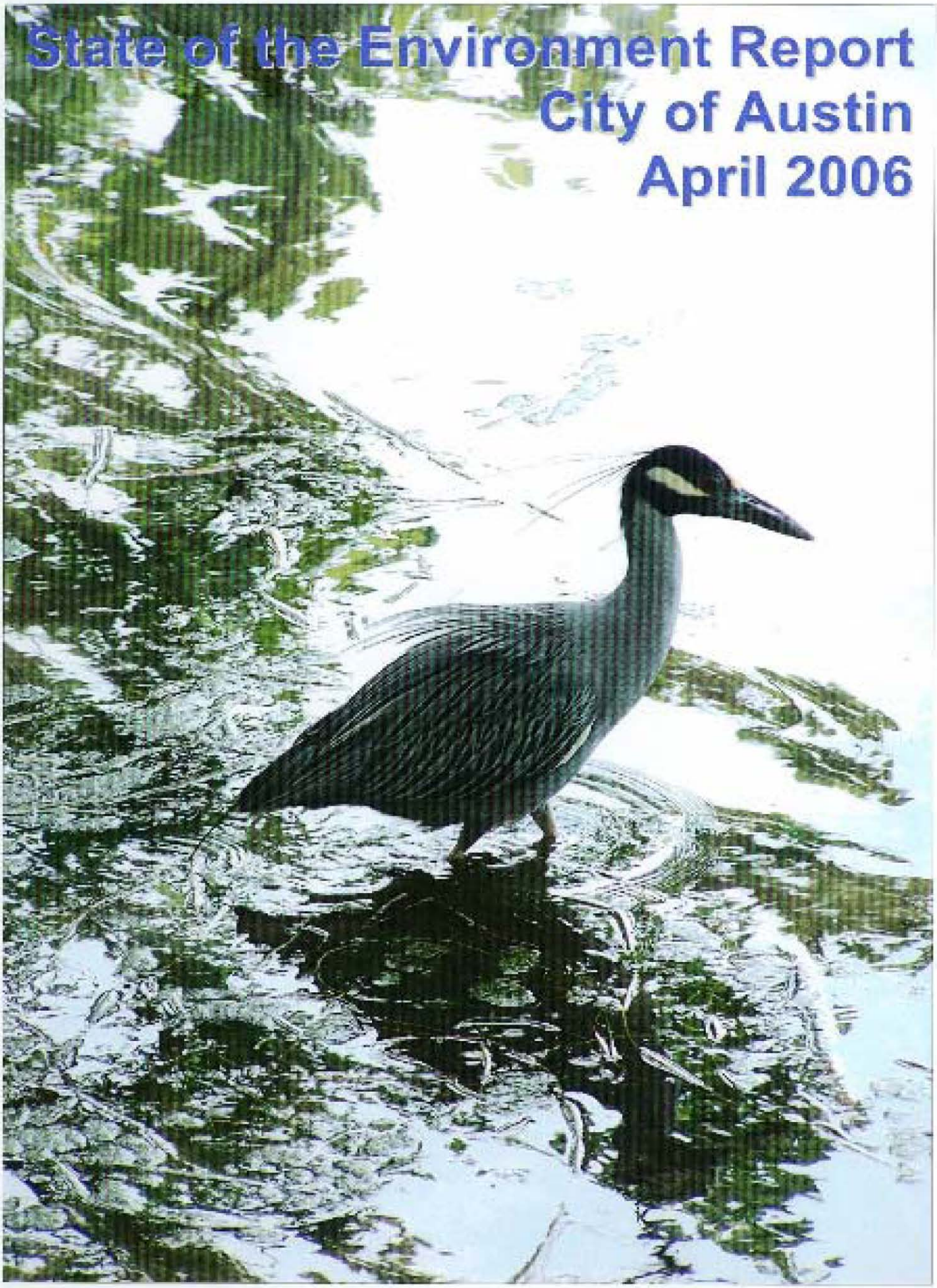
State of the Environment Report
City of Austin
April 2006



Executive Summary

On June 16, 1996, the City Council approved an ordinance directing the City Manager to appoint an Environmental Officer to ensure that environmental protection is given the highest priority, and to produce an annual report regarding the state of Austin's environment. This ninth annual report addresses the state of our environment using the following environmental indicators: watershed protection, air quality, solid waste and hazardous waste disposal, water supply and conservation and wastewater service, open spaces and parkland, and energy consumption and conservation.

Watershed Protection

In November 2005, the Austin City Council passed an ordinance banning the sale and use of coal tar containing pavement sealants from the City of Austin's city limits and planning jurisdiction. The ban is the first of its kind in the nation. Enforcement of the ban will initially be accomplished through the City's existing Spills and Complaints Response program. Over the coming year a permit procedure will be developed for the industry.

Timeline:

- **October 18, 2005**. Based on additional scientific research on the impacts of coal tar containing sealants on aquatic organisms and after a second stakeholder meeting in July 2005, Councilman Leffingwell held a press conference at Barton Sprints pool to call for the ban.
- **October 26 & November 8, 2005**. Additional public comment heard during the ban approval process at the Environmental Board and Planning Commission meetings.
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In an effort to educate the local and national public, Watershed Protection and Development Review (WPDR) developed, launched, and maintains an informational web page that includes ongoing research results, coal tar facts, etc. For more information, please visit: http://www.ci.austin.tx.us/watershed/coaltar_main.htm

Research Results 2005

Various components of the research were presented to EPA, US Department of the Interior, Texas Commission on Environmental Quality, and at various professional conferences. Findings of the research conducted jointly by the COA and USGS have been published in the journal *Environmental Science and Technology (ES&T)*, substantiating the City's early work on PAHs and coal tar sealants. Three additional manuscripts have been peer reviewed and submitted to national technical journals.

Key Findings

- Sealed parking lots are associated with hot spots of polycyclic aromatic hydrocarbons (PAHs) in stream sediments. Aquatic communities are significantly degraded at hot spots in the Austin area.
- Particulates in runoff from sealed parking lots have PAH concentrations 65 times higher than parking lots with no sealants. The ES&T article on this study was one of the top 15 most accessed for July –Sep information please visit:

Parking lot with impacted site

http://pubs.acs.org/journals/esthag/promo/most_accessed/index.html

Air Quality

The Texas Commission on Environmental Quality (TCEQ) collects and analyzes statewide air quality data. Central Texas monitors show exceedances of EPA's health-based 8-hour standard for ground-level ozone. Based on that data, the Austin/Round

Rock Metropolitan Statistical Area (MSA) are acting to assure attainment and maintenance of the federal 8-hour standard. Using the Early Action Compact (EAC) Protocol, the MSA has prepared a Clean Air Action Plan (CAAP) that provides clean air sooner, maintains local flexibility and can defer the effective date of nonattainment designation.

While some cities can attribute the majority of their air pollution to old manufacturing plants or refineries, Austin cannot. Most area NOx emissions come from on-road sources - cars and trucks. Additional sources include non-road (e.g., construction and landscaping equipment, trains, boats), point (e.g., large factories, power plants) and area (e.g., small facilities, households).

Clean air is a vital aspect of the quality of life in the Austin region, and air quality statistics impact Austin's reputation for "livability". Poor air quality creates aesthetic concerns such as reduced visibility and an unsightly green or brown haze. It damages property including buildings, vehicles, and flora. Most importantly, air pollution is a health hazard, especially for the very young, athletes who exercise outdoors, and the elderly.

Recognizing the regional nature of air quality, the City of Austin takes an active role in area initiatives. Section Two of this report provides information on initiatives taken by the City to comply the federal standard for average ground-level ozone concentration.

Solid Waste/Hazardous Waste Disposal

The diversion rate for FY 04-05 was just over 28%, consistent with that of the past several years. The Material Recovery Facility (MRF) received and processed over 37,600 tons of material and generated over $2.4 million in revenue, an increase of over 1,600 tons and almost $200,000 over the previous year.

Through curbside collection of recyclables and yard trimmings, Solid Waste Services diverts a significant portion of the residential waste stream from the landfill. Recyclable materials are processed and sold through the City's Material Recovery Facility, while yard trimmings are delivered to the Hornsby Bend facility and composted into Dillo Dirt.

Water Supply and Conservation, and Wastewater Service

In spite of the increasing stress on Austin's water treatment production capacity over the past years, the Utility's water treatment plants continue to produce drinking water at a quality that are well under the national and state regulatory water quality limits. At maximum production rates in mid-summer and with construction nearing completion at one of the three plants, the treatment plants met the challenge of maintaining the excellent quality of our drinking water under the toughest conditions.

The coming regulatory changes for drinking water, combined with the need for increased capacity, present an additional challenge for our treatment plants over the next several years. The Utility has participated in research projects testing and evaluating ultraviolet light for disinfection, and on the use of membranes. The state drinking water standards for Cryptosporidium and disinfection by-product levels will be tightened as required by new EPA regulations. The Utility's treatment plants will continue to meet these new requirements. The Utility has completed monitoring for *Cryptosporidium* in treated drinking water from all three water treatment plants, and will submit that information to EPA as "grandfathered" data to demonstrate compliance with the rule on *Cryptosporidium*. The method of measuring disinfection by-product levels will change under the new rules. However, the water quality produced by the plants is about one-half the maximum levels under the new rules, which will keep the Utility well within requirements. Planning is also underway for meeting the projected increased system demand for treated drinking water through the initiation of preliminary design and evaluation of a new water treatment plantcapacity, and the expansion of the Ullrich Water Treatment Plant capacity from 100 MGD to 167 MGD.

Wild Lands and Parkland

Through the Wildland Conservation Division of the Austin Water Utility, the City of Austin manages more than 33,000 acres of wildlands. These lands differ from parks in that they do not contain amenities such as swimming pools, picnic tables, playgrounds, or ball fields. The City of Austin's wildlands are dedicated to either the Water Quality Protection Lands (WQPL) or the Balcones Canyonlands Preserve (BCP) program depending on the primary reason for purchase. Lands dedicated to the WQPL are key properties that enhance and protect water quality and water quantity, specifically in the contributing or recharge zones for the Barton Springs segment of the Edwards Aquifer. Lands dedicated to the BCP contain habitat for at least one of the eight endangered species protected under the Balcones Canyonlands Conservation Plan, a federally permitted Habitat Conservation Plan the City shares with Travis County and coordinates with several partners.

With 16,682 acres of parks, greenbelts and preserves, Austin ranks as a leading city in parkland acres both in the state and nationally. Although Austin's population has continued to grow rapidly over the past two decades, parkland acquisition programs approved by the voters have enabled the parkland to population ratio to remain relatively constant. The ratio in 1985 was 26 acres per 1000 people, and in 2005 was 24 acres per 1000 people.

Energy Consumption/Conservation

The Austin Energy's Conservation and Renewable Energy Division, provides residential energy efficiency and commercial energy management services to all types of residential and commercial customers of Austin Energy. These services include, providing technical assistance through energy audits to identify energy efficiency opportunities, making recommendations on the most cost effective measures, and offering financial incentives for the installation of energy efficient measures.

The purpose of these programs is maximizing efficiency in the use of Austin's energy resources while increasing customer comfort and satisfaction and lowering customer electric bills. Maximizing efficiency lowers costs to Austin Energy and its customers, while also reducing power plant emissions and promoting economic development in the Austin area. These services also provide economic benefits through increased employment in the local energy efficiency industry and greater spending in the local economy due to thousands of Austinites having increased disposable income as a result of lower energy bills.

Section 1

Significant Year 2005 Watershed Protection Issues

PAHs AND COAL TAR PAVEMENT SEALANT UPDATE

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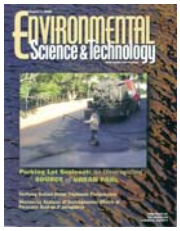

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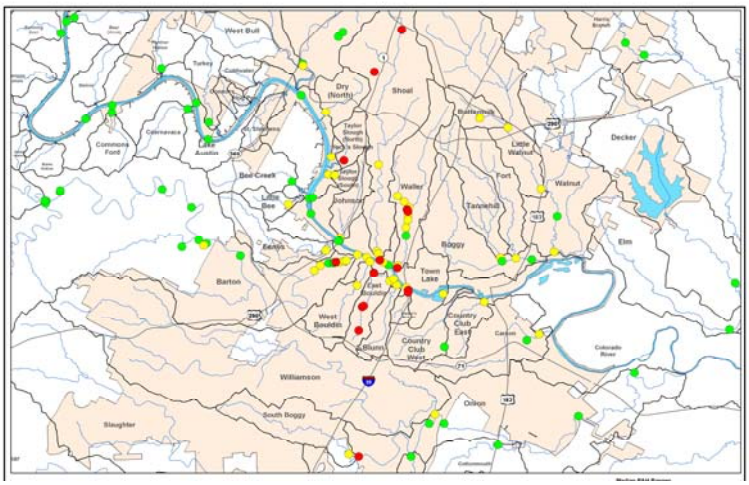

Red indicators for locations with stream sediment PAH levels over expected biological effects levels.

- Coal tar-based sealants are toxic to aquatic organisms at levels observed in Austin area stream sediments.
- Median PAH concentrations are more than 100 times higher in coal tar sealant products than in asphalt-based sealants.
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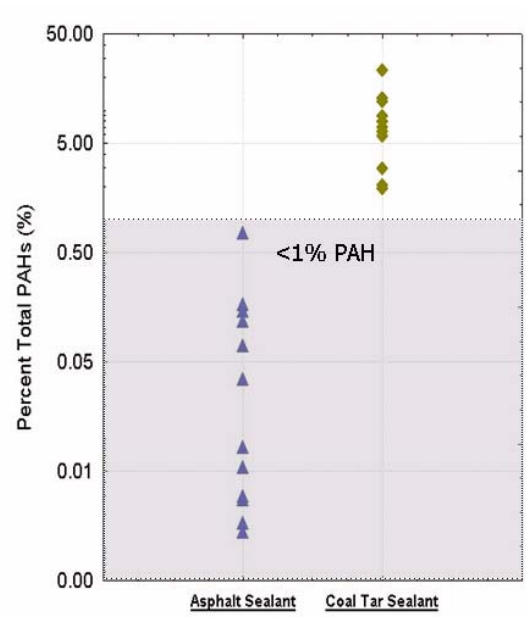


- Although asphalt-based sealants may also be a source of PAHs in stream sediments, our research indicates that the coal tar-based products represent the highest risk to aquatic life.

- Estimates from the USGS study indicate that total loads of PAHs coming from parking lots in the studied watersheds would be reduced to about one-tenth of their current loads if all of the parking lots were unsealed. For more information, please visit: http://water.usgs.gov/nawqa/pah_faq.html#impact

Results were communicated to the scientific community, at the local, state and federal levels through:

- Presentations at state and national professional meetings, including the North American annual meeting of the Society for Environmental Toxicology & Chemistry
- Technical briefings with USGS, EPA and US Department of Interior
- Congressional briefing with USGS on Dec. 2005

PAH Ban Public Outreach

Community education efforts and contact with industry representatives began with the public input process during development of the ban ordinance. Media coverage served as an important component of the public outreach and education effort.

- KVUE and News 8 broadcasted stories on the ban. Informational videos are available online:
  - ◊ KVUE: http://kvue.iewatershed.com/index.php?pagename=Media
  - ◊ News 8: http://news8austin.com/content/your_news/Default.asp?SecID=278&ArID=152772&addvid=34212

- WPDR mailed a notification and informational letter communicating the ban's implementation, effective date, and helpful resources to:

  - ◊ local manufacturers
  - ◊ retailers and applicators
  - ◊ local apartment complex owners
  - ◊ and managers
  - ◊ neighborhood associations
  - ◊ area public and private schools
  - ◊ religious organizations
  - ◊ child care facilities

- WPRD created forms for retailers to track sales for use outside the planning jurisdiction and for field inspections.

Water Quality Protection

The Center for Watershed Protection (CWP) chose Austin as one of four case studies for its new Smart Watersheds benchmarking tool. The tool will evaluate a community's efforts to implement and integrate programs in order to restore urban watersheds. CWP chose Austin's Environmental Integrity Index, which assesses water resources by incorporating chemical, physical, habitat quality and biological assessment components, and the Water Quality Education program as two of its national benchmarks.

On-Going Programs

CITY WIDE ENVIRONMENTAL REMEDIATION

WPDR also provides advice and recommendations on regulatory and technical aspects of the remediation/clean up of contaminated sites that impact the City or are the City's responsibility. WPDR coordinates with other Departments, and local, State and Federal authorities on potential environmental impacts of pipelines, landfills, and other high-risk land uses or activities.

Mabel Davis Park

The project to remediate pesticide and lead contamination at an old City landfill in south Austin's Mabel Davis Park concluded and the park re-opened in December 2005. The project took approximately 2 months longer than expected, but was completed nearly $1.5 million under budget. Additionally, the City reconfigured the project to allow the construction of Austin's first skate park during the remediation process. Completion reports will be submitted to the Texas Commission on Environmental Quality for review, and approval is expected by the end of 2006.

Longhorn Pipeline Inspection Delays

Due to significant reductions in the quantities of fuel being shipped through the Longhorn Pipeline, the owner, Longhorn Partners Pipeline, Inc., requested the federal Office of Pipeline Safety (OPS) grant a delay in an important, required internal inspection of the pipeline. Mayor Will Wynn contacted OPS and objected to the request.

In response to the City's concerns, a series of meetings were held between the City and Longhorn, and the City and OPS. The negotiations resulted in OPS issuing an order amending Longhorn's operating plan. The OPS order noted a number of deficiencies in Longhorn's request for delay and directed Longhorn to implement several safety measures to mitigate potential risks created by the delay in internal inspection and to provide OPS with information on the pipeline transport volumes more frequently. Additionally, Longhorn and the City setup clearer lines of communication for better coordination between the two entities.

Abandoned Landfill Survey Update

The Solid Waste Services Department, with technical assistance from WPDRD, contracted with Geomatrix, Inc. to update a 1984 report on abandoned landfills in Travis County. Many of

these landfills present a possible hazard to public safety from landfill gas migration or to the environment from exposed waste or contaminated landfill leachate.

The survey included a visit to each known abandoned or closed landfill in the Austin area. Geomatrix assessed each landfill for visible hazards such as exposed waste, subsidence, or changes in use of the overlying or adjacent land. The report included a series of recommendations, if needed, for each site.

The survey resulted in the discovery of one new, multi-story building possibly constructed over a former landfill, of which the owners were unaware. Upon notification by the City, the owners undertook a methane gas survey and found small pockets of gas beneath the building. The owners took immediate action to protect the building's occupants while a full investigation took place and permanent protective measures installed. Subsequently, a subsurface investigation by the owner found no evidence of a landfill on site.

Geomatrix completed the report in May 2005 and did not find any other sites requiring immediate action. The City is considering Geomatrix's other recommendations for implementation as appropriate.

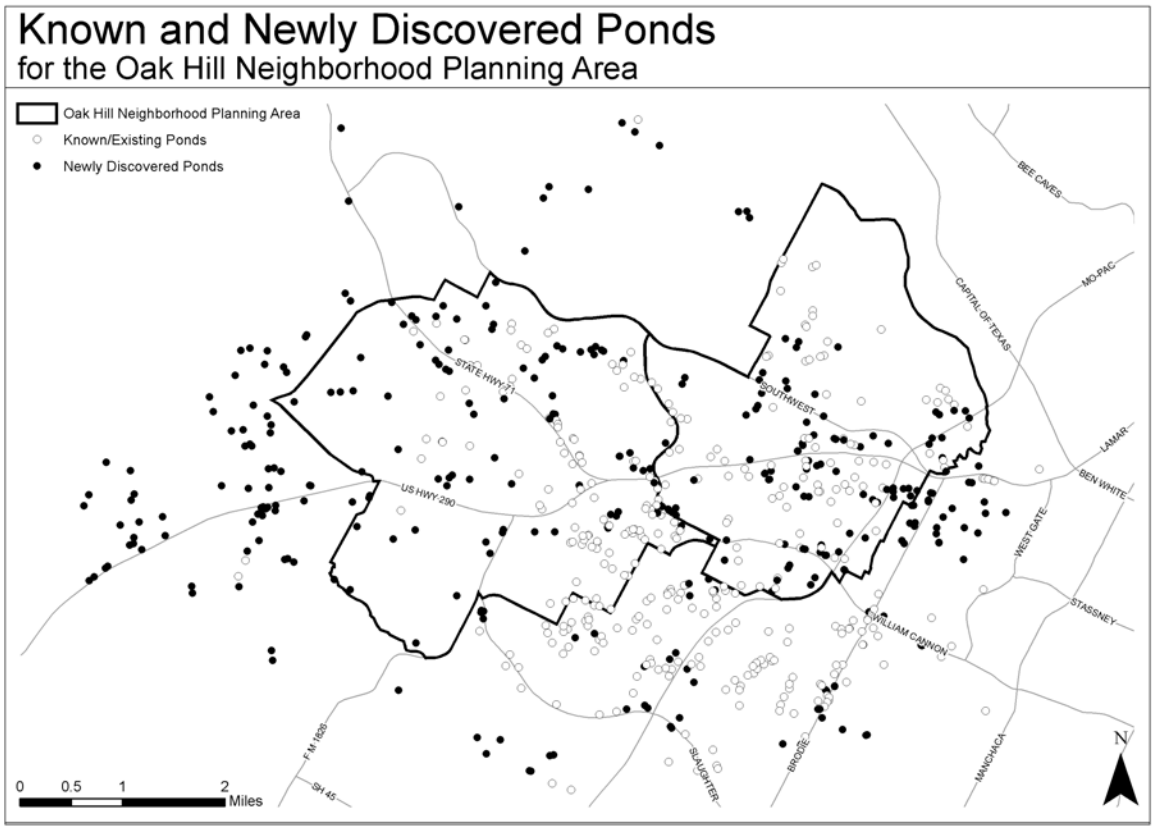
Planning GIS

The Planning & GIS Section led or supported a variety of projects and initiatives, including:

- **Regional Water Quality Plan for the Barton Springs Zone.** WPDR Staff concluded the City's participation in this partnership with other regulatory entities and interested parties in the affected area. WPDR Staff evaluated ways to implement the goals and objectives of this plan in coordination with regional partners to strengthen protection for the aquifer and associated creeks.
- **Legislative Bills**. WPDR Staff presented substantive comments on numerous Texas State Legislature bills that would have an impact on watershed and environmental issues, such as

beginning evaluations of State Highway 130's watershed impacts on its immediate surroundings and the region as a whole.

- **Neighborhood Planning**. WPDR assumed a more active role in the Neighborhood Planning process. WPDR Staff provided support on two proposed ETJ release cases, giving detailed information about the watershed implications. WPDR Staff also provided support on several regulatory initiatives and modifications.
- **Mapping & Database Improvements**. WPDR Staff identified base map, geodatabase needs, and began to address a significant backlog of incomplete, outdated, and/or inadequate information. WPDR Staff also initiated a comprehensive overhaul of the Structural Stormwater Control ("Pond") Database to make it complete and accurate, link it to the Drainage Infrastructure GIS (DIG) project, and modernize GIS features. Similar efforts have begun with a pilot area in Oak Hill.



Pollution Prevention and Reduction

Stormwater Discharge Permit Program

The purpose of the Stormwater Discharge Permit Program is to provide regulatory oversight and guidance regarding the issuance of permits to discharge into the storm sewer system and receiving waterways.

- In 2005, WPRD issued 1,188 permits and conducted 685 inspections for compliance. As a result of the inspections, the following contaminants were removed from the environment:

33 cubic yards of contaminated solids:

- oil contaminated soil
- used sorbent

131 gallons of contaminated liquids:

- used motor oil
- solvent, antifreeze
- gasoline
- diesel

Program staff routinely conducts follow-up inspections to achieve 100% compliance. The program continues to see a steady decrease in the number of facilities requiring a follow-up. In 2005, approximately 62% of previously inspected operations demonstrated 100% compliance without a follow-up visit, showing the success of the program's educational efforts for business operators.

Spills And Complaints Response Program

Program investigators respond to hazardous and non-hazardous material spills and citizen pollution complaints 24 hours a day, 7 days a week through the City's Pollution Hotline 974-2550. Investigations are conducted to prevent/minimize polluting discharges to the storm sewer

system and receiving waterways, often reducing/eliminating threats to life and property at the same time.

In 2005, 1418 investigations were conducted. Investigators ensured removal of over 1 million gallons and 600 cubic yards of pollutants from the environment. The top five pollutants were:

- 38% Sewage from public and private system overflows
- 27% Petroleum from vehicle repair practices/disposal, accidents
- 8% Sediment from construction activities lacking proper controls
- 7% Wastewater discharges, other than sewage
- 6% Paint from improper disposal, equipment washing, etc.

The remaining 14 % of the incidents where a pollutant was found were divided between food grease spills from leaking and overfilled containers; yard wastes such as dumping leaves, grass clippings, and brush into creeks; chemicals like antifreeze or abandoned drums; soap related washing vehicles, pavement, or equipment outside without proper facilities; and trash.

Pollution Prevention Improvements With City Operations

Pollution Prevention and Reduction Section staff worked with various City Departments staff to evaluate operations and practices at specific City properties to ensure compliance. WPDR Staff helped identify activities considered more at risk for creating polluting discharges and developed/implement plans to prevent such discharges. For example, WPDR staff worked with the Austin Water Utility throughout the year to provide input on the development and implementation of an enhanced emergency response program for sewage overflows. The WPDR teams tasked with containment and recovery during sanitary sewer overflows are now all equipped with pumps, vactor trucks, and other equipment that result in a more rapid remediation and enhanced protection of local waterways.

6th Street Food Service Environmental Outreach Initiative

Implemented in 2004 to prevent chronic, polluting discharges along E. 6th Street between Congress Avenue and IH 35, the 6th Street Food Service Environmental Outreach Initiative completed data collection gathered during food service inspections and performed a full evaluation of the information during 2005. The more significant problems identified are:

- Reoccurring grease spills where responsible party could not be identified due to lack of ownership and labeling of grease bins
- Solid waste containers misused and not maintained
- Ponding or stagnant water in alleyways due to potholes, ruts, elevation issues, and washing of the alleyways
- Collection of urine and feces in alleyways
- Discharging soaps and detergents during restaurant equipment washing.

The inspection results prompted several meetings with stakeholders that included various City Departments and the business district. Collaborative efforts have led to a resolution of several problems already. Accomplishments include:

- **Drainage**. City's Public Works and Transportation Department began working on the identified drainage issues.
- **Lighting**. Austin Energy identified areas to adjust and redirect lighting in the alleyways to improve visibility for monitoring the area
- **Consistent Observation**. Waste Management, Inc. assigned an employee to check the dumpsters daily and report problems seen
- **Follow-up**. Solid Waste Services is overseeing and enforcing the services provided by Waste Management, Inc.
- **6th Street Team.** This team has been permanently established, meeting monthly to address any reoccurring or new problems and concerns along the corridor.

Currently, section staff is working on a plan to help prevent grease spills.

STORMWATER TREATMENT & STREAM RESTORATION PROGRAM

Stormwater Treatment

The mission of the Stormwater Treatment section is to identify, prioritize and implement solutions for water quality improvements in areas of Austin that were built out prior to the establishment of water quality regulations. The Stormwater Treatment section designs and constructs stormwater treatment facilities (ponds, filter strips, etc). Primary accomplishments in 2005 include:

- Completion of 4 treatment ponds at the intersection of IH-35 and Ben White, in conjunction with TXDOT's roadway improvements. These 4 ponds treat a total of approximately 30 acres of impervious cover before the runoff reaches Williamson Creek.

COA/TXDOT Pond at
Northeast quadrant of Ben White & IH-35

- Completion of the Betty Cook treatment pond that removes pollutants from 110 acres of the Little Walnut watershed before discharging into Little Walnut Creek.
- Beginning construction of a regional stormwater treatment wet pond in Upper Shoal Creek that treats 400 acres of previously untreated watershed.
- Board and Commission approval to construct a treatment pond in Zilker Park to treat 15 acres of residential land that drains directly to Barton Creek just upstream of Barton Springs Pool.
- Completion of design plans to test a small scale stormwater treatment device inside of a roadway storm drain system.
- Initiation of Preliminary Engineering plans to treat stormwater and restore riparian zones for major portions of Boggy, Little Walnut and West Bouldin Creek.

- Initiation of construction on the Oak Springs Wet Pond that treats 180 acres of the Boggy Creek watershed.

Stream Restoration

The purpose of the Stream Restoration Program is to create a stable stream system that decreases property loss and increases the beneficial uses of waterways.
Urbanization impacts our creeks by adding impervious cover, which increases the volume and frequency of storm runoff, which increases stream channel erosion. Our creeks react by getting deeper and wider. Stream channel erosion impacts residential and commercial properties and public infrastructure.

The Stream Restoration Program staff identifies erosion threats and stream channel instability, develops solutions, and implements stream stabilization and streambank restoration projects that protect properties while enhancing the natural stream setting.

The following are examples of stream restoration projects completed in 2005:

Fort Branch at Manor Road Emergency Project:

June 2004 storm flows scoured away 150 feet of a 10-foot high creek bank upstream of the Manor Road Bridge. Subsequent storm flows in November 2004 wore away an additional 300 feet of the vulnerable bank. Erosion was rapidly advancing into three residential properties and had already exposed two electric power poles. Additionally, future storm flows could have done further damage to the concrete channel lining at the Manor Road Bridge. This emergency project reconstructed 450 feet of creek bank with limestone rock armor and wrapped soil lifts with native vegetation. The Manor Road Bridge and three residential properties are now protected and the reconstructed creek bank enhances the natural creek setting.

Fort Branch before

Fort Branch after

Tannehill Branch at Manor Circle Emergency Project:

The November 2004 storm flows caused severe erosion damage along a Tannehill Branch Creek bend at Manor Circle. The erosion damage caused a bank failure that exposed and undermined a four-plex structure foundation and threatened another four-plex structure. Further exposure of the two 4-plex foundations could have resulted in the displacement to eight families. This project reconstructed the creek bank with native limestone rock armor, wrapped soil lifts and native grasses. The four-plex structures are protected, the properties are restored and the natural creek setting is enhanced.

Tannehill at Manor before

Tannehill at Manor after

Tannehill Branch at Lovell Drive:

This project was designed by Watershed Protection, Creek Erosion Mitigation Program, and constructed by our Watershed Protection Field Operations Division, Erosion Repair Crew. The project includes approximately 400 feet of bank stabilization and channel grade control structures. The channel bank was reconstructed with limestone boulders, wrapped soil lifts, and vegetated with native grasses.

Tannehill at Lovell before

Tannehill at Lovell after

WATER QUALITY EDUCATION

Green Neighbor

The Education group has developed a new program, the Green Neighbor, to encourage water quality stewardship. The program includes a booklet with a Clean Creek Challenge that provides a comprehensive list of actions citizens can take to help protect our water. As they adopt each earth-wise action, citizens collect credits towards becoming a Green Neighbor. If 40% of the neighborhood participates, they then become a Green Neighborhood. This reference booklet also includes educational background on why it is important to care for Austin's water and a list of resources that makes achieving these stewardship activities easier. Additional information can be found at http://www.cityofaustin.org/watershed/greenneighbor/.

Clean Creek Campaign

This new partnership with Keep Austin Beautiful (KAB) combines Watershed Protection's goals of improving water quality and preventing blocked storm drains with KAB's mission of beautifying Austin. The Clean Creek Campaign consists of three separate programs – Creek Cleanups, Adopt-a-Creek, and Clean Creek Campus. Creek Cleanups are one time events to clean trash from creek beds while Adopt-a-Creek requires volunteers to commit to a minimum of four cleanups per year. The Clean Creek Campus offers lessons and service projects to elementary and middle school students. For more information, visit http://www.cityofaustin.org/watershed/cleancreek_main.htm/ .

Grow Green

2005 marked the commencement of a third fertilizer study, this one at the Lady Bird Johnson Wildflower Center. The previous two studies were short-term -- the first in a greenhouse environment at Texas A&M, and the second in our Stillhouse Spring Cleaning pilot neighborhood. In both of the previous cases, results showed that organic fertilizers leached less nutrients to our groundwater than synthetic products. We are working with three major fertilizer companies (Scotts, Lebanon and Purcells) to identify products that have the potential to:

Provide a slow release nitrogen source that would help prevent further degradation to our environmentally-sensitive karst aquifer

- Contain low phosphorous levels, since phosphorous is naturally high and also tends to build up in our soils
- Be formulated to be easily spread at our recommended application rate of ½ lb. nitrogen/1,000 square feet
- Be made available to the homeowner market at a competitive/reasonable cost to consumers.

This study will also test the long-term viability of unfertilized turf as well as some native grasses that have the potential to replace lawns.

City of Austin Biologists Reconstructing Habitat in Barton Springs Pool.

Water Resources Evaluation

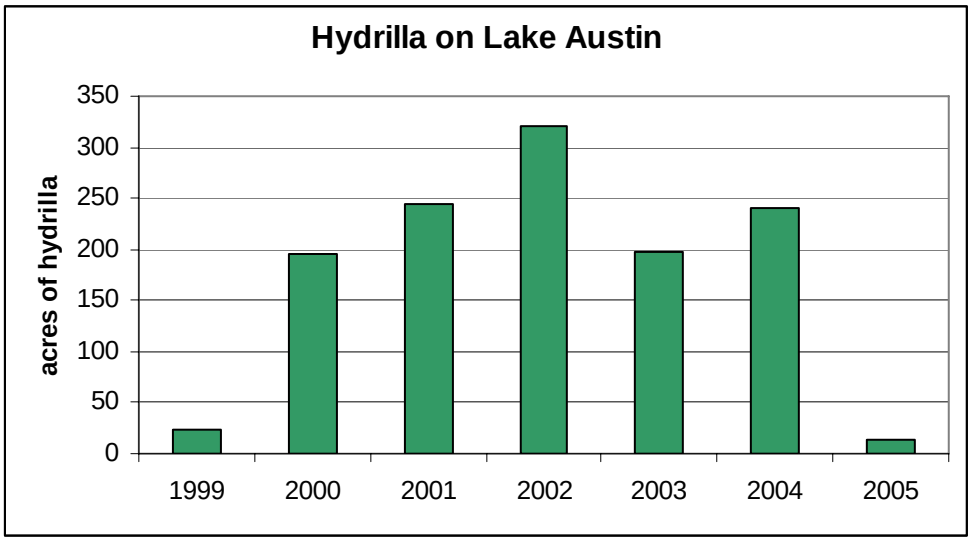
<u>Barton Springs and Austin Blind salamanders</u>

Habitat reconstruction has been the focus of management activities in the past year. The success increasing salamander abundance in Eliza Spring has guided efforts to improve the aquatic environment in Parthenia Spring/Barton Springs Pool. Monthly partial drawdowns of the water level in the pool were used to increase velocity of water flow in the shallow fissures and control undesirable algal growth. In addition, City biologists used SCUBA equipment and submersible water pumps to clean accumulated sediment from deeper salamander habitat. This appears to have been successful in increasing the abundance of Barton Springs Salamanders to 300 in the most recent survey. This is the highest number ever documented. Habitat work in Sunken Garden has focussed on restoring full flow from the spring pool to the outflow stream, slowing cleaning accumulated sediment, and landscaping stream banks with native plants to control erosion and return the site to its former natural beauty. The aquatic environment in Eliza Spring is maintaining itself as a natural stream should and the site harbors approximately 400-600 salamanders.

Hydrilla Update

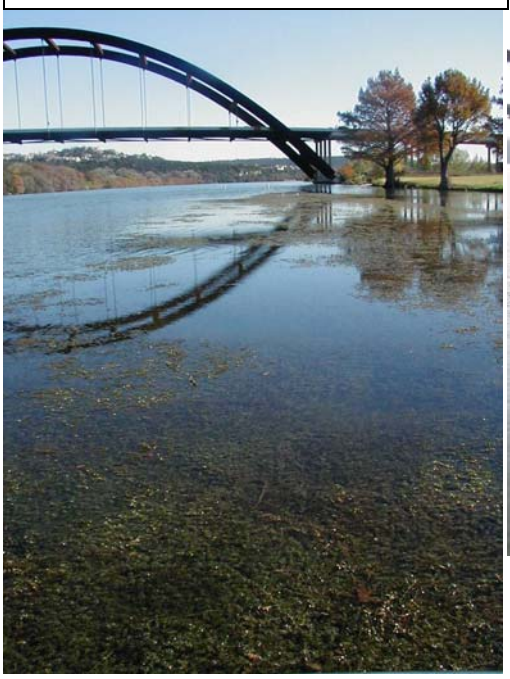
After six years of continued growth and ongoing control efforts, the exotic aggressive plant hydrilla declined significantly in 2005 on Lake Austin, dropping from 241 acres in September 2004 to only 13 acres in November 2005. The decline can be attributed in part to the integrated management plan developed in partnership by the City, Texas Parks and Wildlife

Department (TPWD), Lower Colorado River Authority, and Friends of Lake Austin, a local citizens group. Pursuant to the plan, the City stocked 2400 sterile grass carp in November 2004, bringing the number of fish stocked to over 8,000. Soon after the stocking, the lake experienced a significant flood event, followed by the management plan's recommended 2005 winter drawdown. This combination of flood scouring, drawdown loss, and grass carp feeding finally tipped the balance. Throughout 2005, hydrilla levels were at their lowest since first documented in 1999.

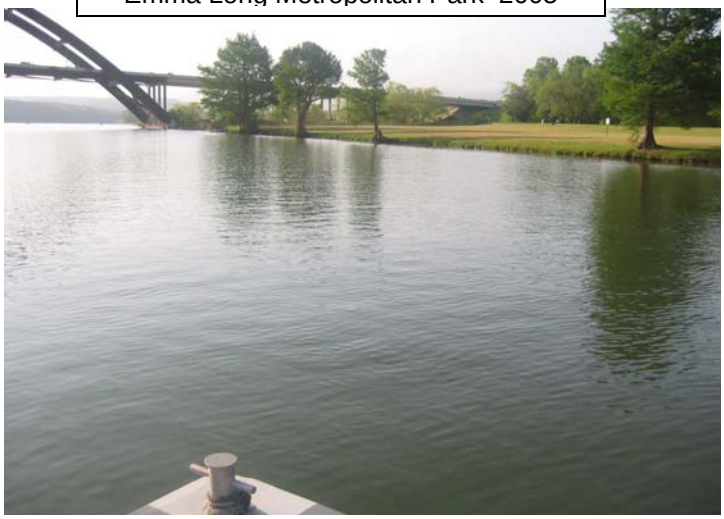


After the first decline in acreage was seen in July 2005, the partners called a joint press conference at Emma Long Metropolitan (City) Park to highlight the success. In this area of the lake, where swimming and boating were severely limited in the past by dense mats of hydrilla, there was only clear, open water to enjoy.

Emma Long Metropolitan Park 2001



Emma Long Metropolitan Park 2005



1-1 While the decrease in hydrilla is something to celebrate, it is important to note that other, less problematic vegetation on the lake has increased to over 300 acres, providing important benefits to the ecosystem (oxygen, habitat) and lake users (limiting erosion, trapping silt). The current trend is expected to continue through 2006 as the City partners with the U.S. Army Corps of Engineers on a native plant restoration project and may use a 'maintenance' stocking of grass carp to offset normal mortality losses.

ON-GOING FLOOD PROGRAMS

Flood Manaement

Floodplain Management and Flood Early Warning System

Floodplain Management and Flood Early Warning System Services continues to be an example to the rest of the nation as one of only eleven cities as Case Study Communities through selected through the Association of State Flood Plain Managers (ASFPM)

Additional information about NAI and ASFPM is available at www.floods.org.

The Flood Early Warning System (FEWS) continues to facilitate the saving of lives and minimizing storm related damages through mobilization for extreme storm events on November 17th and 27th, 2004. The FEWS program is continuing to incorporate improvements throughout. The program now has a dedicated lead FEWS Engineer, and has added required staff to respond for storms of twenty-four hour duration, before calling in additional support staff. The FEWS program has developed corrective actions plans to improve the operation of the automated low water crossing barricade systems.

This program has also work extensively on implementing coordination of technical and contract management needs relating to the City's participation in the FEMA County Wide DFIRM initiative. Further program initiatives are comprised in acquisition of professional services for assessment of the FEWS hardware and software systems for development of recommendations to improve the operational reliability and flood forecast capability of the FEWS and development of services/equipment procurement documents for FEWS stream level gauge evaluation, repair and replacement and FEWS radio transmitter installation; and assisted in development of procurement documents for narrow band radio transmitters for the FEWS.

The program also addresses floodplain variances by developing and presenting recommendations to the City Council for variance requests. Program efficiencies were obtained by closing of the FEWS field maintenance shop, with the transfer of two FEWS field technicians to the Wireless Office.

FLOOD HAZARD MITIGATION

Creek Flood Hazard Mitigation

Creek Flood Hazard Mitigation Services program accomplishments include:

1) Design completion and easement acquisition issues resolution for the Thornberry Road culvert and channel enlargement project. The project is further described as: Culvert enlargement and road pavement replacement at Thornberry Road and Carson Creek Blvd.

intersection, located on a tributary of Carson Creek. The project is also located in the Del Valle Annexation area, annexed in September 2001. Project Benefit - Reduce risks of low-water crossing conditions, diminish standing water conditions upstream of Thornberry, provide downstream streambank stabilization near two homes and improve channel aesthetics and hydraulic integrity.,

2) Continuing progress on the Onion/Williamson Creeks flood hazard mitigation and ecosystem restoration Phase 2 study by the Corps of Engineers. The project is further described as: The US Army Corps of Engineers (USACE) is conducting a Feasibility Study to evaluate flooding conditions and to identify feasible flood mitigation solutions and environmental restoration projects for the Onion Creek and Williamson Creek watersheds. The USACE completed a Reconnaissance Study in 1999 to identify historical flood damage occurrences, current environmental conditions and potential solutions worthy of further scientific and engineering investigation. The City of Austin, Travis County, the City of Sunset Valley and the Lower Colorado River Authority have entered into an interlocal agreement to jointly fund the project local cost share. At the conclusion of the study, the Corps of Engineers' findings and project recommendations will be presented to the US Congress for funding consideration for the design and implementation of floodplain structure buyouts, structural flood control measures and environmental restoration measures within the watersheds. Approximately 1000 residential house structures and numerous roadway crossings are in the floodplains of Onion and Williamson creeks. Over 300 houses in these watersheds experienced flooding during the October 1998 flood event and even a greater number in the November 2001 flooding event. Previous City studies of the flood control needs for the Onion Creek and Williamson Creek watersheds have identified cost approaching $100,000,000. Working with the US Corps of Engineers, LCRA, Travis County and the City of Sunset Valley will provide a large unified local-front in pursuit of Federal funds to support project implementation. Project Benefit--If Federal funding is secured for project implementation, flood protection will be provided for large numbers of houses and roadways, and degraded riparian areas in the watersheds will be restored. The Federal cost share for project implementation (based on the findings from the National Economic Development) is 65 percent which provides significant

economic leveraging of City funds. PHASE I of the study included: 1) a hydrologic model for existing land use conditions only; 2) an evaluation of one structural and one non-structural potential solution for flood reduction limited to the areas of interest; 3) ecosystem restoration within the areas of interest only. The areas of interest are middle-Williamson Creek, Onion-Bear Creek confluence, Bluff Springs Road/Perkins Valley, Onion Creek Subdivision, Onion Creek Forest / Yarrabee Bend, and Timber Creek. PHASE II of the study will include: 1) a hydrologic model for year 2060 land use conditions; 2) Design drawings for flood mitigation in the areas of interest, which may include solutions upstream of the areas of interest; 3) ecosystem restoration possibilities throughout the Onion and Williamson Creek Watersheds (resulting in a cost increase for the study).,

3) Construction completion for the Slaughter Creek-Tanglewood Forest regional detention pond modifications. The project is further described as: An existing detention pond experienced an overflow during the November 2001 flood event resulting in damage to houses located immediately below the dam structure. The pond system was evaluated to identify appropriate modifications to the pond embankment, outlet works and emergency spillway to reduce overflow impacts to the adjacent residential development. The project included a construction phase to implement appropriate modifications to the pond system.

4) Construction completion for the Wells Branch Regional Flood and Erosion Hazard Mitigation pond,

5) Initiation of the Pond Safety Program. The project is further described as: Freese and Nichols provided a Pond Dams Inventory Project report October 2003. The report identified 61 high hazard dams, as classified by Title 30 of the Texas Administrative Code, Chapter 299, Dams and Reservoirs. The City needs to identify and implement any necessary modifications to the dams to meet the State of Texas requirements. Phase 1 of 2. Total project cost $45million. Phase 1 $10 million, Phase 2 $35 million (6039.094),

6) Pleasant Valley Road @ Elmont regional drainage improvements engineering evaluation,

7) Austin Hills floodplain buyout completion-108 dwelling units removed from floodplain. The project may further be described as: City buyout of a mobile home park on 15 acres in East Austin at 5101 Johnny Morris Road known as "Austin Hills Mobile Home Estates." is located in the 25 and 100-year flood plains of Walnut Creek. The facility has been subject to major flooding on numerous occasions resulting in significant flooding of mobile home structures and requiring boat rescue by the fire department. The mobile home park was platted in the early 1970's prior to the City's initiation of floodplain management regulations. The mobile home park is now owned by the City of Austin. All of the 108 mobile homes and RVs have been removed from the dangers of creek flooding. The park was located in the 25 and 100 year floodplain.,

8) Acquisition and removal of 9 houses in the floodplain of lower Onion Creek through the Voluntary Buyout Program,

9) Completion of Pond G regional Flood and Erosion hazard mitigation pond design and lands acquisition. The project may further be described as:. Regional Detention Facility in the upper part of Walnut Creek Watershed to achieve flood control and stream bank erosion control goal. The proposed Regional Detention and Erosion Control Pond "G" site is located just north of Parmer Lane, east of McNeil Road and just west of the Union Pacific Railroad. The goal of the proposed regional facility is to reduce fully developed stormwater flows to the peak flow rates existing in 1988 and to provide for stream bank erosion control. COA staff is coordinating with the land developers to the south of the site. The area adjacent to the proposed pond on the south is currently under development and this development will limit the allowable maximum water surface elevation for the regional facility. The proposed facility will reduce peak 100-year storm flows by approximately 34%.,

10) Initiation of the LWA-7 WMA preliminary engineering study. The project may further be described as: Main branch of Little Walnut Creek from Metric Blvd. to the confluence with

the Quail Branch of Little Walnut Creek downstream of Rundberg Lane is a very high priority for the FC mission. Area from Golden Meadow to Mearns Meadow may have up to 178 flooded structures. Design may include but not be limited to upgrade of culverts from Golden Meadow, Quail Valley, Mountain Quail, Parkfield with channel improvements that will also address stream bank stability and riparian ecosystem restoration and possible buyouts. Preliminary engineering is to begin March 2005. Integration for LWA-7 includes potential WQ retrofit sites - 4 already identified, and 6 or 7 stream channel stability and riparian ecosystem restoration sites that have already been identified. These sites will have conceptual engineering with some going to preliminary engineering and final design

11) Completion of Los Indios Bridge/Pond improvements design evaluation. The project may further be described as: Roadway culvert enlargement and detention pond expansion at the Los Indios Trail crossing of Rattan Creek. These improvements will address flooding of the Los Indios Trail roadway crossing. The project also reduces the flood risk for about 7 houses adjacent to the detention pond and floodwater overtopping of the roadway. We will coordinate with the North Austin MUD immediately downstream of the detention pond as there are over 30 homes at risk of flooding further downstream.,

12) Initiation of preliminary engineering study for the Carson Creek flood hazard mitigation facility plan development and erosion assessment. The project may further be described as: Implementation of recommended alternatives and feasible flood hazard mitigation solutions, resulting from the study for Carson Creek Watershed: Flood Hazard Mitigation Solutions/Cost Evaluation and Erosion Assessments currently being developed. Carson Creek FHM Preliminary report is under review, once finalized, the implementation is scheduled to begin.,

13) Coordination of infrastructure cost development for SH130 related target annexation areas. Project is coordinated through Public Works Department. Watershed Protection Department is addressing environmental issues relating to protecting the waterhed.,

14) One Stop Shop partnership for RSMP participation and detention waivers.,

15) Coordination of engineering services and Community Facilities Contract development for the Z-K Regional Pond detention capacity improvements. The CFC project is with Simon Property Group for a large drainage and water quality improvement pond for Shoal Creek Watershed.

Localized Flood Hazard Mitigation

Localized Flood Hazard Mitigation Services accomplishments include:

1) Development of the LFHM Master Plan 2005 update and the 2006 Bond Election proposal. This is part of the Department Master plan. It has been revised with the 2005 update and the 2006 Bond Election proposal.,

2) Developed policy proposal for response to customer service requests,

3) Developed University Neighborhood Overlay drainage needs assessment for CMO,

4) Design and bid phase services for the Shoal Creek- Rosedale and Ridgelea storm drain improvements projects. The Rosedale Storm Drain improvements alleviate localized flooding for 15 building/yard addresses with reported flooding. Project can be constructed in two phases (downstream system first), (upstream system second). The Ridgelea Storm Drain improvements to alleviate localized flooding for 11 building/yard addresses with reported flooding.,

5) Sponsored preliminary engineering for Lavaca Street tunnel. The project is to upgrade an existing storm drain system along Lavaca Street from Town Lake to 3rd Street, which is adjacent to the new City Hall building on Second Street.,

6) Coordination of preliminary engineering activities for the Bannockburn, Long Bow, and Allandale neighborhoods storm drain improvements projects to facilitate drainage improvements in various neighborhoods throughout the City,

7 Coordination with TxDOT for the Joe Tanner Lane low-water crossing improvements. This project is Hydraulic study of low water crossing is complete. Results have been forwarded to TxDoT for design purposes. WED will provide funds to have nine, 8ft w by 4ft h box culverts at the Joe Tanner LWC included in the TxDoT expansion of US-290 / SR-71 project.

Section 2

Air Quality

Assessment

The Texas Commission on Environmental Quality (TCEQ) collects and analyzes statewide air quality data. Central Texas monitors show exceedances of EPA's health-based 8-hour standard for ground-level ozone. Based on that data, the Austin/Round Rock Metropolitan Statistical Area (MSA) are acting to assure attainment and maintenance of the federal 8-hour standard. This is being accomplished by regional activities of the Early Action Compact, which was created

To facilitate the development, adoption and implementation of a clean air plan to maintain compliance with the federal 8-hour ozone standard for the counties of Bastrop, Caldwell, Hays, Travis and Williamson,

To establish and monitor a regional effort toward the improvement of air quality,

To develop policies and strategies that will provide guidance for each of its independent governing bodies about actions that will achieve clean air in Central Texas,

To work cooperatively to achieve clean air standards that will protect public health and yet allow local governments the flexibility to select measures best-suited to each community's needs and resources.

Using the Early Action Compact (EAC) Protocol, the MSA has prepared a Clean Air Action Plan (CAAP) that provides clean air sooner, maintains local flexibility and can defer the effective date of nonattainment designation.

Background

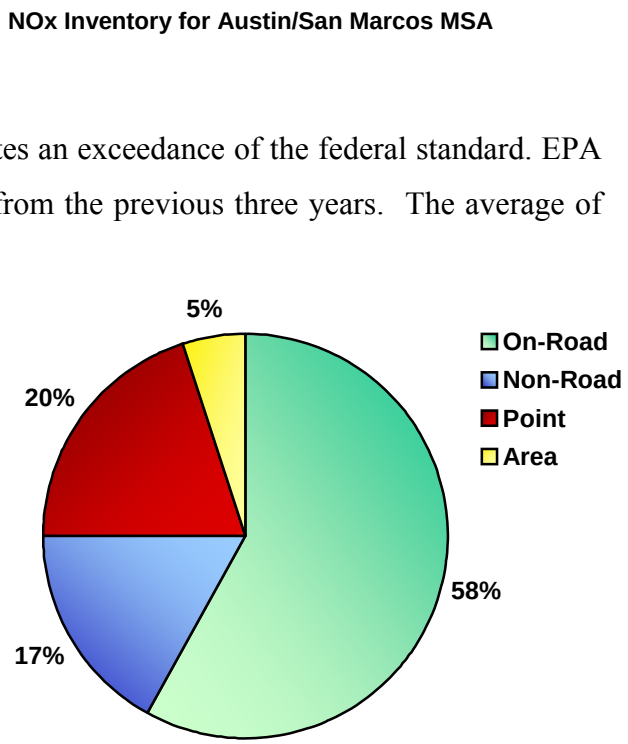
Ground-level ozone (O_3) forms when nitrogen oxides (NOx) and volatile organic compounds (VOCs) combine and "bake" in the sun. While ozone is beneficial in the stratosphere, protecting earth from ultra-violet radiation, in the lower atmosphere it threatens human health and the environment.

Ground-level ozone is a lung irritant. It can make breathing difficult and aggravate respiratory conditions. Children, seniors, people with compromised respiratory systems, and those who exercise or work outdoors are most susceptible. High ozone concentrations may affect even healthy adults. Ground-level ozone also damages buildings, vehicles, and vegetation.

While some cities can attribute the majority of their air pollution to old manufacturing plants or refineries, Austin cannot. Most area NOx emissions come from on-road sources - cars and trucks. Additional sources include non-road (e.g., construction and landscaping equipment, trains, boats), point (e.g., large factories, power plants) and area (e.g., small facilities, households).

Federal Requirements

An average ground-level ozone concentration ≥ 85 parts per billion (ppb) within an eight-hour period constitutes an exceedance of the federal standard. EPA bases an area's attainment status on data from the previous three years. The average of the fourth highest reading from each of the past three years is called the design value. If it is ≥ 85 ppb, the area is in violation. The current Austin/San Marcos MSA design value is 82, the lowest it has been in 9 years.



Nonattainment designation triggers mandatory state and federal pollution reduction requirements. They are typically prescriptive; noncompliance can lead to a loss of federal highway funding.

Regional Initiatives

Recognizing the regional nature of air quality, the COA takes an active role in area initiatives. In conjunction with the CLEAN AIR Force of Central Texas, the COA participates in ongoing public outreach campaigns. As a member of the Commute Solutions Coalition, it assists area employers in promoting trip reduction measures, which reduce traffic congestion and associated emissions.

The COA hosts Clean Cities of Central Texas, a voluntary program of the U.S. Department of Energy. Its mission is to promote the use of alternative fuel vehicles and to encourage development of alternative fueling infrastructures to reduce consumption of foreign oil and to lower emissions.

To address the 8-hour standard, TCEQ and EPA developed the Early Action Compact (EAC) Protocol. Regions that choose the EAC must follow strict timelines for developing an emission reduction plan. The plan is adopted into the State Implementation Plan (SIP) and becomes law. In return for choosing legally enforceable early action, the region is given flexibility in crafting the plan and will reach attainment two years earlier. Failure to complete any portion of the EAC means the area reverts to the traditional nonattainment process, although without penalty, and with credit given for emission reductions already accomplished.

Austin's Mayor Garcia, along with other Central Texas leaders, signed the EAC in December 2002. The Clean Air Action Plan's ozone pollution reduction strategies for the region were decided upon and submitted to TCEQ and EPA by March 31, 2004. The CAAP was incorporated into the SIP, and the SIP was adopted by TCEQ by December 31, 2004 and must be implemented by December 31, 2005. The goal is to get Central Texas air quality to healthy levels no later than December 31, 2007.

COA Initiatives

OZONE REDUCTION STRATEGIES

Staff developed strategies to minimize NOx and VOC emissions from daily COA operations. These strategies comprise the core emission reduction measures of the COA's commitment and serve as a template for other municipalities and government agencies. Because cars and trucks are responsible for about 60% of smog-producing emissions in the Austin/Round Rock region, a number of the emissions reduction strategies are aimed at vehicles. The strategies include:

- Voluntary transportation control measures for employees;
- Reductions in emissions from fleet vehicles;
- Reductions in emissions related to traffic congestion;
- Reductions in emissions through contractual agreements;
- Programs to encourage Smart Growth initiatives;
- Enhanced public education programs;
- Development of regional partnerships;
- Reductions in emissions from mobile sources; and
- Reductions in emissions from area and point sources.

Within the CAAP, the strategies are reflected by specific emissions reduction proposals, of which, two of the more substantial are:

<u>Vehicle Emissions Testing – Inspection and Maintenance (I/M) Program</u>

Would be required annually for all vehicles 2-24 years old.

Must pass before new vehicle registration or safety inspection can be issued.

Fee expected to be no more than $20 in Travis, Hays, and Williamson counties.

Safety inspection fee would remain at $12.50.

If emissions test failed, must get repairs within 15 days to get free re-test.

Repair financial assistance for low-income drivers.

Infrared mobile testing equipment will measure vehicle tailpipe emissions at selected traffic points. High-emitting vehicles have 30 days to get repairs.

Austin Energy to reduce total annual NOx emissions from Holly and Decker combined to 1,500 tons or less – from the 1,750 tons that would have been allowed under SB 7. In addition, Austin Energy has committed to cap the total NOx emissions from all AE power plants located in Austin at 1,500 tons per year, even with the addition of the City's newest generating plant, the natural gas-fueled Sand Hill Energy Center.

The full CAAP and all appropriate updaes can be found on the CAPCOG website: http://www.capco.state.tx.us/CAPCOairquality/EAC.htm

DEPARTMENTAL OZONE ACTION DAY (OZAD) PLANS

Every department has an OZAD plan. It guides air-friendly operational changes made on OZADs or for the entire ozone season. Plans are department-specific, but all include employee notification and trip reduction measures.

CITY EMPLOYEES RIDE CAPITAL METRO FREE PROGRAM

Effective October 1, 2004, the City of Austin entered into an interlocal agreement with Capital Metro to enable all City employees to use approved Capital Metro transportation services free anytime, simply by presenting a valid City employee identification card. The program's easy-to-use approach is intended to encourage Metro ridership, and further supports the City's goal of voluntary automobile trip reductions.

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Section 3

Solid Waste Services

Solid Waste Management

DIVERSION

The diversion rate for FY 04-05 was just over 28%, consistent with that of the past several years. The Material Recovery Facility (MRF) received and processed over 37,600 tons of material and generated over $2.4 million in revenue, an increase of over 1,600 tons and almost $200,000 over the previous year. This facility achieved new levels of revenue and processing despite major downtime obstacles and the ongoing challenge of finding more markets for sorted whole glass bottles, mixed glass, and crushed glass.

Solid Waste Services completed a highly successful pilot of single stream recycling, in which recyclables were commingled and collected in 60 gallon carts rather than the standard blue bins. The "All in One" method proved popular with the 5,000 pilot participants. The number of customers setting out recycling at least once every four week period increased by 7.9%, and the number of customers setting out on any given week increased by 32.4%. The average pounds per household collected during a two-week period increased by almost 5 pounds per household as compared to standard bin routes. The department received Council approval to move forward with citywide implementation, which is slated to begin in January of 2008. This method of collection will enhance operational efficiency and automate the collection process, which should result in an increase in waste diversion and a reduction in employee injuries.

During FY 04-05, Solid Waste Services also partnered with Dell, Inc. and Goodwill of Central Texas in the Austin Computer Recycling Project, which provided computer recovery and recycling opportunities to Austin residents. The project's goals were to test a combination of drop–off and home pick–up recycling solutions, and to raise awareness of the importance of responsibly recycling used electronics. This initiative resulted in a 33% increase in the number of computers dropped off at Goodwill. The project is currently serving as a model for other communities interested in computer recycling.

YOUTH EDUCATION

Solid Waste Services extends its messages of recycling right and protecting the environment to Austin youth through school programs and facility tours throughout the year. In FY 04-05, 11,445 AISD students in kindergarten through second grade were treated to "Sergeant Bin Goes to the Beach." In this musical production, Captain Can's sidekick Sergeant Bin teaches youngsters how everyday waste materials such as milk jugs can be transformed into items such as plastic baseball bats through recycling. Another 1,581 third graders honed their math skills and learned some interesting recycling facts through the "Two Pound Solution" game. Department staff also led 1,336 children through tours of the Material Recovery Facility, Household Hazardous Waste Facility, and landfill.

Solid Waste Services sponsored a student art contest in the fall, challenging Austin middle school students to harness their artistic abilities and illustrate the principles of recycling right. This year's first place winner was Marina Flecha from Murchison Middle School. Following an unveiling on America Recycles Day, Marina's artwork was displayed on two downtown billboards. More of the student artwork will be featured in Solid Waste Services' 2006 calendar.

AWARDS

Solid Waste Services received the following recognition in FY 04-05:

- A Recycling Alliance of Texas Leadership Award, recognizing Solid Waste Services, Dell, Inc., and Goodwill Industries for an Outstanding Recycling Partnership in the Austin Computer Recycling Project.
- A Public Relations Society of America "Best PR Campaign in 2004 for a Non-profit" award, recognizing Solid Waste Services, Dell, Inc., and Goodwill Industries for the Austin Computer Recycling Project.
- Two *Austin Chronicle* Best of Austin awards, for happiest HAZMAT handlers and Out with the Old: Curbside Pickup for Used Computers.

RESIDENTIAL CURBSIDE COLLECTION

FISCAL YEAR	RESIDENTIAL HOUSEHOLDS	Garbage (TONS)	Recycling (TONS)	Yard Trimmings (TONS)	TOTAL TONS	DIVERSION RATE
FY 91-92	**112,400**	**128,333**	**13,899**	**0**	**142,232**	**9.77%**
%		90.23%	9.77%	0.00%	100.00%	
FY 92-93	**121,100**	**125,881**	**16,535**	**510**	**142,926**	**11.93%**
%		88.07%	11.57%	0.36%	100.00%	
FY 93-94	**123,300**	**122,000**	**22,428**	**4,858**	**149,286**	**18.28%**
%		81.72%	15.02%	3.25%	100.00%	
FY 94-95	**125,300**	**114,067**	**22,732**	**11,307**	**148,106**	**22.98%**
%		77.02%	15.35%	7.63%	100.00%	
FY 95-96	**127,200**	**118,298**	**21,340**	**9,735**	**149,372**	**20.80%**
%		79.20%	14.29%	6.52%	100.00%	
FY 96-97	**131,200**	**113,059**	**24,776**	**14,133**	**151,969**	**25.60%**
%		74.40%	16.30%	9.30%	100.00%	
FY 97-98	**132,000**	**107,272**	**26,107**	**18,242**	**151,621**	**29.25%**
%		70.75%	17.22%	12.03%	100.00%	
FY 98-99	**134,643**	**108,228**	**26,104**	**15,593**	**149,925**	**27.81%**
%		72.19%	17.41%	10.40%	100.00%	
FY 99-00	**136,200**	**109,242**	**26,797**	**16,686**	**152,725**	**28.47%**
%		71.53%	17.55%	10.93%	100.00%	
FY 00-01	**141,015**	**115,268**	**28,594**	**16,747**	**160,609**	**28.23%**
%		71.77%	17.80%	10.43%	100.00%	
FY 01-02	**142,651**	**116,492**	**28,446**	**18,636**	**163,574**	**28.78%**
%		71.22%	17.39%	11.39%	100.00%	
FY 02-03	**144,414**	**118,580**	**30,348**	**18,356**	**167,284**	**29.11%**
%		70.89%	18.14%	10.97%	100.00%	
FY 03-04	**152,869**	**122,469**	**30,553**	**18,232**	**171,254**	**28.49%**
%		71.51%	17.84%	10.65%	100.00%	
FY 04-05*	**155,830**	**123,225**	**28,776**	**19,237**	**171,238**	**28.04%**
%		71.96%	16.8%	11.23%	100.00%	

* Through September 2005

RESIDENTIAL BRUSH / BULKY COLLECTION

FISCAL YEAR	RESIDENTIAL HOUSEHOLDS	Disposed Bulky (TONS)	Recycled Bulky (TONS)	Brush (TONS)	TOTAL TONS	DIVERSION RATE
FY 93-94	**123,300**	**4,125**	**607**	**519**	**5,251**	**21.44%**
%		78.56%	11.56%	9.88%	100.00%	
FY 94-95	**125,300**	**4,605**	**660**	**1,136**	**6,401**	**28.06%**
%		71.94%	10.31%	17.75%	100.00%	
FY 95-96	**127,200**	**3,937**	**463**	**1,690**	**6,090**	**35.35%**
%		64.65%	7.60%	27.75%	100.00%	
FY 96-97	**131,200**	**6,062**	**649**	**1,977**	**8,688**	**30.23%**
%		69.77%	7.47%	22.76%	100.00%	
FY 97-98	**132,000**	**3,814**	**485**	**1,309**	**5,607**	**31.98%**
%		68.02%	8.64%	23.34%	100.00%	
FY 98-99	**134,643**	**4,638**	**1,450**	**1,823**	**7,911**	**41.37%**
%		58.63%	18.32%	23.05%	100.00%	
FY 99-00	**138,700**	**4,472**	**935**	**2,081**	**7,488**	**40.28%**
%		59.72%	12.48%	27.79%	100.00%	
FY 00-01	**143,803**	**6,564**	**1,330**	**3,175**	**11,069**	**40.70%**
%		59.30%	12.01%	28.68%	100.00%	
FY 01-02	**144,806**	**7,404**	**1,149**	**3,495**	**12,048**	**38.55%**
%		61.45%	9.54%	29.01%	100.00%	
FY 02-03	**146,569**	**7,334**	**754**	**3,560**	**11,648**	**37.04%**
%		62.96%	6.47%	30.56%	100.00%	
FY 03-04	**152,869**	**7,112**	**389**	**5,050**	**12,551**	**43.34%**
%		56.66%	3.10%	40.24%	100.00%	
FY 04-05*	**162, 024**	**7,241**	**293**	**4,797**	**12,330**	**43.34%**
%		58.72%	2.37%	38.90%	100.00%	

* Through September 2005

Code Compliance

Solid Waste Services' Code Compliance Division includes Property Abatement, Zoning Code Compliance and Dangerous Buildings and Housing. In FY 04-05, the department continued with the reorganization of this division, including a realignment of districts to correspond with the Austin Police Department command districts. Changes were made to Notices of Violation to include a clear remedy on all violations and specific information on the individual to contact regarding the notice and the method to use in registering an appeal or complaint.

Property Abatement responds to complaints about weeds or grass taller than 12 inches, accumulations of junk and debris and standing water on public or private vacant or occupied properties in the City of Austin and/or Limited Purpose Annexations. Also addressed are complaints of tree limbs overhanging the public right-of-way that are lower than 14 feet above the roadway or sidewalk area. This group also investigates and prosecutes cases of illegal dumping. These complaints and issues are investigated and resolved using Municipal Codes 10-5-21 thru 10-5-45 and 6-3-23.

In FY 04-05, Property Abatement investigated 7,449 complaints/requests with 430 abatements and an average processing time of just under 27 days.

Dangerous Buildings and Housing Code Compliance responds to complaints from tenants or citizens relating to the safety and condition of structures in the City of Austin and/or Limited Purpose Annexations. The structures investigated include all categories of residential structures from single-family through apartment uses as well as dangerous commercial structures. The group also conducts proactive inspections of hotel, motel, rooming houses and boarding houses. The governing codes for this enforcement are the Uniform Housing Code and the Uniform Code for the Abatement of Dangerous Buildings. These codes are adopted in Sections 25-12-211, 25-12-213, 25-12-231 and 25-12-233 of the Austin City Code.

In FY 04-05, Dangerous Buildings and Housing investigated 1,028 complaints/requests and achieved voluntary compliance within an average of 113 days. 135 structures were demolished after Dangerous Buildings and Housing Code Compliance action.

Zoning Code Compliance investigates complaints about issues related to zoning and land use violations, applying City Code Chapters 25-1, 25-2, 25-3, 25-5, and 25-10. The types of complaints vary in complexity from easier cases such as recreational vehicle screening requirements to home occupations, adult oriented business regulations, and complex site plan violations. Zoning regulations establish 4 districts and over 130 uses based on those districts and may involve approved neighborhood plans, conditional overlays, non-conforming uses, and other conditions that may affect the determination of whether violations exist.

In FY 03-04 Zoning Code Enforcement responded to 2,208 complaints with a 66-day average to attain voluntary compliance. It took an average number of 247 days to achieve compliance when escalating a case to judicial action.

In FY 04-05 Zoning Code Enforcement investigated 2,039 complaints with an 89-day average to attain voluntary compliance. 85% of complaints submitted to zoning enforcement were responded to within 48 hours. Approximately 65 non-compliance cases were forwarded to the court system by the filing of charges, while in FY 03-04 under 10 cases were processed through the courts. This can be attributed to a focused effort to improve the code enforcement court process and a cooperative effort with the Municipal Court to update complaint language necessary to file charges.

Hazardous Waste Management

HOUSEHOLD HAZARDOUS WASTE

The City of Austin started collecting household hazardous waste (HHW) at annual collection events in 1986. Participation grew from 450 households generating 37,000 lbs. of hazardous waste in 1986 to 1,750 households generating 150,000 lbs. of hazardous waste in 1990. This material was diverted from solid waste or sanitary and storm sewer streams to recycling or proper treatment and disposal at EPA-permitted hazardous waste treatment facilities. In 1991, the City completed construction of a permanent HHW Collection Facility. For two years, the HHW Facility was open on one Saturday every other month for home chemical collection. Participation again increased to 3,300 homes generating over 200,000 lbs. of hazardous waste in 1992.

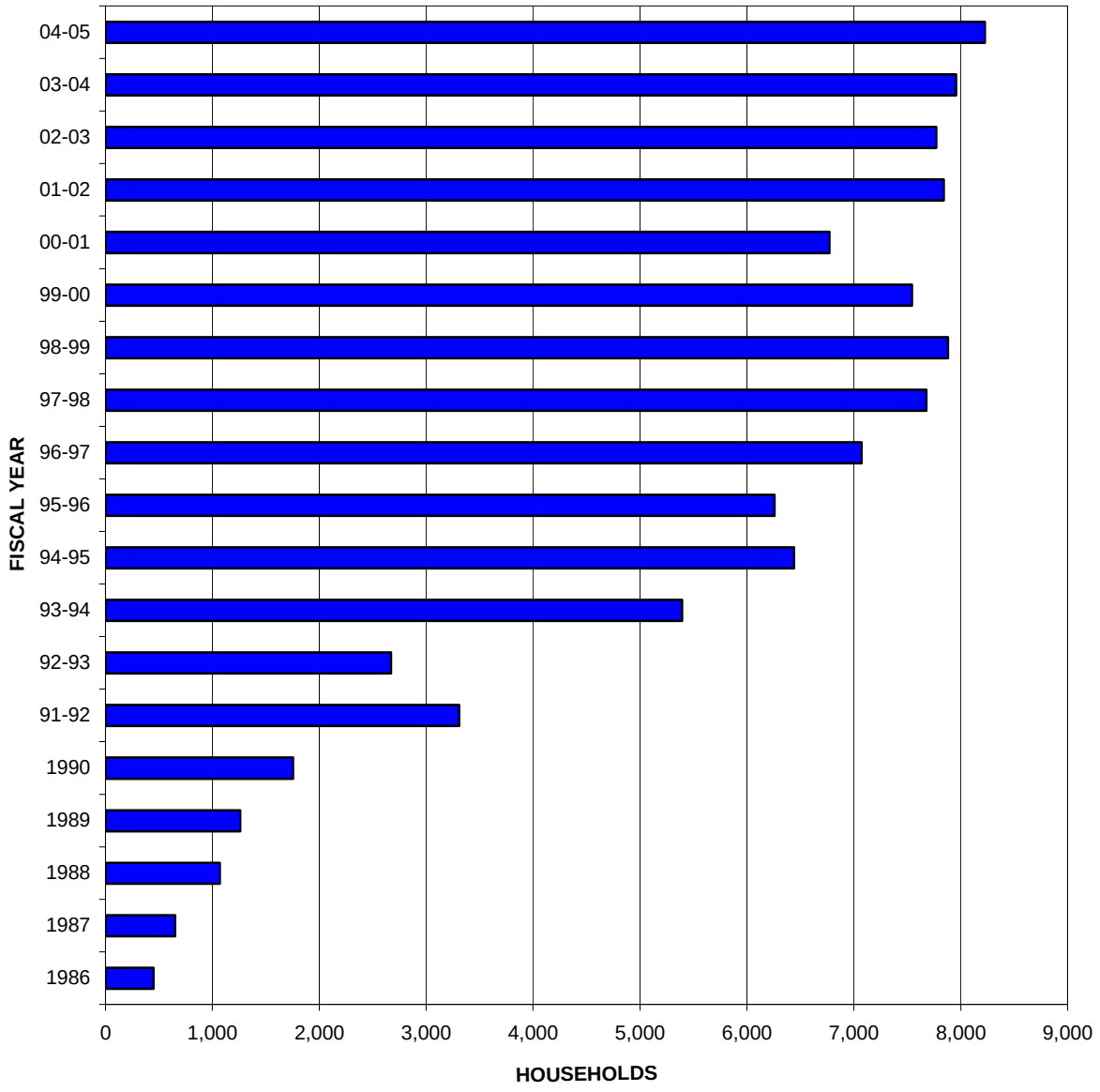
In FY 1993-1994, the Solid Waste Services Department began weekly (Wednesday, 12:00 pm to 7:00 p.m.) collections. The City of Austin HHW Program completed its sixth year of weekly collections in September 1999. Nearly 43,000 households were serviced in those six years, diverting over 3.1 million pounds of hazardous waste (Figures 3-1 and 3-2). On January 4, 2000, this program opened at its new larger facility at 2514 Business Center Drive and implemented a twice-weekly collection schedule (Tuesdays and Wednesdays, 12:00 pm to 7:00 pm). During FY 2004-2005, this program serviced 8,225 households and diverted approximately 936,000 pounds of household hazardous waste. Figures 3-1 and 3-2 and Table 3-1 provide an overview of historical annual waste volumes collected, participation levels, and historical results as the Household Hazardous Waste Program progressed from its inception as an annual program to its current bi-weekly program.

If this waste were not collected, it would remain in people's homes or be discarded with the risk of injury to Solid Waste Services workers and/or pollution through the solid waste stream, wastewater, or even storm sewer. The City's HHW has serviced over 90,000 households and collected over eight (8) million pounds of household hazardous waste for recycling or proper disposal, since the program's inception in 1986. Not only

has this program safely diverted hazardous waste from improper dumping, the landfill, and wastewater systems, but it also substantially increases the safety of solid waste workers who may be exposed to such chemicals during garbage collection or at the landfill. The overall purpose of the program is also to increase the public's awareness of the hazards of these materials at home and in the waste stream, and to encourage alternative behaviors that will lead to wiser use of such materials and reduction in the generation of these wastes.

Although overall HHW budgetary costs have increased significantly since 1986, the overall program cost per participating household is less than $40. Disposal costs per household have been reduced from $132.00 to between $35.00 and $40.00 largely through hands-on management (bulking compatible materials, decanting aerosols, crushing paint cans, etc.) and enhanced recycling (various batteries, antifreeze, paint, etc.). Competitive bidding for waste disposal has also brought the cost down. In addition, the HHW Program coordinates a household battery-recycling program with collection at a number of retail outlets throughout the City, so customers can deposit old batteries when they buy new ones. Although it is not practical to keep count of households recycling batteries at retail and school outlets, the number exceeds several thousand annually.

Figure 3-2
HHW Program Participation FY 1986 - FY 2005



City of Austin

Household Hazardous Waste Collection Program

Historical Results

FY 1986 - 2005

	ANNUAL EVENTS 1986-1990	QUARTERLY EVENTS 1991-1993	WEEKLY SCHEDULE 1994-1999	TWICE WEEKLY SCHEDULE 2000-2005	TOTAL
Households	5,185	11,375	42,872	38,564	97,996
Volume HHW (pounds)	425,203	731,052	3,125,250	4,302,070	8,583,575
Waste Oil Recycled (gallons)	11,750	12,885	51,019	38,752	114,406
Lead Acid Batteries	1,957	1,350	4,798	7,276	15,381
Recycled Latex Paint (gallons)	N/A	3,169	26,925	38,761	68,855
Disposal Cost	$429,079	$913,248	$1,531,172	$1,355,651	$4,229,150
Disposal Cost/Household	$83	$80	$36	$36	$35 (average)

One of the most successful recycling ventures is the recycled latex "Old Paint." Good quality latex paint is segregated, bulked, and shipped to a paint plant in the Austin area. The paint is reblended to a good quality specification, containerized, and picked up by the HHW Program for distribution to community improvement projects and low-income housing building or refurbishing. Since FY 1991-1992, over 80,000 gallons of paint have successfully been reblended and distributed to worthwhile projects, including those completed by Habitat for Humanity, Casa Verde Builders, and Urban Youth Corps. Recycling paint has saved the HHW Program over $400,000 in disposal costs and has conservatively contributed over $500,000 in material costs. The Capital Area Corporate Recycling Council awarded the "Old Paint" Recycling Program a first place "Closing The Loop" award in 1996.

Relocating to the new facility has allowed for the opening of a Product Reuse Center where citizens can obtain new or unused material. This material includes paint and paint products, automotive products, cleansers, and garden products (excluding restricted or prohibited pesticides). During FY 2004-2005, the product reuse efforts diverted over 176,666 pounds of new or unused products, saving almost $50,000 in disposal costs.

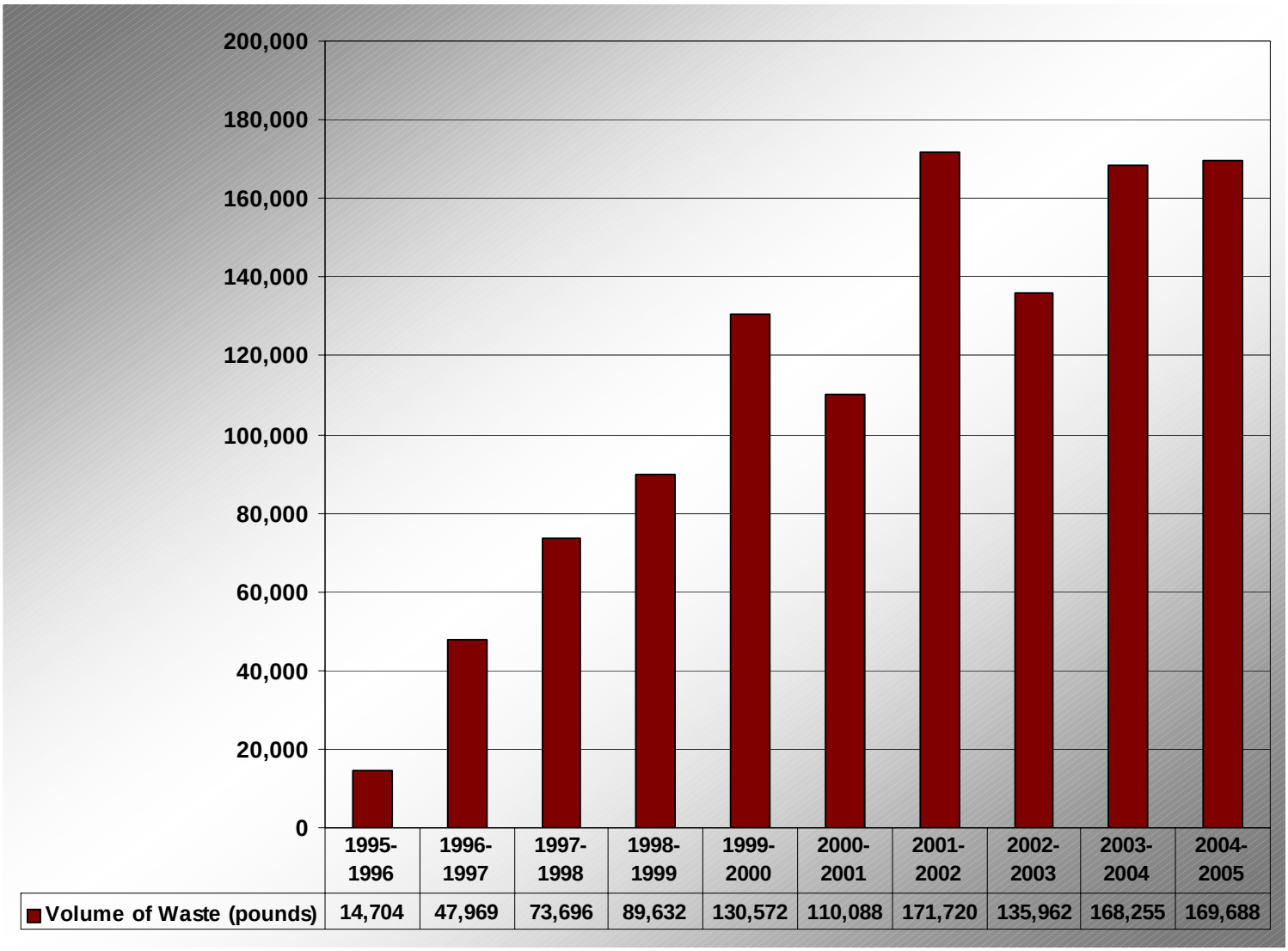
The HHW Program is open to City of Austin and Travis County residents outside the City Limits. Participation and hazardous waste volumes collected in the HHW Program continue to increase and probably will for some time. The City of Austin's HHW Program is the first of its kind in the State of Texas. It has received regional and national recognition, including the EPA Regional Administrator's Award for Environmental Excellence for Outstanding Non-point Source Pollution Prevention in 1992, and Keep America Beautiful, Inc. National Recycling Award in 1995. In 1994, the National HHW Conference selected Austin as its host City, and over 400 HHW managers/staff from around the nation have visited the City's Facility and observed its operation.

SMALL BUSINESS HAZARDOUS WASTE DISPOSAL PROGRAM

The Solid Waste Services Department offers hazardous waste disposal services to small business. Developed in mid-1996, this program provides an environmentally safe and convenient option for businesses to dispose of unwanted hazardous waste streams. The program is limited to those businesses generating less than 220 pounds of hazardous waste in a month (classified as Conditionally-Exempt Small Quantity Generator), and disposal costs are borne by the business utilizing the service.

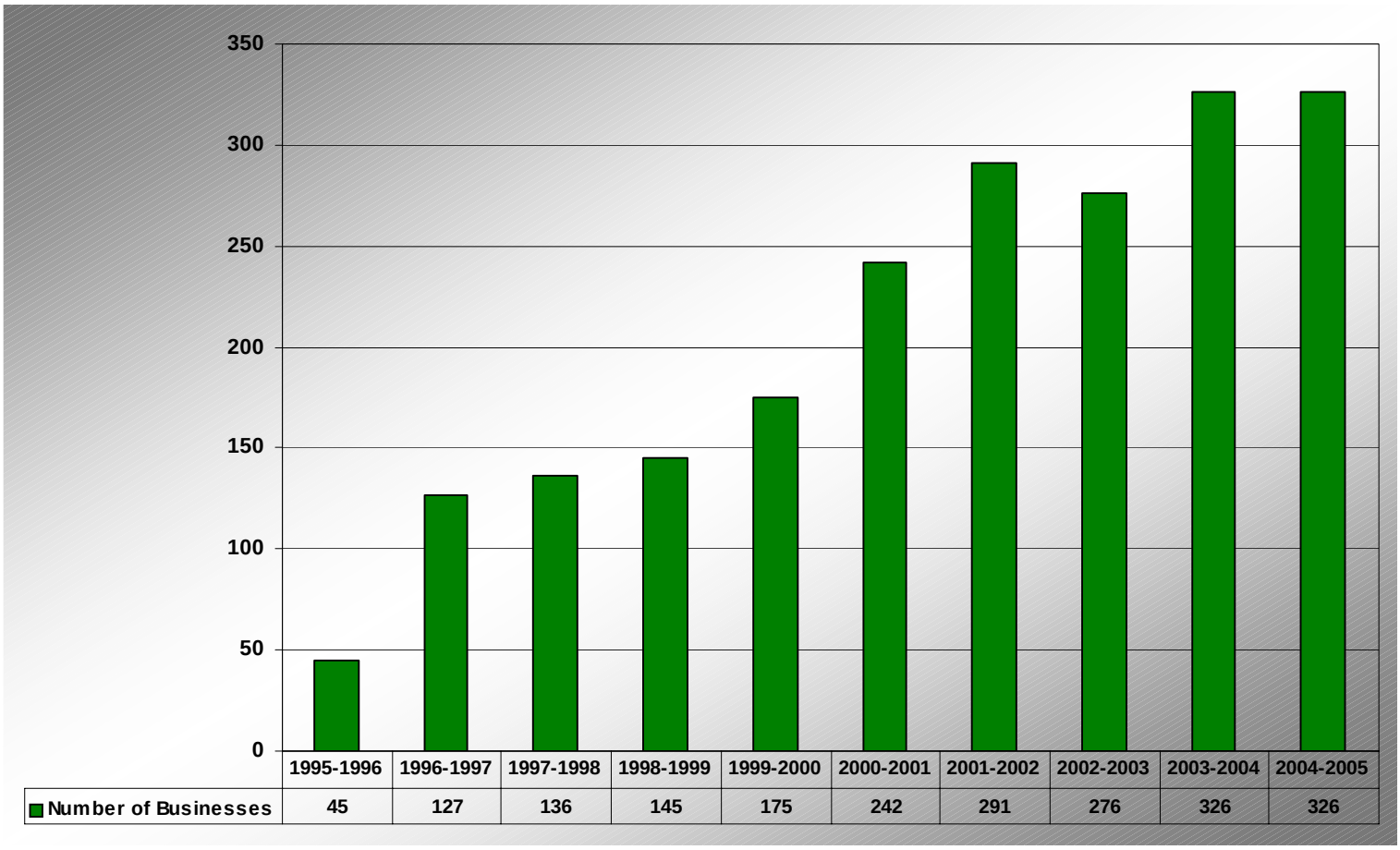
A major problem that small businesses encounter when having to dispose of hazardous waste is that the volume generated is not sufficient to obtain service from a licensed hazardous waste disposal company. In some instances, the licensed companies have provided the service, but at a cost that is prohibitively expensive. When these instances arise, business options are limited and usually involve improper or illegal storage or disposal. During 2004-2005, this program serviced 326 businesses, and collected approximately 170,000 pounds of hazardous waste. Since the program's inception in 1996, over 2,076 businesses have utilized this service and disposed of over 1,112,688 pounds of hazardous wastes. Figures 3-3 and 3-4 detail the annual growth in both pounds of hazardous waste disposed and businesses serviced since this program inception in 1996. This program serves as a model for other municipalities wanting to provide similar services to their small business community.

Figure 3-3
Volume of Waste Collected



	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005
Volume of Waste (pounds)	14,704	47,969	73,696	89,632	130,572	110,088	171,720	135,962	168,255	169,688

Figure 3-4
Number of Businesses



	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005
Number of Businesses	45	127	136	145	175	242	291	276	326	326

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Section 4

Drinking Water Treatment

In spite of the increasing stress on Austin's water treatment production capacity over the past years, the Utility's water treatment plants continue to produce drinking water at a quality that are well under the national and state regulatory water quality limits. At maximum production rates in mid-summer and with construction nearing completion at one of the three plants, the treatment plants met the challenge of maintaining the excellent quality of our drinking water under the toughest conditions.

The coming regulatory changes for drinking water, combined with the need for increased capacity, present an additional challenge for our treatment plants over the next several years. The Utility has participated in research projects testing and evaluating ultraviolet light for disinfection, and on the use of membranes. The state drinking water standards for Cryptosporidium and disinfection by-product levels will be tightened as required by new EPA regulations. The Utility's treatment plants will continue to meet these new requirements. The Utility has completed monitoring for *Cryptosporidium* in treated drinking water from all three water treatment plants, and will submit that information to EPA as "grandfathered" data to demonstrate compliance with the rule on *Cryptosporidium*. The method of measuring disinfection by-product levels will change under the new rules. However, the water quality produced by the plants is about one-half the maximum levels under the new rules, which will keep the Utility well within requirements. Planning is also underway for meeting the projected increased system demand for treated drinking water through the initiation of preliminary design and evaluation of a new water treatment plantcapacity, and the expansion of the Ullrich Water Treatment Plant capacity from 100 MGD to 167 MGD.

Two key system improvement projects, the Ullrich Medium Service 72-inch Transmission Main and the Ullrich Water Treatment Plant Capacity Upgrade to 100 MGD, were completed in the fall of 2000. However, necessary pipe joint repairs in the

72-inch transmission main caused a delay in placing the water main fully in service until just prior to the summer of 2002. After these repairs were completed in May 2002, the water system had a peak day capacity of 260 MGD. Additional capacity will be added when the next expansion of the Ullrich Water Treatment Plant is completed in the 2006 timeframe. This will increase the total treatment plant capacity to 327 MGD. However, the Green Water Treatment Plant is planned to be decommissioned after the Ullrich expansion, with studies underway for a new Green WTP location. During this relocation period, the capacity of the two remaining plants will be 285 MGD.

The following chart shows the history of peak day water usage in Austin.

Fiscal Year	Peak Usage (MGD)
94 – 95	191.3
95 – 96	195.7
96 – 97	191
97 – 98	206.4
98 – 99	211.2
99 – 00	220.3
00 – 01	244
01 – 02	213
02 – 03	225
03 – 04	190
04-05	236

In addition to planned capacity and distribution improvements, the City has implemented comprehensive conservation and reclaimed water programs with the following goals.

1. Reduce peak day use by 20 million gallons per day through a combination of demand reduction and reclaimed water substitution:

   Benefit: This will supplement the Utility's plans to meet future water supply demands.

2. Reduce customer demand by a total of 50,000-acre feet (AF) by 2050 through a combination of demand reduction and reclaimed water substitution.

   Benefit: The City will not have to purchase additional water supplies, which would be extremely costly.

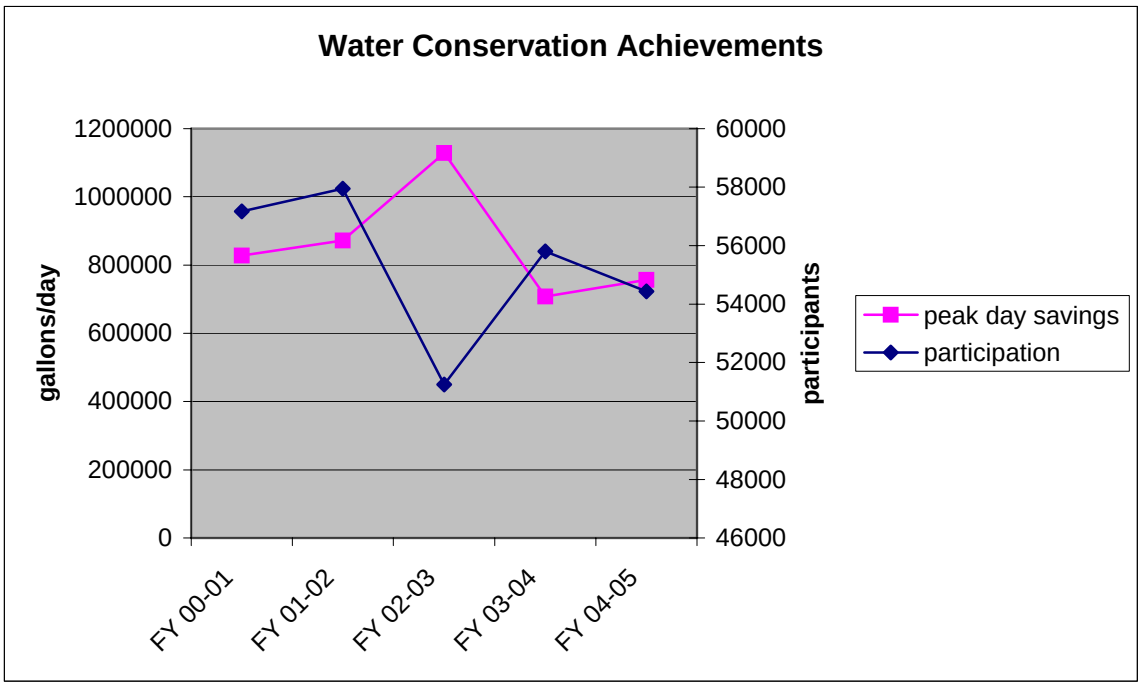
3. Delay reaching a total water demand of 201,000 AF as long as possible.

   Benefit: Since the City prepaid the LCRA for water up to 201,000 AF, the City will not incur additional costs for water used between 150,000 and 201,000 AF until we exceed 201,000 AF, which will be an annual saving of approximately $11.7 million.

4. Provide customers with water conservation programs to reduce their monthly consumption of water and wastewater.

   Benefit: Many customers need and welcome an opportunity to reduce their water and wastewater costs.

The Water Conservation Program has been able to save 756,000 gallons per day through its program due to its efforts in FY04-05, with 54,434 customers participating in the programs offered, or 31% of all customers who receive water from Austin Water.



The Water Conservation Program has developed a wide variety of water conservation programs that target all customer classes, including single-family, multi-family, industrial, commercial, and institutional. The following are some of the largest programs.

TOILET REPLACEMENT PROGRAMS

The City offers two toilet replacement programs for properties constructed prior to 1996. In FY '03-04, the construction cut-off date of 1991 was extended to allow for the replacement of early low-flow toilets, many of which did not flush as well as today's models. Participants in the Free Toilet Program receive a toilet from a local vendor at no charge. Participants in the Toilet Rebate Program receive rebates after purchasing a model from a list of toilets provided by the Water Conservation Program. To date, nearly 70,000 toilets have been replaced through these programs.

Single-Family customers can receive up to three water efficient toilets per household through the replacement programs to replace old, large capacity toilets. Multi-family customers are not limited to the number of toilets they may replace, but they must replace all toilets in a building at the same time. To receive free toilets, customers must first submit an application. After approval, they receive a voucher for redemption at a local plumbing supply company contracted by the City. In addition, there is a $30 per toilet installation rebate if a licensed plumber installs the toilet.

Under the rebate program, customers first purchase toilets at any vendor from a list of eligible models. The eligible toilets are selected on the basis of flush performance and retention of low flush volumes after the flappers are replaced. Rebates of up to $100 are available to cover the purchase price of the toilet and installation by a licensed plumber.

WASHWISE PROGRAM

The WashWise Rebate Program is a partnership of Austin Water Conservation, Austin Energy, and Texas Gas Service. Under this program, residential customers can receive a rebate towards the purchase of a high-efficiency clothes washer. To qualify for a rebate, the washer must use 7.5 gallons of water per cubic foot of capacity or less and have a Modified Energy Factor of 1.80 or greater. These efficient machines save an average of 15 gallons of water per cycle. The standard rebate for these machines is $50 for water and $50 for energy saved by either gas or electric water heating. In the eight years of this program, over 14,000 machines have been rebated.

FREE IRRIGATION SYSTEM AUDITS

The City offers free irrigation audits to owners of commercial and residential in-ground sprinkler systems. Seasonal watering is the driving factor in the City's peak day water usage. Customers often have a poor understanding of how their controllers work, have multiple programs or start times that they are unaware of, lack a backup battery in their controller, or have heads that mist due to pressure that is too high. The City auditor will check the system for leaks, water application rates and adequate coverage and will help determine an efficient watering schedule. The auditor will also assess the adequacy of the equipment and will recommend replacement of components if appropriate. Finally, the customer will be provided with a controller schedule for their system so that they can follow the evapotranspiration recommendations.

RAINBARREL DISTRIBUTION PROGRAM

The City has instituted a program under which it purchases rainbarrels in bulk and sells them at a reduced price of $60 to City water customers. A customer may also purchase

rainbarrels from other vendors and receive rebates of $30 per barrel for up to four barrels. Since the program began in April 2001, over 8500 barrels have been sold or rebated.

SPECIAL COMMERCIAL REBATES

The City offers commercial and multi-family customers rebates of up to $40,000 for the installation of new water-efficient equipment and to redesign manufacturing processes to conserve water. Programs qualifying for this rebate must save at least 500 gallons per day and must remain in place for at least five years. Some examples of commercial equipment changes eligible for a rebate are: replacing single pass cooling with recirculating or air cooling, reusing high quality rinse water, improving cleaning processes, reusing rinse water for the wash cycle in laundry equipment, and making other equipment changes that improve water efficiency. For multi-family customers, rebates are most often granted for large water conserving projects such as the repair or replacement of central cooling towers. The rebate amount is based upon the lesser of (1) half the price of the purchase cost of the equipment or (2) $1.00 for each gallon saved per day up to 30,000 gallons and then $.50 (fifty cents) per gallon saved per day for the next 20,000 gallons, up to a maximum rebate of $40,000. Operation and maintenance measures are not eligible. Participants must seek pre-approval of the project and agree to a post-installation inspection by City staff to verify installation and operation.

'WATER IN OUR WORLD' FIFTH GRADE EDUCATION PROGRAM

"Water in Our World" is a program developed for 5th grade students that continues to expand. The objective of the program is to provide valuable information to the students on water sources, treatment, conservation and protection. What makes this material unique is its focus on Austin. It includes lessons designed to make students aware of local water issues in the hope that they will become informed citizens who will make water-wise choices now and in the future. Since the pilot in 1999, over 13,000 students and teachers have participated and the numbers continue to grow. The curriculum consists of lessons that can be taught in a three-week period, or as stand-alone lessons,

allowing plenty of hands-on experience. Each student receives a water conservation kit that includes water conserving showerheads and faucet aerators. The program is the result of a collaborative effort between the City of Austin and the Austin Independent School District. Three area school districts and the Community Outreach and Education Program (Environmental Health Science Institute) at the University of Texas MD Anderson Cancer Center for 5th grade students in the Bastrop-Smithville school districts are currently implementing the program.

'DOWN THE DRAIN' SIXTH GRADE EDUCATION PROGRAM

"Down The Drain" is a sixth grade program developed as a collaborative effort between the City of Austin and the Austin Independent School District. The objective of the program is to provide valuable information on wastewater treatment, biosolids reuse, reclamation, and alternative waste systems. The partners want the students to come full circle in understanding the City's water and wastewater infrastructure and related issues. Like the 5th grade program, "Down The Drain" is Austin specific and can be taught as a unit or as stand-alone lessons. Since the pilot in 2003, over 4,300 students and teachers have participated and the numbers continue to grow. Three area school districts and the Community Outreach and Education Program (Environmental Health Science Institute) at the University of Texas MD Anderson Cancer Center for 5th grade students in the Bastrop-Smithville school districts are currently implementing the program.

Drinking Water Distribution System

The Austin Water and Utility serves a population of approximately 786,000 through roughly 188,000 service connections. The Utility delivers highly purified drinking water from three treatment plants to its customers through a distribution system containing more than 2,780 miles of water main, 22,160 fire hydrants, 21 pump stations, and 32 water storage reservoirs. The distribution system is further divided into eight major pressure zones because of the varied topography within the City of Austin.

Leaders in the field of drinking water supply acknowledge that water quality can degrade between the time it is treated at the plants and when it is delivered to the customers. Realizing this, the Utility is implementing a program with the goal of assuring that the high quality drinking water produced at the plant maintains its quality while it is distributed to the customers. Activities to date include developing a comprehensive monitoring plan, updating the standards for the disinfection of new pipelines being accepted into the distribution system, analyzing the suitability of sampling sites, regularly measuring water quality in storage tanks, and routinely flushing mains when disinfection residuals are low. Water quality, as measured by the standards in the Total Coliform Rule, has improved. Several hazardous situations in the distribution system have been identified and corrected.

Wastewater Treatment

The Austin Water and Utility owns and operates three major wastewater treatment plants (WWTP): Govalle, Walnut Creek and South Austin Regional (SAR), which have a total treatment capacity of 135 million gallons per day (MGD) . These three plants discharge their highly treated effluent to the Colorado River. The effluent quality from these plants surpasses the State and Federal permit requirements. As a result the water quality in the segment of the Colorado River to which these plants discharge is exceptionally good and the segment has been classified by the Texas Commission on Environmental Quality (TCEQ) as "exceptional." The City also owns and operates four water reclamation plants Davenport Water Reclamation Plant (WRP), Pickfair WRP, Balcones, WRP, and Onion Creek WRP -- and an interim treatment plant at Harris Branch. The water reclamation plants dispose of their effluent by irrigating golf courses. The Harris Branch Treatment Plant discharges into Harris Branch. An expansion and upgrade of the Harris Branch Treatment Plant was completed in late 2002 enabling it to handle increased flows from its service area.

In December 2003, at the request of TCEQ and the Office of the Attorney General, the Austin Water Utility accepted a small and dilapidated Thoroughbred Farms Wastewater

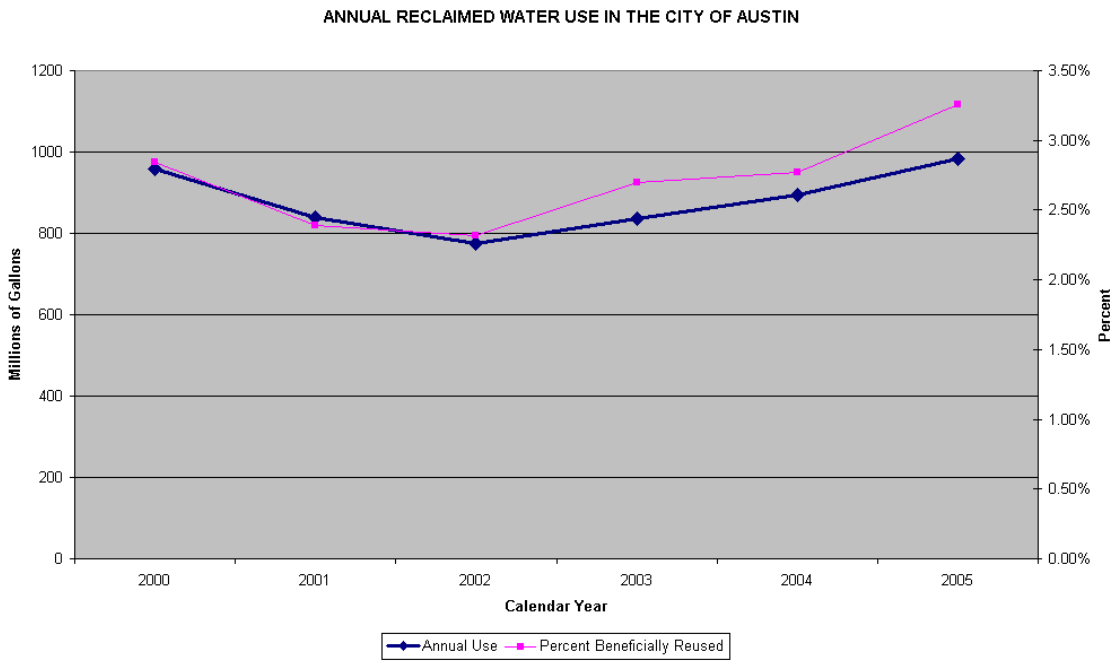
Treatment Plant that was dysfunctional and was discharging raw wastewater without any treatment into Dry Creek creating an environmental and public health hazard. The Austin Water Utility has already made major improvements to the plant and vastly improved its performance. The Utility continues to make improvements to the plant's operation and maintenance to achieve long-term compliance with the plant's permit.

Biosolids (sewage sludge) from all of the City's wastewater treatment plants are pumped to the Hornsby Bend Biosolids Management Plant for treatment and disposal. All biosolids were beneficially reused either as Class A biosolids produced and sold as Dillo Dirt compost or Class B biosolids that were land applied at Hornsby Bend and an off-site location near Webberville.

Water Reclamation Initiative

The use of reclaimed water for irrigation, cooling towers, and manufacturing processes in place of potable water is an important factor in meeting the City's long-term water demand. In 2000, the City implemented the Water Reclamation Initiative Plan to provide reclaimed water to the central and southern service areas. As part of an effort to enter the Bureau of Reclamation's Title XVI Program, in 2005 the City updated its master plan for the reclaimed water system. The updated plan identifies 270 potential customers that could use 8.5 billion gallons of reclaimed water per year.

There were several significant improvements in the central service area. First 4700 feet of 24" transmission main, which was built in late 2004, became active in 2005. An additional 1000 feet of 8" distribution main was installed in Old Manor Road. The distribution main is now active and ready to serve the Combined Transportation and Emergency Communication Center when they are ready to connect. A preliminary engineering report for two million gallon elevated storage tank, a key infrastructure component in the central service area, was completed and subject to extensive public review for compatibility with the neighborhood.



Reclaimed water use for the last six calendar years is shown in the above graph. There was a record 983.4 million gallons of reclaimed water used in 2005. An almost equal amount was used in the year 2000, however the accuracy of that amount is in question. Reclaimed water use at that time was estimated by pump run hours rather than actually measured by a meter. Additionally, a reclaimed water meter was added at the South Austin Regional Wastewater Treatment Plant (SAR), allowing a more accurate measurement of their use.

The record water use is largely attributable to the dry weather that affected the Austin area in the later half of the year. Also important was the Utility's ability to meet customer demand. In September, an elevated storage tank and new reclaimed water pump station at the SAR was put into service. This allowed more reliable and consistent reclaimed water deliveries to major customers such as Hornsby Bend, and the Bergstrom and Clay/Kizer Golf Courses.

THE HORNSBY BEND BIOSOLIDS MANAGEMENT PLANT AND THE CENTER FOR ENVIRONMENTAL RESEARCH

The City of Austin Hornsby Bend Biosolids Management Plant is an award winning biosolids reuse and recycling facility that has won numerous local, regional, state and national awards, including two EPA National First Place awards. Hornsby Bend is responsible for treating and reusing all of the City's biosolids (sewage sludge) and all of Austin's yard trimmings and brush collected curbside. All water generated in processing the biosolids is treated through a 185-acre pond system and is recycled on-site for crop irrigation.

All biosolids are anaerobically digested to reduce pathogens and odors. A by-product of anaerobic digestion is methane, which is used to produce up to 800 kilowatts of electricity from on-site cogenerators. Waste heat from cogeneration is utilized to help heat the digesters. Following anaerobic digestion, biosolids are either land applied to on-site and off-site farmland or composted with yard trimmings and brush picked up curbside around the city by Solid Waste Services. When land applied, the biosolids provide all the necessary nutrients for the crops grown and harvested by local farmers.

Dillo Dirt Compost

Approximately one third of the biosolids produced at Hornsby Bend are used in Dillo Dirt. Yard trimmings and brush delivered by the Solid Waste Department are ground and mixed with digested biosolids to form windrow piles. The heating, turning, and subsequent curing produces a finished compost product called "Dillo Dirt", a trademarked name and logo. Dillo Dirt meets the highest treatment and safety standards for pathogen reduction and metals content set by EPA and the Texas Commission for Environmental Quality, even considered safe enough for vegetable gardens. This composting program utilizes the City's yard trimmings and brush streams, approximately 13% of the total municipal solid waste produced by the City, and accounts for approximately 43% of the solid waste recycling done by the City. Dillo Dirt is sold

wholesale to garden centers, nurseries, and landscapers around the city. Dillo Dirt is also donated to City projects, public schools and nonprofits.

Environmental Impact

The biosolids and yard trimmings recycling program saves valuable landfill space, recycles nutrients back into the soil, helps protect water quality, and generates revenue. Over 100,000 cubic yards of yard trimmings and brush are utilized each year which generates revenue and avoids the cost of landfilling. When utilized in the landscape, Dillo Dirt increases nutrient and moisture holding capacity in the soil, resulting in a healthier ecosystem.

Increased organic matter in the soil from products like Dillo Dirt increases water infiltration rates and holding capacities, helping to reduce runoff and watering requirements. Reduced landfill tipping fees and revenue generated by Dillo Dirt sales make this program very cost effective.

Ecological Significance

What is waste for us is the beginnings of a high nutrient food chain that provides nourishment to wildlife while recycling these "wastes" in an ecologically sound and sustainable manner. Hornsby Bend is nationally known as one of the best birdwatching locations in Texas – with over 370 species of birds identified on site and an abundance of other wildlife. This diversity is present both because of the bio-treatment processes used by the facility and because of the diversity of habitats found at the site. The multifaceted character of the site presents a unique opportunity for environmental research and education about Austin's environment.

Research and Education – The Center for Environmental Research

The Austin Water Utility Center for Environmental Research (CER) is located at the Hornsby Bend Biosolids Management Facility and was built in 1988. It is a partnership between the University of Texas at Austin, Texas A&M University, and the City of Austin Water Utility. The purpose of this center is to support research and education about urban ecology and sustainability. As a community service, the CER auditorium and classrooms are used by a wide range of organizations for environmental workshops, training, and classes throughout the year.

Most directly, the CER works closely to support the recycling of biosolids at the Hornsby Bend facility through its research projects and to manage the land at the 1200-acre site along 3.5 miles of the Colorado River. In 2001, the Hornsby Bend facility was given by the TCEQ one of only two "experimental exemptions" in Texas for biosolids research, and this research is managed by Kevin Anderson, the CER coordinator, working with Dr. Patricia Richardson and Dr. Dick Richardson at the University of Texas in cooperation with Jody Slagle, the environmental engineer for the Hornsby Bend facility. Additionally, the CER has developed programs and projects managed by the CER coordinator, and these are described below.

CER Highlights of 2004

- Completed first year of a study with Travis Cooperative Extension of the effects of Dillo Dirt compost on fire ants at Hornsby Bend.
- Completed the 6th year of the Living Lab Program with Hornsby-Dunlap Elementary School by doing the first field days at the school's on-campus outdoor learning area.

- Hosted the fieldtrips of 4th graders from Bastrop ISD and began working with 8th graders as part of a 5 year NIH grant funded environmental health education program in partnership the University of Texas Center for Research on Environmental Disease at the M. D. Anderson Cancer Center.

- . In 2005, the Austin-Bastrop River Corridor Partnership host river corridor tours of note – in April a luncheon and river trip was held for local elected officials and their staffs and in December a river corridor tour was held for the Trust for Public Land national Conservation Funding staff. The National Park Service Rivers, Trails and Conservation Assistance Program, through a competitive application process, selected the Austin-Bastrop River Corridor Partnership for continued technical assistance in 2005 and 2006 The Trust for Public Land adopted the River Corridor Partner as a top priority project to support.

- Complete the first year of a Riparian Restoration project in partnership with the Water Quality Protection Lands, Treefolks, and the National Park Service and the Austin Youth River Watch to restore riparian trees on Slaughter and Onion Creeks. The Treefolks tree nursery at Hornsby Bend was expanded. Seeds from trees along these creeks were collected on WQPL properties and grown at the tree nursery located Hornsby Bend at the Treefolks office. Initial phase of this project will last 3-4 years.

- In 2005 completed second year of monthly CER Urban Ecology Lunchtime Lectures at Waller Center. Topics covered included soil, agriculture, river corridor, wetlands, water monitoring, and biodiversity. Over 300 people attended the lectures in 2005

- In October 2005, the CER hosted a two day Riparian Ecology workshop for Texas A&M University graduate and undergraduate students in collaboration with the Texas Riparian Association.

- The CER coordinator gave 28 public presentations about Hornsby Bend and the Colorado River ranging from talks to the Master Naturalists to state conferences and 20 tours of Hornsby Bend ranging from the Director of Ecology for the State of Coahuila, Mexico to local high school and university students.

Below is a list of the main programs and projects of the CER:

- **Biosolids and Soil Research** – supported by a TCEQ Experimental Exemption and in partnership with University of Texas Integrative Biology Professors Dick and Patricia Richardson, the CER is conducting long-term research at the Hornsby Bend site .

- **The Hornsby Bend Community Environmental Partnership** – a stakeholder group of governmental and non-governmental organizations involved in research and education at Hornsby Bend. Website – http://www.sbs.utexas.edu/hornsby

- **The Hornsby Bend Bird Observatory [HBBO]** – The HBBO is an effort to promote the study and conservation of birds in Central Texas. Hornsby Bend is the most popular birdwatching site in the Austin area, and the HBBO supports a range of bird monitoring programs, classes, and training at Hornsby Bend. Website – http://www.hornsbybend.org.

- **The Ecological Mentorship Program** – an academic internship program for University of Texas undergraduates interested in natural resource management. The interns work on research projects under the supervision of UT professors and environmental professionals at the CER. During 2005, 9 undergraduates completed academic internships through the CER.

- **The Living Lab Program** – a science education program begun in 1999 in partnership with Hornsby-Dunlap Elementary School 4th and 5th grades (over 200 students) that brings these students to the Hornsby Bend site three times during the year for
ecological field studies. Volunteers from Hornsby Bend Partnership organizations lead these field trips.

- **The Texas Riparian Association** – this statewide organization is hosted by the CER. Founded in 2002, the TRA promotes riparian (waterside habitat) ecosystem protection and restoration across Texas. Website – http://www.texasriparian.org

- **Austin Biodiversity Project** – a project to inventory local flora and fauna and to maximize sustainable populations of all native species in the Austin area. Jointly managed by the CER and the University of Texas – Texas Memorial Museum.

- **EcoHouses Project** – a program to demonstrate green building techniques and water conservation landscaping by remodeling houses on the Hornsby Bend site in partnership with the Austin Energy Green Building Program. These houses are becoming offices for some of the Hornsby Bend Partnership organizations.

- **Austin to Bastrop River Corridor Partnership** – a public-private partnership created in 2003 to study the rapid development along the river corridor from Austin to Bastrop and to promote land use planning to protect the river ecosystem.

- **Urban Ecology Lunchtime Lecture Series** – a free public lecture held at Waller Center on the third Wednesday of each month begun in the fall of 2004. Lectures in 2005 ranged from dragonflies of Texas to eco-philosophy.

THE AUSTIN YOUTH RIVER WATCH PROGRAM

The Austin Water Utility and the Watershed Protection Department jointly fund the Austin Youth River Watch Program (AYRWP) managed by the Colorado River Watch Foundation (CRWF). This program provides an after-school outreach activity for middle and high school students in Austin who are considered at risk of leaving school prior to graduation, while at the same time providing the City of Austin with valuable water quality monitoring services. The River Watch students are required to conduct weekly chemical and biological monitoring with at 17 designated monitoring sites located on Austin's waterways. The students' data are used by both the City of Austin and the LCRA. After completion of their water quality monitoring duties, time is provided for students to study or to work on their school assignments.

During 2005, 50 high school and middle school students were involved in the Austin Youth River Watch program representing 6 different AISD high schools. These students presented reports at the CRWF Student Symposium and other events. Twenty-three students went on to participate in River Watch summer leadership program during June and July. On average, AYRWP high school students attended school more regularly and had grade point averages comparable to or higher than the comparison group of AISD high school students. Most importantly, 10 River Watch students graduated from high school during 2005.

Additional support for the Austin Youth River Watch Program is given through the Austin Water Utility Center for Environmental Research UT undergraduate interns. During 2005, 4 interns mentored the River Watch students by volunteering once a week with the program and attending campouts and fieldtrips with the students.

Energy Conservation Program in Austin Water Utility

The Austin Water Utility has initiated a program to implement electric energy conservation. Under this program, the Utility will implement measures to improve energy efficiency and energy conservation through process, operational and equipment modifications.

The Utility will be entering into an interdepartmental agreement with Austin Energy to reduce energy demand at various Water and Wastewater facilities through energy audits and use of performance contracting.

Currently, a project is being planned to reduce air requirements in the treatment process at the Walnut Creek WWTP. Air requirements at wastewater treatment plants account for almost 70% of the plants' power demand. Reduction in air requirements is expected to reduce power demand at treatment facilities.

Austin Clean Water Program

The Austin Clean Water Program was created in November 2001 to comply with the U.S. Environmental Protection Agency (EPA) issued Administrative Order (AO) in 1999 to eliminate Sanitary Sewer Overflows (SSOs) from the wastewater collection system. SSOs are unplanned discharges of wastewater from the collection system, usually caused by sewer blockage due to the presence of roots, grease or high water flows during wet weather in the pipelines.

The City of Austin received an AO from the U.S. EPA on April 29, 1999. The Administrative Order requires that the City of Austin perform a series of activities designed to result in an improved wastewater collection system free from SSOs. These activities include Infiltration/Inflow Studies, Sanitary Sewer Evaluation Surveys, as well as subsequent design and construction of necessary improvements to the wastewater collection system. Austin Clean Water Program Team provides management support and

coordination for the planning, design and construction of sustainable wastewater collection facilities necessary to meet the AO requirements.

To date, the Utility has completed 9 out of 14 AO items on schedule. The remaining five items are ongoing and on schedule. Already, more than 140 Miles of sewer and 637 manholes have been rehabilitated. Enhanced maintenance, developed as part of ACWP, will include extensive cleaning and inspection of the sanitary sewer system.

In addition to pursuing the activities required by the AO, the utility has completed the following extra work to help eliminate overflows:

Wastewater Lines Televised:	1,485 Miles
Wastewater Lines Cleaned:	1,058 Miles
Wastewater Lines Smoke Tested:	328 Miles
Manholes Located and Raised:	9,616
Manhole inspections :	18,187

Structural improvements to the collection system will consist largely of repairs to the sanitary sewer system, or in some cases, complete replacement of specific segments, depending on their age and condition.

When sanitary sewage leaves the collection system in an uncontrolled manner, there is a potential that the sewage will enter a drainage system, creek or lake. The Utility staff makes every effort to collect and pump the material back in to the system while simultaneously trying to stop the overflow. As the ACWP corrects sources of SSOs, their frequency and volume will decrease and the amount of raw sewage that leaves the collection system and contributes to non-point source pollution will also decrease. This should result in streams that are cleaner and safer.

As part of the ACWP, the Austin Water Utility and the Watershed Protection and Development Review Department presented and received approval from the City Council for the ACWP ordinance, establishing an integrated design and permitting process. The ordinance would also establish an administrative process for approval of variances from specific sections of the City of Austin Land Development code, if they are needed. The ACWP ordinance was necessary to alleviate schedule constraints imposed by the current City permitting process for critical projects within the ACWP in order to meet the EPA mandated construction schedules. The ordinance will expire when the AO is satisfied in 2007.

The ACWP has organized a team of specialists to visit each project site involving wastewater lines in creeks, as part of the integrated design and permitting process. This "Stream Team" visits each project site. During these field visits, team members make recommendations for placement of wastewater lines, alternate routes, environmental protection, construction and permanent access, constructability, stream stability and restoration. The Stream Team has compiled a menu of standard streambank restabilization techniques, as well as special revegetation methodology, for stream and wetland areas. Members of the team include biologists, wetlands specialists, hydrogeologists, civil and environmental engineers, stream stability and watershed specialists, permitting specialists, regulators, field maintenance personnel, and project managers. The Austin Water Utility has made a serious commitment to relocating sewer lines outside of creek areas where possible to improve maintenance and minimize environmental impacts.

In addition to accelerating the design and permitting process, the benefits of this integrated team approach include:

Environmental Protection – Early identification of critical environmental features such as springs, seeps or rimrock that merit special consideration in the design process.

Route Alternatives – Identification of alternate routes that provide for potential cost savings, increased environmental protection and/or reduced construction schedules.

Stream Stabilization – Evaluation of alternative channel stabilization and restoration techniques that provide protection of new wastewater infrastructure while minimizing the impact to the natural character of the creek.

The City's Austin Water Utility and the Watershed Protection & Development Review Department are collaborating through the Austin Clean Water Program (ACWP) to provide much-needed relief for Austin's treasured creeks. In the past, sewer lines were often placed in creek beds because gravity carries the wastewater flow to treatment plants. ACWP examined these lines in targeted areas to see how feasible it is to choose new alignments outside the creek beds. Some manholes are being removed as well. To date, 28 ACWP projects will remove sewer lines from creeks or will plug and abandon the lines in place should removal be too damaging to the creek beds.

Thirty projects have been completed successfully including the Taylor Slough wastewater improvements project through the environmentally sensitive Taylor Slough of Lake Austin. Currently there are over nineteen projects under construction including the Barton Creek Lift Station Relief Tunnel project in the Zilker Park and Barton Creek. Nearly forty five more scheduled to start over the next twenty four months. Given the volume of construction projects the Austin Water Utility has created a Construction Awareness Website that allows the public to quickly obtain street closure and detour information via the internet at: http://www.cityofaustin.org/ca/.

Austin Water Utility has voluntarily adopted the implementation of the Capacity Management Operation and Maintenance program (CMOM), a proposed US EPA regulation by June 2009. CMOM program provides a comprehensive operation, maintenance, capacity assessment, and sanitary sewer overflow prevention of the wastewater collection system. As part of the CMOM implementation, the Utility has already initiated the Sanitary Sewer Overflow Response Plan to effectively respond, mitigate, and correct SSOs. This plan reduces the time to respond to SSOs, provides for effective and fast mitigation, and initiates corrective actions.

The Austin Water Utility has established a genuine partnership with the United States Environmental Protection Agency as a result of the project. Utility senior management personally brief EPA Region 6 staff on a biannual basis and have received a positive reception for this effort. Along with Texas Commission on Environmental Quality, the Utility co-sponsored two US EPA CMOM workshops in Austin.

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Section 5

Wildlands and Parklands

Wildlands

Through the Wildland Conservation Division of the Austin Water Utility, the City of Austin manages more than 33,000 acres of wildlands. These lands differ from parks in that they do not contain amenities such as swimming pools, picnic tables, playgrounds, or ball fields. The City of Austin's wildlands are dedicated to either the Water Quality Protection Lands (WQPL) or the Balcones Canyonlands Preserve (BCP) program depending on the primary reason for purchase. Lands dedicated to the WQPL are key properties that enhance and protect water quality and water quantity, specifically in the contributing or recharge zones for the Barton Springs segment of the Edwards Aquifer. Lands dedicated to the BCP contain habitat for at least one of the eight endangered species protected under the Balcones Canyonlands Conservation Plan, a federally permitted Habitat Conservation Plan the City shares with Travis County and coordinates with several partners.

Since its creation in 2002, the Division continues to successfully share resources between the two programs to efficiently fulfill each program's mandate. Figure 5-1 shows the location of properties attributed to each program.

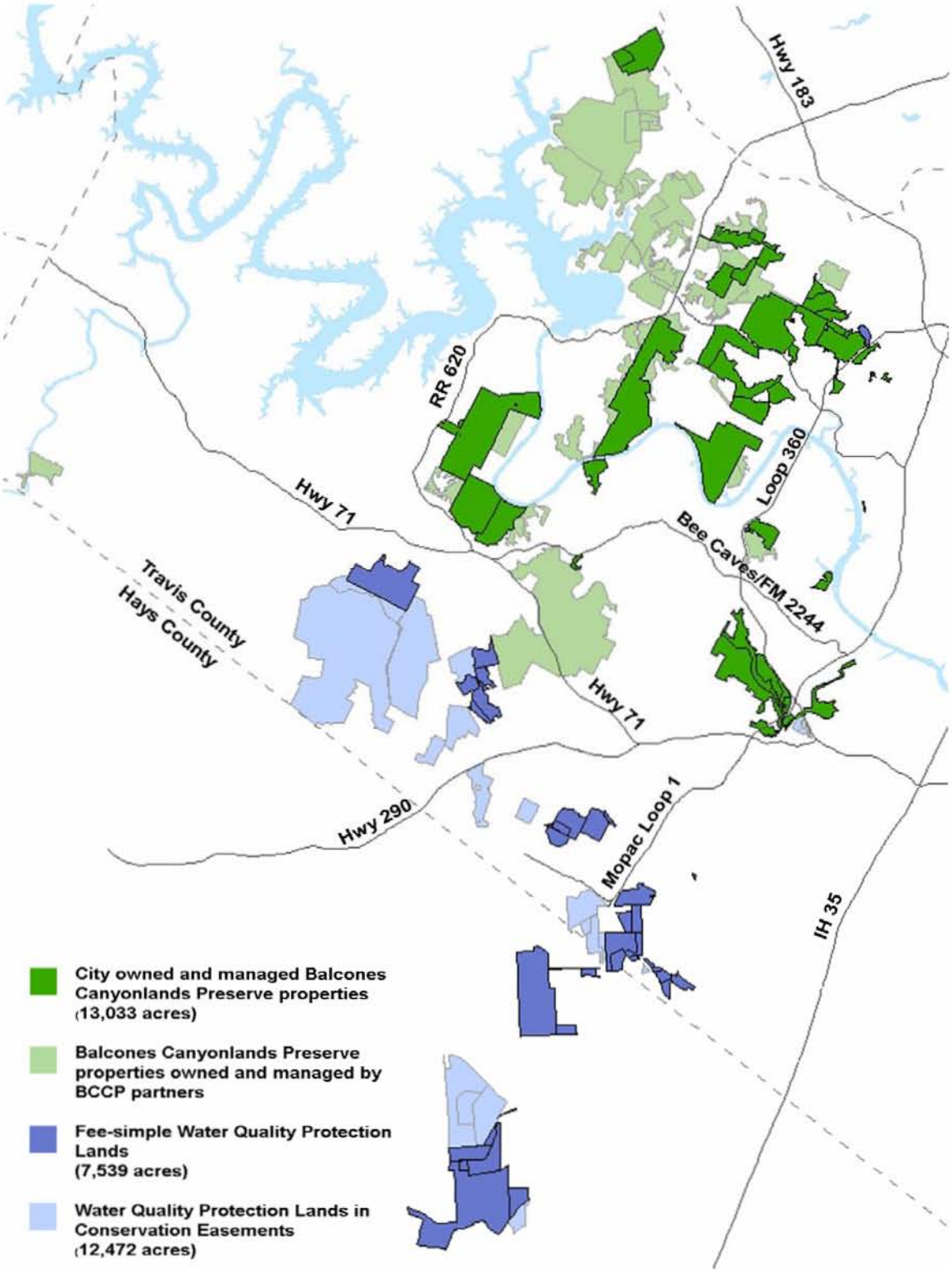

Hwy 183
RR 620
Hwy 71
Loop 360
Bee Caves/FM 2244
Travis County
Hays County
Hwy 71
Hwy 290
Mopac Loop 1
IH 35
City owned and managed Balcones Canyonlands Preserve properties (13,033 acres)
Balcones Canyonlands Preserve properties owned and managed by BCCP partners
Fee-simple Water Quality Protection Lands (7,539 acres)
Water Quality Protection Lands in Conservation Easements (12,472 acres)

Figure 5-1

Water Quality Protection Lands

Bonds passed in 1998 enabled the purchase of land to protect water quality and enhance runoff and recharge in watersheds serving the city's water supply. Since then, the City has acquired 20,010 acres of land. This includes 7,539 acres in full fee title and 12,471 acres in conservation easements.

Karst feature on WQPL's Onion Creek Management Unit.

In the 2004 - 2005 fiscal year over 4,000 acres of WQPL fee simple land received land treatment for ecological restoration and other conservation practices. Projects implemented by staff and contractors included mechanical management of woody species, re-seeding native grasses, control of exotic species, wildlife management, fence maintenance and repair, as well as various clean up projects . These practices were intended to enhance ecological function in order to benefit hydrological processes.

All conservation easements are visited annually to ensure compliance by landowners. The WQPL program annually monitors 13 conservation easements to document compliance with the terms and conditions of the Conservation Easement Agreements. Established photo-points are re-taken every other year on these properties.

Several research projects are ongoing at WQPL properties as part of the program's goal to benefit the Barton Springs watershed by better documenting the relationship between the land and hydrologic processes. The Texas Cave Management Association is monitoring water quality and quantity of water seeping into a cave under the proposed State Highway 45 Right of Way at a depth of 140 ft. The United States Geologic Survey has established four well sites to study water quality on the WQPL as part of the National Water Quality Assessment program. The Barton Springs Edwards Aquifer Conservation District has established a research well on the WQPL to study the vertical flow gradient between the Trinity and Edwards aquifer. A multi-partner cooperative research effort continues to develop a detailed water balance equation for a Water Quality Protection Lands site in the Slaughter Creek and Bear Creek Watersheds. Development of this model will allow the WQPL program to better predict hydrologic responses to land treatment and management. This project is being implemented in cooperation with University of Texas, Barton Springs Edwards Aquifer Conservation District, U. S. Geological Survey, Texas A&M University, and COA Watershed Protection and Development Review Department. Well monitoring is also being conducted by a private consultant looking at any water quality impacts from a nearby golf course to be constructed near WQPL lands in the near future. Finally, a study is being conducted in cooperation with Texas A&M University through the Water for Texas Program looking at runoff and sediment responses from different Best Management Practices used for land management.

The WQPL program continues to receive support from more than 25 organizations, and local, state, and federal agencies that make up the Stakeholder Steering Committee. These include environmental organizations, activity interest groups, neighborhood groups, ethnic and cultural organizations, and federal, state and county governments who assembled to assist with planning and implementing public access recommendations and public education actions

Austin Water Utility's Outstanding Volunteers recognized in April 2005 were Julie Jenkins (pictured) and Bill Russell who have contributed extraordinary effort to the Water Quality Protection Land program. Also pictured from left are Kevin Thuesen, WQPL Program Manager, Willy Conrad, Wildland Conservation Division Manager, and at Chris Lippe, Austin Water Utility Director.

From the Stakeholder Steering Committee, two coalitions of stakeholders have signed Memorandums Of Agreements with the City of Austin to develop multi-use trails on two WQPL properties—the Bull Creek Management Unit and the Slaughter Creek Management Unit. These groups received grant funding to design and install a trail, as well as conduct volunteer stewardship training and install riparian plantings. Both of these projects have received permits from Watershed Protection and Development Review and construction has begun on the Slaughter Creek trail. Efforts between WCD staff and stakeholders has resulted in the collection and growing of native riparian seed stock for future restoration plantings. The initial volunteer training has resulted in a cadre of volunteers who have been leading interpretive hikes on the Slaughter Creek unit every first Saturday of the month starting in June 2005.

The WQPL program benefited this year from 22 volunteer projects involving 75 individuals and resulting in 1,075 hours of support. In addition to the training of interpretive guides, volunteers assisted with seed collection, Ashe juniper removal and other land management projects.

Volunteers practice leading tours during interpretive training.

At Austin Water Utility's Water Education Festival WCD staff led an interactive activity using the Slaughter Creek watershed model for over 300 elementary-level students. The activity incorporates information about non-point source pollution, aquifer hydrologic zones, and role of the wildlands in water quality and quantity enhancement. Other educational outreach activities included presentations to and correspondence with neighborhood associations about the lands and trespassing issues, a presentation to American YouthWorks E-Corps members in advance of their work on these sensitive lands, and use of the watershed model at an annual Cave Festival in southwest Austin.

Balcones Canyonlands Preserves

In 1993 City Council authorized the Balcones Canyonlands Preserves. The City, Travis County, and other partners manage this program in order to protect habitat for eight species of animals listed as threatened or endangered under the Endangered Species Act while allowing development to occur in western Austin and western Travis County. The Preserve operates under the terms of the Balcones Canyonlands Conservation Plan

(BCCP), which is a regional, multi-species habitat conservation plan that approaches conservation and management from a whole ecosystem perspective**.**

The City's portion of the Balcones Canyonlands Preserves currently includes 13,035 acres in six macro-sites. These preserves are situated in watersheds serving Lake Austin and Lake Travis. While the primary focus of management of these preserves is to protect habitat for endangered species, it also serves to lessen threats to water quality, enhance air quality, provide a unique aesthetic quality to the City, and preserve the natural heritage of Austin's rapidly changing landscape.

In fiscal year 2005 - 2006 staff actions focused on measures to further the program's mandate, including habitat restoration projects, erosion control, preserves infrastructure and security enhancement, monitoring of protected species, management of other wildlife species, management of non-native and feral species, public education and outreach, management of the BCCP Infrastructure Process, and planning development of Urban/Wildland human health and safety issues. Staff also continued a collaborative process with other BCCP partners in a U. S. Fish and Wildlife Service required five-year revision of the BCP Land Management Plans.

The endangered golden-cheeked warbler. (Photo by John Ingram.)

2005 marked the eighth year of ongoing monitoring of golden-cheeked warblers on Balcones Canyonlands Preserves. Evaluation of data indicates populations of this species on our preserves appear to be stable but species productivity is lower when compared to other golden-cheeked warbler conservation management areas. As noted in the 2004 survey data, last year's survey data continued to indicate that territory establishment in areas of heavy public use is declining. However, golden-cheeked warblers are being observed on the preserve in transitional habitat, sites that were not expected to provide adequate habitat until several years in the future. This indicated that while golden-cheeked warblers may be struggling to find local habitat outside the preserves, they could rely on our preserves to meet their habitat needs.

Monitoring for the presence of the aquatic Jollyville Plateau salamander on the City's BCP land is performed quarterly. Although this salamander is not listed on the City's section 10(a) permit and is not a federally listed species, the Jollyville Plateau salamander is monitored as an indicator of stream health and water quality. Conserving and protecting this salamander on BCP land may negate the need for future federal listing, which could lead to local or regional economic constraints. City staff conducts surveys following protocol established in the City of Austin's Watershed Protection and Development Review Department report "Jollyville Plateau Water Quality and Salamander Assessment."

The Tooth Cave Ground Beetle (Rhadine Persephone) is one of the karst invertebrates protected under the BCCP. (Photo by Jean Krejca.)

There are six species of endangered karst invertebrates and 25 karst species of concern covered by the City's permit. Twenty-three caves are protected as part of the BCP on City owned or managed land and they are managed by the Austin Water Utility Department – BCP Program. This past year the City's BCP staff performed species surveys for 31 caves, many of which were in support of a specific research project. Those visited were Airmans, Another, Arrow, Barker Ranch, Blowing Sink, Broken Arrow, Brown's, Cave Y, Cotterell, County Line Bat, Dalstrom, District Park, Flintridge, Fossil Garden, Goat, Hole in the Road, Hoskins Hole, Irelands, Jest John, Little Bee Creek, Maple Run, McNeil Bat, Midnight, Rolling Rock, Sam Bass, Seibert Sink, Sky Ranch, Slaughter Creek, Spider, Sunset Valley, and Taylor Bat Caves.

Major threats to the black-capped vireo survival include habitat loss, habitat fragmentation, and parasitism by brown-headed cowbirds. To offset one of these threats, habitat loss, on the City's preserve land, BCP staff has mechanically created two new 18 acre sites, one adjacent to the Bohls 30-acre black-capped vireo habitat restoration areas created in 2004 and one adjacent to the 76-acre site that was mechanically manipulated in

1995. The new habitat areas were manipulated by a combination of contractor juniper tree shearing and mulching and volunteer and American YouthWorks crews hand labor. Currently, the City's BCP Program is managing approximately 172 acres of black-capped vireo habitat. Additional acreage is proposed for the Lime Creek tract and the Vireo Research Area and will be added in a similar fashion in FY06 and FY07.

The City of Austin has completed its land acquisition commitments for BCCP. We continue to support Travis County and our other partners as they strive to complete their acquisitions.

The Balcones Canyonlands Preserves program has continued collaboration with Texas State University at San Marcos (TSUSM) to further the goals of the program and the educational goals of the University. TSUSM has supplied undergraduate and graduate students, through their Internship Course Program, to assist the BCP program with numerous studies and projects. Additionally, TSUSM and the University of Missouri at Columbus are conducting research projects that will aid the City's BCP Program and other partners in the BCCP in developing management strategies and guidelines for the future. These studies included black-capped vireo foraging analysis, nest predation and productivity in an urban/wildland interface, abiotic and biotic factors associated with preserve edges, and effects of non-native trees in oak-juniper woodland on neo-tropical bird migrants.

Marion Couvillion, with the assistance of Walt Krudop, guided the repairs and updates to the BCP Greenhouse.

The BCP program has benefited from the efforts of 101 volunteers on 26 projects contributing a total of 1,085 hours. Projects included seed collecting, tree planting, prior planting maintenance, trail assessment, and cowbird-trap maintenance. The program's restoration efforts began to expand its ability to propagate plants for restoration projects thanks to the significant efforts of a team of two volunteers who updated the BCP greenhouse. In January 2005, the program launched the new website, Bull Creek EcoWeb Tour, which replaced the classroom portion of the course to earn a Bull Creek Entry Permit to enter the preserve during the golden-cheeked warbler breeding season. Sixty-nine individuals were able to conveniently read through the website at home or work, complete a 30-question test, and sign up for the interpretive hike online. WCD staff participated in training for Capital Area Master Naturalists by presenting information on urban endangered species conservation issues.

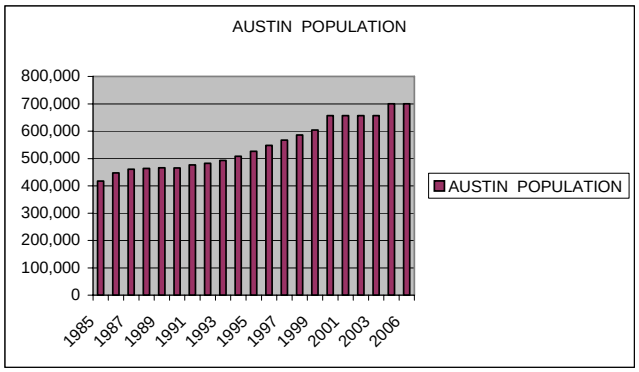
Parkland

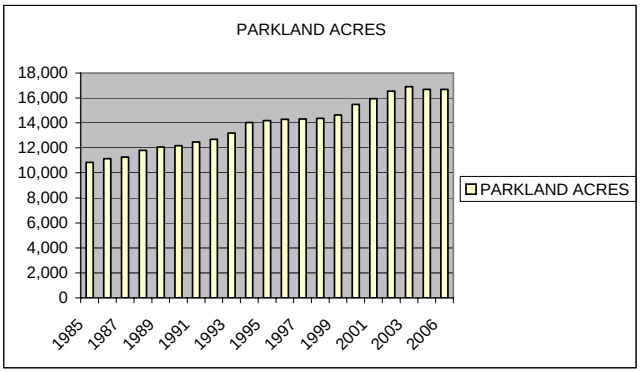
With 16,682 acres of parks, greenbelts and preserves, Austin ranks as a leading city in parkland acres both in the state and nationally. Although Austin's population has continued to grow rapidly over the past two decades, parkland acquisition programs

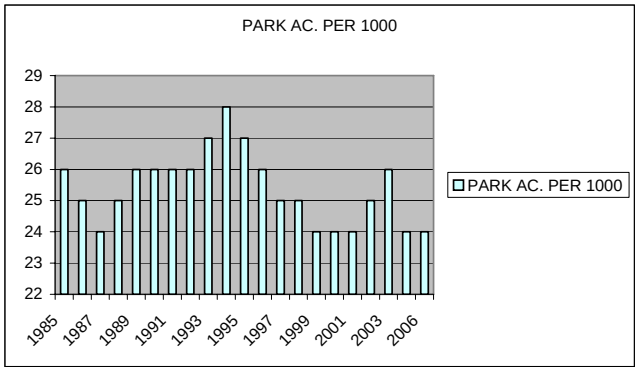
approved by the voters have enabled the parkland to population ratio to remain relatively constant. The ratio in 1985 was 26 acres per 1000 people, and in 2005 was 24 acres per 1000 people.

As Austin's population continues to grow, parkland acquisition must be actively pursued. in order to keep pace. The newly developing State Highway 130 project will cause development and population increases in east Austin. The City continues to expand into environmentally sensitive areas of south and west Austin. Conservation of parks and open space will have to be achieved before rapid development occurs. Continued investment in capital improvement programs for parkland acquisition is necessary to maintain Austin's abundance of green spaces.

As Austin's population continues to grow, parkland acquisition must be actively pursued







Section 6

Energy Consumption and Conservation

Demand Site Management

Demand Side Management (DSM) provides Residential and Commercial energy management services to customers of Austin Energy (AE). Technical assistance and energy audits identify efficiency opportunities, make recommendations on the most cost effective measures, and offer financial incentives for installations. The Green Building program provides plan review and consultation services to building industry professionals seeking to have their projects evaluated for energy efficiency and sustainability.

The Conservation and Renewable Energy Division drives market transformation to maximize energy resources by lowering electric bills while increasing customer comfort and satisfaction. Higher efficiency lowers costs to Austin Energy and its customers, while also reducing power plant emissions and promoting economic development in the Austin area. The capital purchases provide economic benefits through increased employment in the local energy efficiency industry. The resulting gain in disposable income increases spending in the local economy.
The diverse mixture of Residential Efficiency, Commercial Energy Management, and Green Building programs offered by AE achieved substantial reductions in peak electric demand, energy usage, and power plant emissions. In FY 2004 - 2005, Austin Energy achieved the two impacts below.

Demand and Energy Reduction:

- 49.8 Megawatts of Required Power-Plant Peak Capacity in Table 2.
- 119,000 Megawatt-Hours Energy Savings in Table 3

B. Estimated Annual Power-Plant Emissions' reductions in Table 5.

o	Sulfur Dioxide:	11.5 tons	(10.4 metric tons)
o	Nitrogen Oxides:	71.1 tons	(64.5 metric tons)
o	Carbon monoxide:	94.0 tons	(85.3 metric tons)
o	Total Suspended Particulate:	23.0 tons	(20.8 metric tons)
o	Carbon Dioxide:	75,200 tons	(68,200 metric tons)
o	NMOC (VOC)	7.2 tons	(6.5 metric tons)

CONSERSATION PROGRAMS
FY 2004- 2005

Austin Energy's Conservation and Renewable Division is responsible for the design, implementation and evaluation of Residential Energy Efficiency, Commercial Energy Management and Green Building Programs offered to its electric customers. The diverse programs implemented in Fiscal Year 2004 - 2005 are summarized below.

Residential Efficiency Programs

In 2005, the Austin Energy Residential Efficiency Programs achieved tremendous results in participation and savings. For all programs combined, over 30,000 residential customers participated in the Residential Efficiency Programs with a peak demand savings of 21 MW.

The Residential Efficiency Programs also enjoyed a number of achievements:

In February 2005, Austin Energy implemented a Refrigerator Recycling Program. The program is the first utility sponsored refrigerator recycling program in the State of Texas.

In March of 2005, the Austin Energy Home Performance with ENERGY STAR Program was awarded the National ENERGY STAR Award in the category "Existing Home Improvements."

Austin Energy received this award at a banquet in Washington D.C. from the U.S. Department of Energy and the Environmental Protection Agency.

In April 2005, residential staff developed the Austin Energy's Home Performance Contractor Training Program. This initiative funded by the United States Department of Energy (DOE), focuses on the training of home performance contractors to Building Performance Institute (BPI) standards. BPI is a home performance contracting certification agency. The training will be an ongoing training component of Austin Energy's Home Performance with ENERGY STAR Program.

Air Conditioning Rebate Program

The Air Conditioning Rebate Program provides rebates on high efficiency air conditioning units and heat pumps that are 20% to 40% more efficient than the local energy code requirements and the national appliance manufacturing standards. Austin Energy's efficiency standards meet the minimum ENERGY STAR requirements for central air conditioning systems with at least a 13.0 SEER efficiency rating, which is three points above minimum code requirement 10.0 SEER, and approximately six points above the average efficiency of a fifteen-year-year-old system. Rebates for high efficiency window units are also available. This program is available for newly constructed or existing homes and small businesses.

2005 Highlights -

This program has historically saved more kW than Austin Energy's other residential efficiency programs, resulting in over 4,000 participants and a peak demand savings of 3.6 MW.

The average efficiency of air conditioners being installed through the Air Conditioner Rebate Program is 13.7 SEER for existing homes and 12.3 SEER for new homes. The code required efficiency is 10.0 SEER until January 23, 2006. This proves that rebates do change the market and encourage the installation of more efficient equipment.

Home Performance with ENERGY STAR – Rebate Program

The Home Performance with ENERGY STAR – Rebate Program provides rebates to customers as an incentive to make energy-saving home improvements based on an energy analysis performed by a trained home performance contractor. Through this program, rebates are offered for attic insulation, solar screens, duct repair and sealing, and installing a properly sized high-efficiency heating and cooling system. If a homeowner makes all of the recommended weatherization improvements and installs a properly sized unit, customers can qualify for a "bonus" rebate which ranges higher than that offered through the Appliance Efficiency Program. Because the energy improvements bring the home to current energy code standards, this program is offered to existing homes only.

2005 Highlights -

The Home Performance with Energy Star–Rebate Program had 1,080 residential customers participate (98% of goal of 1,100 participants) with a savings of 2.4 MW of electric demand.

As a value added service, Austin Energy provides customers who participate in the program an "Austin Energy Home Performance Completion Certification." The certificate documents the date that the home had energy efficiency improvements made to the home. To receive the certificate, customers must install all recommended energy efficiency measures in the energy analysis.

The program includes the "System Performance Testing" option, which provides an airflow performance analysis of the duct system. This allows the contractor to "commission" the duct system for performance and offers the customer a rebate to have this done. This test compares the existing airflow of the duct system to the industry standard for airflow performance of a duct system is 400 CFM (cubic feet per minute) per ton of air conditioning.

Home Performance with ENERGY STAR – Loan Program

This program is identical to the Home Performance with ENERGY STAR – Rebate Program, but offers the customer the option to borrow money to complete the home energy efficiency improvements. The loan covers the cost for installing attic insulation, solar screens, duct repair and sealing, installing a new properly sized high efficiency heating and cooling system. The Home Performance with ENERGY STAR Program emphasizes improving the total home, giving the customer:

- Greater comfort
- Better energy performance
- Improvement indoor air quality

Currently, Austin Energy buys down the interest rates through Velocity Credit Union. Customers can lock-in at an interest rate of 0% APR interest for 3 or 5 years, 2.9% for 7 years, or 4.5% for 10 years.

2005 Highlights -

- In FY 2005, the Home Performance with Energy Star - Loan Program had a slight increase in participation compared to the previous year, with 324 participants and a savings of 0.68 MW of electric demand.
- Austin Energy implemented an "Air Conditioning Replacement/Duct Improvement" loan option which allows customers to replace their old inefficient air conditioner plus make major duct renovations to improve the efficiency of their duct system.
- The loan program also includes a "System Performance Testing" option, which includes an airflow performance analysis of the duct system. This allows the contractor to "commission" the duct system for performance and offer the customer financing to have this done. This test compares the existing airflow of the duct system to the industry standard for airflow performance of a duct system of 400 CFM (cubic feet per minute) per ton of air conditioning.

Free Weatherization Program

The Free Weatherization Program offers low-income, elderly and physically/mentally disabled customers free energy audits and, for those who qualify, offers free energy improvements on their homes. The Free Weatherization Program service includes the installation of attic insulation, solar screens caulking/weather stripping doors and windows, re-glazing of windows, sealing and repair of

ducts, and other minor energy-related repairs to address substandard housing conditions. In conjunction with the Free Weatherization Program, customers may apply for a Home Performance with ENERGY STAR Loan or an Air Conditioning Rebate to install cooling equipment.

In FY 2004-2005, home safety improvements are installed in each home which includes advanced smoke and carbon monoxide detectors and improved methods of air testing to insure the health and safety of its customers. For customers who qualify, Austin Energy also provides a $500 voucher for the purchase of an ENERGY STAR labeled window unit air conditioner through the Window Unit Voucher Program.

2005 Highlights -

- The Free Weatherization program weatherized 455 homes in 2005 and saved 0.43 MW of peak demand. Since the programs inception in 1984, participation has increased 71%. Since the start of the millennium the program has seen a 22% increase in participation when compared to the 1990s.

- Austin Energy improved the efficiency of customer's existing central air conditioning system by offering a "Free - A/C Service." Contractors utilized the Honeywell Services Assistant, a refrigerant charge verification tool, which verify and report the improvements to Austin Energy.

Multi-Family Incentive Program

The Multi-Family Energy Incentive program provides owners, developers and managers of apartment communities and other multi-housing properties with energy rebates for making energy-efficiency improvements.

For our existing multi-housing customers, Austin Energy's Conservation Program Specialists are available to perform a free walk-through energy audit to identify energy improvements that qualify for rebate incentives.

Austin Energy recently implemented a Duct Diagnostic and Sealing Program for existing multi-family properties. Through this program, contractors perform a diagnostic inspection and a duct blaster test to check duct leakage. Recommendations are made to the property manager for duct improvements. Initial duct leakage testing has shown an average duct leakage rate of 40%.

For our new construction multi-housing customers, Austin Energy's Conservation Program Specialist assist builders, developers and owners with rebate incentives to encourage upgrading air conditioners and heat pumps that exceed national energy code requirements, expertise to review duct system designs, inspection services to assure quality work.

All participating apartment communities and multi-housing properties can partner with Austin Energy and use the Multi-Family logo in their advertising as a symbol of energy efficiency and comfort. Residents of these communities have benefited from the improvements through: utility savings ranging from 10% - 40%, and improved air quality and higher comfort year-round.

2005 Highlights -

- The Multi-Family Program had 54 apartment communities request energy surveys. The surveys generated 6,500 apartment unit retrofits saving 3.2 MW of peak demand savings.

- The Multi-Family Duct Diagnostic and Sealing Program provide duct sealing improvements for 43 apartment communities which total 5,097 apartment units. Currently, three contractors offer duct sealing services to the apartment communities. Contractors have been able to reduce duct leakage below 15%.

- Austin Energy developed an "Apartment Search" feature to Austin Energy's website at www.austinenergy.com/go/map . This feature gives potential apartment residence an opportunity to search for apartments located in certain areas of Austin that have participated in Austin Energy's Multi-Family Program. It lists the measures that have been installed in each of the apartment communities.

The Power Partner Program

Within the past seven years, Austin has been growing at a phenomenal rate. The Power Partner Program and Load Management Program are solutions to accommodate that growth and the need for increased energy. The program provides Austin Energy with an affordable method of load reduction during times of peak demand, and at the same time provides participants with the opportunity to save energy year round, and the ability to make a difference in Austin's energy future by making sure there will be enough electricity for future power needs.

2005 Highlights -

- In 2005, the Power Partner Program had 8,300 customers participate in the program during the fiscal year. This brings the total number of thermostats installed since inception to 43,900 with 600 to 1,000 new participants being added each month.

- In 2005, there were significant changes to the program. A record 13 cycling session exercised in 2005 compared to six (6) the previous year. A new load management thermostat was developed which has received outstanding remarks and reviews from customers who have utilized the thermostat.

- The new thermostat, collaboration between White-Rodgers (a division of Emerson) and Comverge, is a more modern, user friendly thermostat that provides customers with the following enhanced features: a large backlit display screen, auto-changeover, filter change reminder, energy management recovery, keypad lockout, and web programmability.

Multi-Family Cycle Saver Program

Austin Energy offers another load management program, the Cycle Saver Program. The Cycle Saver Program was created to help Austin Energy manage peak energy demand by installing energy control timers on individual electric water heaters at multifamily properties. The program directly targets apartments with electric water heaters, providing the owners and managers with incentives for participation. Austin Energy has programmed the energy control timer to cycle off June through September, Monday – Friday, 3 pm to 7 pm. The unit does not cycle off the water heater on weekends or holidays.

Austin Energy selected the Vaughn Energy Controller IV (www.vaughncorp.com) because of its easy to use, yet sophisticated, load control capabilities. This product was specifically designed to meet electric utilities needs for dedicated peak control of electric water heaters, while offering customer flexibility. State-of-the-art microprocessor technology offers programming capabilities flexible enough to accommodate Austin Energy's load management strategies to save energy, money, and also reduce peak summer demand for electricity.

Property managers of apartment communities like offering this product to its customers because it gives residents an opportunity to save additional energy on their electric bill. The vacation button feature on the timer allows the residence to shut off the water heater for extended periods.

2005 Highlights -

- In FY 2005, the Multi-Family Cycle Saver Program surpassed its participation goal with 2,600 apartment units participating in the program, with a peak demand savings of 1.8 MW.

- A majority of the water heater timers are installed inside the living area, giving the residence greater accessibility to the timer. Many apartment residences feel the water heater timer provided them a great option for additional energy saving in their apartment. They like having independent control of the water heater timer with features such as vacation and 1 hour override buttons, instead of Austin Energy switching off the units from a central location.

Duct Diagnostic and Sealing Program

The Duct Diagnostic and Sealing program encourages customers to have their duct system diagnosed for air leakage and proper distribution of air. Austin Energy contracts with specially trained contractors who have been certified by the National Balancing Institute (NBI) to provide duct diagnostic testing for $50 per unit, which includes the following:

- Duct Leakage Analysis
- Duct Airflow Test
- Temperature Test
- Return Sizing Test
- Combustion Safety Test

The Duct Diagnostic testing identifies significant duct leakage that could reduce cooling and heating capacity and result in higher energy bills. Testing also reveals if rooms have sufficient temperature and airflow for adequate heating and cooling, if return air vents receive sufficient air; and, and if return air vents are drawing unconditioned air from the attic, garage or crawl space, introducing unwanted allergens in rooms. The contractor can then make necessary recommendations, and Austin Energy can provide rebate opportunities to help offset the cost of improvements.

The benefits of having duct improvements may include: saving money, increasing comfort, improved indoor air quality and a safer home.

2005 Highlights –

- In FY 2005, the Duct Diagnostic and Sealing Program surpassed its participation goal with 238 homes participating in the program, with a peak demand savings of 0.29 MW.

- The Duct Diagnostic and Sealing Program partners with the Department of Energy and Environmental Protection Agency's ENERGY STAR® Program to provide customers this quality service.

Compact Fluorescent Lamps (CFL) Lighting Rebate Coupon Program

The CFL bulb program encourages customers to purchase "Energy Star" labeled compact fluorescent light bulbs, instead of incandescent light bulbs. Austin Energy offers $2-$4 discount coupons to help offset the initial cost of buying the CFL bulbs. Local retailers, working together with Austin Energy, help promote the program by stocking CFL bulbs, and accepting the $2-$4 discount "Point of Purchase" coupons. Local retail participants then send the collected coupons to Austin Energy and are reimbursed for the face value of the coupons by Austin Energy.

The CFL bulb program provides the following benefits to Austin Energy, the environment, and its customers:

- Saves money by reducing energy use in customer's homes

- Reduces the amount of heat gain from lighting by 90%, thus reducing homes cooling loads
- Helps reduce the amount of fossil fuels burned to produce energy
- Helps Austin Energy reduce energy use during on and off peak usage times
- Helps the cost of replacing bulbs by lasting up to ten times longer than standard bulbs

2005 Highlights –

- In 2005, the number of CFL bulbs distributed surpassed its participation goal with 21,200 bulbs distributed, with a peak demand savings of 0.063 MW (196% of goal of 10,800 bulbs).
- Companies who have renewed their partnerships with Austin Energy, include Home Depot, Breed and Co., The Light Bulb Shop, Texas Light Bulb & Supply, and The Hardware Store.
- Lowe's Hardware retail outlet joined the list of retailers participating in the CFL bulb program.
- The Austin Housing Authority partnered with Austin Energy to supply 1,900 homes with two CFL light bulbs per home.
- Austin Energy joined the "Change A Light, Change the World" campaign launched by the Environmental Protection Agency, giving Austin Energy national recognition.

Refrigerator Replacement Program

The Refrigerator Recycling Program is the newest Residential Energy Efficiency Program for Austin Energy. The program is intended for those homeowners with a working refrigerator of which they would like to recycle. Austin Energy arranges for the pick up of the refrigerator at no cost. As an added incentive, the homeowner will receive $35. Ninety-eight percent of the refrigerator is recycled, avoiding disposal in a landfill. The program is intended to remove inefficient refrigerators which can cost homeowners an average of $150 a year.

2005 Highlights

- In February 2005, Austin Energy partnered with Appliance Recycling Centers of American (ARCA) to provide the refrigerator recycling service for Austin Energy residential customers. ARCA established a new refrigerator recycling center in southeast Austin. This is the first utility sponsored refrigerator recycling program in the State of Texas.

- In 2005, Austin Energy recycled 2,320 refrigerators and freezers within the first 8 months of the program with a savings of 0.61 MW of peak demand savings.

- The components of the refrigerator that are recycled include the metals, plastics, glass, compressor oils and refrigerants plus the polyurethane foam insulation. The foam contains as much CFC 11 as the refrigerant itself.

Residential Online Energy Analysis

Austin Energy now offers residential customers the opportunity to go "online" to perform an energy analysis on their own home. Customers can log onto Austin Energy's website at www.austinenergy.com to perform the energy analysis. Customers answer a list of questions about the characteristics of their home. The questions include details on wall and attic insulation levels, type of appliances in the home, appliance usage schedules, number and type of lights, and types of heating, cooling and water heating equipment.

Once customers have completed the questions, the online analysis will provide:

- Estimated Operating Cost of Customers Home Appliances
- List of No Cost and Low Cost Energy Efficiency Retrofits
- Savings Estimates of Recommended Retrofits
- Comparison of Customers Home verses An Efficient Home of Similar Size
- Colorful Graphs of Appliance Usage

"Appliance Calculators" have been added to allow customers to determine energy savings for specific products such as a refrigerator, dishwasher, cooling system, heating system, water heater and lighting. If the customer is interested in implementing some of the measures recommended, it directs the customer to Austin Energy's Residential Efficiency Program webpage.

2005 Highlights

- In 2005, 6,519 unique customers accessed the Austin Energy's Online Energy Analysis. This is an average of 543 customers per month.

Commercial Energy Management Programs

On-Site Energy Surveys

Austin Energy performs no-cost energy audits of commercial buildings to identify energy efficiency opportunities. An experienced staff of energy engineers and energy technicians perform walk-through energy surveys of facilities, educate building owners and operators on facility energy management and identify cost saving opportunities. We provide pre-inspection of major equipment prior to its replacement and 100% of all projects are inspected before any rebate funds are disbursed.

Commercial Rebates

Austin Energy's business customers can get utility rebates for investing in new, energy efficient equipment. Rebates are offered for energy efficient technologies that reduce summertime electric peak demand and include, lighting, HVAC, thermal cool storage, motors, Variable Frequency Drives, building envelope and other custom technologies. Trade allies have been very instrumental in helping create awareness among Austin Energy's commercial customers. AE has strong and productive relationships with local equipment suppliers.

In FY 2004-2005 The rebate levels were increased by 20% from January 2005 to May 31 2005, this had the effect of increasing participation significantly during this time frame. The bonus rebate program helped commercial rebates to exceed it's goal in MW's delivered.

Interlocal Agreements

Through Interlocal Agreements, AE can provide customized energy consultations and energy project solutions to institutional and governmental agencies.

Public institutions, school districts, State, Federal, County, and Municipal Departments require special assistance when it comes to energy management services. Through Interlocal Agreements, AE establishes a closer working relationship with public agencies to identify and implement facility energy management. AE rebates can be allocated for energy conservation projects, and project-financing solutions can also be identified.

Municipal Energy Conservation Program

The Municipal Energy Conservation Program (MECP) provides technical support, employee awareness training, and funding for energy conservation projects. The MECP has led the Cities efforts in Senate Bill 5 compliance. To this end the EMCP installed a number of lighting retrofits as well as about 400 occupancy sensors. In addition, the program has provided technical support to serve new construction and renovation projects.

In January 2005 the City Manager issued an Administrative Bulletin (05-01) that outlined the city's commitment to energy conservation in it's own facilities and designated Austin Energy as the cities energy manager. It also outlined the responsibilities of each department and requires energy management plans to be submitted.

In fulfillment of the role as the city's energy manager, municipal program staff solicited a $10 million performance contract to implement energy conservation in city of Austin facilities over the next two to three years. Additionally, a $5 million commitment in LoanSTAR loan funding was approved to fund cost effective retrofits.

By the end of 2004, the city of Austin had reduced it's energy consumption by almost 9% when compared to the 2001 baseline usage. These results were reported to the State Energy Conservation Office (SECO) as required by Senate Bill 5, 1999.

Small Business Lighting

The objective of this program is to motivate small business non-demand and limited demand customers (less than 100 kW) to participate in the City's energy efficiency program through the installation of energy efficiency lighting equipment. The program offers participating customers a discount for the purchase of qualifying energy efficient lighting equipment. In the traditional rebate program, commercial customers receive a rebate after the purchase and installation of the lighting equipment. However, the Small Business Lighting Program offers participating customers a discount, before the equipment purchase. This process gives the participant the advantage of reducing their "initial cost", which has historically been an obstacle for the small business community to implement energy efficiency measures.

The vendor performs the lighting audit in this unique program. This provides the customer an opportunity to meet and interact with the vendor. AE inspects all lighting projects after the equipment is installed.

Power Partner Program

These load management programmable thermostats allow business owners to schedule the "on-off" operating schedule of the air-conditioner as well as pre-program setback temperature schedules. Additionally, the programmable thermostats have radio-controlled devices that can allow AE to cycle-off air conditioning units. Our Power Partners' air conditioners may be cycled off, as needed for no more than 10 minutes every half-hour from 4 to 8 p.m., Monday – Friday, June through September. Participation in the program is voluntary, offered on a first-come, first-served basis. By participating in the Power Partner program, you agree to allow Austin Energy to cycle your air conditioner during these times.

Engineering Services

Austin Energy constructed one district cooling plant in the Central Business District in 2001 and began construction of a second plant in 2003. The first plat serves approximately 10 buildings through an underground distribution network of chilled water pipes.

An integral part of both plants is a Thermal Energy Storage (TES) system. The existing plant contains three 2,000 ton water chillers, two 1,000 ton glycol or ice chillers, and one 26,000 ton hour ice based TES system. The second plant has been constructed and contains one glycol chiller and a 52,000 ton-hr TES system, in addition, spaces for new water chillers are provided to accommodate additional chiller capacity as chilled water demand grows. The capacity of both plants combined at full build out is planned to be approximately 26,000 tons of peak cooling capacity.

During 2005 the peak cooling load was approximately 4,100 tons with an additional 820 tons anticipated to be brought on-line by the summer of 2006.

Thermal Energy Storage Program

This program offers an opportunity for AE customers to reduce their utility bills while reducing peak demand during the utility's on-peak periods. Thermal Energy Storage (TES) is a proven technology using conventional refrigeration equipment and specialized storage tanks to shift all or part of a facilities cooling load from on-peak to off-peak.

AE began offering TES rebates throughout during FY 2004-2005 at $250 / KW shifted. This in conjunction created interest in he program and several preliminary assessments were conducted. No projects applied for rebate during the fiscal year, partly doe to the long decision and construction cycles associated with TES.

In addition to rebates, a feasibility incentive was offered, at the end of the fiscal year several customers were on the verge of taking advantage of the incentive.

One small refrigerant based DX TES system was installed on a City of Austin facility, this system I expected to reduce peak demand by 8 KW and is a promising technology for residential and small commercial. The system will be monitored over the next year to determine it's performance.

Commercial Smart Vendor

Smart Vending was started in 2002 with vending misers for soda machines. It was expanded to include all vending and beverage coolers. No-cost (to customer) installs reduce refrigeration loads through occupancy sensors. This energy conservation is a low cost option to new equipment purchases.

Municipal Smart Vendor

Same as above for municipal customers.

Solar Photovoltaic (PV) Rebate Program

Austin Energy's Solar Rebate Program is designed to help customers implement photovoltaic (PV) technology in their home or business by offering financial incentives that can offset customers' initial investment. By using Austin Energy (AE) as their energy management partner, Austin energy can offer unbiased expertise to help them decide how to make the most effective use of customers' energy dollars. By implementing PV technology, customers will be helping the City of Austin reduce the need to generate additional power, lower our long-term investment costs for new electric facilities and also enhance our City's environment.

During the fiscal year the rebate levels were reduced some what in part to reduce participation in the program, which has been very high and outpacing budgets.

Green Building Program

The Green Building Program offers free consultation and technical assistance to all building industry professionals and residents who are Austin Energy customers.
The program representatives and resources can help design or remodel a building that:

- Is more energy efficient
- Uses material resources efficiently
- Provides a healthier indoor environment
- Reduces water consumption and lessens the impact of storm water run off.

The program's primary concerns are not only energy consumption, but also life-cycle impact of various building materials and strategies on human health, water and waste generation. This program looks at the "big picture" in the building or remodeling a home, and how the home affects not only its occupants, but also the community and the planet. The Green Building program is divided into Residential, Multifamily, and Commercial Divisions. Residential Single Home and Multi-Family Services

The residential single and multi-family groups work with construction professionals to enhance their ability to design and build more energy and resource efficient homes and rental units. Program staff provides education and consultation services to builders and designers in the areas of energy efficiency, water conservation, material use, health and safety and community issues.

***Green Building Rating**

The program utilizes a rating system aimed at guiding and encouraging sound environmental building design and development considerations. The residential group uses a five-star rating system to measure the sustainability of projects referred to them.

***Energy Code Enforcement**

The Green Building Program is responsible for overseeing the administration of the energy code in Austin. To this end program staff monitor and train the building inspectors, work with builders to ensure their understanding of and compliance with the 1993 Model Energy Code and amend the energy code to ensure maximum peak demand savings. Austin Energy Green Building pays the code enforcement department a set amount for each energy inspection and plan review performed.

Green Building/ Multifamily Energy Code Enforcement Program

Offers building envelope improvement and advanced duct sealing as required by code.

Commercial Services

The Austin Energy Commercial Green Building Group assists owners and designers to develop "sustainable business practices" in the construction and operation of commercial facilities with resources and technical assistance, such as information on sustainable products, successful case studies, and design review. The "Sustainable business practices" offer economic benefits to companies and the community without adversely impacting the natural environment or the supply of natural resources. The commercial group evaluates the success of buildings in achieving heir sustainability goals in the areas of Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, and Innovation and Design Process.

DESCRIPTION OF TABLES & EXHIBITS

This report is divided into two parts. Section I - consists of a series of tables that present the participation, demand, energy and emission reductions achieved by the Austin Energy's Conservation and Renewable Energy Division in Fiscal Year 2004-2005. The Tables itemizes performance in each of the last five years, as well as a summary of 1982 to 2000.

Section II - consists of a series of exhibits that present financial information on the programs offered by Conservation and Renewable Energy Division.

SECTION I

A brief explanation for each of tables that make up this part of the report is listed below.

Table 1 - Annual Program Participation

This table depicts the number of participants by year for each of the programs offered by the Austin Energy. Participants are those homes and facilities where the energy conservation measures were installed, inspected and approved by Austin Energy.

Table 2 - Annual Reduction in Power Plant Capacity (MW)

This table shows the reduction in peak electrical demand achieved by Conservation and Renewable Energy Services Division's programs for 2005. These numbers include the avoided Utility Capacity Reserve Margin of 12% and avoided Transmission & Distribution losses of 7%. Figure 1 graphs the last five years of demand reduction.

Table 3 - Annual Energy Saving (Megawatt-Hours)

This table shows the savings in electrical energy consumption achieved by the energy programs. These numbers include the avoided Transmission & Distribution losses of 7%. Figure 2 graphs five years of energy reduction.

Table 4 - Emissions Reductions

This table shows the reduced quantity of pollutants' emission as a result of DSM activities for FY2004-2005.

February 6th 2006
Distributed Energy Services

Conservation and Renewable Energy Division
721 Barton Springs, Rd.
Austin, Texas 78704

Table 1: Annual Program Participation

Program	1982-2000	2001	2002	2003	2004	2005	Total
Residencial Efficiency							
Appliance Efficiency Program	134,412	5,736	4,812	3,911	3,665	4,041	156,577
Home Performance ES - Loan	12,696	526	390	268	232	324	14,436
Home Performance ES - Rebate	13,319	1,289	1,131	1,074	1,106	1,075	18,994
Free Weatherization	8,578	713	862	667	565	455	11,840
Multi-Family Program	57,454	4,215	5,020	5,259	8,044	6,501	86,493
Clothes Washer Rebates	878	362	418	438	420	411	2,927
Duct Leaks Sealing/Diagnosis	-	240	367	319	251	238	1,415
Refrigeration Recycling	-	-	-	-	198	2,323	2,521
Power Partner Program	1,477	9,891	6,978	7,840	5,931	8,314	40,431
Cycle Saver Program	636	2,289	1,199	725	1,126	2,597	8,572
CFL Program	-	-	5,733	10,879	11,449	4,805	32,866
Discontinued Programs	103,518						103,518
Subtotal Residential	332,968	25,261	26,910	31,380	32,987	31,084	480,590
Commercial Energy Management							
Commercial Rebate	106	90	161	190	213	306	1,066
Commercial AEP	12,365	29	65	0	0	0	12,459
Small Business Lighting	54	-	56	109	146	107	472
Municipal	142	18	26	58	12	0	256
Municipal Power Partner	358	130	215	39	60	646	1,448
Commercial Power Partner	181	411	782	731	657	0	2,762
Load Coop	0	4	0	0	0	0	4
Engineering Support	3	2	0	2	0	0	7
Commercial Smart Vendor	-	-	-	2,094	1,776	1,557	5,427
Municipal Vend & Monitor Misers	-	-	101	35	0	0	136
Solar Photovoltaic Rebate	-	-	-	-	11	177	188
Discontinued Programs	2,980						2,980
Subtotal Commercial Programs	16,189	684	1,406	3,258	2,875	2,793	27,205
Green Building							
Residential Energy Star	9,152	396	666	602	730	700	12,246
Residential Energy Code	6,110	1,885	1,159	1,405	3,437	1,600	15,596
Multi-Family Energy Code	6,245	3,863	4,395	2,512	2,691	4,000	23,706
Commercial Energy Code	2,191	0	-	-	-	-	2,191
Subtotal Green Building	23,698	6,144	6,220	4,519	6,858	6,300	53,739
Total DSM Programs	372,855	32,089	34,536	39,157	42,720	40,177	561,534

Table 2: Annual Peak Demand Reduction (MW)

Program	1982-2000	2001	2002	2003	2004	2005	Total
Residential Efficiency							
Appliance Efficiency	111.73	4.430	3.920	3.559	3.336	3.623	130.60
Home Performance ES - Loan	34.14	1.110	0.820	0.576	0.487	0.679	37.81
H P Energy Star - Rebate	34.63	2.710	2.371	2.417	2.422	2.358	46.91
Free Weatherization	13.73	0.710	0.860	0.667	0.537	0.432	16.94
Multi-Family	29.16	2.950	2.080	2.533	3.871	3.215	43.81
Clothes Washer Rebates	0.13	0.047	0.054	0.057	0.055	0.034	0.38
Duct Leaks Sealing/Diagnosis	0.00	0.178	0.272	0.383	0.300	0.281	1.41
Refrigeration Recycling	0.00	-	-	-	0.036	0.610	0.65
Power Partner	2.55	12.265	8.650	9.722	5.854	8.211	47.25
Cycle Saver	0.45	1.648	0.860	0.521	0.653	1.805	5.94
CFL	0.00	-	0.053	0.147	0.136	0.063	0.40
Discontinued Programs	25.85						25.85
Subtotal Res.	252	26.0	19.9	20.6	17.7	21.3	358
Commercial Energy Management							
Commercial Rebate & ILA	2.40	8.00	7.15	6.60	7.22	12.60	43.96
Commercial AEP	15.23	0.03	0.07	0.00	0.00	0.00	15.32
Small Business Lighting	0.17	0.00	0.25	0.85	1.13	0.55	2.95
Municipal	9.22	0.34	0.12	0.19	0.45	0.40	10.72
Power Partner	0.66	0.87	1.57	1.20	1.08	0.86	6.23
Load Coop	4.87	2.83	0.00	0.00	0.00	0.66	8.36
Engineering Support & TES	0.00	1.48	2.79	0.89	1.04	1.20	7.40
Commercial Smart Vendor	0.00	0.00	0.00	0.41	0.36	0.22	1.00
Small Business Air Conditioner	0.00	0.00	0.00	0.00	0.00	0.42	0.42
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.03	0.619	0.65
Discontinued Programs	126.31						126.31
Subtotal Comm.	158.86	13.55	11.95	10.13	11.30	17.53	223.3
Green Building							
Residential Energy Star	10.354	0.330	0.576	0.523	0.608	0.906	13.30
Residential Energy Code	8.360	2.330	1.576	1.916	4.499	5.660	24.34
Multi-Family Energy Code	2.920	1.815	2.065	1.184	1.217	1.046	10.25
Multi-Family (tonnage reduction)	-	-	-	0.231	1.755	0.429	2.42
Commerical	0.873	0.790	0.894	0.305	0.042	0.396	3.30
Commercial Energy Code	1.107	0.950	0.639	4.996	4.253	2.498	14.44
Subtotal GB	23.61	6.22	5.75	9.15	12.37	10.93	68.04
Total DSM	**435**	**45.8**	**37.6**	**39.9**	**41.4**	**49.8**	**649**

Table 3: Annual Energy Savings (MWH)

Program	1982-2000	2001	2002	2003	2004	2005	Total
Residential Efficiency							
Appliance Efficiency Program	47,934	4,582	4,306	4,035	3,927	4,243	69,027
Home Performance ES - Loan	19,501	1,015	753	627	543	758	23,196
H P with Energy Star - Rebate	31,999	2,965	2,601	2,807	2,891	2,810	46,074
Free Weatherization	7,865	1,077	1,301	1,007	619	499	12,367
Multi-Family	37,315	3,995	3,340	3,271	5,368	4,165	57,454
Clothes Washer Rebates	473	173	201	210	208	204	1,469
Duct Leaks Sealing/Diagnosis	0	288	462	466	302	469	1,987
Refrigeration Recycling	0	0	0	0	234	3,999	4,233
Power Partner Program	24	158	112	100	76	88	558
Cycle Saver Program	94	202	106	68	106	16	591
CFL Program	0	0	378	762	801	338	2,279
Previous Programs	8,567						8,567
Subtotal Residential	153,771	14,455	13,559	13,354	15,076	17,588	227,803
Commercial Energy Management							
Commercial Rebate & ILA	4,825	26,656	21,325	18,985	18,753	77,311	167,854
Commercial AEP	0	21	61	0	0	0	82
Small Business Lighting	297	0	564	1,500	2,252	1,422	6,035
Municipal	23,070	828	261	595	5,839	2,374	32,967
Power Partner	8.58	7.50	21.70	9.00	7.93	67	121
Load Coop	12.70	7.40	0.00	0.00	0.00	13	33
Commercial Smart Vendor	0.0	0.0	0.0	2,433	2,130	1,340	5,904
Engineering Support & TES	0.0	34.2	0.0	0	0	0	34
Traffic Signal LED's	0.0	0.0	0.0	7,755	0	0	7,755
Small Business Air Conditioner	0.0	0.0	0.0	0	0	465	465
Solar Photovoltaic	0.0	0.0	0.0	0	45.5	925	970
Previous Programs	241,522	21	61				241,604
Subtotal Commercial	269,735	27,576	22,292	31,277	29,027	83,918	463,825
Green Building							
Residential Energy Star	9,983	600	998	906	1,022	1,522	15,031
Residential Energy Code	7,579	2,837	1,240	1,510	3,437	4,324	20,927
Multi-Family Energy Code	4,720	4,781	5,439	2,430	2,422	2,082	21,874
Multi-Family tonnage reduction	0	0	0	403	3,348	241	3,992
Commerical	3,253	2,208	3,892	543	83	1,554	11,532
Commercial Energy Code	2,269	1,889	1,082	17,407	13,658	8,034	44,338
Subtotal Green Building	27,803	12,315	12,651	23,198	23,969	17,757	117,693
Total DSM	**451,310**	**54,346**	**48,503**	**67,829**	**68,071**	**119,263**	**809,322**

Table 4: Emissions Reduction in Metric Tons – 2005

	Sulfur Dioxide	Nitrogen Oxides	Suspended Particulates	Carbon Monoxide	Carbon Dioxide	NMOC Or VOC	Total
Residential Efficiency							
Residential A.E.P.	0.373	2.313	0.747	3.059	2,446	0.233	2,453
Home Energy Loan	0.067	0.413	0.133	0.546	437	0.042	438
Whole House	0.247	1.531	0.495	2.026	1,620	0.155	1,624
Free Weatherization	0.044	0.272	0.088	0.359	287	0.027	288
Multi-Family	0.367	2.270	0.733	3.003	2,401	0.229	2,407
Clothes Washer Rebate	0.018	0.111	0.036	0.147	118	0.011	118
Duct Leak Sealing	0.041	0.256	0.083	0.338	270	0.026	271
Refrigerator repl/recycle	0.352	2.180	0.704	2.883	2,305	0.220	2,311
Power Partner	0.008	0.048	0.015	0.063	51	0.005	51
Cycle Saver	0.001	0.008	0.003	0.011	9	0.001	9
CFL Program	0.030	0.184	0.059	0.244	195	0.019	195
Sub-total Residential	1.55	9.59	3.10	12.7	10,138	0.967	10,165
Commercial Energy Management							
Commercial Rebate &ILA	6.803	42.135	13.607	55.741	44,561	4.252	44,683
Small Business Lighting	0.125	0.775	0.250	1.026	820	0.078	822
Municipal	0.209	1.294	0.418	1.712	1,368	0.131	1,372
Power Partner	0.006	0.036	0.012	0.048	38	0.004	39
Load Coop	0.001	0.007	0.002	0.010	8	0.001	8
Commercial Smart Vendor	0.118	0.730	0.236	0.966	773	0.074	775
Engineering Support	0.000	0.000	0.000	0.000	0	0.000	-
Small Business a/c	0.041	0.254	0.082	0.335	268	0.026	269
Solar Photovoltaic							
Sub-total Commercial	7.30	45.2	14.6	59.8	47,835	4.56	47,967
Green Building							
Residential Energy Star	0.134	0.829	0.268	1.097	877	0.084	880
Residential Energy Code	0.381	2.357	0.761	3.118	2,492	0.238	2,499
Multi-family Energy Code	0.183	1.135	0.366	1.501	1,200	0.115	1,203
Multi-family ton reduction	0.021	0.131	0.042	0.174	139	0.013	139
Commercial	0.137	0.847	0.274	1.121	896	0.085	898
Commercial Energy Code	0.707	4.379	1.414	5.793	4,631	0.442	4,643
Sub-total Green Building	1.563	9.68	3.13	12.80	10,235	0.977	10,263
TOTAL DSM PROGRAMS	10.4	64.5	20.8	85.3	68,207	6.5	68,395

Green Building

The Austin Energy Green Building Program evolved out of the Austin Energy Star Homes Program. Energy Star Homes was operated as an alternative path to energy code compliance for home builders. The program was popular with builders because the staff worked with the industry to help builders and designers find the best approach to meeting or exceeding the requirements of the City's energy code rather than simply inspecting homes and giving them a red or green tag.

Green Building has developed and continually updates sustainable rating tools for single family homes, multifamily complexes and commercial buildings. Each of these rating tools was developed to be responsive the local climate, the requirements of Austin's building codes, building industry practices specific to Austin and the needs of the community. Homes and buildings are rated on a scale of one to five stars, with five stars being the highest level attainable.
These rating tools evaluate a building's sustainability in the areas of;
Energy Efficiency (emissions reductions)
Water Conservation and Water Quality
Efficient Materials Use and Recycling
Indoor Environmental Quality
Community Issues (Impact on infrastructure and community building).

Green Building continues the collaborative approach developed in the Austin Energy Star Homes Program in its efforts to rate the sustainability of residential and commercial buildings in Austin. Green Building staff members provide technical assistance to builders, designers, architects, engineers, and the public to guide them in their efforts to build more sustainable buildings. Building professionals who participate in the program are invited to monthly technical seminars on topics that range from the latest developments in water conserving toilets to photovoltaic (solar) energy systems. The lunch time professional seminars attracted more than 900 attendees in 2005.
There are no membership fees and all services provided in the service area are free to members. Each participant is assigned a staff representative who is the point of contact with the program for that firm.

This close collaboration between the program and the industry allows Green Building to act as the first point of contact for the City with building projects. As program staff work with the design

teams and builders, they are able to refer the projects to other City programs that can have an impact on sustainability.

To educate the public about the Green Building and the benefits it provides to the community and to individual homeowners the program holds all day Green by Design workshops 4 times a year. Attendees pay a nominal fee to cover the cost of lunch, space rental, and printed materials and receive 7 hours of instruction for staff members. In 2005 more than 500 people attended the Green by Design workshops.

The program continues its involvement with the Energy Code through a Memorandum of Understanding with the Watershed Protection and Development Review Department. Through this collaboration the program is responsible for reviewing national energy cod Austin's climate, industry conditions and the energy efficiency needs of the utility and the city. The program amends the national codes to meet these needs and takes them through the process of adoption as City of Austin Energy Code. Program staff then provide training to City Building Inspectors on the new codes.

For the last 5 years the Green Building Program has provided fee based consulting services to other cities and utilities to help them establish green building or similar energy efficiency programs through its Manage it Green program. In 2005 the program finished a 4 year consulting effort with the California Public Utility Commission and Pacific Gas & Electric. Staff worked with 6 cities, counties, and affordable housing groups to start or enhance green building efforts in the San Francisco Bay Area. Also in 2005 the program acted as the sustainability consultant to a U.S. Department of Defense project in San Antonio, TX, a private developer in Tyler,TX , and began a consulting project with City Utilities of Springfield, MO to evaluate the potential for energy efficiency programs in Springfield and to make recommendations on the types of programs City Utilities should implement. These efforts produced more than $200,000 in consulting fees to Austin Energy.

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