

# Barton Springs

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# *People of the Springs*

*... a rainbow was driven by the Great Spirit with so much force against the rock, to shiver it asunder; where Barton's celebrated springs gushed forth from the mountain side, and a portion of the brilliant bow, having mingled with the waters of the fountain, caused the beautiful prismatic colors reflected from the depths of its waters.*

***~Native American folklore documented in Frank Brown's Annals of Travis County, 1875***

## Native Peoples

From 1582 to 1799, French and Spanish explorers identified more than 20 nomadic groups living in what is now central Texas. European settlers began moving into central Texas beginning in the mid 1700s. The three largest groups of native people they came into contact with in the Barton Springs area were the Tonkawa, Lipan-Apache, and Comanche.

### Tonkawa ~ The Real People

As early as the 1400s, the nomadic Tonkawa roamed throughout what is now Texas. Like the wolf with which they identified, they moved from place to place hunting for food. Settlers found them to be a peaceful people. Tonkawas often served as scouts and skilled fighters for the Texas Rangers in conflicts with their mutual enemy the Comanche. In the mid-1800s, the Tonkawa moved to the Indian Territory in present day Oklahoma. There they suffered attacks from other tribes and eventually were moved by the government to Fort Griffin in Texas.



Photo by H.S. Shuster, Austin History Center CO10826

A Tonkawan scout and war chief named Johnson and a woman named Ida Creaton pose together. This photo was taken 20-30 years after the Tonkawa were forced to leave central Texas.

### Comanche ~ Horsemen of the Southern Plains

Early Texas settlers and local natives were always aware of possible visits from the Comanche. The Comanche lived in a warrior culture with raiding parties traveling hundreds of miles in search of horses, goods, and captives. The Comanche were known for their horsemanship, living in small nomadic groups following the great bison herds. With a Comanche trail running by Barton Springs, settlers like William Barton were at risk of attack. The destruction of the great bison herds, the devastating effects of small-pox and cholera, and continual attack by Texas Rangers and the U.S. Army forced the Comanche's traditional way of life to end around 1880.

### Lipan-Apache ~ The Light Grey People

The Lipan tribe migrated into what is now Texas in the 1600s. The tribe was large and nomadic. Their primary food source was bison but they also farmed, planting corn and squash then staying in the area until harvest. In the 1700s, as the Comanche extended their influence, the Lipan moved farther South and towards what is now San Antonio. The Lipan maintained close ties with Tejas settlers during the early 1800s. By the 1840s, their warriors rode with Texas Rangers in battles against the Comanche. In the 1850s, with outbreaks of small-pox and pressure from a growing Anglo population, the Lipan moved south and west into Coahuila and New Mexico.



Photo by Frank A. Randall, "View of Camp with Group in Native Dress Outside Wickiup", Smithsonian

The Lipan-Apaches lived in wickiups constructed out of brush. Unlike tipis, wickiups were not moved with the tribe; instead they were simply left behind.



Austin History Center C09259

Two Comanche warriors dressed for battle.



Photo by J.C. Caldwell, "Comanche Camp" 1890, Lawrence T. Jones III Texas Photography Collection

The nomadic Comanche and Tonkawas used tipis for shelter. They were easy to transport and were commonly covered with large bison hides.



Re-created illustration appearing in a newspaper article dated 1925, Austin History Center

**"HERE THEY ARE BOYS, COME QUICK!"**

## Old Man Barton's Close Call

William Barton's son was late returning home from a journey to Bastrop one day so old man Barton took his gun and climbed a small hill to scout downriver in the direction of his sons travels. **As Barton passed a thicket, a handful of Indians suddenly rose up and fired**, just nicking the rim of the old man's hat. Mr. Barton returned fire and wounded one of the Indians. The rest of the party then charged upon him whooping and yelling. **The aging Barton turned heel and ran for his life, knowing full-well that his attackers would soon over take him...** Barton reached the edge of the hill and stopped suddenly. Then in plain view of the Indians, he began shouting in a loud voice while beckoning with one hand to unforeseen reinforcements just below the embankment-outside the Indians line of sight. "Here they are boys, come quick!" Barton yelled, pointing with his other hand at his surprised attackers. **The Indians fell for the trick and bid retreat from the wrath of unseen forces.** Barton quickly fled in the opposite direction, running as fast as his old legs could take him... By now a small group of Barton's guests had heard commotion and stood guard of the cabin. As they watched, the old man ran out of the woods at full-gallop and dropped in complete exhaustion into their midst, saying "Boys, it's a good thing it wasn't you or you would have surely been killed."

~ Excerpt from "Frank Brown's Travis County Annals", 1875



## *Newcomers to the Springs*

**L**ocated a short distance from the El Camino Real de los Tejas, a trail used by wildlife, nomadic tribes, Spanish Missionaries, and early settlers Barton Springs soon became a destination for newcomers to Texas.

**1730** Three **Spanish missions** were relocated from East Texas to near Barton Springs. Less than a year later, these missions were again moved to locations near San Antonio. The move may have been motivated by flooding or the raids of Native Americans in the area.

**1837** **William (Billy) Barton** moved his daughters, sons, and slaves to the mouth of Barton Creek, then called Spring Creek. Billy named two of the springs after his daughters Parthenia and Eliza. He and his family loved their property with the abundant wildlife, wild horses, and cattle in the area. The cool springs became known as "Barton's" and were a favorite spot for fishing, swimming, and sight-seeing. An added attraction was the two tame bison Uncle Billy kept on his property. Because of his ownership of the springs and his pioneer spirit, the City of Austin named the springs and creek after William Barton and his family.



*Photo by Clark Hancock of the City of Austin, 2011*

This rock wall by Sculpture Falls on Barton Creek is thought by some to be part of a stock pen from one of the Spanish missions; however, they date from a later period.



*Texas General Land Office*

City of Austin & Vicinity, 1839, W.H. Sandusky. Excerpt showing Spring Creek and "Barton's".

# Barton Springs Menu

The plants and animals found around Barton Springs provided a source of food for people who passed through this area. The following dishes are based on native ingredients and cooking methods used by the Comanche, Lipan-Apache, and Tonkawa.

## Pecan Soup

A rich infusion of crushed pecans, wild onions, and powdered bison jerky

## Pemmican

Hearty cakes of powdered jerky and bison fat mixed with Mesquite Bean meal and Wild Pomegranates

## Small Game Stew

Choice of fresh jack rabbit or squirrel simmered with wild onions, yucca roots, sage, corn and beans (depending on availability)

## Pit Roasted Bison and Venison Feast

Large cuts of fresh bison, venison (deer), and other large game wrapped in rush mats then slow cooked in a buried fire pit

## Spit-roasted Javelina

Wild caught javelina slow roasted over an open fire and served with sweet prickly pear relish

## Nopalitos

Tender strips of Prickly Pear paddles seasoned with salt then sautéed with wild onions in animal fat

## Ash Cakes

A dough is formed from meal and warm water then baked on oak leaves on the floor of the firepit then topped with honey and berries; your choice of acorn, mesquite, or corn

## Honey Roasted Pecans

Shelled pecans roasted on an open fire and covered in wild honey

## Fruit and Nut Sampler

Small bowls of Mesquite Beans, Pecans, Mexican Plums, Mustang Grapes, Wild Pomegranates, and Mulberries for your snacking pleasure

## Summer Mesquite Drink

Finely ground mesquite pods mixed with spring water and sweetened with wildflower honey

## Field Mint Tea

Fresh mint steeped in spring water, sweetened with honey

# Enjoy!



Mustang grapes



Pecans



Mesquite flour



Acorn flour



Deer



Javelina



Squirrel



Bison



Mexican Plums

Mulberries



Prickly Pear Paddles (Nopalitos)

# *Power of the Springs*

*With the splendid water power of Barton Springs, it is strange that all you see in the way of machinery or factories is the two bit tub mill, for making corn meal.*

***~Daily State Gazette, August 1876***



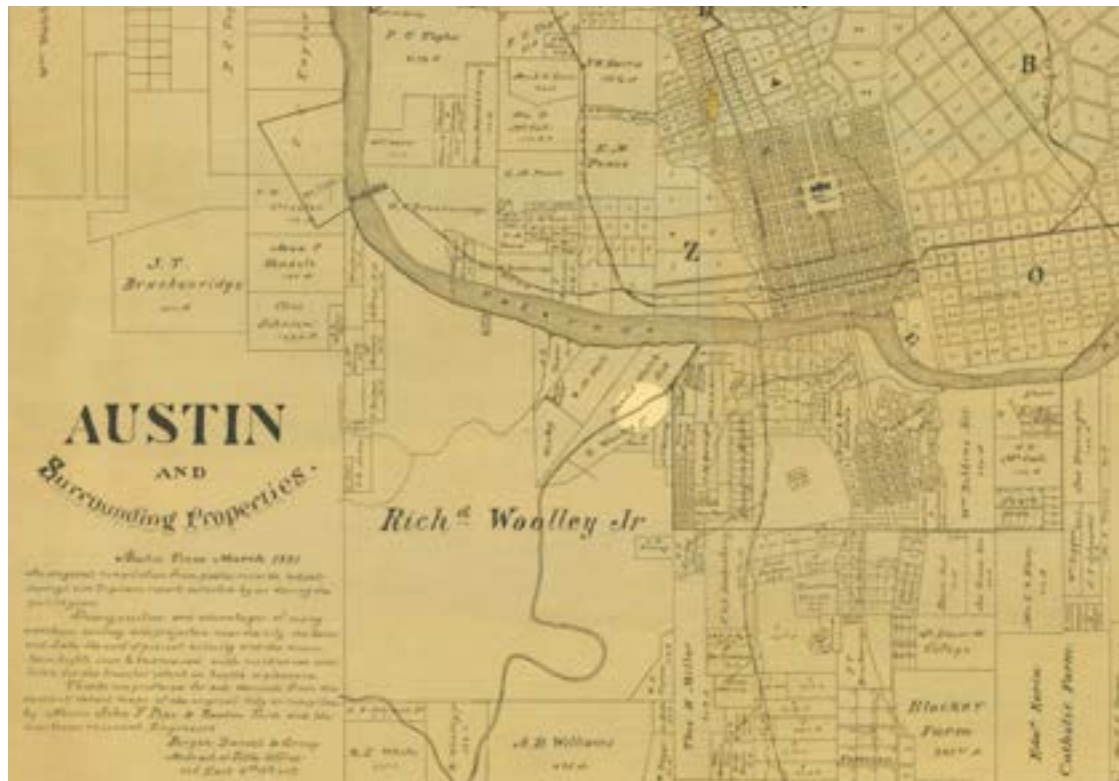
## Spring of Economic Growth

Barton's Springs were viewed with great pride by Austin's growing population. The power of the water flowing from the Springs was a driving force in the growth of local industry. Several mills constructed between 1839 and 1900 produced flour and lumber for the growing city. The Springs were also home to "artificial ice" operations, limestone quarries, and a fish hatchery. Cattle and horses were ranched on the surrounding land.



Austin History Center PICA 00982

This bridge, built in 1894 upstream from the pool, was washed away by a flood in 1900. A bridge abutment still exists on the South side of the creek.



Austin History Center PICA 00982

More roads and bridges were built as Austin grew.

## *Paggi's Mill*

In the 1870s, Michael Paggi operated a mill and an artificial ice manufacturing business at Old Mill Springs, currently known as Sunken Gardens. When the flow was strong, the spring at Paggi's mill could generate up to 5 horse power.



*Austin History Center C03293*

Paggi's Mill



*Austin History Center C00986*

Visitors relax near a tub mill at Barton Springs. The drive shaft can be seen coming out of the barrel that enclosed the horizontal water wheel.

## ❧ *The English & English Mill* ❧

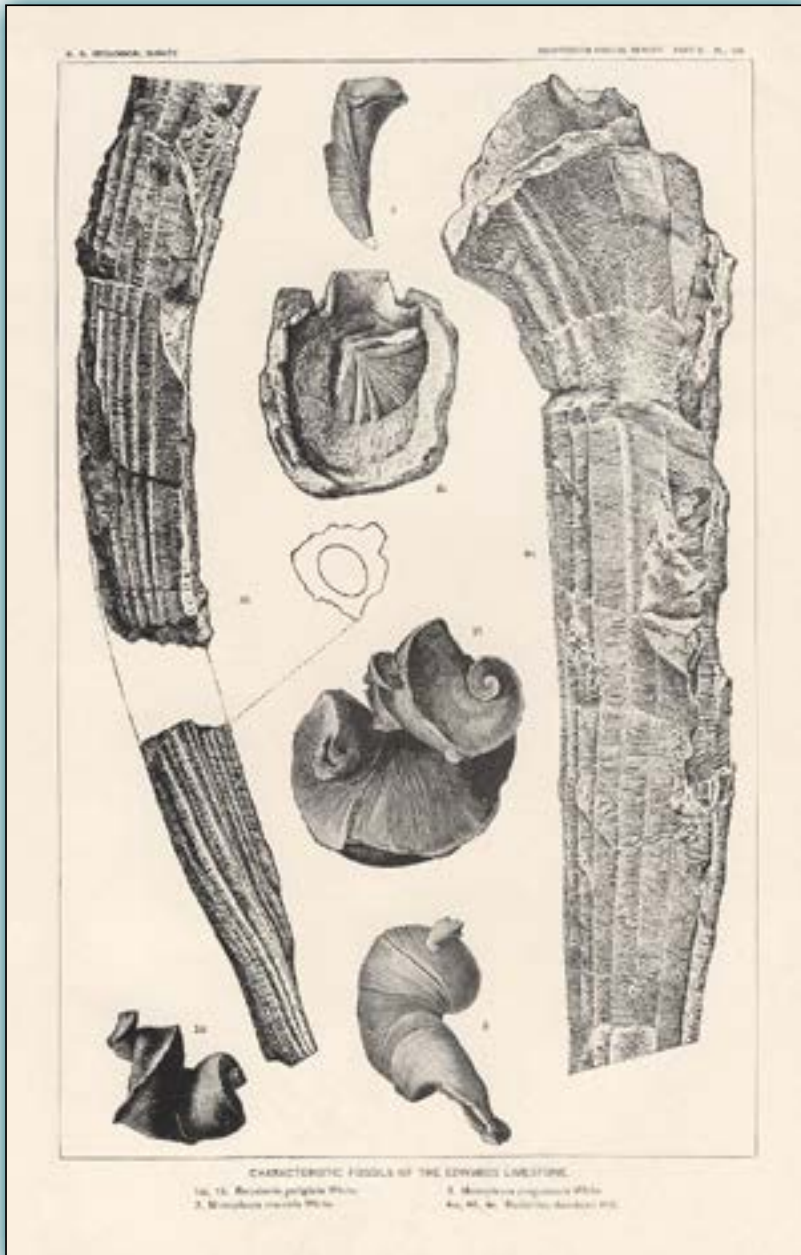
**1880** The English & English flour mill was built on the south bank and was powered by water from the main spring. The mill's turbines could generate 40 horse power producing 50 barrels of flour a day. The mill was destroyed by fire in 1886. In the upper right portion of the photo is the limestone Rabb House built by Mary Rabb after her husband's death in 1867.



Austin History Center C00077A

The English & English Mill 1880





## ~ Limestone Quarry ~

In 1866 William C. Walsh moved to Barton Springs and, farmed, hauled wood, and ran a limestone quarry with the help of his younger brothers. Quarrying operations took place above what is now the shallow end of the pool. Mr. Walsh became Texas Land Commissioner in 1878.

*“The quarrying was done by hand, and many fossils were saved in the early days. The Austin Naturalist school teacher George Stolley collected fossils and sent them to Breslau (then in Germany). Those fossils are apparently still in the museum at Warsaw, now in Poland.”*

*~ Excerpt from Chris Durden's essay in "Barton Springs Eternal"*



## Early Austinites Flock to the Springs

**B**arton Springs was not only a source of drinking water and source of power, it was also an important recreational resource.

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### PAGGI'S BATHING HOUSES NOW READY

Paggi's bathing houses at Barton Springs are now completed, and are ready to receive ladies and gentlemen. He provides bathing suits, and other necessaries. He has also, on the way to Austin, what is called an Mexican Fandango, or a set of revolving horses and carriages, which will be accompanied with a fine organ, made expressly for it, and chock full of grind.

DAILY STATE JOURNAL August 11th, 1871

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Austin History Center C00986

A couple relaxes near Walsh Springs, also known as Eliza Spring, located behind the current concession stand. Andrew Zilker had it encircled by a stepped amphitheater around 1903.



Austin History Center PICA 20150

A group of early tourists camping near Barton Springs pose for a photo.

# *Swim Season*

*We knew very well that Barton Springs... belonged to all the people of Austin.*

***~ Joan Means Khabele, Barton Springs Eternal, 1993***

## Andrew Zilker 1858 -1934



In 1876, 18-year-old Andrew Jackson Zilker arrived in Austin from Indiana with only pennies in his pocket. He had just enough money for room and board for the night. He worked as a dishwasher and a construction worker until he found a position at a local ice manufacturing plant. Mr. Zilker rose in prominence in the community, becoming owner of the Capital Ice and Cold Storage Company. In 1901, he began buying land around Barton Springs to raise livestock for use in his ice delivery business. During this time he encouraged tourists to visit the Springs, and he even rented out swimming clothes. Andrew and his wife Ida had hoped to build a home for their family on this property; however, Ida died in 1916, which changed his plans. After Ida's death, Andrew began to design a deal that would support the education of Austin's youth while providing land at Barton Springs to be used as a public park.

### A Gift to the Children of Austin

A strong supporter of public education, Andrew Zilker is most famous for the donation of the land that now bears his name. Between 1918 and 1934, he designed a series of deals in which he gave land to the Austin School District with the stipulation that the school district would sell the land to the City of Austin to be used as a public park. Funds from these sales were used to establish an endowment for industrial education and home economics training for the Austin Independent School District. In a series of three land transfers the City of Austin took ownership of Barton Springs and the tracts that make up present day Zilker Park.



Austin History Center PICA 00971



Austin History Center PICA 00972



Austin History Center PICA 00973

In 1902, Andrew Zilker constructed the Elks Amphitheater at Eliza Spring. It was designed as a "naturally air conditioned" meeting place for the Benevolent and Protective Order of Elks, of which he was a member. During the severe drought of 1917, Eliza Springs was a reliable source of drinking water. Currently, Eliza Spring is managed as a biological preserve for the endangered Barton Springs Salamander.

# The Changing Landscape of Barton Springs

Barton Springs of today represents a unique balance of man-made structures and the natural environment.



Austin History Center C01803

Until 1928, low dams were built before the beginning of the annual swim season by piling rocks and tree limbs in the creek bed. These temporary dams were frequently washed away by floods.



Austin History Center C01818

The lower dam, constructed in 1928, was the first major addition to the pool.



Austin History Center C01825

In 1922, the Chamber of Commerce funded the building of a public bathhouse designed by Austin native Hugo Kuehne. The two-story wooden building had dressing rooms on the first floor and an open air dance pavilion on the second floor. This structure was severely damaged in the floods of 1935 and 1936.



Austin History Center PICA 01009

Opening day at Barton Springs, 1936



Austin History Center PICA 27414

Barton Springs ca. 1925



Austin History Center 17312

Women pose on the bucket of a dredging crane, 1946



## Sunken Gardens

**T**he circular retaining walls of Sunken Gardens were built on the site of Paggi's Mill. Constructed by the Youth Progress Administration in 1937, it was designed by architect Delmar Groose, who had been a locker boy and lifeguard at Barton Springs.

During recent renovations, these fragments of a cast iron sign were found downstream of the outflow of Sunken Gardens. They were uncovered by Laurie Dries and Liza Colucci, biologists with the City of Austin's Watershed Protection Department.



# The New Bathhouse

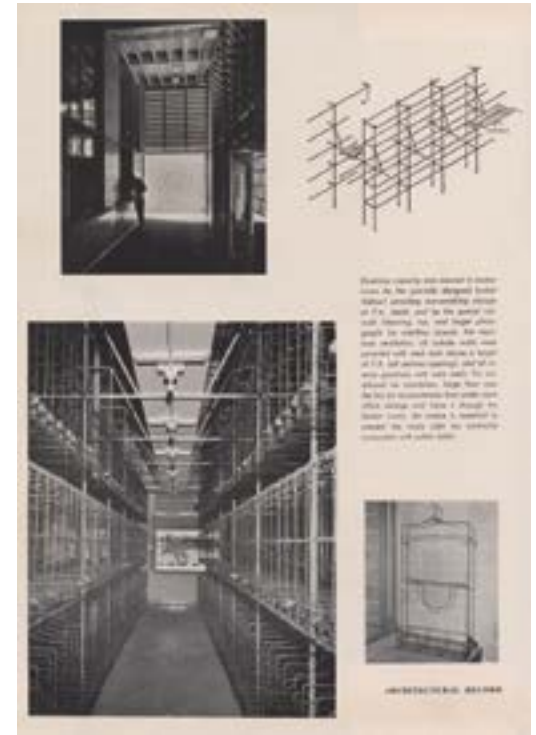


Opened in 1947, the current bathhouse was designed by Dan Driscoll and Delmar Groos. Its architecture demonstrates Streamline Moderne influences. Tickets were sold from the rotunda windows. The original plans called for roofs over the changing areas, but when funding ran short that idea was abandoned in favor of an open air concept.



Austin History Center 20161

A crowd gathers outside of the bathhouse during a dedication speech on opening day, 1947.



Architectural Record, December 1948

This page from the Architectural Record highlights the custom basket system that allowed a large number of patrons to store their clothing and belongings while they took a swim in the chilly waters.

## Philosopher's Rock

The bronze memorial that stands near the entry to the pool pays tribute to the deep love of the Springs shared by the naturalist Roy Bedichek, the folklorist Frank Dobie, and historian Walter Prescott Webb. Their friendship often brought them together at the Springs where they would discuss literature, philosophy, politics, history, and nature.

*I think knowledge and love of one's own physical environment constitutes the very (and only) basis of genuine patriotism.... Personally, if I have to fight for this country I will not fight for the flag, or democracy, or the "American way of life", or any other abstractions, which seem cold as kraut to me. But I will fight for Barton Creek, Boggy Creek, cedar-covered limestone hills, blazing star, and bluebonnets, golden cheeked warblers and black-capped vireos, and so on through the catalogue of the natural environment of Austin, Texas. It is through this natural environment that I love America.*

*~ Roy Bedichek, 1951, excerpt from "Letters of Roy Bedichek"*



Dolph Briscoe Center for American History, The University of Texas at Austin, dL\_01426

Texas naturalist Roy Bedichek and folklorist Frank Dobie, deep in conversation on "Bedi's Rock", 1955.

## Treasured Gathering Place

The people of Austin come to the springs for different reasons. Whether it's to swim, socialize or play, there is something deeply sacred about these waters. Dubbed the "The Soul of Austin", Barton Springs continues to be a place of joy and solace to all those who gather here.



Baptism at Barton Springs, 1925

Congress Avenue Baptist Church



Barton Springs Style Show, 1940

Austin History Center PCA 17251



A group of young adults lounge on the grass, ca. 1950s

Austin History Center PCA 18823



U.S. Army Air Corps demonstration of water rescue at Barton Springs, ca. 1943

Austin History Center PCA 24059



Photo by Bridget Quinn of the City of Austin  
Tibetan Monks Blessing Barton Springs, 2011

Photo contributed by the Save Our Springs Alliance, 2011  
Austinites dive into the New Year with an annual tradition of a morning Polar Bear Plunge on January 1st, 2011.



Photo by Scott VanDyke  
Dancers perform Water Works, created by Dee McCandless and Gene Menger, 1985.



Austin History Center 17270

Topless sunbathing and swimming is a common sight at Barton Springs. The City of Austin has no ordinance preventing women and men from going topless.



## Swim-ins

**I**n 1960, some Austin teenagers and young adults took a bold step, into the waters of Barton Springs. At that time, all Austin's parks, including the Springs, were racially segregated. These non-violent "swim-ins" began with a few high school students jumping into the pool then refusing to leave until they were dragged out by staff. They would go limp to make their removal more difficult then they would come back and jump in again.

*Those swim-ins at Barton Springs and other pools began the civil rights movement in Austin. It took about a year for the policy to be officially changed. Then the Springs were integrated.*

*~ Excerpt from Joan Means Khabele's essay, published in "Barton Springs Eternal"*



*Photos from Austin High's 1959 and 1960 yearbooks*

Joan Means, an Austin High senior, began the swim-ins after being told that she and her fellow Black classmates would not be allowed to attend their senior class picnic at Barton Springs. As a result of this activism, all students were ultimately allowed to attend the picnic.

# Beverly Sheffield

**B**everly Sheffield began swimming at Barton Springs when he was 10 years old. As a young man he worked as a life-guard, eventually becoming Director of Austin's Parks and Recreation Department. After retirement, his love for the Springs brought him back on a daily basis. His legacy can be found throughout the City's recreation centers and public parks but one of his greatest achievements was the protection and preservation of Barton Springs and the Barton Springs Watershed.



*"I think that seeing that setting (Barton Springs) and swimming out there brings back our relationship with nature and with the beginning of humankind. We need to hold onto that.*

*~ Excerpt from Beverly Sheffield's essay in "Barton Springs Eternal"*



*Austin History Center PICA 26341*

Barton Springs lifeguards in 1936. Beverly Sheffield is on the far right of the back row. The man third from the left in the top row is the architect Delmar Groos, who designed the current bathhouse and the circular retaining walls of Sunken Gardens.



*Photo by Will Van Overbeek*

Beverly Sheffield, ca. 1990

# *Discovery and Stewardship*

*Let's make them proud that their ancestors cared enough about this place to fight for it.*

***~Daryl Slusher, Austin Chronicle, 1993***

# Liquid Treasure Underground

In the late 1800s, geologists identified the source of the water that flows from Barton Springs as the limestone formation that forms the Edwards Aquifer. This underground source of water stretches from north of Austin through San Antonio, and west to Bracketville in Kinney County. The segment that feeds Barton Springs extends south of the Colorado River into Hays County. When rainfall flows over the area where the porous Edwards Limestone formation meets the surface, the water is channeled underground through sinkholes and fractures, to emerge at Barton Springs. The area where this runoff capture occurs is called the Recharge Zone. Researchers continue to develop innovative approaches to better understand this important natural resource.

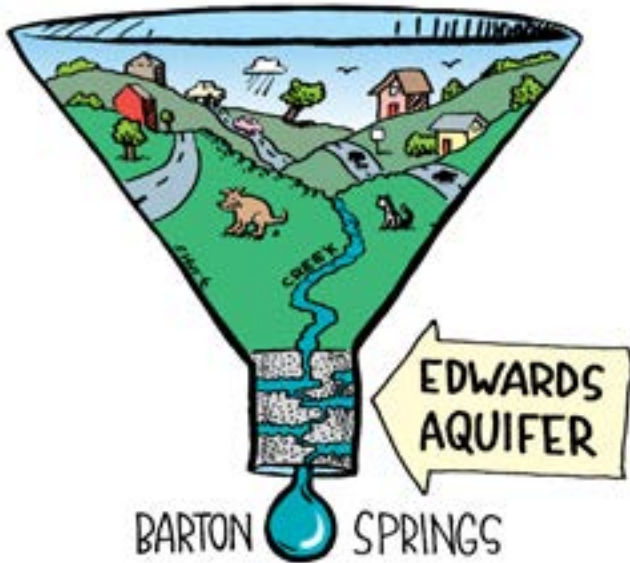
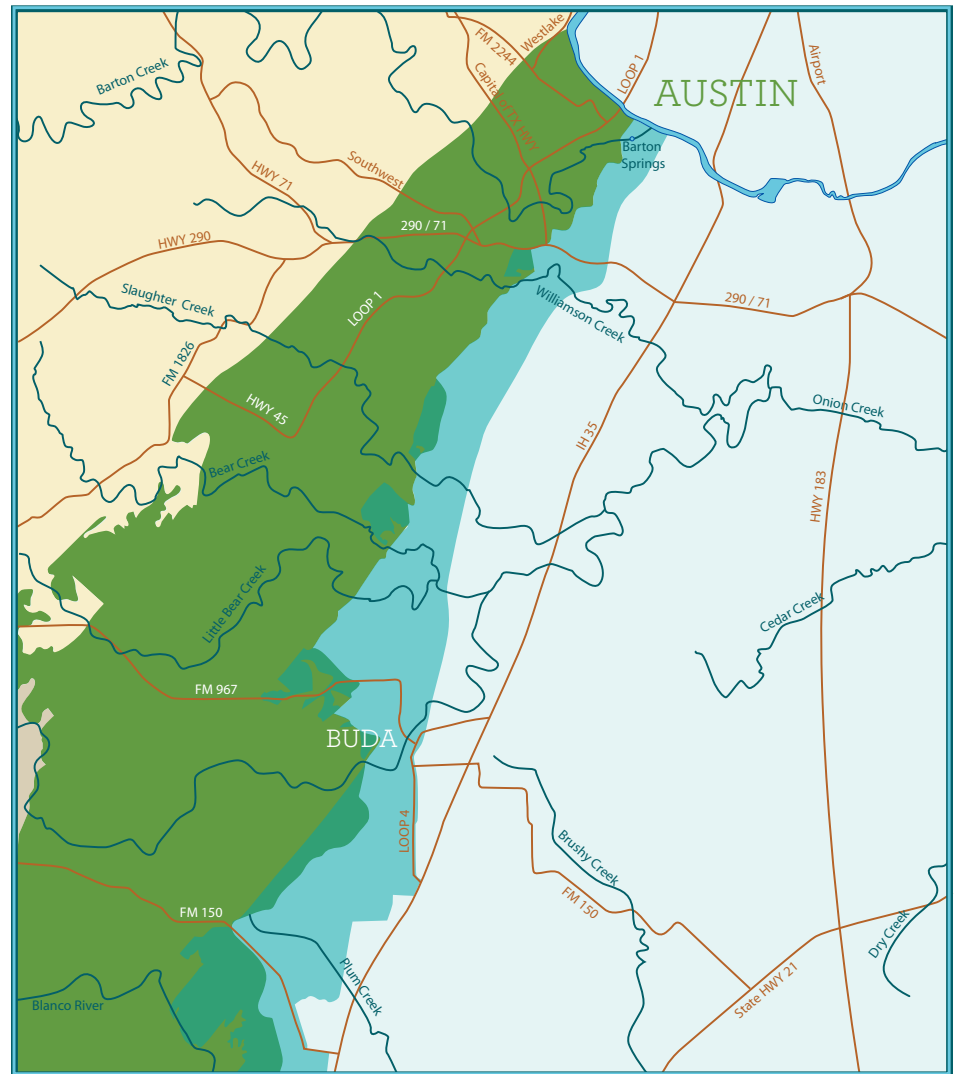


Illustration by Sam Hurt

Water enters the aquifer through fractures, faults, and sinkholes in the Edwards limestone. Anything carried by this flow may eventually show up at Barton Springs.

## Barton Springs Recharge Zone



- Contributing Zone:** Water flows off of this area and onto the recharge zone
- Recharge Zone:** Water enters the aquifer through recharge features in this area
- Contributing / Transition Zone:** Water flows off of this area and onto the recharge zone
- Transition Zone:** Water comes to the surface in this area in the form of springs or wells



# Austin's Growing Pains Felt at Barton Springs

As Austin's population expanded, concern grew over the possibility of polluted runoff entering the aquifer and Barton Springs.



Austin History Center PICA 10262

In 1974, a bypass was installed at Barton Springs. This concrete tunnel diverts creek water past the pool. It ensures that the pool is only filled with spring water. Creek water may flow over the dam and into the pool during floods.

## Environment

by Suzanne Winkler



A concrete dam at Barton Springs diverts creek water from the pool.

## BAD WATER

*Austin's Barton Springs, the best place to swim in Texas, is now dangerous to your health.*

**E**arly in the evening, three young boys are playing in an aquifer. A summer has passed, and the sun is setting. The boys are laughing and splashing in the water. They are playing in the pool at Barton Springs. The water is clear and cool. It is the best place to swim in Austin. The boys are playing in the pool at Barton Springs. The water is clear and cool. It is the best place to swim in Austin.

But something has gone wrong at Barton Springs. The water is no longer clear. It is now brown and stinky. The boys are no longer playing in the pool. They are sitting on the shore, looking at the water with concern. The water is no longer clear. It is now brown and stinky. The boys are no longer playing in the pool.



Water is murky and stinky at Barton Springs. The boys are no longer playing in the pool.

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The U.S. Geological Survey began a study of the aquifer near Barton Springs in 1974. In 1974, the survey found that the water was contaminated with bacteria and other pollutants. The survey found that the water was contaminated with bacteria and other pollutants. The survey found that the water was contaminated with bacteria and other pollutants.

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Continued on page 25

# *Austinites Fight for the Future of Barton Springs*

## *The All Night Hearing*

By the late 1980s, concern over the effect of urbanization in the Barton Creek watershed reached a peak. On June 7, 1990, City Council convened to consider approval of a 4,000 acre proposed development in the sensitive Barton Creek watershed. More than 1,000 citizens signed up to speak in opposition to the development because of their concern about environmental impact to Barton Springs. After an all-night meeting the Council unanimously rejected the planned development.



## *The SOS Ordinance*

In August 1992, Austin voters strengthened environmental regulations by passing the "Save Our Springs (SOS)" Ordinance. This was adopted through a community initiative with the goal of non-degradation of the Barton Springs watershed. The Save our Springs Coalition was a loose group of citizens and community groups instrumental in gathering petition signatures and rallying public support for the ordinance. This group morphed into the Save Our Springs Alliance, which still exists today.



*Photo by Alan Pogue*

A protest outside of City Council Chambers the day of the "all night hearing."



*Photo by Eric Beggs*

Shudde Fath, a long time officer of the Save Barton Creek Association, demonstrating outside of Council Chambers. Organized in 1979, the Save Barton Creek Association continues to promote protection and conservation of the flora, fauna, and water quality of Barton Creek and the Barton Springs Edwards Aquifer through public education, advocacy, and conservation.



## *The Savior of the Springs: The Barton Springs Salamander*



Photo by Laurie Dries of the City of Austin

First collected and studied in 1946, the Barton Springs Salamander was formally described in 1993 and given the name *Eurycea sosorum* in honor of the citizens who helped bring the SOS initiative into law.

**B**arton Springs Salamanders are only found in the four springs of Zilker Park. They live in fissures and under cobble stones near the openings of these springs. They are fully aquatic, primarily using external gills to breathe even as adults. They grow to a length of 2.5-3 inches. In 1997, the Barton Springs Salamander was added to the Federal Endangered Species List due to the sensitive nature of its limited habitat.

*The primary threats to this species are degradation of the quality and quantity of water that feeds Barton Springs due to urban expansion over the Barton Springs watershed. Also of concern is disturbance to the salamander's surface habitat ...*

~ Excerpt from the Federal Register, Vol. 62, No. 83, 1997

## Habitat of the Barton Springs Salamander

**F**ound only in four spring sites in Zilker Park, the Barton Springs Salamander occupies one of the smallest habitat ranges of any vertebrate species in North America. The Salamander's habitat extends into the Edwards Aquifer but researchers are uncertain on how deep.



What should I do if I find a Barton Springs Salamander?

Leave it alone

Could I accidentally step on one?

Probably not, the Barton Springs Salamander is an expert at hiding in the fissures and cobbles at the bottom of the pool.



Photo by Bridget Quinn of the City of Austin 2011

**Upper Barton Springs** is located upstream of Barton Springs Pool. It is the only spring in Zilker Park that remains in a natural state. This spring stops flowing when the water level in the aquifer is low.



Photo contributed by the Save Our Springs Alliance 2005

**Barton Springs** is an important part of the habitat for the Barton Springs Salamander. For the protection of the Salamander, the pool is managed very differently now than it was 30 years ago. Patrons are asked to help maintain a healthy salamander habitat by avoiding certain areas and leaving rocks and plants alone.



Photo by Neal Douglass, Austin History Center ND-53-220-01

Eliza Springs underwent habitat restoration and now hosts the largest population of Barton Springs Salamanders. This photo was taken in 1953, before the habitat was managed as a protected habitat.



Photo by Laurie Dries of the City of Austin 2011

**Sunken Gardens** or Old Mill Spring hosts a small population of Salamanders. Biologists are currently working to make it a more suitable salamander habitat. The photograph shows city biologists conducting a salamander population survey.



# Salamander Food Web



## What's all that green stuff in the pool?

**Algae:** Algae are photosynthetic organisms, ranging from single-celled to multicellular forms, that play an important role in the aquatic food web. They provide food and habitat for macroinvertebrates and fish living in the springs. They produce oxygen and consume CO<sub>2</sub> and nutrients. This foundation of the food chain belongs in a healthy ecosystem; however, excess algae, a result of surplus nutrients in the water, can cause problems by blocking sunlight and depleting oxygen. Some algae blooms occur naturally and are not caused by pollution while others are the result of the introduction of excess nutrients by human activity. Common causes of excess nutrients are fertilizer runoff, sewage leaks, or non-point source pollution like pet waste.

**An Underwater Garden:** The biologists of the Watershed Protection Department take care of the native aquatic plants that beautify and strengthen Barton Springs as a habitat. These aquatic plants provide food and shelter to many of the animals that live in the pool. Native aquatic plants also release oxygen into the water through respiration and they compete with algae for nutrients in the water.

## Yummy macroinvertebrates!

Macroinvertebrates are an important part of the Barton Springs food web. Lacking an internal skeleton, these tiny creatures feed on algae, bacteria, and organic matter and, in turn, are eaten by larger animals like the Barton Springs Salamander. Macroinvertebrates have varying levels of tolerance to pollution, making them useful indicators of water quality.

## Predators! Look out little salamander!

Even though the Barton Springs Salamander is a **protected species**, it is still part of the natural food web. Measuring only 3 inches in length, Salamanders are prey for many aquatic and terrestrial animals.

# Counting Salamanders & Captive Breeding

## Population Monitoring

City of Austin biologists conduct monthly population surveys at each of the spring sites. They count salamanders found in the above ground portion of the habitat (not within the aquifer) and collect data on the abundance of aquatic invertebrates, an important food source for the Barton Springs Salamander. The biologists also monitor basic water quality conditions including temperature, pH and dissolved oxygen levels.



Photo by Laurie Dries of The City of Austin

Liza Colucci, a City of Austin Biologist, conducting a survey in Barton Springs Pool.

## Captive Breeding

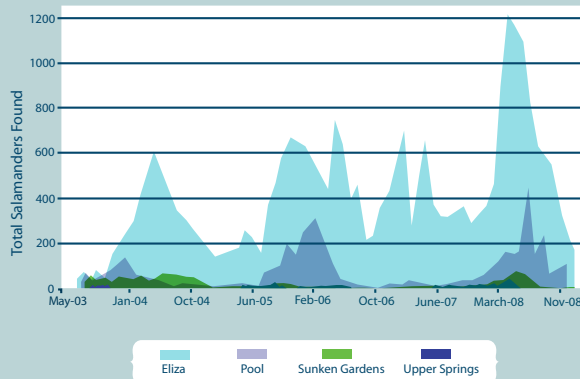
In 1998, the US Fish and Wildlife Service required the City of Austin to establish a captive breeding program to protect the endangered Barton Springs Salamander. Raising captive salamanders provides a safeguard against extinction in case a catastrophic event eliminates the wild population. This also allows researchers the opportunity to further study this rare species.



Photo By Clark Hancock of the City of Austin

The City of Austin's captive breeding facility

**Barton Springs Salamander Survey Results at Four Springs:**  
Eliza, Barton Springs Pool, Sunken Gardens, Upper Springs



Graph courtesy of the City of Austin's Watershed Protection Department

Water quality affects the number of Salamanders found in each of the surface water habitats.

# Help Preserve Barton Springs!

**W**ater is essential to all life. Barton Springs is a special place but no matter where you live protection of water resources is important. Here are some simple things you can do to help:

## Volunteer to Clean the Pool

"Volunteering to help with the pool cleanings is a great way to learn more about the Pool. Once you're in the pool wrestling the floor buffer or swimming along with the giant algae skimmer, you'll begin to understand how the water flows through the pool, where the main springs are, what creatures live in the pool and where, and how we can continue to improve pool cleaning and maintenance practices."

~Friends of Barton Springs Pool

Visit: [friendsofbartonspringspool.org](http://friendsofbartonspringspool.org) to learn more

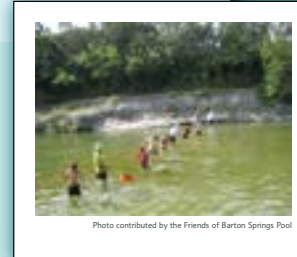


Photo contributed by the Friends of Barton Springs Pool

## Dispose of Chemicals & Waste Properly

Rainfall runoff will carry soil, yard waste, fertilizer, motor oil, and other pollutants into waterways. The City of Austin Household Hazardous Waste Facility is open to City of Austin and Travis County residents for the safe disposal of hazardous waste. Pouring chemicals down the drain, dumping them on the ground or putting them in the trash is dangerous and harmful to the environment.

Visit [austintexas.gov/department/austin-resource-recovery/programs](http://austintexas.gov/department/austin-resource-recovery/programs) to learn more



## Grow Green

Garden with native and drought tolerant plants. Use the least toxic gardening products.



Visit [austintexas.gov/department/grow-green](http://austintexas.gov/department/grow-green) for green gardening tips!



## Scoop the Poop!

Pet waste isn't just stinky; it also pollutes our water and can spread disease! Help keep creeks clean by simply picking up after your pets. Carry a bag with you and toss it in the trash.



Visit [austintexas.gov/department/watershed-protection](http://austintexas.gov/department/watershed-protection) to learn more

## Conserve Water

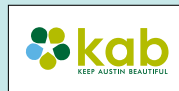
Conserving water can be as easy as turning the water off while brushing your teeth!

- Adhere to your communities watering restrictions, and keep up to date about drought status
- Go to [WaterWiseAustin.org](http://WaterWiseAustin.org) to pledge to cut your water use by 10%
- Austin Water offers rebates on water saving yard and home and improvements and appliances.

Visit [ci.austin.tx.us/watercon/rebatelist.htm](http://ci.austin.tx.us/watercon/rebatelist.htm) to see a list of current rebates.



## Organize a Creek Clean-up!



Keep Austin Beautiful and The City of Austin Watershed Protection Department offer resources to help you organize and implement your own Creek Clean-up.

Visit [keepaustinbeautiful.org](http://keepaustinbeautiful.org) to learn more!



## Help Preserve Land in the Recharge Zone

The Hill Country Conservancy and the City of Austin are developing the Violet Crown Trail. The trail begins at Barton Springs and will meander for thirty miles across the Barton Springs Recharge Zone, into Hays County. This preservation effort will help keep the Spring waters to flow clean, and will encourage outdoor recreation.

