



Water Quality Protection Lands Annual Report

FY 2014

The goal of the Water Quality Protection Lands is to optimize the quality and quantity of water from project lands recharging the Barton Springs segment of the Edwards Aquifer.

Photos, from top to bottom: Managed live oak woodland; summer prescribed burn; *Liatris* blooming seven months after prescribed burn; recharge into Cripple Crawfish Cave; Birthday Rattler Cave.





Executive Summary

The Water Quality Protection Lands (WQPL) program began in 1998 with the passage of Proposition 2 of the May 2, 1998 Bond Election. The goal of the WQPL is to optimize the quality and quantity of water from project lands to recharge the Barton Springs segment of the Edwards Aquifer. The program accomplishes this goal by protecting and managing land in the recharge and contributing zones of the Barton Springs segment via conservation easements and fee simple purchases.

The City of Austin made three pivotal acquisitions for the WQPL program this year: the 607 acre Hudson tract purchase, the 351-acre Searcy tract purchase, and the 747-acre Ruby tract conservation easement. These brought the WQPL to 28,308.95 acres – 17,526.15 acres under 18 separate conservation easements and 10,782.8 acres in fee simple ownership.

Conservation easements allow families to maintain possession of their land while at the same time keeping it undeveloped. The WQPL ensures that the terms of these easements are met and provides technical guidance to landowners when requested.

Fee simple lands are more intensively managed. The land is protected from development, but oftentimes it has been degraded by past land-use. In such cases, in order to deliver the services for which the land was purchased - clean, natural water available to recharge Barton Springs- the biotic communities must be restored. Even when ecosystem function is intact or restored, active management is still necessary.

This year the WQPL treated 1,470 acres with prescribed burns, thinned brush on 239.6 acres, and seeded 75 acres. A failed low-water crossing in Bear Creek was removed and the stream banks and riparian zones were restored. We continued the sediment removal from major recharge feature as well as maintained patrols on roughly 15 square miles of fee simple lands and 75 miles of perimeter fencing. Two public trail systems continue operation through public-private partnerships in accordance with memoranda of agreement.

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Lands Protected

The WQPL protects land to benefit Barton Springs in two ways. One is simple purchase, called fee simple acquisition. On these lands, ecological restoration and management protect and improve water quality, aquifer recharge, and many other ecosystem services such as wildlife habitat and carbon sequestration.

The other method of protecting land is with conservation easement agreements whereby the City purchases the development rights on private land from willing landowners and works cooperatively with them to ensure that the land is managed according to the terms and conditions of the agreement. Such easements convey with the title of the land and are perpetual. They do not expire regardless of any change of ownership.

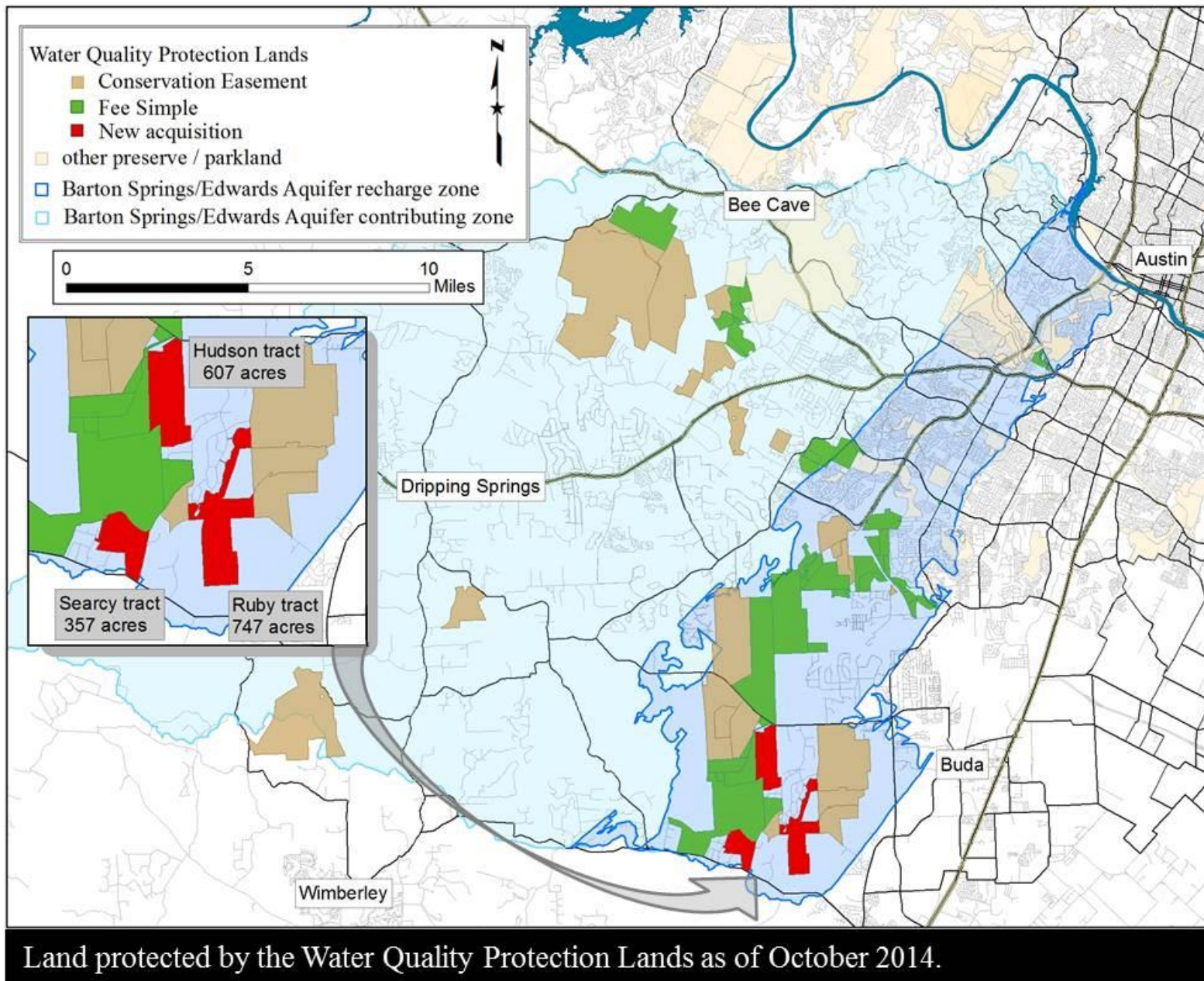
Currently the WQPL protects 28,308.95 acres – 17,526.15 acres under 18 separate conservation easements and 10,782.8 acres in fee simple land holdings. These lands encompass 24.5% of the Barton Springs/Edwards Aquifer recharge zone and 7% of the contributing zone.

Conservation Easements

On conservation easements, the WQPL conducts annual site visits, reviews and semi-annual photo points. WQPL staff also provide technical assistance on a variety of land management topics to landowners on an as-requested basis. A portion of the Shield Ranch conservation easement falls under WQPL oversight and the balance is overseen by the Nature Conservancy of Texas. The Storm Ranch, Historic Gibson/Ragsdale, and new Ruby conservation easements are overseen by the Hill Country Conservancy with support from the WQPL. The Dahlstrom Ranch conservation easement is also administered by the Hill Country Conservancy and supported by Hays County and the WQPL.

Fee Simple Lands

Fee simple lands are owned outright. The City bears all operations and management obligations on these tracts. Almost all of the WQPL's fee simple acreage is located outside of the Austin city limits and much of it is located in Hays County. The majority of these lands extend between the cities of Bee Cave and Kyle. Thus, our operations depend on, and are affected by, many public safety and regulatory jurisdictions. In our land management and security operations, we interface with seven fire departments, two county sheriff's offices, the Austin Police Department, state game wardens in Travis and Hays counties, as well as several federal and state regulatory entities such as the US Fish and Wildlife Service, the Texas Department of Agriculture, Texas Parks and Wildlife, and the Texas Commission on Environmental Quality. We also have wildland fire cooperative agreements with federal, state, and non-profit entities.



New Acquisitions

The City of Austin made three pivotal acquisitions for the WQPL program this year, all within the Barton Springs Recharge Zone and adjacent to existing fee simple tracts or conservation easements located near Onion Creek.

The first acquisition is the 607 acre Hudson tract adjacent to the Onion Creek management unit fee simple tracts. The land owner had entered into an agreement with the development company Jeremiah Ventures who intended to develop the property into a subdivision with up to 1,400 houses and a sewage treatment plant. For years, the City of Austin, the Save Our Springs Alliance, and others fought Jeremiah Ventures' application for a state permit to dispose of up to 330,000 gallons of treated sewage per day by land applying (irrigating) it on the property which is situated in the Barton Springs segment of the Edwards Aquifer recharge zone. In December of 2013, the City of Austin purchased the tract with \$18 million in voter-approved bond funds. The land will now be protected in perpetuity and managed by the WQPL for optimal water quality, aquifer recharge, and endangered species habitat.

The second acquisition is the 351 acre Searcy tract, also adjacent to Onion Creek fee simple tracts. Onion Creek itself flows either through or along the tract's northern boundary. Thus, in addition to aquifer recharge features and comparatively well-managed uplands, the Searcy tract acquisition protects in perpetuity 0.9 miles of Onion Creek which is vital to the health of the Barton Springs segment of the Edwards Aquifer.

Lastly, the City of Austin, in partnership with the USDA Natural Resources Conservation Service and the Hill Country Conservancy, acquired a conservation easement on the 747-acre Ruby tract. The tract is located in the Barton Springs recharge zone and is adjacent to both the Dahlstrom and the Orr Conservation Easements, providing connectivity between the two and creating a single 8,300-acre expanse of protected land undivided by any public road, an area larger than Pedernales Falls, Enchanted Rock and Inks Lake State Parks combined.



This managed Hill Country ecosystem will improve the quality of stormwater runoff (some of which originates on a nearby highway) into Onion Creek, will facilitate prescribed burn management, and will be more resilient to potential wildfire.

Restoration and Land Management

The City of Austin pays appraised value for the lands it buys as part of the WQPL program. That value is based on its development potential which has little or nothing to do with its ecosystem functions. Once purchased, however, the land's true value to Austin becomes instantly welded to its performance - its ability to provide a suite of services that Austinites cannot acquire by other means. It is then up to Austin, via the WQPL, to maximize the ecosystem return on its own monetary investment.

Unfortunately, the land we buy rarely performs the way we need it to at the time of purchase. We have protected the land from development, but the primary ecosystem service for which the land was purchased – clean, natural water to recharge Barton Springs – has, in many cases, been degraded by past land-use. In such cases the biotic communities, along with their vital ecosystem functions, must be restored and once restored must be maintained.

Thus, when the real estate deal closes and we have the key to the gate, the work at that point is only half-finished. Restoring functional ecosystems can be a decades-long process. And it's where the WQPL program's daily work begins.

In fiscal year 2014, the WQPL applied active ecological restoration treatments to 1,794 acres of land. Here is a more detailed look at that work:

Brush Management

The WQPL program completed the thinning of Ashe juniper trees on 239.6 acres across four management units and the control of 25 acres of mesquite on the Onion Creek management unit. This work was conducted largely by private contractors, although 29 acres of juniper was thinned by volunteers and the mesquite control was conducted by WQPL staff with assistance from interns.

Using an approach that minimizes negative impacts to soil, water, wildlife, and desirable vegetation while accomplishing the task of removing targeted trees, the program was able to initiate the process of restoring this land to prairie or oak savanna. All brush thinning operations are conducted in concert with prescribed burn plans which helps to ensure our preparation for both prescribed burns and potential wildfires.



This juniper thinning project is helping to improve aquifer recharge by beginning the process of restoring native oak savanna within a 94-acre management unit near Onion Creek.

Prescribed Fire

A total of 1,470 acres were treated with prescribed fire in 2014. On 954 of these acres, the 2014 burn was the second fire treatment. This is a positive sign that management burns are being implemented as part of a continual *process* of ecological restoration.

Additionally, 148 of these acres are part of scaled-up experimental treatments that the WQPL developed and began researching in 2007. These techniques carefully pair mechanical and fire treatments in an adaptive management framework. They are proving to be successful at addressing restoration challenges that previously afforded no economical remedy.

Invasive Species

Our primary invasive species management action this year involved the application of 997 acres of growing season prescribed burns. This treatment method has been shown to be as effective as herbicide at long-term control of King Ranch bluestem (*Bothriochloa ischaemum*) which can reduce plant and animal diversity, particularly that of grassland birds, and can compromise water quality through poor fire adaptability. Follow-up seeding treatments, described below, will improve native grass diversity and place increased competitive pressure on King Ranch bluestem.

Several acres of johnsongrass (*Sorghum halepense*) along the banks of Onion Creek were also manually removed, solarized, and re-seeded with native grass.

Seeding

Seeding native herbaceous species after prescribed burns helps to boost plant diversity and improve ecosystem resilience to disturbances such as drought and flooding. This ultimately improves and protects water quality.

Volunteers distributed native grass seed across 66 acres of the Onion Creek management unit which had been treated with prescribed fire. WQPL staff



Clean lines along the perimeter of the 387-acre Big Trough prescribed burn on the Little Bear Management Unit.



Grass resprouts just 14 days after the Big Trough prescribed burn. Note the scorched low brush and cactus under the green oak canopy.



Excavations in Crooked Oak Cave to restore aquifer recharge function.

used a no-till seed drill to plant an additional 9 acres of native grass.

Karst Management

In 2012, Crooked Oak Cave in Onion Creek was 13 feet deep and recharged little water although previous landowners remember it recharging enough to create a whirlpool in the creek.

Previous years work removed most all of the 50+ years of accumulated sediment and established a grate to keep new sediment and debris out. The Halloween floods of 2013 damaged part of the grate and allowed a large influx of sediment back into the cave, which has since been removed. Additional research is ongoing to determine an ideal solution for keeping sediment out and clean water recharging back through this potentially important recharge feature.

Birthday Rattler Cave was similarly excavated down to bedrock, removing a vast amount of sediment and collapsed rock which hindered the continued proper functioning of this important recharge feature. This work is intended to restore the aquifer recharge function provided by these caves. It is hoped that they can also be utilized in future Barton Springs dye trace studies.

Wildlife Management

No whitetail deer management occurred on the WQPL this year. Our deer census indicated that the whitetail deer density remained near our goal of 15 acres/deer. Furthermore, years of broad-scale restoration treatments along with a sustained reduction in deer density have improved forage quality across the WQPL. It is anticipated that deer management on the WQPL will be suspended



The failed low water crossing at Bear Creek on the Tabor tract along with accumulated sediment in the stream channel were removed and the eroded stream bank was restored.

for the foreseeable future.

Feral hog management, however, continued on the Onion Creek, Little Bear, and Lower Bear management units. In total, 79 hogs were removed.

Riparian Restoration

Previous owners of the Tabor tract on the Travis/Hays County line had decades ago constructed a low water crossing over Bear Creek. The under-sized culverts beneath the structure, intended to allow the creek to flow through, failed to keep up with flow rates. Subsequently, the creek found its own passage around the right side of the concrete structure, ending the utility of the structure and dramatically eroding the stream bank in the process.

In the winter of 2014, after much planning, the WQPL oversaw the removal of the structure along with years' of accumulated sediment on the upstream side. In addition, WQPL staff, with structural design input from the COA Watershed Protection Department and permit from the United States Army Corps of Engineers, designed and implemented a restoration plan for the reconstructed stream banks. Volunteers played an important role in accomplishing the restoration of this site.

The rehabilitated channel and banks have remained stable and the restored riparian community is establishing well.

Research and Monitoring

Outside entities as well as WQPL staff conduct research on WQPL land. This year saw a continuation of projects started in preceding years by researchers from the University of Texas, the Barton Springs Edwards Aquifer Conservation District, the US Geological Survey, and the City of Austin Watershed Protection Department. New surveys were conducted by the Texas Forest Service as part of a state-wide tree assessment being done in conjunction with the City of Austin Urban Forestry group.

Vegetation monitoring also occurred at 18 locations on three management units to evaluate the effects of land management and restoration activities.

Maintenance and Patrol

Maintenance activities and patrols occurred on all tracts. Primarily facilities staff patrolled almost 15 square miles of fee simple lands and maintaining over 75 miles of boundary fencing, 95 miles of roads, 67 gates, 5 office buildings, 3 residences, and two other structures used for events.

1.8 miles of Wildland Urban Interface (WUI) and several other areas around buildings were mowed through a contract with the Health and Human Services Department's Austin Youth Development Program. This is done to a) provide emergency vehicle access in the event of a wildfire or other emergency incident in the area, b) reduce the intensity of a wildfire moving from WQPL land to the neighborhood, c) reduce the likelihood of a wildfire moving from the neighborhood to WQPL land, and d) provide access for staff patrols in the area. The added presence in these areas as well as the visual cue (mowed grass) that the areas are being "maintained" have also reduced boundary issues such as cut fences and dumping.

The program created a 2,300-ft long travel corridor and 42-ft wide fuel break along a portion of the Slaughter Creek management unit that borders the Circle C neighborhood. The purposes of the project are the same as the WUI mowing described above. The work was conducted by the Austin Fire Department Wildfire Division according to the Guidelines for Fuel Treatment on Water Quality Protection Lands adapted from The City of Austin Fuel Treatments Best Management Practices within the Balcones Canyonlands Preserve as well as the National Fire Protection Association emergency vehicle clearance standards.

Endangered Species

This year, 4,252 acres of endangered species (black-capped vireo and golden-cheeked warbler) surveys were contracted across four management units. These surveys, the ninth conducted on the WQPL since its inception in 1998, documented the presence of each of these species and the locations and sizes of individual breeding territories. Such surveys are a key step in a continual process of updating our understanding of how the WQPL can accomplish its water quality and quantity missions without negatively impacting endangered species habitat.

Illegal Activities

Every year, Wildlands staff – primarily our Land Management Rangers – must deal with various types of illegal or unauthorized activities from relatively benign issues such as off-trail use and illegal dumping to more serious threats such as poaching, looting, and homeless encampments. We take all illegal or unauthorized activity seriously and do our best to address it quickly and effectively.

The argument is often made to approach seemingly benign issues such as off-trail use and trespass on publicly-owned land with greater leniency. After all, most are harmless, at least acutely. There are, however, three strong motivations for maintaining a firm posture with respect to trespass and enforcement of trail rules:

The first relates to public trust. The WQPL program was created with voter-approved bond funds for the chief and express purpose of protecting natural resources, namely water quality. Thus, upholding public trust in a functional democracy dictates that this voter directive be followed. Recreational activities can be accommodated within a conservation mission, and indeed public access was part of the language of successive WQPL bond propositions, but conservation must remain the priority. Where there is a conflict between the two, conservation should take priority. Hence, property boundaries and trail rules must be stringently enforced in order to avoid the environmental damage - such as soil erosion, trash dumping, damage to endangered species habitat, and human health impacts such as fecal coliform in creeks – that often results from unfettered public access.

The second is another, and perhaps stronger, public trust argument. It concerns the limitation of resources. Time and money spent addressing serious and widespread illegal activity on the WQPL means less time and money for our primary mission of conservation. If the conservation mission is not being fulfilled, then the resources we are tasked to restore and maintain will degrade. Slowly and imperceptibly we will fail the public by not delivering the environmental services we have been contracted to deliver. Thus, taking illegal or unauthorized activity seriously and addressing it early will keep it small and isolated and will allow more resources for our conservation mission.

The third concerns public safety. Unenforced boundaries or trail rules can enable access in places and times that are unexpected. Some of the work done on the WQPL can involve significant hazards if people are located where they are not known to be---think of a prescribed fire being conducted or thinning of brush with equipment---a person could easily get seriously injured if they are in a place they should not be. County, State, and National parks and forests employ their own commissioned peace officers who carry sidearms and write citations. In contrast, our rangers at the WQPL are not commissioned, so we do not have the luxury of allowing illegal activity to escalate. We must act quickly to keep illegal activity relatively benign so that a) our lands are safe for staff and abiding trail users; and b) so that an unarmed City employee with no law enforcement authority can deal with it safely and effectively.

Looting

The WQPL contains many archeological sites. Most of these are ancient encampments that were used for thousands of years before European settlement and many predate the bow and arrow. Looting of these sites has increased in frequency in recent years. Most of the looted artifacts are stone tools such as projectile points and other stone implements.

In FY 14 alone, one such site was looted eight times and another was looted three times. While the frequency of looting seems to have increased, our Land Management Rangers have become more effective at discovering looted sites and working with law enforcement to apprehend looters. This year, sixteen individuals were arrested. Cultural resource damage assessments conducted by consultants on the WQPL have estimated that the damage to these such sites of human history in a single incident can top half a million dollars.

Trespass

In total, an estimated 300 hours were spent on illegal activity at the Slaughter Creek management unit alone. Despite the commitment of the stakeholder groups to maintaining the trail itself, trespass on this management unit has increased since the opening of the Slaughter Creek hike and bike trail. Land management rangers issued 12 unauthorized access letters in the last year, primarily to individuals either off-trail, accessing the trail when it was closed, and/or hiking with dogs which are not allowed on the property. Unfortunately, these 12 unauthorized access letters represent an extremely small proportion of the trespass activity on the tract. Much of this trespass comes from the Circe C Metro Park which borders the Slaughter Creek tract to the east.

The Shudde Fath tract adjacent to the Barton Creek Greenbelt near Mopac and Loop 360 is a perennial source of trespass problems. Eleven unauthorized activity letters were written on this tract and many individuals were turned away before they could access the property. Land management rangers, alongside Austin Police, also conduct sweeps of homeless camps quarterly.

The Upper Bear management unit south of the Wildflower Center between Mopac and Shady Hollow is also seeing more trespass. This year at least nine individuals were encountered on the property without proper authorization.

Poaching

Land Management Rangers encountered evidence of six separate instances of poaching on WQPL lands and received seven reports of discharged firearms.

Other

Infrastructure damage continues to be a problem. This year, primarily facilities staff discovered 21 incidents in which a fence, lock, or gate was damaged or destroyed by trespassers seeking to poach, loot, access a temporarily closed trail, access a trail through a point other than the trail head, or recreate on tracts or portions of tracts closed to the general public. Facilities staff also worked to have six illegal dumps removed.

Public Access and Involvement



Outreach & Education Activities

The education and volunteer staff facilitated over 75 volunteer and educational events on the WQPL. Volunteers performed valuable tasks such as leading educational hikes for other citizens, seeding native grasses, collecting native grass and wildflower seed, assisting with vegetation surveys, and

collecting and processing juniper live fuel moistures. Over 400 people participated in interpretive hikes, more than 300 students from all across Austin visited the WQPL and learned about ecology and conservation from staff biologists, and over 150 people participated in volunteer workdays in which they helped the WQPL mission and forged their own connections to the lands and waters we manage. In total, our education and outreach efforts reached an estimated 1,100 people.

Stakeholder Projects

From the Stakeholder Steering Committee, two coalitions of stakeholders have continued to operate multi-use trails on two WQPL properties. The Bull Creek Foundation continues to operate the trail on the Bull Creek Management Unit with few issues. The primary violations tend to be associated with trail users leaving the trail and accessing Bull Creek. This activity often leads to the creation of unauthorized trails which can damage riparian vegetation and lead to a cycle of erosion and sedimentation.

The Slaughter Creek Trail continues to be operated by a group of stakeholders led by the Austin Ridge Riders. To help users stay updated on the status of the trail (closures are required after significant rain events) Twitter and Facebook are utilized to inform users of the trail status and have allowed some instant feedback as well as additional information about the trail. There have been problems associated with this trail, primarily an observed increase in the incidence of off-trail use which has demanded significant staff time to address (see Illegal Activities, above). That said, removal of unpermitted commercial equestrian trail riders from the trail has benefited the condition of the trail and reduced the number of users off-trail.

Overall, despite the numerous trespass and unauthorized use violations, the trails themselves have been well-maintained and managed by each of the MOA signatory groups. Minor issues have been promptly addressed. The commitment of the Slaughter Creek trail stewards has been remarkable. They were recognized by Council Proclamation and also named the Wildland Conservation Division Volunteers of the Year.

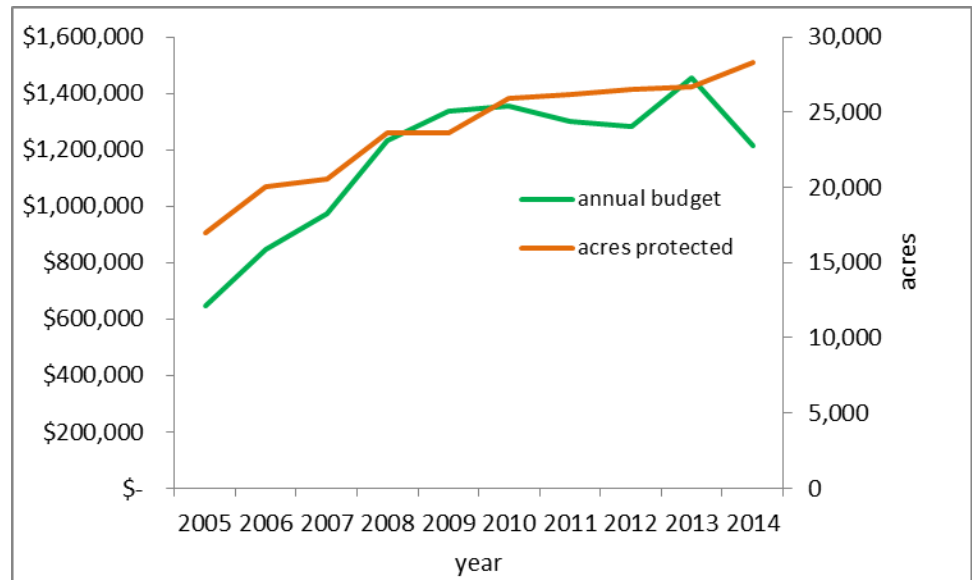
The Slaughter Creek trail was featured by the Austin American Statesman as one of Austin's hidden gems for staying in shape. The number of users on the trail is increasing, but as of yet traffic on the trail itself has remained sustainable.

Budget

The WQPL began the year with a budget of \$1,280,512 across four expenditure categories; personnel, services, contractual, and commodities.

Budget Area	2014 Amended Budget		Spent	
Personnel	\$859,730	60.70%	\$827,910	55.50%
Services	\$307,503	21.40%	\$286,685	29.30%
Contractual	\$173,982	11.70%	\$151,266	9.40%
Commodities	\$92,166	6.30%	\$82,024	5.70%
Total	\$1,280,512	100%	\$1,213,869	100%

This year's budget was an 11% decrease from FY 2013. We are currently operating at the spending level of FY 2008. However, since this time the amount of land the program protects and manages has increased almost 20% and personnel costs have increased 38%.



Staffing

As of October 1, 2014, our organizational chart is as follows:

The WQPL mission is implemented by:

Kevin Thuesen, Ph.D. Environmental Conservation Program Manager
 Matt McCaw, Biologist Sr.
 Devin Grobert, Biologist

The program is supported by the following Wildland Conservation Division staff:

Willy Conrad, Wildland Conservation Division Manager
 Luke Ball, Fire Management Specialist
 Kimberlee Harvey, Environmental Regulatory Specialist
 Rick Hudson, Facilities Supervisor
 Jesus Borja, Heavy Equipment Operator Lead
 Rob Brooks, Land Management Ranger
 Hunter Denham, Building and Grounds Lead
 Johnny Ross, Land Management Ranger

vacant, Building and Grounds Lead
Monica Pauliuc, Administrative Senior
Amanda Ross, Education and Outreach Coordinator
Louise Liller, Volunteer Coordinator

All staff are housed at Reicher Ranch, 3621 South FM 620, Austin TX 78738.