



**Barton Springs
Edwards Aquifer**
CONSERVATION DISTRICT

ANNUAL REPORT FOR FISCAL YEAR 2009

BOARD OF DIRECTORS (August 31, 2009)

Dr. Robert D. Larsen, President	Precinct 3	May 2003 - May 2012
Mary Stone, Vice President	Precinct 1	Feb 2008 - May 2012
Gary Franklin, Secretary	Precinct 2	May 2006 - May 2010
Jack Goodman	Precinct 4	May 1988 - May 2012
Craig Smith	Precinct 5	May 1998 - May 2010

DISTRICT STAFF

August 31, 2009

W.F. (Kirk) Holland	Chief Operating Officer and General Manager
Dana Christine Wilson	Administrative Programs Team Leader
Tammy Raymond	Administrative Assistant – Personnel
Shannon DeLong	Administrative Assistant – Accounting
Brian Smith	Senior Hydrogeologist, Aquifer Research Team Leader
Brian Hunt	Senior Hydrogeologist
Joseph Beery	Hydrogeologist
John Dupnik	Senior Environmental Permit Specialist Regulatory Compliance Team Leader
Robin Gary	Environmental Educator Community Outreach and Education Team Leader
Julie Jenkins	Environmental Educator
Guy Rials	Regulatory Compliance Technician
Nathanael Banda	Geospatial Systems Administrator

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1.0 BACKGROUND

The Barton Springs/Edwards Aquifer Conservation District's ("District") Bylaws require the District Board President or General Manager to report on the status of the District and its programs annually to the Board and to the Texas Commission on Environmental Quality (TCEQ). This document is the Annual Report for Fiscal Year 2009, covering the period from September 1, 2008 to August 31, 2009.

According to District Bylaw 4-6, this report shall include:

1. The status of the aquifer and the District's programs.
2. A financial report to include the report of the annual audit and the security of any District investments.
3. A review and evaluation of professional services rendered to the District.
4. A status report of any capital projects of the District.
5. The evaluation of the District's long-range plans pursuant to §36.107 (now §36.1071) of the Texas Water Code.
6. A self-evaluation of the District's compliance with the Valdez Principles.

This introductory section provides an overview of the District, and summarizes the mission and vision of the District. Other major sections of this report include a summary of the active programs in FY 2009, a recap of the other specific information required by statute, and a financial summary; the annual audit report conducted by an independent audit firm is included in its entirety as Appendix A.

1.1 General Information about the District

The District was created in 1987 by the 70th Texas Legislature, under Senate Bill 988. Its statutory authorities include both Chapter 52 (later revised to Chapter 36) of the Texas Water Code and its enabling legislation, now codified as Chapter 8802, Special District Local Laws Code. The District's legislative mandate is to conserve, protect, and enhance the groundwater resources of the Barton Springs segment of the Edwards Aquifer and other groundwater resources located within the District boundaries. The District has the power and authority to undertake various studies, assess fees on groundwater pumpage and transport, and to implement structural facilities and non-structural programs to achieve its statutory mandate. The District has rule-making authority to implement its policies and procedures and to help ensure the management of groundwater resources.

The District's jurisdictional area is bounded on the west approximately by the western edge of the Edwards formation outcrop, and on the north by the Colorado River, which is the regional groundwater discharge boundary. The eastern boundary is generally formed by the easterly service area limits of the Creedmoor-Maha Water Supply Corporation, Goforth Special Utility District, and Monarch Utilities, Inc. The District's southern boundary is generally along the "groundwater divide" that hydrologically separates the Barton Springs and the San Antonio segments of the Edwards Aquifer, generally along FM 150 west of Interstate 35. This area encompasses approximately 250 square miles in parts of four counties that are rapidly changing from rural to urban/suburban. A portion of the Barton Springs segment of the Edwards Aquifer

was designated a Sole Source Aquifer by the Environmental Protection Agency in 1997. It was estimated to be the primary source of drinking water for 45,000 people in a 1995 survey; the current estimate is about 60,000 people. Spring discharge from the Barton Springs segment of the Edwards Aquifer contributes to Lady Bird Lake and the Colorado River system, a surface-water resource heavily used for municipal supplies. Barton Springs provides significant recreational opportunities at Barton Springs Pool in Austin's Zilker Park, and is home to the federally listed endangered Barton Springs salamander and the candidate-for-listing Austin blind salamander. Some wells in the District also produce water from the Taylor, Glen Rose, and Trinity Formations, as well as various alluvial deposits along river and stream banks.

A five-member Board of Directors ("Board") governs the District. The Directors are elected in even-numbered years to staggered four-year terms from the five single-member precincts that comprise the District. In FY 2009, no directors were up for election.

The Board elects officers annually, and for the current period June 2009 through May 2010, the elected officers are Dr. Robert D. Larsen as President, Mary Stone as Vice President, and Gary Franklin as Secretary. As a local political subdivision of the State of Texas, all meetings of the Board are conducted in accordance with the Open Meetings Act, and the District's business is subject to the Texas Public Information Act.

The District is not a taxing authority. Its only sources of income are groundwater usage fees, administrative processing fees, and from time to time grants from various local, state, and federal programs.

1.2 District Mission and Vision Statements

The Board of Directors of the Barton Springs/Edwards Aquifer Conservation District has assessed and articulated not only the mission of the District but also the vision and overarching strategic purpose of the District today. These are some of the early outputs of a continuing strategic planning process that was initiated in late FY 2005, providing a consensus basis for near-term, mid-term, and long-term planning that is ongoing.

The mission of the District is largely mandated by and adapted from its enabling legislation and statutes:

"The Barton Springs/Edwards Aquifer Conservation District, as the responsible public agency and authority, is committed to conserving, protecting, recharging, and preventing waste of groundwater and to preserving all aquifers within the District."

The vision of the District was added in FY 2006 as a succinct statement of the ultimate, continuing goal of the District, describing the standard by which it will execute its mission:

"The Barton Springs/Edwards Aquifer Conservation District will excel in its operations and administration so that it is considered the model and standard for other groundwater districts."

A more action-oriented, overarching strategic purpose was also articulated:

"We will manage the District aquifers to optimize the sustainable uses of groundwater in satisfying community interests."

2.0 DISTRICT PROGRAM AREAS AND HIGHLIGHTS FOR 2009

The District continues its successful use of a matrix-type organizational structure, in which all staff members report for administrative supervisory purposes to the General Manager/Chief Operating Officer of the District, and standing and *ad hoc* teams execute the programs. This section of the report summarizes the operational teams that existed throughout FY 2009 and provides some highlights and notable achievements for each. Appendix B contains more information and details on the work undertaken by these teams in support of the various goals, objectives, and performance standards identified in the District Management Plan.

2.1 General Management

Mr. W.F. (Kirk) Holland, P.G., served as the District's General Manager for all of FY 2009. The GM is responsible for the day-to-day business of the District, and is an ad hoc member of all the other teams. The GM is the District's Chief Operating Officer, who:

- a) ensures the policies and direction of the Board of Directors are implemented effectively, appropriately, and efficiently;
- b) provides leadership, both inside and outside the District organization, in accomplishing the mission, vision, and goals of the District; and
- c) serves as an advocate for the staff with the Board and an advocate for the Board with the staff.

The key areas of functional responsibilities for the General Manager include staff management and development, programmatic planning and execution, stakeholder relationship development and cultivation, and financial administration of the District. Currently, the GM Team also oversees all activities associated with the Geospatial Systems Administrator staff position.

In FY 2009, some highlights for the GM Team included:

- Hiring a new Environmental Educator and Public Information Official to replace the Education and Community Outreach Team Leader, Jennee Galland, who relocated out of state;
- Participating actively in the joint groundwater planning processes of GMA 9 and GMA 10;
- Serving as the Secretary for the state-wide association of GCDs, the Texas Alliance of Groundwater Districts;
- Developing, championing, working with sponsors, and testifying on two bills on the District's legislative agenda, one for annexation of the part of southwestern Travis County that is not in a GCD but in the Hill Country PGMA, and the other for prohibiting direct discharges of treated domestic effluent to contributing zone streams; and following up with TCEQ stakeholders input meetings;
- Implementing and enhancing 3-D visualization technology capabilities for the District and applying it for general geological viewing; and
- Providing overall project management of the District Habitat Conservation Plan grant project.

2.2 Administrative Programs Team

Ms. Dana Christine Wilson serves as the Team Leader of the Administrative Programs area, with Ms. Tammy Raymond and Ms. Shannon DeLong as team members. Ms DeLong moved from half-time to three-quarter time at the end of FY 2009, including telecommuting one day per week.

The Administrative Programs Team is responsible for banking, accounting, timekeeping administration, payroll administration, records retention and management, facilities and vehicle fleet management, human resources administration, director compensation and reimbursement administration, and state/federal grant administration.

In FY 2009, some highlights for the Administrative Programs Team included:

- Disposing of an old field vehicle and purchasing a new multi-purpose vehicle;
- Maintaining the financial records to receive a clean financial audit (See Appendix A);
- Scanning electronically thousands of historical hard-copy records for archival purposes;
- Updating/remodeling the Boardroom reception area;
- Changing over from physical check deposits at the bank to a remote check deposit (RCD) system that utilizes a scanner attached to a desktop at the District office, so that bank deposits can be done remotely, from within the District offices; and
- Developing and implementing new accounting tracking system for recording and invoicing Drought Management Fees.

2.3 Aquifer Science Team

Dr. Brian Smith, P.G., serves as the Leader of the Aquifer Science Team, which is involved in various internal- and external-funded groundwater research and assessment programs. The Team also is supported by Senior Hydrogeologist Brian Hunt, P.G., and Hydrogeologist Joe Beery.

To protect and manage the groundwater resources of the District's aquifers, the District continued an active research program that is designed to better understand the hydrogeology and hydrodynamics of aquifers in the District.

In FY 2009, some highlights for the Aquifer Science Team included:

- Developing new data series reports, giving numerous technical talks with published abstracts, and publishing several technical papers;
- Developing monitor well standard operating procedures and refining the hydrologic database;
- Collaborating with the TWDB to assess the Edwards and Trinity Aquifer hydraulic connection and Trinity Aquifer yield the District collected water quality and isotope data, conducting aquifer tests from 13 zones in the District's multiport well, and collecting monthly water-level data for each zone;
- Collecting additional water-quality and isotope data from three wells and Barton Springs in a partnership with the TWDB;
- Collaborating with GBRA and USGS regarding synoptic well monitoring program to delineate better the Edwards groundwater flow regimes in the San Marcos-Kyle-Buda area;

- Determining and documenting when the District reached drought thresholds going into and emerging from Critical Stage drought, including refining the District's drought monitor blog;
- Participating with Hays-Trinity GCD and Blanco-Pedernales GCD staff and consultants in initiating the development of a hydrogeologic atlas of the Trinity Aquifer in Blanco, Travis, and Hays Counties;
- Partnering with the EAA and COA on a dye tracing program on the Blanco River watershed to help characterize flow and recharge characteristics;
- Collaborating with EAA, COA, and HTGCD to develop a synoptic potentiometric map of drought conditions for the Edwards and Trinity Aquifers;
- Developing a geologic database and initial regional 3-D visualization model of the Edwards and Trinity Aquifers in Central Texas;
- Participating with GMA-9 technical discussions and DFC language for draft MAG model runs;
- Continuing the upgrade of Antioch Cave BMP as part of the 319(h) grant from EPA and TCEQ; and
- Investigating, designing and promoting a saline-zone feasibility study and pursuing funding for projects to better understand the opportunities and issues associated with utilizing brackish groundwater as an alternative new water supply for the area.

2.4 Education and Community Outreach Team

Ms. Robin Havens Gary serves as the Team Leader of the Education and Community Outreach program area at the end of FY 2009, replacing Ms. Jennifer Galland who relocated out of state for personal reasons in the Spring of 2009. Ms. Gary and Ms. Julie Jenkins are the District's Environmental Educators and are the primary members of the Education and Community Outreach Team. Most other members of the staff support this team from time to time.

The District continues its active, multi-dimensional educational program that emphasizes awareness of the finite and fragile aspects of the groundwater resources in the District. The Critical Stage Drought that the District was in through nearly all of FY 2009 put a premium on the importance of outreach, providing both permittees and end-users necessary tools for water conservation and water demand reduction strategies that are the linchpin of drought management.

The Education and Community Outreach Team constantly seeks to maintain and create new partnerships with like-minded local entities to more efficiently and effectively carry out the District's mission. Through these partnerships, staff members augment their knowledge base and are able to make a contribution to efforts that reach larger and more diverse audiences. This year staff continued its partnerships with the Aquarena Center, Capital Area Master Naturalists (CAMN), City of Austin's Watershed Protection Development Review Department, City of Austin Water Quality Protection Lands, City of Austin's Water Conservation Department, City of Austin Water Utility, City of Sunset Valley, Edwards Aquifer Authority, Grow Green, Hill Country Foundation, Keep Austin Beautiful, Lady Bird Johnson Wildflower Center, LCRA, Oak Hill Association of Neighborhoods, Regional Water Quality Protection Plan, Save Barton Creek Association, San Antonio River Authority, San Antonio Water System; Splash! Exhibit, Texas Cave Management Association, Texas Parks and Wildlife Department, Texas Water

Development Board, University of Texas' Bureau of Economic Geology and University of Texas Geology Department.

In addition, the Education and Community Outreach Team continued to develop its volunteer program, mostly notably utilizing the Capital Area Master Naturalists. CAMN assisted the District at booth events and the Austin Cave Festival and continued their commitment to care for their installed water-wise landscaping at the District.

In FY 2009, some highlights of the Education and Community Outreach Team included:

- Redesigning the District website and implementing a content management system to facilitate its updating;
- Revamping the District's electronic newsletter and e-publishing three editions;
- Developing a multi-faceted Drought Awareness Education Program that employed email notices, direct mail, public service announcements, editorial letters, door-to-door campaign, and drought stage identification materials (flags, bill inserts, road signs);
- Distributing over 175 dual-flush toilets to end-users within the District;
- Hosting the 4th Annual Groundwater to the Gulf Summer Institute for Educators; and
- Participating in approximately 65 outreach events which reached over 1,500 adults and nearly 2,500 children.

2.5 Regulatory Compliance

The Regulatory Compliance Team Leader is John Dupnik, P.G., and other regular team members are Joseph Beery (Hydrogeologist), Guy Rials (Technician), and Shannon DeLong (Permit Administration). Other members of the staff also support this team from time to time.

The Regulatory Compliance Team is responsible for a wide range of the District's responsibilities including: drought management, pumpage tracking/compliance assessment, rule making, rule and well construction standard interpretation, permitting, enforcement, well inspections, well plugging, and drilling oversight. Regulatory Compliance Team members have also actively attended and participated in community outreach and regional development and planning groups and served as District liaisons to local municipalities, political subdivisions, permittees, and licensed drillers and pump installers in the area.

In FY 2009, some highlights of the Regulatory Compliance Team include:

- Implementing a major rulemaking process that established management zones and revised the Districts drought management program. District staff facilitated these discussions through town-hall meetings, permittee workshops, and one-on-one permittee meetings which culminated in the adoption of the rules on September 10, 2009;
- Establishing an advisory group to guide planned changes in well construction standards for the District, especially for wells in the Trinity Aquifers;
- Managing one of the, if not the most, severe drought in the District's history: The District experienced four months of Alarm Stage Drought (September-December) and eight months of Critical Stage Drought in FY09. The District's permittees were successful in achieving the requisite overall pumpage reductions of 20% and 30% for Alarm and Critical Stage Drought, respectively, for each month in drought. Such performance, both at the overall

aquifer level and especially at the individual permittee level, for which all but a handful of permittees were in substantial compliance every month throughout the FY 2009 drought, is a remarkable achievement and could not have happened without the commitment of the permittees, their end-user customers, and District staff;

- Granting conservation credits to compliant permittees: conservation credits for FY2009 were granted to 28 permittees for a total of \$29,644; and
- Enforcing drought-period pumpage restrictions: the District conducted eight initial and three follow-up pre-enforcement meetings, and took formal enforcement actions by issuing two Notices of Alleged Violation for drought rule violations, both of which resulted in agreed orders. One of the agreed orders will lead to the abandonment of a historic-use Edwards well in favor of a surface-water supply.

Permitting Summary – New permitting activity was limited owing to the District declared drought that was in place for each month of the fiscal year. Any individual permits approved carry delayed effective dates, which postpone permit issuance until “no drought” is declared. Four new wells were authorized under the Nonexempt Domestic Use (NDU) General Permit, increasing the total volume of NDU permitted pumpage from 14,024,463 to 14,939,463 gallons/year. A summary of permitting activity is provided in following tables:

Individual Permits	
New Permittees (landowners)	0
Total Permits Issued	80
Total Permitted Wells	163
NDU General Permits	
New Permittees (landowners)	4
Total Permits Issued	54
Total Permitted Wells	54

	Permitted Pumpage		
	gallons	cfs	acre-feet
Historical (Ind.)	2,453,318,331	10.40	7,528.96
Historical (NDU)	1,176,933	0.005	3.61
Total Historical	2,454,495,264	10.45	7,564.52
Conditional (Ind.)	82,500,701	0.35	253.18
Conditional (NDU)	14,939,463	0.06	45.85
Total Conditional	97,440,164	0.41	299.03
	Permitted Transport		
	gallons	cfs	acre-feet
FY2009			
Total Permitted	215,000,000	0.91	659.81
Total Permitted	2,551,935,428	10.82	7831.60

- **Well Drilling and Plugging Summary** – Well-related authorization activity in FY 2009 is summarized in the following table:

Well Drilling	
New Nonexempt Wells	1
New NDU Wells	4
New Exempt Wells	1
Total Wells Drilled	6
Well Plugging	
Total Wells Plugged	2

3.0 BOARD’S EVALUATION AND ASSESSMENT OF OBJECTIVES AND METRICS

The preceding section of this report highlighted some activities for each of the operational teams. A more comprehensive and detailed listing of the activities of the District is included in Appendix B, which was prepared by the Staff to assist the Board in its evaluation of the progress made in FY 2009 toward the goals, objectives, and performance standards identified in the District Management Plan.

On January 23, 2010, the Board reviewed this document, discussed its consistency with the planned objectives and their subsidiary elements, identified some specific work areas and priorities that will form part of the strategic agenda going forward in FY 2010 and 2011, and then took action to evaluate progress made by the District toward these strategic objectives, as specified in the metrics for each of the objectives. In that meeting, which was open to the public, the Board found the following objectives to have satisfactory progress in 2009:

- a. *Objective 1-1:* Optimize the balance each year between water use and “preserving, conserving, and protecting” the groundwater resources of the District.
- b. *Objective 2-1:* Ensure that groundwater is used solely for beneficial purposes at all times and minimize or prevent activities that may cause or contribute to the wasteful use of groundwater and to the pollution or harmful alteration of the character of the groundwater and its reservoirs.

- c. *Objective 3-1:* Diversify water supplies available to users in the District and thereby allow for appropriate pumpage curtailments, especially during extreme drought.
- d. *Objective 4-1:* Increase understanding of District aquifers through sound science that characterizes aquifer properties and variability so that appropriate policy and regulatory decisions can be made.
- e. *Objective 4-2:* Review and modify, as warranted and within statutory authority, the Rules as to their consistency with natural resources protection
- f. *Objective 5-1:* Maintain conditions of the aquifers on the basis of sustainable yield concepts to prevent well interference and water-quality impacts related to reduced springflow during a recurrence of the DOR and to preserve and ultimately reduce the Extreme Drought Withdrawal Limitation (EDWL).
- g. *Objective 6.1:* Reduce the per capita use in the District during non-drought times in the Plan period, through relevant statutory, regulatory, scientific, administrative, and educational vehicles.
- h. *Objective 7-1:* Improve recharge to the Edwards Aquifer to increase the amount of water in storage so that future droughts will be less severe and of shorter duration.
- i. *Objective 7-2:* Assess the feasibility of implementing as warranted, supply enhancement measures including desalination, aquifer storage and recovery, and effluent reclamation and reuse.
- j. *Objective 7-3:* Augment the amount of water recharging the aquifer through the use of alternative water sources.

The Board found that no objective had unsatisfactory progress in FY 2009.

4.0 REQUIRED DATA AND INFORMATION

The District Bylaws and the Management Plan require a number of specific items to be included in the Annual Report.

4.1 Aquifer Status

The District and most of Texas experienced a drought about 18 months long from the fall of 2007 (6/23/2008) and through 2009 (12/17/2009). During this period, the region received below-normal rainfall, totaling only 35.25 inches of rain at Austin/Mabry. That is about 53% of average, and nearly equivalent to the severity experienced during the 1950s drought.

The District entered FY09 in an Alarm Stage drought status with conditions that became one of the driest and hottest on record. The hot and dry conditions persisted for most of the year and resulted in no significant recharge. Accordingly, water levels and springflow were in a deep recession, or decline, for most of the year. Barton Springs began FY 2009 at about 26 cfs and

reached a low of about 14 cfs at the end of FY 2009. That is the equivalent to the lowest springflow since they began recording daily values 30 years ago in 1978! Old Mill Spring (one of several springs that make up the Barton Springs complex) effectively stopped flowing by the end of FY 2009.

Water levels in the Lovelady well declined from about 186 feet to about 197 feet by the end of FY 2009. Those levels are only several feet above levels in that well during the 1950's drought.

It is also noteworthy that, while data are sparse, the Middle Trinity Aquifer from the District's multiport monitor well showed declines in water levels of about 30 feet, and generally behaved similarly to the Edwards wells.

The District was not alone in its drought declaration as the drought engulfed the entire state. The Edwards Aquifer Authority in San Antonio and the Hays-Trinity Groundwater Conservation District also issued drought declarations. Indeed, the drought reached historic levels and geographic proportions. At one point, every county in Texas was reporting at least one impact from the drought, with Hays and Travis Counties reported the most impacts across the state.

Impacts from the drought were felt by well users. Some older, shallower wells in the Edwards and Trinity Aquifers went dry or had yield problems. As a result, new wells had to be drilled and many pumps within wells had to be lowered.

4.2 Grant Programs

In FY 2009, progress on the follow-on grant for finalizing the District Habitat Conservation Plan was considerably slower than planned. While an initial joint meeting of the Citizens Advisory Committee and Biological Advisory Team was held, the pace of the work was defined by the critical-path re-examination of the previous laboratory investigation of salamander response to dissolved oxygen concentrations, including the correction/recasting of some data and the incorporation of a probabilistic risk assessment. This work, led by consultant Dr. Bryan Brooks, consumed most of FY 2009, in part because of the unavailability of the earlier investigators for effective consultation on a consensus approach to be used. The Biological Advisory Team finally was able to begin considering the new information near the end of FY 2009.

Also during this time, as suggested by the prior HCP work, the District made major revisions to its drought management regulatory program, which required the re-definition and re-evaluation of the suite of HCP measures for the various groundwater management alternatives previously documented. The re-analysis of the effects of the new alternatives on flows at Barton Springs was undertaken by consultants Dr. Kent Butler and Mr. Raymond Slade, and was nearing completion at the end of FY 2009. A major edit, including a re-organization of the Draft HCP and Draft EIS documentation, in response to comments by the US Fish and Wildlife Service and to reflect the new regulatory program, was undertaken, but its completion required the results of both the biological and hydrologic re-assessments. Both of these were only nearing completion at the end of FY 2009. In addition, the project monitor for the USFWS was re-assigned during this FY and ultimately left the Service, and at the end of FY 2009 no new project monitor had been assigned. A (probable) no-cost, (certain) schedule extension to the existing grant project

will be required but had not been requested at the end of the FY, as the District was unable to discuss and arrive at a consensus project schedule with a FWS manager.

A contract with TCEQ was signed in FY 2007 on April 16, 2007, for a three-year grant project for recharge enhancement and aquifer protection, under EPA's 319h non-point source pollution program. In addition to federal grant funds of \$335,000, the District is contributing \$223,000 of in-kind services to the project, for a total project amount of \$519,000. Early work on this grant project in FY 2008 was associated with developing a Quality Assurance Project Plan, and in coordinating with TCEQ staff in conducting a related conference and workshop. Also in FY 2008, substantial progress was made in upgrading the BMP at Antioch Cave on Onion Creek with a Continuous Water-Quality Monitoring Network (CWQMN). A second valve was installed in the vault at Antioch Cave, and the cave opening was widened. A 3-ft diameter, 42-ft long screen was installed at the intake structure to minimize the amount of sediment entering the cave and to prevent clogging of the intake structure. A CWQMN system was installed at Antioch that monitors water quality in the creek and will automatically open and close valves on the BMPs to minimize entrance of contaminants into the aquifer that are associated with storm flows.

In FY 2009, staff continued evaluating other sites on creeks that cross the recharge zone. Potential candidates for construction of another BMP and installation of a CWQMN system included Cripple Crawfish Cave, Crooked Oak Cave, and Barber Falls on Onion Creek. Crooked Oak Cave was identified as the most likely site for which the City of Austin would give approval. However, a pending real estate transaction delayed approval for the site. With no other sites worth considering, the District and TCEQ agreed that rather than install a second BMP, a multiport monitor well would be installed near the Antioch Cave BMP for monitoring water levels and the movement of non-point source pollutants within the aquifer.

FY 2009 ended without any flow occurring in Onion Creek due to the ongoing drought. This precluded sampling of storm flows that is one of the tasks for this project.

4.3 Professional Services

The District expended \$ 175,090 for professional services in FY 2009.

This amount included legal fees of \$ 140,227 provided by Bickerstaff, Heath, Delgado, & Acosta LLP of Austin for general counsel support and legislative fees. These fees were less than the prior year fees of \$177,722 but higher than the initially budgeted legal expenses owing to the heavy involvement of the District and its attorneys in opposing and contesting the application for a TCEQ Texas Land Application Permit by Jeremiah Venture, L.P. There were no legal services associated uniquely with the grant projects as grant-billable costs.

Additional professional services for FY 2009 include Laura Raun Public Relations Communication Consultant for \$16,521, DGRA Engineering for \$3,901, and The Standard Retirement Plan Administration for \$4,941.

The District again retained Mike Figer and Company, CPA, to perform its annual financial audit for FY 2009; that audit report is this Annual Report as Appendix A. The fees for these professional services (expended in FY 2010) for the FY 2009 audit totaled \$ 9,500 and are also included in the professional services total above.

4.4 Capital Projects

The District had no new capital projects in FY 2009. However, a portion of the District's Westbay™ multi-port monitoring well, installed during FY 2009 in the southwestern part of the District, was capitalized as a depreciable fixed asset of \$40,202.

4.5 Evaluation of District's Long-Range Plan Pursuant To §36.1071

Texas Water Code §36.1071 requires all Groundwater Conservation Districts to establish and maintain a long-range comprehensive plan for groundwater management in the District. This long-range plan is a five-year plan called the Management Plan. This part of the Water Code was substantially modified in the 79th legislative session during FY 2005, and new Management Plans responsive to these new requirements will be required. Under the new code provisions, all GCDs are required to assess progress quantitatively toward the objectives in their prevailing Management Plan at least annually.

The District's prevailing Management Plan at the end of FY 2008 was the old plan, which was written and adopted in 2003. The new Management Plan, which was developed in FY 2008, was not approved as a basis for groundwater management until FY 2009, so the Annual Report for FY 2009 is the first year in which progress may be assessed using the new plan. It should also be noted that the District will be required to at least consider the need to revise its new Management Plan once the Desired Future Conditions are established by the joint regional planning process and the Managed Available Groundwater for each regulated aquifer is established by TWDB; the MAG represents the maximum amount authorized for withdrawal, after imposing all applicable groundwater management schemes. These limitations may not be available until FY 2011. In addition, the results, findings, and conclusions of the investigations associated with the Habitat Conservation Planning project, scheduled to be completed in 2010, will also need to be incorporated into the next revision to the then- prevailing Management Plan.

In FY 2008, as part of the development of the new Management Plan, the District's performance against the existing Management Plan was evaluated. In particular, the District's Board established a set of continuing "critical success factors" that are flow from and are generally consistent with the goals and objectives that are now in the new Management Plan. These critical success factors include:

- Providing sound science to support and form the basis of policy and tactical decisions made by the District that affect water supply users and endangered species habitat;
- Being highly efficient, accurate, and fair in administering staff activities related to all District programs;
- Developing and instituting an equitable and consistently administered regulatory program that is required to serve our mission;
- Becoming a respected and effective part of the state and local political landscape for water resource management and its stakeholder communities;
- Serving our permittees, stakeholders, and the public at large as a readily accessible source of first resort for reliable information about local water, groundwater, aquifer science, water use and conservation; and

- Providing the programmatic and resource basis for innovative, cost-effective solutions to augment the sustainable quantity of water in the District and to protect the quality of District waters required for various existing uses.

4.6 Self-Evaluation Pursuant to the Valdez Principles

As an agency of the state that focuses on environmental management for its mission, the District supports the spirit of the Valdez Principles. Strict adherence to these guidelines is not incumbent on the District. However, most of the District's operations and most of its regulations and requirements of permittees are consistent with the tenets of the Valdez Principles.

4.7 Financial Report

As authorized in the District Bylaws, the Board utilizes the Texas Treasury Safekeeping Trust Company (commonly referred to as "TexPool") as a depository for its funds not required by its current operations. There are several built-in controls and safeguards in the TexPool account mechanisms. The District has established and maintains funds in several TexPool accounts to further minimize risk and to partition funds designated for certain potential uses. To facilitate payments and timely deposits, the District also maintains both checking and payroll accounts with Citibank, which are FDIC-insured. Monies are moved electronically between these accounts and the TexPool accounts, generally keeping funds not required by current operations in TexPool and the cash balances in the operating bank accounts as small as prudently feasible. The District has no additional monetary investments other than its cash fund accounts.

End-of-the-year cash and account balances and an independent assessment of financial controls are found in the Annual Audit Report, included here as Appendix A.

APPENDIX A

APPENDIX B

Appendix B

Evaluation of Progress Towards Goals and Objectives

Objective 1-1: Optimize the balance each year between water use and “preserving, conserving, and protecting” the groundwater resources of the District.

Performance Standards for Objective 1-1:

A. Provide and maintain a sound statutory basis for continued District operations on an ongoing basis.

The District very actively supported this performance standard in FY 2009, a year in which there was a legislative session and unremitting drought.

- The completely revamped Management Plan, developed mostly in the prior year, was approved by the Texas Water Development Board (TWDB) early in FY 2009 after some changes were negotiated, upon TWDB staff’s suggestions to improve its comporment with their understanding of how the State Auditor would insist new Management Plans be constructed and reviewed under Texas Administrative Code (TAC) Chapter 356.
- District staff and directors communicated both verbally (telephone calls, conferences, one-on-one meetings) and in writing (letters, newsletters) with those legislators having common constituents in the District, focusing on those whose constituents dominantly depend on groundwater but including all six representatives and three senators.
- The District championed and worked with legislator sponsors for two bills, one for annexing portions of southwestern Travis County in the Hill Country Priority Management Groundwater Area (PGMA), and one for prohibiting direct discharges of treated effluent in the contributing zone of the Edwards Aquifer. These bills were supported by testimony in committees, with committee staff, and with individual legislators. While neither bill passed, the cause was not because of lack of our supporting them and we did make some progress in getting better positioned for the next session.
- The District regularly monitored developments associated with other groundwater legislation, reviewing progress in each Board meeting during the session. Staff provided testimony in supporting a key bill that prohibited municipalities from asserting sovereign immunity from groundwater management rules of a Groundwater Conservation District (GCD), which did pass and thereby correct an appellate court error. Staff also worked with legislative aides to revise introduced legislation to protect GCD interests.
- In response to the deepening drought and the need for differentiated rules among the aquifers in the District, a major revision to the *Rules* was proposed and communicated to the public during multiple town hall meetings and meetings with individual stakeholders. The *Rules* derived from both explicit and implied authorities in the governing statutes and were

consistent with the new Management Plan. An *ad hoc* Policy Advisory Committee (PAC) of stakeholders and public officials was formed, and met to review the proposed rulemaking.

B. Seek and make effective use of grant funding of programs that are complementary to ongoing District activities and programs and that supplement other District revenue sources.

The District had two major grant projects of its own ongoing throughout FY 2009, and also co-sponsored one additional grant project.

- The District's Habitat Conservation Plan (HCP) grant project, funded by US Fish and Wildlife Service through Texas Parks and Wildlife Department, to complete the re-assessment of biological risk and the final documentation of both the Draft HCP and its associated NEPA Draft Environmental Impact Statement proceeded slowly, primarily as a result of some errors and missing components associated with the original analysis and the need to re-validate data before the probabilistic risk assessment was conducted. Since the evaluation of the alternatives hinged on that assessment, progress was largely limited to this area. By the end of the year, the issues had been resolved and the new analyses were undertaken and their documentation for a peer-reviewed journal was underway.
- The District's Section 319(h) grant project funded by the Environmental Protection Agency (EPA) through the Texas Commission on Environmental Quality (TCEQ) continued throughout FY 2009. The Best Management Practice (BMP) at Antioch Cave had been upgraded in FY 2008 and an automated sampler had also been installed. However, due to the continuing drought, there was no flow in Onion Creek during the entire year, so no samples were collected and the operation of the system could not be tested under actual flow conditions. An option for another BMP to be installed over a cave on City of Austin (COA) watershed protection lands did not materialize, so installation of a multiport monitor well at Antioch was agreed to by the District, TCEQ, and EPA.
- Along with the TWDB, the District co-sponsored and provided oversight to the development of a new dual-conductivity model for the Barton Springs segment of the Edwards Aquifer by Southwest Research Institute. The dual conductivity model needs further calibration to be brought up to Groundwater Availability Model (GAM) standards, but such a model is likely to better simulate a conduit-dominated karst aquifer like the Barton Springs segment than the strictly diffuse flow models.

C. Empanel and empower a Board of Directors that ensures Board-level policy decisions are consistent with current public perceptions of efficient groundwater use, conservation, preservation, and protection so that there is public accountability for District operations and decision-making.

- A full Board of Directors, with all five precincts represented, was active throughout FY 2009.
- The District Board of Directors held 21 regularly scheduled Board meetings, 8 public hearings, 4 public or town-hall meetings, 3 special called Board meetings, 3 work sessions, and 232 other Director meetings in 2009 to govern the District according to the needs of its

constituents and the requirements of its statutes. All Board meetings were noticed and conducted in accordance with the District Rules & Bylaws, and the Texas Open Meetings Act.

- The District considered the need to redistrict its director precincts and determined, in accordance with the statutes, that redistricting was not required in FY 2009.
- The District developed criteria for evaluating possible areas to be annexed by the District.

D. Register, permit, and monitor, as appropriate, wells in the District to assess compliance with the *Rules*, and *Well Construction Standards*.

The District conducted permittee inspections in FY 2009 in association with applications received and also the water level synoptic study that occurred in March 2009. General inspections were conducted on 15 permittee well systems including: Aqua-Texas Chaparral, Aqua-Texas Copper Hills, Aqua-Texas Southwest Territory, the City of Kyle, the City of Hays, Village of San Leanna, Oak Forest WSC, Marbridge Foundation, The Porter Company, JD Malone, Barton Properties, St. Andrews School, Cook Walden/Forest Oaks, Inn Above Onion Creek, and Associated Drilling. District staff members were particularly diligent about requiring timely meter readings due to the drought conditions throughout the entire fiscal year, and the importance of timely meter readings to drought compliance assessments. A small percentage of District permittees would require reminders of delinquent reporting from month to month but all were responsive once the reminder was received. In response to rule changes adopted on January 10, 2007 which included a requirement for permittees to update their User Drought Contingency Plans (UDCPs) every five years, District staff were successful in reviewing and approving updated UDCPs for many of the District's permittees. In that effort, 41 plans were updated. With the recent rule changes, all plans will again be required to be updated to incorporate the newly created drought stage and provisions. To date, 14 permittees have updated plans to incorporate the new drought rules.

E. Maintain and develop programs that inform and educate Austin-area citizens of all ages about water-related matters of local, state, and national importance.

The District collaborated with local water-related agencies to organize and host the 4th annual Groundwater to the Gulf Summer Institute for Educators that trained 47 teachers who collectively reach over 4,700 students. Three editions of the Aquifer Bulletin were posted on-line and subscribers were notified with content via email. To keep the public up-to-date with aquifer conditions, the Drought Monitor Blog and Drought Charts were regularly updated, posted on-line, displayed, and distributed at events and at District headquarters. District staff included user drought contingency requirements and water conservation strategies in presentations at two town hall meetings.

F. Process and review renewals and applications for new production permits, new transport permits, production permit amendments, transport permit amendments, and well modifications in accordance with the *Rules*, and *Well Construction Standards*.

As reported in the “District Programs -Team Highlights” section of the Annual Report, there only a small number of new wells, new production permits, or production permit amendment applications received and processed in FY 2009. Of these, all were processed consistently with the District’s information requirements, procedural requirements, and timeframes. All current Production and Transport Permits were renewed at the end of the respective permit terms as well.

G. Maintain effective and efficient accounting and financial records management in accordance with federal and state law, the *Rules*, and Board direction; and maintain official records, files, and minutes of Board meetings, preserving and protecting public documents in accordance with state and federal laws and the District Records Retention Schedule to allow for safekeeping and efficient retrieval.

- The District maintained their financial resources in a manner that maximizes liquidity while maintaining the greatest return on District fund balances by investing in securities or investment pools that operate in low risk investments and are backed by the state and/or federal government.
- The District developed, implemented and modified as needed, a balanced FY 2009 Annual Budget that the Board approved on July 24, 2008 and then revised twice during the fiscal year; on March 26, 2009 and on June 25, 2009.
- The District obtained contracts for services in accordance with established District standards that meet or exceed the requirements of state law and the *Rules*.
- The District developed, posted and distributed District Board Meeting materials and back-up materials, and prepared meeting minutes in a timely manner for Board approval.

Objective 2-1: Ensure that groundwater is used solely for beneficial purposes at all times and minimize or prevent activities that may cause or contribute to the wasteful use of groundwater and to the pollution or harmful alteration of the character of the groundwater and its reservoirs.

Performance Standards for Objective 2-1:

A. Require all newly drilled exempt and nonexempt wells as well as plugged wells, to be registered and authorized in compliance with the *Rules* and *Well Construction Standards*.

All applications for well plugging, well registration, and new exempt and nonexempt wells reported in the “District Programs-Team Highlights” section of the Annual Report were reviewed and processed in accordance with the specified timeframes. Additionally, all new wells were inspected both before and after completion.

B. Assess ambient conditions in District aquifers by sampling and collecting groundwater data from selected wells, including those installed by the District and other resource management agencies for such purposes as well as those for other uses.

Much of the water quality sampling in FY 2009 was conducted through our annual participation in the TWDB groundwater sampling effort. In this effort, the District collected

samples from 13 zones in the District's multi-port monitor well located near the Ruby Ranch subdivision with 13 of those samples analyzed for major ions and 12 for environmental and age-dating isotopes. The District sampled an additional four other wells and Barton Springs for major ions and environmental and age-dating isotopes as well. Samples were also collected from each new well completed in FY 2009. Samples from the abandoned wells that were plugged, however, were not collected due to problems with obstructions and other access issues. Water level data collection was accomplished via the District's participation in a regional synoptic water-level study where water levels from 274 wells were recorded between February 10 and March 22, 2009.

C. Provide leadership and technical assistance to federal, state and local entities; organizations; and individuals on the geology, hydrogeology, and karst features impacted by groundwater-utilizing land use activities.

- The District actively participated in providing input into regional water quality issues in several ways. The District attended each regularly scheduled meeting of the regional water quality protection plan group that was convened to allow representatives from local governmental entities to provide information updates that are relevant to the goals of the regional water quality protection plan. These regularly scheduled meetings are organized by Director Craig Smith and have been useful in maintaining the collaborative relationships with our fellow resource managers. These relationships proved useful in coordinating the group's role at a meeting on May 7, 2009 held by the Lower Colorado River Authorities's (LCRA) Clean Rivers Program to discuss the initiation of an effort to possibly establish a watershed protection plan for the Onion Creek Watershed.
- The District continued to monitor and review activity subject to TCEQ's 30 TAC §213 Rules related to regulated activities that may affect the Edwards Aquifer. In FY 2009, the District logged receipt of five Water Pollution Abatement Plans (WPAPs) and provided comments on one.
- With regard to pursuing legal remedies to minimize groundwater quality impacts, the District has formally protested the Jeremiah Venture Texas Land Application Permit application and is participating as a designated party in a contested case hearing. The hearing and the action by TCEQ will likely occur during FY 2010. Additionally, the District submitted a petition to the TCEQ to consider rulemaking to prohibit direct discharges of wastewater into the Contributing Zone of the Barton Springs segment of the Edwards Aquifer. This petition was denied by the TCEQ but was successful in prompting a stakeholder's group and a draft rule to address wastewater management in the Barton and Onion Creek watersheds. This process is ongoing and will carry over into FY 2010.

Objective 3-1: Diversify water supplies available to users in the District and thereby allow for appropriate pumpage curtailments, especially during extreme drought.

Performance Standards for Objective 3-1:

A. Assess the availability of regional surface water and alternative water supplies and the feasibility of those sources as viable supplemental supplies for District groundwater resources.

The Critical Stage Drought throughout FY 2009 reinforced the need to identify and utilize alternative water supplies by Edwards Aquifer permittees. The District undertook several initiatives with the intent to improve the ability for its permittees to curtail groundwater use in favor of such alternative supplies, either as a long-term permanent resource or as a temporary extreme-drought alternative supply. In the past year:

- District staff actively participated in the regional water planning processes of both Region K and Region L, which are engaged in a multi-year re-evaluation of water demand, water supplies and resources, and water management strategies. The District provided input to both of these regional water planning groups. The supplies of all water sources in both these regions are already strained during drought, and firm-yield surface water in particular is fully committed.
- The District initiated the exploration of the geotechnical, economic, engineering/technological, and environmental/public-acceptance feasibility of a potential desalination facility in or near the eastern part of the District in the Saline Edwards Aquifer. Desalinated Edwards water may be the only true “new water” available in the vicinity of the District.
- The District worked with two of its industrial permittees, Centex Materials and Texas Lehigh, and one of its large municipal permittees, the City of Buda, to evaluate the substitution of highly treated municipal effluent for Edwards groundwater in their processing areas. Protecting the recharge zone from deleterious effects of such substitution was identified as a potential issue, and along with costs, were in the process of being evaluated at year end.
- The District developed a regulatory approach that would encourage the tandem use of the deep Trinity Aquifer as a supplemental supply of groundwater for permitted Edwards users in the western part of the District.
- The District proposed rulemaking that would establish a Temporary Transfer Permit (TTP) system that would allow during Exceptional Stage Drought the contractual transfer of pumping rights from one historical user who had access to surplus water and could reduce its Edwards pumping further than required by its applicable curtailment to another historical user who had no such access and was required to curtail pumping during extreme drought.

B. Encourage District permittees to diversify their water supplies and implement conjunctive use by fostering arrangements with available water suppliers.

In 2009, the ever-deepening drought generated interest in identifying surface water and other alternative water supplies by both the District staff and the District stakeholders, especially permittees with other supplies accessible and nearby.

- The District initiated discussions with the COA’s Austin Water Utility (AWU) to promote possible interconnections, especially during severe drought conditions, between certain permittees such as Creedmoor-Maha Water Supply Corporation (WSC) and Arroyo Doble WSC and AWU. Progress was made with AWU in helping define severe drought as an

emergency condition and in demonstrating the beneficial effect of such interconnections on Barton Springs low-flow discharges. However, at the end of FY 2009, no such connections had been agreed.

- The District established dialogue with Texas Disposal Systems (TDS) about initiating feasibility studies of a desalination facility under a possible public-private partnership in or nearby the TDS landfill.
- The District also initiated discussions with Texas Lehigh and Centex and with City of Buda about the use of reclaimed Buda effluent as an alternative water supply for those industries.
- The District worked with both Ruby Ranch WSC and Oak Forest WSC to promote the development of the Trinity Aquifer as a substitute and supplemental resource, and devised a methodology by which a tandem Edwards-Trinity Aquifer water system could be regulated.
- District staff has been active in maintaining and furthering good working relationships with area surface water providers including the Guadalupe Blanco River Authority (GBRA) and the COA. In FY 2009, GBRA contributed in the staff review of the City of Kyle Class B Conditional Production and Transport Permit applications by assisting staff in the confirmation of alternative water supplies, and by attending Board meetings to provide information related to the applications. GBRA has proven to be a reliable reference for information related to surface water supply availability and regional water planning developments. The District has also made significant progress in relaxing the institution barriers to wholesale water arrangements between District groundwater users and the COA AWU. Much of this progress was in response to Board Resolution No. 021209-01 in which the Board formally requested the Austin City Council to make policy exceptions where such wholesale contracts could reduce pumping pressure during drought. The response initiated discussions with the COA and the development of a draft Memorandum of Understanding (MOU) to address this issue among others. These discussions and the development of the MOU are ongoing and have carried over into FY 2010.
- Other progress in fostering new surface water supply arrangements was achieved through the Stenger Ridgewood enforcement case. In response to persistent violations of the District's drought stage pumping limits, the District and Stenger Ridgewood entered into an agreement that would require Stenger Ridgewood to retire the Historical Edwards Production Permit and convert to a water supply through Travis County Water Control and Improvement District (WCID) No. 10 which receives wholesale water supplies from the COA. This arrangement is currently in the planning stages but appears to be eminent.

C. Demonstrate the importance of the relationship between surface water and groundwater, and the need for implementing conjunctive use, through education and public outreach.

The District hosted a number of events that help communicate the importance of surface water/groundwater interaction. The Austin Cave Festival (October 25, 2008) attracted over 1,500 visitors, and allowed people to explore local caves, learn about water quality protection, water conservation, and rain water harvesting systems. The Groundwater to the Gulf Summer Institute for Educators (June 23-25, 2009) equipped 47 teachers (who reach over 4,700 students annually) with hands-on activities to teach about surface

water/groundwater interaction, water issues, and water conservation. The Recharge and Discharge Features of the Barton Springs segment of the Edwards Aquifer field trip (July 22, 2009) given as a part of the International Congress of Speleology, which the District helped sponsor, allowed District staff to discuss local groundwater issues with 23 participants from five different countries.

Objective 4-1: Increase understanding of District aquifers through sound science that characterizes aquifer properties and variability so that appropriate policy and regulatory decisions can be made.

Performance Standards for Objective 4-1:

A. Conduct scientific studies to better determine groundwater availability, to understand and prevent threats to water quality, and to minimize impacts to water- supply wells and springs.

- The District maintains a monitor well network of about 35 wells that collects data hourly. The District's weather station also collects hourly data. District staff collected water quality data from 17 sites (TWDB partnership) and also conducted 13 aquifer tests in the multiport well in addition to supervising permittee aquifer tests. Numerous stream-flow measurements were made at Barton Springs during the drought and a few measurements were made on the Blanco River. All other streams in the District were dry.
- District staff measured Barton Springs discharge numerous times during drought conditions and as discharge approached the various drought thresholds. Staff members were in frequent communication with the USGS and COA regarding measurements and factors affecting flow.
- District staff worked with the COA on an urban leakage study and paid for water-quality analyses.
- The Aquifer Science Team met with the Edwards Aquifer Authority (EAA) and the COA two times to plan dye trace studies on the Blanco River; and met with them twice to discuss results of the tracing studies. The Aquifer Science Team also met with TDS three times to discuss plans for saline zone studies, and twice with GBRA, HDR, and USGS to plan studies along the groundwater divide near Kyle.
- The Aquifer Science Team hosted a workshop to discuss the Edwards saline zone and its potential for desalination and aquifer storage and recovery. About 50 people attended the workshop.
- Along with the TWDB, the District co-sponsored and provided oversight to the development of a new dual-conductivity model for the Barton Springs segment of the Edwards Aquifer by Southwest Research Institute. The dual conductivity model needs further calibration to be brought up to GAM standards, but such a model is likely to better simulate a conduit-dominated karst aquifer like the Barton Springs segment than the strictly diffuse flow models.

B. Utilize site-specific hydrogeological data from applicable production permit applications to assess potential impact to groundwater quantity and quality, public health and welfare, contribution to waste, or unreasonable well interference.

The District was involved in the planning and execution of one pump test and hydrogeological investigation in FY 2009. District staff worked closely with the City of Kyle in developing the pump test work plan that was approved on September 18, 2009. The pump test was conducted on September 23-26, 2009. The resulting Hydrogeological Report was submitted with the City of Kyle's Production Permit amendment and Transport applications and was used by staff in the evaluation of the applications and in the determination of recommendations to the Board to be considered in their deliberations.

C. Assess the feasibility and implement as warranted, separate management strategies or management zones to address variable management needs of the different areas and aquifers within the District.

In FY 2009, the District staff delineated five Management Zones that would be used for differentiating regulatory requirements: Western Freshwater Edwards, Eastern Freshwater Edwards, Saline Edwards, Middle Trinity, and Lower Trinity Aquifers. Following an extensive outreach program involving one-on-ones with permittees and two public meetings, the Board proposed rulemaking to establish these Management Zones and to incorporate specific, differentiated rules for each. At the end of FY 2009, the *Rules* were awaiting a final public hearing and action by the Board. Because the District's annexation bill did not pass, there was not a need to include the Trinity Outcrop Management Zone in the current rulemaking, although example rules for it were developed as part of the annexation outreach initiative.

D. Actively participate in the joint planning process for Groundwater Management Areas (GMAs) 9 and 10 to establish Desired Future Conditions (DFCs) by mid-2010 and periodically thereafter.

- **GMA-9:** The District's designated representative actively participated and attended numerous GMA-9 meetings in Kerrville, Boerne, and Johnson City, and actively participated in discussions of the various DFCs for GMA-9 aquifers. The District Board was updated on GMA-9 activities about once a month. The Board approved DFCs proposed by GMA-9 for minor aquifers found in Blanco County (Ellenberger, Marble Falls, and Hickory) and the Edwards Plateau Aquifer of GMA-9, which was then voted on and approved in a subsequent GMA-9 meeting. It is anticipated that GMA-9 will meet its deadline of September 2010 for establishing DFCs that will be relevant to the District.
- **GMA-10:** The District's designated representative actively participated and attended each of the GMA-10 meetings, held at the Edwards Aquifer Authority office in San Antonio. While progress was less forthcoming than in GMA-9, the conceptual framework for subdividing the GMA for purposes of establishing differentiated DFCs and proposing DFCs were set forth, with the District taking the lead in that endeavor. Near the end of FY 2009, the District Board authorized a preliminary set of DFCs for the relevant aquifers in the Northern Subdivision of GMA-10, including a series of possibilities for the Edwards, and those were

subsequently approved by the GMA-10 Coordinating Committee for transmittal to TWDB for preliminary indicated Managed Available Groundwater (MAG) determinations. It is anticipated that GMA-10 will meet its deadline of September 2010 for establishing all DFCs that will be relevant to the District's regulation.

Objective 4-2: Review and modify, as warranted and within statutory authority, the *Rules* as to their consistency with natural resources protection

Performance Standards for Objective 4-2: (i) Schedule and conduct public hearings to solicit public input on proposed changes to the *Rules*, within the prescribed regulatory time frames. (ii) Appoint and convene ad hoc policy advisory committees at the will of the Board but at least once during the Plan period to review and comment on District policies and proposed rules revisions as they relate to protection of the identified natural resources, and (iii) Make available to the public the revised rules within three days after adoption by the Board.

The District initiated a comprehensive review and revision of the District's rules in response to the severe drought that persisted throughout FY 2009 and the need to incorporate management zones for aquifer- and area- specific groundwater management. The prospective rule changes were thoroughly vetted by soliciting public and permittee input on the draft rule through town hall meetings, permittee workshops, and one-on-one permittee meetings. The package incorporating the input provided was then vetted via two PAC meetings held on June 16 and July 14, 2009. The rulemaking process was not complete by the end of FY 2009 but extended into FY 2010 with the public hearing, and board action to adopt the rules occurring on September 10, 2009.

Objective 5-1: Maintain conditions of the aquifers on the basis of sustainable yield concepts to prevent well interference and water-quality impacts related to reduced springflow during a recurrence of the Drought Of Record (DOR), and to preserve and ultimately reduce the Extreme Drought Withdrawal Limitation (EDWL).

Performance Standards for Objective 5-1:

A. Monitor and declare drought stages on the basis of the analysis of data from the District's defined drought triggers and in accordance with the adopted drought trigger methodology.

District staff continuously monitored the water levels at the Lovelady Well and springflow values at Barton Springs. Frequent manual measurements were made by staff at both the well and at Barton Springs to verify instrument readings. Drought charts and information on the website and blog were updated, at a minimum, before each Board Meeting. The Board was frequently updated on drought status by staff. The District declared Critical Stage drought on December 11, 2008. Both drought indicators were below their respective Critical Stage threshold when the declaration was made.

B. Inform and educate permittees and the public about declared drought stages and the severity of drought, and encourage practices and behaviors to reduce water use.

The District developed a series of icons for each drought stage. These icons serve as a visual cue for the severity of the drought stage starting with green, yellow, red, then black. The drought icons have been used to provide a consistent and repetitive message as flags at District headquarters, images on the website, drought chart, road signs, direct mail materials, etc. District staff issued press releases and emailed permittees each time the drought stage changed. Additionally, a drought timeline and water conservation strategies were included in the fall newsletter and used during the door-to-door drought awareness campaign. Compliance with the user drought contingency plan was enhanced through presentations and bill inserts provided electronically to District permittees.

C. Assist permittees in developing drought planning strategies and complying with District drought rules.

This performance standard was also addressed in the response to Performance Standard D of Objective 1-1. In short, all permittees will be required to update their UDCPs to incorporate the new drought stage and requirements of the September 10, 2009 rule change prior to renewal at the end of FY 2010. The District staff will be working closely with District permittees to facilitate that effort.

D. Enforce compliance with drought management rules during District-declared drought stages.

The District was in either Alarm Stage or Critical Stage drought for each month in FY 2009. In accordance with the drought management protocol of the District Enforcement Plan, staff monitored compliance with monthly pumpage limits, responded to delinquent meter readings, and took the appropriate enforcement action in response to persistent and egregious non-compliance. In FY 2009, the District conducted eight initial and three follow-up pre-enforcement meetings. The District conducted formal enforcement actions by issuing two Notices of Alleged Violation, both of which resulted in agreed orders. As a whole, the drought management protocol was successful as evidenced by the level of compliance of District permittees with monthly pumpage limits. District permittees who achieved the overall pumpage curtailment levels of 20% and 30% for Alarm Stage and Critical Stage respectively for every month in FY 2009. Such performance, both at the overall aquifer level and especially at the individual permittee level, for which all but a handful of permittees were in substantial compliance every month throughout the FY 2009 drought, is a remarkable achievement and could not have happened without the commitment of the permittees, their end-user customers, and District staff.”

E. Limit the total amount of groundwater withdrawals by all groundwater users from designated aquifers during Extreme Drought to the amount that may be achieved by the imposition of regulatory restrictions on District authorized nonexempt well users.

As mentioned, the District has used most of FY 2009 to develop and vet a comprehensive rule change package that established management zones with the primary purpose of allowing the District to implement rules to manage the individual aquifers differently. These rules also clarified that the EDWL specifically applies to the freshwater Edwards management zones and not the saline Edwards or Trinity aquifers. Considering these

distinguishing factors, all applicable drought curtailments were implemented and enforced in accordance with District *Rules*.

F. Implement measures, as warranted and feasible, to effectively reduce the EDWL.

In FY 2009, the District made substantial changes to its drought management program and established both a new deepest drought stage, called the Exceptional Stage Drought, and made a 40% mandatory curtailment required of all historic-use permittees in such a drought. In addition, in the newly defined Emergency Response Period, in which the aquifer supply is in a peril that it has not previously experienced, the new rules call for complete curtailment of Edwards groundwater production for non-Public Water Supply permittees. These steps effectively reduced the EDWL from 8.5 cfs to 7.5 cfs. In addition, the new rules created a District-held Conservation Permit, which will be used to “hold” otherwise retired Edwards water rights, either on an all-the-time or a during-extreme-drought basis, to comprise an Ecological Flow Reserve. In FY 2009, a District enforcement order was initiated that will retire 16.5 million gallons of Edwards pumpage as the permittee switches to surface water permanently. This amount will be transferred to the Conservation Permit which will further reduce the EDWL. The so-called “aquifer benefit” associated with the use of the TTP is also designed to reduce the EDWL, although the size of its benefit depends on the nature of the contractual agreement that underlies the TTP.

G. Assess the feasibility and implement as warranted, separate drought trigger methodologies and related management strategies to address variable management needs of the individual aquifers within the District.

- Data have been collected periodically from the District’s Westbay multiport monitor well to evaluate the effects of drought on potentiometric levels in the Edwards and Upper and Middle Trinity Aquifers. These data will be useful in assessing the potential impacts of drought on the Trinity Aquifers and will help set drought trigger levels for these aquifers.
- Plans and budgets are being developed for studies of the Edwards saline zone for potential desalination and aquifer storage and recovery projects. Meetings have been held with Texas Disposal Systems and other partners to coordinate these efforts.

Objective 6-1: Reduce the per capita use in the District during non-drought times in the Plan period, through relevant statutory, regulatory, scientific, administrative, and educational vehicles.

Performance Standards for Objective 6-1:

A. Maintain and develop programs that inform, educate, and support District permittees in their efforts to educate their end-users about water conservation.

Qualifying permittees were contacted by mail about their conservation credits and opportunities to expand their qualifying rebates through additional outreach and programs. The District hosted two town hall meetings and met with permittees both individually and in workshops to discuss rule changes, water resource management, and pumping restriction compliance. Printed materials such as watering schedules and Critical Stage Drought

Restrictions bill inserts and on-line links for pertinent trainings and conferences were made available to permittees through email and in person.

B. Maintain and develop programs that inform and educate District groundwater users and Austin-area citizens of all ages about water conservation practices and resources.

Through the two town hall meetings and many presentations to community groups and homeowners associations, the District provided end-users with up-to-date aquifer conditions, drought status, and effective water conservation measures. Aquifer 101 presentations at schools, teacher trainings, and summer camps reached over 5,000 students. As part of a drought awareness campaign, the District enlisted the aid of a third party contractor to help develop a comprehensive media campaign that targeted groundwater users through direct mail, door-to-door communication, increased newspaper coverage, an informational meeting with local editors, and public service messages. Additionally, framework and support for a drought coordination meeting between large water providers has been laid, and staff actively participates in the COA Citizens' Water Conservation Task Force.

Objective 7-1: Improve recharge to the Edwards Aquifer to increase the amount of water in storage so that future droughts will be less severe and of shorter duration.

Performance Standard for Objective 7-1: Conduct investigations and, as warranted and feasible, physically alter discrete recharge features that will lead to an increase in recharge to the Edwards Aquifer.

- As part of the 319(h) grant for enhanced recharge on Onion Creek, District staff have evaluated numerous recharge features for potential to use the features for enhanced recharge to the aquifer.
- District staff is currently using 319(h) funds for modifying and upgrading the BMP at Antioch.
- A sinkhole in Shady Hollow has been partially excavated to allow more water to recharge the aquifer through this feature.
- District staff met with COA staff to discuss a project to divert stormwater from Little Bear Creek into Stoneledge Quarry in Hays County.

Objective 7-2: Assess the feasibility of implementing as warranted, supply enhancement measures including desalination, aquifer storage and recovery, and effluent reclamation and reuse.

Performance Standard for Objective 7-2: Conduct scientific and other evaluations to determine how water supply within the District can be increased cost-effectively.

Groundwater samples have been collected from wells near the saline zone for water-quality analysis. Plans are being made for installing test and monitor wells in the saline zone to evaluate the potential of the saline zone for desalination and aquifer storage and recovery.

Meetings have been held with various partners to coordinate logistic and funding of these studies.

Objective 7-3: Augment the amount of water recharging the aquifer through the use of alternative water sources.

Performance Standard for Objective 7-3: Inform and educate the public on the availability of alternate sources including gray water / condensate reuse and rainwater harvesting.

Directors and staff have actively researched the feasibility of substituting saline water and treated effluent for non-potable uses to lessen withdrawals for industrial and commercial uses. The District hosted a Desalination Workshop on June 3, 2009 and spoke with individual permittees about the possibility of using treated effluent for industrial and commercial uses. District staff participated in the Hays County Water Conservation Working Group standing committee that has launched legislation to have rainwater harvesting systems as a requirement for new state buildings and schools. This legislation did not pass in the 2009 legislative season, but it has heightened awareness, and Representative Rose is championing the cause in the 2010 legislative season. The District uses the rainwater harvesting system installed at District headquarters as a teaching and outreach tool.

Goal 8: Addressing Quantitatively the Desired Future Conditions

According to TWDB guidance, no objectives or performance standards for this Goal 8 should be identified or included in the Management Plan until applicable DFCs are officially established by the GMAs. At the end of FY 2009, neither of the two GMAs in which the District is involved in joint regional planning had promulgated DFCs for relevant aquifers in the District.

However, the District was an active participant in the ongoing planning process in both GMA-9 and GMA-10. The Board named Senior Hydrogeologist Brian Hunt as the District's Designated Representative for GMA-9, and General Manager Kirk Holland for GMA-10. Good progress was made in developing the DFCs in both GMAs, and it is anticipated that the DFCs applicable to the District will be developed by the statutory deadline of September 1, 2010.

In GMA-9, the District provided technical guidance in defining relevant aquifers and in requesting GAM modeling runs from TWDB. Mr. Hunt produced several documents and graphs to help other member GCDs interpret the various GAM modeling results. Approximately 10 meetings of GMA-9 were held and attended during the fiscal year.

In GMA-10, the District took a leadership role in defining an action program for the GMA and in proposing a rational, hydrogeologic-based subdivision of the GMA. Mr. Holland developed and introduced to the GMA a set of potential, conceptual-level DFCs for proposed relevant aquifers in the Northern Subdivision of GMA-10. Approximately four meetings of GMA-10 were held and attended during the fiscal year, and one meeting with TWDB was attended to begin discussing the efficacy of modifications to the official GAM for the primary aquifer in the subdivision.