquifer Authority Act (Senate Bill 1477) in 1993, its actions were precipitated by a lawsuit involving endangered species at the Comal and San Marcos springs. But the Legislature also realized that the State's disjointed water law systems needed adjustment to achieve a balance among those who rely on the Edwards. The EAA Act created the Edwards Aquifer Authority with the express intent of altering the state's water laws to strike that balance:

> The legislature finds that the Edwards Aquifer is a unique and complex hydrological system, with diverse economic and social interests dependent on the aquifer for water supply. In keeping with that finding, the Edwards Aquifer is declared to be a distinctive natural resource in this state, a unique aquifer, and not an underground stream. To sustain these diverse interests and that natural resource, a special regional management district is required for the effective control of the resource to protect terrestrial and aquatic life, domestic and municipal water supplies, the operation of existing industries, and the economic development of the state.[3]

The EAA Act also created the South Central Texas Water Advisory Committee to represent downstream interests in the Nueces, San Antonio, and Guadalupe river basins. These river basins provide recharge to the Aquifer, and they also receive water from natural spring discharges from the Aquifer. The Advisory Committee consists of one member appointed by the governing body of each of the following counties and cities:

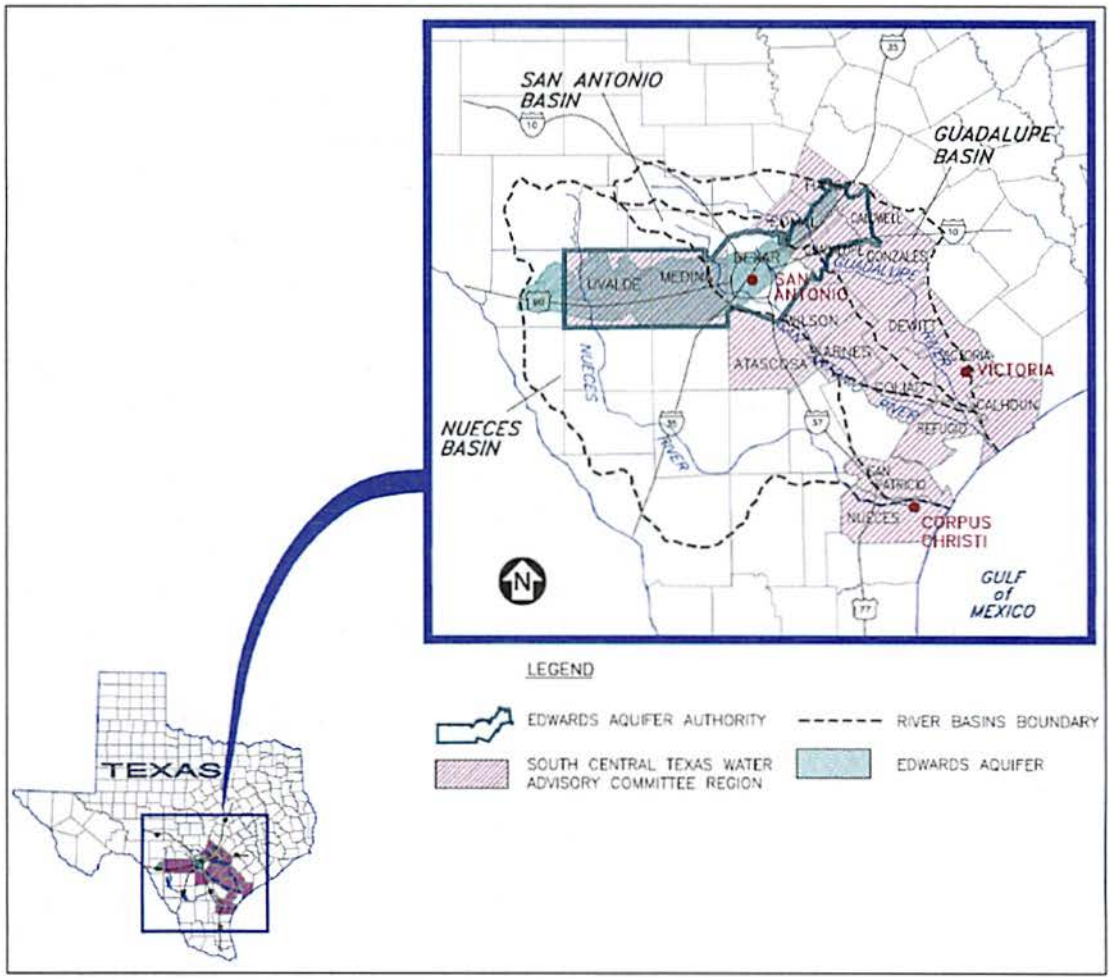
Atascosa County[4]	Caldwell County	Calhoun County
Comal County	DeWitt County	Goliad County
Gonzales County	Guadalupe County	Hays County
Karnes County	Medina County	Nueces County
Refugio County	San Patricio County	Uvalde County
Victoria County	Wilson County	
City of San Antonio	City of Victoria	City of Corpus Christi

particularly because of the 1917 constitutional amendment, for the Legislature to feel constrained from taking appropriate steps to protect groundwater.

[3] EAA Act §1.01

[4] Atascosa County may not have a representative on the Advisory Committee when the county has a voting member on the EAA Board.

Ten members of the Advisory Committee represent entities in the Guadalupe River basin, five represent entities in the San Antonio River basin, and five represent entities in the Nueces River basin. This composition emphasizes the Guadalupe River basin because of the substantial reliance of that basin on springflows from the major Aquifer springs in New Braunfels and San Marcos. As illustrated on the following map, the area represented by the Advisory Committee is larger than the Aquifer region itself.



The role of the Advisory Committee as defined in §1.10 of the EAA Act is to:

- Advise the EAA Board on downstream water rights and issues
- Select one of its members to represent the Advisory Committee as a non-voting member of the EAA Board of Directors
- Assist the EAA in formulating and implementing demand management plans
- Ask the EAA Board to reconsider actions the Advisory Committee considers prejudicial to downstream interests, and seek recommendations from the Texas Commission on Environmental Quality (TCEQ) if EAA Board action does not result in a satisfactory solution
- Prepare and submit a biennial report to the EAA Board and to the TCEQ assessing the effectiveness of the EAA

The creation of the Advisory Committee indicated the importance of the concerns of downstream interests in ongoing governance of the EAA. This role was reflected in the original composition of the EAA Board. In the EAA Act as passed in 1993, the EAA Board consisted of nine members appointed as follows:

#	Qualification	Appointed by
1	South Central Texas Water Advisory Committee Member	Advisory Committee
1	Comal County/New Braunfels resident	Comal County Commissioners Court
1	Hays County resident	San Marcos City Council
2	Bexar County residents	San Antonio City Council
1	Bexar County resident	Bexar County Commissioners Court
1	Medina County resident	Medina County UWCD Board
1	Uvalde County resident	Uvalde County UWCD Board
1	Atascosa, Medina, or Uvalde County resident (rotating)	Evergreen, Medina or Uvalde County UWCD Board

This "3 – 3 – 3" balance among springflow/downstream interests, Bexar County municipal/industrial interests, and western irrigation interests was agreed to by the stakeholders involved in the drafting and passage of the EAA Act.[5] This balance was undermined as a result of an objection by the U.S. Department of Justice under the Voting Rights Act to the system for selecting the EAA Board. While the apparent Justice Department concerns related to the apparent substitution of an appointed board in the EAA Act for an elected board (under the Edwards Underground Water District), what soon became clear was that the San Antonio area wanted more than an equal share of EAA board members.

After the Justice Department decision, representatives of the San Antonio area proposed a "4 – 7 – 4" system under which the number of voting EAA Board members would be increased from nine to 15, with four representing agricultural communities, seven representing the San Antonio area, and four representing the springflow areas near New Braunfels and San Marcos. Under this proposal, the Advisory Committee would no longer have a voting member of the EAA Board to represent communities such as Seguin, Lockhart, Luling, Gonzales, Cuero, Victoria, and Port Lavaca. Ultimately, the Texas Legislature enacted this system.[6] In doing so, the Advisory Committee was left to fill a larger role than it would have had if downstream interests had a voting member on a balanced board.

1.5 Downstream Interests – The Guadalupe, San Antonio, and Nueces River Basins

The Edwards Aquifer lies in the upper portion of the Nueces, San Antonio, and Guadalupe River Basins. Water is recharged into the Aquifer in all three basins and is

[5] The apportionment of board directors was considered roughly equivalent to historic water usage/rights among the three groups, a basis which has been upheld for apportionment of board positions on the governing body of a special purpose district such as the EAA. *Ball v. James*, 451 U.S. 355 (1981); *Salyer Land Co. v. Tulare Lake Basin Water Storage District*, 408 U.S. 920 (1973).

[6] House Bill 3189 (Act of May 29, 1995, 74th Leg., R.S., ch. 261, § 1, 1995 Tex. Gen. Laws 2505)

discharged from the Aquifer by pumping and through springs in all three basins. But recharge and discharge are not balanced among the basins. As to recharge, approximately 51% has occurred historically in the Nueces River Basin, 37% in the San Antonio River Basin, and 12% in the Guadalupe River Basin.[7] As to discharge (combined for wells and springs), the median over the 1935-2005 historic period shows 11.2% occurring in the Nueces River Basin, 36.7% in the San Antonio River Basin, and 51.8% in the Guadalupe River Basin.[8]

1.5.1 Guadalupe River Basin

The Guadalupe River Basin is bounded by the Colorado River Basin on the north, the Lavaca River Basin on the east, and the Nueces and San Antonio river basins on the west and south. The drainage area of the basin is about 6,700 square miles. The average annual flow of the Guadalupe River above the Aquifer recharge zone is 320,000 acre-feet, increasing to 1,323,000 acre-feet near Victoria. Groundwater resources supply 48 percent of the water used for all purposes in the basin while surface water resources supply about 52 percent.[9] The largest purpose of water use in the basin, municipal, accounts for more than 45 percent, followed by manufacturing which accounts for about 23 percent. The following major population centers are located in the basin:

Table 3-1
Guadalupe River Basin Estimated Population

City	Estimated Population
Victoria	61,305
San Marcos	37,604
New Braunfels	38,404
Seguin	23,031
Kerrville	21,191
Lockhart	12,639
Cuero	7,170
Gonzales	7,039
Luling	5,894
Kyle	2,247

Source: 2000 Census

The Guadalupe-Blanco River Authority (GBRA) is a regional entity serving Hays, Comal, Guadalupe, Caldwell, Gonzales, DeWitt, Victoria, Kendall, Refugio, and Calhoun counties. GRBA's duties include supplying water from Canyon Reservoir to municipal and industrial users, delivering Guadalupe River water to Calhoun County rice farmers and several major industries along the Victoria Barge Canal, overseeing operation of Coleto Creek Reservoir, and operating water and wastewater treatment plants. GBRA also operates a barrier to minimize saltwater intrusion into the Guadalupe River.

[7] 2002 Advisory Committee Report
[8] EAA Hydrologic Data Report for 2005
[9] 2002 Advisory Committee Report, p. 20

Total population in the basin according to the 2000 Census and TWDB data was 330,349, and is projected to increase to 1,035,228 by the year 2060.[10] Total water use in the basin in 2000 was 120,932 acre-feet, and is projected to increase to about 300,000 acre-feet by the year 2060.[11]

1.5.2 San Antonio River Basin

The San Antonio River Basin is bounded on the north and east by the Guadalupe River Basin, and on the west and south by the Nueces River Basin and the San Antonio-Nueces Coastal Basin. Total drainage area of the basin is 4,180 square miles.

For the San Antonio River Basin, the average annual recharge to the Aquifer is 129,000 acre-feet, and the average annual river flow below San Antonio is 369,000 acre-feet. Groundwater resources supply about 88 percent of the water used for all purposes in the basin, with surface water resources supplying the remaining 12 percent. Municipal water use accounts for 67 percent of all water use in the basin and another 20 percent of the water is used for irrigated agriculture. Groundwater supplies about 99 percent of the water for municipal use in the basin and about 80 percent of the water used for irrigated agriculture. Major population centers and their 2000 population estimates include all or portions of the following cities:

Table 3-2

San Antonio River Basin Estimated Population

City	Estimated Population
San Antonio	1,137,369
Universal City	15,992
Schertz	26,173
Live Oak	12,439
Leon Valley	12,455
Converse	13,658
Kirby	10,039
Alamo Heights	7,039
Floresville	5,998
Kenedy	4,478
Karnes City	3,453
Goliad	2,140

Source: 2000 Census

San Antonio River Authority (SARA) is the only major surface water supplier in the San Antonio River Basin. SARA's principal purpose is to provide flood protection and wastewater treatment services in the San Antonio River basin. Existing reservoirs in the basin provide water for irrigation (Lake Medina), cooling for steam-electric power generation (Braunig and Calaveras reservoirs), and flood protection (Olmos Reservoir). The basin is supplied by natural runoff, springflows, and wastewater

[10] 2006 Region L Water Plan, p. 2-3
[11] 2006 Region L Water Plan, p. 2-25

discharges derived from wells in the Edwards, Trinity, Carrizo-Wilcox, Queen City, Sparta, and Gulf Coast aquifers. Although the Edwards Aquifer is the primary water supply for the San Antonio area, water supplies have been developed for the area from Medina Lake, Canyon Lake, and the Carrizo-Wilcox Aquifer. The San Antonio Water System has also developed a system for distribution of reclaimed wastewater, and a system for storage and recovery of Aquifer water in the Carrizo-Wilcox Aquifer.

Total population in the basin according to 2000 Census and TWDB data was 1,503,219, and is projected to increase to 2,913,176 by the year 2060.[12] Total water use in the basin in 2000 was 337,024 acre-feet, and is projected to increase to 542,928 acre-feet by the year 2060.[13]

1.5.3 Nueces River Basin

The Nueces River Basin is bounded by the Colorado, San Antonio, and Guadalupe River basins and the San Antonio-Nueces Coastal Basin on the north and east, and the Rio Grande River basin and the Nueces-Rio Grande Coastal Basin on the west and south. The Nueces River drainage area covers approximately 17,000 square miles. In the Nueces River basin, annual flow above the recharge zone of the Aquifer averages 326,000 acre-feet, and downstream the annual flow averages 162,000 acre-feet. Groundwater supplies about 76 percent of the water used for all purposes in the basin, with surface water supplying the remaining 24 percent. Agricultural irrigation represents nearly 90 percent of the basin's water use, while municipal water use accounts for about 5 percent. Major population centers in the basin and their population estimates are:

Table 3-3
Nueces River Basin Estimated Population

City	Estimated Population
Corpus Christi	296,339
Uvalde	17,296
Crystal City	8,900
Pearsall	7,933
Pleasanton	10,084
Hondo	7,032
Carrizo Springs	7,203
Mathis	6,440
Devine	4,524
Cotulla	4,178

Source: 2000 Census

The Nueces River Authority (NRA) manages the surface water resources for the entire basin, except in Wilson and Karnes counties. Surface water resources in the basin include several small lakes on the Nueces River in Zavala and Dimmit counties owned

[12] 2006 Region L Water Plan, p. 2-3
[13] 2006 Region L Water Plan, p. 2-25

by Zavala-Dimmit Counties WID#1, and Choke Canyon and Lake Corpus Christi reservoirs owned by the City of Corpus Christi and the NRA.

In 1990, total water use in the basin was 615,752 acre-feet.[14] Total water use in the basin is projected by the Texas Water Development Board to decline gradually, with a projected total water use of about 209,000 acre-feet by the year 2050. This decline is due to a projected reduction in water requirements for irrigated agriculture of about 82 percent during the period. Water conservation practices and programs are projected to reduce the basin's total annual water use by about 10,000 acre-feet by the year 2020, and nearly 15,000 acre-feet annually by the year 2050.

1.5.4 Coastal River Basins

As the Guadalupe, San Antonio and Nueces Rivers near the Texas coast, they become interrelated with coastal river basins, which include segments of these major rivers, and also creeks and water courses that drain directly to the bays along the coast. Included are the San Antonio-Nueces Coastal Basin, Lavaca-Guadalupe Coastal Basin, and the Nueces-Rio Grande Coastal Basin. To some extent, especially in populated areas in and around the city of Corpus Christi, the coastal river basins are impacted by the management of the Aquifer.

1.6 Project Approach

The Advisory Committee, in preparing this Report, reviewed agendas and agenda supporting materials from EAA Board meetings, EAA Board Committee meetings, and Advisory Committee meetings, reports from the EAA to legislative committees, and documents filed with TCEQ and the Office of the Texas Attorney General related to the "Junior-Senior" permit rules.

The EAA staff prepared a report of accomplishments for the period from May, 2004 to May, 2006, a copy of which is included as Appendix B to this Report. The Advisory Committee found this report to be of substantial assistance in preparing this Report, and expresses appreciation to the EAA staff for preparing it.

The new EAA Strategic Plan, together with updates on implementation of the plan provided by the EAA staff, served as an excellent tool for gauging EAA policy direction and progress towards the achievement of the goals.

[14] 2002 Advisory Committee Report, p.25

Section 2
Effectiveness Measures from the 2004 Report

The Advisory Committee includes effectiveness measures in its biennial reports to identify goals for the EAA to accomplish during the two-year period following each report. In addition to serving as gauges of the EAA's performance during that period, the effectiveness measures are also intended to communicate the Advisory Committee's expectations to the EAA Board and staff. This section reviews the EAA's activities during the past two years under the effectiveness measures included in the 2004 Report.

2.1 Planning Effectiveness Measures

2.1.1 Completion and adoption of the Comprehensive Water Management Plan

The EAA Act requires the EAA to develop and implement a "comprehensive water management plan that includes conservation, future supply, and demand management plans" and is "[c]onsistent with Section 1.14" of the EAA Act.[15] This comprehensive plan must also address the provision of alternative supplies of water to the Aquifer region over a 20-year period, with five-year goals and objectives.[16]

The EAA has largely met this effectiveness measure with respect to planning for Aquifer as a water supply source. The EAA adopted a Comprehensive Water Management Plan (CWMP) on December 14, 2004. The CWMP contains programs, activities and internal plans to guide the EAA in managing the Aquifer. The CWMP is well-written and readable.

The CWMP integrates in certain respects with the habitat conservation plan prepared by the EAA and submitted to the United States Fish and Wildlife Service. See Sections 2.1.2 and 3.3 of this Report for more information on the habitat conservation plan.

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[15] EAA Act §1.25
[16] EAA Act §1.25(b)

With respect to the EAA's statutory charge to plan for alternative water supplies, the enactment of state-wide water planning legislation in 1997 (Senate Bill 1) effectively transferred this responsibility to the South Central Texas Regional Water Planning Group (SCTRWPG), which develops the regional water supply plan for Region L, including the Aquifer region and most of the downstream area. The EAA has devoted significant efforts to integrate its planning activities with those of the SCTRWPG as described in 2.1.3 below.

2.1.2 Completion and adoption of the Habitat Conservation Plan, and submission to U.S. Fish and Wildlife Service with incidental take permit application

The EAA Act expressly authorizes the EAA to hold permits pertaining to the Endangered Species Act (ESA)[17], and as noted above, the Act also requires the EAA to "implement and enforce water management practices, procedures, and methods ... to protect endangered and threatened species".[18] A primary reason for the creation of the EAA was to have it obtain an "incidental take permit" (ITP) under the ESA on behalf of all Aquifer pumpers. The ITP would provide insulation against liability for ESA violations that occur when limited recharge and continued Aquifer pumping decrease springflows upon which the listed species depend. An ITP requires the preparation of a "habitat conservation plan" (HCP) to ensure the survival of the affected species.

In the 2004 Report, the Advisory Committee recommended that the EAA finalize its draft HCP, submit it to the U.S. Fish and Wildlife Service (USFWS), and "actively seek completion of USFWS review and issuance of an ITP".

The EAA's development of drafts of the HCP involved a significant commitment of staff resources, the engaging of consultants (the principal consultant being Hicks and Company), and public meetings of the EAA Board and committees of the EAA Board. The EAA, in accordance with state legislation passed in 1999, appointed a 26-member Citizen Advisory Committee and a six-member Biological Advisory Team to assist in preparation and review of the HCP.

The EAA Board released a draft of the HCP for public comment in September of 2004. During the comment period, the EAA staff held public hearings in Victoria, New Braunfels, Uvalde and San Antonio. The EAA held two additional meetings with stakeholders in February of 2005. Following these meetings, the EAA staff revised the draft HCP, and the final draft of the HCP (Final Draft HCP) was approved by the EAA Board and submitted to the USFWS with an ITP application in March of 2005.

The Advisory Committee has significant concerns with the Final Draft HCP, which are discussed in Section 3.3 of this Report.

[17] EAA Act §1.11(d)(9)
[18] EAA Act §1.14(h)

2.1.3 Continued Support and Involvement in the Regional Water Planning Efforts

The Advisory Committee's 2004 report stated

> As long as regional water planning is a legislative goal, the EAA's participation in regional water planning efforts will continuously be required. The Board and the [general manager] should continue support of and involvement in regional water planning activities. The existing mutually beneficial relationship between EAA and the SCTRWPG needs to continue. It is also important that EAA continue to establish beneficial partnerships with other entities in the region to share resources and information.[19]

During the review period, the EAA Board and staff met this effectiveness measure. Members of the EAA Board and staff actively interacted with the SCTRWPG in preparing the 2006 update of the Region L Plan. EAA Board Chair Doug Miller and EAA General Manager Robert Potts served as voting members of the SCTRWPG, and attended the SCTRWPG's meetings that led to the 2006 Region L Plan update. Unfortunately, issues arose late in the update process and the SCTRWPG failed to complete and submit the update in a timely manner to the Texas Water Development Board. This may affect the development of water supply projects included in the updated plan.

In addition to involvement in Region L planning, the EAA has responded to the Legislature's enactment of HB 1763 in 2005. This bill added a requirement for all groundwater conservation districts within a groundwater management area (GMA) to meet jointly and determine the "desired future conditions for relevant aquifers within the GMA". The Texas Water Development Board has divided the state into 16 GMAs. The EAA is located mostly within GMA 10, but also in GMAs 7, 9, and 13. The EAA staff has attended GMA meetings and has provided input to the GMAs, and is cooperating with other groundwater districts to achieve compliance with HB 1763.

2.1.4 Implementation of the Groundwater Conservation Plan

The EAA Act authorizes the EAA to review conservation and reuse plans of holders of regular and term permits, requires the EAA to offer assistance to permit holders in developing these plans, and requires the EAA to "prepare and update enforceable and effective conservation and reuse plans" and to submit such a plan to the Legislature every two years.[20]

This is a significant area in which the Advisory Committee applauds the efforts of the EAA. In its 2004 Report, the Advisory Committee stated that "the EAA should continue its efforts in executing and updating the GWCP". As of that report, the EAA Board had approved Groundwater Conservation and Reuse Rules requiring permit holders and applicants to submit groundwater conservation plans, and the Board had also approved rules outlining best management practices to be implemented by permit

[19] 2004 Report §4.1.3
[20] EAA Act §1.23

holders based on their designated purposes of use. In addition, the EAA staff developed educational materials and conducted workshops to assist Aquifer users in selecting conservation techniques. Since that time, the EAA staff conducted follow-up workshops to assist users in completing the required GCP submittals, and the EAA staff has reviewed GCPs submitted by permit holders and applicants.

The Advisory Committee continues to recommend that the EAA undertake efforts to develop and execute agreements with state agencies to ensure that EAA approval of a permit holder's conservation plan would be deemed as meeting applicable state requirements.

2.1.5 Implementation of the EAA Strategic Plan

The EAA Board adopted an initial Strategic Plan in April of 2002 to outline activities to be accomplished by the EAA during the period of 2002 – 2006. In the 2004 Report, Advisory Committee recommended an update of the plan, noting that many of the details of this plan were no longer relevant, or the completion time of certain tasks had fallen behind schedule.

In October of 2005, the EAA Board approved an entirely new Strategic Plan for the period 2006-2009. This new Strategic Plan differs from the previous plan in that the new plan is more general in nature, it incorporates an annual implementation and updating process to ensure that it remains current, and it identifies EAA staff "teams" responsible for carrying out the various work tasks needed to implement the plan.

The EAA in adopting the new Strategic Plan has largely met this effectiveness measure. The Advisory Committee considers the new Strategic Plan to be an improvement over the previous plan because it incorporates annual review and updating and a flexible, year-by-year approach to implementation.

2.2 Research Effectiveness Measures

2.2.1 Continue to implement programs that quantify recharge and withdrawal amounts

The EAA has met this effectiveness measure.

It is critical to the success of the EAA's mission that it accurately quantify the amounts of recharge to and withdrawal from the Aquifer. Data collection and analysis to reliably determine this information is essential to the EAA in making appropriate decisions in its regulatory and planning capacities.

The EAA has assembled a skilled staff of hydrogeologists and technicians, headed by Chief Technical Officer Geary M. Schindel. The EAA has continued its data collection activities, and its publication of thorough annual hydrologic reports, with monthly update information provided to the EAA Board and the Advisory Committee.

2.2.2 Optimization Technical Studies

The EAA Act authorizes the EAA to perform research to "augment the springflow, enhance the recharge, and enhance the yield of the aquifer".[21] The EAA has continued to pursue a variety of studies under this authorization, some of which explore options for increasing the use of Aquifer water above historic levels.

In its 2004 Report, the Advisory Committee stated that it supported

> studies that pass a cost/benefit analysis and contribute to effective management of the Edwards Aquifer while conforming to statutory requirements for protection of springflow at Comal and San Marcos springs. ... [T]he Advisory Committee would oppose studies that have as their object the minimization of flows at Comal and San Marcos springs without reference to the statutory requirement to ensure continuous springflows and without consideration of the effects of such minimization on downstream interests.

The EAA has somewhat met this effectiveness measure. The EAA has continued to fund studies to determine the workings of the Aquifer and methods of increasing recharge to the Aquifer. However, as more fully discussed in Section 3.4 of this Report, the EAA continues to pursue studies that appear to be directed at a goal of decreasing the levels of springflows needed to sustain the listed species, and identifying alternatives to natural springflow to sustain the species, apparently overlooking the broader implications of reducing or eliminating springflow to downstream interests.

2.2.3 Complete, implement and update the Groundwater Model

The EAA has somewhat met this effectiveness measure. The EAA has worked jointly with the United States Geological Survey (USGS) since April of 2000 to construct a new computerized model of the Edwards Aquifer that is more user-friendly and is based on MODFLOW software that is more generally available to the public. The computer model is intended to serve as the foundation for running water management scenarios.

The new MODFLOW model for the Aquifer was completed in 2005, and was presented to the Texas Water Development Board (TWDB) in May of 2005 for recognition as the official groundwater availability model (GAM) for the Aquifer. The TWDB includes the following statement on its web-site describing the new model:

> The U.S. Geological Survey in cooperation with the U.S. Department of Defense and the Edwards Aquifer Authority (EAA) has developed a GAM for the San Antonio segment of the Edwards aquifer. This model replaces TWDB GWSIM as the GAM. However, the Texas Water Development Board will continue to maintain GWSIM as a model with an alternative hydraulic conductivity distribution and as an easier-to-use screening tool.

[21] EAA Act §1.27(b)(1)

The Advisory Committee notes that the new model is fairly accurate in modeling certain parameters of the Aquifer, but apparently it is not capable of running all water management scenarios to a high level of certainty. For example, limitations in the model prevented it from predicting the effects of some aspects of the Junior-Senior Implementation Rules, as noted in the Regulatory Impact Assessment for those rules.[22]

2.3 Regulatory Effectiveness Measures

2.3.1 Complete the permit issuance process for all initial regular permits and resolve any related litigation

The EAA Act requires that pumping of water from the Aquifer be authorized by a permit issued by the EAA, and that "[e]ach permit must specify the maximum rate and total volume of water that the water user may withdraw in a calendar year".[23] The Advisory Committee has noted in its past two reports the need to complete the permitting process in order to quantify the total permitted withdrawal amounts. In its 2004 Report, the Advisory Committee stated that the completion of the permitting process should be among the highest priorities of the EAA.

The EAA has largely met this effectiveness measure. The EAA completed its review of initial regular permit applications in late 2005, and the EAA Board issued the final initial regular permit in April of 2006. This is a landmark accomplishment which culminated years of rulemaking, application processing and review, Board decisions, and administrative appeals. The Advisory Committee heartily commends the EAA on this achievement. Some of the permits, however, are still involved in litigation, presenting some of the thorniest issues faced by the EAA in achieving its regulatory objectives.

As of November of 2005, the EAA Board had approved 881 initial regular permit applications. The approximate sum of all permit holders' maximum historical use (each permit holder's highest use in any one year during the period of 1972 – 1993) amounted to 668,000 acre-feet. The approximate sum of all permit holders' statutory minimum amounts (each permit holder's average annual use during the historic period for users with at least three years of use, or two acre-feet per acre actually irrigated in the historic period) was 521,000 acre-feet. After the final proportional adjustment made by the EAA Board in November of 2005, the approximate sum of the initial regular permits was 549,000 acre-feet, or 99,000 acre-feet above the initial statutory cap on authorized withdrawals. Under the EAA's Junior-Senior Rules, 450,000 acre-feet of the permit total were allocated to Senior rights, and 99,000 acre-feet was allocated to Junior rights.

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[22] The RIA for the Implementation Rules states "limitations that currently exist in the MODFLOW Management Module ... preclude simulation of all potential scenarios associated with the 2006 Proposed Rules and developed in this assessment," (p. 27) and "[b]ecause of the current limitations of the MODFLOW Management Module, these simulations did not incorporate a junior rights 'accrual' for later use in the calendar year or early pumping of a junior right based either on (a) anticipated water levels or (b) willingness to pay a fee for an 'unaccrued' junior right". (Appendix B, p. 2)

[23] EAA Act §1.15(b) and (d)

2.3.2 Implement required reductions in total permitted withdrawals by repealing the bifurcated permit rules and adopting rules requiring proportionate reductions in regular permits

The EAA Board adopted the Junior-Senior Rules in December of 2003 in an attempt to reconcile apparently contradictory provisions in the EAA Act that established caps on authorized annual withdrawals but seem to guarantee minimum permit amounts to existing users.

The Advisory Committee in its 2004 Report recommended the repeal of the Junior-Senior Rules, and the adoption of rules requiring that all initial regular permits be proportionately reduced to achieve compliance with the EAA Act's cap on permitted withdrawals. The EAA has not met this effectiveness measure.

The EAA Board, in spite of recommendations for reconsideration by the Advisory Committee and the TCEQ, has not repealed the rules. Rather, the EAA Board in July of 2006 proceeded to adopt Implementation Rules for Junior and Senior permit rights. A more complete discussion of the Junior-Senior Rules is included in Section 3.1 of this Report.

2.3.3 Revise and implement workable Demand Management/Critical Period Management Rules that will achieve required critical period reductions in a timely manner

The EAA Act requires the EAA to adopt and implement a "critical period" plan for management of the Aquifer when the Aquifer level and springflows are low.[24] This plan must "distinguish between discretionary use and nondiscretionary use," "require reductions of all discretionary use to the maximum extent feasible," "require utility pricing, to the maximum extent feasible, to limit discretionary use by the customers of water utilities," and "require reduction of nondiscretionary use" according to certain categories of water uses.[25]

The EAA Board adopted Demand Management/Critical Period Management (DM/CPM) rules in November of 2002. The rules place restrictions on Aquifer withdrawals based on index well or springflow levels for the San Antonio pool, and based on index well levels for the Uvalde pool. A more detailed description of the DM/CPM Rules is in Section 3.2.

The Advisory Committee in its 2004 report stated:

> The EAA should rewrite the DM/CPM rules to include as a primary objective the protection of continuous springflows at Comal and San Marcos Springs. This will require greater reductions in withdrawals to occur earlier in time, especially if the [Junior-Senior] permit rules remain in place allowing increased levels of withdrawals

[24] EAA Act §1.26
[25] EAA Act §1.26

when aquifer levels are high. The revised rules should also include a practical and effective system for tracking aquifer and springflow levels, and tracking and enforcing required reductions in withdrawals on a timely basis.

The EAA has not met this effectiveness measure. The EAA Board has not considered revisions to the DM/CPM Rules in response to the Advisory Committee's recommendations. However, the EAA staff in 2006 endeavored to increase compliance with the current DM/CPM Rules by simplifying the process by which permit holders reported their quarterly pumping allocations, increasing efforts to secure updated quarterly allocations and monthly pumping report forms, and sending reminders to permit holders.

The EAA has begun the process of updating the DM/CPM Rules. The new EAA Strategic Plan includes the following strategic goal:

D. Amend Demand Management/Critical Period Management Rules

The Act provides for a Demand Management/Critical Period Management (DM/CPM) Program for the Edwards Aquifer region. This program applies to all Edwards Aquifer users who hold a groundwater withdrawal permit and pump more than three acre-feet of groundwater per year. The DM/CPM is a four stage program designed to slow the rate of decline in the Edwards Aquifer during low rainfall periods. While the rules are in effect year-round, stages of the program are triggered by one or both of two index wells and springs. This program is implemented through the EDWARDS AQUIFER AUTHORITY RULES. These rules may be simplified to make them more understandable and manageable not only for Authority staff, but also for permit holders, stakeholders, and other regional interests alike.

The EAA staff has developed a proposed review process to evaluate the effectiveness of the DM/CPM Rules and to simplify the rules. The staff is proposing the creation of a "DM/CPM Task Force and Scientific Group" to "analyze separate pool(s) and review DM/CPM reporting requirements for permit holders".[26] The tentative schedule prepared by the EAA staff calls for a concept memorandum on rule changes to be developed by July of 2007, with final rules being adopted in January of 2008.

2.3.4 Implement registration of exempt wells

The EAA Act requires owners of wells that are exempt from permit requirements to register their wells with the EAA or with a local groundwater district.[27] Exempt wells are domestic and livestock wells that withdraw (and are only capable of withdrawing) less than 25,000 gallons per day. The EAA has identified the registration of all Aquifer wells as an objective. Registration of exempt wells can provide the EAA with more information to quantify the use of Edwards Aquifer water.

The Advisory Committee in its 2004 Report recommended that registration of all Aquifer wells should continue to be a priority for the EAA staff.

The EAA staff implemented a campaign to pursue well registrations in 2004, and as of May 10, 2006, 3,864 well registrations had been recorded as a result of the campaign.

[26] Aquifer Management Planning Committee, July 25, 2006 meeting agenda, summary for Item 3
[27] EAA Act §1.33

The EAA staff is continuing this campaign, and consolidating and reviewing available data to identify wells that have not yet been registered. The Advisory Committee commends the EAA on its efforts in this area.

2.4 Financial Effectiveness Measures

2.4.1 Obtain approval of legislation authorizing issuance of revenue bonds to retire water rights; begin education process for downstream water users

In its 2004 Report, the Advisory Committee urged the EAA to obtain statutory authority to finance the retirement of regular permits associated with lowering the cap on authorized withdrawals to 400,000 acre-feet on January 1, 2008. While the EAA did not meet this effectiveness measure by introducing or securing passage of this legislation, this was due to circumstances in which alternatives to permit retirements were being considered.

Senate Bill 3, introduced by Senator Armbrister in the regular session in 2005, became the focus of debate in the Legislature, and the bill took an entirely different approach to the issue of caps on withdrawals and permit retirements. Senate Bill 3 as initially filed and as amended in the course of the session included an increase in the cap on authorized annual withdrawals, and elimination of the permit retirement provisions. The bill did not pass. Had this legislation passed, it would have removed the need for payments to retire permits.

2.4.2 Inform downstream water users on potential required financial contributions

In its 2004 Report, the Advisory Committee recommended that the EAA undertake efforts to inform downstream water users about the potential financial obligations associated with the retirement of EAA permit rights to achieve the reduction in authorized withdrawals to 400,000 acre-feet as of January 1, 2008.

The EAA did not accomplish this effectiveness measure. The EAA staff discussed the topic briefly at a meeting of the Advisory Committee in March of 2006, and discussed the topic in June of 2006 with the TCEQ staff. The lack of substantial efforts in this area is likely related to proposals in the 2005 State Legislature to eliminate the permit retirement provision in the EAA Act, the potential for similar proposals to surface in the 2007 State Legislature, and the possibility that permit retirements could be addressed by an extension of the Junior-Senior Rules past their current scheduled termination on December 31, 2007.

2.5 Other Effectiveness Measures

2.5.1 Increase data collection efforts and accessibility

The EAA has met this effectiveness measure.

Since the 2004 Report, the EAA has continued its efforts to expand knowledge of the Aquifer through a variety of activities including collection of data, research programs, and regional partnerships. The Advisory Committee recommends the EAA maintain the focus on gathering information regarding the Edwards Aquifer and explore new avenues to provide for the free-flow of communication between the EAA and its stakeholders.

The EAA has assembled a skilled staff of hydrogeologists and technicians, headed by Chief Technical Officer Geary M. Schindel. The EAA has continued its publication of thorough annual hydrologic reports, with monthly update information provided to the EAA Board.

2.5.2 Hire new General Manager that will fulfill the duties and responsibilities of this position

The Advisory Committee's 2004 Report recommended that "significant efforts be made to hire an experienced [general manager] who will be able to maintain and enhance the level of EAA activities".

The Advisory Committee believes that the EAA Board fully met this effectiveness measure with the hiring of Robert Potts as General Manager in October of 2004. The daunting nature of the responsibilities of the general manager cannot be overstated. Mr. Potts' background in land and water resource conservation made him an excellent candidate for facing these responsibilities. On the whole, Mr. Potts has displayed a keen awareness of the diverse interests that rely on the Aquifer, and he has endeavored with energy, imagination and candor to identify consensus solutions to the issues faced by the EAA.

2.5.3 Continue to promote public awareness and information campaigns that support successful implementation of EAA's programs

In its 2004 Report, the Advisory Committee stated:

> One of the keys to implementing a successful program is to enable the stakeholders of the program to become involved in implementing the components of the program. Some of the EAA's programs including well registration efforts and implementation of BMP's for water conservation entail that the water users be aware of the reasons behind and the details of the program.

The EAA has met this effectiveness measure. On a variety of fronts, the EAA has endeavored in creative ways to communicate with the public about the EAA's activities and mission. These have included regular press releases on significant

events, including summaries of actions at EAA Board meetings, communications with the regulated community, educational materials on water conservation, and outreach to community leaders in the Aquifer region.

In concert with the new EAA Strategic Plan, the EAA has begun developing a Comprehensive Public Information Plan. At the August 2006 Work Session meeting of the EAA Board, the EAA staff made a presentation on the current draft of this plan to the Board. The draft plan is "structured to complement the strategic plan in a manner that incorporates the complete spectrum of components and functions of the Public Affairs Team," including "corporate identity, media relations, stakeholder relations, community relations and education outreach". The draft plan establishes as its goal "establish[ing] a well-defined identity that will engender greater understanding, trust, and support of the edwards aquifer authority and its mission". This goal is proposed to be accomplished through the following objectives:

- Objective A: Raise Awareness
- Objective B: Build Trust
- Objective C: Enhance Understanding

The draft plan identifies a broad variety of target audiences, and proposes the following as key messages of the EAA:

- The Edwards Aquifer Authority's mission is to manage, enhance, and protect the Edwards Aquifer.
- The Edwards Aquifer is a shared resource on which more than 1.7 million people depend as their primary source of water.
- Effective management and sustainability of the Edwards Aquifer requires a regional approach that balances the various needs and interests of a geographically, economically and culturally diverse region.

The Advisory Committee supports the development and implementation of a Comprehensive Public Information Plan by the EAA.

2.5.4 Identify options for office space consolidation

The Advisory Committee's 2004 Report included this effectiveness measure "in order to promote a more efficient EAA".

The EAA met this effectiveness measure on an interim basis, but further efforts at office space consolidation appear to be needed. The EAA staff has been spread among three separate office buildings near downtown San Antonio. This fact, together with the layout of the EAA headquarters building, hampered the ability of staff members to efficiently communicate and interact with one another. In addition, the recent decision by the EAA Board to pursue a water quality protection program will likely lead to additional staffing and office space needs.

In 2005, the EAA staff worked with an architecture/planning firm to reassess and update the EAA's original space plan from May of 2003, and a revised plan was finalized in March of 2006. The EAA Board at its May, 2006 meeting approved a

lease of 9,000 square feet of office space from the San Antonio River Authority. This interim measure has allowed for a limited consolidation of staff members, but some inefficiency remains inherent with two separate office settings. The EAA is planning for the purchase of additional land near the headquarters building that will eventually allow for further consolidation, and the Advisory Committee supports this concept. The EAA Board received a briefing at its August, 2006 Work Session meeting on the status of various measures to meet the EAA's office space needs.

2.6 EAA Response to 2004 Report

The Advisory Committee acknowledges the EAA's January 11, 2005 Response to the Advisory Committee's 2004 Report. The clarifications and explanations in that response were appreciated by the Advisory Committee as an important aspect of open and positive communications between the Advisory Committee and the EAA.

Section 3
Discussion of Key Issues

3.1 Permitting of Water Rights

Under the EAA Act, the EAA is mandated to limit permitted withdrawals to 450,000 acre-feet per year for the period ending December 31, 2007, and 400,000 acre-feet per year beginning January 1, 2008. These limits on permitted withdrawals, together with critical period withdrawal reduction rules, represent the primary regulatory mechanisms by which the EAA can achieve a balance between use of Aquifer water through wells and reliance on Aquifer springflows by downstream interests.

The permitting of water rights by the EAA does much more than achieve a regulatory objective – it also lays the foundation for the market for permit rights, allowing buyers and sellers to determine their value and transfer them. According to the EAA staff, market prices for Aquifer permit rights have been volatile, especially with respect to the sale of permit rights. Several factors have contributed to this volatility, including the lack of finality in the permit review and issuance process, lack of finality of rules governing the use of permits, and litigation over permit applications and the nature of permit rights.

3.1.1 Junior-Senior Rules

As noted in Section 2.3.2 above, the EAA Board and staff have struggled to reconcile the provisions in the EAA Act that limit permitted withdrawals[28] with the apparently contradictory provisions that seem to guarantee minimum permit amounts to existing users.[29] As permit applications were processed, it became apparent that the permit

[28] EAA Act §1.14(b) states in part "for the period ending December 31, 2007, the amount of permitted withdrawals from the aquifer may not exceed 450,000 acre-feet of water for each calendar year".

[29] EAA Act §1.16(e) states "To the extent water is available for permitting, the board shall issue the existing user a permit for withdrawal of an amount of water equal to the user's maximum beneficial use of water without waste during any one calendar year of the historical period. If a water user does not have historical use for a full year, then the authority shall issue a permit for withdrawal based on an amount of water that would normally be beneficially used without waste for the intended purpose for a calendar year. If the total amount of water determined to have been beneficially used without waste under this subsection exceeds the amount of water available for permitting, the authority shall adjust the amount of water authorized for withdrawal under the permits proportionately to meet the amount available for permitting. An existing irrigation user shall receive a permit for not less than two acre-feet

floor (guaranteed permit minimums) was above the permit ceiling (annual cap on permitted withdrawals).

In October of 2003, the EAA Board considered the following options for resolving this apparent conflict:

- Increase the withdrawal cap from 450,000 acre-feet per year to 560,000 acre-feet per year, on a temporary basis until December 31, 2007
- Bifurcate initial regular permits into "Senior" and "Junior" rights, in lieu of compensation
- Make proportional downward adjustments to all initial regular permit amounts to meet the permit cap without compensating permit holders for the decrease
- Delay the effective date of the 450,000 acre-foot cap until December 31, 2007

From these options, the EAA Board chose the one which bifurcates initial regular permits into "Junior" and "Senior" permit rights, adopting formal rules to this effect (Junior-Senior Rules) in December of 2003. The Junior-Senior Rules split each initial regular permit into a "Senior" portion, which is interruptible only when the Aquifer reaches certain lower levels (under the DM/CPM Rules)[30], and a "Junior" portion, which is in effect only when the Aquifer is at or above certain higher levels.[31] Since 2004, the EAA has proportionately adjusted the Senior portion of each initial regular permit downward in order to achieve the 450,000 acre-feet cap. The difference between a permit holder's proportionally adjusted "Senior" right and the permit holder's statutory minimum constitutes the holder's "Junior" permit right.

The Junior-Senior Rules are premised on certain key concepts:

- The statutory annual cap on withdrawals applies only to the Senior permit rights
- The EAA may issue and honor Junior permit rights without reference to the statutory annual cap on withdrawals, and without determining that additional supplies of water are available from the Aquifer, in consultation with state and federal agencies
- The EAA may impose the "Junior" permit conditions on a portion of initial regular permits without compensating permit holders

The Advisory Committee has consistently opposed the Junior-Senior Rules for two reasons: First, the rules in effect raised the annual limit on permitted withdrawals without a prior determination that additional Aquifer water was available, in consultation with state and federal agencies, as required by the EAA Act; and second,

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a year for each acre of land the user actually irrigated in any one calendar year during the historical period. An existing user who has operated a well for three or more years during the historical period shall receive a permit for at least the average amount of water withdrawn annually during the historical period." The Advisory Committee notes that some stakeholders, including GBRA, have taken the position that the annual caps are absolute in nature while the permit minimums are not.

[30] 650 feet AMSL for the San Antonio Pool, and 845 feet AMSL for the Uvalde Pool.

[31] 665 feet AMSL for the San Antonio Pool, and 865 feet AMSL for the Uvalde Pool

the increased withdrawals allowed under the rules will lead to decreased flows in the Guadalupe River basin, to the detriment of downstream interests. As stated in the Advisory Committee's 2004 Report:

> The EAA should not engage in imaginative management techniques as a means of artfully adjusting the permit cap without appropriate scientific support, consultation with state and federal agencies, and consideration of the consequences to downstream interests.

Without question, the practical effect of the Junior-Senior Rules is to increase the cap on permitted withdrawals under initial regular permits.[32] The EAA Board is authorized by the EAA Act to increase the cap, but only if the Board "determines that additional supplies are available from the aquifer," and only if the Board makes its decision "in consultation with appropriate state and federal agencies". Any such action that is not premised on a determination that "additional supplies are available from the aquifer," or is not made "in consultation with appropriate state and federal agencies" is invalid.

The EAA Board, before adopting the Junior-Senior Permit Rules, did not determine "that additional supplies [were] available from the aquifer," did not "review and ... increase the maximum amount of withdrawals provided by [EAA Act Section 1.14] and set a different maximum amount of withdrawals," and did not make its decision "in consultation with appropriate state and federal agencies".

The requirement for the EAA Board to find that additional water is available from the Aquifer before increasing a permit ceiling is a matter of simple hydrologic logic – If an increase is not based on added supply, it upsets the balance in the EAA Act between users of the Aquifer and users of surface water dependent on the springs in favor of the former and at the expense of the latter. Likewise, the requirement for "consultation with appropriate state and federal agencies" is not an insignificant afterthought in the Act. "Consultation" is a term of art under the federal Endangered Species Act, a process characterized by careful examination of the impacts of proposed actions from a biological perspective to assure the survival of endangered and threatened species.[33] The endangered and threatened species in the Comal Springs and San Marcos Springs habitats depend on the high-quality, constant temperature flows from these springs for survival. They have been the object of intensive studies, including studies by the EAA, to determine their behavior patterns, breeding characteristics, and other needs for survival. These species are aquatic species, however, and no study to this point has determined that are able to survive in their natural habitats when springflow has ceased.

The EAA did not request a review of the impact of the Junior-Senior Rules by any of the state or federal agencies (Texas Commission on Environmental Quality, Texas Parks and Wildlife Department, or the U.S. Fish and Wildlife Service) with which consultation could be expected in a matter that potentially affected state-issued water

[32] This increase can be quantified simply as the total of all junior permit rights, which the Authority has stated amounts to about 99,000 acre-feet. This is 22% higher than the 450,000 acre-foot initial permit ceiling as defined in the Act.

[33] *See* 16 U.S.C. §1536 (description of consultation process for federal agencies).

rights, wildlife resources, and endangered species. Ironically, consultation with the TCEQ on the impacts of the rules occurred only as a result of an Advisory Committee request to the TCEQ after the rules had been adopted, and that consultation resulted in a clear signal to the Authority to reconsider its position.[34]

The EAA has rationalized the Junior-Senior Rules on a variety of bases. One of these is that the rules avoid the expense of compensating permit holders for permit reductions. This is intertwined with another oft-cited basis, that the rules are the most legally defensible option among those considered by the EAA Board for reconciling the apparent statutory conflict. Both of these assume that the EAA would not prevail in a lawsuit by a permit holder seeking compensation for a reduction in an initial regular permit.[35] The Advisory Committee disagrees with this assumption for two reasons. The first, premised in economics, is that the natural reaction of the market to a reduction in the total quantity of available EAA permit rights would be to increase the per-acre-foot value of permit rights in a manner that would offset the reduction in quantity and maintain the value of each permit. Actual experience with the market value of EAA permit rights supports the presence of these market tendencies.[36] Without a reduction in the market value of a permit, it would be extremely difficult to establish a compensable taking.[37] The second reason is legal in nature – The Advisory Committee also notes the EAA has argued that there is no common law property interest in Aquifer groundwater before it is produced through a well, and therefore the only property interest in Aquifer water in place prior to production is that created by the EAA Act.[38] If the EAA Act is the source of the property rights to Aquifer water, then an initial cap on the total of permitted rights, and a proportionate reduction in all permits relative to historic maximum use to achieve that cap, are inherent conditions of those rights and cannot be regarded as compensable. The argument that the permit

[34] In the Commission's resolution dated January 11, 2006 (a copy of which is included as Appendix A), the Commission concludes that the Junior-Senior Permit Rules are "contrary to basic Commission actions in administering surface water rights, the Commission recommends that the EAA reconsider the [Junior-Senior Permit Rules] to limit permits and to within the statutory cap of 450,000 acre-feet per year and to minimize the measurable impact on downstream surface water rights holders and other downstream interests".

[35] The EAA General Counsel has gone so far as to conclude that the EAA is required to compensate initial regular permit holders for reductions in permits. The EAA's January 11, 2005 response to the Advisory Committee's 2004 Report includes the following statement:

> Absent an alternative such as the "junior/senior" rules, the Authority's ... counsel believe[s] the Authority cannot reduce initial regular permits for those permit holders with a guaranteed statutory minimum below their minimum permit amounts without compensation.

[36] As the EAA has proportionately adjusted the senior portion of initial regular permit rights downward (with a corresponding increase in the junior portion), the value of each acre foot of initial regular permit rights has climbed steadily.

[37] In fact, a recent Texas Supreme Court case established that an exercise of the police power that decreases the value of a property right is not always a compensable taking. *Sheffield Dev. Co., Inc. v. City of Glenn Heights,* 140 S.W.3d 660 (Tex. 2004). The Advisory Committee understands that permit holders that face increasing demand will claim compensation based on the high cost of alternative water supplies. But the EAA would not be seizing property here for public use; rather, it would be using its regulatory authority to achieve a balance between the rights of all who rely on the Aquifer, whether through well withdrawals or natural spring discharge.

[38] *Edwards Aquifer Authority v. Peavy Ranch*, EAA Appellant's brief in Fourth Court of Appeals, pp. 19-25.

reductions called for by the EAA Act create a right to compensation is simply not valid.

With respect to the permit reduction to achieve the initial 450,000 acre-foot limit, the Advisory Committee has also noted that any compensation owed would be payable by the current permit holders. This means that if compensation was owed for this reduction, permit holders would be engaged in the meaningless exercise of paying themselves.

The EAA has also rationalized the Junior-Senior Rules on the basis that they are temporary, since they will expire on December 31, 2007. While the rules are indeed temporary, their reason for existence – reconciliation of the apparent conflict in the EAA Act – is not. In fact, the need to reconcile this apparent conflict will likely be exacerbated by the impending deadline for a further reduction in the withdrawal limits as of January 1, 2008. The same forces which drove the EAA to adopt the Junior-Senior Rules in the first place will surface again, even stronger, as the expiration of the Junior-Senior Rules approaches.

The Junior-Senior Rules have had a complex procedural history, summarized below, including the first exercise by the Advisory Committee of its authority to appeal an EAA Action to the Texas Commission on Environmental Quality (TCEQ).

Date	Event
12/13/03	EAA Board adopts Junior-Senior Rules
2/12/04	Advisory Committee requests EAA Board to reconsider adoption of rules
5/11/04	EAA Board declines to reconsider adoption of rules
5/18/04	Advisory Committee requests TCEQ to review rules and make recommendation to EAA Board
3/1/05	TCEQ Commissioners issue order agreeing to hear Advisory Committee request and requesting analysis from TCEQ staff and TWDB
August 2005	TWDB issues report – "The Effect of Bifurcated Permits on Spring Flow in the San Antonio Segment of the Edwards Aquifer"
1/11/06	TCEQ Commissioners adopt resolution finding that the rules detrimentally impact downstream interests and are contrary to TCEQ actions, and recommending that the EAA Board reconsider the rules
3/14/06	EAA Board approves issuance of Junior-Senior implementation rules for public comment
3/16/06	State Rep. Hilderbran requests opinion from Attorney General Abbott on issues related to the Junior-Senior Rules
5/9/06	EAA Board postpones consideration of TCEQ resolution pending outcome of Attorney General opinion request
7/11/06	EAA Board proceeds to adopt Junior-Senior implementation rules

Section 1.10(f) of the EAA Act describes the process under which the Advisory Committee can appeal actions of the EAA Board as follows:

> The advisory committee by resolution may request the board to reconsider any board action that is considered prejudicial to downstream water interests. If the board review does not result in a resolution satisfactory to the advisory committee, the advisory committee by resolution may request the commission to review the action. The commission shall review the action and may make a recommendation to the board. If the board determines that the board's action is contrary to an action of the commission affecting downstream interests, the board shall reverse itself.

In the course of the Advisory Committee's appeal to the TCEQ, the EAA took positions the Advisory Committee found extremely troubling. For example, in its Reply filed with the TCEQ on September 1, 2004, the EAA stated:

> The [EAA's] adoption of the junior/senior rules cannot, as a matter of law, be "contrary to an action of the commission affecting downstream interests" because the surface water rights administered by the Commission do not provide any assurance or guarantee that any quantity of water will be available for diversion in any given year by permit holders.

The Advisory Committee submits that if this statement is correct, then no action of the EAA Board in issuing permits for pumping of Aquifer water will ever be subject to reversal under Section 1.10(f), regardless of the effects of that action on downstream interests. This logic would limit the scope of the Section 1.10(f) review process to EAA Board actions that not only harm downstream interests, but also manifestly encroach on the jurisdiction of the TCEQ (for example, if the EAA Board were to transfer a surface water right in the Guadalupe River to an EAA permit holder to be withdrawn from the Aquifer). Responding to this, the Advisory Committee stated in a letter to the TCEQ in November of 2004:

> The Advisory Committee disagrees wholeheartedly with this logic, and urges the [TCEQ] to interpret the review process in a manner that respects rather than annuls the legislative intent behind Section 1.10(f) of the EAA Act.
>
> The Advisory Committee acknowledges the long history in Texas law of a "legal disconnect between the laws governing surface water and groundwater," as alluded to in the EAA Reply. The Advisory Committee would submit, however, that the Texas Legislature declared the Edwards to be a "unique aquifer" and carefully crafted the EAA Act for the very purpose of bridging this disconnect with respect to the Edwards. The TCEQ review process in Section 1.10(f) of the EAA Act is a fragile backbone of that bridge.

The TCEQ unanimously adopted a resolution in January of 2006 confirming the Advisory Committee's concerns and finding that the Junior-Senior Rules were "contrary to the Commission's actions affecting downstream interests because they could measurably deprive downstream water rights holders of a portion of river flows that would otherwise be available to them under permits and certificates of adjudication issued and/or administered by the Commission and could also otherwise measurably deprive flows for instream uses". On this basis the TCEQ resolution recommended "that the EAA reconsider the bifurcated permitting rules to limit permits to within the statutory cap of 450,000 acre-feet per year and to minimize the measurable impact on downstream surface water rights holders and other downstream interests".

Arguments over the validity of the Junior-Senior Rules surfaced again as a result of a request by State Representative Harvey Hilderbran for an Attorney General opinion in March of 2006. In a letter to the Attorney General dated May 10, 2006, the Advisory Committee expressed support for the EAA's legal authority to adopt and implement a permit system such as the Junior-Senior Rules. However, the Advisory Committee also explained its position that the EAA's failure to determine that additional Aquifer supplies were available before adopting the rules rendered them invalid.

The EAA Board in May of 2006 postponed a response to the TCEQ resolution until the Attorney General opinion is issued. However, the EAA Board proceeded to adopt implementation rules for Junior-Senior permits on July 11, 2006, over the objections of the Advisory Committee. The Advisory Committee is concerned that the Implementation Rules were adopted before the EAA Board responded to the TCEQ resolution, and before the Attorney General opinion was issued. The Advisory Committee is also concerned that the Implementation Rules will lead to even further increases in Aquifer withdrawals and decreased flows in the Guadalupe River basin.

3.1.2 Junior-Senior Permit Implementation Rules

The Junior-Senior Rules were general and conceptual in several respects, leaving significant aspects of the rules to await the development of more detailed "implementation rules".[39]

In May of 2004, the EAA Board approved the issuance of proposed implementation rules for public comment. The key features of the proposed rules were as follows:

1. Junior permit rights would not be severable from the senior permit rights with which they were affiliated; all transfers of permit rights would be in a fixed proportion of junior and senior rights.
2. During periods when junior permit rights could be exercised, water withdrawn by permit holders would be charged to their junior and senior permits proportionally; permit holders could not draw exclusively on their junior rights during such periods.

The Advisory Committee in its 2004 Report commented that these rules would likely "decrease the extent to which junior permit rights will be used, and this will result in lesser impacts from the use of the rights on springflow at Comal and San Marcos springs". These proposed rules were not finalized, however, or adopted by the EAA Board. Rather, in March of 2006, the EAA Board approved the issuance of a revised draft of proposed implementation rules. The key provisions of the revised rules were:

1. Junior rights and Senior rights can be severed from one another and transferred separately.
2. Junior rights are accrued on a daily basis during periods when the aquifer is at certain levels, and thereafter they may be withdrawn at any time during the year in which

[39] The Advisory Committee's February 12, 2004 resolution requesting the EAA Board to reconsider the Junior-Senior Rules commented that "[t]he impact of the Revised Permit Rules cannot be determined with any certainty since they do not address, in any depth, practical aspects of how and when the Senior Rights and Junior Rights can be used by permit holders".

they are accrued, even during DM/CPM stages, unless the EAA Board orders otherwise.

3. Junior and Senior rights can be allocated by irrigation permit holders to their base permit rights or to their unrestricted permit rights.[40]
4. The accrual and use of Junior rights is calculated by permit holders and reported to the EAA at the end of each year.

In a series of meetings with stakeholders (including one with the Advisory Committee) early in 2006, the EAA staff explained that the basis for these revised rules was to enhance flexibility in the use and transfer of permit rights, and to allow for development of a firmer market for Junior rights, thereby avoiding the need to compensate permit holders for reductions in their permits. Shortly after release of the proposed rules, the Advisory Committee requested the EAA General Manager to perform a regulatory impact assessment (RIA) on the rules, and offered the following comments:

> The Advisory Committee is mindful of the recent policy shift with respect to water supply planning on the part of the San Antonio Water System. The fact that SAWS, as the largest single aquifer user, intends to aggressively pursue acquisition of additional aquifer permit rights must serve as a backdrop to any informed analysis of the impact of the Proposed Rules.
>
> The Advisory Committee understands that the general intent of the Proposed Rules is to create flexibility in the use and transfer of permit rights, especially when compared to the implementation rules proposed by the Board on May 11, 2004, which would have apportioned use of aquifer water between junior and senior rights and would not have permitted the separate transfer of junior and senior rights. While the flexibility in the Proposed Rules appears to be beneficial from the perspective of many permit holders, it appears likely from the Advisory Committee's perspective to lead to a sustained increase in withdrawals from the aquifer, including withdrawals in excess of the 450,000 acre-foot annual cap now in effect. These increases in withdrawals will correspond to decreased springflow and decreased water availability for downstream interests.[41]

Commendably, the General Manager approved the preparation of an RIA on the revised rules. Unfortunately, the RIA was not released until after the public comment period on the rules ended, so stakeholders were unable to offer comments on the rules based on the impacts identified in the RIA. The RIA analyzed the impacts of the revised rules on some stakeholders through the end of 2007 under six hypothetical scenarios:

1. **Scenario 1**: Aquifer Index Wells Above Trigger Levels for the Entire Year
2. **Scenario 2**: Aquifer Index Wells Below Trigger Levels for the Entire Year

[40] Section 1.34(c) of the EAA Act provides that 50% of a permit for irrigation use "must be used in accordance with the original permit and must pass with transfer of the irrigated land". This is the "base" or "restricted" portion of the permit rights. The other half of the permit rights can be transferred and is referred to as "unrestricted".

[41] March 29, 2006 letter from Gary Middleton to Robert Potts

3. **Scenario 3**: Accrue Junior Rights Early and Withdraw Late in Year During Drought Conditions
4. **Scenario 4**: Aquifer Low in Q1 and Q2, Above Trigger Levels in Q3 and Q4
5. **Scenario 5**: Junior Rights Pumped as Accrued, Modeled on a Monthly Basis
6. **Scenario 6**: Allocation of Junior Rights in the Transfer or Conversion of Base Irrigation Groundwater to Unrestricted Irrigation Groundwater[42]

The RIA results concluded, predictably, the likely impact to springflows was minimal in scenarios 1 and 2, which reflect, respectively, high and low extremes of Aquifer levels, the latter of which would not allow any accrual of Junior rights.[43] Scenario 3 on the other hand could result in "high hydrologic alteration with periods of low or no springflow at Comal Springs".[44] Under Scenario 4, if Junior rights were used during DM/CPM stages, the "effects of the DM/CP drought reductions would be reduced by the withdrawal of Junior rights not subject to critical period reductions ... [and] [r]educed aquifer levels and associated reduced springflow would result".[45]

The Advisory Committee notes with interest that the RIA analyzed the impact of the revised rules on flows in the Guadalupe River basin under only two scenarios, rather than under the six scenarios used to assess the impact on other stakeholders. The two scenarios compared 1) withdrawal of Senior rights only with 2) withdrawal of Senior rights accompanied by withdrawal of Junior rights on a monthly basis as they accrued, and only in months in which Junior rights accrue (i.e., relatively high Aquifer levels). The RIA found that the difference in flows in the Guadalupe River basin between the two scenarios over the historical period was minor, ranging from a 0.63% reduction in flow at the Guadalupe/San Marcos confluence to a 0.41% reduction in flow at Victoria. The Advisory Committee is disappointed that the RIA left to speculation the impact to flows in the Guadalupe River basin that would result from the scenarios that predicted "periods of low or no springflow at Comal Springs". It can only be assumed that those impacts, which are of critical importance to the Advisory Committee, were in fact modeled and edited out of the RIA because someone, for some reason, did not want them to be made known.

An aspect of the proposed rules the RIA notes as potentially significant is the fact that the year-end accounting by permit holders for the accrual and use of Junior rights may lead permit holders to speculate on the possible accrual of Junior rights later in the year, risking enforcement action (or the acquisition of rights after the fact) if the speculation proves incorrect.[46] This potential inclination to overestimate/overuse is of obvious concern to the Advisory Committee, as is the potential that permit holders may choose to exceed their pumping allowances and risk EAA penalties as a business decision.

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[42] RIA pp. 20-22
[43] The RIA notes that under an "extreme scenario" in Scenario 2 in which permit holders fully used Junior rights even thought they had not accrued, the Comal Springs would cease to flow 20% of the time. RIA p. 47
[44] RIA p. 48
[45] RIA p.49
[46] RIA p. 7

A noteworthy series of assumptions upon which the RIA is premised relates to potential use of Junior Rights for aquifer storage and recovery (ASR) projects:

> During periods when index wells are above trigger levels, Edwards groundwater Interruptible (Junior) Rights could be withdrawn by water purveyors for storage in an ASR system. The ASR project could, as a consequence, allow reduced Edwards Aquifer use (during, for instance, DM/CPM stages) in drought periods as stored water would be substituted for Edwards withdrawals.[47]
>
> *******
>
> ASR projects would have positive effects on springflow by reducing demand for aquifer pumping during dryer periods because stored surplus water could be utilized.[48]
>
> *******
>
> Withdrawal of Edwards Aquifer Junior rights that would be used by purveyors to supply their ASR projects would potentially have a beneficial impact on downstream flows and associated water rights holders since Edwards Aquifer water stored in the Carrizo-Wilcox Aquifer during periods of high aquifer levels would be withdrawn by purveyors during periods of low aquifer levels, thus buffering springflows and resulting river flows.[49]
>
> *******
>
> The Authority has ... determined that the creation and implementation of Junior rights under the 2006 Proposed Implementation ... would in fact result in additional supplies being made available during droughts by virtue of existing ASR projects....[50]

The Advisory Committee would consider these assumptions valid if the purveyor's primary concern in operating the ASR project was springflow protection rather than minimizing costs. If minimizing costs is more important to a purveyor than springflow protection, however, the assumptions are invalid, because the purveyor will "base load" on its Senior rights to keep costs low, and implement use of the more expensive ASR supply only when needed to supplement Senior rights. In other words, a purveyor motivated by cost will not use expensive ASR supply as a substitute for cheap Senior rights, but rather only in addition to Senior rights. And if this purveyor has a third existing or planned water supply source that is even more expensive to acquire, produce, transport, treat and distribute than ASR, the purveyor is likely to fully acquire and fully use as much in Junior rights/ASR supply as it possibly can before developing and using the third supply source; again, this is simply to achieve the purveyor's objective of minimizing costs. This means that the use of Senior rights by the purveyor, accompanied by Junior rights/ASR supply, will result in the use of more Aquifer water than the purveyor would use if exercising Senior rights only, contrary to the assertions in the RIA quoted above.

Two corollaries to this exercise in practicality are worth noting. The first is that the availability of Junior rights to a purveyor with ASR storage allows the purveyor to postpone the development of water supplies other than the Aquifer. The second is that

[47] RIA p. 29
[48] RIA p. 44
[49] RIA p. 58
[50] RIA p. 66

the purveyor's natural tendency to use Junior rights to fill ASR storage in the first two quarters would increase the rate of decline of the Aquifer and hasten the onset of DM/CPM rules compared to the use of Senior rights only. The purveyor would thereby trigger pumping reductions sooner for other permit holders who have no ASR storage. In doing so, the purveyor would protect its position when pumping reductions occur, to the disadvantage of the other permit holders.

The Advisory Committee notes one other concern regarding the provision in the proposed rules allowing irrigators to allocate their Junior and Senior rights to their base and transferable (unrestricted) permit rights. The rationale for this provision is explained in the RIA as follows:

> These provisions introduce a significant degree of flexibility with regard to the ability of a holder of irrigation Junior rights (a total of 49,316 acre-feet) to manage them so as to maximize their value. These provisions could be economically beneficial to irrigators in that they would be able to assign their Junior (less valuable) rights to their base irrigation groundwater (BIG) and their more valuable Senior rights to their unrestricted irrigation groundwater (UIG), allowing them to maximize the economic benefits of transferring their most valuable Senior rights.[51]

When this provision was explained by the EAA staff at meetings with stakeholders, it seemed apparent that reasonable assumptions could be made about the magnitude of permit transfers and the resulting changes in use – this was, after all, a key purpose to the rules. Moreover, the recently completed Region L 2006 Regional Water Plan included an analysis of transfer of Aquifer irrigation rights as a water supply strategy.[52]

The Advisory Committee expressed concern that transfers encouraged by this provision would be from under-utilizing irrigators to more fully utilizing water purveyors, thereby increasing actual withdrawals (compared to permitted withdrawals) from the Aquifer as time goes by. For this reason, the Advisory Committee asked that these likely outcomes be quantified and modeled as part of the RIA.[53] Regrettably, the RIA failed to assess the impact of this key feature of the rules beyond the following half-hearted explanation:

> The effects of allocating Junior rights to base irrigation groundwater and Senior rights to unrestricted irrigation groundwater on aquifer levels are complex and would depend on how irrigators chose to manage their groundwater resources. If some irrigators chose to transfer their more valuable Senior rights to other users for withdrawal purposes and convert their business operations to dryland farming, ranching, or urban development, then their Junior rights would remain restricted to the land and likely not be fully utilized, resulting in reduced withdrawals of Junior rights and reduced impacts to the aquifer and springflow. The magnitude and timing of these impacts cannot be quantified at this time because of the uncertainty with respect to the extent

[51] RIA p. 33

[52] Region L 2006 Regional Water Plan, Section 4C.2. The Plan describes as an environmental issue "potential reductions in discharge at Comal and San Marcos
Springs associated with increased pumpage from municipal wells closer to the springs.

[53] Letter from Advisory Committee Chair Gary Middleton to EAA General Manager Robert Potts dated March 29, 2006.

of allocation of Junior and Senior rights associated with the conversion of base irrigation groundwater to unrestricted irrigation groundwater.[54]

This lack of impact assessment meant, of course, that the practical effect of this key aspect of the implementation rules was unknown to the EAA Board, the Advisory Committee, and Aquifer stakeholders when the EAA Board adopted the rules.

Among the conclusions of the RIA regarding the impact of the implementation rules was the following[55]:

1. As a result of the increased utility and flexibility in the use of Junior rights, the potential value of these rights to the regulated community would likely be enhanced.
2. The implementation rules would "potentially increase, under some scenarios, total annual withdrawals (Senior plus Junior rights) under initial regular permits above the potential withdrawal levels under existing rules".
3. The implementation rules would "impose modest and transient adverse impacts to aquifer levels, springflow and endangered species habitat, under most scenarios investigated, but more severe adverse impacts under potential hydroclimatological scenarios that included increased Junior rights withdrawals, unrestricted by DM/CP reductions, during drought conditions".

At the July, 2006 EAA Board meeting, the Advisory Committee asked the Board to 1) postpone consideration of the proposed rules until the Attorney General issued an opinion on the Junior-Senior Rules (as the EAA Board had done with respect to the TCEQ Resolution recommending reconsideration of the rules), and 2) sever and not act on the portion of the proposed rules allowing irrigation rights to be allocated to base and unrestricted rights until there was enough information to assess the impact.

The EAA Board did not address the Advisory Committee's requests, and proceeded to adopt a final revised version of the implementation rules. The final version differed from the version issued in March of 2006 in one significant respect: Accrued and unused Junior rights cannot be used during a time when a DM/CPM stage is in effect. This is a clear improvement over the previous version, which allowed Junior rights to be used during the most serious critical period stages. Compared to the first draft of the implementation rules from May of 2004, however, Junior rights can now be used when the Aquifer is below the level at which Junior rights accrue, ceasing only when a DM/CPM stage is in effect. Given this change, Junior rights now more closely resemble Senior rights in that they are now both interrupted at the same time – when DM/CPM stages are in effect.

[54] RIA p. 52. While this comment alludes to the decreased Aquifer use that would result from the retention of Junior rights by irrigators (which is questionable since much irrigation use occurs at times of the year when the Aquifer is seasonally high and Junior rights are available), it ignores the obvious concept that underutilized Senior irrigation rights, upon transfer to more fully utilizing municipal or industrial uses, would result in increased Aquifer pumping.

[55] RIA pp. 71-72

3.1.3 Permit Transfer Rules

With the completion of the process of issuance of initial regular permits, the rights to withdraw water from the aquifer have become a defined set. While the overall size of this set of rights is subject to modification at the will of the Legislature and by the EAA Board in certain circumstances, the policy focus of the EAA has begun to shift to the transfer of existing permit rights. The EAA's decisions in this area will become increasingly important in the future in determining the impact of the EAA's management of the Aquifer on downstream interests.

The EAA already recognizes, to an extent, the potential impacts on Aquifer levels and springflow that may accompany permit transfers. The EAA has defined two pools of the Aquifer and has applied different demand/critical period management triggers and reduction levels to these pools based on their unique characteristics. In addition, the EAA has defined the Cibolo Creek as a boundary line for permit transfer purposes – permit transfers that result in relocation of the withdrawals point from west of this boundary to east of this boundary are premised on a showing of no significant impact to springflow.

As noted in Section 3.1.2 above, the impact of the transfer of rights from those who do not fully use them to those who are likely to fully use them can be considerable, especially in light of the following:

1. Permit holders who do not fully utilize their rights are more likely to transfer their rights than permit holders who intend to fully utilize the rights.
2. Permit holders who intend to fully utilize their rights are more likely to acquire permit rights than permit holders who do not intend to fully utilize their rights.
3. As a group, the holders of irrigation permit rights do not fully utilize their rights. Of the many reasons for this, two significant ones are the strides made in conservation techniques in irrigated agriculture, and the apparent over-appropriation which occurred in the EAA Act's assignment of a minimum of two acre feet for each acre of land irrigated during the historic period. Out of the 253,323 acre-feet of initial regular permit rights issued for irrigation use, the average annual usage during the period from 1999 – 2005 is estimated by the EAA at 85,993 acre-feet.
4. The holder of the largest amount of permit rights, the San Antonio Water System, has indicated through its 2005 Water Resource Plan Update that it intends to acquire additional EAA permit rights to provide for its own future needs as well as the needs of other water suppliers in the Bexar County area.
5. On the heels of the SAWS Water Resource Plan Update, the EAA has adopted rules to facilitate permit transfers from under-utilizing irrigation permit holders to those who wish to acquire additional permit rights.

To illustrate the magnitude of the potential impact of permit transfers on Aquifer pumping, consider the following: If half of the total amount of irrigation permit rights (253,323 divided by 2 = 126,663) had been held and used by fully-utilizing permit

holders, it would have had the following impacts on total Aquifer withdrawals during the period from 1996 – 2005:

Year	Total Aquifer Withdrawals (a-f)	Total Aquifer Withdrawals plus irrigation transfers (a-f)
1996	493,700	620,363
1997	377,100	503,763
1998	453,500	580,163
1999	442,700	569,363
2000	414,800	541,463
2001	367,700	494,363
2002	371,400	498,063
2003	362,200	488,863
2004	317,600	444,263
2005	388,500	515,163

Given this potential impact to Aquifer levels and springflow of these levels of increased *actual pumping*, it is of critical importance as the EAA approaches decisions about permit transfers that the EAA model the impacts of various policy options to determine their impact on overall use of the Aquifer and on springflow and downstream interests. The EAA, to this point, has not performed well in this respect. As noted in Section 3.1.2 above in connection with the Junior-Senior Implementation Rules, the Advisory Committee specifically requested that the EAA "determine the quantity of under-utilized agricultural permit rights, based on a comparison of permit rights to actual withdrawals by permit holders during the period of historic record," and "[o]n the assumption that this quantity of water would be fully used upon transfer for municipal and industrial use, modeling to determine the impact of this full use on aquifer and springflow levels, and the duration and severity of critical periods". The EAA's consultant responded to this request by stating that the effects of the rules on Aquifer levels were "complex" and "cannot be quantified" because they depended on factors that involved "uncertainty".[56] Advisory Committee Chair Gary Middleton made the following observation and request at the July 2007 EAA Board meeting:

> An important area the rules assessment skips over is the impact of the irrigators allocating their Junior and Senior rights to their base and transferable permit rights. When these rules were explained at meetings and hearings, assertions were made about the allocations that irrigators would likely make, and the encouragement this would give for permit transfers. It seems to us that reasonable assumptions could be made, given these assertions. And those assumptions could be used to predict the impacts. Instead, the rules assessment says there are too many variables, and the impact cannot be assessed. This means, of course, that we have no idea what the outcome will be. SCTWAC submits that when the impact of a key element of the

[56] RIA p. 52

> rules cannot be assessed, that element should be severed from the rules and not acted upon until we have enough information to assess the impact.

The request went unheeded, and the EAA Board proceeded to adopt the rules in the absence of key information on what their impact would be.

The EAA must do a better job addressing the potential impact of its rules related to the transfer of existing permit rights in order to maintain its credibility.

3.2 Demand Management/Critical Period Management Rules

As stated in Section 2.3.3 above, the EAA Act requires the EAA to adopt and implement a "critical period" plan for management of the Aquifer when the Aquifer level and springflows are low.[57] This plan must

- "distinguish between discretionary use and nondiscretionary use";
- "require reductions of all discretionary use to the maximum extent feasible";
- "require utility pricing, to the maximum extent feasible, to limit discretionary use by the customers of water utilities"; and
- "require reduction of nondiscretionary use" according to certain categories of water uses[58]

Critical period rules are the second of the two primary regulatory mechanisms by which the EAA is to achieve a balance between the needs of those who rely on the Aquifer for well withdrawals and those who rely on it for springflow and downstream flows, the other mechanism being the annual caps on pumping. The importance of effective critical period rules to downstream interests is obvious in light of the fact that the level of the Aquifer is known to drop precipitously at times when recharge is limited and withdrawal rates are high. Declines of as much as 2.2 feet per day at the J-17 well have occurred, with several declines of 1.5 feet or more per day as recently as the Summer of 2000. At this latter rate of decline, the time between the aquifer being high enough for accrual of Junior rights and the onset of required reductions in Senior rights would be a mere ten days. Moreover, at that rate of decline, the time between the onset of Stage I reductions for the San Antonio pool (650 AMSL) and the time the Comal Springs cease to flow (620 AMSL) would be 20 days.

The EAA Board adopted Drought Management/Critical Period Management rules (DM/CPM Rules) in November of 2002. For the San Antonio pool (covering all of the EAA area except Uvalde County), the DM/CPM Rules require reductions in Aquifer withdrawals in Stages I, II, III and IV of 5%, 10%, 15% and 23%, respectively, when the San Antonio index well level or the springflow level at Comal or San Marcos Springs[59] drops below defined trigger points. For the Uvalde pool, the DM/CPM Rules require reductions in Aquifer withdrawals in Stages III and IV of 15% and 23%,

[57] EAA Act §1.26
[58] EAA Act §1.26
[59] The index well trigger is as of a certain time each day; the springflow triggers are five-day averages

respectively, when the Uvalde County index well level drops below defined trigger points.

The Advisory Committee's 2004 Report noted that the effectiveness of the DM/CPM rules has been difficult to determine since the time the rules were adopted, because the Aquifer and springflow levels had remained above the Stage I trigger. Since that time, Stage I was declared for the San Antonio pool on July 20, 2006 based on the San Antonio index well level. During the period that stage has been in effect, the daily changes in the San Antonio index well level have varied between significant declines (-1.1 foot) and moderate gains (+0.7 foot). The EAA staff [has] [has not] received reports yet to verify whether compliance with the Stage I reduction goal of 5% has generally been achieved during the period. The EAA General Manager declared Stage II for the San Antonio pool effective September 11, 2006 based on flow levels of the San Marcos Springs.

The Advisory Committee continues to believe that the current trigger levels for withdrawal reductions are set too low, and the corresponding levels of required reductions in withdrawals are also set too low. The Regulatory Impact Assessment underlying the adoption of the Junior-Senior Rules recommended that the DM/CPM rules be reassessed in light of the potential for the exercise of Junior rights to cause higher rates of decline in the Aquifer and more frequent implementing of DM/CPM withdrawal reductions.

The DM/CPM rules utilize monthly pumping reports, and apply required withdrawal reductions to withdrawal amounts budgeted by permittees on a calendar quarter basis, to determine whether reduction requirements are being met. During a time of precipitous decline in Aquifer or springflow levels, these practices would likely be ineffective at achieving pumping reductions. Effective control of withdrawal rates will require frequent monitoring of aquifer levels and springflow at Comal and San Marcos springs, together with a prompt and meaningful regulatory response. The Advisory Committee believes that the DM/CPM rules should be revised to require monitoring of changes in trigger levels on a more frequent (at least daily) basis, immediate communication of required withdrawal reductions to Aquifer users, and prompt tracking of withdrawal amounts to ensure compliance.

As noted in Section 2.3.3, the new EAA Strategic Plan includes amending and simplifying the DM/CPM Rules as a strategic goal, and the EAA has begun the process of addressing this goal. The Advisory Committee applauds and supports this process. The EAA staff has developed a draft timeline and a review process to evaluate the effectiveness of the DM/CPM Rules and to simplify the rules. The EAA Board at its August, 2006 meeting approved the creation of a "DM/CPM Task Force and Scientific Group" to "analyze separate pool(s) and review DM/CPM reporting requirements for permit holders".[60] The Advisory Committee intends to provide input from its perspective as this process moves forward.

[60] Aquifer Management Planning Committee, July 25, 2006 meeting agenda, summary for Item 3

3.3 Habitat Conservation Plan

3.3.1 Endangered Species Act Background

The EAA Act authorizes the EAA to hold permits pertaining to the Endangered Species Act (ESA)[61], and requires the EAA to "implement and enforce water management practices, procedures, and methods to ensure that, not later than December 31, 2012, the continuous minimum springflows of the Comal Springs and the San Marcos Springs are maintained to protect endangered and threatened species to the extent required by federal law"[62]. The Aquifer itself and the clear, constant temperature flows of the Comal and San Marcos springs provide habitat for several animal and plant species that are found nowhere else in the world. These species have been listed by the United States Fish and Wildlife Service (USFWS) as either endangered or threatened, and they are therefore protected under the federal Endangered Species Act. The ESA prohibits the "taking" of endangered species, which includes killing or harming members of the species. The ESA's protections also extend to actions that impact the habitat of the listed species in a manner that harms them.

The ESA provides that an entity such as the EAA can apply to the USFWS for an "incidental take" permit (ITP), allowing otherwise lawful actions that incidentally kill or harm members of listed species. Obtaining an ITP provides insulation from civil or criminal liability for a taking as long as the terms of the permit are complied with. The foundation for an ITP is a habitat conservation plan, which is a plan of actions designed to assure, from a biological perspective, that an endangered species will survive even if incidental takes of members of a species occur.

Individuals and entities that withdraw water from the Aquifer are subject to potential liability under the ESA because their actions diminish the flow of the Comal and San Marcos springs, resulting in harm to the listed species under certain conditions.[63] A primary reason for the creation of the EAA was to provide for it to obtain an ITP on behalf of all users of Aquifer water.[64] The obtaining of an ITP by the EAA dovetails with the requirement in the EAA Act for the EAA to "implement and enforce water management practices, procedures and methods to ensure that, not later than December 31, 2012, the continuous minimum springflows of the Comal Springs and the San Marcos Springs are maintained to protect endangered and threatened species

[61] EAA Act §1.11(d)(9)

[62] EAA Act §1.14(h)

[63] In a 1996 lawsuit, *Sierra Club v. City of San Antonio et al.*, the Sierra Club sued Edwards Aquifer pumpers alleging that unregulated pumping from the Aquifer was causing declines in the flow of Comal and San Marcos springs to the extent that "takes" of endangered species were occurring, and seeking an injunction to limit pumping by the defendants. The trial court in this case found violations of the ESA and approved a court-imposed plan for management of the Aquifer. The appeals court, however, concluded that the newly-formed EAA should be given the opportunity to address the management of the Aquifer at a local level.

[64] EAA Act §1.11(d)(9) allows the EAA to "hold permits under state law or under federal law pertaining to the Endangered Species Act of 1973".

to the extent required by federal law".[65] For this reason, the EAA's habitat conservation plan is intended to be a significant component of the EAA's regulatory and planning efforts.

The Advisory Committee understands the focus that has been placed on protection of the endangered and threatened species that populate the Aquifer and the habitats at Comal and San Marcos springs. The conflict between the protection of these species under federal law and the state common law "rule of capture" was the catalyst for the creation of the EAA. However, broader downstream interests, including cities, agricultural interests, industries and coastal interests, also depend on springflows. For this reason, the needs of the listed species serve as a backstop for the minimum protection of downstream interests, but they do not define the sole extent to which downstream interests are protected under the EAA Act. In other words, the EAA Act does not balance only the interests of "people versus critters," but also the interests of "people versus people".

3.3.2 Development of Draft Habitat Conservation Plan

As noted in Section 2.1.2 above, the EAA's development of drafts of the HCP involved a significant commitment of staff resources, the engaging of consultants (the principal consultant being Hicks and Company), and public meetings of the EAA Board and committees of the EAA Board. In accordance with state legislation passed in 1999, the EAA Board appointed a 26-member Citizen Advisory Committee and a six-member Biological Advisory Team to assist in preparation and review of the HCP.

In July of 2004, the EAA issued a draft HCP that considered four alternative management strategies:

- Alternative 1: No Action
- Alternative 2: Regional Permit, Highly Restricted Aquifer Pumping
- Alternative 3: Regional Permit, EAA-Proposed Habitat Conservation Plan
- Alternative 4: Regional Permit, Least Restricted Aquifer Pumping

The EAA Board released this draft of the HCP for public comment in September of 2004. During the comment period, the EAA staff held public hearings in Victoria, New Braunfels, Uvalde and San Antonio. The EAA held two additional meetings with stakeholders in February of 2005. Following these meetings, the EAA staff revised the draft HCP, and the final draft of the HCP (Final Draft HCP) was approved by the EAA Board and submitted to the USFWS with an ITP application in March of 2005.

[65] The Advisory Committee has throughout its history interpreted the requirement to ensure continuous springflows "*to the extent required by federal law*" as inherently requiring some level of springflow at all times, with the "extent" of springflow being defined by the biological needs of the species. Although public discussions have not alluded to this, the EAA's Final Draft HCP and research activities indicate the EAA interprets this statutory requirement in such a manner that if an ITP can be secured based on the cessation of springflows, the ITP would negate the express requirement in the EAA Act for "continuous" springflows. The Advisory Committee strongly disagrees with any such interpretation.

3.3.3 Final Draft Habitat Conservation Plan

The Final Draft HCP begins with the obvious premise that "loss of springflow [is] the primary threat to the listed species".[66] Commendably, the Final Draft HCP rejected Alternative 1 (No Action) and Alternative 4 (Least Restricted Aquifer Pumping), which would have guaranteed the cessation of springflows for extended periods of time. However, the Final Draft HCP also rejected Alternative 2 (Highly Restricted Aquifer Pumping) that would have provided more protection for springflows, stating:

> This alternative would employ aquifer management strategies to maintain aquifer levels sufficient to assure springflow at Comal Springs during worst drought conditions, including those equivalent to the drought of record. Aquifer management would result in a higher water level in the aquifer, allowing more groundwater for discharge through Comal and San Marcos Springs, thus providing higher flows to the spring ecosystems. However, much less aquifer water would be available for irrigation and municipal and industrial needs, as pumping reductions would be driven by the requirement to maintain springflow levels at Comal and San Marcos Springs. Under this alternative, regional irrigation, municipal, and industrial economic activities that are dependent upon the aquifer could not be supported at currently projected levels, resulting in severe economic impacts.[67]

The Final Draft HCP incorporated a version of Alternative 3 (EAA-Proposed Habitat Conservation Plan), with the significant modification from the previous (July, 2004) draft of deletion of all references to annual caps on permitted Aquifer pumping. The Final Draft HCP proposes a 50-year regional ITP that would require pumping to be reduced to 346,400 acre-feet per year if the worst drought conditions were in effect for an entire calendar year. The Final Draft HCP notes that this level of regulation "will not assure continuous springflow under all conditions, and the risk that low flows may increase in frequency and duration or that flow might completely cease may potentially be higher as aquifer pumping increases".[68]

In addition, the Final Draft HCP relies on an "Adaptive Management Program" that includes the following management strategies and mechanisms:

1. The development, maintenance and operation of "intensive management areas" near the springs or in river channels in which members of the listed species could be maintained during periods of low springflow, either by channeling reduced springflows into areas of "high quality habitat" or by introducing "supplement water" (with "similar water chemistry") into such areas.[69]
2. The development, maintenance and operation of off-site refugia, in which collected members of the listed species could be kept "in the event that habitat

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[66] Final Draft HCP p. 1-2. The San Marcos and Comal Springs Rcovery Plan published by the USFWS in 1996 states "[a] primary threat to [the] species and their ecosystems is loss of springflows. Springflows at San Marcos and Comal Springs are tied inseparably to water usage from the entire Edwards Aquifer, and use of groundwater in that region decreases flow of water from the springs".

[67] Final Draft HCP pp. 1-14, 1-15

[68] Final Draft HCP p.4-1

[69] Final Draft HCP p. 4-15. The EAHCP describes this as an "unproven plan [that] would require both engineering and environmental feasibility studies".

within intensive management areas becomes extremely limited or population numbers decline dramatically".[70]

3. Captive propagation – the "development of active breeding populations of the [listed species] in locations or facilities not dependent upon the same factors affecting the natural populations at Comal and San Marcos Springs" to "provide a source for reestablishment of the natural populations if conditions at the springs result in local extirpation".[71]

In addition to these strategies, the Final Draft HCP proposes that management of the Aquifer may include "implementation of alternative management practices, procedures, or methods allowed by the EAA Act that are currently undefined or unidentified".[72]

The Final Draft HCP obviously is a compromise between the protection of the listed species and the interests that have become dependent on Aquifer pumping. Frankly, the Advisory Committee is surprised by the candor with which the Final Draft HCP tips the scale in favor of the interests that rely on Aquifer pumping over those that rely on Aquifer springflows. It is a far cry from the EAA Act's requirement to "develop and implement a plan by January 1, 2012 to ensure that the continuous minimum springflows of the Comal Springs and the San Marcos Springs are maintained" for the protection of the listed species.

As the Advisory Committee stated in its 2004 Report, the Committee understands that the EAA may lack the near-term ability to ensure continuous springflows in light of the significant time frames and investment required for the development of alternative water supplies for the EAA region. The Advisory Committee disagrees, however, with the policy choice in the Final Draft HCP that concedes the long-term need for periodic cessation of the flow of the Comal Springs. Under drought conditions which have actually occurred in the past 50 years, this policy alternative would result in the following:

1. Guaranteed availability to Aquifer permit holders of 77% of their Senior permit rights;
2. Extended periods of complete cessation of flow at Comal Springs and very low flows at San Marcos Springs;
3. Extended periods in which downstream water rights would be extremely curtailed; and

Resort to extraordinary methods for maintenance of limited groups of the listed species in highly altered natural habitats or in artificial habitats.

[70] Final Draft HCP p. 7-2, 7-5. This is also described as "salvage efforts targeted as a last resort to collect and provide refuge for individuals during conditions that have deteriorated beyond those expected for continued species existence in the wild".
[71] Final Draft HCP p. 6-1
[72] Final Draft HCP p. 5-1

3.3.4 Status of Review of Final Draft HCP

The Advisory Committee has significant doubts that the Final Draft HCP will gain USFWS approval since it would resort to "salvage" and "captive propagation" of the listed species, even as a long-term solution. The strategy during droughts of barely maintaining the species on the brink of potential extinction would thwart, rather than attain, the ultimate objective of the ESA – recovery and delisting of the species.

Commendably, the new EAA Strategic Plan includes as one of its eight goals to "obtain and comply with [an] Endangered Species Act 10-A Permit". The status of USFWS review of the Final Draft HCP was recently summarized by the EAA staff as follows:

> Authority and Service staff met to discuss the draft HCP. The Service is limiting its review effort pending the outcome of the 2007 legislative session.
>
> The General Manager has regular conversations with the Service's Austin Administrator on issues such as the status of the HCP, drought, aquifer and springflow levels and species.
>
> Authority staff met with staff of the U.S. Fish &Wildlife Service (Service) on August 2, 2006, to meet the new State Administrator and discuss the HCP. The new Administrator is interested in using a new method to finish the HCP that begins with a Recovery Implementation Plan. Having the Service take charge of the process will result in a more aggressive completion schedule. A regular meeting schedule will be established once the process for completing the HCP is outlined.[73]

The Advisory Committee also applauds the apparent new emphasis on a "Recovery Implementation Plan" expressed by the USFWS Austin Administrator.

The Advisory Committee reiterates, however, it is not just the listed species that depend on springflows – broader downstream interests, including cities, agricultural interests, industries and coastal interests, also depend on springflows. Even if there were no EAA Act, federal law would protect the listed species. The broader goal of the EAA Act is to achieve a balance among the needs of ***people*** who rely on the Aquifer, both for pumping and for springflow.

3.4 Research Activities

The Edwards Aquifer has been studied extensively.[74] Studies of the Aquifer, many supported by the EAA, continue to add to our knowledge of how the Aquifer functions, how the quality of Aquifer water is affected by various activities, and how the Aquifer should be managed.

The Advisory Committee generally supports many of the EAA's current research initiatives, including aquifer modeling, biological research of the endangered and threatened species, and flowpath studies. The Advisory Committee understands the need to determine the springflow levels needed to maintain the listed species.

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[73]

[74] The EAA Bibliography at http://edwardsaquifer.org/pdfs/EAABIB/EAABIB2004.pdf lists hundreds of studies, ranging from general overviews to detailed biologic and hydrogeologic studies.

However, the Advisory Committee realizes that these determinations lead some stakeholders to ask questions such as

- "What can we do to ensure that no more springflow occurs than is necessary to assure survival of the species, and thereby achieve greater storage capacity in the Aquifer?"
- "What ways other than natural springflow can we find to sustain the species that will allow us to use more Aquifer water to supply our current needs and to foster the growth of the region rather than more expensive alternative water sources?"

The Advisory Committee believes that inquiries such as these can drive extensive, expensive research efforts towards goals that are fundamentally at odds with the intent of the EAA Act to achieve balance between all of the interests that rely on the Aquifer. With respect to research connected with the Habitat Conservation Plan, a management strategy that would never pass muster with the U.S. Fish and Wildlife Service can be studied all the way through engineering feasibility and cost estimates for implementation before consultation with the FWS occurs. Research towards such a strategy is at best misdirected, and at worst, appears to be an attempt to construct a "straw man" the FWS will be obligated to knock down.

The Advisory Committee understands that much of the EAA's research is directed at the objective of increasing the yield of the Edwards Aquifer, primarily due to its high quality and low cost as a water supply source. Unfortunately, the Advisory Committee has found that the impacts of expanded Aquifer use on downstream interests are often neglected or downplayed in the research. The fundamental challenge remains that the EAA must strike a balance between Aquifer pumping and springflows, since increases in Aquifer pumping are tied inseparably to decreases in springflows and available supply to downstream interests, especially in times of drought.

The new EAA Strategic Plan includes as a goal to "identify, prioritize, and schedule [the EAA's] science/technology research program components". The action steps identified to accomplish this goal include forming and "aquifer science advisory panel," and to develop and publish an "aquifer science research plan". Upon completion, the new research plan is expected to identify, prioritize, and budget the EAA's research needs. The EAA formed a 13-member Aquifer Science Advisory Panel (ASAP) in April of 2006 to assist in developing the new research plan. The ASAP is composed of leading scientists in several areas of study who serve on a volunteer basis. The ASAP will provide guidance and advice on science-related issues before the EAA Board, provide peer review of EAA scientific work, and assist with special EAA research needs as they occur. The EAA staff expects the ASAP to meet three or four times per year.

On a related note, the Advisory Committee generally supports the EAA's cooperative research efforts with entities such as USGS and academic institutions. But the Advisory Committee thinks the EAA must use great caution in approaching research efforts on a joint funding basis with entities such as SAWS that have a stake in the research outcome. An example of this is the Phase III and Phase IV Recharge and Recirculation study that is being jointly pursued by the EAA and SAWS. Given the

recent policy shift by SAWS towards greater reliance on the Aquifer, the Advisory Committee thinks the study may shift from the objective "should this concept be pursued?" to the subjective "how can we make sure this concept is implemented?".[75]

3.4.1 Edwards Aquifer Optimization Program

In 1999, the EAA developed an Edwards Aquifer Optimization Program (EAOP) in response to a recommendation of the San Antonio Mayor's Citizens Advisory Committee on Water Policy. The EAOP is summarized in a July, 2006 EAA staff report as follows:

> The EAOP includes a series of seventeen interrelated, mission-directed biologic and hydrogeologic research studies known as the OTS [Optimization Technical Studies]. The OTS are designed to evaluate potential technical options for increasing the amount of water stored in the Edwards Aquifer and identify various methods for optimizing the amount of water available for withdrawal. Data and information obtained from the OTS will provide aquifer managers with the tools necessary to make scientifically sound decisions to benefit aquifer users and preserve the environment supported by the aquifer, including Comal and San Marcos Springs and downstream aquatic habitats.

The July 2006 OTS Status Report describes six studies currently in progress, 19 completed studies, and three potential future studies. The studies vary from biological research on endangered species to hydrologic research and modeling. The following are summaries of OTS research relevant to the downstream interests.

3.4.1.1 Biological Studies of the Comal Springs and San Marcos Springs Aquatic Ecosystems

The federal lawsuit that triggered the formation of the EAA also resulted in determinations by the U.S. Fish and Wildlife Service in 1993 of the springflow levels at Comal and San Marcos springs at which the "taking" of endangered species occurs, and at which "jeopardy" to the continued existence of the species occurs. These determinations were characterized by the USFWS at the time as being conservative in nature, based on the lack of information and systematic studies of the characteristics of the spring habitats and the needs of the species. The effect of this conservative approach was to conclude that relatively substantial springflow levels were needed to avoid harm and jeopardy to the endangered species. This conclusion translated to the need to maintain the Aquifer at relatively high levels, reducing the quantity of water available from the Aquifer and exposing Aquifer users to potential liability for ESA violations when Aquifer levels decline. While the USFWS expressed the need for

[75] The Interlocal Cooperative Agreement between the EAA and SAWS for joint funding of the study provides that the EAA "shall consult with SAWS before giving any direction or guidance to Todd Engineers in connection with the services" and "shall provide to SAWS a copy of all correspondence, communications, draft reports or other written materials exchanged between the Authority and Todd Engineers in connection with the services". To provide an incentive to the EAA to complete the study, the Agreement also provides that if the EAA terminates the agreement with the consultant without cause, "SAWS shall be entitled to a refund of all sums previously paid to the [EAA] hereunder".

further studies to refine the conclusions, the USFWS has been reluctant to undertake these studies itself.[76]

The EAA Board approved an agreement with Bio-West, Inc. in February of 2001 for a study to determine the effects of various levels of springflow on the spring habitats and the species. The study was scheduled to be completed in February of 2005, but relatively high Aquifer and springflow levels since the study was authorized have not allowed for research in periods of low flow. In July of 2006, the Aquifer level in the San Antonio pool dipped below the Stage I trigger in the DM/CPM Rules for the *first* time in years, and in August of 2006, the EAA Board authorized additional research by Bio-West as Comal and San Marcos springflows decreased. Assuming this study can be completed, it may provide a basis for refinement of the original USFWS springflow determinations.

3.4.1.2 Recharge and Recirculation

The EAA Board approved an agreement with Todd Engineers in April of 2004 to conduct a four phase Edwards Aquifer "recharge and recirculation" (R&R) study. According to an EAA staff report in June of 2004, "the analysis of recharge and recirculation is designed to provide information for an integrated and coordinated approach to water management that combines groundwater and surface water sources and storage units."[77]

In its 2004 Report, the Advisory Committee criticized the process under which the study was approved, stating:

> [T]he Board entered into this study without requiring an initial cost/benefit/fatal flaw analysis as part of Phase I of the study, in spite of a recommendation from the Board's Research and Technology Committee that the cost/benefit/fatal flaw analysis be included.
>
> The Advisory Committee has had concerns with past R&R studies because they have involved unrealistic, far-fetched strategies, improbable assumptions, untested technologies, and little regard for practical feasibility and economical implementation. Advisory Committee has seen little in the R&R study approved by the Board in April, 2004 to generate optimism that the result of the new study will be any different.

The original scope of work for this R&R study was broken into four phases:

- Phase I: Definition of Alternatives
- Phase II: Modeling of Alternatives
- Phase III: Sizing of Facilities
- Phase IV: Summary, Recommendations and Report

Phase I included a literature review and an evaluation of the Aquifer MODFLOW model to determine if it would be an appropriate tool for the study. Two recharge

[76] In a letter to the Texas State office of the USFWS dated July 13, 2004, SAWS asked that the springflow determinations be reviewed "to assure that the Aquifer pumping restrictions are based on current, accurate and sound science".

[77] See Optimization Technical Studies Status Report p. 15 for further clarification.

scenarios were modeled, both of which predicted storage benefits to the Aquifer. No specific source of the recharge water was considered. Phase I was completed in September of 2004 and concluded that Phase II should be performed.

Phase II used the MODFLOW model to simulate Aquifer responses to recharge at several different locations. Again, no specific source of the recharge water was considered. The Phase II simulations predicted that Comal Springs could be kept from going dry during a repeat of the drought of record by enhancing recharge by 149,000 acre-feet and applying the EAA's DM/CPM Rules. Phase II was completed in May of 2005.

In August of 2006, the EAA staff proposed combining Phase III and Phase IV of the study, and the EAA Board at its September, 2006 meeting approved a supplement to the agreement with Todd Engineers for these two phases. The work is to be funded equally by the EAA and the San Antonio Water System. Phase III will evaluate potential operational parameters, water sources, and costs of various R&R scenarios, and Phase IV will consist of preparation of a report. The proposed Phase III and Phase IV scope of work includes the following tasks:

Task 1 involves developing a baseline scenario with which subsequent R&R scenarios can be compared.

Task 2 will evaluate the amount and location of enhanced recharge needed to maintain the flow of Comal Springs at 40 and at 150 cubic feet per second. To accomplish this, recharge structures and "recirculation wells" will be considered.

Task 3 will evaluate potential R&R source water supplies, including the Guadalupe and Medina rivers, recharge structures, and unused Aquifer rights. Benefits and environmental issues will be evaluated using surface water and groundwater modeling.

Task 4 will combine optimum R&R facilities determined in Task 2 and source water feasibility determined in Task 3 into "preferred R&R water management strategies" for water supply and springflow maintenance. Infrastructure costs will also be evaluated in this task.

Task 5 will compile the results of Tasks 1 through 4 into a report in the regional water planning format. If required, Todd Engineers will present the report to the Region L planning group.

Task 6 (optional) would involve seeking an amendment to the regional water plan to include the R&R strategies.

The study is expected to be completed within nine months of authorization to proceed. Todd Engineers will utilize NRS Consulting Engineers (cost estimating and regional plan formatting) and R.J. Brandes Company (surface water modeling) as subcontractors for the study.

In the 2004 Report, the Advisory Committee made the following recommendations related to the study:

> The Advisory Committee strongly recommends that in the new study, consideration must be given to the impacts of R&R methodologies on the availability of water supplies in the Guadalupe river system downstream of the Comal and San Marcos

> springs. The Advisory Committee also urges that each R&R methodology identified in Phase I of the new study be reviewed to determine the potential for acceptance by the USFWS if it involves alteration of the habitats of endangered and threatened species, or is intended as protection for the species in times of drought.

The first of these recommendations was based on the Advisory Committee's concern with the "recirculation" concept. Initially, the concept was that natural springflows would emerge or outside sources of water would be supplied to dry spring habitats; this water would flow through the habitats; and the water would be diverted downstream from the spring habitats and pumped back (recirculated) to the spring areas, in a repeating loop. While this concept perhaps seems plausible from a conceptual perspective, it rests on an assumption that surface water needs downstream from the diversion point are to be ignored. This assumption is simply not tenable to the Advisory Committee. The scope of Phases III and IV of the study appear to address this concern by giving consideration to the impacts of R&R methodologies on the availability of water supplies in the Guadalupe river system.

3.4.1.3 Springflow Augmentation Study (In Situ Refugia)

This study evaluated various methods for augmenting flows at Comal and San Marcos springs when natural springflow ceases or decreases to the point that the protected species are significantly impacted. It was performed by LBG-Guyton Associates (in association with Bio-West, Espey Consultants, Inc. and URS Corporation) and was presented to the EAA Board in September of 2004. The study identified various options including the introduction of groundwater at the surface or subsurface of spring areas, the use of water recirculation systems in critical habitat areas, and the use of inflatable dams to direct water flow to specific portions of critical habitat. The study recommended reduction or elimination of groundwater use in the New Braunfels and San Marcos areas either temporarily or permanently, the use of Canyon Reservoir water to provide surface water to the Comal Springs area and as recharge to supplement flow at San Marcos Springs, and the further study of several other options. The study included preliminary cost estimates for many of the identified options.

The Advisory Committee expressed concerned in its 2004 Report that the goal of the report was at odds with the statutory requirement for the EAA to "implement and enforce water management practices, procedures and methods to ensure that, not later than December 31, 2012, the continuous minimum springflows of the Comal Springs and the San Marcos Springs are maintained to protect endangered and threatened species to the extent required by federal law". The 2004 Report stated

> It is evident from the study that many of the methods evaluated for augmentation of springflow, such as introduction of imported water into areas inhabited by endangered species and redirection of reduced flows to "high quality habitat" are creative alternatives to the protection of springflow, and they would not serve to satisfy the EAA's legal duty to ensure "continuous minimum springflows". Unless they are proposed as temporary measures for use during periods of low springflow that may occur before the statutory deadline, the evaluation of these methods appears to represent a nonproductive use of the EAA's finite resources.

The cost of implementing springflow augmentation was estimated in the study. These estimates formed the basis for the EAA's issuance in August 2004 of a request for statements of interest and qualifications for performing a study to compare that cost to the cost of limiting withdrawals from the Edwards Aquifer. The Advisory Committee's 2004 Report offered the following comment on the proposed cost comparison study:

> [T]he Advisory Committee anticipates that this comparative study is likely to determine that the cost of augmentation is small in comparison to the cost of limiting withdrawals. The Advisory Committee has two concerns related to this potential conclusion. First, use of the ... study to establish augmentation costs involves several assumptions that the Advisory Committee would question, including the legality of augmentation methods other than "continuous ... springflows" after the December 31, 2012 deadline in the Act, the ability of the EAA to secure USFWS approval for the augmentation options, the technical feasibility and effectiveness of augmenting flow at San Marcos Springs with artificial recharge near New Braunfels, and the willingness and ability of the New Braunfels and San Marcos communities to retire their aquifer rights.
>
> Second, the Advisory Committee is concerned that the cost comparison will not take into account the full economic consequences of minimization of springflows. The Advisory Committee anticipates that the "cost of limiting withdrawals from the aquifer," on the other hand, will take into account a broad range of economic consequences. Assuming the use of some of the recirculation options defined in the study that would accompany minimization of springflows with the addition of imported water for recirculation in specified areas, the water-related economies in New Braunfels and San Marcos and the downstream interests that rely on springflow especially in times of drought apparently are to be ignored. At a more fundamental level, however, the Advisory Committee is concerned that studies such as this serve only to amplify "us versus them" divisions among the interests that depend on the aquifer. The Advisory Committee wonders whether the next EAA study will compare the value of aquifer-irrigated agricultural production with that of all manufacturing operations or tourism-related activities in San Antonio.

3.4.2 Precipitation Enhancement Program

The EAA has conducted a multi-year Precipitation Enhancement Program (PEP) to increase rainfall over areas of the Aquifer region by seeding suitable rain producing clouds with silver iodine. The benefits from the program include increasing recharge and, through direct precipitation benefits, decreasing demand for Aquifer water. In March of 2004, the EAA renewed a contract with the Southwest Texas Rain Enhancement Program to perform cloud-seeding over Uvalde County. The EAA also contract is in the final year of a three year contract with South Texas Modification Association, managed by the Evergreen Underground Water Conservation District to perform cloud-seeding over Bandera, Bexar and Medina Counties.

During the 2004 season, cloud-seeding activities were conducted on 26 separate days in Bandera, Bexar, and Medina counties, and on 15 separate days in Uvalde County. In 2004, an estimated total of 12,360 grams (27.0 pounds) of silver-iodide

cloudseeding agent was dispersed in the four counties where cloud seeding is funded by the Authority.

An independent assessment performed by Arquimedes Ruiz (2004) indicated that an additional 287,000 acre-feet of rainfall was created for Bexar, Bandera, and Medina counties, and 70,500 acre-feet of rainfall was created for Uvalde County as a result of the 2004 cloud-seeding work. The results for 2004 were notably higher than those reported for 2003. Meteorologists involved with the PEP and Mr. Ruiz explained that the difference is due to use of more precise National Weather Service Doppler radar for the rainfall analyses in 2004.

During the 2005 season, cloud-seeding activities were conducted over Uvalde, Medina, Bandera, and Bexar counties. A total of 29 flights were made on 25 separate days. During the season, 11,480 grams (26.3 pounds) of silver-iodide seeding agent was used. Radar evaluations indicate a potential increase of 183,100 acre-feet of precipitation across the four-county area in which seeding activities were conducted.

The EAA Board heard a proposal in September of 2006 to discontinue the PEP. The EAA Board is expected to make the decision at its November 15, 2006 meeting with the approval of the EAA budget for 2007. The Advisory Committee believes the EAA should continue pursuing the PEP as a strategy even though it is difficult to quantify success with current techniques. It is the primary effort by the EAA to actually increase the water available in the Aquifer.

The Advisory Committee remains interested in determining what is required to make PEP a dependable, ongoing water supply enhancement strategy for the Aquifer region.

3.5 Legislative Activity

3.5.1 79th Texas Legislature – 2005

The EAA was a significant focus of legislative activity in the Regular Session of the 79th Legislature. In early April of 2005, Senator Ken Armbrister, sponsor of the original EAA Act in 1993, filed Senate Bill 3, intending it as a follow-up to the landmark water planning legislation that began with Senate Bill 1 in 1997 followed by Senate Bill 2 in 2001. Article 5 of the proposed Senate Bill 3 included significant changes to the EAA Act, based generally on an increase in the cap on withdrawals in exchange for stricter statutory critical period pumping reductions. As filed, Article 5 would have:

- Authorized the EAA to finance the construction of recharge facilities
- Increased the cap on authorized withdrawals to 480,000 acre-feet, and removed the required permit retirement to achieve a 400,000 acre-foot cap in 2008
- Clarified that the EAA has no authority to issue interruptible Junior permit rights, and that only regular permits count against the annual cap

- Specified five stages of critical period reduction triggers (all related solely to springflow) and withdrawal reduction percentages, including a 40% reduction for the San Antonio pool in Stage V
- Created a five-member Emergency Task Force to be activated during the most severe stages of critical periods, with authority to order additional reductions in Aquifer withdrawals

As passed by the Senate, the bill incorporated the following changes:

- The increase in the cap on authorized withdrawals would have been to "the sum of all permits" rather than to 480,000 acre-feet/year.
- Provided for annexation of other areas into the EAA.
- Reduced critical period stages from five to four, with index well level triggers for some stages and index well level and springflow triggers for other stages. Initiated critical period reductions at 665, rather than 650, index well level for San Antonio pool
- Tied critical period stages to specified annualized withdrawal rates; Stage IV at 340,000 acre-feet/year, dropping to 320,000 acre-feet/year in 2012 and 288,000 acre-feet/year in 2020.
- Created a 15-member Edwards Aquifer Area Stakeholders Committee and a seven-member Edwards Aquifer Area expert science team. The science team and Stakeholders Committee would have made recommendations for withdrawal reduction levels and stages for critical period management to a newly created Environmental Flows Commission and the EAA.
- Specified funding for the Advisory Committee at an annual amount of $75,000.

As approved by the House Natural Resources Committee, the bill incorporated the following changes:

- Removed lowest Stage IV reduction (288,000 acre-feet/year), so that the maximum critical period reduction would allow withdrawals of 320,000 acre-feet/year
- Required the EAA to form a "budgetary advisory committee" to consult and advise the authority on budget matters, including aquifer management fees and bonding authority issues.
- Increased the restrictions on use of term permits.

Senate Bill 3 failed to pass in the House, and attempts to append the provisions of Article 5 to other bills were unsuccessful.

3.5.2 80th Texas Legislature – 2007

Indications have surfaced that various Aquifer stakeholders will undertake efforts to amend the EAA Act in the upcoming session of the State Legislature.

At its September, 2006 meeting, the EAA Board approved the following list of concepts for consideration during the 2007 Legislature as proposed amendments to the EAA Act:

1. Increase the limit on authorized annual withdrawals from the Aquifer from the present cap of 450,000 acre-feet to the sum of the initial regular permits (approximately 549,000 acre-feet), and eliminate the reduction to 400,000 acre-feet scheduled to occur in 2008. This is proposed to be accomplished "by converting all existing 'junior' groundwater withdrawal rights into 'senior' groundwater withdrawal rights".
2. Define critical period reduction parameters in the EAA Act rather than by rules adopted by the EAA Board. A limit on permitted withdrawals to an annual rate of 340,000 acre-feet per year would apply "when all of the pools of the Aquifer are at the most severe critical period levels".
3. Provide that any reductions in permits would be paid for 50% by downstream water rights holders in the Guadalupe River Basin and 50% by the EAA (with all EAA permit holders contributing proportionally to the cost).
4. Allow for the EAA to build recharge structures and issue bonds.

These proposals represent a consensus among the viewpoints of *those who rely on pumping from the Aquifer.* From the downstream perspective of the Advisory Committee, however, the proposals represent a departure from the original intent of the EAA Act, tipping the balance dramatically towards those who rely on Aquifer pumping at the expense of those who rely on Aquifer springflows. While the limit on authorized permits would increase by 22%, the "most severe critical period" pumping reduction would rarely apply since the last time the Uvalde Pool reached the current Stage 4 EAA trigger (842 feet AMSL) was in 1958. These proposals appear to inherently conflict with the provisions in the EAA Act requiring the EAA to ensure "continuous springflows" from the Aquifer by 2012. The following table compares the current provisions of the EAA Act and EAA Board rules to the EAA's legislative proposal:

Aquifer Use Parameter	Current EAA Act/Rules	EAA Legislative Proposal
Annual limit-permitted pumping	450,000 a-f Senior (until 12/31/07) 99,000 a-f Junior 400,000 a-f (effective 1/1/08)	549,000 a-f
Critical Period Stage 4 limit	346,500 a-f	340,000 a-f
% of years CPM Stage 4 reached[78]	15.4% (1955, 1956, 1957, 1967, 1984, 1985, 1989, 1990)	7.7% (1955, 1956, 1957, 1958)
Reductions begin at:	665 (Junior rights accrual) 650 (Junior use, some Senior use)	Not specified

[78] Number of calendar years since 1955 in which trigger well level went below Level 4 trigger÷52 (number of years 1955-2006)

3.6 Litigation

The EAA has committed substantial resources to litigation in the areas of legal challenges to EAA actions, administrative hearings on permit applications, and enforcement of EAA rules and permit conditions. The EAA Board and staff have developed a review process to ensure that costs associated with litigation are minimized to the extent feasible.

The firm that serves as the EAA's general counsel, Kemp Smith, has on the whole served the EAA well during the review period. The firm provides general legal services that include administrative support, preparation and review of EAA Board and Committee resolutions and orders, review of internal policies, and drafting and review of contracts.

The firm also provides litigation services in support of the EAA's mission. Given the regulatory role assigned to the EAA by the Legislature, the EAA's rulemaking, permitting and enforcement actions have been challenged at a variety of junctures. Kemp Smith's litigation efforts have resulted in considerable success in sustaining the validity of the EAA Act and the actions of the EAA. Especially in the area of constitutional challenges and the nature of groundwater rights, the pleadings filed by Kemp Smith on behalf of the EAA have been well-written, well reasoned, thorough and persuasive.

A current status report on litigation involving the EAA provided by Kemp Smith is attached as Appendix C to this Report.

3.7 Retirement of Permit Rights

Under the EAA Act, EAA permit holders are responsible for any compensation needed in connection with the reduction of aquifer withdrawals to 450,000 acre-feet per year. Avoiding the need for compensation was one of the primary reasons the EAA developed the Junior-Senior Rules. By creating an "interruptible" Junior water right, the EAA can argue that there is no "taking" of property – the permit holder retains ownership of the water right; the right may not be exercised, however, at all times and under all conditions.

The Advisory Committee considers compensation to be unnecessary for the reduction of permits to the 450,000 acre-foot level as long as it is accomplished by one or more proportional reductions in the quantity of all permits. Moreover, since the permit holders themselves would be the source of funding for any compensation, they would be paying themselves for the reductions in permit rights.

Under the EAA Act, any compensation associated with the reduction from 450,000 acre-feet to 400,000 acre-feet is to be funded equally between Aquifer users and downstream water rights holders in the Guadalupe River basin.

A focus of Article 5 of Senate Bill 3 in the 2005 Texas Legislature was to eliminate the need for any compensation by creating a single permit cap and eliminating the need for permit retirements to reach the second, lower cap. However, attempts to secure passage of this legislation were unsuccessful.

As noted in Section 3.5.2 above, efforts are under way to revisit the concept of creating a single permit cap and eliminating the need for permit retirements in the 2007 session of the State Legislature. In the event that a legislative solution is not secured, the EAA, the TCEQ, and downstream water rights holders will need to prepare a plan to address any needed compensation associated with permit retirements. To accomplish this, the EAA would need to work with EAA permit holders and downstream permit holders to determine whether compensation is needed, determine the amount of compensation needed, and implement a mechanism by which compensation needed from the downstream permit holders would be assessed and collected.

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Section 4
Effectiveness Measures Established for the 2008 Report

This section of the Report includes the effectiveness measures the Advisory Committee intends to use in evaluating the EAA's accomplishments and activities for the 2008 Advisory Committee Report.

4.1 Regulatory Effectiveness Measures

4.1.1 The EAA Board should repeal the Junior-Senior permit rules, and in their place adopt rules proportionately reducing regular permits

The Advisory Committee reiterates its position from the 2004 Report that the Board should repeal the Junior-Senior Permit Rules and adopt in their place rules that require proportional adjustment of all regular permits to meet the 450,000 acre-foot cap on authorized withdrawals. This adjustment can be accompanied by the issuance of term permits based upon an individualized showing of need.

The Advisory Committee also believes that the EAA should adhere to the reduction of authorized withdrawals to 400,000 acre-feet per year by the January 1, 2008 deadline in the EAA Act.

The EAA should not implement management strategies that effectively increase the permit caps without appropriate scientific support, consultation with state and federal agencies, and consideration of the consequences to downstream interests.

4.1.2 The EAA should revise the Demand Management/ Critical Period Management Rules so that required reductions in withdrawals will be sufficient to protect springflows, and will be achieved in a timely manner

The EAA should rewrite the DM/CPM rules to include as a primary objective the protection of continuous springflows at Comal and San Marcos Springs. This will

likely require greater reductions in withdrawals to occur earlier in time, especially if the Junior-Senior Permit Rules remain in place allowing increased withdrawals when Aquifer levels are high. The revised rules should also include timely monitoring and communication of Aquifer and springflow levels to stakeholders, and a practical and effective system for tracking and enforcing required reductions in withdrawals on a timely basis.

4.1.3 The EAA should complete the program it has begun to register exempt wells

The Advisory Committee strongly supports the EAA's program to register all exempt Aquifer wells. The Advisory Committee encourages the EAA to take all necessary and reasonable actions to complete it.

4.1.4 The EAA should resolve all litigation related to applications for initial regular permits in a manner that preserves the EAA's regulatory authority

Litigation related to Aquifer permit applications and the nature of permit rights has led to uncertainty for EAA permit holders and volatility in the market for permit rights. The Advisory Committee supports efforts to resolve this litigation as soon as possible, while holding to principles consistent with the purposes and intent of the EAA Act.

One suit in which the EAA has been involved relates to the enforcement of the deadline for submission of declarations of historic use.[79] The EAA has held firm to a position of strictly enforcing the deadline, rather than allowing applicants to "substantially comply" with it. The Advisory Committee supports this position.

Several pending EAA permit suits involve the nature of groundwater rights in Texas. The EAA has adopted a position that a groundwater right is "usufructuary" in nature; i.e., it is only a potential right that does not ripen until the water is actually produced at the surface. The other view is that groundwater is owned in place, marketable and transferable whether or not it is ever produced at the surface. The Advisory Committee supports the view of the EAA, and encourages the EAA to continue to strongly assert this position in litigation.

4.1.5 The EAA should make regulatory impact assessments for significant changes to its regulations available before the public comment period closes

The EAA's procedural rules give the general manager discretion to determine when a proposed change to EAA regulations will be preceded by the preparation of a regulatory impact assessment (RIA). The Advisory Committee supports this discretion, and notes that it has been exercised reasonably by the current General

[79] *Edwards Aquifer Authority v. Chemical Lime, Inc.*

Manager. However, the Advisory Committee also notes that there have been instances when the general manager has authorized an RIA for proposed rules, but the RIA was not completed and released before the close of the public comment period on the rules. This was the case most recently for the proposed Junior-Senior Implementation Rules.

The Advisory Committee recommends that the general manager, in authorizing an RIA for a significant change to EAA regulations, ensure that the RIA is completed and released to the public before the close of the public comment period on the proposed rules.

The Advisory Committee also cautions against the inclusion in RIAs of editorial commentary on positions taken by EAA stakeholders.[80] RIAs by their nature and purpose should be quantitative, fact-based, and above all, objective. These purposes are undermined when an RIA is used as a platform for subjective commentary.

4.1.6 The EAA Should Ensure that Complete Regulatory Impact Assessments are Performed for Proposed Rules that Relate to Permit Transfers

As noted in Section 3.1.3 above, the completion of the process for issuing initial regular permits is shifting the policy focus of the EAA to the transfer of existing permit rights. The EAA's decisions in this area will become increasingly important in the future in determining the impact of the EAA's management of the Aquifer on downstream interests.

The EAA Board members have already made significant policy decisions related to permit transfers in the absence of complete information about the effects of their decisions on Aquifer levels and the duration and severity of critical periods. Because of the broad range and significance of potential impacts of various policies on Aquifer stakeholders (including the downstream interests), and the potentially far-reaching consequences of pursuing policies without adequate information about the impacts, it is of critical importance that the EAA evaluate the impacts of various policy options on overall use of the Aquifer and on springflow and downstream interests so that decision makers have adequate information. The EAA simply must do a better job addressing the potential impact of its rules related to the transfer of existing permit rights in order to maintain its credibility with the Advisory Committee.

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[80] As an example, the RIA on the Junior-Senior Implementation Rules included, on page 66, the following snipe at downstream interests:

> [A]lthough they are not permit holders who would be directly affected by proportional adjustment and the implementation of Junior rights, downstream interests have been the most vocal in opposition to the proposed introduction of these rights. The Authority has prepared several additional documents in response to downstream interests, and has determined that the creation and implementation of Junior rights under the 2006 Proposed Implementation Rules is within their statutory authority, does not exceed the statutory withdrawal limits, would in fact result in additional supplies being made available during droughts by virtue of existing ASR projects, and would allow the Authority to reconcile the competing provisions of the enabling legislation.

The Advisory Committee strongly recommends that the EAA, in the course of considering proposed changes to its permit transfer rules, perform a complete assessment of the impact of the proposed rules on Aquifer levels and springflows and on the duration and severity of critical periods.

4.2 Planning Effectiveness Measures

4.2.1 The EAA should continue its active support and involvement in Region L and Groundwater Management Area planning efforts

Participation by the EAA in regional water planning efforts is a necessity, given the EAA's regulatory and planning purposes. The Advisory Committee supports active support and involvement by the EAA Board and staff in regional water planning activities.

4.2.2 The EAA should continue to implement the Groundwater Conservation Plan

The EAA should continue its ongoing efforts to implement the GWCP. The EAA should also ensure that reliable information is secured to confirm compliance with individual permit holder conservation plans. The EAA should coordinate with state agencies that require water conservation plans to reduce duplication of efforts for agencies and for EAA permit holders.

4.2.3 The EAA should modify the habitat conservation plan and incidental take permit application submitted to U.S. Fish and Wildlife Service

The Advisory Committee strongly supports the EAA's goal of securing an incidental take permit from the U.S. Fish and Wildlife Service related to management of the Aquifer, and complying with the terms of the permit. The Advisory Committee does not support the EAA Board-approved draft HCP because it does not include even a long-range plan to ensure continuous springflows at Comal and San Marcos springs, let alone assure compliance with federal protections for the listed species. Rather than barely ensuring the survival of the listed species, the HCP should include a plan to achieve eventual recovery and delisting of the species. The Advisory Committee recommends that the EAA continue discussions with the USFWS to determine the modifications needed to the Final Draft HCP to assure compliance with the ESA, followed by approval of the modifications by the EAA Board.

4.3 Research Effectiveness Measures

4.3.1 The EAA should complete and implement the MODFLOW Groundwater Model

As noted in Section 2.2.3 above, the new MODFLOW groundwater availability model for the Aquifer was completed in 2005, and approved by the Texas Water Development Board as the official GAM for the Aquifer. However, it is not yet capable of running all water management scenarios to a high level of certainty. For example, limitations in the model prevented it from predicting the effects of some aspects of the Junior-Senior Implementation Rules, as noted in the Regulatory Impact Assessment for those rules.

The Advisory Committee recommends that the EAA complete and implement this model so that it can be used effectively by the EAA staff without the regular need for assistance from technical consultants. The Advisory Committee considers it highly important that the EAA have a proven model that is trusted by all Aquifer stakeholders and capable of use by the EAA staff.

4.3.2 The EAA should continue research focusing on flow patterns and similar aspects of how the Aquifer functions

The Advisory Committee supports research that enhances our understanding of the Aquifer's hydrogeology and how it functions.

4.3.3 The EAA should discontinue studies of alternatives to natural springflow which do not consider the impacts to downstream interests and listed species

The Advisory Committee supports studies that contribute to effective management of the Aquifer while conforming to the statutory requirement for protection of continuous springflows at Comal and San Marcos springs. The EAA should not commit its limited resources to studies of alternatives to natural springflow that do not recognize the statutory requirement to ensure continuous springflows, and do not give full consideration to the impacts on downstream interests and the listed species protected under the Endangered Species Act.

4.3.4 The EAA should approach with caution joint research initiatives with individual Aquifer stakeholders

The Advisory Committee believes that studies undertaken jointly with individual stakeholders in the Aquifer risk a loss of needed objectivity, especially when the stakeholders insist on contributing to study design parameters and reserve rights to review of interim study results that are not afforded to all Aquifer stakeholders.

4.4 Financial Effectiveness Measures

4.4.1 The EAA should be prepared to plan for the assessment of permit retirement fees on downstream water rights holders

Depending on events in the 2007 session of the State Legislature, permit retirements may not be necessary. In the event that a legislative solution is not secured, however, the EAA will need to prepare a plan with the TCEQ and downstream water rights holders to address any needed compensation associated with permit retirements. Any such plan will require the EAA to work with EAA permit holders and assist the TCEQ in its work with downstream permit holders to determine whether compensation is needed, determine the amount of compensation needed, and implement a mechanism by which compensation needed from the downstream permit holders would be assessed and collected.

4.4.2 The EAA should secure approval of legislation clarifying that special permit fees assessed for EAA permit retirements apply to all regular permits equally

The legislative change to the EAA Act secured by irrigation interests in 1999 limits the fees assessed annually by the EAA on initial regular permits for irrigation use to $2 per acre-foot per year, with assessment based on the amount of water used rather than the amount of water authorized for use. Because of the way the amendment was written, and also because the amendment was not the product of a consensus among Aquifer stakeholders, an issue exists as to whether the fee limitation applies only to the regular permit fees that are used to fund EAA operations and administration of the EAA Act, or if it also extends to the special fee for permit retirements to reduce the total of authorized withdrawals to 400,000 acre-feet as of January 1, 2008.

Because of the fundamental inequity that a differential in the special assessment fee would create, the Advisory Committee recommends that the EAA secure the passage of legislation to clarify that the special permit retirement fee applies equally to all initial regular permits equally.

4.5 Other Effectiveness Measures

4.5.1 The EAA should respond to TCEQ recommendations promptly

Over nine months have passed since the Texas Commission on Environmental Quality issued its recommendation that the EAA reconsider the Junior-Senior Rules. The EAA Board has not yet responded to this recommendation. This is simply too long. The fact that the EAA Board proceeded to adopt the Junior-Senior Implementation

Rules without addressing the TCEQ recommendation makes matters even worse. The statewide commission which administers surface water rights deserves much more respect than this.

4.5.2 The EAA should work to enhance its organizational effectiveness

The EAA has already taken significant steps towards accomplishing this effectiveness measure. The new EAA Strategic Plan includes as a goal to "nurture and develop Edwards Aquifer Authority staff". The EAA should continue to plan for consolidation of its office space, and identify methods to recruit, retain, and enhance staff capabilities.

4.5.3 The EAA should develop and implement a Comprehensive Public Information Plan

The EAA has begun developing a Comprehensive Public Information Plan. The Advisory Committee supports the development and implementation of this Plan by the EAA.

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Appendix A

Texas Commission on Environmental Quality Resolution January 11, 2006

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

A RESOLUTION regarding the Request by the South Central Texas Water Advisory Committee concerning the Edwards Aquifer Authority Board of Director's action; TCEQ Docket No. 2004-1705-MIS.

WHEREAS, on December 1, 2003, the Edwards Aquifer Authority ("EAA") passed Resolution and Order No. 12-03-478, which adopted the Junior/Senior permit rules.

WHEREAS, on February 12, 2004, the South Central Texas Water Advisory Committee ("SCTWAC") adopted Resolution No. 02-2004-01 requesting the EAA to reconsider its adoption of the Junior/Senior permit rules. The EAA considered SCTWAC's request at its May 11, 2004 Board meeting and adopted an order denying the request.

WHEREAS, on June 3, 2004, SCTWAC filed a request with the Commissioners, requesting that the Commission conduct a review of the EAA's approval of the Junior/Senior permit rules under the authority of Section 1.10 of the EAA Act.

WHEREAS, on February 23, 2005, the Commission during its public meeting evaluated the request by SCTWAC and determined to issue an interim order granting the request and establishing the procedure and scope of review for evaluating the request.

WHEREAS, On March 1, 2005, the Commission referred the matter to the Executive Director to conduct his suggested analysis using the computer groundwater simulation model of the Texas Water Development Board (TWDB), GWSIM-IV, and determined that the Executive Director must consider the following issues and make proposed recommendations regarding:

(1) the impact of the EAA's Junior/Senior permit rules on downstream water interests, particularly surface water rights holders; and

(2) whether the EAA's Junior/Senior permit rules are contrary to a Commission action affecting downstream interests, particularly the issuance, administration and enforcement of existing and future surface water rights.

The Commission also determined that the parties may file responsive briefs or additional technical analysis to the Executive Director's proposed recommendations within sixty (60) days following the filing of the recommendations.

WHEREAS, On September 1, 2005, the Executive Director filed its recommendations with the Commission.

WHEREAS, the Commission received timely response filings from SCTWAC and the EAA.

WHEREAS, on January 11, 2006, the Commission during its public meeting evaluated the request by SCTWAC, the Executive Director's recommendations regarding the two specific issues, the timely filed responses, the oral presentations and the answers to questions during its meeting under the requirements in the applicable statutes, including Section 1.10 of the EAA Act.

WHEREAS, as the grantor of surface water rights under Chapter 11 of the Texas Water Code, the Commission has an obligation to enforce and uphold the rights conveyed to private and public parties in surface water rights.

WHEREAS, the Commission determined that the EAA's Junior/Senior permit rules will have a measurable effect on downstream water interests and surface water rights holders and that the EAA's Junior/Senior permit rules are contrary to the Commission's issuance, administration and enforcement of existing surface water rights.

WHEREAS, by the EAA's own admission, the Junior/Senior permit rules provide for a bifurcated permitting process for pumping up to approximately 560,000 acre feet of water per year.

NOW THEREFORE, BE IT RESOLVED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY that, after consideration SCTWAC's request for review of the EAA's Junior/Senior permit rules:

1) the EAA's Junior/Senior permit rules will have a measurable effect on downstream water interests, particularly surface water rights holders; and

2) the EAA's Junior/Senior permit rules are contrary to the Commission's actions affecting downstream interests because they could measurably deprive downstream water rights holders of a portion of river flows that would otherwise be available to them under permits and certificates of adjudication issued and/or administered by the Commission and also could otherwise measurably deprive flows for instream uses.

BE IT FURTHER RESOLVED, that because of the measurable impact on downstream interests, particularly surface water rights, under the maximum pumping of water from the Edwards Aquifer allowed under the bifurcated rules of up to approximately 560,000 acre feet per year; and because the EAA's Junior/Senior permit rules are contrary to basic Commission actions in administering surface water rights, the Commission recommends that the EAA reconsider the bifurcated permitting rules to limit permits to within the statutory cap of 450,000 acre feet per year and to minimize the measurable impact on downstream surface water rights holders and other downstream interests.

ISSUED this 11th day of January, 2006.

TEXAS COMMISSION ON
ENVIRONMENTAL QUALITY

Kathleen H. White
For The Commission

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Appendix B
Edwards Aquifer Authority Report of Accomplishments

May 1, 2004 – April 1, 2006

May 26, 2006

[Prepared by EAA Staff]

Strategic Plan Objective Number	Strategic Plan Objective Description	Statutory Authority (EAA Act Sections)	Update
1.1	Issue all initial regular permits by December 31, 2004. (The December 31, 2004 date is not required by the Act. This date is an interim date identified that, if met, would be helpful in meeting the ultimate 450,000 and 400,000 annual caps by January 1, 2008.)	1.14; 1.15; 1.16; 1.21; 1.29	**The Edwards Aquifer Authority (Authority) issued permits through November 5, 2005. This objective is complete.** **Conclusion of Initial Regular Permits (IRP)** The Authority's board of directors concluded the IRP process in November 2005 by making final adjustments to all IRPs so that the total amount of "senior" rights does not exceed 450,000 acre-feet. The final maximum, minimum and permitted amounts are: • 668,000 acre-feet is the approximate sum of all IRP holders' maximum historical use amounts. Maximum historical use represents a permit holder's highest use in any one year during the statutorily defined historic period of 1972 – 1993. • 549,000 acre-feet is the approximate sum of the IRP amounts after the final proportional adjustment under current Authority rules. Of this amount, 450,000 acre-feet are Uninterruptible ("senior") groundwater withdrawal rights, and 99,000 acre-feet are Interruptible ("junior") groundwater withdrawal rights. The board approved the last IRP on April 11, 2006. **Development of "Junior/Senior" Rules** During 2003, the Authority approved IRPs that, when combined with previously approved IRPs, would allow water rights in excess of 450,000 acre-feet to be effective on January 1, 2004. Consequently, the Authority worked to develop a solution to the permit dilemma regarding the limit on the total amount of permitted withdrawals (450,000 acre-feet through December 31, 2007 and the guaranteed minimums). Consequently, the board developed a temporary solution in 2003. On December 16, 2003, the board adopted rules to amend the groundwater withdrawal permit rules so that, through December 31, 2007, IRPs issued by the Authority would have two components: an Interruptible (or "junior") portion that can be produced only when aquifer levels are above specified thresholds, and an Uninterruptible (or "senior") portion that is available for pumping both above and below those thresholds. The Interruptible/ Uninterruptible rules are also sometimes referred to as the "junior/senior" rules, or the "bifurcated permitting" rules. Under the "junior/senior" rules, the aggregate of the Uninterruptible or "senior" component of all IRPs equals 450,000 acre-feet per year. Further, pursuant to the "junior/senior" rules, through December 31, 2007, the difference between a permit holder's "PA-2" amount and the permit holder's statutory minimum is considered the permit holder's Interruptible or "junior" right and can be produced only when the level of the aquifer measured at Well J-17 is greater than 665 feet above mean sea level for the San Antonio Pool, and when the aquifer level at Well J-27 is greater than 865 feet above mean sea

Strategic Plan Objective Number	Strategic Plan Objective Description	Statutory Authority (EAA Act Sections)	Update
			level for the Uvalde Pool. The "senior" portion applies against the 450,000 acre-feet "pumping cap," while the "junior" portion does not. **Proposed "Junior/Senior" Implementation Rules** Authority staff and counsel developed proposed Interruptible ("junior") and Uninterruptible ("senior") groundwater withdrawal rights implementation rules in 2004; however, the board tabled consideration of these rules in November 2004. Authority staff and counsel developed a second set of "junior/senior" implementation rules based on discussions at the January 2006 meetings with permit holders. The board of directors approved the proposed draft rules and authorized the General Manager to publish notices, initiate rules assessment and conduct public hearings on March 14, 2006. Significant features of the implementation rules are: • no term permits can be approved when "junior" rights are in use; • "junior" rights may be severed from the "senior" rights; however, all transfers approved prior to the effective date of the proposed rules will consider the "junior" and "senior" rights to be proportional to the original permit; • withdrawals of "junior" and "senior" rights must be reported; and • the use of "junior" rights on an annual basis will be proportional to the number of days in a year the aquifer is above the specified trigger levels. For a complete copy of the proposed rules, please visit the Authority's web site (http://www.edwardsaquifer.org). The rules adoption timetable is as follows: • The 45 day public comment period began on March 24, 2006 and concluded May 8, 2006; • Public hearings were held on April 12, 17 and 19, 2006; • Regulatory assessment will be completed June 15, 2006; • Regulatory assessment, public comments, and final rules will be presented to the Permits/Enforcement Committee on June 27, 2006; • Regulatory assessment, public comments, and final rules will be presented to the board on July 11, 2006; and • Final rules will be effective July 21, 2006. **SCTWAC Appeal of "Junior/Senior" Rules** In June 2004, pursuant to § 1.10 of the EAA Act, the South Central Texas Water Advisory Committee (SCTWAC) asked the Texas Commission on Environmental Quality (Commission) to review the Authority's adoption of the "junior/senior" rules. The Commission issued a resolution on January 11, 2006, and found that: (1) the "junior/senior" rules will have a measurable effect on downstream water rights holders and other downstream water interests; and (2) the "junior/senior" rules are "contrary" to actions of the Commission affecting downstream interests because they could reduce the downstream river flows. The Commission recommended that the Authority reconsider the "junior/senior" rules and replace them with other rules that limit initial regular permits to no more than 450,000 acre-feet per year.

Strategic Plan Objective Number	Strategic Plan Objective Description	Statutory Authority (EAA Act Sections)	Update
			The Authority received the Commission's recommendation and will postpone taking any formal action to respond until after the Attorney General's Office issues an opinion on the validity of the Authority's "junior/senior" rules. **Representative Hilderbran Attorney General's Opinion Request** On March 16, 2006, State Representative Harvey Hilderbran filed a request with the Office of the Texas Attorney General for an opinion on the following questions: • *Is the EAA statutorily authorized to reduce the Uninterruptible groundwater withdrawal rights of permit holders to an amount that is below their statutory minimum as provided in Section 1.16(e) of the Act?* • *Does the EAA have the statutory authority to issue a type of permit that contains Interruptible "junior" withdrawal rights which are not specifically authorized or included in the types of permits authorized by the EAA's enabling legislation?* • *If the EAA can reduce permit holders to amounts below their statutory minimums, should these permit holders receive compensation?* *See EDWARDS AQUIFER AUTHORITY RULES.*
1.2	Develop program for term and emergency permits by July 1, 2002.	1.15; 1.19; 1.20	**This objective is complete.** On October 10, 2000, the board passed rules regarding emergency and term permits. The rules require the board to adopt an order calling for the submittal of term permits. No order has been adopted. From October 2000 through March 31, 2006, no emergency or term permits have been issued. *See EDWARDS AQUIFER AUTHORITY RULES.*
1.3	Reduce Edwards Aquifer pumpage to 450,000 acre-feet by December 31, 2004. (The December 31, 2004 date is not required by the Act. This date is an interim date identified that, if met, would be helpful in meeting the ultimate 450,000 and 400,000 annual caps by January 1, 2008.)	1.14; 1.21; 1.29	**See discussion under section 1.1 of this report.**
1.4	Reduce Edwards Aquifer pumpage to 400,000 acre-feet by January 1, 2008.	1.14; 1.21; 1.29	**The deadline for this objective is pending.** Authority staff has met with the Commission staff and with members of SCTWAC regarding this issue; however, there are no new developments. *See EDWARDS AQUIFER AUTHORITY RULES.*
1.5	Develop process for evaluation of adjusting "the cap."	1.14	**This objective is complete.** On June 28, 2004, Authority staff conveyed the most recent "General Manager's Additional Water Supply Report" to the board. The report was prepared by Daniel B. Stephens and Associates and includes a decision analysis model as a method to evaluate adjusting the "pumping cap." Current Authority rules require the next additional water supply report to be provided to the board by December 31, 2007.

Strategic Plan Objective Number	Strategic Plan Objective Description	Statutory Authority (EAA Act Sections)	Update
			See EDWARDS AQUIFER AUTHORITY RULES.
1.6	Register all points of withdrawal from the Edwards Aquifer by December 31, 2007. (This date is not required by the Act.)	1.08(a); 1.15; 1.29; 1.33	**The Authority has made a concerted effort to achieve this objective.** The Authority initiated a comprehensive well registration program *in* the spring of 2004 to obtain information on the location of small capacity domestic and livestock wells completed in the Edwards Aquifer within the Authority's boundaries. Well registration is necessary because: • The Edwards Aquifer Authority Act requires the registration of all non-permitted wells; • Authority rules require the registration of aquifer wells by December 31, 2005; • Well registration is essential in helping the Authority manage the aquifer; and • A well registration database provides protection in the event of aquifer groundwater contamination. As of March 15, 2006, the Authority has registered approximately 7,300 points of withdrawal from the Edwards Aquifer. This number includes wells registered because they are the subject of a groundwater withdrawal permit, wells registered because they are the subject of a well construction permit, and wells registered as a result of the Authority's well registration campaign. Authority staff is working to review relevant Authority documents for well information and to review data from other agencies for well information. Once all available data are compiled, owners of wells that have not been registered will be contacted and notified that they need to properly register their well. *See EDWARDS AQUIFER AUTHORITY RULES.*
1.7	Establish effective well construction permit program, by December 31, 2002, for all new wells, modifying existing wells, or plugging wells (This date is not required by the Act).	1.15	**This objective is complete and the program remains active.** The Authority administers an active well construction and well plugging program. Regulations have been adopted that require well construction and well plugging permits, and established minimum well construction, operation, maintenance, and plugging standards. Between June 1996 and May 2006, the Authority has issued approximately 1,875 well construction approval documents for wells completed in or through the Edwards Aquifer. These documents include exempt well status notices to facilitate constructing exempt wells and well construction permits. Between June 2001 and May 2006, the time period that the Authority has issued well plugging permits, the Authority has issued approximately 242 permits to plug wells completed in or through the Edwards Aquifer. The current well construction, operation, maintenance, and plugging regulations were adopted by the board in August 2003. Minor updates to the current rules were approved by the board in February 2005. The Authority's rules are more stringent than the existing state standards to provide additional protection to the Edwards Aquifer. To implement the new rules, Authority staff held a half day workshop for well drillers in October 2003 and another half day workshop in October 2005. Authority staff also arranged for well drillers who attended these work shops to receive four hours of continuing education credit. In April 2004, the Authority announced the formation of a Water Well Driller Advisory Taskforce (WWDATF)

Strategic Plan Objective Number	Strategic Plan Objective Description	Statutory Authority (EAA Act Sections)	Update
			to review and discuss issues regarding the Authority's well construction rules. The WWDATF continues to meet three to four times per year. *See EDWARDS AQUIFER AUTHORITY RULES.*
1.8	Establish a groundwater trust program to facilitate transfers to small users by December 31, 2003. (This date is not required by the Act.)	1.22	**This objective has not been necessary as the water market is quite active.** The Authority continues to operate a bulletin board service on its website for IRP permit holders or IRP applicants who have interim authorization, to list information about their groundwater withdrawal rights for potential buyers. Authority staff checks this list regularly to confirm interest by prospective sellers. The water market is operating; therefore, the Authority has not moved forward with a program to secure Edwards Aquifer groundwater withdrawal rights for interested third parties. *See EDWARDS AQUIFER AUTHORITY RULES.*
1.9	Continue water rights transfer program, and conduct annual program reviews by December 31, 2002. (This date is not required by the Act.)	1.22; 1.24; 1.34	**This program is quite active and periodic activity reports are provided.** Through March 31, 2006, the Authority approved 1,359 groundwater withdrawal rights transfers, representing 230,818 acre-feet. In addition, the Authority has also approved 20 new "Cibolo Creek" transfers totaling 1,597 acre-feet since the 2004 report. The total number of approved "Cibolo Creek" transfers is 50 for a total authorized amount of 2,958.018 acre-feet. "Cibolo Creek" transfers are transfers to the place of use, purpose of use, point of withdrawal and ownership of groundwater withdrawal rights from Uvalde, Medina, Atascosa and Bexar counties, to Comal, Guadalupe, Hays and Caldwell counties and require an analysis of the effect of these transfers on Comal and San Marcos spring flow, as applicable. The board may approve or deny these transfers. *See EDWARDS AQUIFER AUTHORITY RULES.*
1.10	Continue to receive and evaluate annual groundwater use information.	1.32	**This objective is on-going.** The Authority continues to receive annual groundwater use reports from agricultural, municipal and industrial IRP permit holders and applicants with interim authorization. As the Authority works with permit holders to receive water use reports and update information for previous years. Reported water use for 2004 and 2005 is as follows: In 2004, total reported withdrawals from IRP permitted wells was 295,495 acre-feet as follows: • Irrigation – 54,793 acre-feet • Industrial – 28,129 acre-feet • Municipal – 212,630 acre-feet In 2005, total reported withdrawals from IRP permitted wells was 366,404 acre-feet as follows: • Irrigation – 84,733 acre-feet • Industrial – 34,327 acre-feet • Municipal – 247,344 acre-feet *See EDWARDS AQUIFER AUTHORITY RULES.*
2.1	Implement the Habitat Conservation Plan, and	1.11(d)(e)	**This objective has been active since 1999 and continues.** The bio-monitoring program for the Comal and San Marcos springs

<table>
<tr><th>Strategic Plan Objective Number</th><th>Strategic Plan Objective Description</th><th>Statutory Authority (EAA Act Sections)</th><th>Update</th></tr>
<tr><td></td><td>receive a Section 10A Incidental Take Permit by June 30, 2003. (This date is not required by the Act.)</td><td></td><td>ecosystems continues. The bio-monitoring program contract was extended in February 2005 through February 2008. A notable change was the sampling schedule from four times per year to three times per year as follows:
<table>
<tr><th>Event</th><th>Upper San Marcos River</th><th>Comal River</th></tr>
<tr><td>Spring</td><td>Early April</td><td>Mid April</td></tr>
<tr><td>Summer</td><td>Late July</td><td>Early August</td></tr>
<tr><td>Fall</td><td>Late October</td><td>Early November</td></tr>
</table>
At the September 21, 2004 regularly scheduled board meeting, the draft HCP, was released for public comment from October 4 through December 3, 2004. The draft HCP included:

• Withdrawal limit through December 31, 2007 set at 450,000 acre-feet per annum.
• Additional withdrawals will be allowed for Interruptible and Uninterruptible groundwater rights and for term permits according to rules adopted by the Authority and instructions specified in the Act.
• Demand management/critical period pumping will not exceed 350,000 acre-feet per year if the worst drought conditions (Stage IV) are in effect for an entire calendar year.
• The alternative includes a high number of mitigation measures.

In conjunction with the comment period, public hearings were held in Victoria, New Braunfels, Uvalde and San Antonio on November 1, 8, 16 and 17, respectively. On December 14, 2004, at their regularly scheduled meeting the Authority's board extended the public comment period through January 21, 2005. Comments were received from twenty-four stakeholders. The comments ranged from support for the draft HCP, to concern about the pumping limits referenced in the draft HCP.

Two additional meetings were held on February 9 and February 17, 2005 between Authority representatives and a representative sample of stakeholders. Representatives from the San Antonio Water System, New Braunfels Utilities, Guadalupe-Blanco River Authority, City of San Marcos, western irrigation (landowners), Sierra Club and the National Wildlife Federation met with Authority staff and consultants to discuss the draft HCP. The issue that received the most discussion was the "pumping caps." The discussions at these meetings failed to achieve consensus.

Following these meetings, the draft HCP was revised to delete the discussion regarding "pumping caps" and instead, listed the actual anticipated withdrawals under specified conditions. The revised HCP also separated the Authority's HCP from the Environmental Impact Statement, and added focus on the Authority's proposal for habitat management. Although the "pumping caps" are omitted from the revised draft HCP, the revised draft HCP incorporates pumping amounts at specific aquifer levels, as determined by the Authority's rules, for the "junior/senior" permits and demand management/ critical period. The revised draft HCP was prepared from information contained in the previous draft HCP, and contains no</td></tr>
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Strategic Plan Objective Number	Strategic Plan Objective Description	Statutory Authority (EAA Act Sections)	Update
			new text or ideas. However, mitigation costs have increased slightly (from $9.4 million to $9.7 million). The revised draft HCP was submitted to the U. S. Fish & Wildlife Service shortly after the March 8, 2005 board approval date.
2.2	Complete recirculation analysis and submit results to South Central Texas Regional Planning Group by January 31, 2004 (This date is not required by the Act.)	1.27	**Work is progressing on this objective.** On April 13, 2004, the board approved a contract with Todd Engineers to perform an analysis of the recharge and recirculation concept. The contract is structured such that the work will be completed in four phases and the board must approve the work scope and budget for each phase. Phases I and II have been completed. As of March 30, 2006, Authority and Todd Engineers staff are working to finalize the work scope and budget for Phase III. San Antonio Water System (SAWS) is also interested in contributing some level of funding to Phase III; therefore, SAWS staff is also involved in the development of the Phase III scope of work. The performance period for Phase III and IV will not be known until the Phase III scope of work is finalized.
2.3	Complete Comprehensive Water Management Plan by December 31, 2002. (The actual date in the Act has been adjusted and is now June 28, 1998 because of the Barshop decision.)	1.25	**This objective was completed in December 2004.** **Comprehensive Water Management Plan** The Authority adopted the Comprehensive Water Management Plan (CWMP) as required in Section 1.25 of the Edwards Aquifer Authority Act on December 14, 2004. The CWMP contains all of the programs, activities and internal plans that guide the Authority in the management of the Edwards Aquifer. The CWMP was designed and written to convey a plethora of information in a format that is easily readable. The CWMP is divided into the following sections: 1.0 Introduction; 2.0 Background; 3.0 Planning Area Description; 4.0 Population, Water Use, and Projections; 5.0 Available Water Supply; 6.0 Current and Future Water Supply Needs in the Planning Area; 7.0 Management Strategies; 8.0 Implementation; 9.0 Ongoing Planning Processes of the Edwards Aquifer Authority; and 10.0 Performance Evaluation and Update. The CWMP will require an update if there are significant changes to the management or regulation of the aquifer. **Groundwater Management Plan** No additional action is necessary for this specific objective. **Groundwater Management Area Planning** In 2005, the Legislature passed HB 1763 that added some significant requirements to Section 36.108 (Joint Planning in Management Area) of the Texas Water Code. HB 1763 requires all groundwater conservation districts (districts) within a groundwater management area (GMA) to meet jointly and determine by September 1, 2010,

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			and every five years thereafter, the "… desired future conditions for relevant aquifers within the GMA." Desired future conditions are defined by the Texas Water Development Board (TWDB). Different "desired future conditions" may be established for each aquifer, subdivision of an aquifer, or geologic strata located in whole or in part within the boundaries of the GMA. The TWDB has divided the state into 16 GMAs. The Authority is mostly located within GMA 10. However, the Authority also is assigned to three additional GMAs (7, 9, and 13): • GMA 7 goes from Brackettville to Snyder and contains 17 districts; • GMA 9 goes from Blanco to Kerrville and contains 8 districts; and • GMA 13 goes from Zapata to Gonzales and contains 10 districts. <u>GMAs 7 and 13</u> GMA 7 has met several times since the fall of 2005 and is working on an Interlocal Agreement (IA) to guide the planning process. GMA 13 has been more active. They have approved an IA and are considering a scope of work to complete the desired future conditions. <u>GMA 9 Discussion</u> GMA 9 circulated a draft IA for the six member districts to approve and use as an instrument to guide and direct their planning effort. The IA that was discussed at a November 10, 2005 meeting of GMA 9 was not adopted and concerns have been expressed by some of the member districts about the document. Authority staff will continue working with GMA 9. The last GMA 9 meeting was held on February 15, 2006 at the Upper Guadalupe River Authority office in Kerrville. <u>GMA 10 Discussion</u> There are nine districts within GMA 10 (the Authority, Kinney County Groundwater Conservation District, Uvalde County Underground Water Conservation District, Medina County Groundwater Conservation District, Trinity Glen Rose Groundwater Conservation District, Guadalupe County Groundwater Conservation District, Hays Trinity Groundwater Conservation District, Plum Creek Conservation District, and the Barton Springs/Edwards Aquifer Conservation District). The Sierra Club has also become an active participant of GMA 10. GMA 10 has met twice. The Authority has been selected as the GMA administrator and the consensus was that GMA 10 will primarily focus on developing desired future conditions for the Edwards Aquifer. GMA 10 has opted to proceed slowly in the development of desired future conditions.
2.4	Research water management strategies by September 30, 2006. (This date is not required by the Act.)	1.27	**This activity is on-going.** **<u>Precipitation Enhancement Program (PEP)</u>** The Authority continued to conduct PEP for 2004 and 2005 and participated with the South Texas Weather Modification Association (STWMA) (Bandera, Bexar & Medina counties) and the Southwest Texas Rain Enhancement Association (SWTREA) (Uvalde County) in their cloud-seeding program. Estimated total enhanced rainfall benefit to Bandera, Bexar, Medina, and Uvalde counties for the 2004

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			PEP season was 350,716 acre-feet. The 2004 PEP benefit was a 228,198 acre-feet increase over the 2003 PEP benefit of 122,518 acre-feet. This increase can be attributed in part to more favorable weather patterns in 2004 relative to 2003. The total enhanced rainfall benefit for 2004 was estimated by Arquimedes Ruiz-Columbie, a contractor for SWTREA and STWMA. Estimated total enhanced rainfall benefit to Bandera, Bexar, Medina, and Uvalde counties for the 2005 PEP season was 183,100 acre-feet. The 2005 PEP benefit was 167,616 acre-feet less than the 2004 PEP benefit of 350,716 acre-feet. This decrease can be attributed to less favorable weather patterns in 2005 relative to 2004. The total enhanced rainfall benefit for 2005 was estimated by Arquimedes Ruiz-Columbie, a contractor for SWTREA and STWMA. **Quarry Analysis** Phase 2 of the quarry analysis was conducted by SAWS and they have provided two status reports. This activity is complete. **Brush Management** The Authority is currently involved in two cooperative funding agreements for brush management research. Both agreements are part of the Optimization Technical Studies (OTS) group of research initiatives being conducted by the Authority. One agreement is with the U.S. Department of Agriculture – Natural Resource Conservation Service. The second agreement is with Texas A&M University. The purpose of both research projects is to quantify the water quality and water quantity benefits of removing dense stands of Ashe Juniper from the Edwards Aquifer Recharge Zone. The 2006 budget contains funding to pay additional per acre costs to private landowners who complete brush management through the Natural Resources Conservation Service Environmental Quality Incentives program within the Edwards Aquifer recharge and contributing zones. This activity is on-going. **Saline Water Study** In January 2003, an Authority contractor completed a feasibility study for the treatment and use of saline water from the Edwards Aquifer saline zone. The next phase of the study was to investigate aquifer parameters from the saline zone to evaluate the availability of saline water. This project was to be developed with the Barton Springs/Edwards Aquifer Groundwater Conservation District (BSEAGCD) being the lead agency. However, BSEAGCD could not obtain funding to complete this portion of the study. This activity is on-going.
2.5	Implement Edwards Aquifer Authority Groundwater Conservation Program by March 1, 2006. (This date is not required by the Act.)	1.01; 1.08; 1.21; 1.23; 1.25; 1.26; 1.34	**Activity regarding this objective is on-going.** On December 16, 2003 the Edwards Aquifer Authority Board of Directors approved the Ch. 715, Comprehensive Water Management), subch. C, (Groundwater Conservation and Reuse Rules requiring irrigation IRP holders or IRP applicants submit individual groundwater conservation plans (GCPs) to the Authority by March 31, 2004 for municipal users, June 30, 2004 for industrial users, and September 30, 2004 for irrigation users that are not currently operating at the required 60% application efficiency. On February 10, 2004, the board of directors also approved the GCP that outlined Best Management Practices (BMPs) to be implemented

Strategic Plan Objective Number	Strategic Plan Objective Description	Statutory Authority (EAA Act Sections)	Update
			by permit holders based on their designated purpose of use and included the necessary forms. Immediately after the rules and GCP were adopted, Authority staff conducted six GCP workshops to assist users in completing the required GCP. Authority staff is reviewing municipal and industrial GCPs, agricultural irrigation assessment forms, and status reports. The agricultural irrigation assessment forms are used by Authority staff in order to determine irrigation efficiencies of irrigation permit holders. *See EDWARDS AQUIFER AUTHORITY RULES.*
2.6	Continue Agricultural Water Conservation Loan Program and conduct annual review for overall program effectiveness by June 30, 2003.	1.01; 1.08(a); 1.21; 1.23; 1.24; 1.25; 1.34	**This objective is complete.** The Authority approved 35 loans from January 1999 through December 2002, for a total of $2,648,270.05. However, the Authority discontinued the program in March 2003 because of lack of interest by irrigators. Thirteen of the 35 loans approved have been re-paid to the Authority in full. The outstanding balances for the remaining 22 loans total $441,302. All loans are scheduled to be repaid by 2010.
2.7	Establish a recharge enhancement program by January 31, 2003. (This date is not required by the Act.)	1.08; 1.11(f); 1.44; 1.45	**This objective is complete.** The Authority has not adopted an order authorizing the General Manager to process recharge project applications. The Authority received the final Guidance Manual for evaluating recharge project applications in December 2005. The Authority continues to maintain four recharge dams that contribute an average of 4,900 acre-feet of water to the aquifer per year.
2.8	Establish Demand Management/Critical Period Program by September 30, 2003. (This date is not required by the Act.)	1.25; 1.26	**This objective is complete and on-going.** The demand management/critical period management (DM/CPM) rules adopted on November 12, 2002 remain in effect without change. No stages of the DM/CPM were declared in 2004 or 2005. *See EDWARDS AQUIFER AUTHORITY RULES.*
2.9	Continue participation in the South Central Texas Regional Planning Group (Region L) activities.	1.08(a)	**This objective is on-going.** The Authority continues to maintain an active role on the Region L planning group, and in the development of a regional water plan. Development on a second Region L water plan began in 2001 and was due to the TWDB by January 5, 2006. Unfortunately, several issues developed late in the planning cycle that were not resolved and the plan was adopted late on January 19, 2006. The TWDB is not able to accept it, and the impact of the situation to entities that need to develop new water supplies that are identified in the plan are not known at this time. The proposed 2006 Region L plan (the second regional water plan) contains water supply options to meet the needs of a projected 416,000 acre-feet deficit by 2060. The projected population for 2060 is approximately 4.3 million, which is less than was projected for 2050 in the previous plan. Total expected costs for the recommended water management strategies (in 2002 dollars) are $5.034 billion.
3.1	Continue basic data collection, and conduct annual program evaluation	1.27	**This objective is on-going.** The Authority has an extensive data collection program and collects water quality, water level, and precipitation data from across the

Strategic Plan Objective Number	Strategic Plan Objective Description	Statutory Authority (EAA Act Sections)	Update
	to determine overall program effectiveness.		region. Water quality samples are collected each year from approximately 80 wells, eight springs, and eight surface water sites and are analyzed for a wide range of parameters including field parameters, cations and anions, nutrients, VOCs, herbicides and pesticides, heavy metals, and bacterial indicators. Water level data are collected from approximately 40 wells using continuous water level recorders, 17 wells on a monthly basis, and approximately 200 wells two times per year during synoptic measurement events. In addition, the Authority conducts a focused synoptic study in selected areas. The Authority also operates 59 continuous recording rain gauges. Results of the data collection efforts are included in the Authority's annual hydrologic data report.
3.2	Continue Optimization Technical Studies (OTS) schedule, and conduct annual program evaluation to determine program effectiveness. (First annual evaluation to be conducted by July 31, 2002. See OTS table – Appendix Four of the strategic plan.)	1.27	**This objective is complete.** The Authority has completed twenty OTS-related projects and has six on-going OTS-related projects. The completed and on-going projects include biologic assessments, modeling/flowpath studies, and recharge enhancement studies. The board receives monthly written status reports on the OTS projects. The Authority is re-evaluating the future of its research program.
4.1	Establish Edwards Aquifer Water Quality Program by December 31, 2002. (This date is not required by the Act.)	1.03(17) and (21); 1.08(a); 1.11(d)(8), (10), and (11); 1.14; 1.15; 1.35; 1.44	**This objective is complete and on-going.** On October 8, 2002, the board adopted final rules prohibiting new above ground and underground storage tanks on the recharge zone. On August 11, 2003, the board of directors adopted final rules for well construction, operation and maintenance; abandoned wells and well closure. The Authority has implemented water quality protection programs pursuant to these rules. On March 14, 2006, the board directed staff to prepare draft rules regarding hazardous material storage and impervious cover on the recharge zone. Authority staff has initiated the rules drafting process. *See EDWARDS AQUIFER AUTHORITY RULES.*
4.2	Establish petroleum storage tank (PST) regulation program by September 30, 2002. (This date is not required by the Act.)	1.03(17) and (21); 1.08; 1.35	**This objective is complete and on-going.** In October 2002, the board adopted final rules. Authority staff has inventoried storage tank facilities on the recharge zone and has initiated an inspection program for these facilities. *See EDWARDS AQUIFER AUTHORITY RULES.*
4.3	Establish Edwards Aquifer Authority Recharge Zone Protection Program by March 31, 2003. (This date is not required by the Act.)	1.03(17) and (21); 1.08(a), 1.35	**This objective is on-going.** *See comments for Strategic Plan Objectives 1.7, 4.1 and 4.2.*
4.4	Establish wellhead protection and well spacing program by December 31, 2003. (This date is not required by the Act.)	1.03(17) and (21); 1.11(d)(8), (10) and (11); 1.14; 1.15; 1.35; 1.44	**This objective is complete.** In October 2003, Authority staff provided a memorandum to the board to recommend the Authority not promulgate wellhead protection and well spacing rules. Authority staff believes these issues are sufficiently addressed in existing rules. Authority staff does not expect any further action regarding these two issues.
4.5	Formalize hazardous materials spill response program by December 31,	1.03(17) and (21); 108(a);	**The Authority is still working with Texas Commission on Environmental Quality (TCEQ) to complete this objective.** Components of this program are in place, such as emergency

Strategic Plan Objective Number	Strategic Plan Objective Description	Statutory Authority (EAA Act Sections)	Update
	2002. (This date is not required by the Act.)	1.35	response materials, staff training, and emergency call lists. Authority staff and TCEQ staff work closely on any spill incidents; however, a formal written agreement between the Authority and the TCEQ to share information and material is not in place.
4.6	Continue to acquire land over the recharge zone to protect water quality.	1.11(d)(8)	**Work on this objective is on-going.** Since 1993, the Authority has acquired eight conservation easements to preserve a total of approximately 9,400 acres of recharge zone and contributing zone property. The most recent conservation easement acquired by the Authority was approved by the board in April 2005. The easement acquired in 2005 is on a 617 acre-tract consisting of 218 acres of recharge zone property and 399 acres of contributing zone property. The Authority's 2006 budget does not contain funding for land acquisition because the City of San Antonio (City) now has a tax initiative-funded Edwards Aquifer preservation program that is intended to preserve property over the recharge zone. Authority staff serves on two advisory groups for the City regarding the City's recharge zone preservation land acquisitions. The City can acquire property throughout the Authority's jurisdictional area.
5.1	Adopt all rules required by the Edwards Aquifer Authority Act by June 30, 2004. (This not required by the Act.) Please see the strategic plan Rulemaking Schedule.	1.11(a)	**The Authority has adopted all required rules; however, amendments and new circumstances may require new rules to implement.** In 2004, the board adopted a number of rules on a variety of topics: • Minor amendments to the Authority's aquifer management fee rules; • Miscellaneous amendments to Chapters 702, 707, 709, 711 and 715 for clean-up purposes; and • New rules regarding enforcement. In 2005, the board adopted final rules regarding: • Recharge zone protection (amendments to Ch. 713, subchs. A, C, D & G). • Well construction, operation and maintenance; and abandoned wells; well closures; and exempt wells (Ch. 711 - owner's disclosure). Thus far in 2006, the board has adopted final rules regarding exempt wells (Ch. 711 - large tract exemption). *See EDWARDS AQUIFER AUTHORITY RULES.*
5.2	Continue enforcement program, and conduct annual program evaluation to determine overall program effectiveness.	1.11(b), (c), (d)(3)(10); 1.36; 1.37; 1.38; 1.40	**Work on this objective is on-going.** In March 2005, the Authority re-structured the organization to better orient the directions of the new teams into more policy/scientific/functional roles, and to create a more appropriate management structure within the growing organization. One result of this re-structure was the formation of a Compliance Team, which consolidated staff from various parts of the organization that were already performing compliance and enforcement actions. With greater resources to assist other programs in achieving regulatory compliance with Authority rules, Compliance Team's goals are to assist Authority permit holders, Edwards Aquifer well owners, and regional stakeholders to understand and comply with Authority rules and to effectively and efficiently take enforcement actions when

<table>
<tr><th>Strategic Plan Objective Number</th><th>Strategic Plan Objective Description</th><th>Statutory Authority (EAA Act Sections)</th><th>Update</th></tr>
<tr><td></td><td></td><td></td><td>rules violations require actions to be considered by the Board. As a result of this re-structure, the new Compliance Team was effective in 2005 in significantly increasing the level of understanding and compliance with reporting requirements and significantly decreased the number of non-reporting enforcement actions. In addition, the Compliance Team brought all pending enforcement actions current. As the Compliance Team moves into 2006, it has established a formal operating process that coordinates the work of staff and closely integrates its actions with the Edwards Aquifer Groundwater Information System (EAGIS) database for efficient tracking and execution of compliance/enforcement items. The Compliance Team also developed a guidance document, Compromise and Settlement Guidelines of the Edwards Aquifer Authority, to provide staff a consistent approach for enforcement items to the Board of Directors.

Below is a summary of the financial penalties associated with compliance enforcement for 2004 through March 2006:

<table>
<tr><th>Year</th><th>No. of Board Actions</th><th>Total Penalties Assessed</th><th>Total Penalties Collected</th></tr>
<tr><td>2006</td><td>14</td><td>$14,174.00</td><td>$1,637.30</td></tr>
<tr><td>2005</td><td>78</td><td>$65,993.70</td><td>$63,893.70</td></tr>
<tr><td>2004</td><td>82</td><td>$183,915.65</td><td>$183,715.65</td></tr>
</table>
</td></tr>
<tr><td>6.1</td><td>Increase overall public awareness of the Authority by December 31, 2004. (This date is not required by the Act.)</td><td>1.08(a); 1.11</td><td>This objective is on-going.
The Authority has identified important conferences and worked to support these conferences as sponsors as well as having served on organizing and steering committees. Over the last three years, the Authority has sponsored the National Groundwater Association's Groundwater Summit in 2005 and 2006, the Witte Museum Water Conference and "World of Water" Exhibit, the ASCE Sinkholes and the Engineering Impacts of Karst Conference. The Authority has also been the co-host of the Teacher's Water Workshop held at Our Lady of the Lake University each summer.

Community Outreach/Partnerships: The Authority has participated in local and regional community events as well as national conferences, and has worked to support these events through sponsorships and participation on organizing and steering committees. In the spring of 2004, 2005, and 2006 the Authority participated in several local and regional community events. The Authority sponsored the National Ground Water Association's 2005 and 2006 Groundwater Summit, the Edwards Aquifer Conference held at the Witte Museum, the 2005 ASCE Sinkholes and the Engineering Impacts of Karst Conference, and the 2005 Uvalde County Land Stewardship and Water Resources Conference. In 2004-2005, the Authority partnered with the Witte Museum in the creation of the "World of Water Exhibit" and the Edwards Aquifer simulation theater, and with Texas Parks and Wildlife in the creation of the Government Canyon State Natural Area Edwards Aquifer Interpretive Exhibit. In 2005, the Authority partnered with the San Antonio Children's Museum to create a new Edwards Aquifer exhibit scheduled to open to the public in late summer 2006. The Authority also remains a co-sponsor of the Annual Summer Water Conference for Educators held at Our Lady of the Lake University and the American Ground Water Trust's Ground Water Institute for Teachers. In addition, each year the Authority's Speakers Bureau</td></tr>
</table>

Strategic Plan Objective Number	Strategic Plan Objective Description	Statutory Authority (EAA Act Sections)	Update
			offers presentations to civic clubs, schools, businesses, community organizations, and other groups interested in learning about Edwards Aquifer.
6.2	Continue to support implementation of all Authority programs, and conduct annual evaluation of overall program effectiveness. (First annual evaluation to occur by April 30, 2003.)	1.08(a); 1.11	**This objective is on-going.** The Public Affairs Team continues to support the Authority's programs by communicating and defining the Authority mission to stakeholders throughout the region. This includes communication campaigns, media relations, printed materials and community outreach initiatives. In addition, the internet has been integrated in these efforts through the Authority web site. For example, daily aquifer level readings are now published on-line daily as resource to media and the general public. The San Antonio River Authority has been running the daily J-17 level on its electronic sign at I-35 and McCullough since March 2006. In 2004, the Authority issued 20 press releases/advisories covering monthly board meetings and other Authority projects and activities. The Public Affairs Team produced the General Manager's Report, the 2003 Annual Report, the 2004 Board Brochure, the Odie Gilliam award direct mail piece, a water quality protection bookmark, an updated student regional map, and two English-Spanish pieces, the Threatened and Endangered Species of the Edwards Aquifer Region and the public information Edwards Aquifer regional map. In addition, Authority staff made over 100 public appearances regarding the Edwards Aquifer, the Authority, and the Authority's programs. Public information and water conservation materials were distributed to an estimated 10,160 constituents at the seven community-wide events in which the Authority participated. In addition, staff members made 23 technical presentations to adult audiences reaching approximately 3,300 professionals and community members. The Authority also sponsored 25 various presentations, including workshops, meetings, and hearings regarding Authority-related programs, rules, and/or forms. Approximately 400 visitors participated in these events. In 2005, the Authority issued 23 press releases covering monthly board meetings and other Authority projects and activities. The Public Affairs team produced the 2004 Annual Report, the Odie Gilliam award direct mail piece, the Initial Regular Permit Holder Reporting Guide, the Demand Management/Critical Period Management Program poster, and the 2006 Edwards Aquifer Authority calendar. In addition, Authority staff made over 125 public appearances regarding the Edwards Aquifer, the Authority, and the Authority's programs. Public information and water conservation materials were distributed to an estimated 33,000 constituents at the eleven community-wide events in which the Authority participated. Staff members made over 30 technical presentations to adult audiences reaching approximately 2,000 professionals and community members. In addition, the Authority was featured on two morning television programs. The combined attendance for the three conferences and two associated field trips was over 700. The Authority partnered with the Witte Museum in a collaborative effort to fund and create the *World of Water* exhibit.
6.3	Increase public education on management and protection of the Edwards Aquifer by December 31, 2005. (This date is not	1.08(a) and 1.11	**This objective is on-going.** In 2004, Authority staff presented information to students and teachers across the region. Staff members made 34 student presentations reaching approximately 6,000 students ranging in age from kindergarten through graduate school and participated in nine

Strategic Plan Objective Number	Strategic Plan Objective Description	Statutory Authority (EAA Act Sections)	Update
	required by the Act.)		teacher staff-development events reaching approximately 1,370 teachers region wide. Staff also coordinated summer and fall teacher workshops. In 2004, staff continued to implement the WaterWise Program throughout the region and reached 12,292 students. The Authority also conducted its annual book cover contest. The winning art work was printed on 350,000 book covers distributed to schools throughout the region. Also in 2004, Authority education staff continued to update the Authority's reference and resource library collection by purchasing news books, journals, and other materials published regarding the Edwards Aquifer. The distribution of the existing three Authority videos regarding the Edwards Aquifer continued.
6.4	Continue Authority customer service program, and conduct annual evaluation of overall program effectiveness. (First annual evaluation to occur by May 31, 2003.)	1.08(a); 1.11	**This objective is on-going.** In 2004, these functions were assumed by other existing positions within the Authority.
6.5	Conduct biennial Edwards Aquifer symposium in October of even-numbered years starting in 2004. (This date is not required by the Act.)	1.08(a); 1.11	**This objective is on-going.** The Authority was a co-sponsor of the ASCE conference, the "Tenth Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst." The Authority participated in the conference by providing general assistance to organize the event, as well as chairing a special session and conducting a field trip on the Edwards Aquifer.
7.1	Adopt new single-member district lines by March 31, 2002, if necessary. (This date is not required by the Act.)	1.094	**This objective is on-going.** On April 13, 2004, the board adopted a resolution to modify the director single-member district lines in Atascosa County, Comal County, Guadalupe County and Hays County (District No. 11 only), identify current director single-member district lines in Bexar County and Hays County (District No. 10 only), identify or re-state the director single-member district lines for all Authority districts, authorize the General Manager to continue to identify current single-member district lines, without geographic modification, as county voting precincts continue to change over time, and authorize the General Manager to submit any necessary modifications to single-member district lines to the U.S. Department of Justice. On May 5, 2004, Authority staff submitted these district line modifications to the U.S. Department of Justice. Corrections to the original submission were submitted on June 15 and 25, 2004. Staff received pre-clearance from the Department of Justice on August 19, 2004. On July 13, 2004, the board of directors called for an election to be held on Tuesday, November 2, 2004, to elect seven directors to serve as voting members of the board. Applications for a place on the ballot were accepted by the Authority through September 3, 2004. On September 21, 2004, the board declared five unopposed candidates elected to office pursuant to Section 2.051 *et seq.* of the Texas Election Code. An election was duly held for one director from each of the remaining two single-member districts, located in Bexar and Uvalde counties, on November 2, 2004. On April 11, 2006, the board voted to modify the director single-member district lines in Medina County, Uvalde County, and Districts 1, 3, 4, and 5 in Bexar County, identify or restate the

Strategic Plan Objective Number	Strategic Plan Objective Description	Statutory Authority (EAA Act Sections)	Update
			director single-member district lines for all Authority districts, authorize the use of new voting equipment purchased by counties in Authority elections, and authorize the General Manager to submit these modifications to single-member district lines, and changes to voting systems in all counties within the Authority's jurisdiction, to the U.S. Department of Justice for pre-clearance. On April 28, 2006, Authority staff submitted these modifications to the Department of Justice.
7.2	Conduct biennial director elections in November of even-numbered years.	1.09	**This objective is on-going.** The Authority conducted elections in November 2004 and is preparing for another election in November 2006.
7.3	Continue to provide legal support to all Authority programs as needed.	1.08(a); 1.11	**This objective is on-going.** The Authority provides ample resources for legal support of Authority programs and rules as necessary.
7.4	Continue to prepare for legislative sessions and monitor related activities in non-session years.	3.01	**This objective is on-going.** In addition to maintaining regular communications with federal and state elected officials, the General Manager also works to provide these elected individuals with an understanding of Authority issues, and provide them with additional information. During the 2005 session of the Texas Legislature, Authority staff and designated representatives distributed general and targeted information regarding the Edwards Aquifer and the Authority.
7.5	Fund and provide information to consultant preparing the SCTWAC report on the effectiveness of the Edwards Aquifer Authority by October 31 of each even-numbered year.	1.10; 1.29(i)	**This objective is on-going.** The Authority spent $43,000 with R.W. Beck for the 2004 SCTWAC Edwards Aquifer Authority Assessment Report. For 2006, SCTWAC has indicated that one of the members will compile the report and use funding for technical analysis and report printing.
7.6	Conduct competitive procurement process and manage Authority contracts.	1.08(a); 1.11(e)	**This objective is on-going.** The Authority continues to conduct its procurement program according to procedures consistent with state and local government standards. For all purchases of goods or services valued at more than $25,000, the Authority conducts a competitive process that is open to all interested vendors. Purchases of goods valued between $3,000 and $25,000, the Authority conducts a less formal process requiring a minimum of three bids from interested vendors. Professional services valued at less than $25,000 require a letter agreement authorized by the General Manager. Purchases of goods less than $3,000 do not require staff to obtain bids. In all instances, the Authority encourages historically underutilized minority-owned and woman-owned businesses to compete for the Authority's business. The Act states: "The Authority shall make a good faith effort to award to minority-owned and women-owned businesses contracts issued under the powers and duties granted under this section in the amount of 20 percent of the total amount of those contracts." The Authority Bylaws build on the requirement included in the Act, by stating: "The Authority shall make a good faith effort to award contracts to historically underutilized businesses in the amount of 30 percent of the total amount of those contracts."

Strategic Plan Objective Number	Strategic Plan Objective Description	Statutory Authority (EAA Act Sections)	Update
			In 2004, the Authority awarded 680 contracts for $5.4 million. Of these contracts, 118 contracts, totaling about $642,000 or 12%, were awarded to historically underutilized businesses. In 2005, the Authority awarded 1,306 contracts for $4.2 million. Of these contracts, 180 contracts, totaling about $741,000 or 18%, were awarded to historically underutilized businesses.
7.7	Prepare for review under Chapter 325, Government Code (Texas Sunset Act). Review to be conducted as if board scheduled to be abolished September 1, 2005.	1.12	**This objective is on-going.** No longer applicable. On June 1, 2003, the Texas Legislature passed House Bill No. 2455 that, among other things, repealed Sections 1.12 (a) – (c) of the Edwards Aquifer Authority Act that made the Authority's board of directors subject to Sunset Commission Review.
7.8	Submit report to the governor, lieutenant governor, and speaker of the house of representatives on the extent to which other entities have cooperated with or assisted the Authority.	3.04	The Authority believes this requirement has been superseded by the Senate Bill No. 1 planning process.
7.9	Actively manage all Authority documents.	1.08(a); 1.11	**This objective is on-going.** The Authority actively manages all Authority documents to ensure the availability of files for requests from directors, staff, and the general public. The records retention schedule adopted by the board, defines the length of time Authority documents shall be maintained. This retention schedule complies with the requirements set forth by the Texas State Library. Staff works with the requestors to ensure an accurate and timely response to about 500 requests for public information each year. To facilitate the availability of documents, the Authority operates an imaging program that makes files available to staff electronically from their desktop computers. Staff also presents an annual report to the board on the status of the implementation of the Authority's records management plan and the accomplishments for the prior year. Authority staff provided the Annual Report on the Authority's Records Management Program in September 2005. Due to a key staff vacancy in the Records Team, this report was the first since 2003, and covered accomplishments from July 2003 through July 2005. Staff is currently conducting a thorough evaluation of the Authority's records retention schedule and plans to request the board's approval of this schedule in late 2006.
7.10	Ensure accurate financial accounting for Authority operations.	1.08(a); 1.11	**This objective is on-going.** The Authority's annual financial audits consistently reflect excellent management of the Authority's financial operations. In no instance have the Authority's auditors found there to be any material deficiencies in any aspect of the Authority's financial management. Recommendations from the auditors for improvements in the management of the Authority are generally addressed immediately. The annual audit for the fiscal year ending December 31, 2004, was accepted by the board on April 12, 2005.

Strategic Plan Objective Number	Strategic Plan Objective Description	Statutory Authority (EAA Act Sections)	Update
			The annual audit for the fiscal year ending December 31, 2005, was accepted by the board on April 11, 2006.
7.11	Adopt annual budget and aquifer management fees for the Authority by November of each year.	1.08(a); 1.29	**This objective is on-going.** The Authority consistently adopts its annual (calendar year) budget and the associated annual aquifer management fee rates by November each year. The budget adoption process begins with the General Manager's proposed budget presented to the board in September each year. This process involves deliberation on several occasions by the board and provides opportunity for the public to provide input into the process. On November 9, 2004, the board approved a budget of $13.6 million (total); $12.6 million (general fund) for 2005. The board approved aquifer management fees for 2005 of $38 per acre-foot for municipal and industrial users, and $2 per acre-foot for agricultural users. Public comment hearings were held in Bexar, Hays and Medina counties regarding the proposed budget and fees. All public comments were carefully considered as part of the final fee recommendation approved by the board. For 2005, the Authority collected $12.1 million in aquifer management fees from municipal, industrial and agricultural users. On November 8, 2005, the board approved a budget of $17.5 million (total); 10.6 million (general fund) for 2006. The board also approved aquifer management fees for 2006 of $37 per acre-foot for municipal and industrial users, and $2 per acre-foot for agricultural users. The 2006 budget also included a $5.2 million Aquifer Conservation Fund that will be used to rebate aquifer management fees to municipal and industrial users for water that was paid for but not used. This program will promote water conservation. Public comment hearings were held in Bexar, Comal and Uvalde counties regarding the proposed fees. All public comments were carefully considered as part of the final fee recommendation approved by the board.
7.12	Maintain positive work environment by retaining qualified trained professional employees, and by providing a comfortable work environment.	1.08(a); 1.11	**This objective is on-going.** The Authority continually strives to maintain a high-quality, positive staff. In 2004, the Authority conducted a salary survey comparing the salaries of employees in similar work environments performing similar duties. The board approved cost of living adjustments in 2003 (3%) and 2006 (5%) for all staff. In November 2005, the Authority board approved a five-year lease for a 9,000 office facility owned by the San Antonio River Authority. This lease, which begins June 1, 2006, will replace the lease of office space at the Anderson Building that expires May 31, 2006. The new leased space is less than five years old and less than ½ mile from the Authority's main building.
7.13	Maintain management information systems that enhance staff effectiveness.	1.08(a); 1.11	**This objective is on-going.** The Authority continually upgrades its management information systems to ensure staff has access to the latest developments in technology. In 2005, the Authority replaced director and key staff notebook computers. In 2005, the Authority implemented a new enterprise database (EAGIS) that was custom-designed for the Authority's rules and database to aide in processing all activities, including compliance matters, related to permits, well construction and well registration.
7.14	Maintain geographic	1.08(a);	**This objective is on-going.**

Strategic Plan Objective Number	Strategic Plan Objective Description	Statutory Authority (EAA Act Sections)	Update
	information systems that enhance staff effectiveness.	1.11	The Authority also maintains a geographic information system (GIS) that allows staff to query geographic references and develop maps. This system is also linked to the Authority's internet web site allowing the general public to access some geographic information without having to submit a formal request for information.
7.15	Annually assess organizational performance pursuant to adopted strategic plan and make adjustments to the plan as necessary by June 30 of each year.	1.08(a); 1.11	**This objective is on-going.** On October 11, 2005, the board approved a Strategic Plan for the period 2006-2010.

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Appendix C
Litigation Status Summary

[Prepared by Kemp Smith Law Firm]

The following is a summary of the primary completed and pending litigation in which the Authority has been actively involved as a party during the period of January 2004 through August 2006. The information was compiled by the EAA's attorneys with the Kemp Smith law firm.

Guadalupe-Blanco River Authority v. Royal Crest Homes, No. 89-0381 (22nd Dist. Ct., Hays, County, Tex. filed June 15, 1989)

This case involves claim by GBRA that the water in the Edwards Aquifer is an underground river and, therefore, "state water" held by the State of Texas in trust for the public benefit and subject to regulation by the TCEQ. GBRA seeks adjudication of all claims of the right to use the Edwards Aquifer. Despite being scheduled for hearings on dismissal for want of prosecution, the case remains pending.

In re: Jack Barrett White, Cause No. 98-51752 (W.D. Tex. Aug. 30, 2002)

This was a bankruptcy case wherein Jack White filed voluntary petition to protect himself from creditors. The bankruptcy judge approved a joint motion for approval of compromise and settlement to order Jack White to pay the Authority $5,600 out of the sale of certain real property to settle his past violations of the Act and EAA Rules. The case was dismissed due to Jack White's failure to pay Bexar County ad valorem tax debt as ordered. White never complied with the order to pay the Authority in accordance with the terms of the compromise and settlement agreement and so the Authority filed an enforcement lawsuit in state district court.

Edwards Aquifer Authority v. Jack White, Karen White and Jack White and Associates, Inc., No. 2003CI01580 (150th Dist. Ct., Bexar County, Tex. Dec. 5, 2005)

This case was an enforcement suit brought by the Authority. The Authority sought recovery of its well plugging costs and civil penalties based on Defendants' withdrawal of groundwater from the Aquifer without a permit and Defendants' commission of waste of Aquifer water and failure to plug an abandoned well. The Authority obtained temporary and permanent injunctive relief to ensure that Defendants complied with the requirements of the Act, the Authority's rules, the Texas Occupations Code and the Texas Department of Licensing and Regulations' rules and to allow the Authority to plug the well. The Authority plugged the Defendants' well. Ultimately, the parties entered into a settlement whereby the Defendants paid the Authority's plugging costs, plus penalties, attorney's fees and court costs and the case was dismissed.

Chemical Lime, Ltd. v. Edwards Aquifer Authority, et al., Cause No. C2002-0547-A (22nd Dist. Ct., Comal County, Tex. May 10, 2004)

This case was essentially an appeal from an Authority permit application denial. Plaintiff filed its Initial Regular Permit ("IRP") application on January 17, 1997 which was after the December 30, 1996 application deadline. The Authority denied the application because it was filed late. Chemical Lime appealed that decision to district court. After a jury trial in 2004, Chemical Lime obtained a declaratory judgment that: (1) the Authority rulemaking that established the December 30, 1996 deadline for filing an IRP application was incorrect and instead should have been February 16, 1997; (2) alternatively, that Plaintiff's late-filed IRP application "substantially complied" with the Authority's deadline, even though it was filed late; and (3) the EAA Act was not rendered unconstitutional as a result of the repeal of § 1.11(h) of the Act. In addition, the district court awarded Chemical Lime $481,948.72 in attorney's fees plus additional, unspecified sums conditioned on its success on appeal. The Authority subsequently appealed the decision.

Chemical Lime, Ltd. v. Edwards Aquifer Authority, et al., Cause No. C2004-115A (22nd Dist. Ct., Comal County, Tex., filed Jan. 22, 2004)

This is a constitutional takings claim that was originally part of the Chemical Lime case discussed above. By agreement, the Plaintiff severed the takings claim out of the case-in-chief and now asserts the takings claim in this suit. Plaintiff seeks declaratory judgment that the Authority's denial of Plaintiff's IRP application amounted to an unconstitutional taking of Plaintiff's groundwater rights without just compensation. The case has been dormant due to the pending *Chemical Lime* appeal.

Chemical Lime, Ltd. v. Edwards Aquifer Authority, No. C2004-259A (22nd Dist. Ct., Comal County, Tex. Aug. 31, 2005)

Plaintiff sought declaratory judgment that the unlawful actions of the Authority violated the takings provision of TEX. CONST. art. I, § 17 and the Property Rights Act. Case dismissed for want of prosecution. This action duplicated Cause No. C2004-115A (above).

Edwards Aquifer Authority v. Chemical Lime, Ltd., --S.W.3d --, 2006 WL 1502285 (Tex. App.—Austin 2006, motion for r'hrg pending) (*prior opinion in* -- S.W.3d --, 2006 WL 305180 *withdrawn*)

This constitutes the Authority's appeal of the trial court's decision in the *Chemical Lime* case mentioned above. The Austin Court of Appeals withdrew an opinion issued on February 10, 2006, which had reversed the judgment of the trial court and rendered judgment in favor of the Authority, and issued a new opinion affirming the judgment of the trial court finding that the December 30, 1996 deadline was invalid as the Act did not become effective until February 10, 1997, the date on which the Supreme Court's mandate to the trial court in the *Barshop* case was issued. The Court also affirmed the lower court's award of attorney's fees to Chemical Lime. The Authority's motion for rehearing is pending before the court. In addition, the Authority may file a petition with the Texas Supreme Court asking that court to review the decision of the Court of Appeals in this case. [Note: on September 14, 2006, the Court of Appeals denied the motion for rehearing and issued a new opinion which affirmed the district court's judgment invalidating the Authority's filing deadline, declaring Chemical Lime's historical use declaration to be timely filed, and awarding attorney's fees.]

Day and McDaniel v. Edwards Aquifer Authority, 2004 WL 1118721 (W.D. Tex. 2004)

Mr. Day and Mr. McDaniel had applied to the Authority for an IRP for 700 acre-feet. After a contested hearing, the Authority issued them a permit for only 14 acre-feet. Day and McDaniel appealed the Authority's ruling to federal district court. The issues raised on appeal included, among others, whether: (1) the Authority's action constituted a "takings" of applicant's groundwater rights; (2) the Edwards Aquifer Authority Act ("EAA Act") was unconstitutional as applied; and (3) the Authority's permit processing procedures violated due process. The Authority sought dismissal of the appeal pursuant to the *Burford* and *Pullman* abstention doctrines, failure to name indispensable parties, and on the grounds that at least some of the Plaintiffs' claims were not yet ripe for adjudication. In March 2004, the Court granted the Authority's motion and dismissed the case, holding that the case should more appropriately be tried in state court.

Burrell Day and Joel McDaniel v. Edwards Aquifer Authority, Cause No. 04-04-0294-CVA (218th Dist. Ct., Atascosa County, Tex. filed Apr. 23, 2004).

In response to their dismissal from federal court, Mr. Day and Mr. McDaniel filed this similar suit in state court. The claims made by the Plaintiffs are numerous and include: (1) whether the applicants proved "historic use" of Aquifer water, or merely use of state surface water; (2) whether the Authority committed an unconstitutional taking of Plaintiffs' groundwater rights by granting their application at the reduced amount; (3) whether the EAA Act violates substantive due process by requiring proof of historic use; (4) whether the Authority violated substantive due process by applying an elevated "clear and convincing" standard of proof; (5) whether the procedures governing SOAH hearings violate the open courts provision; (6) whether the laws governing *ex parte* communications in SOAH hearings

violate the equal protection or due process clauses; (7) whether various sections of the Water Code violate due process; and (8) whether the Authority's procedural rules violate due process. The Plaintiffs requested damages in the amount of $4,587,000.00 as compensation for their allegedly "taken" water rights.

The court has issued rulings in the case as follows: (1) reversed the Authority and found the Plaintiffs irrigated with Aquifer water; (2) dismissed the Plaintiffs' takings claim and request for monetary damages; (3) dismissed claim that applicants were denied due process by having to prove historical use; (4) dismissed claim that Plaintiffs were denied due process by having to meet "clear and convincing" burden of proof; (5) dismissed claim that SOAH hearings violate open courts provision; (6) dismissed claim that SOAH hearings violate the equal protection or due process clauses; (7) dismissed claim that sections of Water Code violate due process; and (8) dismissed claim that Authority's procedural rules violate due process. The court has also ruled that (1) the Plaintiffs are entitled to a jury trial; and (2) the case should be governed by the "substantial evidence *de novo*" standard of appeal. The Authority filed a mandamus petition to challenge these last two findings. Trial of the case is pending the outcome of the mandamus action.

In re Edwards Aquifer Authority, No. 04-06-00254-CV (4th Court of Appeals, filed Apr. 19, 2006)

This is the mandamus action with respect to: (1) whether the trial court improperly ordered a jury trial in the administrative appeal of final action on Day and McDaniel's IRP application; and (2) whether the trial court improperly intends to apply the "substantial evidence de novo" standard of review in this administrative appeal. The action remains pending.

In the Matter of the Request of the South Central Texas Water Advisory Committee for the Texas Commission on Environmental Quality to Review the Final Action of the Board of Directors of the Edwards Aquifer Authority Taken on December 16, 2003, to Adopt Resolution and Order No. 12-03-478 relative to Certain Rulemaking (Texas Commission on Environmental Quality, State of Texas, filed June 3, 2004)

On January 11, 2006, the TCEQ issued its order in this matter. This is a proceeding brought under Section 1.10(f) of the EAA Act in which the South Central Texas Water Advisory Committee ("SCTWAC") seeks to overturn certain rulemaking of the Authority creating a system of "uninterruptible" and "interruptible" withdrawal rights packaged within its IRPs. (These rights are often referred to as the "junior/senior" permit system.) This system had been adopted by the Authority in 2003 in order to reconcile conflicting sections of the EAA Act which create a "cap" of 450,000 AF/yr for aggregate IRP withdrawal amounts (section 1.14(b)), and the duty to issue IRPs in certain specified "minimums" (section 1.16(e)) which in their aggregate exceed the cap. TCEQ determined the "junior/senior" system was "prejudicial" to downstream surface water rights holders on the Guadalupe River and recommended that the Authority find the rulemaking to be "contrary" to an action of TCEQ and repeal the rulemaking. Section 1.10(f) of the EAA Act provides that the TCEQ recommendation is advisory. The Authority has not yet taken any action in response to TCEQ's recommendation.

Elm Creek Owners Association v. Edwards Aquifer Authority, No. 2004-CI-10234 (408th Dist. Ct., Bexar County, Tex. May 24, 2006)

In this case, Elm Creek appealed the final order of the Authority denying its application for an IRP. Elm Creek claims the Authority's deadline of December 30, 1996 for the filing of IRP applications is incorrect. Also, Elm Creek asserts that its predecessor in interest filed a Declaration of Historic Use with the Texas Water Commission and with a United States District Court on March 1, 1994 (the original deadline stated in the EAA Act) and requests a declaration that this filing was in substantial compliance with the EAA Act. Elm Creek also filed an IRP application on Nov. 16, 1998. Thus, Elm Creek claims to have filed both early and late. Additionally, Elm Creek claims an inverse condemnation – *i.e.*, that the Authority's denial is a taking of property or application to public use without adequate compensation in violation of the Texas Constitution. Pursuant to a settlement agreement reached by the parties whereby the Authority agreed not to seek its attorney's fees in exchange for a dismissal of all

related claims by the plaintiff, and the subsequent filing of a joint motion for dismissal, the trial court dismissed the lawsuit with prejudice.

Peavy Ranch v. Edwards Aquifer Authority, No. 04-09-17105-CV (38th Dist. Ct., Medina County, Tex. May 19, 2005)

In this case, Peavy Ranch appealed the final order of the Authority denying its application for an IRP. The Authority did not receive an IRP application from Peavy Ranch until January 2, 1998, long after the December 30, 1996 filing deadline. Peavy Ranch argued that its owners lived in Louisiana and were unaware of the deadline. The Authority denied the application based on the late filing. Peavy Ranch asserted three main claims: (1) due process required the Authority to provide Peavy Ranch with personal notice of the application deadline; (2) the permit denial constitutes a taking of private property for public use without adequate compensation; and (3) its filing, although late, "constitutes substantial compliance" with the deadline. This trial court ruled against the Authority in May 2005 by remanding the Peavy Ranch application and ordering the Authority to consider the application on its merits. The Plaintiff's claims for declaratory relief, inverse condemnation, and attorney's fees were non-suited without prejudice to refilling.

Edwards Aquifer Authority v. Peavy Ranch, -- S.W.3d --, 2006 WL 397959 (Tex. App.—San Antonio 2006, no pet. h.)

This constitutes the Authority's appeal of the trial court's decision in the *Peavy Ranch* case mentioned above. The Authority appealed the case to the Fourth Court of Appeals in San Antonio. The court held that Peavy Ranch was charged with knowledge of the initial March 1, 1994 deadline through the enactment and publication of the EAA Act. Additionally, the subsequent extension of that deadline could only work to the benefit of Peavy Ranch. Accordingly, the court found that Peavy Ranch was not entitled to individualized notice of the December 30, 1996 deadline to file its IRP applications. The court reversed and remanded the case in favor of the Authority. Peavy Ranch and the Authority entered into a settlement agreement whereby in exchange for not seeking its attorney's fees, Peavy Ranch would not file a motion for rehearing or a petition for review with the Texas Supreme Court.

Edwards Aquifer Authority v. Milberger Landscaping, Inc., No. 2004-CI-17559 (37th Dist. Ct., Bexar County, Tex. pet. amended June 23, 2005)

This is an enforcement suit brought by the Authority. The Authority seeks injunctive relief and civil penalties based on Defendant's failure to file annual groundwater use reports, failure to file a groundwater conservation plan, failure to file demand management/critical period management quarterly withdrawal schedules, and failure to pay aquifer management fees. The case remains pending.

Edwards Aquifer Authority v. Mardoche Abdelhak and Zalman Resources, Inc., No. 2005-CI-05608 (408th Dist. Ct., Bexar County, Tex., March 13, 2006)

This was an enforcement suit brought by the Authority. The Authority sought injunctive relief and civil penalties based on Defendants' failure to file annual groundwater use reports. The parties entered into a settlement whereby the Defendants filed the reports and paid penalties, attorney's fees and costs and the case was dismissed.

Edwards Aquifer Authority v. Lawns of Beauty, Inc. and Dennie E. Berry, Jr.., No. 2005-CI-05609 (37th Dist. Ct., Bexar County, Tex. filed Apr. 11, 2005)

This is an enforcement suit brought by the Authority. The Authority seeks injunctive relief and civil penalties based on Defendant's failure to pay aquifer management fees, failure to install a meter, and withdrawals of aquifer water without a permit. The case remains pending.

777 Operating Company v. Edwards Aquifer Authority, Cause No. 05-10-17660-CV (38th Dist. Ct., Medina County, Tex., filed Oct. 27, 2005)

777 Operating Company has appealed the final order of the Authority denying its IRP application. 777's well was completed on August 27, 1993, which is after the end of the "historical period" specified in the EAA Act. Thus, neither 777 nor its predecessors withdrew nor beneficially used Aquifer water from its well during the historical period, and 777 does not meet the EAA Act's definition of "historical user" eligible for an IRP. 777 bases its appeal on the following: (1) the denial of its IRP application constitutes a denial of due process under the federal and Texas constitutions; (2) the Authority's rule stating the end of the historical period (June 1, 1993) is void and unconstitutional, and that the Authority's rules should recognize all historical use prior to the EAA Act's effective date on June 28, 1996; and (3) an inverse condemnation claim, asserting that the denial constitutes a unconstitutional taking. Motions for partial summary judgment are due to be filed on September 14, 2006, and a hearing on those motions is set for October 12, 2006.

Edwards Aquifer Authority v. Boyd, No. 2005-CI-17842 (224th Dist. Ct., Bexar County, Tex. filed Nov. 8, 2005)

The Authority filed suit for civil penalties and injunctive relief for Defendants' unauthorized withdrawals from the Aquifer for the use of a subdivision beginning on January 1, 2002, and failure to install meter and pay aquifer management fees. The case remains pending.

Sanchez v. Brown and the Edwards Aquifer Authority, Cause No. 2005-CI-18445 (37th Dist. Ct., Bexar County, Tex., filed Nov. 21, 2005)

This case involves the transfer of land that was the place of use for a then-pending IRP application before the Authority. The Browns applied for an IRP and then sold some or all of the land related to the application to Sanchez. The Authority ultimately issued the Browns an IRP. Sanchez alleges that, due to the transfer of the land, the application should have been considered to have been transferred as well, and he should be considered the proper owner of the IRP. Brown seeks damages from the Browns for the value of the water rights. Brown does not seek damages from the Authority. Limited discovery has been conducted in the case and no trial date is set.

In the Matter of the Request by Rep. Hilderbran for an Opinion of the Attorney General on Certain Issues Concerning the "Junior/Senior" Rules of the Edwards Aquifer Authority (Texas Attorney General, filed Mar. 22, 2006)

Rep. Hilderbran has asked the Attorney General to opine on whether the Authority: (1) may reduce Initial Regular Permits below the statutory minimums; (2) may assign a "junior" status to the portion of rights below the statutory minimums; and (3) must compensate permittees for the junior portion of their permits. The Authority and other interested parties have submitted briefs in the matter. The Attorney General's opinion is pending.

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Appendix D

Summary of Comments at Public Comment Meetings

Meeting 1 – Victoria, August 20, 2006

Meeting 2 – San Marcos, August 21, 2006

1. At the Victoria meeting, Victoria Mayor Will Armstrong expressed strong support for the Advisory Committee's positions in attempting to achieve protection of the base flows to the Guadalupe River. He distributed a memo from Victoria Assistant City Manager Charles Windwehen and Utilities Director Lynn Short describing the long-range water supply planning of the City of Victoria, the securing of surface water rights in the Guadalupe River, and the construction of a new surface water treatment plant. The memo is attached.
2. Via email, Richard Fritz of Victoria commented favorably on the positions and activities of the Advisory Committee, and he commented on the relationships between the EAA, the San Antonio Water System, the Guadalupe-Blanco River Authority, and the Lower Colorado River Authority.
3. At the San Marcos meeting, Jack Fairchild and Dianne Wassenich of the San Marcos River Foundation commented favorably on the Advisory Committee's efforts to achieve effective management of the Aquifer and to protect springflow at the Comal and San Marcos Springs.

CITY OF VICTORIA Established 1824, Founded by Congress, Republic of Texas, 1839

Utilities Department, 700 Main Center, Suite 108
P.O. Box 1758, Victoria, Texas 77902-1758
(361) 485-3381, Fax (361) 485-3385

Lynn Short, Director

Date: September 13, 2006
To: Honorable Mayor Will Armstrong
Via: Charles Windwehen, Assistant City Manager
From: Lynn Short, Director of Streets & Utilities
RE: Recent History of the City of Victoria's Water Supply

Recently, you requested information regarding the history of the City of Victoria's water supply. To satisfy that request, I have assembled the following information for your review:

• Prior to June 2001, the City of Victoria relied solely on groundwater from the Gulf Coast Aquifer for its drinking water supply. This water was pumped from the aquifer using the City's fifteen water wells. These water wells were all approximately 1000 feet deep and supplied approximately 1500 gallons per minute each. This water was abundant, but it had several undesirable constituents in it, (such as iron, manganese, and hydrogen sulfide), that caused water quality complaints and that made it expensive to treat.

• In 1991, the City and the County of Victoria hired Camp, Dresser & McKee, Inc. to evaluate its water supply and to recommend any changes required to meet future demands. This study indicated that the City should pursue the development of an alternate water supply so that the increasing demand for water could be met for the future; to improve the quality of the water being served to the citizens and, thereby reduce complaints; and to reduce the potential for salt water intrusion and subsidence as had been experienced in other coastal communities. Because it ran through the City, this plan identified the Guadalupe River as the most advantageous alternate water supply to pursue. In addition to being a high quality, readily available source of water, the Guadalupe River was also very attractive because, even though it is subject to rapid changes in level depending on climatic conditions, unlike an underground aquifer, it is also very quickly renewable following a period of drought.

• To develop this alternate supply, the City of Victoria embarked on a five year mission to acquire a surface water permit from the State of Texas. The

combined cost of consultant and professional fees associated with this permit acquisition approached $650,000. Although the professional services required to obtain the permit were substantial, it is important to note that this permit, once acquired, would provide 'Run of the River" water that is essentially free to the City for perpetuity. There is no purchase price or lease fee associated with the use of the water. In other words, after acquiring a permit, the only cost to the City for using the run of the river water is a small annual fee for the City's portion of the South Texas Watermaster Program.

• In 1996, after successfully acquiring a 20,000 acre/feet per annum surface water permit for the Guadalupe River, the City took to the voters a $32M revenue bond proposal to fund a $36M Surface Water Supply Project. This project included the construction of an 18.5 million gallon per day surface water treatment plant, raw and river water pump stations, several large diameter pipelines, and a new 1 million gallon water tower. This bond issue was overwhelmingly approved by the voters.

• While in the design phase of the project, the Fordyce Company very generously donated approximately 640 acres of land to the City that included abandoned gravel quarries containing approximately 7000 – 10,000 acre/feet of water in them. These abandoned gravel quarries, that the City calls off-channel reservoirs, became the primary back-up supply to the City's 20,000 acre/feet surface water supply.

• In late 1998, construction of the surface water supply project began.

• In June of 2001, when the construction was completed, the City converted its primary water source from water wells to surface water from the Guadalupe River. Its primary backup supply became the water stored in its off-channel reservoirs.

• This conversion did satisfy the original goal of developing an alternate water supply to meet future demands, improving water quality, and reducing the potential for salt water intrusion and subsidence.

• Following the successful conversion to surface water, the City abandoned and plugged five of its fifteen water wells because of either very poor water quality or because their location, and the associated capital cost required to get that groundwater to a point where it could be used, prohibited their continued use. The remaining ten water wells were kept in operation as a second backup supply to the surface water supply and the off-channel reservoirs.

• In 1999, in order to mitigate the effects of a permit amendment that was filed by the Guadalupe Blanco River Authority, (GBRA), the City entered into an agreement with GBRA that requires GBRA to release additional water from Canyon Reservoir to be captured by the City of Victoria at its normal diversion point upon the City's call. The amount of water to be delivered by GBRA upon

the City's call, under this contract, amounts to a rolling annual average of 1260 acre/feet per year with no more than 3600 acre/feet in any given year.

• In 2005, the City purchased a 260 acre/foot Guadalupe River water right from the Lipscomb family to further improve its surface water supply. This right is used at the onset of drought conditions to reduce the amount of drawdown on the City's off-channel reservoirs.

• Also in 2005, the City successfully completed a plant re-rate project that increased the treatment capacity of its surface water plant from 18.5 million gallons per day to 25.2 million gallons per day.

The information above provides a brief history of some of the more important events that have occurred during the recent history of the development of the City of Victoria's water supply. It is my hope that this information will meet your needs and satisfactorily convey to you the importance of obtaining the City's surface water permit. In my opinion, the conversion to surface water was a great success for the City. It provided a high quality, readily available, inexpensive, and quickly renewable source of additional water for its citizens' future.