

# BARTON SPRINGS POOL MASTER PLAN

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*Concepts for Preservation and Improvement*





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*Concepts for Preservation and Improvement*

*Prepared for*

**CITY OF AUSTIN PARKS AND RECREATION DEPARTMENT**

*December, 2008*

*LIMBACHER & GODFREY Architects*

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Cover Photo: "Diver", Will van Overbeek



# EXECUTIVE SUMMARY

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This project began in October, 2006 with a City Council resolution that recognized an immediate need for improvements at Austin's most famous swimming pool. It called for consideration of water quality and salamander habitat improvements, grounds improvements, infrastructure improvements and facilities improvements. Working from this resolution, City staff worked internally and with stakeholders for input, and they consulted previously commissioned studies and analyses to develop a task list. This consultant team was given that list when brought into the process in early 2007, and the list was used to develop a project scope. The team also received previous studies, information on earlier construction efforts and historical data on the pool, grounds and buildings at the site.

The planning team was led by Limbacher & Godfrey Architects and is composed of mechanical, electrical and plumbing engineers, structural engineers, civil engineers, dam engineers and a landscape architect, a permitting consultant, a cost management consultant and a sustainability consultant. By agreement with City staff, no biologists, ecologists or any other environmental consultants were included on the team. The decision was made to work with existing staff expertise, and to recognize that these kinds of consultants would be required for future work.

The planning process included a substantial public participation component, which, early on, yielded a goals statement that served as a guiding principle throughout. The Goals Statement reads:

*Return the site to its rightful glory where the water was cleaner and the experience of the pool was more enjoyable. Propose appropriate additions and renovations to the swimming pool, its buildings and its grounds that respect the fragility of this unique natural and historical setting, and also accommodate the significant user demands on Austin's most popular park amenity.*

The public participation process also resulted in a number of course corrections where the priorities for water quality and interpretive planing were elevated and the priority for building improvements was de-emphasized.

*City Council of Austin  
Resolution No. 20061019-035*

*WHEREAS, Barton Springs Pool, a historical landmark, is considered to be one of the crown jewels of Austin, covering three acres in size and fed by underground springs from the Edwards Aquifer, and*

*WHEREAS, over 409,000 people annually enjoy this spring-fed swimming pool, and*

*WHEREAS, the only known surface habitats of the Barton Springs Salamander (*Eurycea sosorum*) are located in Barton Springs Pool, Eliza Springs, Old Mill Springs (Sunken Garden) and Upper Barton Springs, and*

*WHEREAS, Barton Springs Pool is in immediate need of improvements to facilities, water quality and salamander habitat conditions, and*

*WHEREAS, the removal of the gravel bar from the deep end of the pool is scheduled for this fall to improve conditions at the pool for swimmers, salamanders and water quality, and*

*WHEREAS, City Council has unanimously supported the improvement of Barton Springs Pool by allocating \$500,000 annually in capital improvement funds until all items of the master plan are completed, NOW, THEREFORE,*

*BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF AUSTIN:  
That the services of a professional consultant be obtained this fall to work on a comprehensive master plan for Barton Springs Pool that will address improvements to facilities, the grounds, infrastructure, water quality and salamander habitat conditions*

*That the comprehensive master plan be established through a public process that includes participation and contributions of Friends of Barton Springs Pool and other interested stakeholders*

*That the City Council be informed quarterly of the progress of the plan and improvements to Barton Springs Pool*

*ADOPTED: October 19, 2006*



The plan begins with a discussion of the regulatory requirements within which the pool and any improvements to it must exist. Next, it looks at the history of the site and how it has changed over time. Then the plan is described in detail where elements of the pool and park are described, needs are identified and recommendations are made.

Following a description of the plan, a number of special considerations are given attention, including interpretive planning, sustainability, art in the park and a proposal to enlarge the pool.

The plan concludes with an implementation discussion where short term project and long term project strategies are described.

Recommendations fall into three general categories: the pool, which includes water quality improvements, water quality studies and pool cleaning improvements; the grounds, which includes landscape and landscape infrastructure improvements and building improvements, where an enlarged role is proposed for the Beverly S. Sheffield Education Center.

The designs presented in this master plan are conceptual in nature, and should be expected to evolve as they are further developed, with the final designs, perhaps differing in detail, yet honoring the spirit of the recommendations contained in this report. In the end, the key to successfully addressing the needs of Barton Springs Pool will involve meeting contemporary functional requirements in ways that extend the ability of this place to tell its story and to continue to serve as one of the crown jewels of Austin.

*The recommendations are separated into short-term and long-term recommendations.*

Short-term recommendations were funded by the City Council in September, 2007, and included items in five categories:

*Water Quality Improvements*

- Remove gravel bar
- Replace bypass tunnel inlet grate
- Repair bypass tunnel joints
- Renovate Sunken Garden (part 1)

*Water Quality Studies*

- Topographic survey
- Hydrodynamic modeling
- Structural testing of dams
- Pilot study for water recirculation at beach
- Pilot study to determine effects of creek flows on pool water quality
- Pilot study for ultrasonic algae control

*Pool Cleaning Improvements*

- Additional electrical power at pool side
- New pump to increase water pressure and facilitate cleaning
- New algae skimmer
- Disposal for silt and nuisance algae

*Grounds Improvements*

- Tree assessment and treatment
- General grounds improvements
- New accessible route on south side and evaluation of existing accessibility improvements on north side
- Interpretive plan

*Building Improvements*

- Rehabilitate existing bathhouse (part 1)

Long-term recommendations are not currently funded, and include items in three categories:

*Water Quality Improvements*

- Flow Regime Improvements
- Renovate Eliza Spring
- Renovate Sunken Garden (part 2)

*Grounds Improvements*

- Rehabilitate Zilker Ponds
- “Dog Park” Improvements
- Further downstream improvements
- General grounds improvements, north side
- General grounds improvements, south side

*Buildings*

- Rehabilitate the existing bathhouse (part 2)
- Build a new south bathhouse

# INTRODUCTION

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*"Alien Boy", Will van Overbeek*



# PROJECT APPROACH

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This project began with an Austin City Council initiative in 2006 that recognized that maintenance and improvements to Barton Springs Pool were overdue. Working from this initiative, staff worked internally and with stakeholders to develop a list of issues to be included in a master planning process. This consultant team was given that list when hired in early 2007.

The planning process has included a substantial public participation component, which, early on, yielded a goals statement that has served as a guiding principle throughout. The Goals Statement reads:

*Return the site to its rightful glory where the water was cleaner and the experience of the Pool was more enjoyable. Propose appropriate additions and renovations to the swimming pool, its buildings and its grounds that respect the fragility of this unique natural and historical setting, and also accommodate the significant user demands on Austin's most popular park amenity.*

The consultant team researched the history of Barton Springs, and investigated technical challenges. They met with constituent groups, taking verbal and written input throughout.

The team met with regulatory officials at multiple levels. For salamander habitat, aquifer and stormwater matters, they consulted with U.S. Fish and Wildlife Service officials and the City's Watershed Protection and Development Review staff. For historical and archeological matters, they consulted with the Texas Historical Commission and the City Historic Preservation Officer. For code compliance matters, they consulted with the City's Plan Review and Environmental Officer staff and for handicapped accessibility, they consulted with the Texas Department of Licensing and Regulation. Knowing that sustainability is an important City priority for all of its construction efforts, they consulted with the Green Building program at Austin Energy.

In addition, team members interviewed the staff at Barton Springs to learn the complexities of particular aspects of park operations and watershed management issues at the site. The PARD Aquatics staff provided information on pool operations and maintenance issues. The Watershed Protection staff provided information on salamander habitat, flow regime and watershed-specific matters. The Austin Nature Center staff (which operates the



Photo: Will van Overbeek.

## PROJECT SCOPE

### THE POOL

#### 1. IMPROVE FLOW REGIME

*Study concepts for improving flow regime that may include adding more operable gates to the downstream dam, introducing water recirculation features in strategic locations and installing operable gates in the upstream dam.*

#### 2. BYPASS INLET UPGRADE

*Redesign inlet grate so that it is less prone to clogging during floods.*

#### 3. UPSTREAM DAM

*Add openings to improve flow regime. Raise dam to mitigate “pop up” floods. Widen dam to improve clean-up equipment access.*

#### 4. NUISANCE ALGAE CONTROL

*Study algae control skimmer designs to remove floating algae.*

#### 5. GRAVEL BAR REMOVAL

*Remove gravel and sediment bar from deep end of Pool.*

#### 6. SEDIMENT and ALGAE DISPOSAL

*Consult with Pool cleaning and maintenance staff to improve methods for disposing sediment and nuisance algae.*

### THE GROUNDS

#### 7. ZILKER PONDS

*Rehabilitate Zilker Ponds with special attention to the several sets of steps leading from the upper parking lot to the Zilker Hillside Theater and the Bathhouse.*

#### 8. SIGNS and GRAPHICS \*\*

*Identify opportunities throughout the Barton Springs Pool site for the creation and installation of coordinated thematic material that fosters awareness of the cultural and scientific history of the park and its ecosystem. Propose a series of maps and signs for orientation and wayfinding. Propose signs at major entry points to direct visitors into the park and towards the Pool.*

#### 9. ELIZA SPRING

*Reconstruct spring run from Eliza Spring and possibly reconnect to the main body of the Pool. Rehabilitate the Elks amphitheater. Remove concrete slab under waters of Eliza. Add an operable gate to allow control over flows. Redesign areas around Eliza to mitigate flooding.*

#### 10. FENCE

*Recommend new fence design. Consider new fence locations to possibly include new areas within the perimeter.*

#### 11. TREES and GRASS

*Evaluate trees to determine number, distribution, species and condition. Make recommendations for replacing sick and damaged trees. Make recommendations for adding more trees throughout the campus. Consider more drought-tolerant grass options. Make recommendations for upgrading and extending the irrigation system. Make recommendations for grass care.*

#### 12. AREA BELOW DOWNSTREAM DAM

*Redesign the area below the downstream dam to make it more comfortable and more attractive.*

#### 13. ENLARGE THE POOL \*\*

*Study the possibility of making the Pool larger by relocating the downstream dam to a position below the Sunken Garden outflow. The concept is to bring all three salamander habitats into one uninterrupted body of water.*

#### 14. SUNKEN GARDEN

*Rehabilitate stone walls, reconstructing and stabilizing as required. Reconsider the fence, including its location and its design. Rehabilitate the basin to improve salamander habitat. Include a new, operable gate for flow control. Create stable walking surfaces to enhance access and enjoyment. Update landscaping to include new trees and groundcover recommendations.*

#### 15. INFRASTRUCTURE IMPROVEMENTS

*Recommend improvements to site electrical service to include buried lines and increased power. Recommend site lighting improvements*

### THE BUILDINGS

#### 16. HISTORIC BATHHOUSE

*Rehabilitate the historic Bathhouse to repair deteriorated condition and to return ticket-taking to its original location, at the central “glass cylinder”.*

#### 17. NEW SOUTH BATHHOUSE

*Consider the addition of a new, though modest, south bathhouse to provide shower and changing facilities.*

**\*\* Item added by public input**





*Barton Springs Salamander. Declared an endangered species in 1997, it lives in all three springs at Barton Springs as well as one upstream spring. Endangered species requirements have fundamentally changed the approach to Pool cleaning and maintenance.  
Photo: Laurie Dries*

Beverly S. Sheffield Center, home of “Splash! into the Edwards Aquifer Exhibit”) provided educational program advice and offered leadership in park interpretation matters.

The consultant team itself is composed of an appropriately diverse array of professionals including a landscape architect (who worked with an arborist and an irrigation specialist), two dam engineers, each bringing lengthy careers working on most dams in the Highland Lakes chain and experience working at Aquarena Springs (home to five endangered species). It included a sustainability consultant to advise on green building matters. It included civil engineers and mechanical, electrical and plumbing engineers plus structural engineers. The team was led by architects experienced in working on complex public projects with significant historic preservation components.

The Goals Statement has, indeed, served as the central guiding principal. But through the process of learning about the personalities, the history and the technical issues, a number of corollary observations emerged that can shed useful light on positions this plan has taken:

#### ***BALANCE***

Planning efforts should honor the state of tense balance between and among competing factors:

- The fragility of the grounds competes with the frank, practical impulse to use heavy, potentially destructive equipment for maintenance and repair.
- The nuisance algae could be managed more effectively if the Pool could only be cleaned with chlorine. But chlorine use will threaten the salamanders, so it is not used.
- The gravel could be more easily removed if trucks could be driven across the gravel Pool bottom. But much of the Pool bottom is salamander habitat, so trucks cannot be used there. The risk of leaks and accidental spills associated with driving trucks in creek and river beds is also a concern.
- The water level could be lowered more often to facilitate cleaning, except lowering water in the Pool also lowers it in Eliza Spring, and that does harm on the salamander population.
- The grass would be healthier if it could be fertilized occasionally, but fertilization--even organic fertilizer--could pollute the Pool.

This balance is very nearly intrinsic to the place. This plan recognizes that balanced, but less-than-obvious solutions should be anticipated.



### *LOGICAL ORDER*

A close examination of park operations reveals a number of sometimes curious interrelationships that explain “how things are the way they are”. The planning team found that understanding these was often a first step toward accomplishing planning goals. Some examples:

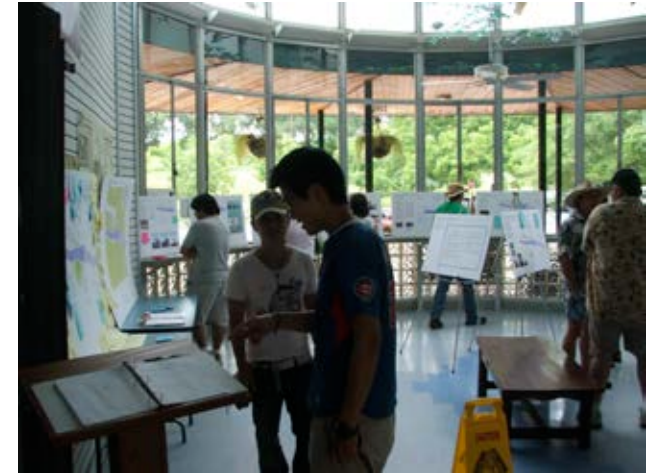
- The spring run at Eliza Spring should be restored and the concrete floor in the vessel should be removed. But construction work at Eliza might jeopardize our most robust salamander population, so any work at Eliza will have to wait for the development of larger populations at another habitat location, either Sunken Garden or the main spring.
- There is a strong sentiment for installing an algae skimmer along the south wall of the Pool. But preliminary indications show that during drought conditions, such a skimmer could skew much of the Pool’s flow regime. So the algae skimmer concept should be studied as one part of a comprehensive flow-regime solution.
- A part of the Bathhouse should be turned into a Visitor’s Center using a space currently assigned for educational programs. But those educational programs need to be reassigned first.
- Rainwater collection is a solid sustainability idea. But the existing irrigation system has the drinking fountains connected to it, which could create a health hazard for drinking if rainwater were used. So a new irrigation system, with drinking fountains plumbed separately, is a logical first step.

### *FRAGILITY*

The Goals Statement concept of “fragility” suggests a bias toward using the resources that currently exist, rather than looking to embark on adventurous new directions. So this plan recommends more trees, but no additional parking. It recommends rehabilitating the existing historic Bathhouse. It recommends using the existing historic dams, to the extent consistent with the results of the future structural analyses and modeling studies recommended in this plan, and it recommends against enlarging the Pool.

### *PUBLIC INPUT*

Because of its iconic status, Barton Springs will always be the subject of considerable public interest. This should be thought of as a planning and operations “fact of life”, and therefore a credible public process for input should be part of all changes and proposals.



*As part of the public participation process, an Open House was held at the Bathhouse on Saturday July 14, 2007. Ideas were exchanged and public input was sought. Consultants and City staff were on hand for questions.*



*Eliza Spring in the 1950s.  
ND-53-220-01, Austin History Center, Austin Public Library.*

### ***PLAN COMPLEMENTS OTHER EFFORTS***

Because the Pool is tied culturally, politically and environmentally to development struggles over the aquifer, discussions about water quality in the Pool are inevitably linked with water quality upstream. This planning team recognizes that cause-and-effect relationship, but at the same time, it acknowledges and accepts the limitations of this plan--it is a plan for Barton Springs Pool, not for the entire watershed. The planners understand that the future viability of the Pool depends on water quality stewardship upstream. Even so, this plan should be seen as a complement to the substantial efforts by others to buy land and development rights as well as other initiatives to protect the watershed.

### ***SUSTAINABILITY***

This planning team believes that sustainability considerations should be present in all decision making within the plan area. So it recommends rainwater collection as well as shower water reuse. It recommends sustainable landscape practices and it recommends solar hot water. It recommends the use of local natural materials and it recommends the rehabilitation of existing facilities seeking energy conservation opportunities. At the same time, it acknowledges the need for balance, even with sustainability decision making. So it favors placing solar collectors inconspicuously rather than making a more obvious display. It favors placing the rainwater collection vessel underground, because such vessels are large and could distract from the park ambiance.

### ***INTERPRETIVE PLANNING***

This park has fascinating stories to tell. Robert Redford learned to swim here. Water parades were popular in the 1930s here. Large-group dance performances used to happen here. Evangelical baptisms took place here. And, of course, there was topless bathing. These are but a few of the stories about people, but there are equally fascinating stories about flooding and the wildlife and other natural events and processes. Beyond simply enriching the park experience, these stories could also raise awareness on issues of environmental fragility and splendor. Seen in this light, interpretive planning is more than mere entertainment. It is integral to responsible stewardship efforts where deep appreciation of this unique historical and natural setting should be fostered. Therefore, the planning team sought opportunities for interpretive planning throughout the park, and made certain key decisions, like the Visitor Center and Gallery proposal for the Bathhouse and the reconfiguration of the Tree Court, to enhance the interpretive possibilities.

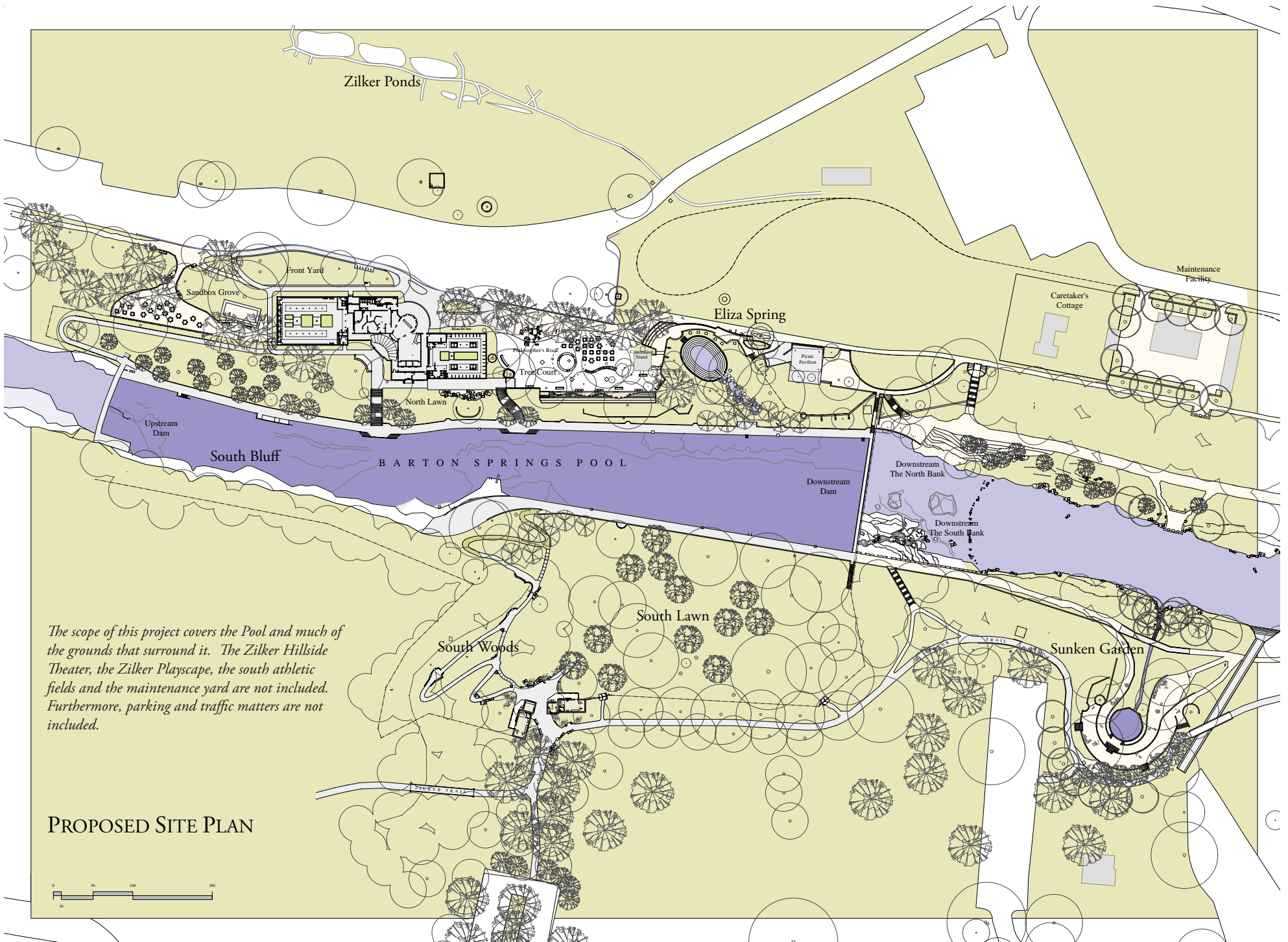


*Barton Springs Pool in the 1920s. The wooden bathhouse features an open-air dance pavilion on its upper level. Note that the upstream dam had not yet been built. C01825, Austin History Center, Austin Public Library.*

*A Note About Place Names:*

*As one might expect with a place as iconic as Barton Springs, the significance and history of the place is a very personal thing. This extends to the place names used for features at the site. Four primary springs make up what we today call “Barton Springs”. Upstream of Barton Springs Pool, there is a spring that flows during times of high discharge, called the Upper Spring. Within Barton Springs Pool is the Main Spring, also called Parthenia Spring. On the north bank of the pool is Eliza Spring, which was also called Walsh Spring and the Polio Pit in the past. On the south bank of the creek, downstream of Barton Springs Pool, is the Sunken Garden, which was also called the Old Mill Spring. For a time during the 1940s, the City of Austin publications referred to the entire site as Zilker Springs, as an homage to Andrew Zilker, who had donated the site for public use.*

*For clarity, we have used the following names for the various sites: the Upper Spring, the Main Spring, Eliza Spring and the Sunken Garden. These are the place names used by Brune in *The Springs of Texas* and are also the place names used in the “Barton Springs Archeological and Historic District National Register Nomination”.*



Zilker Ponds

Front Yard

Sandbox Grove

Eliza Spring

Maintenance Facility

Caretaker's Cottage

North Lawn

Upstream Dam

South Bluff

BARTON SPRINGS POOL

Downstream Dam

Downstream The North Bank

Downstream The South Bank

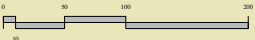
South Lawn

South Woods

Sunken Garden

*The scope of this project covers the Pool and much of the grounds that surround it. The Zilker Hillside Theater, the Zilker Playscape, the south athletic fields and the maintenance yard are not included. Furthermore, parking and traffic matters are not included.*

PROPOSED SITE PLAN



# REGULATORY OVERVIEW

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Barton Springs is subject to a wide range of regulatory requirements at all levels of oversight and government. Many of these also have complex permitting requirements that will require the allotment of adequate time and resources for preparation of submission materials and completion of review cycles. As part of this planning effort, preliminary review conferences were held with a number of regulatory authorities to identify potential code compliance issues and procedures. Meeting and conference notes can be found in Appendix C. The following narrative summarizes code and permitting issues.

## ***U.S. ARMY CORPS OF ENGINEERS***

The U.S. Army Corps of Engineers protects the aquatic ecosystem and navigable waters in the United States. Under Section 404 of the Clean Water Act, the Corps administers a Regulatory Program which includes the issuance of permits for any activity involving the discharge of dredged or fill material into the “waters of the United States”. The “waters of the United States” include navigable waters subject to the ebb and flow of tides and interstate waters, including any part of the surface water tributary system down to the smallest of streams, lakes, ponds and wetlands. The primary purpose of the permit process is to reduce the potential impact of proposed construction projects on the aquatic resources of the nation.

Depending upon the activities proposed, the form of the permit may be general or specific in nature. General permits, either nationwide or regional in scope, are used for activities that are similar in nature and are expected to have minimal environmental impact. Repairs of existing dams are typically permitted under a nationwide general permit, for example. Certain changes to existing facilities may also be permitted under a nationwide general permit, typically for reasons of safety, such as a change required by flood conditions. For specific projects not permissible under a general permit form, an individual permit is used. Construction of new dams are typically permitted under an individual permit process.

The Section 404 permit review process includes consultation and review with the Corps, public notice and comment on the permit application, evaluation of environmental impacts of the project and the permit decision. The Corps review process also addresses related environmental laws, including the National Environmental Policy Act, the Endangered Species Act, the National Historic Preservation Act, the Texas Antiquities Code and Texas Commission on Environmental Quality water quality certification, often in

partnership with the federal and state agencies charged with the primary administration of these laws. From our preliminary discussions with the staff of the Fort Worth District Office of the Corps, a typical Section 404 review process for an individual permit for the construction of a new dam usually takes months, but not years, to acquire. However, projects with many environmental impacts will likely take more time to complete the permit process.

#### *U.S. FISH AND WILDLIFE SERVICE*

A branch of the Department of the Interior, the U.S. Fish and Wildlife Service is dedicated to the conservation, protection and enhancement of fish, wildlife, plants and associated habitats in the United States. The agency enforces federal wildlife laws, including the Endangered Species Act of 1973. In 1997, the Barton Springs salamander, found in the four springs that comprise Barton Springs, was listed as an endangered species. The Endangered Species Act listing authorizes several important conservation strategies at the federal level, including protection from damage by federal activities, a requirement for a federally-generated recovery plan for the listed species and eligibility for federal aid for protection and conservation of the listed species. Non-federal activities that “take” (defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect) endangered wildlife must be conducted under the requirements of an incidental take permit. As part of the incidental take permit application, submission of an associated habitat conservation plan, identifying activities to minimize and mitigate the incidental take of the listed species, is required.

In 1998, the U.S. Fish and Wildlife Service issued to the City of Austin a Section 10(a) (1)(B) permit for incidental take of the Barton Springs salamander for the operation and maintenance of Barton Springs Pool and adjacent springs, with a fifteen year permit duration. The associated habitat conservation plan and environmental assessment, prepared by the City of Austin and the U.S. Fish and Wildlife Service, analyzed in detail four alternatives for pool operation and maintenance, and recommended a preferred alternative to allow for the continued use of Barton Springs Pool as a recreational pool facility with the initiation of structural and procedural changes intended to minimize or eliminate the impacts of pool cleaning activities on the salamander habitat. The habitat conservation plan listed forty-one implementation measures, related to the preferred alternative, to achieve the goals of improving salamander habitat, increasing salamander population size and increasing life history information over the term of the incidental take permit.

The incidental take permit defines a procedure under which amendments to the permit

may be proposed, including a requirement to consult with and receive the concurrence of the U.S. Fish and Wildlife Service for all proposed amendments. The permit allows for minor amendments, which “involve routine administrative revisions or changes to the operation and management program which do not diminish the level or means of mitigation”. The U.S. Fish and Wildlife Service has the authority to approve minor amendments, a process likely to take up to three months. All other changes are major amendments, and will require longer, more complex application, review and approval cycles. Any major amendment also requiring an increase in the anticipated incidental take levels will take a minimum of one year, possible two, to complete. Each of the projects and issues that the master planning team was asked to study were preliminarily reviewed with the staff of the Austin Ecological Services Field Office of the Southwest Region of the U.S. Fish and Wildlife Service. From this very preliminary review, it appears that the more invasive and complex projects, such as major changes to the downstream dam, may likely require a major amendment and a lengthy review cycle. Carefully considered projects that account for both salamander habitat and structure rehabilitation, employing best environmental management practices during construction, are permissible. Obviously, as any of the projects studied in the master plan might be further developed, careful coordination with the U.S. Fish and Wildlife Service will be required.

#### ***TEXAS HISTORICAL COMMISSION***

The Texas Historical Commission, the state agency for historic preservation, is responsible for conducting reviews authorized under the National Historic Preservation Act of 1966. Under the National Historic Preservation Act, any federally permitted, funded, assisted or approved project must undergo a Section 106 review, to consider the effects of these actions on historic and cultural resources that are listed or eligible for listing on the National Register of Historic Places. The reviews are done by archeologists, architects and historians, and identify adverse effects on archeological sites and existing buildings and other structures. A normal Section 106 review is likely to take thirty days, but complex projects with numerous adverse effects could take much longer and could require prolonged coordination with affiliated federal agencies reviewing related components of the project.

The Texas Historical Commission also administers the Antiquities Code of Texas. The Antiquities Code of Texas requires state agencies and political subdivisions, including cities, to notify the Commission of any proposed action on public land that involves five or more acres of ground disturbance, 5,000 or more cubic yards of earth moving or any other project that has the potential to disturb recorded archeological or historic sites. The

several designated archeological and architectural landmarks at Barton Springs -- including the Pool, dams, surrounding springs and structures, Bathhouse and other sites -- fall within the purview of this review and permitting process. The time required to complete this process can vary, depending on the complexity of the proposed project, the archeological and historic resources that might be adversely impacted and whether previous archeological investigations have been completed in the area.

#### ***TEXAS COMMISSION ON ENVIRONMENTAL QUALITY***

Related to the Section 404 permits from the U.S. Army Corps of Engineers, the Texas Commission on Environmental Quality conducts a Section 401 certification review to determine whether a proposed discharge will comply with Texas water quality standards. The review process and duration varies with the size and type of the proposed project. Small projects, less than three acres in size or less than 1,500 linear feet of streams, may be reviewed under a Tier I process. If Best Management Practice methods are employed in the project, this review is abbreviated. Larger projects, or projects that can not employ the recommended Best Management Practices are reviewed under a Tier II process, which can take several months to complete.

The TCEQ also administers a storm water discharge permit program for construction activities, with varying requirements for a Storm Water Pollution Protection Plan dependent upon the size of the construction activity area. For projects in the Edwards Aquifer recharge, transition or contributing zones, additional protection plan applications, including a water pollution abatement plan, are required, with a typical review cycle of sixty days.

#### ***TEXAS DEPARTMENT OF LICENSING AND REGULATION***

The *Texas Accessibility Standards* are based on federal accessibility standards established by the Americans with Disabilities Act. The standards are administered by the Texas Department of Licensing and Regulation. The review process includes provision of construction plans that demonstrate compliance with applicable provisions of *Texas Accessibility Standards* and a field inspection to review compliance once construction is complete.

As a qualified historic building (City of Austin Landmark and National Register listing) the Bathhouse will be eligible to comply with Section 4.1.7 “Accessible Buildings: Historic Preservation.” This section establishes the following minimum requirements:

- At least one accessible route on the site to an accessible entrance.
- At least one accessible entrance that is used by the public.
- At least one accessible toilet facility along an accessible route. Such facility may be unisex in design.



- An accessible route from an accessible entrance to all publicly used spaces.
- Displays and written information should be located where they can be viewed by a seated person.
- Customer service counters and windows must have an accessible counter.

An “accessible route” is defined as a path with a minimum width of 36 inches and with a slope no greater than 1:20 for walking surfaces and 1:12 for ramped surfaces. An “accessible entrance” is defined as having a minimum clear opening of 32 inches, with required maneuvering clearances adjacent to the operable door.

Any new construction must also comply with the requirements of the *Texas Accessibility Standards*. For new construction, the minimum site accessibility requirements include an accessible route from accessible parking spaces to an accessible building entrance. The minimum building accessibility requirements include an elevator and accessible toilet facilities, drinking fountains, public telephones, doors, controls and signage. If alarms, fixed or built-in seating or tables, or shelving and display systems are included, these also must be accessible.

Of special relevance to this master planning effort, new federal accessibility guidelines have been published by the U.S. Access Board. The new *ADA Accessibility Guidelines* add extensive provisions for accessibility to recreational facilities, including swimming pools. The guidelines require the provision of at least two accessible means of entry to swimming pools, and apply to newly constructed or existing, altered swimming pools. The guidelines became effective in 2004, but are not enforceable under federal law until they are formally adopted by the U.S. Department of Justice. Although the exact date on which the new *ADA Accessibility Guidelines* will become enforceable is not known, the Texas Department of Licensing and Regulation is poised to update the *Texas Accessibility Standards* in short order, once the new *ADA Accessibility Guidelines* are adopted by the federal government.

#### ***TEXAS DEPARTMENT OF HEALTH***

The Texas Department of Health regulates the minimum standards for the design, construction and operation of swimming pools and spas under the *Standards for Public Pools and Spas* (Texas Administrative Code, Title 25, Part 1, Chapter 265, Subchapter L). The standards are based in part on the American National Standards Institute and the National Spa and Pool Institute *Standards for Public Swimming Pools* (ANSI/NSPI-1, 1991). However, from our preliminary conversations with the Texas Department of Health, Barton Springs Pool is considered a natural body of water, or a flow-through pool, and is not subject to these regulations. The Texas Department of Health does take

samples of the water in the Pool periodically, to monitor for public health issues. The City of Austin Parks and Recreation Department also adheres to the code for matters of public safety, such as with compliant signage at the pool deck addressing safety issues.

Some of the issues studied in this master plan, if they are developed in more detail in a future study or project, may require coordination with the Texas Department of Health to identify potential code issues and establish compliance standards. One example is the notion of recirculating water within the Pool, which may trigger a requirement for a filtration system under the standards.

The operation of the Bathhouse must also comply with applicable provisions of *Standards for Public Pools and Spas*. The standards for existing facilities are limited, and typically less restrictive than those in the building and accessibility codes noted in this section. The standards also stipulate requirements for lifeguards, including recommended break provisions.

#### *CITY OF AUSTIN*

The City of Austin regulates land use, building construction, environmental quality and historic preservation issues under the *Land Development Code* and related technical manuals and adopted codes.

#### *BUILDING CODE REQUIREMENTS*

The City of Austin has adopted the following building codes:

- *The International Building Code (IBC)*, 2003 Edition, International Code Council
- *The International Energy Conservation Code (IECC)*, 2006 Edition, International Code Council
- *Uniform Building Code for Building Conservation (UCBC)*, 1994 Edition, International Conference of Building Officials
- *Uniform Plumbing Code (UPC)*, 2003 Edition, International Association of Plumbing and Mechanical Officials
- *Uniform Mechanical Code (UMC)*, 2003 Edition, International Association of Plumbing and Mechanical Officials
- *National Electrical Code (NEC)*, 2005 Edition,

The *IBC* establishes standards for building construction and safety. The Bathhouse will have to comply with this code. However, as a historic building, deviations from the code may be approved by the regulatory authorities if they meet the intent of the code. The

*UCBC* pertains to the repair, alteration and maintenance of existing buildings.

Under the *IBC*, a bathhouse is a Type B occupancy group (*IBC* Sec. 304.1). In the dressing areas, the occupancy use is defined as a locker room use, which requires an occupant load factor of one person per 50 square feet.

The *UPC* prohibits commingling of sanitary sewer water, which is treated, with storm water, which is not (306.2 and 714.2). This means that showers, toilets and sinks cannot collect rainwater, and are required to be under cover. This will be an issue for the uncovered showers in the historic dressing rooms. The *UPC* stipulates minimum quantities of plumbing fixtures, based on occupant load factors. However, since the Bathhouse is an existing, historic building, the fixture requirement will be based on the existing quantity of fixtures.

#### *ENVIRONMENTAL QUALITY*

The *Land Development Code* regulates development in watersheds, aquifers and water zones with special requirements intended to protect water quality and drinking water. The entire area of the master plan falls within the critical water quality zone of the Barton Creek watershed, in the Barton Springs Zone. Critical water quality zones are subject to development restrictions. Permitted development includes fences that do not obstruct flood flows and public or private parks or open spaces if a program of fertilizer, pesticide and herbicide use is approved. In the Barton Springs Zone, park development is limited to hiking, jogging and walking trails and outdoor facilities, not including stables and animal corrals. Bicycle or golf cart paths, pedestrian bridges and boat docks, piers, wharfs and marinas are also permitted. In certain circumstances, more types of recreational development are also permitted, with the approval of the Council. Development in the Barton Springs Zone must also comply with the Save Our Springs Initiative provisions of the *Land Development Code*. Allowable development must include pollution prevention, in the form of impervious cover limitations and water quality controls.

The *Land Development Code* also defines a site plan submission and review process, applicable to all development projects in the city. Site plans are reviewed for water quality protection measures, as required by the applicable watershed protection ordinance for the specific project location within the city, as well as land use issues, as required by the zoning designation. Small projects, with less than 5,000 square feet of impervious cover, are typically exempt from the site plan requirements. Routine construction, emergency repairs and maintenance activities conducted by the Parks and Recreation Department are permitted under a General Development Permit. Routine construction activities allowed under

the General Development Permit include irrigation systems; installation of minor park facilities such as benches, trash cans, drinking fountains and signage; ADA/TAS accessibility improvements to existing structures and ADA/TAS walkways; landscaping repairs; turf repair and maintenance; installation of new landscaping; standard-design public restrooms; minor utilities, including water, sewer and electric lines; standard repairs to park buildings and facilities and emergency repairs or removal of trees or vegetation to protect public health, safety and welfare.

### ***HISTORIC PRESERVATION***

As an Austin Historic Landmark, alterations to the exterior of the building will require review by the City of Austin Historic Landmark Commission for a Certificate of Appropriateness (City of Austin *Land Development Code* Ch. 25-11-212). The Commission's determination will be based on the *Secretary of the Interior's Standards* (see the Annotated Secretary of the Interior's Standards section). The National Register of Historic Places listing will not require any regulatory review; however continued listing is contingent on compliance with the *Secretary of the Interior's Standards*. It will be important to maintain contact with the City Historic Preservation Office as the project is developed to ensure a smooth approval process.

*The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings*, produced by the U.S. Department of the Interior and National Park Service, establish professional standards and guidelines for treating historic properties. The Austin Historic Landmark Commission has adopted the *Secretary of the Interior's Standards* in granting a Certificate of Appropriateness. Because the Barton Springs Bathhouse is an Austin Landmark, it will require a Certificate of Appropriateness and therefore must comply with the Standards. In addition, any project that applies for federal rehabilitation tax credits must comply with the Standards.

The Secretary of the Interior establishes four treatments for historic buildings, each with its own standards and guidelines. Before undertaking any work on a historic building, a preservation treatment should be decided upon and the respective set of standards and guidelines consulted. The treatment for the Barton Springs Bathhouse is rehabilitation, but it is worth briefly discussing the other treatments because the terms are often used interchangeably and inaccurately.

***Preservation*** is defined as the act or process of applying measures necessary to sustain the existing form, integrity and materials of an historic property.

**Rehabilitation** is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values. This is the treatment most frequently undertaken, as well as that which is most appropriate for the Barton Springs Bathhouse. Rehabilitation is updating a building for contemporary needs, or a new use, while retaining its architectural significance. In this treatment additions and alterations are acceptable but they should be limited to secondary spaces or be done in a way that is sensitive to the historic fabric.

**Restoration** is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in history and reconstruction of missing features from the restoration period. Restoration involves selecting a period of significance, usually when a building was first built, but sometimes the date of an important event, and taking the building back to that period. While the Barton Springs Bathhouse has a period of significance, 1947, and the goal is generally to return it to that period, adaptations will be made for contemporary needs.

**Reconstruction** is defined as the act or process of depicting by means of new construction, the form, features, and details of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.



# A BRIEF HISTORY OF THE SITE



*Recreation Department Annual Report, 1936.  
PICA 01009, Austin History Center, Austin Public Library.*

The modern occupation of Barton Springs began at about the time the city of Austin was founded, almost 175 years ago. But the site was familiar to Native Americans for a few thousand years before that and the natural forces that formed the springs began hundreds of millions of years ago. Barton Springs, actually a group of four springs, are artesian springs, issuing under pressure from a fault line in the underlying limestone formation. They are part of a chain of artesian springs that extend along the Edwards Aquifer from near Del Rio, at the south, to near Temple, at the north. Barton Springs is the fourth largest spring in Texas.<sup>1</sup>

The springs, and the abundant plants and wildlife they sustained, and the ready source of stone for toolmaking attracted Native Americans to the site. Archaeological excavations conducted in the area of the springs found evidence of middens, camps and shelters, quarries and butchering sites, as well as tools, artifacts and points.<sup>2</sup> By the time of the Spanish settlements, the Tonkawa and Lipan Apache tribes inhabited the area around Austin. By



*Mexican land grant issued to Henry P. Hill.  
Texas General Land Office*

the time the colonists settled the area, the Comanche and Kiowa tribes inhabited parts of Travis County. Brune describes a Comanche trail that passed by the springs, as well.

Beginning in the late seventeenth century, the Spanish established frontier missions across what would become Texas. The mission system was intended to convert the indigenous tribes into the Catholic religion and bring them into the Spanish colonial culture. For a very brief time in 1730 and 1731, three such missions were located in the vicinity of Barton Springs. The Franciscan missions were originally founded in 1716 in East Texas, near what is now the Texas-Louisiana border. The missions were part of a group of six missions and a presidio established in East Texas to build relations with the Hainai, Nasoni and other Caddoan tribes in the area. The missions struggled with limited food supplies, epidemic disease and skirmishes with the French to the east. The peaceful Caddoan tribes maintained good relations with the missions, but remained independent and did not live within the mission compounds. By 1729, the Spanish government determined that operations in East Texas should be scaled back, recommending cuts in funding and closing the presidio, prompting the three missions to request relocation. These missions, Nuestra Senora de la Purisima Concepcion de los Hainais, San Jose de los Nazonis and San Francisco de los Neches, were moved to Central Texas on the Colorado River, in hopes of attracting the participation of the local tribes. Conditions in this location were apparently unfavorable on the Colorado, and the missions were finally moved to the San Antonio River in 1731. The missions were renamed Nuestra Senora de la Purisima Concepcion de Acuna, San Juan Capistrano and San Francisco de la Espada, and flourished in the new location.<sup>3</sup> The mission churches continue to this day and the sites are now part of the San Antonio Missions National Historical Park. The brief stop on the Colorado is commemorated with a historical marker installed on the south grounds of Barton Springs Pool by the Texas Centennial Commission in 1936.

The Spanish also began the practice of making private land grants to individual settlers in the eighteenth century. By 1820, concerned with populating the vast stretches of Texas that lay north of the Rio Grande, the Spanish government openly sought foreigners prepared to pledge allegiance to the laws of New Spain as colonists. After winning independence from Spain in 1821, Mexico continued the practice, creating a system of empresarios, or agents, contracted to recruit colonists, allocate land grants and enforce the Mexican colonization laws. These laws provided for large allotments of land conveyed on generous terms: heads of families could apply for a full league of land, or 4,428.4 acres, and single men a quarter-league, with six years to pay off the nominal purchase price.<sup>4</sup>



One such empresario's colony was that issued to Ben Milam, who received a contract to settle 300 families between the Colorado and Guadalupe Rivers in 1826. Milam's Colony included the land surrounding Spring Creek, which is today called Barton Creek. In 1835 League No. 21 in Milam's Colony, a tract at the mouth of Spring Creek, was granted to Henry P. Hill, who was twenty-eight years of age, a native of Georgia and a lawyer. In Milam's Register of families, Hill's oath states that he is single, but enters the colony with a family, entitling him to a grant of a full league of land as a head of household.<sup>5</sup>

Little is known about Henry P. Hill and his use of the land on Spring Creek. He did attend a meeting of the municipality of Mina (present Bastrop) in July 1835, called to consider the deteriorating relations with the government of Mexico, and served on a committee to prepare a letter to the governing committees of other municipalities in the district presenting their thoughts on the issue. Perhaps he returned to Georgia around this time, concerned about the brewing conflict that became the fight for Texas independence. In the 1840s to the 1870s, Travis County court and deed records list Hill as a resident of Georgia, protecting his ownership of League 21.<sup>6</sup>

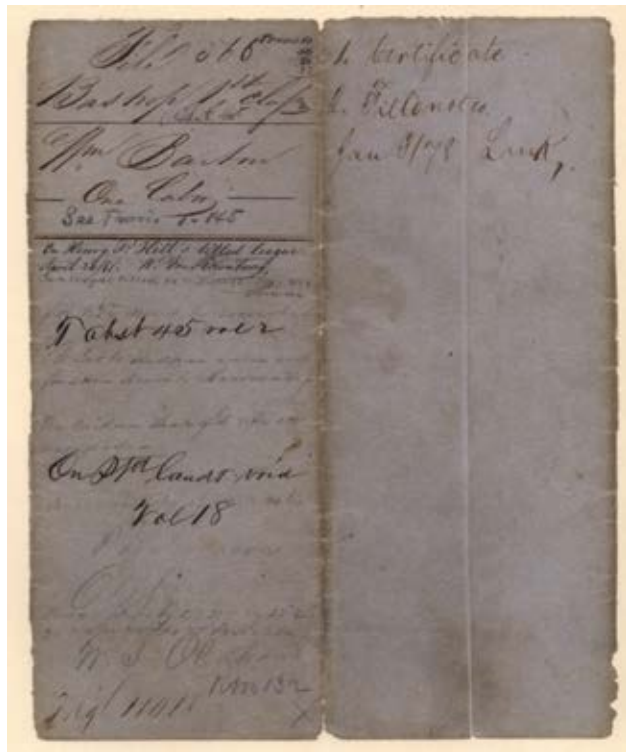
Although he was not the original recipient of League 21, William Barton is the settler with the strongest association with the springs. William Barton was born in South Carolina in 1782 and lived in Kentucky and Alabama before coming to Texas in 1828. He settled in Stephen F. Austin's Little Colony, which was located east of the Colorado River and north of the Old San Antonio Road. Austin's Register of Families lists William Barton as forty-seven years of age, a farmer, who entered the colony with his wife, Stacy, two male children, three female children and five slaves. He worked on a survey crew laying out the Little Colony in 1830 and was elected comisario of the Bastrop precinct the same year.<sup>7</sup> He took his oath of allegiance in January 1830, and was granted League No. 9, located on the right bank of the Colorado near the present Bastrop-Fayette county line, in March 1831. A small creek, called Barton's Creek, is noted in the survey for the league. Later that year, a third son, named Wilford or Willifred, was born.

Two of Barton's brothers also immigrated from Alabama to the Little Colony at about the same time. Benjamin, a single male forty-four years of age and a farmer, arrived in 1829 and was granted a quarter league west of the Colorado in 1831. Elisha and his wife Susanna, both thirty-nine years of age, arrived in 1830 with three male children, two female children and one slave. Elisha, also a farmer, was granted a league of land west of the Colorado at the mouth of Ten Mile Creek in 1831.<sup>8</sup>

Life on the Texas frontier was difficult, and the memoirs of early settlers tell vivid stories



*Map of Travis County, W. von Rosenberg, 1861  
Texas General Land Office, Map 4088*



*Republic of Texas patent application, William Barton. (Notation "On Ptd. Land, Void, Vol. 18" visible near bottom of the left panel)  
Texas General Land Office*

of clashes with the Indians. War was brewing with Mexico through the 1830s, and by the fall of 1835 the revolution was fully engaged. Even still, settlers continued to come to the Little Colony. The story goes that William Barton, a man with an independent nature, began to feel a little crowded when settlers arrived within about ten miles of his place on League 9. Court records show that in late 1835 William and Stacy Barton entered into an agreement to sell League 9 to William Primm, of Concordia parish, Louisiana. Primm made the first of three required payments, but was delayed in making additional payments for several years, perhaps due to the war. Barton remained on the land through 1837, when the court records state he raised a crop on the League 9 lands. The sale to Primm was completed in the spring of 1839, when the final payment was made and Barton conveyed the deed and full title to Primm.<sup>9</sup>

Around the time the Bartons agreed to sell League 9 to Primm, the provisional government of the Republic of Texas suspended the operation of land commissions and the transfer of land titles under practices established by the Mexican government. In 1836, the first Congress of the Republic of Texas met and drafted a Constitution and laws regulating the ownership of land in Texas. In an effort to keep the existing settlers in the new republic, Congress enacted a first class headright act. Each head of household living in the republic on March 2, 1836, received a league and a labor (177.1 acres) of land, except for those who had already received this amount of land from Mexico. If a settler had received less than this allotment of land from Mexico, they were now entitled to receive the difference. To get a headright grant, settlers applied to the county board of land commissioners, who determined whether the request was valid and issued a certificate for land to those that were. The settler then selected their land, had it surveyed and submitted the field notes to the county board of land commissioners. The county board certified the field notes and sent the application and the field notes to the General Land Office for review, authorization and issuing of the land patent. In the years following the war, there was a great deal of confusion in the land grant system, and fraudulent grants were a problem. Verifying the land records was also a challenge, as it took years to collect the records from each of the land offices operated under the Mexican government and to catalogue the land grant records into an orderly archive. As a result, it sometimes took years before a land patent was issued under a headright grant.

It was under these confusing conditions that Barton moved to a labor of land on the west bank of the Colorado, at the mouth of Spring Creek, around 1837. The patent records of the General Land Office show that Barton applied to the Board of Land Commissioners for Bastrop County for a labor of land, which granted Certificate 191 on February 15,

1838. Survey field notes were completed the following month, certified by the county board and sent on to the General Land Office in April 1838. But, a patent was never actually granted by the General Land Office, because it was later determined that the land selected by Barton was on the tract already patented to Henry P. Hill.<sup>10</sup>

Stacy Barton died in the spring of 1837, and William Barton moved the children and his slaves to Spring Creek. If a remote setting was what he was after, Barton certainly achieved his goal. His closest neighbor was Rueben Hornsby, about 11 miles down river, and four families lived across the river in the tiny settlement of Waterloo, now Austin. Barton built a house on the south bank of Spring Creek, near the main spring. He named two of the springs for daughters Parthenia and Eliza.<sup>11</sup> Barton's cabin and the springs are depicted in an 1839 map of Austin. The spot became known as "Barton's" or Barton Springs.

As Austin grew, Barton Springs was a favorite spot for fishing, swimming and sight-seeing. Barton kept two baby buffaloes at his place, and the tamed animals were part of the attraction. Indian encounters were still an occurrence at the site in to the 1840s. Barton had a reputation as a skilled Indian fighter, and several versions of a close call he had at the Springs are told in the memoirs of early Texas settlers. Barton sent his older sons to Bastrop to conduct some business, and became concerned when they did not return on time. He walked out from the house to the top of a hill to look for them and was surprised by a group of Indians who shot at him. He turned and ran towards the top of the hill, then pretended to signal to others in the valley to come to his rescue. The ruse worked and by the time the others actually arrived the Indians had turned and left. Barton assured his friends that they would surely have been killed, had they not been as quick-witted and fast as he.<sup>12</sup>

In 1839, Barton made an agreement with Lewis Capt and Company for use of the stream of water from the "big spring", probably the Main Spring, and land on the north bank of the creek as needed to erect a saw mill building, equipment and supports, in exchange for all the lumber and planking that he or his children might want for building on Barton's place. The agreement also required Capt's promise not to build a grist mill or raise the water in Barton Springs.<sup>13</sup>

In April 1840, William Barton died. He prepared a will a few days before his death, leaving his property -- the labor of land at the springs, livestock, wagons, farming implements, furniture and kitchen goods and eleven slaves -- to his children. Barton was survived by six children: Wayne, Parthenia (married to Richard Lloyd, an attorney), Eliza, Ailiff (or Arliff), William and Willifred (or Willford).<sup>14</sup> Due to the confusion over the actual



*City of Austin and Vicinity, 1839, W. H. Sandusky.  
Excerpt showing Spring Creek and "Barton's".  
Texas General Land Office, Map 3149.*

*In 1840, George W. Bonnell, a journalist and soldier who came to Texas during the war for independence, published an account of the springs at about this time in his Topographical Description of Texas, to Which is Added an Account of the Indian Tribes, as follows:*

*Spring creek is a stream of eighteen miles in length, which enters the Colorado from the west, one mile above the City of Austin. It rises in the mountains, and after running a few miles, almost disappears; but about one mile from the river, at a place called Barton's springs, it is again supplied with water, by four large springs, which supply a stream of sixty feet in width and four feet deep, and runs with a brisk current to the river. A company are about erecting a mill at this place. A portion of the land, towards the head of this creek, is broken and hilly, but of a rich quality and well supplied with timber. It has extensive, rich and beautiful valleys, and some excellent table land upon the hills. Towards the mouth, it runs through a country beautifully undulating, rich and agreeably interspersed with woodland and prairie.*



*These gentlemen appear to be standing at the Main Spring. The photograph is undated, and the people are not identified. CO0078 Austin History Center, Austin Public Library.*

ownership of the labor of land, it would take fifteen years before the will was finally settled. The children got into several disputes over the care of the younger children and the disposition of the assets of the estate. Also, in that time Wayne, Eliza and Ailiff would marry, have children and die. The question of the ownership of the labor of land was finally resolved by a decree of the Travis County District Court issued in 1855. The labor of land was then sold on behalf of the heirs to A. B. McGill for \$5,044.50.<sup>15</sup>

While Barton's estate was being settled by the courts and his heirs, occupancy of the property at the springs continued. Wayne Barton, the eldest son, was elected the first sheriff of Austin in 1840, and continued to live at the springs with his siblings and friends of the Barton family. A soldier who fought in the Battle of San Jacinto during the revolution, he applied for the donation land grant of 640 acres he was entitled to as a veteran, perhaps on land adjacent to William Barton's labor at the springs. In 1841, Lewis Capt sold his share of the sawmill business to his partners, several members of the Stussy family. In 1842, two Indian attacks were recorded near the springs, and the cost of a swim became quite dear, since lives were lost in the attacks. In 1845, newspaper accounts reported that John Grumbles, a pioneer and Texas Ranger, had purchased the Barton place at the springs, although the particulars of this transaction are not recorded. Grumbles continued to live near the springs, and participated in a Fourth of July celebration there in 1853, preparing a delicious barbecue meal for the assembled crowd. In all the confusion over the ownership of League 21, originally granted to Henry P. Hill in 1835, court records show that the land was sold at the courthouse steps against property tax debts several times in the 1850s. Hill's ownership of the league of land, exclusive of two subdivisions previously made for William Barton's labor and Wayne Barton's donation grant, was finally resolved by a decision of the Travis County District Court in 1869, in favor of Hill.<sup>16</sup>

As a site of natural wonder, visitors to Austin often made a special trip out to see the springs. A young Rutherford B. Hayes made a horseback trip through Texas in 1848, visiting a college friend in Brazoria County. During that trip, Hayes visited the springs and recorded his impressions in his diary:

*Tuesday, February 20.--Weather warm and balmy, but cloudy. Walk with Uncle over the Colorado to Barton Spring, named after the Barton who sent word to the commanding officer of a company of Regulars, sent out to guard the frontier, that if he didn't withdraw, "he would let the Indians kill them." [The] spring is large but not unusually so. P. M., ride to the top of Mount Bonnel, north of Austin--a steep, high hill overlooking the valley and affording a fine view of mountain scenery, stretching off towards the northwest. Evening spent with Judge Wheeler, talking over old times.<sup>17</sup>*

From court records, dam building at the creek began in the late 1850s. McGill sold the Barton labor to Thomas Collins in 1857. Collins sold the portion of the Barton labor on the north side of the creek back to McGill in 1858, retaining control of the springs and enough land on the north bank of the creek for the construction of a dam or dams. The deed allowed for McGill to construct a dam no more than 4' high at the mouth of "said spring", if he felt it necessary to strengthen the spring. From the deed, it is not clear which spring might need strengthening, nor are there any records of whether a dam or dams were actually built at this time by McGill or Collins. The following year, Collins sold the land on the south bank of the creek and the water rights to Thomas Tumey. A year later, Tumey sold the land and water rights to John Rabb, whose heirs would hold the land for the next century.<sup>18</sup>

John and Mary Rabb were early settlers of Texas, arriving in 1822 as part of Stephen F. Austin's Old Three Hundred colonists. Prior to coming to Barton Springs, they lived in several locations on the Brazos and Colorado Rivers, and built and operated a saw and grist mill in Fayette County. They had nine children. At Barton Springs, they lived in a log cabin and raised a herd of cattle on their 50 acres of land. John died in 1861, and deeded the land to his youngest son, Gail Texas Rabb, with a provision that gave Mary possession and control of the property until the time of her death. Mary and the children continued to live and ranch at the springs. In 1867, Mary had a two-story limestone house built near the log cabin. She died in 1882, and her son Gail and his wife Isabella continued to live at the site. Gail Rabb died in 1929. When Isabella Rabb died in 1934, she left the Rabb homestead and 10 acres surrounding it to her only daughter, Mayme.<sup>19</sup>

After the Civil War, a gradual shift in the land uses around the springs began, as more intensive industrial uses were intermixed with ranching and farming. Civil War veteran William C. Walsh, his mother and three younger brothers moved to the springs in 1866. Walsh farmed, hauled wood and ran a rock quarry with the assistance of his younger brothers. Given that the spring on the north bank of the creek was once called Walsh Spring, it seems that the Walsh place was on the north bank, and probably included the saw mill site that Capt and Stussy had established. The Walsh family owned property at Barton Springs for the next forty years.<sup>20</sup>

Michael Paggi arrived in Austin by 1870 and lived near the springs. He operated an ice manufacturing business and a grist mill at the Old Mill Springs. Paggi's grist mill was described in a newspaper account as follows:

*We visited yesterday Barton's Springs immediately opposite the city. In our*



*Paggi's Mill, circa 1876. (Hermann Lungkwitz painted an image of the mill very similar to this photograph in that year.)  
CO 3293, Austin History Center, Austin Public Library.*



*Eliza Spring, circa 1870. This image was used in a tinted postcard souvenir view. Note the carriage shown in the upper left. PICA 00987, Austin History Center, Austin Public Library.*



*Paggi's Mill, circa 1870. Also used in postcard souvenir views, note the "two-bit tub". PICA 00986, Austin History Center, Austin Public Library.*

*ramblings along the stream we came across Paggi's Grist Mill, which is doing an extensive business. He has one of the springs dammed up, with the waters escaping through a narrow passage which runs his mill, equal to about five horse power. Mr. Paggi turns out about five bushels of meal per hour, and has ready sale for all he can grind. The spring is beautiful, being about two hundred feet in circumference and about fifteen feet deep and arranged around the springs for visitors, where they can sit around and chat, and look at the beautiful trout playing in the deep clear waters. Mr. Paggi does not allow fishing in the spring, as he is trying to raise them and does not want them molested for the present. This is a very pleasant drive and our pleasure seekers should visit it.<sup>21</sup>*

Newspaper accounts in the 1870s also described the springs as a popular destination for Sunday afternoon carriage rides. Paggi encouraged visitors to the site, building a bath-house for changing and renting swimming suits for visitors to use.

*The indefatigable Paggi has been making improvements in his stand near the post-office, where he is prepared to furnish cooling draughts to refresh the inner man. His bathing houses at Barton's Springs are now completed, and he is ready to receive ladies and gentlemen. He provides the bathing suits, and other necessaries. He has also, on the way to Austin, what is called a 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.<sup>22</sup>*

Barton Springs was also a popular spot for military reunions. Walsh, a veteran of the Civil War, was perhaps involved in these. In 1873, the survivors of Hood's Brigade met at the springs to mark the anniversary of the Battle of Gaines Farm. Walsh was seriously injured in that battle, and walked with a crutch the rest of his life as a result of his wounds. In 1875, Terry's Texas Rangers held a reunion at the springs. The newspaper account of the reunion noted the clear, limpid stream, the majestic walnut grove (perhaps a mistaken reference to pecans) and the beautiful spring belonging to Captain Walsh, enhancing the activities of the event.<sup>23</sup>

The interest in harnessing the water power of the springs grew stronger in the last quarter of the 19th century. The western branch of the Houston and Texas Central Railway came to Austin in 1871, opening the local markets to fast, reliable means of transport. The following year, a group of merchants organized a Board of Trade to advance the business and manufacturing interests of the city. Water power, and the manufacturing opportunities it opened, was of particular interest to the Board of Trade. In this spirit, a glowing article was published in the Daily State Gazette in August 1876, describing the springs as follows:

*Local News: Ye business manager spent a day at Barton Springs, and our little party enjoyed the change from the heated streets of Austin to the cool shade of Barton, very much indeed. This, after a sojourn in Austin of nearly three years, was our first visit to this truly pleasant place, and we were agreeably disappointed, for we had no idea of finding such a volume of pure cold water so near our city. It reminded us of the Cold Mountain Springs of Virginia, and made us sigh for home. When Austin is supplied with this water (which will not be long) she can boast of having the best of any city in the Union. With the splendid water power of Barton Springs, it is strange that all you see in the way of machinery or factories is the little "two-bit tub mill", for making corn meal. It has water power sufficient for most any kind of machinery, and is the best opening for a paper mill to be found anywhere. The water is as clear as a crystal, never gets muddy, and is admirably adapted to the manufacturing of paper and Texas can supply the material for all grades of newspaper very cheap. Her grasses are said to possess the finest fiber for this use. It can't be long till Barton Springs passes into the hands of manufacturers. Her water power, etc., has gone unutilized as long as it can. The rapid improvement of Austin will soon dot this creek with splendid factories. There is building stone in abundance. It is easily worked and of a very superior quality.<sup>24</sup>*

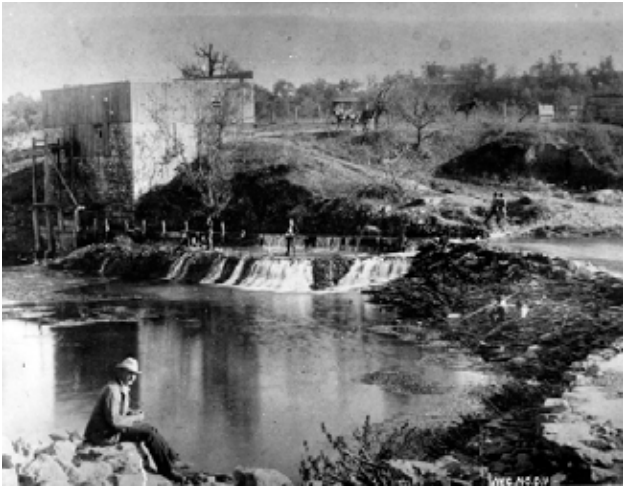


*English & English Mill, circa 1880.  
PICA 00975, Austin History Center, Austin Public Library.*

The reference to a “two-bit tub mill” in the article may have referred to Paggi’s mill, which had been in operation for about five years. Paggi, in addition to suffering the backhanded criticisms of the business reporter, also struggled with the ebb and flow of water from the springs. The water became quite low at the Old Mill Spring in late 1876, a condition reported in the *Daily Democratic Statesman* in January 1877:

*People who have been over to Paggi's mill and listened to the roar and rush of water from the immense Barton's Spring, which has so long been the pride of this city, will be astonished and mortified to learn that it has nearly gone dry and that now only a hole of muddy water is to be seen where a boiling bubbling spring with sufficient volume to turn a mill has roared for ages gone by. The spring has been failing for a long time, and Mr. Paggi has not, therefore, been able to run his mill for three or four months past. But very little rain has fallen in this section in the past six months, and whether the beautiful Barton Spring will resume its past vigor when the rains set in again remains to be seen. Possibly the damming of the spring for mill purposes has forced a change in the vein, and that now the outlet is in the bed of the river.<sup>25</sup>*

At about the time the *Gazette* article about the untapped power appeared, Gail Rabb leased the creek water power and an acre of land to Michael English, E. G. Dorr and Robert English for the construction of a mill. The lease stipulated that the mill be built on the south bank, downstream of Walsh’s Spring on the north bank, with a dam of a height not more than sufficient to raise the water eight feet above the present water level of the



*English & English Mill, circa 1880.*  
CO00077A, Austin History Center, Austin Public Library.

*Robert Thomas Hill, a geologist with the United States Geological Survey, described the springs in On the Occurrence of Artesian and Other Underground Waters in Texas, Eastern New Mexico and Indian Territory, West of the 97th Meridian, published in 1892.*

*In the vicinity of Austin are other groups of artesian springs of remarkable beauty and scientific interest, breaking along the line of the great fault in which the Colorado flows . . . . Of these Taylor and Barton springs are the best known. The latter group occur in each side of Barton Creek, near its junction with the river and flow superb volumes of water. A mill is run by the water power from Barton Springs, but it would be impossible to conduct irrigation with the waters owing to their low position relative to the Colorado. The water power which is now mostly wasted should be utilized. These springs are beautifully situated and are the favorite resort of the people of Austin; they are surrounded by pleasing groves of pecan timber and picturesque rocks. Their aggregate volume must reach many thousands of gallons per minute.*

*Based in part on the research compiled by Hill, the USGS began measuring flows at the springs in 1894.*

stream. The lease also allowed for the use of two additional acres of ground for a residence and garden by the proprietors of the mill, and prohibited any interference with Paggi's mill, as well as the grinding of corn for meal, the sale of spiritous liquors and nude bathing in the creek.<sup>26</sup> The Daily Democratic Statesman reported on the progress of the construction of the mill several years later:

*A reporter of the Statesman yesterday paid a visit to the new flour mill being built over on Barton by Messrs. English, Dorr and English. The mill is three stories high and of good size, and by the latter part of next week everything will be in readiness for manufacturing flour. They have a turbine wheel, which, with their present supply of water, will give them forty-horse power and turn two run of stone of four feet each. Fifty barrels of flour a day is the present capacity of the mill, but this can be doubled whenever occasion demands. The Messrs. English, father and son, are practical millers, and Mr. Dorr was formerly connected with the city hotel.<sup>27</sup>*

The Englishes continued to operate the flour mill through the 1880s until a fire destroyed the facility in 1886. The Englishes ended the agreement with the Rabbs, which had been negotiated through 1896, removed their machinery from the site and conveyed the mill dam, foundation, race wall and water wheel flume to the Rabbs.<sup>28</sup>

Around the time of the fire, Rabb sold a 5.85 acre portion of his land to Jacob Stern. The property included the Old Mill Spring and the improvements and mill built by Mr. Paggi. The Rabbs retained all their rights to Barton Creek and the creek water power. Mr. Stern operated the Barton Springs Feed Mill at the site.<sup>29</sup>

In 1890, Rabb sold land on the south bank of the creek, including the creek bed and water power rights but exclusive of the tract sold to Stern, to Richard Wooley of San Antonio, for \$15,000. Rabb retained a vendor's lien on the transaction. It is unclear whether Wooley actually took possession of the land, and Rabb sued Wooley when he did not make the second payment on the sale. Rabb recovered the land in 1895.<sup>30</sup>

By the turn of the century, the Rabbs owned considerable acreage in portions of the original Henry P. Hill league, on beyond the south portion of the Barton labor. They began to sell these lands off to various buyers, and thus begins the next major transition at the springs. In 1907, Gail Rabb sold the land along the creek, including the Main Spring, to A. J. Zilker. Rabb reserved a tract upstream of the Main Spring for the Rabb residence.<sup>31</sup>

Andrew Jackson Zilker, an Austin businessman, was born in New Albany, Indiana. As a youth, he read a description of Austin in Henderson Yoakum's *History of Texas*, and on the basis of this description decided to make his way to Austin. He arrived in 1876 at age



eighteen, on a Saturday night with only fifty cents in his pocket. He spent half on lodging and the other half on food, went hungry the next day and got a job on Monday as a construction worker on the International and Great Northern railroad freight depot.

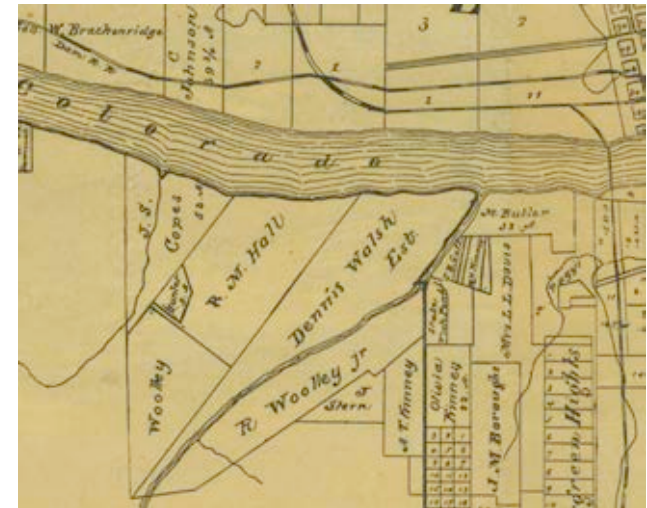
Zilker became interested in the workings of an ice plant on Colorado Street on the north bank of the river. He took a job there as a fireman, earning \$1.25 a day, to satisfy his curiosity about how artificial ice was made. After a few weeks he was employed as the plant engineer, and three months after that, he leased the plant from the owner. He went on to own and operate his own ice plant, and was engaged in the ice business in Central Texas for the rest of his life.<sup>32</sup>

He held a number of business and political positions, outside the artificial ice business. He was a volunteer fireman, a city alderman for the Tenth Ward and was the Water and Light Commissioner in Austin for a time. He was a director of the First National Bank. He was especially interested in education, and was on the Travis County Board of Education for many years. He was an advocate of practical education in the public schools, including manual training and home economics, in “the useful arts and sciences”, and could point to his own rags to riches story as an illustration of the importance of this training.

Zilker married Ida Pecht in 1888, and the couple had four children. In 1899, the family moved in to a handsome two-story house Zilker had built at the corner of East Second and San Jacinto. In 1901, Zilker began acquiring property around the springs, when he purchased about 350 acres on the south bank of the Colorado. He continued to accumulate property in this area through 1913, acquiring Walsh’s Spring (Eliza Spring) on the north bank of the creek in 1901 and the Main Spring and Old Mill Spring on the south bank of the creek in 1907.<sup>33</sup>

Zilker used the land for farming and ranching. He raised feed for horses, which were used in the ice business. Large blocks of ice were delivered by horse-drawn wagon to homes throughout Austin, for use in ice box refrigeration. He also raised livestock on the ranch.

Andrew Zilker was an early member of the Benevolent and Protective Order of Elks, Austin Lodge #201, which was founded in 1891. The Lodge membership underwent a growth period in 1901, when 65 new members were added to the rolls in three months. In 1902 the membership jumped to 196, and in 1903 Lodge #201 hosted the Elks “State Encampment”, a convention gathering of lodges from across the state of Texas. Zilker had a stepped amphitheater structure built around Eliza Spring at about the time of the State Encampment, perhaps even in honor of the event. The amphitheater is an open-air



*Austin and Surrounding Properties, 1891, Bergen, Daniel & Gracy. Excerpt showing land owners surrounding Barton Creek. Texas General Land Office, Map 421.*



PICA 00972, Austin History Center, Austin Public Library.



PICA 00971, Austin History Center, Austin Public Library.



PICA 00973, Austin History Center, Austin Public Library.

*Three views of the Zilker Amphitheater, at Eliza Spring. The photographs are undated, but were probably taken around 1915. These may even be views of the “R.N.G. Club”, described by Zilker’s grandson, A. Z. Thompson.*

*The R.N.G. Club is spending a few days in camp at Barton Springs under the chaperonage of Mr. and Mrs. Bonear. Among those who are enjoying the “simple life” are Ann Zilker, Kathalene McCallum, Evelyn Chumney, Winifred and Katherine McQueen, Daisy McCullough, Lois Martin, Mary Clark Weir of Houston, Bessie Malone, Eloise Thatcher, Elenore Atkinson, Theresa Martin, Helen Haynes and Katherine Alford.*

*Undated newspaper clipping, cited by Andrew Zilker Thompson during an address.*

meeting space, built in a large stepped oval around the mouth of the spring. The scored concrete walls above the stepped seats of the amphitheater are decorated with an embossed elk and the star and wreath insignia of the Elks. Two smaller panels are incised to read “Wm. Barton’s Springs, March 10, 1838” and “A. J. Zilker, Feb 24, 1903”. The 1903 date may be the construction date of the amphitheater.<sup>34</sup>

The Zilker family used the springs for family gatherings and celebrations. Andrew Zilker Thompson, a grandson, described a time when his mother, Ann, and a group of friends dubbed the R.N.G. Club (which stood for the Rough Neck Gang Club) camped at the springs in 1915. Mr. Zilker “would visit the campers and bring them food and young men from the University would come out with their banjos and serenade them.” Andrew and Ida Zilker were planning to build a house on the land, in about the location of the current Zilker Garden Center, when Ida Zilker died in 1916.<sup>35</sup>

In 1917, Zilker approached the Austin School Board and the City Council with an offer to donate the tract of land at Barton Springs to the public realm. He proposed to donate about fifty acres of land, including the four springs at Barton Springs, to the School Board, on the condition that the city purchase the land from the schools for use as a public park. The purchase price of \$100,000 was to fund an endowment for industrial education and home economics training in the schools, called the Zilker Permanent Fund. The particulars of the arrangement were presented in August to both bodies, including a provision for a thirty foot wide easement from Bee Cave Road to the creek, to allow Zilker’s livestock access to water. Zilker also allowed for the possibility of an easement across his lands to

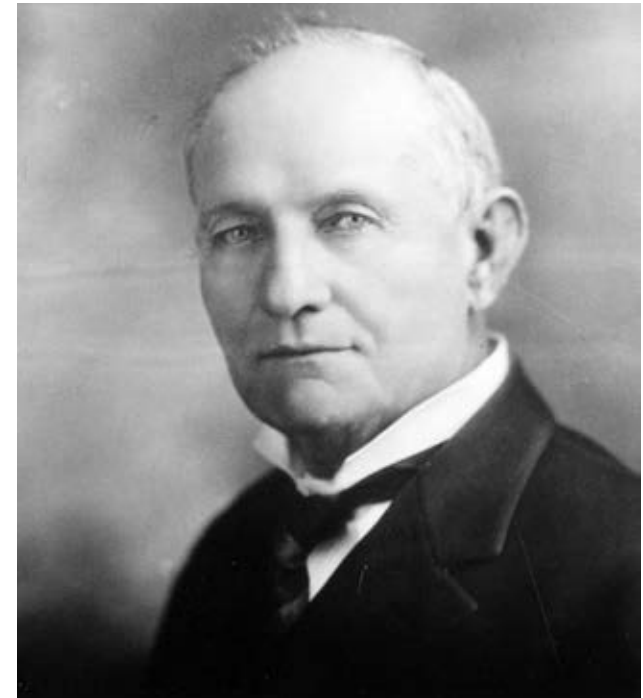
the city, should it choose to use the springs as a source of municipal water, for laying water mains from the springs to a remote pumping station. The Council accepted the proposal, in principle, and set an election for October to obtain the consent and authority of the voters.<sup>36</sup>

Following the election, in which the voters approved the purchase of Barton Springs, the Council met on December 15, 1917 to consider a resolution to move forward with the transaction. The question almost failed, with two of the five Council members voting against the resolution. Concerns were raised over the size of the tract, which was determined to be only thirty-seven acres in size, once surveyed, as opposed to the “more or less fifty acres” previously described. Also, while the voters approved the purchase, there were 799 votes in favor and 635 votes against, and the passing margin was 157 votes less than a two-thirds majority. The two Council members who voted against the measure felt that the level of support for the purchase of Barton Springs was not sufficient to justify taking on the indebtedness required. The city attorney advised that all was in accord with the city charter and prepared the ordinance making the property transfer. The Council passed the ordinance by a vote of three to two on January 3, 1918, authorizing Mayor A. P. Wooldridge to accept a warranty deed from Zilker, execute promissory notes for payment and levy taxes to pay the notes and interest. The \$100,000 payment was made in \$10,000 increments, with 6% interest, over the course of the next ten years.<sup>37</sup>

On January 15, 1928, Mayor P. W. McFadden made the final payment to J. Harris Gardner, with Austin school board, in a ceremony at the Majestic Theatre. Gardner presented the mayor with the deed to Barton Springs, and read a resolution of appreciation to Zilker from the school board. Andrew Zilker was proclaimed Austin’s Most Worthy Citizen of 1927. Over 800 people attended the awards ceremony, and more stood outside trying to get a seat. Zilker was lauded by state, city and school board officials and was presented a Hamilton watch by The Austin American newspaper. In his remarks, Zilker spoke about the things that moved him to make the gift to the public.

*Barton Springs is a sacred spot, dedicated to the memories of Robert E. Lee and Albert Sidney Johnston. We felt that it would be a wrongful thing for this beauty spot to be owned by any individual, and that it ought to belong to all the people of Austin. .... Who knows but what, through the discovery and development of talent in Austin schools, we may find here another Edison?*<sup>38</sup>

In 1931, Zilker made a second donation of land to the public, under the same arrangement as the first gift. He gave an additional 300 acres of land, adjacent to the first gift, to the school board, on the condition that the city purchase the land for use as a public park



*Andrew Jackson Zilker, undated, but probably around 1927. PICB 11162, Austin History Center, Austin Public Library.*

*Save a little of what you have, and always remember that success is based on hard work.*

*A. J. Zilker*



*Barton Springs, circa 1917. This image was included in Report on the Dam and Water Power Development at Austin, Texas. Austin History Center, Austin Public Library.*

for \$200,000. In 1934, he gave a third tract of land to the city, adjacent to the first two gifts. The three tracts make up present day Zilker Park, the largest metropolitan park in Austin. In 1931, Zilker was again named Austin's Most Worthy Citizen. He died on June 20, 1934, and his funeral was attended by dignitaries from state, county and city government and the school board. In 1950, Zilker Elementary School was named in his honor.<sup>39</sup>

Once the city acquired Barton Springs, they had an abundant source of municipal water. There was a severe drought in Central Texas in 1917 and 1918, limiting crop production in an era when horses and mules were used in most businesses, not motors and engines. The United States entered World War I at this time, and the Austin Chamber of Commerce worked to establish a military camp or facility near the city. As water supplies fell, it became clear that there was barely enough water for the citizens of the city, let alone a military camp. The Chamber prepared estimates for piping water from Barton Springs under the river and into the municipal water supply infrastructure. Rains began, relieving the drought conditions, and the massive undertaking was never begun.<sup>40</sup>

Instead, the city fathers began to think of the springs as a municipal amenity and a tourist attraction. By 1920, Austin had been dubbed the "Automobile City of Texas" by the *Austin Statesman*, and there were 6,000 vehicles in the county. In 1921, work began on several automobile tourist camps in Austin parks, including one at Barton Springs. Godfrey Flury, a painter with an emphasis in outdoor advertising, donated road signs for the new campgrounds. The billboards may have been effective in directing tourists to the springs, but many in the city found billboards unsightly, and by 1928 the citizens had amended the city charter to prohibit billboards.<sup>41</sup>

In 1922, the Chamber of Commerce and the Lions Club funded the construction of a public bathhouse on the north bank of the creek. The two story wooden structure was designed by Hugo Kuehne, Austin native, MIT trained architect and an organizer of University of Texas School of Architecture. In 1915, Kuehne established a private architectural practice in Austin and completed many projects for the City of Austin. He also served on city boards and commissions, including the Parks Board and the Planning Commission. The building had men's and women's dressing rooms on the first floor, a dance pavilion on the second floor, and a wide promenade on three sides.

A 1923 article in a special Industrial Trade and Expansion issue of the *Austin Statesman* described the many attractions Austin offered to tourists.

*Less than two miles from the heart of Austin's business district is to be found Barton Springs which promises to become the playground of the city's denizens. The city*



*City of Austin and Suburbs, 1925, Dixon B. Penick. Excerpt showing Barton Springs as a "free tourist camp". Texas General Land Office, Map 76203.*

*authorities are expending a considerable sum of money to make the park about the springs attractive for visitors and a bathing resort has been conducted there for several years. Up-to-date facilities, including a bathing pavilion, are being installed to make the place as attractive as possible to those who on a hot summer's day seek a place to cool off.*

*Among conveniences that are being provided at Barton Springs for automobile tourists are electric lights and water pressure. Hydrants supplied from an underground water pressure system are being placed at convenient distances to provide a convenient water supply for camping motorists.<sup>42</sup>*

In 1927, the City Council instructed the City Manager to install a septic tank at the tourist camp grounds, and also approved plans for restrooms at the camp. By 1928, though, the vision for the use and development of the park had changed, and the Council voted to discontinue the tourist camp at the site.<sup>43</sup>

Public interest in developing a city parks system came in to full force in the mid-1920s. A 1923 editorial in the *Austin Statesman* decried the limited supply of public park land, finding the supply of less than one acre for every 1,000 inhabitants deficient. The editorial noted that the city was growing, and advocated setting aside large tracts for parkland, to avoid the possibility of later having to tear buildings down to create parks.<sup>44</sup>

The growth in Austin taxed the existing city infrastructure of utilities, amenities and public services. As a remedy, Austin adopted a council/city manager form of government in 1926 and the Council instructed the new City Manager, Adam Johnson, to prepare a plan of action to solve the problems. To assist in this effort, an unpaid advisory board called the City Plan Commission was created, and the city hired the Dallas firm of Koch and Fowler Engineers to prepare a city plan for Austin.

In 1928 the City of Austin adopted a five-year plan that recommended the development of parks ranging from small neighborhood playgrounds to large nature reserves. The Koch and Fowler plan spoke favorably of Barton Springs Park, and made specific recommendations for improvements that might be made in the park.

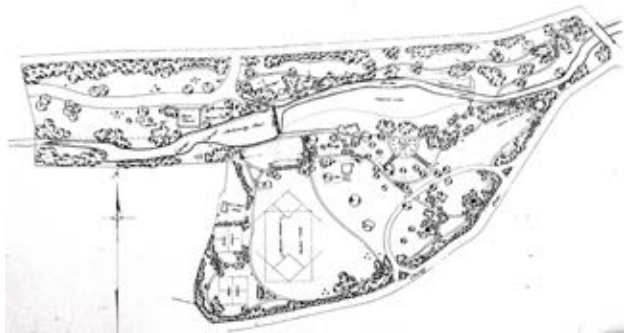
*The city is also fortunate in the possession of Barton Springs Park. This is a tract of thirty-seven and thirty-one one hundredths acres upon which considerable improvement has already been made, and for which future improvement plans have been adopted by the present City council with the idea of installing such improvements immediately. This park should be enlarged on the east by the acquisition of the property remaining between the present property and the rock bluff. The proposed improvements for the development of Barton Springs Park are*



*Barton Springs Pool, circa 1918.  
PICA 20641, Austin History Center, Austin Public Library.*



*Barton Springs Pool, circa 1925. Prior to the construction of the permanent dam, temporary rock dams were built each spring to make the pool. C01803, Austin History Center, Austin Public Library.*



*Plan Showing Development of Barton Springs Park, from A City Plan for Austin, Koch & Fowler, 1928.*

*shown on Plate No. 5 of this report.<sup>45</sup>*

The first parks board, actually a committee of businessmen from the Austin Lions Club, was formed in 1928, and a bond election for park and playground acquisition and development funds was passed the same year. That same year the City established the Recreation Department and hired its first paid Superintendent of Recreation, James Garrison.

In October, the City Manager presented his program of proposed improvements at Barton Springs, to include “the erection of a dam, retaining wall, storm sewer and other improvements”. The Council approved the recommendations of the City Manager and authorized \$50,000 for the work. Bids were taken immediately and presented to the Council a month later. Contracts were awarded to J. A. Johnson for \$22,536.25 and to C. A. Maufrais for \$3,590.50.<sup>46</sup> The drawings for the dam and retaining wall work were prepared by the City Engineer’s office in October 1928. The work included the current downstream dam and a children’s wading pool, installed in the shallow end of the Pool. The children’s wading pool had a raised concrete floor, installed over several feet of gravel fill, and a retaining wall surrounding it. The drawings also included a sidewalk on the north bank of the creek, adjacent to the children’s wading pool.

The following year, the Council considered bids for paving, curbs and gutters for parkways and driveways in Barton Springs Park. They also approved the plans for a concession stand and caretaker’s cottage, both designed by Hugo Kuehne. The concession stand, designed to suggest the appearance of a wind-powered mill, was built on the north bank of the creek, to the east of Eliza Spring. It was demolished in 1959, when the current concession stand was built. The caretaker’s cottage is still in use, although it is within the fenced perimeter of the parks maintenance compound.

In late 1929, the Council received bids for the construction of baseball diamonds and bleachers, and the construction took place the following year. The baseball diamonds remain today on the south bank of the creek. At the end of the year, the Parks Board recommended the expenditure of an additional \$14,045 for the construction of a concrete trap dam above the children’s wading pool (the current upstream dam), sidewalks on the north and south sides of the Pool, retaining walls on portions of the north and south sides of the Pool and the removal of accumulated gravel from the Pool. The Council approved the request, and considered bids for the work in early 1930. A bid of \$3,949.40 from the Austin Bridge Company was accepted for the construction of the trap dam, upstream of the children’s wading pool. Sidewalks and retaining walls on the south side of the Pool were also built in 1930. Playground equipment, fences and backstop improvements were



*Pool, downstream dam and “mill” concession stand, circa 1939. PICA 22842, Austin History Center, Austin Public Library.*



*Construction of the downstream dam, 1928.  
C01818, Austin History Center, Austin Public Library.*

installed, as well.<sup>48</sup>

At the end of 1931 the Council accepted in principle another gift of land from A. J. Zilker of over 300 acres, located north of the Barton Springs Park tract. Mr. Zilker proposed a similar arrangement as had been done for Barton Springs. Perhaps beginning to feel the pinch of the Great Depression, the Council asked for more favorable terms, in the form of a reduction on the interest rate to be paid. Mr. Zilker declined, wishing to endow the school fund to the greatest extent possible. The question was put to the voters, who approved the purchase of the new parklands. Ultimately, the Council paid one quarter of the purchase price in a lump sum, saving the interest expense that way. The deed for the new park was conveyed in August 1932. In May 1933, the Council passed a resolution



*Pool, and wooden bathhouse, circa 1926.  
C01825, Austin History Center, Austin Public Library.*



*Barton Springs Pool, circa 1925.  
C01802, Austin History Center, Austin Public Library.*

*Aerial view, Barton Springs Park and Zilker Park, circa 1934. The old Bee Caves Road is still in place in this image, just above the pool parking lot. The new park roads are being laid out. PICA 17205, Austin History Center, Austin Public Library.*



creating a single park from the tracts of land, to be called Zilker Park, in appreciation of the generous gifts of A. J. Zilker.<sup>49</sup>

The new parkland would require considerable investment of planning and design to convert the ranch and farm lands and the old quarry and clay pit sites to a beautiful recreational amenity. Once the plans were laid, another investment in the construction of the improvements would be required. For similar projects, such as Shoal and Waller Creek improvements, the city had worked together with the Texas Reconstruction and Relief Commission. The city provided materials, tools and technical supervision, and the TRC provided labor. The federal government provided the funding, which was administered by the state agency. A similar arrangement would be used for the work at Zilker Park.

Charles H. Page, a local architect, was appointed to the Park Board in 1933. Page had





*Aerial view, Barton Springs Park and Zilker Park, circa 1934. The old Bee Caves Road is still in place in this image, just above the pool parking lot. The Zilker Ponds are under construction. PICA 17206, Austin History Center, Austin Public Library.*

been practicing architecture in Austin since before the turn of the century, his firm specializing in the design of schools and courthouses. He completed work on the Travis County Courthouse shortly before his appointment to the Park Board. Page prepared the overall design for the development of Zilker Park, which was presented to the Park Board at the end of 1933. Page also secured the support and funding of the Civil Works Administration for the project. Funded for \$94,000, the Zilker Park project was the most generously funded CWA park project in the state.<sup>50</sup>

Although the project emphasized the new, undeveloped tract to the north of the Barton Springs Park tract, there were changes and improvements made in the vicinity of the Pool. A bandstand was added on the hill above the north bank, and above that a “rock garden” (the Zilker Ponds) was built. The entrance road and parking areas were also reconfigured. As the work was nearing completion, an enthusiastic article in the local newspaper



Zilker Ponds, "Charlie Page's rock garden", circa 1938.  
PICA 20146, Austin History Center, Austin Public Library.



Zilker Ponds, being filled with water, circa 1938.  
PICA 01001, Austin History Center, Austin Public Library.

described the project and the rerouting of traffic:

*..... the old asphalt road from the bridge to the entrance of the swimming pool will be abandoned as a roadway. Cars headed for the pool in the future will enter the park, then bear to the left over a hill by the old reptile institute, pass through the old gravel pit and into the pool's parking area at the present exit on the southwest. Returning autos will come out over a short stretch built from the old entrance to the county road. Traffic thus will be moved in a loop with congestion at the point of entrance to the pool eliminated. The old road will not be torn up, Dale said, but will be leveled down for use as a roller skating surface up to the old Barton Springs entrance point. Beyond that, it will be cut away to give a view of Charlie Page's rock garden.<sup>51</sup>*

In the spring of 1934, the CWA was closed and the Zilker Park project was shifted to the control of the National Parks Service, through the Civilian Conservation Corps. CCC Company 1814 set to work in the park at the end of April. The CCC work diaries note that the rustic light standards at the entrance to the Barton Springs area were built that spring, as were the Zilker Ponds. The park was opened to great fanfare in the summer of 1934.<sup>52</sup>

In April 1934, A. J. Zilker made a third gift to the city of 32.5 acres, located west of Barton Springs Park, on the north bank of the creek. Zilker suggested that this new park be called Page Park, in recognition of the work of Charles H. Page, Sr. in the design and construction of the improvements to Zilker Park under the RFC, CWA and CCC. This final gift of land was just that -- a gift out right, without any money changing hands. The Council was again moved to publicly thank Zilker. Zilker, who had made the gift while ill and bedridden, died a few months later.<sup>53</sup>

In 1933, the Recreation Department began the practice of annual reporting to the Council. The reports described activities and expenditures for the year, and included references to programmatic, operational and maintenance and improvement work completed during the reporting year. The annual reports are an interesting window in to the changes the department and the park facilities underwent, over time.

The major activities of the 1930s were program and activity oriented. A tradition for organized entertainment at the Pool was begun in these years, with swim meets, diving exhibitions, holiday pageants and celebrations and regular dances at the dance pavilion and band stand. Large crowds of spectators looked down on the Pool from the north bank. In 1933, the Lions Club petitioned the Council "to have erected at once long rows of cement seats on the north side of the Barton Springs bathing pool In order to better accommodate



*Entry gate to Barton Springs Pool, showing flood waters up to this level, June 15, 1935.  
PICA 04154, Austin History Center, Austin Public Library.*



*Sunken Garden, 1993.  
Photo: Alan Pogue.*



*Barton Springs Pool, opening day, 1936.  
PICA 01009, Austin History Center, Austin Public Library.*

the large crowds that visit this resort.” The City Manager was asked to look in to this, and several years later the gallery seats were built. A bathing apparel review opened the 1937 swimming season, an event attracting some 5,000 spectators. Community singing, with weekly Thursday Night Sing-Song and swing music events, and gospel Sunday Night Sing-Song events were held at the bandstand on the hillside overlooking the Pool.<sup>54</sup>

There were also two big flood seasons in 1935 and 1936, and the Pool was closed for extended periods those years. The Pool was closed twelve times in 1935 due to flooding. The flood of June 15, 1935, was perhaps the largest flood on record since 1869. The water coming down the creek and the water rising from the river converged at Barton Springs, rising to the level of the roofs of the wooden bathhouse and concession stand. The bandstand was completely destroyed, washed away in the flood. It took six days of intensive cleaning by 65 laborers and the entire Recreation Department staff of life guards and playground leaders to clean the site and get it open in time for the big 4th of July celebration at the Pool that year. The Pool was closed five times in 1936 due to flooding. During the flood of July 16, 1936, a 20 foot wall of water came down Barton Creek. The Pool was closed for eight days for cleaning after the flood.<sup>55</sup>

After these floods, the Recreation Department made repairs to the wooden bathhouse and cleaned the grounds and the Pool. Additional assistance was provided by another federal relief agency, the National Youth Administration. The NYA was created in 1935 for the purpose of providing training and employment to youths 16 to 25 years of age. Again, the city provided supervision, materials and tools, and the NYA provided funding and labor. In 1936, a new band stand and comfort station was built on the hillside overlooking the Pool. The band stand, an open air platform, was used for the singing and music events held at the Pool throughout the swimming season. The comfort station, restrooms for men and women at the level below the band stand platform, was a welcome addition to the site.

In 1938, another NYA project was begun at the Old Mill Spring, Austin’s first “municipal sunken garden”. The project was designed by Delmar Groos, one of the architects who designed the Deep Eddy Bathhouse for the Recreation Department the year before. Groos had worked for the Recreation Department in his youth as a lifeguard and basket boy at Barton Springs, and was listed as the manager of the Pool in the 1935 city budget. He studied architecture at the University of Texas and established a practice with Dan Driscoll, an architectural engineer, in 1935. The Sunken Garden, a series of terraced flagstone platforms stepping up from the spring pool, was designed as a gathering and picnicking place. A flagstone stage and picnic tables to seat 300 were built on the stone terraces.<sup>56</sup>



Even with the repairs to the wooden bathhouse made by the Recreation Department, the severe flood damage compromised the building. The floors of the dance pavilion heaved and buckled under the standing water, and the dances were no longer held at the building as a result. The park and the Pool grew in popularity, and 1938 was a record year for attendance. During World War II, Zilker Park and Barton Springs hosted large groups of bivouacked troops, with special swimming, musical and recreational events staged for the men. Maintenance and construction work during the war years was limited to small repair and addition projects, although the records mention the construction of a shallow gate in the lower dam at the Pool. Mrs. Goodall Wooten donated an aviary, placed near the Pool in 1943, stocked with parakeets, love birds and cockatiels. Community singing and musical performances continued at the hillside above the Pool. Swimming slacked off in the summer of 1945, due to a polio scare, but music remained popular, particularly at the end of the summer when gasoline rationing was lifted. In 1946, an enclosed ballcourt (now used as a maintenance building) was built near the caretaker's cottage.<sup>57</sup>

In 1946, the old wooden bathhouse was razed and construction began on a new masonry bathhouse to commemorate the thirtieth anniversary of the city park. The new bathhouse was designed by Dan Driscoll, with assistance from Delmar Groos and Chester Nagel. Driscoll had worked as a staff architect for the Recreation Department in the late 1930s, and was an architect with the City Engineering Department when the Bathhouse construction drawings were prepared in 1945. The new Bathhouse included a central service office, with good views of the approach from the park and entrances to the public restrooms and dressing rooms. Tickets and basket tokens were issued from the service office. The basket



*Dedication ceremony for the new Bathhouse, March 23, 1947 (above). PICA 20163, Austin History Center, Austin Public Library.*

*Bathhouse, south elevation, circa 1947 (left). PICA 17226, Austin History Center, Austin Public Library.*



*Bathhouse service office, central rotunda, circa 1947. PICA 17393, Austin History Center, Austin Public Library.*



Many civic events have been held at the pool, like this one, circa 1940. PICA 17281, Austin History Center, Austin Public Library.



Barton Springs Pool, circa 1950. C01801, Austin History Center, Austin Public Library.

rooms were efficient, sanitary rooms, with a custom designed basket-hanger system that took up a minimum of space. The building materials were selected for maximum durability and minimum absorption. The project was published in *Architectural Record* magazine, a leading architectural journal, and described as a model of efficiency, beauty and durability. During the course of construction of the Bathhouse, the Pool remained open, but no admission was charged. The new Bathhouse was dedicated on March 23, 1947, the highlight of the year for the Recreation Department. A bronze plaque was unveiled, with the inscription:

*In memory of Colonel Andrew Jackson Zilker. Friend of the people and of school children of Austin, he gave this beautiful park as a rich endowment dedicated to the happiness of the citizens of his beloved city, and their neighbors.*<sup>58</sup>

In the 1950s, attendance at the park and the Pool was strong. The Parks and Recreation Board, which had been dormant since 1940, was reactivated in 1951, and charged with studying the system of parks and recreation in the city. In general, the Parks and Recreation Board found that more playgrounds were needed in the city, and plans were developed for a play area in Zilker Park in 1952. The singing program had been expanded to include fine arts and theatre presentations. A permanent, concrete stage was constructed at the Zilker Hillside Theatre in 1952. Nature and wildlife programs were begun at the new theatre the following year. A new, permanent band shell and lighting were added to the Zilker Hillside Theatre in 1957. On the south grounds, the parking area at the south entrance to Barton Springs was enlarged and gravelled in 1952. New lighting was installed at the baseball diamonds in 1957. At the Pool, aluminum diving boards were installed in 1953. In 1955 and 1956, a time of drought, the flows at the springs were lower than usual. For the next three years, though, flooding caused serious damage and the Pool was closed for long periods during the swimming season for clean up and repair.<sup>59</sup>

In 1955, the City acquired the old Rabb house and surrounding 29 acres of land on the south bank of Barton Creek. The Parks and Recreation Department had identified this as a vital property acquisition as early as 1953. The Builders Development Corporation assembled the Rabb land holdings and other adjacent parcels to create the new Barton Hills subdivision. The City purchased the property to provide a buffer between the new subdivision and the springs. The old Rabb house had partially burned in 1943, but Mayme Rabb continued to live there. After the City acquired the property, the remainder of the house was burned in 1956.<sup>60</sup>

The old mill concession stand was demolished, and a new concession stand was built



*A day at Barton Springs.  
Photo: Megan Peyton.*

in 1960. The structure is still in use today, located between Eliza Spring and the Bathhouse. In 1960, students from Austin High School, including a daughter of longtime Parks and Recreation Board member Bertha Means, began holding swim-ins at the Pool to protest the tacit segregation that had occurred in years past. The following year, the tacit policy was officially changed and the springs were integrated and open to all the citizens of Austin. The Zilker Eagle miniature train was put in operation in 1961, a surprising source of revenue for the park ever since. Jack Robinson, son of former Zilker Park manager “Buster” Robinson, became the manager at Barton Springs in 1965. The Pool was closed 40 days of the six month swimming season due to flooding. In 1966, the Pool was closed for 11 days during the swimming season, due to flooding. Also in that year, the Barton Springs staff “experimentally” moved the ticket taking function from the entry rotunda to the south gallery of the Bathhouse. The year after that, the office, lifeguard room and ticket taking functions were moved to a permanent space, built in the southeast corner of the women’s dressing area. In 1969, the Parks and Recreation Board and PARD Director Beverly Sheffield included a recommendation for the construction of a “culvert” to catch polluted creekwater that would otherwise enter the Pool.<sup>61</sup>

In 1971, the Zilker Playscape was opened adjacent to Barton Springs. The Pool was opened year round for the first time in March 1972. In 1973, the Pool was closed for long stretches due to flooding. Tree maintenance work was done at Barton Springs and Zilker Park. The Pool was closed at the end of 1974 and construction was begun on a floodwater bypass tunnel in 1975. The work was delayed by several months by a summer flood. The Pool reopened in March 1976. In 1978, an attendance record was set for the year with 421,000 bathers using the Pool.<sup>62</sup>

The Pool was closed for long stretches in 1981 due to the Memorial Day flood and a subsequent flood in June. Repairs, including installing concrete on portions of the shallow Pool bottom and restoring gravel on the shallow “beach” on the north side of the Pool, were completed twice that year. In 1985 the Barton Springs Historic District was listed on the National Register of Historic Places.<sup>63</sup>

In 1990 Barton Springs Pool and Bathhouse were designated City of Austin Historic Landmarks. In 1992, citizens of Austin led the initiative for the Save Our Springs Ordinance to protect the aquifer and the springs. In 1996, the Austin Nature and Science Center opened a new satellite facility in the Bathhouse, including a gift shop, classrooms and an exhibit hall. In 1997 the Zilker Park Historic District was listed on the National Register. Also in that year, the Barton Springs Salamander was listed as an endangered species by the



U.S. Fish and Wildlife Service. Degradation of the quality and quantity of water feeding Barton Springs was cited as a primary threat to the species. The Parks and Recreation Department and the Watershed Protection Development and Review Department formulated guidelines for the management of the surface habitats of the salamander, changing the operation and maintenance procedures at the Pool to gentler practices. In 1998, the educational exhibit Splash! Into the Edwards Aquifer was opened at the Bathhouse by the Austin Nature and Science Center. The permanent exhibit tells the story of water migration through the Edwards Aquifer ecosystem.<sup>64</sup>

On June 29, 2002, a wall of water flowed down Barton Creek and through Barton Springs Pool. The flow continued until July 11. The staff of Barton Springs Pool worked furiously after that date, cleaning and repairing the flood damage. The Pool was reopened to the public on July 20, 2002.<sup>65</sup>

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# MASTER PLAN

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*"Yellow Fins", Will van Overbeek*

*This chapter describes the plan geographically to allow the reader to understand the proposals for individual parts of the planning area. In general, existing conditions are described, followed by relevant observations and recommendations.*

*Some matters that are better discussed globally rather than geographically, like interpretive planning, sustainability and art in the park seemed to warrant their own discussion, which can be found in "Special Considerations".*



# PLAN OVERVIEW

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This chapter describes the plan in its constituent parts to offer understandings of specific proposals and their impact on particular places or elements within the park. It is presented in three broad categories: the Pool, the grounds and the buildings. In general, existing conditions are described, followed by relevant planning concepts and observations; then recommendations.

This chapter also discusses one matter that affects the entire park; the planning attitude toward the landscape. Its discussion is found in “Grounds Overview”. It concerns the decades-long trend towards suburbanizing the landscape, and its effects on contemporary issues such as plant diversity, an interest in native species and sustainability.

There are also matters of an equally global nature that seemed to warrant their own detailed discussions: the interpretive plan, sustainability and art in the park. Their discussions are found in “Special Considerations”.

The interpretive plan is a first-order concept that has become a fundamental goal and whose reach is found throughout the planning area. It gives an official voice to the long-standing community advocacy for the Pool that is embodied by such groups as the Save Barton Creek Association, Friends of Barton Springs Pool and the Save Our Springs Alliance.

Sustainability is a fundamental value for the City of Austin. Its details tend to be technical, and its logic is best understood when discussed in wholistic terms.

Art and performance also seemed to warrant their own discussion, since they breathe a special kind of life into the place. Plus, opportunities for them were found in unexpected places.

And there is also a matter that is alone in its own category--enlarging the Pool. In the course of preparing this plan, a proposal was made by the Barton Springs Scientific Advisory Committee to enlarge the Pool, and the planning team was asked to evaluate that proposal from a planning point of view. Enlarging the Pool did not seem to fit into the fabric of the original master plan proposals, therefore, we did not recommend it in this plan. The planning team’s thoughts on enlarging the Pool are also discussed in “Special Considerations”.

## PROJECT SCOPE

### THE POOL

#### 1. IMPROVE FLOW REGIME

*Study concepts for improving flow regime that may include adding more operable gates to the downstream dam, introducing water recirculation features in strategic locations and installing operable gates in the upstream dam.*

#### 2. BYPASS INLET UPGRADE

*Redesign inlet grate so that it is less prone to clogging during floods.*

#### 3. UPSTREAM DAM

*Add openings to improve flow regime. Raise dam to mitigate “pop up” floods. Widen dam to improve clean-up equipment access.*

#### 4. NUISANCE ALGAE CONTROL

*Study algae control skimmer designs to remove floating algae.*

#### 5. GRAVEL BAR REMOVAL

*Remove gravel and sediment bar from deep end of Pool.*

#### 6. SEDIMENT and ALGAE DISPOSAL

*Consult with Pool cleaning and maintenance staff to improve methods for disposing sediment and nuisance algae.*

### THE GROUNDS

#### 7. ZILKER PONDS

*Rehabilitate Zilker Ponds with special attention to the several sets of steps leading from the upper parking lot to the Zilker Hillside Theater and the Bathhouse.*

#### 8. SIGNS and GRAPHICS \*\*

*Identify opportunities throughout the Barton Springs Pool site for the creation and installation of coordinated thematic material that fosters awareness of the cultural and scientific history of the park and its ecosystem. Propose a series of maps and signs for orientation and wayfinding. Propose signs at major entry points to direct visitors into the park and towards the Pool.*

#### 9. ELIZA SPRING

*Reconstruct spring run from Eliza Spring and possibly reconnect to the main body of the Pool. Rehabilitate the Elks amphitheater. Remove concrete slab under waters of Eliza. Add an operable gate to allow control over flows. Redesign areas around Eliza to mitigate flooding.*

#### 10. FENCE

*Recommend new fence design. Consider new fence locations to possibly include new areas within the perimeter.*

#### 11. TREES and GRASS

*Evaluate trees to determine number, distribution, species and condition. Make recommendations for replacing sick and damaged trees. Make recommendations for adding more trees throughout the campus. Consider more drought-tolerant grass options. Make recommendations for upgrading and extending the irrigation system. Make recommendations for grass care.*

#### 12. AREA BELOW DOWNSTREAM DAM

*Redesign the area below the downstream dam to make it more comfortable and more attractive.*

#### 13. ENLARGE THE POOL \*\*

*Study the possibility of making the Pool larger by relocating the downstream dam to a position below the Sunken Garden outflow. The concept is to bring all three salamander habitats into one uninterrupted body of water.*

#### 14. SUNKEN GARDEN

*Rehabilitate stone walls, reconstructing and stabilizing as required. Reconsider the fence, including its location and its design. Rehabilitate the basin to improve salamander habitat. Include a new, operable gate for flow control. Create stable walking surfaces to enhance access and enjoyment. Update landscaping to include new trees and groundcover recommendations.*

#### 15. INFRASTRUCTURE IMPROVEMENTS

*Recommend improvements to site electrical service to include buried lines and increased power. Recommend site lighting improvements*

### THE BUILDINGS

#### 16. HISTORIC BATHHOUSE

*Rehabilitate the historic Bathhouse to repair deteriorated condition and to return ticket-taking to its original location, at the central “glass cylinder”.*

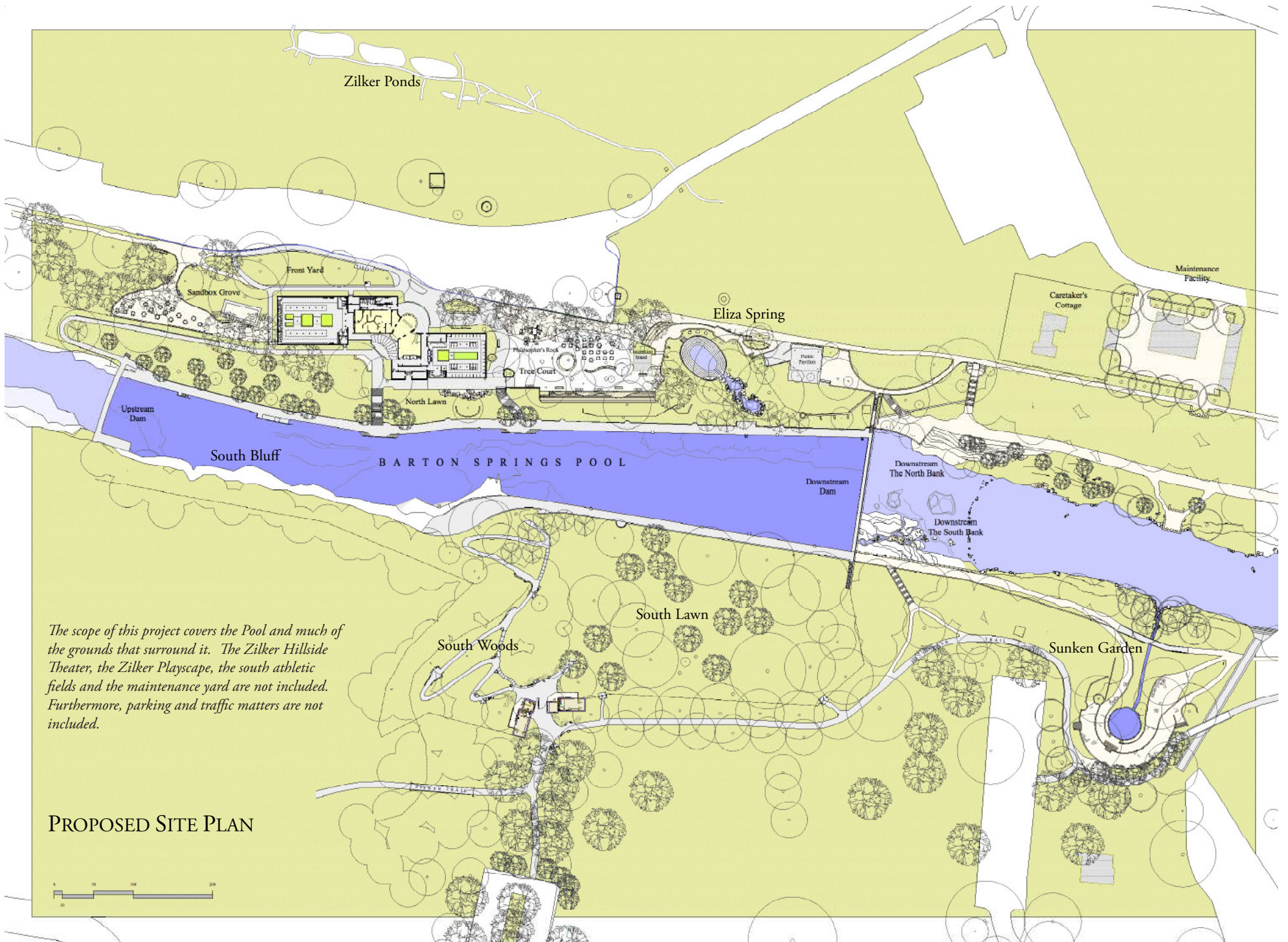
#### 17. NEW SOUTH BATHHOUSE

*Consider the addition of a new, though modest, south bathhouse to provide shower and changing facilities.*

**\*\* Item added by public input**







*The scope of this project covers the Pool and much of the grounds that surround it. The Zilker Hillside Theater, the Zilker Playscape, the south athletic fields and the maintenance yard are not included. Furthermore, parking and traffic matters are not included.*

**PROPOSED SITE PLAN**

# THE POOL AND ITS INFRASTRUCTURE



*Barton Springs Pool is nearly 1,000 ft. long. Its water surface covers nearly two acres.*

The Pool is, of course, the centerpiece of the park and its reason to exist. The Pool we know today was built in the late 1920s with the construction of the two concrete dams across Barton Creek that still exist, creating nearly two acres of pool water surface. When it was built, the Pool captured the waters of Eliza Spring and the Main Spring, but the 1975 bypass tunnel diverted Eliza's waters. So today, except when flooding overtops the upstream dam, the Main Spring is the primary source of water for the Pool. It emerges from fissures in the exposed rock of the aquifer, just to the west of the diving board. Under non-flood conditions, all of the creek water is diverted around the Pool through the bypass tunnel.

From a hydraulic standpoint, the Pool acts as a pond, which means that its waters, in aggregate, move very slowly. Both swimmers and the endangered salamander prefer more stream-like conditions, therefore, improving the flow regime was identified from the beginning as an important goal of this master plan. Improving the flow regime is the scientific term for altering the way the water flows in the Pool for the better. To make improvements involves first studying the ways the water flows now, and then proposing adjustments to how and where the water enters and exits the Pool. It could also involve some methods for recirculating the waters within the Pool.



*Barton Springs Pool under construction in the 1920s.  
C01818, Austin History Center, Austin Public Library.*

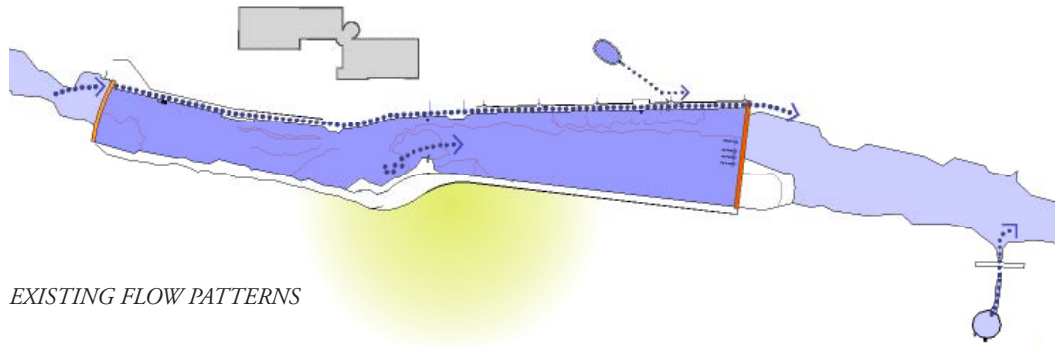
The goal of improving the flow regime comes from the observation that both salamanders and swimmers prefer clear, moving waters instead of the pond-like conditions that characterize parts of the Pool. Improving these conditions should be expected to at least partially address the nuisance algae problem, which accounts for the slippery bottom and the objectionable floating materials that are an ongoing problem, especially during conditions of drought.

Any proposal for altering the flow will have an effect on the salamanders, so proceeding with any course of action can only be undertaken after a thorough study has been concluded, determining the anticipated impact on water temperature, speed and direction. Many of the short-term recommendations for the Pool are components of this study.

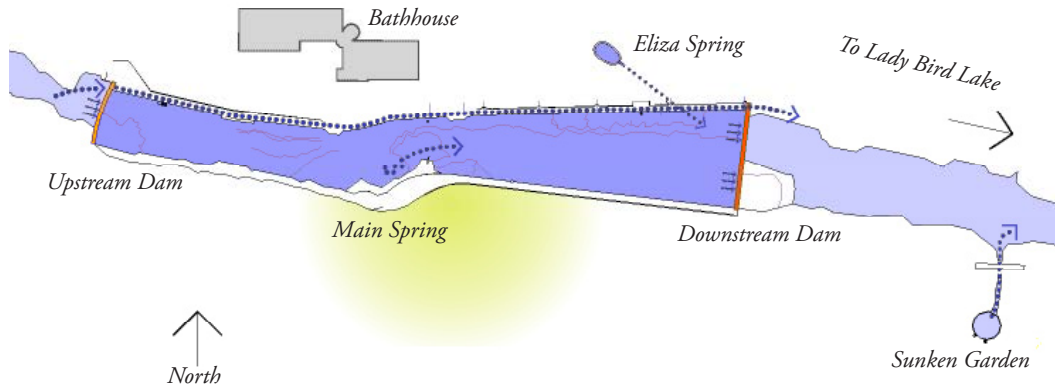
A related set of issues are those involving cleaning and maintenance of the Pool. Since flooding is a fact of life, procedures for cleaning up afterwards are critical to swimmer satisfaction (a faster, more thorough process is appreciated). And there are environmental considerations as well. Pool cleaning today involves the use of gasoline-powered equipment down in the Pool, a potentially dangerous proximity to the nearby salamander habitat. Electric equipment would be an improvement, so improved electrical infrastructure is a recommendation. And there are sustainability issues. High-pressure hoses are a part of the cleaning efforts, and they use City of Austin drinking water. As part of the larger city-wide effort to conserve water, new infrastructure for using Pool water for this purpose is recommended.

Yet another set of related issues involve structural deficiencies related to the bypass tunnel. The inlet grate is susceptible to clogging, which tends to block the bypass tunnel during floods, sometimes allowing even minor events to overtop the dam. The inlet grate should be replaced with an improved design. The structure of the bypass tunnel itself has also experienced deterioration over the years, especially at the joints. This should be addressed just to preserve the structural viability of the infrastructure, but it should also be addressed, because the leakage has water-quality implications for the Pool. In floods, turbid water leaks into the Pool from the bypass tunnel. And during droughts, Pool water escapes into the bypass tunnel--altering the flow regime in an uncontrollable way. The joints in the bypass tunnel should be repaired.

Since flooding occurs when waters overtop the upstream dam, possibilities for raising the height of that dam should be explored. At the same time, the width of the top surface should be widened if possible to facilitate equipment movement into and out of the Pool.



EXISTING FLOW PATTERNS

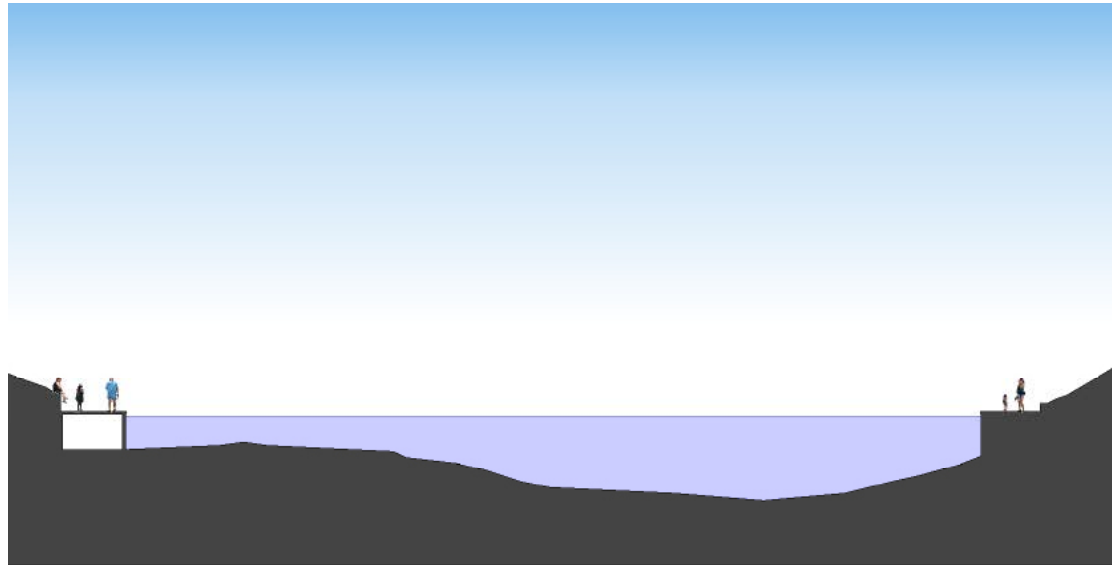


FLOW REGIME IMPROVEMENT CONCEPTS

One goal for this master plan is to improve the flow regime because both swimmers and the salamanders prefer more stream-like conditions over the pond-like conditions that characterize the Pool today. Except when floods overtop the upstream dam, the Main Spring is the primary source of water for the Pool. Conceptually, improvements to the flow regime might include creating new openings in the upstream dam, adding and relocating openings in the downstream dam and reconnecting the waters of Eliza Spring to the main body of the Pool.

Nuisance algae are an ongoing problem in the Pool, but they do tend to grow more vigorously in pond-like conditions, so they will tend to be more prevalent during a drought, when the spring flow may only be half of its normal output. Nuisance algae tend to break from the bottom and float during the heat of hot days, making it an especially disagreeable pest, since those are optimal times for enjoying the waters of Barton Springs. Nuisance algae also make the bottom of the shallow end slippery.

*This section is based on bathymetry found in 'Barton Springs Pool Preliminary Algae Control Plan', by Alan Plummer Associates. It represents the Pool about 100 ft. from the downstream dam, and shows 1,350 sq. ft. of water in the cross section.*



#### *HYDROLOGICAL CHALLENGE*

*Flow rate in an open body of water is generally calculated as follows:*

*Water input (in cubic feet per second) ÷ the cross-sectional area = water speed.*

*While flow rates at Barton Springs vary considerably, we can use a normal rate of 50 cfs to illustrate the point:*

*50 cfs ÷ 1350 = .037 ft. per second. Interpretation: at 50 cfs, the waters of Barton Springs Pool generally flow at less than 1/2 inch per second (well below speeds that would move sediment, for instance).*

*In some circumstances, allowing creek water to flow through can offer relief, but the creek is frequently dry, especially in drought conditions when the problem is even more acute.*

#### *IMPROVING FLOW REGIME*

*Adding and/or moving openings in the downstream dam or the wall of the bypass tunnel might play a role, but it is unlikely that they will offer a well-rounded solution by themselves, because directing flow to a particular location will necessarily be at the expense of the flow in another location.*

*Recirculating pipes offer promise as a partial solution. They would draw water from one part of the Pool and deliver it to another, from the Main Spring to the shallow end, for instance. While this can be effective, the technical challenges to moving sufficient water to make a meaningful difference could prove daunting.*

*Water bubbles are another concept, where compressed air is introduced at the Pool bottom, rising to stir the water, a concept generally understood from our common experience with fish aquariums.*

Efforts to improve the flow regime are inspired, in part, to make conditions for nuisance algae less favorable; to allow the waters to run faster to create more stream-like conditions. But the dam and hydrodynamic engineers with whom the planning team consulted believe that it will take more than that to manage this problem, so efforts should be made to test the most promising possibilities for possible deployment on a permanent basis. And recognizing the ongoing issue, an algae skimmer should be installed along the south wall between the diving board and the downstream dam.

### *Recommendations*

Many of the short-term recommendations of this plan involve initiatives to improve swimming conditions and salamander habitat conditions in the Pool. Some of them involve physical remediations (removing the gravel bar, for instance), some involve gathering additional information and studying more complicated remedies and still others involve changes intended to facilitate pool cleaning. Those recommendations fall into three categories, Water Quality Improvements, Water Quality Studies and Pool Cleaning Improvements.

### *WATER QUALITY IMPROVEMENTS*

#### *Remove Gravel Bar*

Dammed waterways like the Barton Springs Pool tend to accumulate gravel and sediments in the lake, reservoir or pond created by the dam. Over time, this can significantly alter the vessel in terms of its depth, its temperature, its flow dynamics and its overall capacity, among other changes. At the Barton Springs, this process has resulted in an accumulation of an estimated 1,500 cubic yards of unwanted material (commonly called the gravel bar) in the deep end, resulting in significant loss of pool depth, an alteration of the flow regime and changes to the aquatic culture. Without action, this accumulation would likely continue to the extent that the viability of the Pool itself would eventually be compromised.

The most recent effort to remove it was undertaken in 2006, but, for technical reasons, it was not completed. The last successful removal operation took place in the early 1990s, prior to the official recognition of the Barton Springs Salamander as an endangered species. During that effort, with the water level lowered, trucks and heavy equipment were driven from the shallow end across the Pool floor to the deep end, a practice that would not be allowed today. Significant portions of the Pool are now considered Salamander habitat, and are off limits to heavy equipment.

Environmental constraints will not be the only challenges. The north sidewalk sits atop the bypass tunnel, and is not designed for heavy loads. Similarly, the south sidewalk may not be capable of handling heavy loads due to its poolside location, and the potential that

#### *THOUGHTS ON THE EXISTING DAMS:*

*Modifications to the existing dams have good potential to improve the flow regime. The purpose of the hydrodynamic modeling is to determine which of the studied design alternatives will yield optimal improvements.*

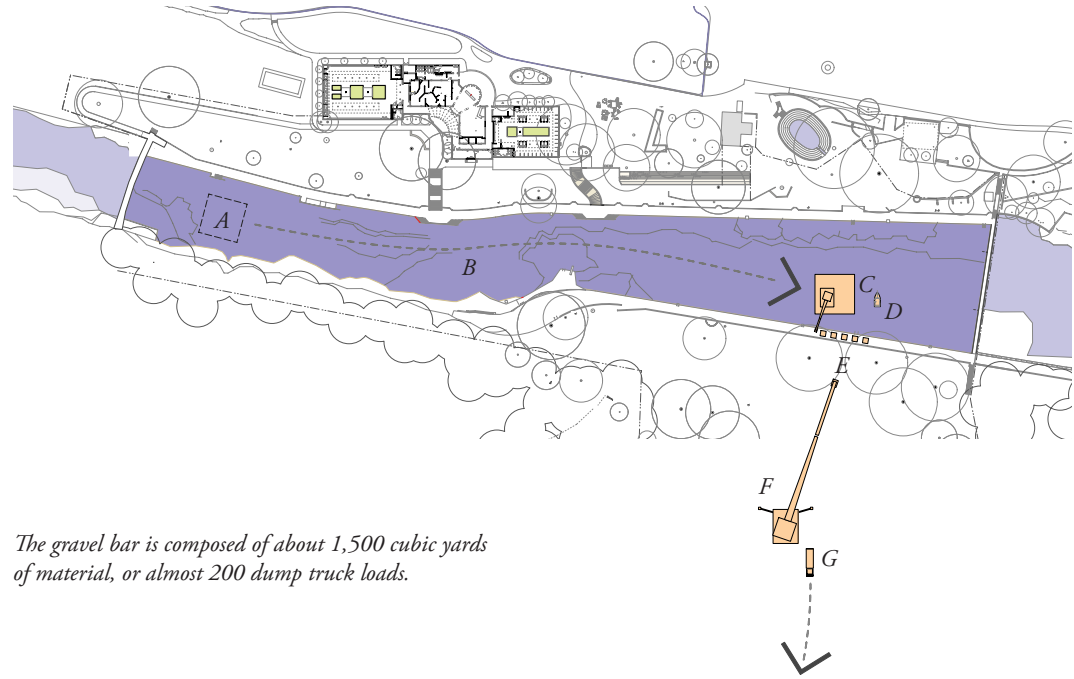
*One obvious solution that should be contemplated is to reintroduce openings to the upstream dam. Historically the upstream dam had three openings, but those were closed in 1975 as part of the bypass tunnel construction. Since then, creek flow has been entirely eliminated from the Pool, except when flood waters overtop the dam. During certain conditions, the waters in the creek are as clean as the waters in the Pool (source: Watershed Protection staff). Running them through the Pool could be beneficial to plant or invertebrate species in the Pool, and assist with algae management.*

*New openings in the downstream dam could also improve flow conditions in the Pool. New gates in the lower reach of the dam could enhance self-scouring and cleaning along the bottom of the Pool, mitigating some sediment build up. At the same time, it is important to realize that dam engineers caution that operable gates are more susceptible to being jammed in the open position, the closer they are placed to the bottom. They also warn against excessive optimism regarding sediment scouring potential, generally suggesting that scouring will be most prevalent near the openings.*

*For the planning team, these observations serve as reminders that the hydrodynamic modeling/schematic design process will grapple with a complicated set of factors, and that proposals for change should be offered cautiously.*

*Remove Gravel Bar*

- A. *Deploy barge-mounted backhoe in shallow end.*
- B. *Float barge across salamander habitat areas to deep end.*
- C. *Barge-mounted backhoe.*
- D. *Work boat.*
- E. *Filtration Hoppers.*
- F. *Land-based crane.*
- G. *Trucks.*
- H. *Booms and containment systems (not shown).*
- I. *Suction Dredge (not shown).*



*The gravel bar is composed of about 1,500 cubic yards of material, or almost 200 dump truck loads.*

its subsoil has washed out. Access to the Pool near Eliza Spring is also not acceptable for fear that the aquifer and the Salamander habitat could be compromised.

The sensitivity of the cultural context of this unique place must also be given appropriate respect. This must be an efficient process to minimize the time of Pool closure, but it must also acknowledge the fragility of the site. So some straightforward engineering solutions, like building a construction road across the South Lawn, are not recommended.

The process that appears to be most feasible is one that employs a barge-mounted backhoe and a land-based crane stationed on the flat portion of the South Lawn. The barge (with its backhoe) would be deployed in the shallow end of the Pool, then floated across the salamander habitat areas to the deep end. The barge would be serviced by a work boat. The backhoe would dig materials from the Pool and place them in a series of filtration hoppers located on the south walk. These loaded hoppers would then be plucked from their position at the edge of the Pool by the land-based crane and emptied into trucks at the top of the hill.



Aquatic turbidity curtains would be required to protect the water quality in the adjacent habitat areas. Additionally, if the backhoe is hydraulically driven, substantial secondary oil containment systems, including oil booms, would need to be installed. Furthermore, the composition of the removed materials may need to be tested to inform an environmentally responsible plan for disposal.

The backhoe process would remove all of the large material and much of the finer materials. This process would be followed by a suction dredging effort to finish the job.

The dredging effort described here is clearly expensive and time consuming, but it seems appropriate to the scale of the task. Once completed, more minor dredging can be undertaken on a more frequent basis to keep the size and expense of the task within more manageable bounds. This first effort is intended to mitigate 15 years worth of accumulation. If subsequent efforts are undertaken on a two to four year cycle, then the task can more easily be fit within normal pool maintenance efforts, such as the three week February cleaning period.

Of all of this Plan's short-term recommendations, this is the most aggressive. Removing 1,500 cu. yards of heavy materials from an aquatic environment in proximity to an endangered species habitat, all-the-while lifting those materials across a fragile landscape without damaging it, is no small task. While this master plan has sketched out this plan in broad terms, it should be designed in detail by a professional engineer. The environmental mitigation plan, including aquatic curtains and booms, filtration criteria, and debris and water disposition techniques should be designed by an environmental engineer. This work may require permitting from U.S. Fish and Wildlife and the Army Corps of Engineers among others. Furthermore, because this process is likely to take several weeks, efforts should be made to limit the area of disruption in hopes of keeping at least parts of the Pool open.

#### *Replace Bypass Tunnel Inlet Grate*

The bypass tunnel is the Pool's first line of defense against flooding. Ideally, it should divert minor flooding events, especially those of short duration, around the Pool preventing the silt, sand, gravel, rocks and debris normally associated with flooding from entering the Pool. However, as a practical matter, the ability of the bypass tunnel to flow to capacity is frequently impeded by clogging at the inlet grate. As a result, the Pool is easily flooded, resulting in Pool closings that could be avoided with a more efficient inlet.

The purpose of the inlet grate is to catch the kinds of large debris (such as tree branches) that might otherwise clog the tunnel, while also preventing public access. Not only does



*The Pool has always required the occasional removal of gravel. Most of the practices traditionally used, like this horse-drawn drag sled in use in 1926, are no longer allowed. PICA 20169, Austin History Center, Austin Public Library.*



*Existing inlet grate is damaged and clogs too easily.*

this existing inlet grate clog easily, but it has also been damaged to the point that it allows the public to climb through the bent structural members and into the tunnel.

A new inlet grate should be designed that has the capacity to catch significantly more debris than the current design does, and to prevent public access to the tunnel. It should allow maintenance access, perhaps through a strategy as simple as unbolting certain structural members. The grate should also be designed with the aesthetics of the park in mind. As the “Crown Jewel of Austin”, Barton Springs demands heightened attention to the visual character of all physical interventions, even those as mundane as an inlet grate.

#### *Repair Bypass Tunnel Joints*

The vertical construction joints within the bypass tunnel are exhibiting signs of distress, including cracking and spalling. The joints should be repaired to restore the concrete’s integrity to provide adequate coverage over the reinforcing steel.

The cracked and spalling concrete should be removed to sound concrete and to such a depth to completely expose the first reinforcing bar parallel to the joint. The existing exposed reinforcing bar can be used to anchor the repair grout to the repair section without having to use anchors or dowels. A pumpable non-shrink, non-metallic grout can be used to restore concrete sections. The requirements for this work should be designed by an engineering team that includes a structural/civil engineer and an environmental engineer. The development of criteria for this work should reference the report, “Structural Assessment of the Barton Springs Pool Bypass Culvert” by PBS&J.

#### *WATER QUALITY STUDIES*

##### *Pilot Studies for Water Recirculation at Beach*

The Beach is the gravel area that runs parallel to the northern edge of the Pool from the downstream dam to roughly across from the diving board. The Beach is identified as a Salamander habitat, and efforts have been made to improve the population in this area, in particular by lowering the ground plane to make it less likely that salamanders would be crushed underfoot by wading swimmers. Despite these efforts, population counts generally reveal that very few salamanders live there. This pilot study is intended to determine whether water recirculation could be a viable technique to improve the flow regime in this area to make it a more amenable home to the salamander. The results will be used to help shape the hydrodynamic modeling efforts.

The study will be undertaken by Watershed Protection and Development Review Department staff using available equipment.

### *Pilot Study for Ultrasonic Algae Control*

One of the primary goals of this master plan is to mitigate nuisance algae. New technologies using ultrasonic sound waves to kill the targeted organisms have shown promise in other installations. The literature suggests that these devices would be effective at killing just the troublesome single-cell algae while leaving other multi-cell organisms undisturbed. But questions remain.

Recognizing the ecological sensitivity of this habitat, a pilot study should be undertaken to test these devices in a limited area. Should the study yield successful results, a recommendation for a permanent installation may be forthcoming. The study will be undertaken by Watershed Protection and Development Review Department staff.

### *Pilot Study to Determine Effects of Creek Flows on Pool Water Quality*

During certain times of year, the flowing waters in Barton Creek are as clean or cleaner than the waters that emerge from the springs themselves. This suggests that selectively introducing these waters into the Pool by means of controllable openings in the upstream dam might be part of a solution for improving the flow regime. In general, clear flowing water is good for the salamanders, and is not so good for nuisance algae.

While selectively (re)introducing creek waters to the Pool may seem to be an obvious positive, questions still remain as to its potential effects on the Pool ecosystem in general and the health of the salamander in particular. This pilot study intends to yield a better, though preliminary understanding of the effects of potential changes to water temperature, algae growth, flow regime and other criteria. It will be undertaken by Watershed Protection and Development Review Department staff using available equipment. The results will be used to help shape the hydrodynamic modeling efforts.

### *Topographic Survey*

Accurate topographic information is essential to the success of the hydrodynamic modeling efforts. Clearly, the modeling can only be as accurate as the information it is based on. Because up-to-date topographic information does not currently exist, it will be commissioned at this time.

It will include the shape of the Pool bottom (bathymetry) and the grounds to the tops of the slopes (to understand hydrologic behavior during flooding events). It will include sufficient area upstream that might be flooded if the upstream dam were raised (one idea that is under consideration). It will include a sufficient area downstream to understand the consequences of various opening patterns in the downstream dam.



*With water level down, gurgling leak in bypass tunnel is visible.*



*Hydrodynamic models can be physical scale models like this, or they can be numerical (computer) models. In slow moving waters, like those of Barton Springs, the sensors on a physical model are unable to make accurate detections.*

Seizing this opportunity to commission a comprehensive survey, this topography should also establish benchmarks at both Eliza Spring and Sunken Garden. And to support a related effort, the South Woods should be surveyed to provide accurate topography for the design work on the proposed accessible route.

This work should be performed by a licensed professional surveyor. The scope should be prepared by the hydrodynamic modeling design team in consultation with Watershed Protection Development Review Department staff.

#### *Flow (Hydrodynamic) Modeling*

One of the primary goals of this master plan is try to find ways to positively alter the flow regime to improve conditions for the salamanders and to disrupt the growth of nuisance algae. An improved flow regime should also improve the experience for swimmers. Flow regime is the scientific term for the way water flows within a body of water. It involves more than simple water direction and speed, though that is part of it. It also involves understanding how water tends to stratify in terms of speed, direction and temperature. With this kind of detailed understanding, it is hoped that informed decisions can be made regarding impacts on salamander habitat, Pool ecology and nuisance algae.

From a hydrological standpoint, Barton Springs Pool is a pond because its waters, in aggregate, move quite slowly. For this reason, a numerical (computer) model, rather than a physical scale model, seems like the most practical approach. In slow moving waters, the sensors on a physical model are unable to make accurate detections.

The Pool is also a dynamic system. It experiences extended periods of drought as well as sudden flooding events. During drought, Barton Springs flow can drop to below 20 cu. ft./sec. During much of 2007, an especially wet year, flows above 100 cu. ft./sec. were not uncommon. During dry spells, because the flows at Eliza slow, its water level is kept up, in part, by the water pressure from the Pool. So draining the Pool (which is prohibited by the 10(a) permit during droughts) results in lower (threatening to the salamander) water levels in Eliza. There is much for the hydrodynamic modeler to consider.

This modeling is specialized work, and should be undertaken by hydrologists experienced in the nuances of these kinds of challenges (while there are others, the Utah Water Research Laboratory is a possible resource). The modeling should be undertaken in tandem with the efforts of a civil/structural engineer so that schematic design concepts for physical alterations can be tested as part of this effort. The team should also include a design component, so that ideas that may have visible implications (like a bubbling element in the shallow end,



*One concept to be studied is the idea to add new openings to the downstream dam to improve the flow regime.*

for instance) can be schematically designed. The team should also include an environmental engineer and an historical preservation specialist.

It is important to stress that the design concepts should not be confined to pre-determined ideas that involve alterations to the dams only. A better approach is one where the breadth of the inquiry is arrived at incrementally, so that the results of the first concepts tested would indicate the direction to pursue for the second concepts. This inquiry should be seen in wholistic terms and should account for recirculation concepts at both the beach and the shallow end. It may also involve the possibility of new openings in the bypass tunnel. And it should also account for the flow implications of the algae skimmer.

The recommendations for improving flow regime are difficult to gauge at this time, since their shape will be determined by the results of this modeling/schematic design process. Even still, it is worth reminding ourselves that Barton Springs is such an important icon for all of Austin, that any proposals for change should be thoroughly discussed with the public before action is undertaken. Therefore, this plan recommends that a public input process be included as an integral component of the design process that will follow the modeling, so that potential impacts can be well understood and digested over a period of time before long term commitments are made.

As a further safeguard for public sentiment, this plan recommends that this modeling/de-

#### *Master Plan Values*

*The recommendations of this master plan are based on values believed to be important to this place and its history. In the case of the dams, there is both history and precedent involved. The plan's Goals Statement declares that additions and renovations should, "respect the fragility of this unique natural and historical setting", suggesting in this case that studies for improving the flow regime should exhaust all reasonable possibilities for using the existing dams before even thinking of new dam construction as a solution.*



*The upstream dam was built in the late 1920s with three openings in it for creek flow. These openings were closed during the 1975 construction of the bypass tunnel. One concept being considered is to install operable openings in the upstream dam.*

sign process first study solutions that use the existing dams. After that, should the results of this effort suggest that more appropriate solutions can be found with more aggressive solutions, like replacing or relocating the dams, then the study process should be brought to a halt, and a process of public disclosure of study results should be undertaken. Only in light of clear public direction, should other alternatives be studied.

While this work will not directly result in construction work, it should certainly be expected that it might propose some. With this in mind, the modeling/schematic design team should consult with regulatory officials on the permitting implications of preferred solutions.

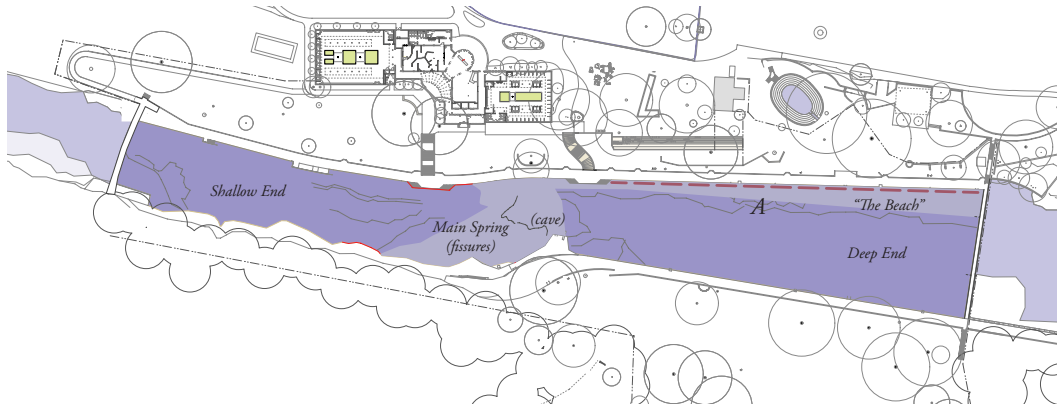
#### *Structural Testing of Dams*

One of the ideas that has coursed through this planning effort is that altering the pattern of openings in the dams could have a positive effect on the flow regime. This idea generally visualizes operable openings that can be adjusted as changing conditions demand. To take this idea beyond its current “concept stage” requires both a hydrodynamic modeling effort to test the hydrological results of the modification concepts, and a better understanding of the structural potential to add openings to the existing dams.

In 2006, both the upstream and the downstream dams were visually inspected by a professional engineer, whose report suggested that both dams appear to be in sound condition, and with proper maintenance, should have a long useful life left. Subsequent consultations with a dam engineer (part of this master planning effort) suggest that new openings could be made in these dams without compromising their structural integrity.

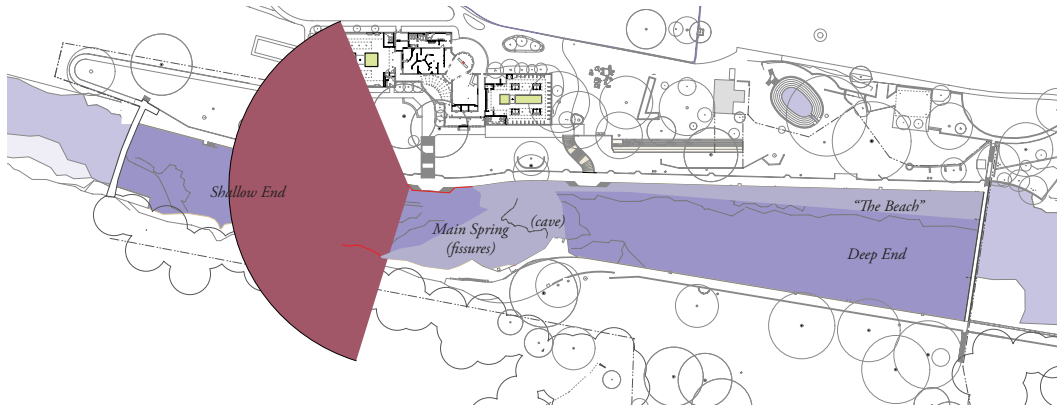
Both of these engineers’ opinions are, of course, based on limited, visually-based information, so should not be taken as a final word. Structural testing of the dams is a logical next step.

Testing should take three vertical core samples through the each of the dams and into the bearing material below to determine the structural strength of the concrete and the friction between the dams and the ground they sit on. Because this work will generate turbid water and concrete dust, aquatic booms and absorbent pads will be required to soak up and contain water laden with concrete dust. The criteria for these core samples should be established by a structural/civil engineer. The samples themselves should be taken by a geotechnical testing laboratory, and the mitigation efforts should be designed by an environmental engineer. This work may require permitting from U.S. Fish and Wildlife and the Army



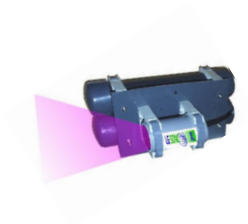
*Water Recirculation at Beach*

- A. *Recirculation Pipe. Assuming that the pilot study confirms the concept, the recirculation pipe would be used to improve the flow regime at the Beach.*



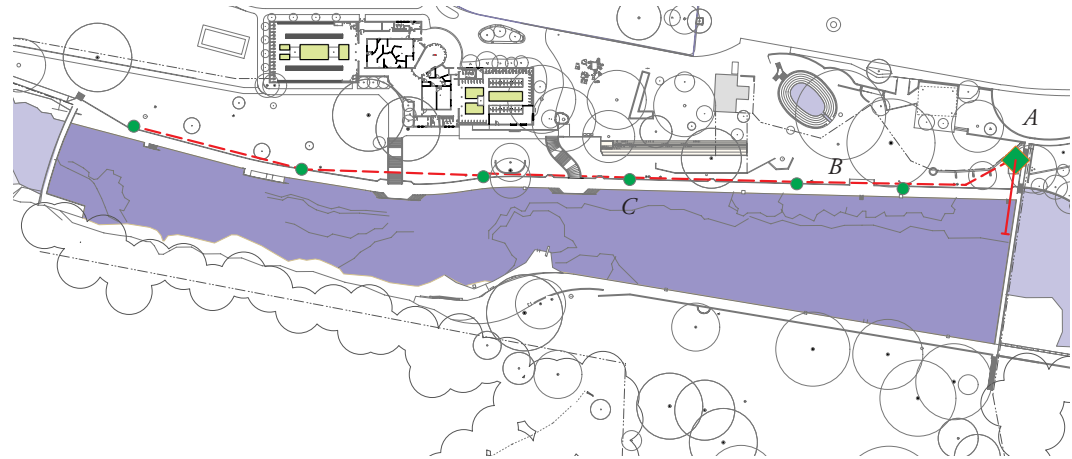
*Ultrasonic Algae Control*

- A. *Ultrasonic Algae Control. The device (about the size of a football) would be mounted to the wall of the Pool and pointed toward the shallow end.*



*Water Pump*

- A. *Pump House.*
- B. *Buried Water Pipe.*
- C. *Typical Hose Coupling Device.*



Corps of Engineers among others. It is likely that this work can be undertaken with only limited interruption of pool operations.

*POOL CLEANING IMPROVEMENTS*

*Additional Electrical Power at Pool Side*

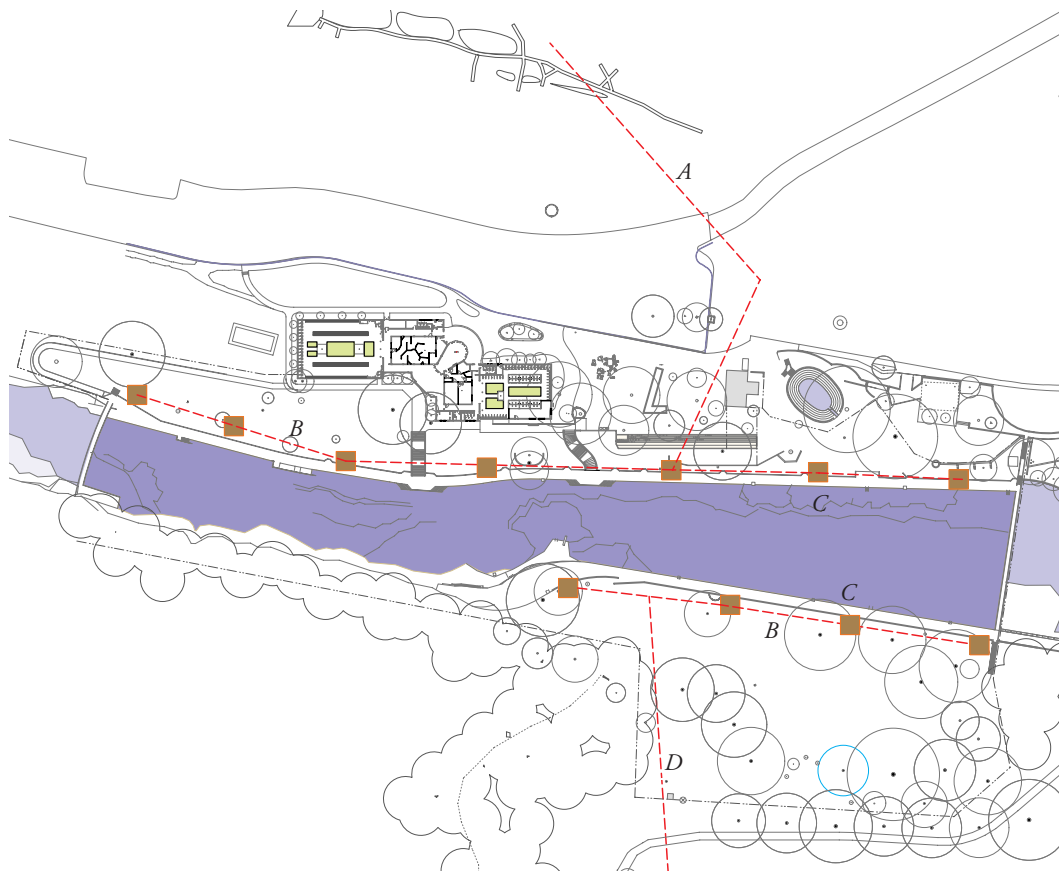
Most of the mechanical equipment used to clean the Pool today uses gasoline engines, which are notorious air polluters. But more to the particular circumstance of this place is the uneasy proximity of gasoline near a sensitive ecological zone. Electrical equipment would be an improvement, and the Aquatics Department could make the switch if sufficient power were available.

Additional electrical power should be brought to the Pool side to facilitate pool cleaning. An incidental benefit may be the eventual switch of lawn equipment to electrical. The work should be designed by a professional engineer, and should be coordinated with the initiative to remove all overhead lighting and the new site lighting being designed and installed by Austin Energy. It is likely that this work can be undertaken with only limited interruption of pool operations.

*New Pump to Increase Water Pressure and to Facilitate Cleaning*

Part of the routine pool cleaning activities includes the use of 2 ½" high-pressure fire hoses to clean certain areas. City of Austin drinking water is currently used for this process, because the City system is capable of achieving the required pressure and volume. Unfortunately, when one hose is in use, pressure losses elsewhere in the park make it difficult to flush toilets in the Bathhouse. When two hoses are in use, pressure losses affect plumb-





*Site Electrical*

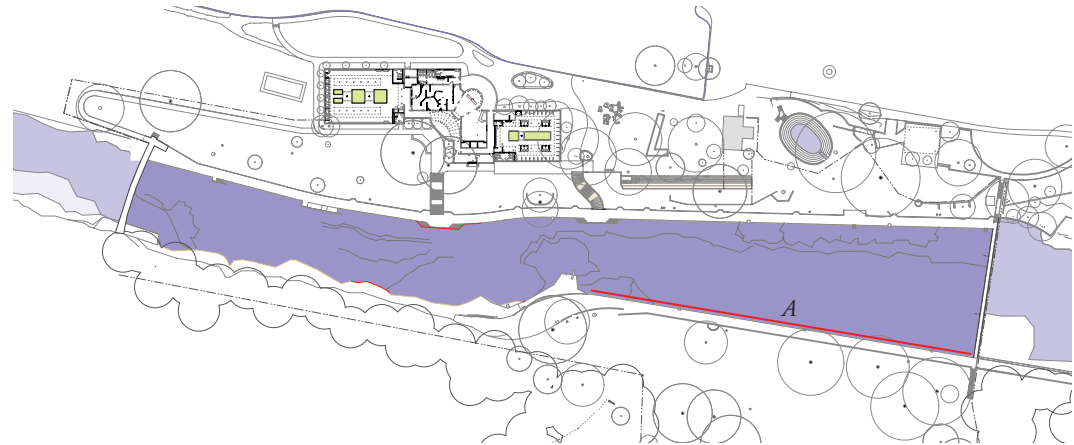
- A. *Future underground electrical service to Zilker Ponds (long term goal).*
- B. *Buried site electrical.*
- C. *Typical electrical device.*
- D. *Underground electrical service from Robert E. Lee.*
- E. *Coordination with new lighting by Austin Electric (not shown).*

ing fixtures as far away as the McBeth Recreation Center. Pool water would generally be a better source for this process if the pumping infrastructure were in place. Pool water is also better environmentally, because it does not contain chlorine. Furthermore, it is a more sustainable approach for a city where water use demands are an increasingly serious matter.

A new pump should be installed to accommodate the high-pressure cleaning requirements of the Pool, and it should be sized to allow two or more hoses to be operated at once. It should draw its water from the deep end. Piping should be installed underground along the northern edge of the Pool so that hose fittings can be located in the surface of the existing retaining wall at intervals convenient for the cleaning process. The system should be arranged so that the pump can be used to pressure assist the use of City water during those

*Algae Skimmer*

- A. *Algae skimmer on south wall.*



times when the Pool water is not suitable for use in cleaning (like immediately after a flood when the water is too turbid).

The pump should be located in a new pump house at the northeast corner of the Pool grounds. This work should be designed by a professional engineer, and its requirements should be coordinated with appropriate regulatory agencies including the City's Watershed Protection and Development Review Department. It is likely that this work can be undertaken with only limited interruption of pool operations.

*Algae Skimmer*

An algae skimmer should be installed along the south wall between the diving board and the downstream dam. The skimmer should be designed by a civil engineer, and it should be tested as part of the hydrodynamic modeling process to understand its flow regime implications prior to deployment.

*Disposal for Silt and Nuisance Algae*

Cleaning the shallow end of the Pool after a flood currently involves hosing the accumulated silt, sediment and debris to a temporary holding area created by silt fence. The silt laden water is pumped into a nearby deck drain with a trash pump. This practice has been cited in more than one annual report to U.S. Fish and Wildlife as a non-compliant practice along with the comment that a practical, compliant solution has not been found.

This plan recommends that an environmental engineer be commissioned to design a disposal process that complies with TCEQ and other applicable standards. While the terms of this design are yet to be determined, it may be worth noting that one standard practice for



*Trash pump used for silt disposal.*

managing turbid water in environmentally sensitive areas such as this is a dewatering bag. An environmental engineer generally designs the filtering criteria for these bags. Assuming that the dewatering bag is the engineer's preferred solution, their purchase for staff use should be included in this recommendation.

While the disposal practices for brush and debris (add it to the park brush pile) seem appropriate, these, too should be reviewed by the environmental engineer.

Collected algae has been identified as a particular problem, since it tends to rot if left to dry in a pile. This algae should be composted on-site near the "brush pile" by Parks Department gardening staff using available tools and equipment. This seems practical since the quantities are too small to require trucking it to an off-site location. The finished compost should be used to fertilize plants near the Bathhouse. Composting techniques can be learned through the Compost Advisory Council.

#### *Design Opportunities*

The general speed of water through the Pool is a function of the amount of water that exits at the springs and the volume of the Pool. Since the amount of water discharging is not fixed by Pool infrastructure, the width and depth of the Pool are factors that could be adjusted. This could result in concepts that narrow the Pool in places, or make it shallower in others; all in the interest of speeding the flow of water.

Also related to the speed of water is the idea of recirculating water within the Pool. This idea involves drawing water from one area and pumping it to another. For instance, it might involve drawing water from the diving well and pumping it to the shallow end. If this idea emerges, it would offer a design opportunity to introduce stonework into that part of the Pool, which would make it look more natural. With skill, new stonework could mask some of the manmade appearance of the side of the bypass tunnel and recapture some of the "old swimming hole" character that was lost during that construction effort.

Even while we consider design opportunities preliminarily, it is worth reminding ourselves that Barton Springs is such an important icon for all of Austin, that any proposals for change should be thoroughly discussed with the public before action is undertaken. Therefore, this plan recommends making a public input process an integral part of the modeling/design process, so that potential impacts can be well understood, and digested over a period of time before any long term commitments are made.

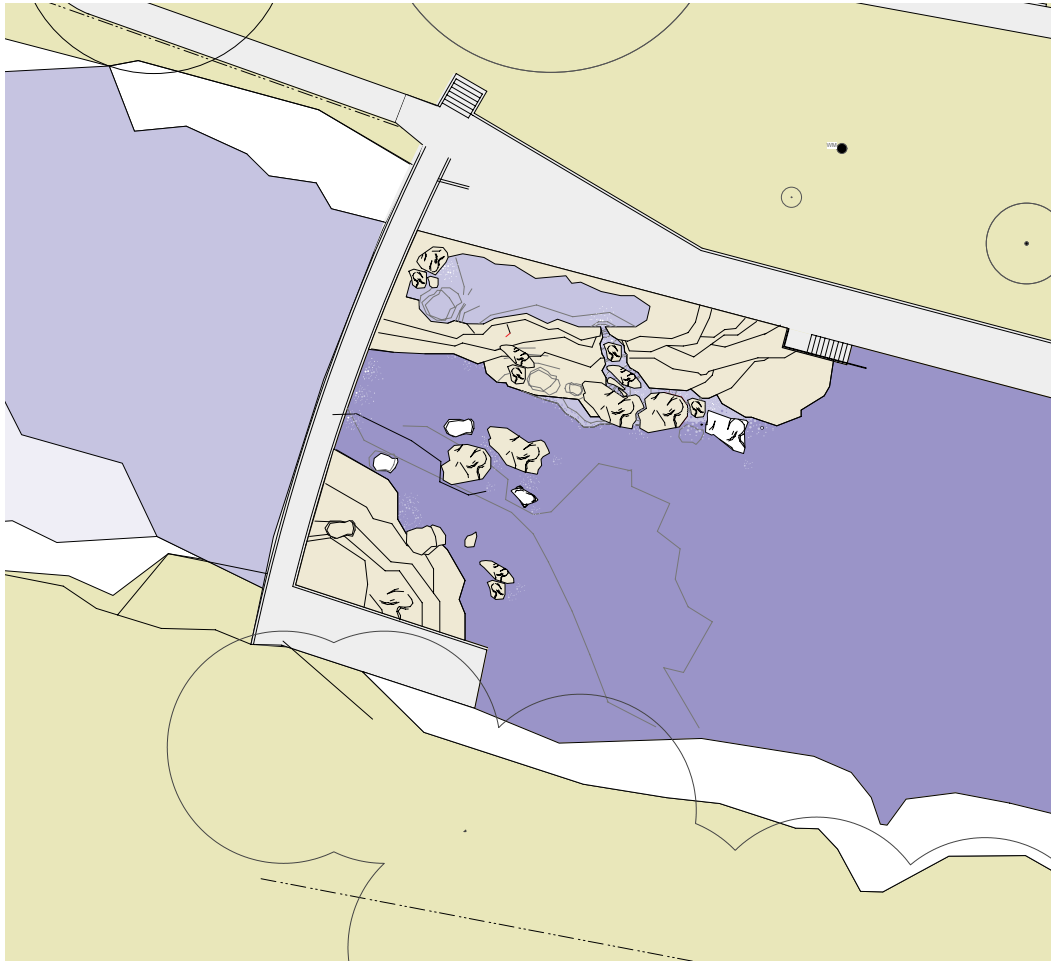
It may also be worth reminding ourselves that the recommendations of this plan are built on a Goals Statement that articulates the value of both the historic and the natural ele-

*In the 1920s, the shallow end featured a more natural edge characterized by boulders and informal plantings. C01824, Austin History Center, Austin Public Library.*



*While the bypass tunnel did, indeed accomplish its goal of mitigating some flooding, it did so at the expense of the Pool's character. This is especially pronounced in the shallow end, where the tunnel is tallest and its wall is most exposed. Ideas such as water recirculation, that may emerge from the hydrodynamic modeling/schematic design process should be seen as opportunities to create new stone elements that might mask some of the tunnel's manmade character with more naturalistic materials and forms.*

ments of this place. Therefore, this plan recommends that the historic dams themselves should be thought of as valued parts of the iconography of the place, and should be preserved if possible, even if new openings are made. To that end, this plan recommends structural testing of the dams to confirm their viability into the future. Furthermore, it recommends, as a safeguard for public sentiment, that this modeling/design process first study solutions that use the existing dams. After that, should the results of this effort suggest that more appropriate solutions can be found with more aggressive solutions, like replacing or relocating the dams, then the study process should be brought to a halt, and a process of public disclosure of study results should be undertaken. Only in the light of clear public direction, should other alternatives be studied. And if other alternatives are to be studied, this plan recommends including the possibility that no changes at all should be made to the dams to the considered alternatives.



#### *DESIGN OPPORTUNITY*

*Among the numerous possibilities for improving flow regime, one that might be explored is to recirculate water by pumping it from a deep area and releasing it in another area in need of improved flow. The shallow end, because it is upstream of the Main Spring would seem to be a likely candidate for this kind of improvement. If the hydrodynamic modeling bears this out, then it would offer design possibilities that do not currently exist. This sketch suggests that an accumulation of stonework be built against the wall of the bypass tunnel so that the top of the stonework is level with the Pool deck. A shallow depression is created, and the recirculated water is poured into it, creating an easy-to-reach water feature for small children. That water then spills through rivulets down to Pool level.*

*This idea begins with a straightforward engineering concept and combines it with the observation that the shallow end is the least attractive part of the Pool, and the substantial level change from deck to Pool make it difficult to access, especially for families with small children.*

*This idea could pay even further flow-regime dividends if openings are restored in the upstream dam, because it would narrow the channel there, making the water run more swiftly.*



# ELIZA SPRING

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Eliza Spring, one of the three principal springs of Barton Springs, is located behind the concession stand. It is surrounded by a concrete amphitheater that was built in 1903 by Andrew Zilker. Curiously, he built it as an outdoor meeting space for his Elk's chapter. The amphitheater is approximately oval-shaped with its long axis oriented southeast-northwest. It has several generous steps at the water's edge, suitable for lounging, and it has an access stair that enters from the northwest. In Zilker's original construction, the spring waters drained through a slot in the concrete to the southeast and then, open to the air, on to the creek beyond. Today those waters are carried in a buried concrete pipe and are drained, not into the Pool, but into the bypass tunnel.

Eliza Spring is currently home to the largest population of the endangered Barton Springs salamander. While the numbers of salamanders in the Main Spring are often in the tens these days, the numbers in Eliza are in the hundreds. In literal terms, the viability of the species is a complex matter. But the numbers show that the population at Eliza is very important.

After Zilker's construction, a number of additional construction efforts were undertaken at this site, involving additions or modifications to his work. The first two involved adding height to the amphitheater walls. A third involved pouring a concrete "floor" over the spring itself. Yet another effort involved closing a keystone-shaped opening with stone. Another change was to bury the spring run in a 24" concrete pipe. Because the date of the pipe is uncertain, it is not known if it was a part of one of the other modification efforts.

The first effort to add height to the walls was done sometime in the 1930s, and involved extending Zilker's walls with more concrete. The access stairs were also extended and the surrounding grades were raised with this construction. The second addition was more recent, and involved adding one or two courses of limestone wall to the top of the 1930s concrete wall. The purpose of this effort was to divert storm water from entering the vessel and compromising the water quality in the salamander habitat. It was done in conjunction with the addition of a stone flume that directs storm water to an area drain below the spring.

The concrete floor was the work of Beverly Sheffield, longtime Director of the Parks Department. His reasons for doing so have been lost to history. Thickness is estimated at 12" to 18".



*Eliza Spring holds a unique position in both the cultural and the ecological history of the park. It is the home of the most robust population of the endangered Barton Springs salamander, and its concrete amphitheater construction is credited to Andrew Zilker himself. It is simply too important to let it remain in such poor condition and in such isolation, marooned as it is behind the concession stand.*



*Andrew Zilker's amphitheater has been altered over the years. Note the added band of concrete (the lighter color) and two courses of limestone. This plan recommends returning Eliza to Zilker's 1903 form.*



*View towards Pool. Stonework should be removed to reopen slot in amphitheater, allowing flow into recreated spring run.*

Eliza Spring holds a unique position in both the cultural and the ecological history of the park. It is the home of the most robust population of the endangered Barton Springs salamander, and its concrete amphitheater construction is credited to Andrew Zilker himself. It is simply too important to let it remain in such poor condition and in such isolation, marooned as it is behind the concession stand.

With the additions to Zilker's walls, the amphitheater is deeper and more stark than it was during his time. The hardscape that surrounds it is unrelieved by the softness of planting. The fence that surrounds it is old and in poor shape. There is only one interpretative graphic, and it is attached casually to the fence. There is no sign to indicate the name of the place. Eliza should be one of the premier interpretative destinations in the park.

### ***Recommendations***

*First, reconstruct salamander habitat elsewhere*

No recommendation can be made for Eliza Spring without first acknowledging its importance as an endangered species habitat. Since Eliza is currently the home of the largest salamander population, it is not unreasonable to say that the future of the species relies on the health of this habitat. With this in mind, any construction work should be undertaken with extreme caution, and mitigation efforts should be approved in advance by regulatory authorities.





*Despite its location, tucked behind the concession stand, Eliza Spring is a popular park destination.*

At the same time, Eliza should also be recognized for its unique place in the cultural history of the park, since the amphitheater was built by Andrew Zilker--the namesake of Austin's oldest and most important park--himself.

Eliza Spring should be recognized as an element of special significance, and should be planned for accordingly.

Before beginning any work at this site, efforts should be undertaken to reconstruct the habitat at other sites in the hope that it fosters increases in population. Sunken Garden, in particular, holds special promise in this regard. With stable populations at other spring sites, then the situation at Eliza can be evaluated to determine if proceeding with construction can be done prudently.

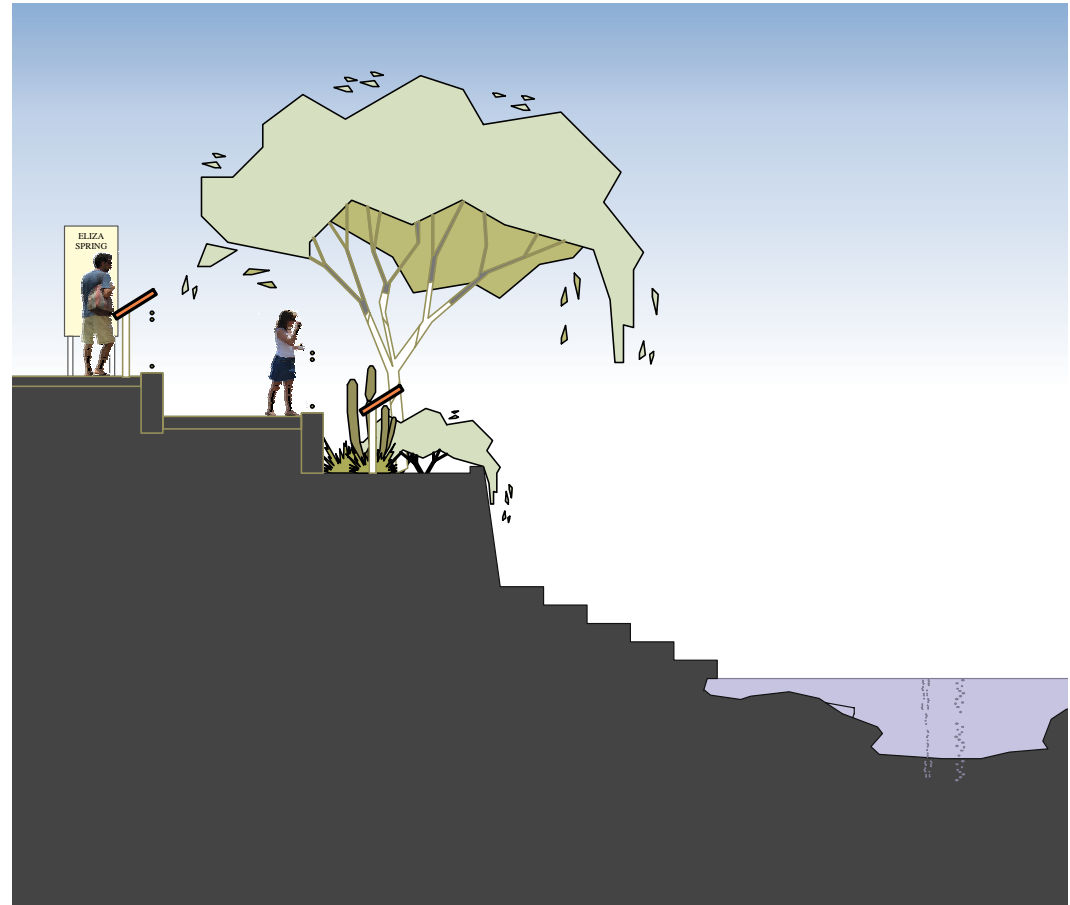
#### *Reconnect Eliza Spring to the Pool*

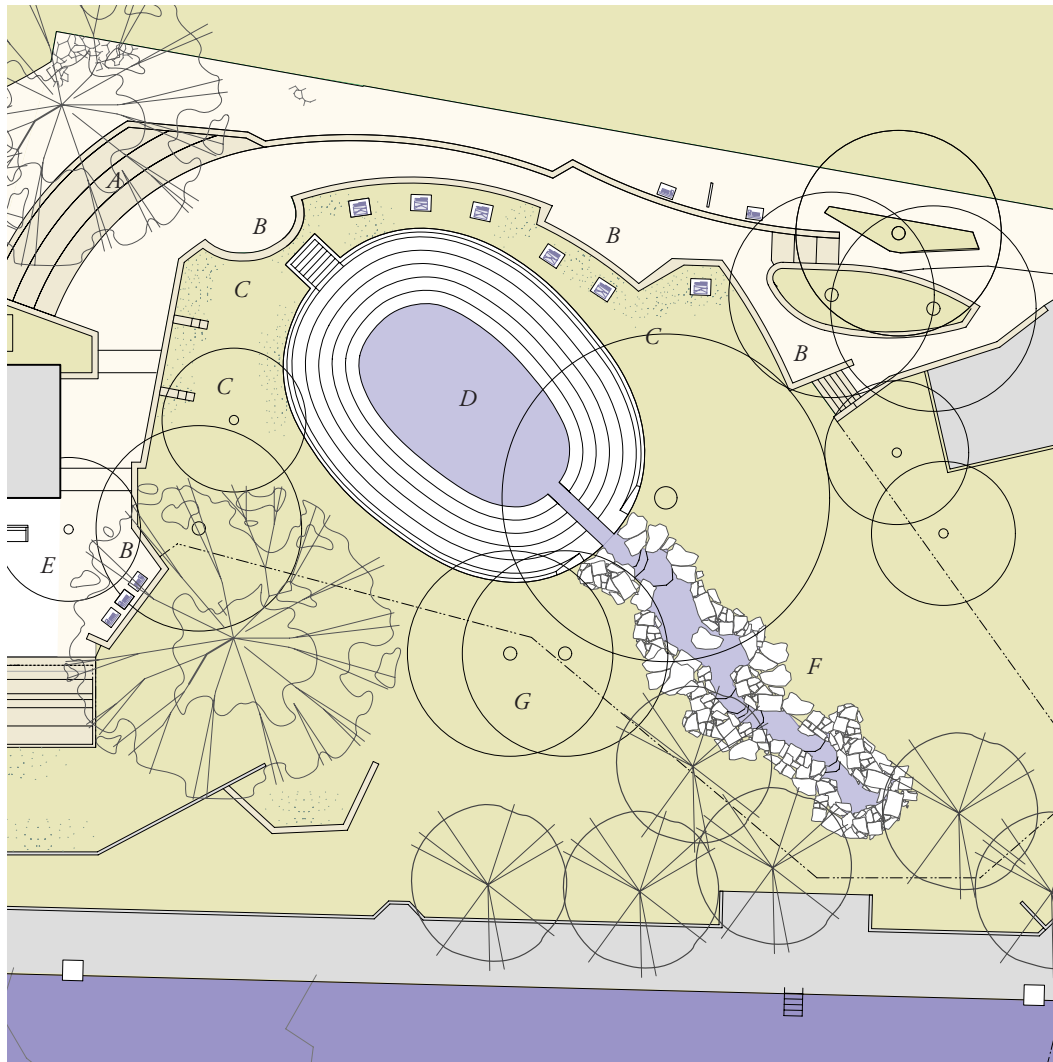
With this as a pre-condition, reconnect the waters of Eliza Spring to the waters of the Pool by building an open-to-the-sky spring run. This effort would, of course, involve the removal or abandonment of the existing concrete pipe, and it would require the study of passing the waters over (or under) the bypass tunnel. Remove the stonework blocking the southeast "keyhole" to visually reconnect the Spring to the Pool.

#### *Remove concrete wall extensions and redesign area*

Remove the post-Zilker concrete wall extensions and the recent stone wall extensions.

*Section at Eliza Spring. After removing alterations, new walls should be built leaving a landscape buffer between overlook and vessel. Note the integration of interpretation and wayfinding materials. Note also that the concrete bottom has been removed.*





*Eliza Spring*

- A. *New sweeping steps to reinforce the connection between Eliza Spring and the Tree Court.*
- B. *Create overlooks for viewing down into the bowl. Integrate interpretive materials into the experience to “tell the story” of the park.*
- C. *Create landscape buffer to gracefully frame the amphitheater with soft, attractive plants.*
- D. *Remove the concrete slab that covers the Spring. Coordinate with safety precautions to protect salamander.*
- E. *Wrap overlook around new, smaller concession stand to create a better connection to Tree Court.*
- F. *Rebuild spring run to connect the waters of Eliza to the waters of the Pool. Install operable sluice gates for operational flexibility.*
- G. *Regrade with berms or other landscape devices to mitigate against flooding.*



*Recreated spring run should use native Texas riparian planting.*

Lower the grades at the top of the amphitheater to create a generous planting bed at approximately top-of-wall (Zilker wall, that is) level. Build new retaining stone walls several feet back from the amphitheater perimeter to allow visitors visual access, while softening its presentation with a ring of appropriate plantings. New retaining walls should be built with Central Texas limestone. Redesign walks and approaches to include lookouts, interpretative materials and attractive landscaping.

The lawns between the train station and Eliza Spring presently has an old chain link fence for part of its length. Replacement of that fence with a more attractive permanent fence, with additional vine and shrub planting to serve as a barrier between the retaining wall and the heavily trafficked walk should be considered.

*Replace lawns with more natural planting areas*

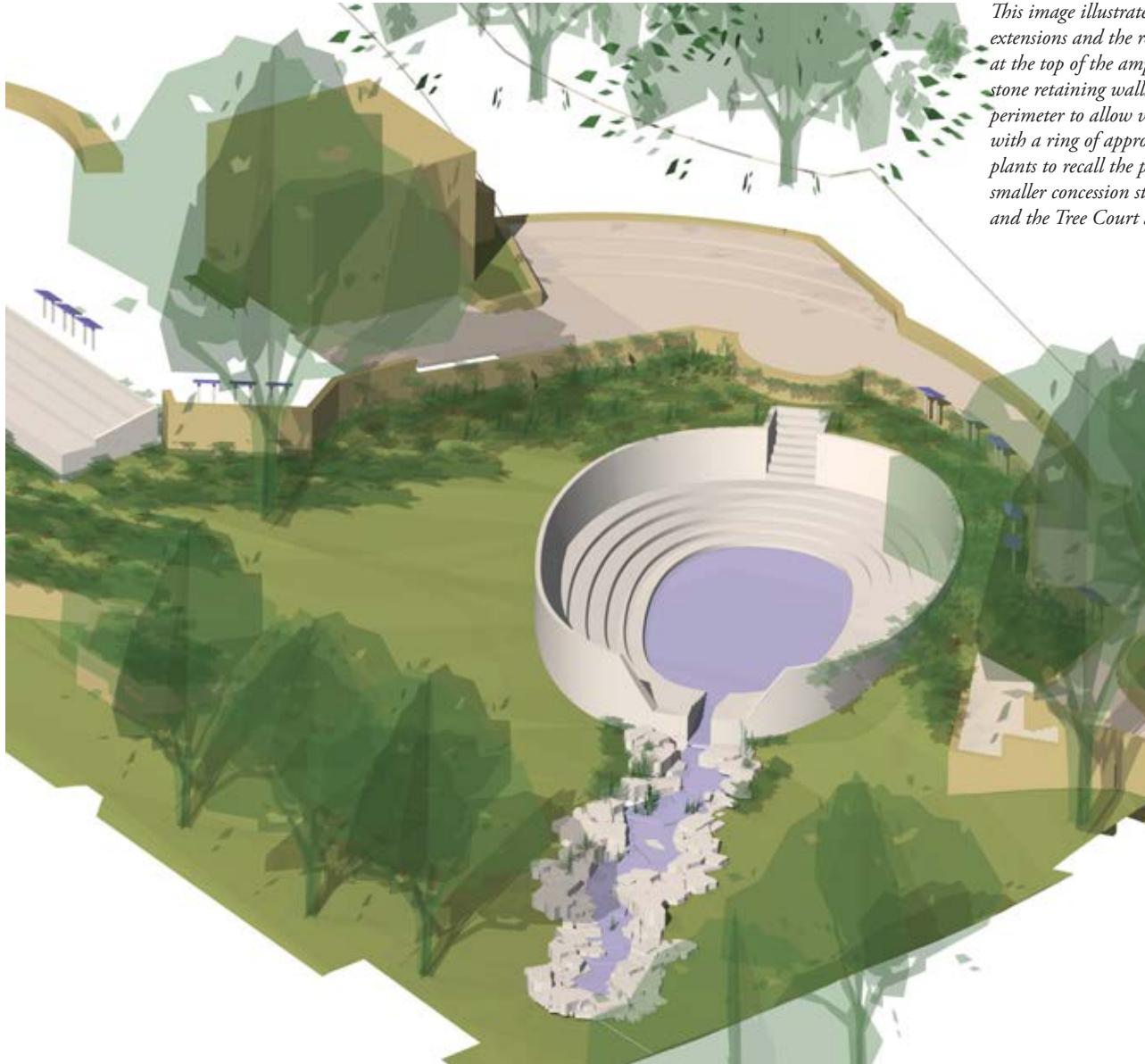
The lawn surrounding Eliza Spring should be replaced with native vegetation that would stabilize the slopes around the spring and require less maintenance. The area is large enough and sensitive enough that preparation of a planting plan will be required.

*Reclaim storage area beside concession stand*

The area to the north of the concession stand needs to be reclaimed from its current use as trailer parking and trash storage. That will allow for a clearer connection to the Tree Court.

*Plant more trees*

Eliza Spring is now shaded by a large cottonwood and a large elm, neither of which are in good condition. Because the salamander population in Eliza Spring is thriving, we assume that the current conditions of shade and leaf drop are agreeable to them. We recommend that new shade trees be planted to maintain the already dwindling shade, and that they be species with leaves that will decompose as readily as the leaves of the cottonwood and the American elm that currently shade the spring. We recommend the planting of river walnut (*Juglans microcarpa*), cedar elm (*Ulmus crassifolia*) and bald cypress (*Taxodium distichum*). The bald cypress should be from a hill country seed source, to be adaptable to our alkaline soil and water. While walnuts are known for allelopathic interactions with other plants, we have found no evidence of any negative interaction with animal life, and walnuts do occur naturally around hill country springs which would be assumed to have salamander populations.



*This image illustrates the removal of the post-Zilker concrete wall extensions and the recent stone wall extensions. The grades are lowered at the top of the amphitheater to create a generous planting bed. New stone retaining walls are built several feet back from the amphitheater perimeter to allow visitors visual access, while softening its presentation with a ring of appropriate plantings. Plantings should be native Texas plants to recall the plant palette during Zilker's time. Note that a smaller concession stand allows for connections between Eliza Spring and the Tree Court around both sides of the concession stand.*



# SUNKEN GARDEN



Sunken Garden is the home of one of the three principal springs of Barton Springs. It is located to the south of the creek, downstream from the Pool by several hundred feet. While the centerpiece is the spring itself, Sunken Garden is also noteworthy for its stone retaining walls, concentrically arranged to focus attention on the spring. Sunken Garden was built in 1937 under the Youth Progress Administration, a program of the FDR administration. Interestingly, an earlier building existed on this site, and part of its foundation was integrated into the construction we see today. While Sunken Garden is, indeed, an important historical element of the park, it is also important as one of the homes of the endangered Barton Springs Salamander.

The stone walls are generally 12" thick unreinforced masonry; their heights range from 6 ft. to 12 ft. tall. While some of the walls are relatively straight and in good repair, others are cracked and out of plumb; sometimes by as much as 12". Much of this failure can be traced to structural inadequacy; walls too narrow and tall, and inattention to hydrostatic pressure. Some of it can also be traced to tree roots.

Historically, the flat surfaces between the walls were paved with limestone paving stones, that created popular places for picnics and other recreational activities. Those stone surfaces appear to still be in place, but they are concealed by soil and weeds. Because it is an

*Sunken Garden as it appears today. Walls have collapsed, some trees are in poor health and the limestone paving stones are concealed by soil and weeds.*



*Sunken Garden during the 1980s. Trees are smaller and stone walls are intact. Though limestone paving is overgrown, the grounds are mown and neat.*

endangered species habitat, its waters are fenced to prevent public access.

Sunken Garden is accessible by the trail along the southern edge of the creek and by the Zilker Trail, and it is located close to parking. Prior to falling into disrepair, it was a popular attraction, with newspaper accounts reporting 250 picnickers on a given Sunday. Today it is a curious artifact that is poorly understood, and only casually visited. For most, it is not a destination.

Staff reports that Sunken Garden is subjected to harsh treatment after hours. The fence is occasionally cut, and trash and debris are commonly thrown into the water.

### ***Recommendations***

#### ***Reconstruct salamander habitat***

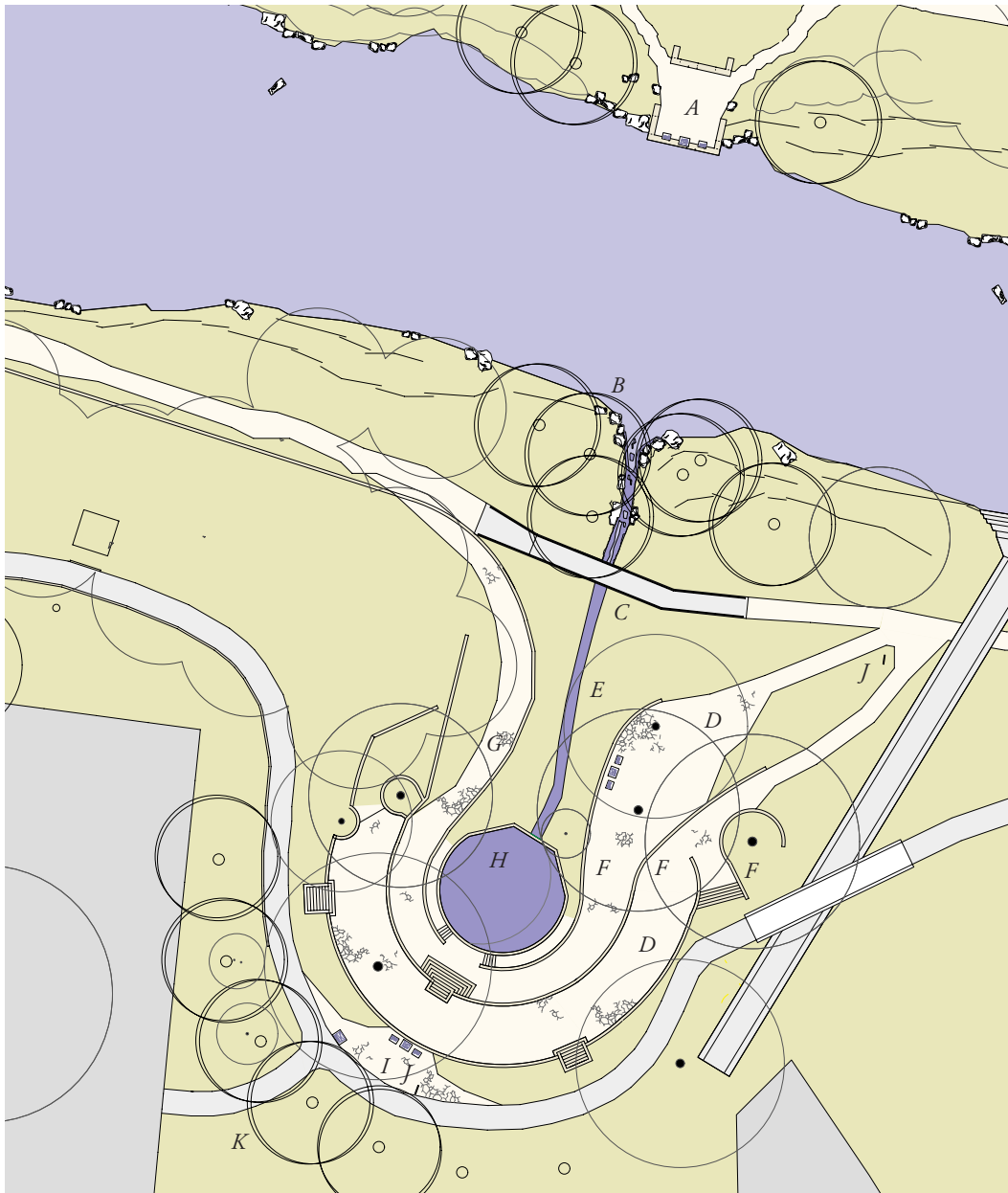
The Sunken Garden should be rehabilitated in two parts with the first part to be undertaken in the short term. This work should focus on those portions that most closely affect the salamander habitat; the spring vessel, and the wall immediately above it and the spring run. The goal should be to rehabilitate the architecture, but more importantly to create better conditions for increasing the salamander population here.

This work should include cleaning silt and debris from the bottom of the vessel and repairing its walls. An operable gate should be installed at the outflow to provide a tool for the biologists in the management of the habitat. A new fence should be installed, located so that it balances the security of the habitat with needs for visitor comfort and enjoyment. The fence should have conveniently located gates to facilitate maintenance, and the new fence should be shorter if possible to facilitate more comfortable viewing. This work should include landscape additions to complement the riparian landscape work already in place, and it should include landscape attention to the understory in the fenced area to either side of the spring run. Additional pecans can be planted within the spring fence as spots of sunlight emerge. The planting of riparian vegetation inside the spring fence, including coralberry, river fern, pigeonberry, beautyberry and inland sea oats, should continue. Above the spring walls near the Zilker Trail, a row of larger caliper (4"-5") trees, such as cedar elms or chinquapin oaks could be added, following the line of the retaining wall, to replace the large pecans that have been lost.

Special attention should be paid to the removal of nuisance species. This work should also include safety measures to protect the public from collapsing walls in other parts of the complex. And it should include wayfinding and interpretative materials in the effort.

This work should be undertaken by a team that includes a civil/structural engineer, an





### Sunken Garden

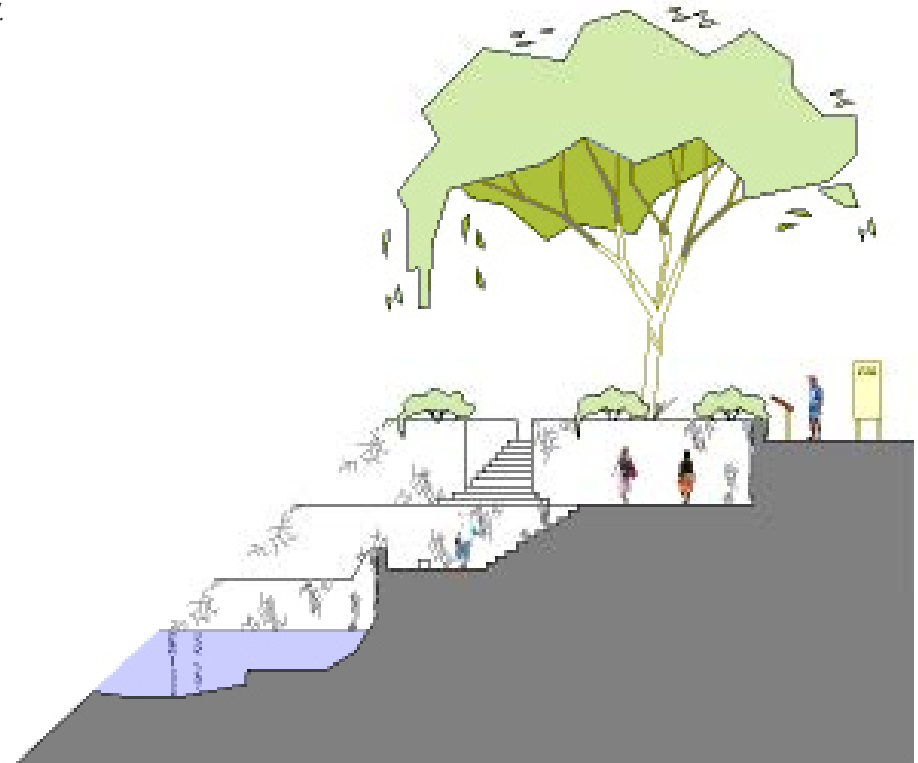
- A. Create an overlook on the north side to highlight the waterfall spilling from the Sunken Garden spring run. Integrate interpretative graphics into the experience to “tell the story” of Sunken Garden.
- B. Plant new cypress trees to frame the waterfall.
- C. Adopt a long-term goal to replace the existing bridge with a more attractive, more transparent bridge. The existing bridge is so bulky as to obscure views to one of Barton Springs’ more unusual features.
- D. Reconstruct stone paths to encourage walk-through traffic. Integrate interpretative materials into the experience.
- E. Working with salamander biologist and Friends groups, propose new groundcover and understory planting scheme.
- F. Repair and/or rebuild the historic stone walls. Reconstruction should use modern techniques to promote long service life. Coordinate the construction efforts with tree replacement to minimize disruption.
- G. Replace the existing fence with one that is shorter and more transparent. Reposition the fence so that visitors can walk the site more freely, while still being mindful of the importance of protecting the salamander habitat.
- H. Rehabilitate the stonework to complete the stone cylinder. Add an operable sluice gate. Remove sediment and debris from bottom of pool.
- I. Take advantage of this elevated position and create a new overlook. Integrate interpretative materials into the experience to “tell the story” of Sunken Garden.
- J. Include wayfinding, such as a site map and site signs.
- K. Plant new shade trees to complete the planted frame around the site.



*Sunken Garden in 2007. Some walls have collapsed, and the landscape is less organized. The fence is to protect the salamander habitat.*



*Stone stairs are in disrepair (above and right). Steps should be rehabilitated to improve footing, handrails should be added.*



*A rehabilitated Sunken Garden could be a suitable venue for small concerts, outdoor weddings, family reunions and the like.*



*Some walls are leaning precipitously. Strategy for stabilization should account for historic preservation, long-term service and public safety.*



*One short-term goal is to repair the walls of the spring vessel. In the same effort, add an operable sluice gate and remove sediment.*



*Repairing and stabilizing this crack will require the removal of the tree.*

environmental engineer, an architect experienced in historic preservation, a landscape architect and an interpretive planning designer. Due to the site's ecological sensitivity, this project will likely require permits from U.S. Fish and Wildlife among others.

*Enhance the site with masonry repair and clearer circulation*

Longer term, efforts should be made to make Sunken Garden a more active amenity. If it were in good repair, it could be a suitable venue for small concerts, outdoor weddings, family reunions and the like. And if it were more actively used, it would likely be less vulnerable to mischief. Furthermore, more activity is likely to translate into more active community stewardship. But for it to be a suitable venue, it needs to be in attractive and in good repair. To that end, this plan recommends that all of the masonry in the complex should be repaired including walls, stairs and stone walking surfaces. Tree lights should be considered for gentle evening illumination, and interpretive graphics should be integrated into the complex. Special attention should be paid to creating pedestrian traffic through the complex by clearly articulating the path from the creekside trail up and through the complex, and then back down to the trail again.

*This 1980 performance featured dancers, musicians, professional lighting and a chorus. A grand piano was even lowered into the complex for the occasion. Pianist Lyova Rasanov said, "Sunken Garden is a wonderful place for a performance. The acoustics were magical."*

*Poster: Courtesy of Lyova Rasanoff.*

**A Musical Invitation  
to the Sunken Garden**

Photo: Stan Kwart 1980

DAVID PERKOFF, FLUTE  
LYOVA ANDERSON, PIANO  
with special guests  
DEE McCANDLESS &  
GENE MENGER, DANCE  
JULIE CHRISTENSEN, VOICE

**THURS. OCT. 23 at 8 P.M. ADM. FREE**

Co-sponsored by Austin Parks and Recreation Dept., Musicians Performance Trust Fund and Austin Federation of Musicians, Local No. 433 and the National Endowment for the Arts.

*Map labels: Pool, Sunken Garden, Barton Creek, Barton Springs Rd., Robert E. Cox Rd., Rain date: First clear night*



*A dozen years later, Sunken Garden on February 19, 1993. The landscape is still nicely groomed and the flagstone paving stones are not yet obscured by overgrowth. According to photographer Alan Pogue, the wall section collapsed in the flooding of 1991. Note that the wall section to its right appears to be leaning as does the wall above it.  
Photo: Alan Pogue*

*Sunken Garden: A key to Eliza Spring*  
While Sunken Garden is located in a quiet part of the park, Eliza Spring is right in the thick of the heaviest visitor traffic. While Sunken Garden has a struggling salamander population, Eliza has the largest and most robust. While Sunken Garden has a peripheral connection to LBJ (he was the Texas Director of the Youth Progress Administration), Eliza has a very direct connection to Andrew Zilker, the park's namesake (he built the Eliza Spring amphitheater). For all these reasons, Eliza would normally be rehabilitated first. But Eliza is the home to so much of the salamander population that a construction mishap there could jeopardize the entire species. This dire prospect suggests that a pre-condition to rehabilitating Eliza Spring should be to build a sustainable salamander population in another location. Though not perfect, Sunken Garden is a good candidate. Unlike the Main Spring, the waters of Sunken Garden are fenced, which protects them from public traffic. And since Sunken Garden is not part of the Pool, its waters can be managed to better optimize conditions.

### ***Notes on Masonry Restoration***

The stone walls of Sunken Garden are built of unreinforced masonry, which are cracking and leaning in places, and in some cases have failed completely and have collapsed.

These kinds structural problems are probably caused by a number of factors; tree roots too close to the back of the walls, soil pressure causing walls to topple and in some instances the walls are simply too tall and slender. At stair locations, corners can be seen to be pulling apart, which is likely due to insufficient “keying” of stones across the intersection. The challenge for the historic preservation architect is to find solutions that restore the walls in minimally intrusive ways, which takes on special significance in cases like this, where the repairs to the failing parts must be integrated seamlessly with adjacent walls that are structurally intact.

This planning team considered a number of techniques, noting that each has advantages and disadvantages. The team considered the range of structural conditions this complex presents, and concluded that a robust solution would likely include the use of more than one strategy. The process of designing the remediation should begin with soils tests to determine characteristics. Then some exploratory digging should be done to reveal the size and profile of the footings.

### *Concepts*

#### *Concrete Backer Wall*

Were these walls new, the recommendation would be easy. Simply dismantle the stonework, build a series of concrete backer walls, and rebuild the stonework against the concrete walls as a veneer. But the dismantling would destroy the original idiosyncratic masonry patterns, so the result would be more of a replica than a restoration. Plus, using this technique only in the damaged areas would introduce new problems of differential movement, because the repaired parts and the original, intact parts would behave differently, because their structural systems would be different. While the use of this technique may, indeed, be necessary in limited areas, it should not be seen as the first choice.

#### *Soil Anchor*

Openings are made in the walls for helical screws, which are driven horizontally back into the soils about five feet. A steel compression plate would then be affixed to the exposed end of the screw, securing the wall in position. These screws would likely be placed 48” apart horizontally, with two rows required; one at the one-third height and the other at the two-thirds height.

This technique would likely limit the need to dismantle walls and rebuild them. Further, some leaning parts might be pushed back into level before installing the screws. In any event, it would require digging a trench behind the wall to relieve soils pressure and to allow for pushing the walls back if required. Once the walls are repointed and repaired, new soils would be installed.

The soil anchor technique offers the potential for preserving much of the historic fabric of the walls. One potentially negative consideration would be the visible pattern of steel compression plates. They would certainly not be “original”, but some might argue that they authentically communicate the nature of the problems that were addressed.



### *Geosynthetic Mesh*

With this technique, a trench is dug behind the wall to expose its back side, and a series of stainless steel anchors is epoxied into the stonework. Then the geosynthetic mesh (Tensar is one brand name) is attached, and buried horizontally back into the soil. Clearly, the installation of the mesh would need to be coordinated with the reinstallation of the soils behind the wall. Two rows of the mesh would likely be required, one at the one-third height and the other at the two-thirds height.

Like the soil anchor technique, this would likely allow for much of the preservation of the historic wall fabric, and some of the leaning parts might be pushed back into plumb before installing the mesh. One advantage of the mesh over the soil anchor technique; it would leave no obvious artifact of the repairs.

### *Braces*

With this technique, the wall would simply be propped up from the front using visible braces. The planning team visualized this technique using a steel brace every 48" along the remediation area. Because the braces would be so obvious, this would likely be the most controversial solution. But some might argue that it is the most authentic solution, in that it frankly expresses the challenges faced, and it clearly distinguishes between original fabric and the artifact of repair.

Regardless of the technique, trenching behind the walls should be anticipated. They should be backfilled with stable material (this could be crushed limestone or it could possibly be reclaimed original soils), which should be topped by a layer of clay to limit water penetration. Requirements for repair work to the wall footings is a near-certainty.

Drainage is always an issue with retaining walls, and in this case, the land should be graded away from the walls where possible. In the flat limestone walking surfaces, area drains should be integrated into them inconspicuously.

The choice of restoration techniques should be based on a careful evaluation of conditions, such as height of wall, degree of structural failure and contributing factors like tree roots or soils characteristics. It should also consider the skill of the work force, and, of course, public safety. The final design will likely include a range of nuanced decisions. Some walls are out-of-plumb, but not by much, so they may be deemed to be stable enough and not in need of remediation. For some of the lesser cracking, it may be possible to simply repoint without trying to realign the pieces, an especially likely possibility at corners near the stairs.

### *Stairs*



The stairs are defining features of the place, and, obviously, they are the clearest way to negotiate the level changes. But the tread surfaces are uneven and with some stones missing, they present a hazard. The stairs should be rebuilt with new, even treads. Steel handrails should be added for visitor safety and convenience. During the design process, the architect should coordinate with City of Austin code officials regarding provisions in the Uniform Code for Building Conservation governing the reconstruction of historic elements that do not comply with today's codes.

#### *Public Participation*

There are many aspects of this project that will be of keen interest for the public. The work will be disruptive, so the place will be off-limits during construction. And some of the techniques would leave visible artifacts of the repair, which the public will want to understand and discuss beforehand. And perhaps most controversially, the work will require the removal of some large (though in some cases unhealthy) trees. All of these matters should be thoroughly aired with the public.



# DOWNSTREAM OF THE POOL

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## “DOG PARK”

The so-called “Dog Park” is an unintended, but extremely popular destination located just downstream from the downstream dam. While this area does not have an official name, it is popularly called “Dog Park” or “Barking Springs”, because--despite signs prohibiting it--people bring their dogs to play in the rushing water. The spectacle of the dogs and the rushing water attracts more people still, creating a lively and enjoyable scene. “Dog Park” is unsupervised, it is free and it is open year round, uninterrupted by the cleaning and maintenance that periodically closes the Pool.

Both the north and south banks are armored with concrete slabs to mitigate against erosion. The slab on the north shore is studded with protruding rocks as if to discourage comfortable human use. On the north side, official access is from the area above by way of a stone stair. But the traffic is so intense that numerous footpaths have been beaten through the vegetation to make way. Since there is no stair at all on the south side, access is entirely by way of informal footpaths through the vegetation.

### *Recommendations*

#### *Replace the concrete armor with more natural stonework*

Replace the existing concrete armor slabs with new stonework laid up in irregular layers that at once make the water easily accessible, while also abstractly recalling shapes of natural stone outcroppings. The stonework on the south bank should incorporate the stream of water spilling from a horizontal slot in the dam to create an animated series of rivulets and pools. While no scientific claims should be made, it might be hoped that these water features would attract aquatic life and perhaps even foster ecological interactions between the Pool and the creek. To replace the armored slopes, use weathered, irregular form limestones, mixing in larger specimen limestone boulders for accents and seating.

#### *Improve stair access down the slope*

Rehabilitate the existing stair for safer footing, and add handrails. Build two new stone stairs, one to the north and one to the south. For new stairs, use limestone flags to match or improve upon the stonework of the existing stairs.

#### *Develop the area on the north bank, just below the dam, into an overlook*

Consider additional hardscape on the north side of the creek, atop the retaining wall between the steps and the dam. The soil level in this area is lower than the retaining wall,



*“Dog Park”, a lively and enjoyable scene.  
Photo: Megan Peyton*

which causes it to drain poorly during wet periods or after floods. Paving the low mud terrace with weathered, irregular limestone flags would let the area work more as an overlook. The stone should be mortared in place to better withstand flooding and so that when the area floods mud can be hosed or swept off. Begin removing invasive trees on the slope between the creek and the playscape, like chinaberries and hackberries, and replacing them with native understory like Carolina buckthorn and blackhaw viburnum.

*Define a width for the trail, and replant outside that, to restore habitat*

The terrace that begins at the bottom of the stairs and parallels the creek as it flows downstream looks like a wide gravel road. It appears wider than necessary for access to the canoe rental. Defining the path at a particular width – perhaps 14’ wide with provision for a wider turnaround – would make the area appear less like a maintenance access road. The new trail would need to be edged, perhaps with intermittent large boulders, to maintain the newly introduced vegetation. It is recommended that the areas outside the newly defined trail be revegetated according to City of Austin standard specification 609S. Planting a mixed understory of native small trees, shrubs and perennials and adding ‘Mexican’ sycamore, bald cypress and other trees adapted to hill country creeks would be appropriate.

#### FURTHER DOWNSTREAM

Downstream from the “Dog Park”, the creek flows unimpeded towards Lady Bird Lake. There are trails on both the north and the south banks. The south trail bridges across the Sunken Garden spring run, then connects with the Zilker Trail. The north trail extends past a canoe rental concession and toward the bridge at Barton Springs Road, rising to connect a spur of the hike and bike trail system. This area is also punctuated by numerous stormwater outfalls. The landscape is naturalistic, though the riparian landscape seems generally depleted.

#### *Recommendations*

##### *Enhance the Sunken Garden outfall*

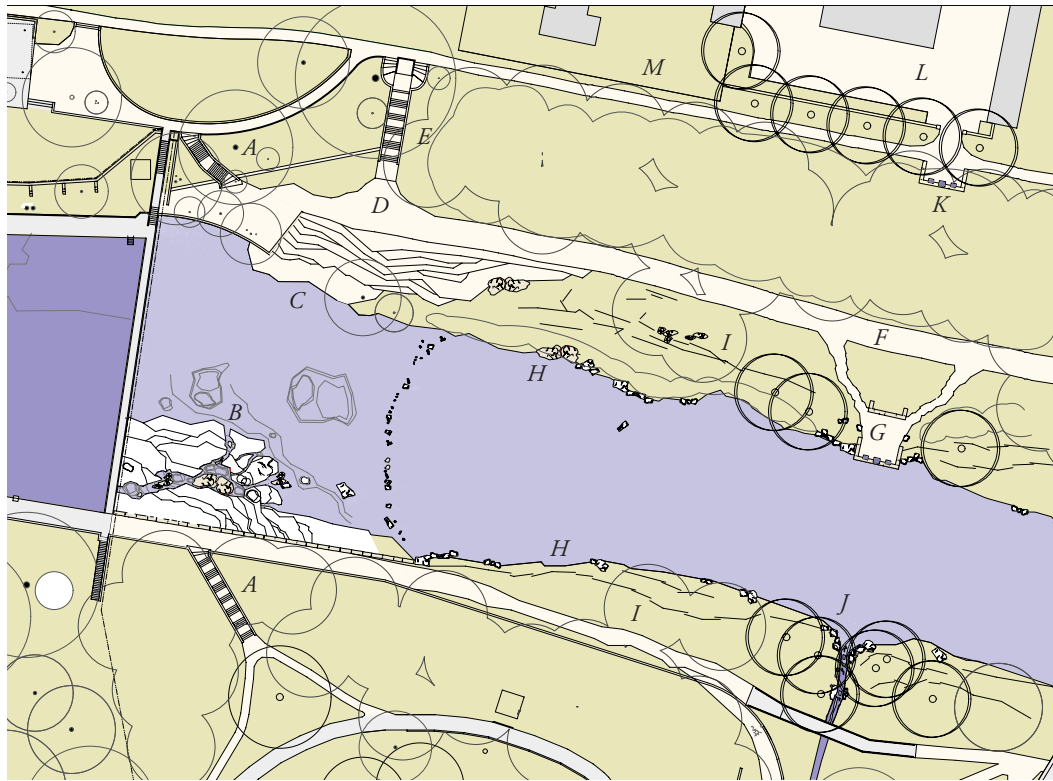
The Sunken Garden outfall is a significant natural event, yet for the casual visitor, it is unclear exactly what it is. It looks like a small waterfall, but it could reasonably be interpreted to be a broken water main. It is simply not clear, which is an unfortunate opportunity lost.

Sunken Garden is, of course, one of the three main springs in the complex. Its outfall should be acknowledged and celebrated. This plan recommends a number of steps:

- Build a viewing area immediately across the creek from the outfall. This area should include interpretative materials to explain the event and its relationship to its larger natural context.

*The spilling water effect may bear some resemblance to this Llano River example.*





*“Dog Park” and Further Downstream*

- A. Build new stone stair.
- B. Remove existing concrete and redesign with new stonework for greater comfort and more natural beauty. Using water spilling over the dam, integrate flow into the design to create an attractive “fish ladder” effect.
- C. Remove existing concrete slab and redesign with new stonework for greater comfort and natural beauty.
- D. Add new weathered limestone paving .
- E. Rehabilitate existing stone stair for safer footing, add handrail.
- F. Define a particular dimension to this gravel path using stone edging and the occasional boulder. Revegetate areas outside path with native plants.
- G. Create an overlook to highlight the waterfall spilling from the Sunken Garden spring run. Integrate interpretative graphics into the experience to “tell the story” of Sunken Garden.
- H. Restore riparian vegetation along creek edge, intermingle with boulder groupings.
- I. Reestablish diverse forest along slope of creek bank.
- J. Plant new cypress trees to frame the waterfall.
- K. Take advantage of this elevated position to create an overlook highlighting the waterfall spilling from the Sunken Garden spring run. Thin the tree canopy to encourage viewing--especially during the winter--across the creek to Sunken Garden. Integrate interpretative graphics into the experience to “tell the story” of Sunken Garden.
- L. Adopt a long-term goal of reassigning the buildings of the maintenance yard for more public, park uses. This should include the removal of the wood privacy fence in favor of a low stone wall.
- M. Adopt a long-term plan of relocating the train tracks to the north of the existing maintenance yard. This would allow a widening of the upper path, making biking and walking from the lake to the Pool more enjoyable.



*Reestablish diverse forest along slope of creek bank.*



*Define a particular dimension to this gravel path using stone edging and the occasional boulder. Revegetate areas outside path with native plants.*



*Restore riparian vegetation along creek edge, intermingle with boulder groupings.*

- Also on the north side, build a viewing area at the upper level trail, near what is now the maintenance facility. This should also be appointed with interpretative materials.
- The area around the outfall itself should be planted in distinctive native Texas trees to give subtle, though natural, cues to the visitor that the event is important. We recommend the addition of bald cypress by and across from the outflow of the Sunken Garden spring, to emphasize the almost hidden mouth of the Sunken Garden spring and the point on the trail across the creek from which it is visible.
- Vegetation should be thinned of nuisance species like hackberries, so that the Sunken Garden complex is more easily visible from the north shore.
- Long term, replace the bridge over the spring run with a more attractive, more transparent bridge.



*Remove existing concrete and redesign with new stonework for greater comfort and more natural beauty. Using water spilling over the dam, integrate flow into the design to create an attractive “fish ladder” effect.*



*Remove existing concrete slab and redesign with new stonework for greater comfort and natural beauty. Add new weathered limestone paving at terrace below stairs . Rehabilitate existing stone stair for safer footing and add handrail.*



*Create an overlook to highlight the waterfall spilling from the Sunken Garden spring run.*

### *Inventory and mitigate storm drainage outfalls into creek*

While it is beyond the scope of this plan, efforts should be made to inventory the stormwater outfalls with the goal of developing a plan for making them both attractive and functional. This effort may appropriately include a best-management-practices analysis looking for mitigation opportunities for surface runoff into the creek.

### *Add native plantings*

Along the creek banks themselves, riparian vegetation should be restored, and should be intermingled with naturalistic boulder groupings. Invasive species should be removed and replaced with creek-appropriate native Texas plants and trees.

There are some large pecans in the slopes above the creek and the “Dog Park”, but along the lower trail, additional tree planting is needed. The dramatic fast growing Mexican Sycamore should grow well in this area. In order to reestablish a more diverse forest along the creekbank and on the slope above the creek, a variety of shade and smaller trees should be



*Adopt a long-term plan of relocating the train tracks to the north of the existing maintenance yard. This would allow a widening of this upper path, making biking and walking from the lake to the Pool more enjoyable.*



*Define a particular dimension to this gravel path using stone edging and the occasional boulder. Revegetate areas outside path with native plants.*



*Restore riparian vegetation along creek edge, intermingle with boulder groupings.*

introduced. Good choices for shade trees, in addition to the sycamore and cypress, would be cedar elm, Western soapberry and Texas Ash. For smaller, understory trees, planted in groves of 5 or more of a single variety, good choices include Mexican plum, Texas redbud, yaupon holly and Eve's necklace. There is not a functioning irrigation system in this area, but for creekside plantings, the water table may be sufficiently high that fall and winter tree plantings would be successful without additional water. For planting on the slope between the train tracks and the lower trail, locate a hose bib or quick coupler within 100 feet of any additional planting, so that hose end irrigation on a timer can be used to establish new trees.





*A Hill Country stream to which local limestone boulders and native vegetation have been added. An example of how a comparatively denuded riparian landscape can be enhanced.*

*An example of diverse creekside vegetation in the western Hill Country. A similar mix of diverse native vegetation and boulders would be appropriate and beautiful along lower Barton Creek.  
Photo: Rachel Guest*



# GROUNDS OVERVIEW

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The Barton Springs Pool area is an extensively modified landscape. Concrete sidewalks raise us several feet above the water level; evenly graded dirt slopes obliterated the original rocky irregular terrain; and irrigated, mowed lawns cover what would once have been a tangle of native creekside vegetation. Those changes were done long ago to accommodate the crowds of people that come to springs, and they may have been unavoidable. The rocky South Bluff with its rough path reminds us both of what was lost and what was gained in the modifications that have been made to the springs landscape.

There has been a tendency, when modifying the Pool landscape, to lean toward the style of a stereotypical suburban yard, with extensive lawns, visible fences at property lines, and random planting with little diversity or understory vegetation. This plan aims to direct the springs area landscape away from that suburban aesthetic, in two alternative directions. The first is to restore a more easily sustained landscape of native plants in those areas

*The grounds at Barton Springs are characterized by extensive lawns with little plant diversity or understory vegetation.*

TREE CONDITION

- 1. GREAT CONDITION  
*Long life expected.*
- 2. GOOD CONDITION  
*Of a variety that may not have a long life, or may tend to become hazardous.*
- 3. COMPROMISING FACTORS APPARENT  
*That can be expected to affect longevity or tendency to become hazardous.*
- 4. SHOULD BE ASSESSED  
*To minimize the potential for hazards.*
- 5. COMPROMISING DAMAGE APPARENT



where that works for people visiting the Pool. The second is to recognize that parts of the Pool landscape – the Tree Court in particular – are some of the most heavily used pedestrian areas in Austin. Maintaining and, especially, keeping plants alive in such a landscape requires careful design and comparatively intense maintenance. A goal of this master plan is to keep the springs area landscape green, healthy, and sustainable, while accommodating the ever increasing crowds of visitors.

### *TREES*

Most of the trees around Barton Springs are pecans. Pecans are a majestic native tree that occurs naturally around springs in the Hill Country. Naturally, however, one would expect pecans to occur in a diverse forest with many other kinds of trees. With about 75% of the trees around Barton Springs being pecans, the Barton Springs area is close to a forest monoculture. The problem with a monoculture is that the weaknesses of the dominant species are magnified. In the case of Barton Springs, the weaknesses of pecans are their large, heavy branches, and their tendency to develop often hidden areas of decay within branches and trunks, causing them to drop branches or break without warning. This makes pecans difficult to manage in heavily used pedestrian areas, like Barton Springs. The other prevalent tree around Barton Springs is the cottonwood, which according to the Texas Native Plant Database at Texas A&M has limited use “as a street or landscape tree (because of their) shallow root system, weak wood, and the fact that they are relatively short lived (30-60 years)”. The large cottonwoods around Barton Springs are nearing the end of that range. Management of large old pecans and cottonwoods is an issue wherever they occur. The City of San Antonio removed the largest cottonwoods from the Riverwalk in 1978, as a safety precaution after one of them dropped a large limb. The City of San Marcos has been assessing the park canopy, removing problematic pecans as necessary.

Recognizing the importance of the trees to the ambiance of Barton Springs, the planning team undertook a visual evaluation process in an effort to better understand their condition. The process took the simple approach of assigning a grade from 1 to 5 for each tree. The purpose was never to use these findings as a final word. Instead, it was to gain a general understanding of the general condition of the collection, so that recommendations for further action could be better targeted. The evaluation was performed by the team’s landscape architect and a licensed arborist. They then consulted with the Parks Department’s staff arborist to compare notes.

### *Recommendations*

#### *Tree Assessment*

Of the more than 125 trees evaluated, about one-third of them suggests that a more thor-



*The landscape at Eliza Spring before the influence of the suburban aesthetic.  
PICA 00972, Austin History Center, Austin Public Library.*

*Proposed Trees*

- A. Cedar Elm, Texas Red Oak, River Walnut, Texas Ash.
- B. Live Oaks.
- C. River Walnut, Cedar Elm and Bald Cypress.
- D. Big Tooth Maple, Texas Red Oak, Cedar Elm.
- E. Cedar Elm, Chinquapin Oak, Texas Ash.
- F. Bald Cypress.
- G. Cedar Elm, Big Tooth Maple, Texas Red Oak
- H. Chinquapin Oak, Bur Oak,
- I. Rusty Blackhaw Virburnum, Eve's Necklace, Escarpment Black Cherry.
- J. Bald Cypress.
- K. Bur Oaks and Chinquapin Oak.
- L. Cedar Elm, Monterrey Oak, Texas Ash.
- M. Chinquapin Oak.
- N. Bald Cypress.
- O. Bald Cypress.
- P. Mexican Sycamore, Cedar Elm, Western Soapberry, Texas Ash. Mexican Plum, Texas Redbud, Yaupon Holly, Eve's Necklace.
- Q. Mexican Sycamore, Bald Cypress, Cedar Elm, Western Soapberry, Texas Ash. Mexican Plum, Texas Redbud and Eve's Necklace.





*75% of the trees in the Barton Springs area are pecans, and that makes the flaws of this beautiful native tree potentially devastating for the tree canopy around Barton Springs. (Left) Photo: Forest and Kim Starr*

*Damaged and deteriorating pecans around the Sunken Garden. Note the broken and missing limbs, the cavities and the generally poor form. (Right)*

ough evaluation is in order before arriving at final recommendations for either accelerated tree care or tree removal and replacement for reasons of public safety. This work should be performed by a tree scientist working in conjunction with a licensed arborist, and should use state-of-the-art evaluation techniques. Tree replacement and tree treatment should be included in this effort.

#### *Plant New Trees*

An important goal of this plan is to diversify the tree canopy in the Barton Springs area, by planting a wider variety of native trees. All trees planted should be well adapted, long lived native trees, that would naturally be found in similar environments in the Texas Hill Country. It's important that native trees be planted in the springs area both because they are best adapted to survive in our climate and conditions through the years, and also because they are reminders of the unique beauty of our Hill Country springs. It's important that the native trees selected be long lived, because the expense, both financial and emotional, of coping with the decline of large trees in public places should be avoided where

*Lawn and Groundcover*

- A. Native and Naturalized Shrubs, Grasses and Perennials.*
- B. Boulder Garden.*
- C. Lush waterside "riparian" plantings, such as river ferns, horsetail, columbine and inland sea oats.*
- D. Native bank stabilizing vegetation.*





possible. Around San Pedro Springs in San Antonio, bald cypress were planted at much the same time that pecans were planted around Barton Springs. Bald cypress typically age more gracefully than pecans, and as a result, the bald cypress around San Pedro Springs are at their majestic peak, while our pecans are deteriorating and being removed. Throughout this plan, particular species of trees will be identified as particularly suitable for specific locations. In every case, our goal is to plant trees in response to our understanding of particular environments. These trees should become part of the unique ecology of an area, and be - as much as possible - self-sustaining.

#### *Increase tree maintenance*

Pecans, the dominant tree in the springs area, require constant maintenance as they age. PARD has undertaken a program to assess the condition of the existing tree canopy, and to do the maintenance that is indicated by that assessment. Adequate maintenance of the tree canopy in a heavily used park like Barton Springs is a matter of public safety and cannot be deferred.

#### **PLANTING BEDS**

Planting beds require more specialized maintenance than lawns, and cost more to establish. That said, what begins as a planting bed of, for example, inland sea oats, dwarf yaupon or cenizo, can become, when established, an area requiring only occasional watering and maintenance. Some lawn areas around Barton Springs are difficult to maintain because they are steep or inaccessible. There have been instances of riding lawn mowers tipping over onto the sidewalk next to the Pool (spilling gasoline at that) when trying to mow some of these lawns. These same steep and inaccessible lawns tend not to be used much, either, for sitting or playing. Replacing lawn that will always require mowing and is too steep to use, with a naturalizing planting bed could reduce maintenance in the long run, while adding beauty.

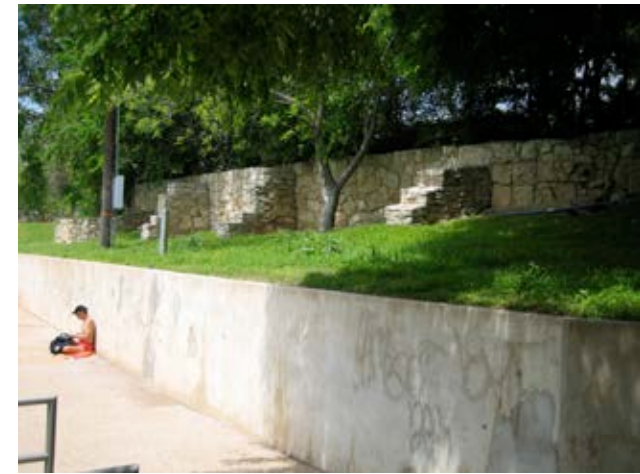
#### **Recommendation**

##### *Replace lawn with planting beds, where possible*

Replace areas of lawn that are difficult to maintain and are not used with naturalizing planting beds. With the exception of the “Boulder Garden”, which is a longer-term recommendation, all of the proposed naturalizing planting beds should be considered a short-term recommendation. Their design and installation should be coordinated with the design and installation of the new irrigation system.

#### *Boulder Garden*

This plan recommends a ‘Boulder Garden’ for the steep slope between the front of the



*An area of difficult-to-mow St. Augustine grass. Replace with attractive, low-water-use native Texas plantings.*



*Native plantings can give a more natural appearance to the landscape, while reducing maintenance and water use requirements.*



*St. Augustine is a non-native turf grass that thrives in shade and requires irrigation to survive. In the sun, it requires substantial irrigation: in the shade, less so. All the St. Augustine slopes around the Pool have functioning, effective irrigation systems. If the irrigation systems were turned off and the St. Augustine not watered, it would weaken and eventually die, even in the shade. In spite of its water use, it is the only lawn that will thrive in shade in Austin.*

Bathroom and the Pool, as its most ambitious replacement of turf with naturalizing, low maintenance plantings. By terracing the slope with local limestone boulders, and planting native and naturalizing perennials and shrubs among them, a nondescript, difficult to maintain lawn area could be replaced with a beautiful garden that refers to the slopes and plants that would have existed in this location before the extensive modification of the Pool environment. This idea is discussed in more detail in the ‘North Grounds: North Lawn’ part of this document.

### ***TURF***

One of the principles of xeriscape is the appropriate use of turf. Within the Pool fence and around the Hillside theater, the slopes are covered with common St. Augustine grass. St. Augustine is a non-native turf grass that thrives in shade and requires irrigation to survive. In the sun, it requires substantial irrigation: in the shade, less so. All the St. Augustine slopes around the Pool have functioning, effective irrigation systems. If the irrigation systems were turned off and the St. Augustine not watered, it would weaken and eventually die, even in the shade. In spite of its water use, St. Augustine is the only lawn grass that will thrive in shade in Austin.

Because the lawns around Barton Springs are well-used and enjoyed, they are a good use of landscape water, and this plan considers them an appropriate use of turf. In other sections, lawn areas have been identified that are not well-used, recommending their replacement with either gravel or naturalizing planting beds..

Outside the Pool fence and the hillside theater, there is very little irrigated turf. Much of the unirrigated dry lawns is a mixture of Bermuda grass, horseherb, and other low growing weedy plants. This provides an adequate if dusty turf for playing. Extension of irrigation to these dry lawns requires more construction, maintenance and ongoing expense than is practical or sustainable at this time.

### ***Recommendations***

#### ***Increase maintenance***

Many traditional lawn maintenance techniques are not possible for the lawns in the springs area, because of the danger of polluting the springs. Both the dry and the irrigated lawns around Barton Springs are subject to heavy use, and it shows. A program of periodic lawn maintenance should be undertaken, to help maintain both the dry and the irrigated lawns. This program cannot include the regular use of any chemicals or organic additives to the lawns, because of the possibility of runoff into the Pool. The City of Austin Grow Green program can provide direction and consultation for this effort. That maintenance program

should include:

- Test the soil for nutrient levels and levels of organic matter
- Aerate the lawn twice a year with a hollow tined aerator.
- Driving over leaves with a mulching lawnmower so that the leaves can contribute organic matter to the soil.
- If soil tests indicate that the soil is deficient in some way, consult with COA Grow Green program representative for current best management practices.
- Control weeds by mowing and hand removal. As particular weed problems appear, consult with COA Grow Green program representative for current best management practices.

#### *Replace lawn where too worn*

Where the dry lawns thin and become worn from overuse, in spite of aeration, the plan recommends they be replaced. Periodic resodding of worn areas is one option. Another is replacing hard to maintain lawn areas with compacted, limestone edged decomposed granite. This provides an adequate, less dusty play surface.

#### **IRRIGATION**

Irrigation is a requirement for planting in Austin. It can be someone holding a hose or an automatic irrigation system, but plants here only occasionally survive planting without supplemental water. In the Barton Springs area, with its heavy use and attendant soil compaction, few seedlings of existing vegetation become established. Most vegetation that becomes established without irrigation in the Barton Springs area is not desirable: ragweed, hackberries, nandina, ligustrum, and poison ivy.

Watering newly planted vegetation by hand can take a long time, and often does not provide the deep soaking required. Using water tank trucks is an alternative for areas fairly close to pavement. In general, however, for extensive lawns like those at Barton Springs, and extensive planting, automatic irrigation is required. For native and naturalizing plants, irrigation is generally considered required for the two years it takes for plants to become established. In general, drought tolerant plantings are appropriate in the Barton Springs area, and throughout Austin. However, there are few plants that do not benefit from occasional watering during dry periods, particularly plants that grow in the generally compacted soil of heavily used parkland.

Automatic irrigation systems, however, are not maintenance free. Heads can be dam-



*The unirrigated, largely Bermuda grass lawn outside the South Entry. It is comparatively lush in wet years (like the year when this picture was taken), but will be brown in drier summers. It will not, however, tolerate shade.*

*The recently opened Town Lake Park draws all of its irrigation water from Lady Bird Lake, saving an estimated \$75,000 annually.*

*Source: Robert Holland, Project Manager, Planning and Engineering Department, City of Austin.*

aged by the heavy trucks that bring scenery to the Hillside theater, or by vandalism, or in a thousand other ways. The number of licensed irrigators maintaining PARD irrigation systems has been dropping steadily over the years, and there are now two licensed irrigators responsible for all irrigation in PARD facilities. This trend is not expected to change in the foreseeable future.

Automatic irrigation systems have been installed over the years throughout the Barton Springs area. Irrigation has been installed and apparently abandoned throughout the South Fields, in the Sandbox Grove and around Zilker Playscape. There are recently functioning irrigation systems within the Pool fence and on the slope around the Hillside Theater. Those irrigation systems were installed between fifteen and thirty years ago. Only the irrigation system within the Pool fence is still used on a regular basis.

The planning team has not found construction documents of the irrigation system within the Pool fence. There are construction documents for the Hillside Theater area and the Zilker playscape area, but in the playscape area, enough construction was done after the irrigation system was installed to make the drawings obsolete. Because there is no documentation, it is impossible to say with certainty how the irrigation systems are laid out. It appears, however, that all these irrigation systems on the north side of the Pool are served by a water meter in the South Fields, through a pipe strapped to the downstream dam.

There is the possibility that the same water lines are providing irrigation water and potable water to park restrooms and drinking fountains. Park facilities like restrooms and drinking fountains require potable – drinkable – water. A water line that provides water for irrigation cannot also provide potable water because of the risk of contamination. With an old, complex system that has been expanded and modified, and is not documented, the risk of cross-connections must be addressed so that the City is not exposed to any public health liability.

### ***Recommendations*** ***Redesign irrigation system***

Because irrigation technology and efficiency has improved greatly in the last fifteen years, and because there is limited information about the construction of the existing system, a total irrigation system replacement is recommended. This is a short-term recommendation, and should be coordinated with the design of new planting beds and the location of new trees.

One goal of this master plan is to minimize permanent irrigation, while providing sufficient temporary irrigation to establish naturalizing plants and trees, and to replace potable

water in irrigation with alternative water sources, where possible. Irrigation systems should support the landscape goals for the springs area: lawns only where they are used, diversified native/naturalized plantings in other areas, and a diversified tree canopy throughout. Lawns where people sit, that are shaded or are planned to be shaded, should have permanent rotor or spray sprinkler head automatic irrigation. Shrub and perennial beds should have spray or drip irrigation for at least the first two years, and a hose bib close enough to provide emergency supplemental water when needed. All newly planted trees should have temporary bubblers or drip irrigation, or be close enough to pavement to be watered for two years by a water truck, or be in an area with automatic turf irrigation.

#### *Automatic irrigation within the Pool fence*

The irrigation system within the Pool fence currently works, and appears to offer close to complete coverage of the lawns in the Pool area. It appears to be around fifteen years old, and there are no 'as-built' drawings. Because of that, it is difficult to resolve the cross-connection question. The system is also, because of its age and maintenance, likely to be inefficient. We recommend that, when an alternative source of landscape irrigation water is identified, the area within the Pool fence be provided with a newly designed efficient irrigation system using non-potable water.

#### *Automatic irrigation at the Tree Court*

Automatic irrigation for the new trees installed in the Tree Court should be part of the new Pool irrigation system. New large caliper trees should not be installed in the Tree Court without automatic irrigation; partly because it is impossible to water larger trees adequately without slow drip irrigation, and partly because the surrounding soil is so compacted that a high rate of runoff from higher volume water would be expected.

#### *Emergency Irrigation for any new plantings*

We recommend that, when an alternative source of landscape irrigation water is identified, quick couplers be installed throughout the park, within 100 feet of any areas that will have tree or other planting. This will allow plants to be watered on an emergency basis if required.

#### *Notes on Alternative Water Sources*

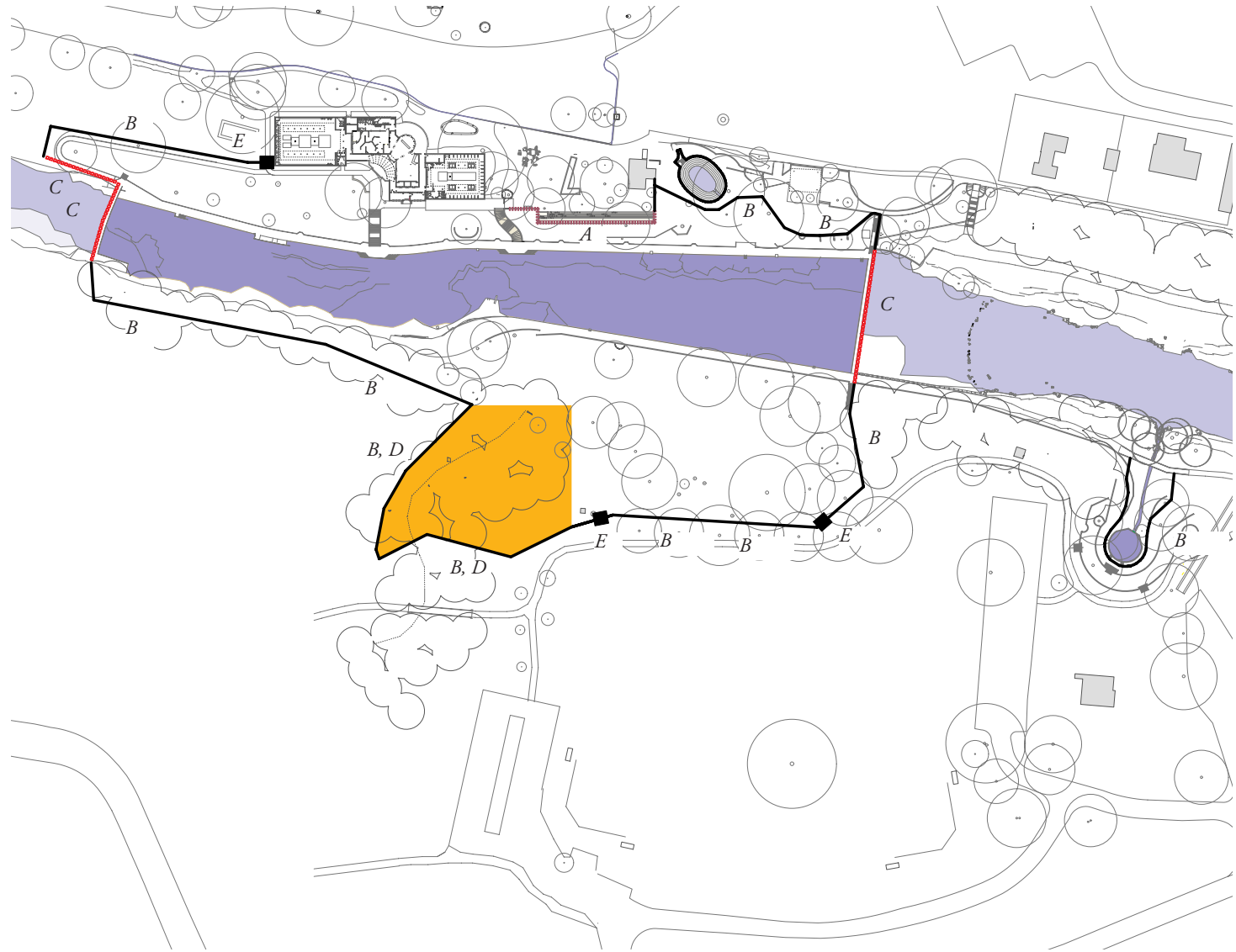
In this parkland celebrating springs, and bordered by a creek and a lake, all irrigation water is potable – drinking water – provided by the City of Austin. There are several possibilities for replacing all or part of the landscape irrigation in the Pool area with alternative water sources, in the Barton Springs area: lake water, creek water, graywater and rainwater. While limiting the use of City water and making the irrigation system more sustainable,



*Newly planted trees benefit from separate irrigation from that provided by lawn sprinklers. New trees require irrigation for at least two years to become established.*

Fences

- A. "Art" Fence
- B. Decorative Wire Mesh Fence
- C. Powder-Coated Chain Link Fence
- D. Fence relocated at South Woods
- E. Accessible Turnstile



none of these are considered potable water, and each would increase the hazard posed by possible cross-connections in the existing system. Therefore, before any alternative water sources are installed, the issue of possible cross-connections must be resolved.

Several sources of non-potable water are worth exploring as sources for irrigation water. One of these would be to use raw Town Lake water, from the existing pumping system that provides irrigation water to the Zilker soccer fields on the north side of Barton Springs Road and is currently being upgraded to improve its volume and pressure. This would require piping under Barton Springs Road, and extending a main irrigation line south to the Pool area. A second alternative source of landscape irrigation water would be to pump water directly from Barton Creek on either the upstream or downstream sides of the lower dam. A third alternative is to collect rainwater from the Bathhouse roof and store it in cisterns for irrigation use. A fourth alternative is to treat the water used in the Bathhouse showers and store it in cisterns for irrigation use.

The first, second and fourth alternatives – pumping water from Town Lake or from Barton Creek or using graywater – are potentially complex both in terms of regulation and in terms of engineering, and should be the subject of a separate study. The third alternative, harvesting rainwater, will not provide much irrigation water, because the roof area from which to collect is not large. It could, however, be a fairly simple system, with water collected from the Bathhouse roofs in small cisterns at the west end of the Bathhouse and used for drip irrigation in the Bathhouse perimeter planting beds. All of these alternatives have promise for reducing the use of potable water for irrigating the park grounds, and merit further study that is beyond the scope of this master plan.

### ***FENCING***

Most of the existing fencing around Barton Springs is old chain link fencing. It varies in height: 3' tall in some sections and 6' in others. In some areas, even potential overlooks like the Sandbox Grove, there are three strands of barbed wire on top of the fence. In others, twisted chain link wires are exposed at the top of the fence, or the top rail of the fence is deformed or missing. The fencing is galvanized, with the galvanizing deteriorated or in some cases apparently covered with aluminum paint.

Besides the inconsistent and sometimes unkempt and unfriendly appearance, the chainlink fencing around the Pool is regularly vandalized. Not only does it have to be repaired, but it is not serving its primary purpose: to control access to the springs.



*Barbed wire on top of chainlink fence. Staff reports that fences are frequently cut, requiring an ongoing repair effort.*



*An example of an "Art Fence".*



*Decorative wire mesh fencing*

The goal of the master plan for fencing is to create a hierarchy of different, complementary fence types, with all fences being less subject to vandalism and easily maintainable.

#### *Recommendations*

##### *Art Fence at the Tree Court overlook*

The first fence type is a fence custom designed and built by an artist, for the very visible overlook at the Tree Court. There are several beautiful iron fences in the Zilker Park / Lady Bird Lake area, designed and built by local metal artists. It is expected that this fence would run from the existing turnstile exit from the Pool to the reconfigured concession stand.

##### *Wire mesh fence to replace chainlink*

The second fence type, and by far the predominating fence type, is recommended to be a decorative wire mesh fencing. This type of fencing is panels of wire of specified thicknesses, welded together in a grid pattern, mounted on steel posts. This kind of fencing offers the transparency of chainlink, in a stronger, more attractive fence that is still affordable. The thickness of the wire for these fence panels is identified as the wire gauge: the smaller the gauge, the thicker and therefore stronger the wire. Either 4 or 6 gauge wire is appropriate for wire fence panels. This is equivalent to 5 or 4.5mm thickness. Chain link fence fabric is generally substantially thinner than that, and therefore easier to cut. With wire panels, it is important that the panels be set level, even on sloping ground, with the result that the fence appears to stair-step down the slope. Trying to slope the fence panels requires extensive cutting of the fence, compromises the galvanizing of the fence wire and appears awkward. It is therefore recommended that the bottom of the fence panels be buried as required to accommodate sloping ground. Matching steel posts are part of wire fence systems, with brackets that allow fences to be installed in straight runs or turn varying degrees of corners. Matching pedestrian and vehicular gates are also part of wire panel systems. Wire panel fences are generally available galvanized, and often with powdercoated finishes. While powdercoating can be a durable finish, it is not as durable as an uncoated galvanized finish. A wire panel fence that meets these requirements is available from Deacero, Inc. (1 800 DEACERO).

##### *Removable dam fencing*

The final fence type is for the removable fence panels on the dam. Currently, these panels are galvanized pipe with chainlink. This combination meets the requirement for fairly light panels that can be removed quickly when needed, and are inexpensive to replace when they get damaged. While these panels serve their purpose, they are not very attractive and are in the line of one of the iconic views in Austin: from the Pool down the creek, toward down-



town, as well as upstream at the upper dam. Making these panels of black powdercoated chainlink fabric, rather than galvanized fabric, would make them less visible. While, as mentioned above, powdercoating does not last as long as unfinished chainlink, these panels are subject to flooding and hard use, and a powdercoated finish is therefore likely to last longer than the panels themselves.

### ***MAINTENANCE***

A goal of this plan is to increase the diversity of plantings in the springs area, by changing some areas that are presently lawn to naturalizing planting beds. These areas are intended to be very low maintenance, but will still require some attention. In addition, the ‘natural’ woods in the springs area is heavily impacted by compaction, erosion, the prevalence of weed seeds, and other factors that tend to degrade the quality of an environment. Accordingly, even ‘natural’ woods in this area require some attention.

### ***Recommendations***

#### ***Increase efforts to control noxious and invasive vegetation***

“Native and Adapted Landscape Plants: An Earthwise Guide for Central Texas”, produced by the City of Austin and the Texas Cooperative Extension Service, includes a list of the plants that are proving to be invasive in the Austin area. Parts of the Barton Creek Greenbelt and much of the Lady Bird Lake Trail are infested with these plants, and volunteer groups work valiantly to control them. An ongoing maintenance effort to identify and remove these plants from the Barton Springs area is important for reestablishing the health and diversity of the plant community around the springs. Ligustrum, nandina and chinaberry are the three most common invasives in the springs area.

The primary noxious vegetation in the springs area is poison ivy. Because of the proximity to the springs, no chemical treatment is appropriate; leaving constant manual removal in areas adjacent to trails as the only alternative.

#### ***Enhance Native Vegetation***

Comparatively little reseeding of the desirable native vegetation is taking place in the Barton Springs area, likely because of soil compaction and the prevalence of invasive species. Regularly planting acorns, nuts, seeds and seedlings of desirable native vegetation to the existing woodlands, especially along the edges, would help diversify the forests and contribute to their long-term health.

### ***LANDSCAPE LIGHTING***

The lighting around the Pool now is mostly incandescent lights on wooden utility poles. The wiring on the Pool grounds is the result of numerous uncoordinated efforts to provide



*The fencing at the dams must be easy to remove, durable, and inexpensive to replace when it gets damaged.*



*The tree overhanging the walk is a ligustrum, an exotic tree that crowds out native vegetation.*

or upgrade services over the years. The result is an overhead tangle of wires that is inefficient and that degrades the ambiance of the place.

*Recommendations*

*Include Tree court lighting in current Austin Energy project*

Austin Energy is undertaking a project to upgrade the Pool lighting, in a process that includes public participation and review. We recommend that the Tree Court be included as part of this project.

*Add landscape lighting in some areas*

Landscape lighting is appropriate in some other areas for security or to make foot traffic at dusk safer. In those cases, ‘moonlighting’ using the large established trees may be appropriate. ‘Moonlighting’ refers to placing small spotlights in large trees, and aiming those spotlights at walks or stairs that require illumination. It can be a very beautiful and subtle way to light an area, like the Moonlight Towers on a smaller scale and without the structure. Because the lights are directed down, moonlighting does not contribute to light pollution of the night sky, like the uplighting of trees can. Areas that might be considered for moonlighting include the Sunken Garden, the Tree Court, the Zilker Ponds, and perhaps the accessible route from the South Entry.

Moonlighting requires that conduit be run from a transformer located on the ground, to the spotlight in the tree branches. The transformer is a metal box about 1 ft. square, and is located on metal supports 12” above the ground. The conduit can be black, so that it is not obtrusive against tree bark. The goal for this additional landscape lighting should be that it be invisible in the daytime and only the light visible at night. Since it involves attaching the lights to the large existing trees, it should be done in consultation with an arborist to ensure that the trees are not damaged.

Around the Pool itself, the lighting will most appropriately be pole mounted. Hinged poles should be used here for ease of maintenance. Choosing the style of pole should be part of the lighting design process. In general, this plan recommends a simple, neutral design in a neutral finish. A round pole would be preferred to a square pole. A natural galvanized finish would be a good choice. And like the tree lighting, this poolside lighting should be pointed downward to prevent light pollution of the night sky.

*Remove all of the existing overhead wiring*

Buried wiring should be the new standard. Power should be brought to the south side from Robert E. Lee to avoid the temptation to swag wires across the Pool in the future, and

to eliminate the need to attach conduit to the dams. Wired communications equipment is now obsolete. New equipment should be wireless.

The effort to remove all overhead wiring and replace it with new buried services should be coordinated with the Austin Energy commitment to design and install new site lighting, and another effort of this plan; to provide electrical service to the Pool side. The design of all of these efforts should be done by professional engineers.

### ***PARK FURNITURE***

There are a variety of different kinds of park furniture in the springs area now, including trash containers, picnic tables and benches. Trash is collected, around Barton Springs and in most other Austin parks, in ‘trash coffins’: open topped concrete boxes enclosing one, two or three 20 gallon standard galvanized steel trash cans. These ‘coffins’ are built according to City of Austin Standard Specification 461 “Trash and Litter Coffins”. Within the Pool fence, 20 gallon galvanized trash cans hang on concrete poles, or are set in alcoves in the retaining wall. In the Tree Court, galvanized cans are enclosed in 2x4 wood slat enclosures, raised on short pedestals.

The advantage of the coffin system is that the concrete trash coffins are indestructible. Many have been in place for more than twenty years. Their exposed aggregate finish does not make a good surface for graffiti. The galvanized cans inside are durable, cheap and easy to replace. A disadvantage of the coffin system is that the top is open, and the lids for the galvanized cans are often missing, with the result that the trash is contained but visible.

Another concern is whether the coffin system is flexible enough to add recycling containers. Recycling is increasingly being requested in parks throughout the country, with the failure of parks departments to adopt recycling in parks becoming a political issue in some areas, like Seattle.

One goal of this master plan is to explore ways to add recycling to the Barton Springs area waste collection; to minimize the disadvantages of the coffin system; and to identify areas where a different sort of trash/recycling container would be appropriate.

A satisfactory recycling container has to be easy to spot and distinguish from a regular trash can, and has to have a lid that restricts what kind of material can be added. It appears that a container with a fixed lid with a 4”-6” hole seems to be the most successful, since it allows people to add most cans, bottles, and rolled up newspapers, but not drink cups or fast food waste. Since in Austin and many other places, blue is the color of recycling, using blue lids and the universal recycling symbol should be enough to identify the recycling



*The ‘trash coffin’ in use throughout the park system. Recycling containers could be added as one of the containers.*



*Landscape Forms ‘Parc Vue’ trash containers have options for different tops that can accommodate recycling.*



*An old stone picnic table that has been modified to be accessible.*

containers. The City of Austin already accepts unsorted recyclable cans, bottles and paper, so there should be no need for multiple recycling containers for different materials.

There are also several kinds of picnic tables in the park. Permanent, fixed in place tables are mostly older concrete tables on concrete pads. Often these are grouped into a rental picnic area, and occasionally they are individually placed, like the lovely, if eroded, picnic setting above the Hillside Theater. In the Tree Court there are standard vinyl coated picnic tables and also wood tables installed by the concessionaire. While the Sandbox Grove is often used as a group picnic area, we do not recommend that a fixed array of picnic tables be installed there, so that the area can keep its variety of uses, and stay comfortable for individuals to use.

In general, people like to be able to move park furniture. Families pull picnic tables together for a large group; people pull tables into or out of the sun; people circle tables to enclose children or games. Fixed tables, while less subject to theft, do not allow this flexibility.

#### *Recommendations*

##### *Add recycling containers*

Because the trash coffins are easy to spot and are already identified as the place for waste, this plan recommends that, for general park use outside the Pool fence and the Tree Court, one of the cans in a two or three can coffin be replaced with a recycling container. Rubbermaid, the manufacturer of the standard blue COA curbside recycling bins, also makes a blue 20 gallon round recycling container, in the 'Brute' series that will fit in the trash coffins. This container is available with a lid with a cutout for cans, bottles and newspapers. Recycling decals can be attached.

Within the Pool fence, the current galvanized cans hang on concrete poles with hooks. Some of the hooks have fallen out of the years, but replacements could be welded into place, where needed. It appears that the same 20 gallon blue Rubbermaid container would hang on these hooks, but that would have to be confirmed in the field.

##### *Use movable picnic tables*

This plan recommends that all new picnic tables in the springs area be movable, rather than fixed in place. The vinyl coated picnic tables do not seem to have been vandalized, and are a flexible option. Using a greater variety of sizes and shapes – squares, ovals, and different lengths of rectangular tables – would add flexibility. All tables should be ADA accessible, and accessible tables are available in many configurations, not just the standard table with one side elongated.

### *Coordinate park furniture selections in Tree Court*

In the Tree Court, a more coordinated approach for all the park furniture is appropriate, since this is the front door of the springs. A visible, but unobtrusive container that could serve for trash collection in the Tree Court is the Landscape Forms ‘Parc Vue’ powdercoated wire mesh trash container. A black wire mesh can could be used for trash collection and a blue can of the same design for recycling, with a universal recycling decal attached to the lid. These cans can be used with or without liners, and there are also two lid styles available. A further visual clue to the separation of trash and recycling could be given by using a dome lid for the trash can and the flat lid with a cutout for recycling.

We recommend that a more consistent and distinctive approach to picnic tables be adopted in the Tree Court, with tables coordinating with trash & recycling containers, as well as with benches. We also recommend that in the Tree Court there be even greater flexibility in seating arrangements, with movable tables and chairs. Galvanized perforated steel or steel mesh tables tops, which are not easily vandalized, in 36” and 42” round tables with stacking chairs would provide more flexibility and a dramatically lighter appearance than the wood structures now in the Tree Court. This kind of furniture would typically be chained up at night by the food concessionaire.

### *Add more benches*

The Barton Springs area needs more benches. Both movable and permanently fixed benches are needed, with permanent benches located along walks on concrete pads. In gathering areas, like the Sandbox Grove and within the Pool grounds, movable benches are more appropriate to allow people to congregate as they choose. For fixed benches along walks and trails, a powdercoated wire mesh bench could be in keeping with the proposed fencing and the existing picnic tables. This would, for example, be appropriate along the trail in the South Fields.

### **NOTES ON HARDSCAPE**

Throughout the report, this plan has described areas that might have additional paving or retaining walls (known in design terms as hardscape) added. As a general rule, additional retaining walls in the park, when required, should be built of weathered local limestone, in varying sizes. The use of ‘chopped block’ – unweathered rough cut limestone cut into large bricks – would be obtrusive and out of character with the rest of the stonework in the park.

Additional pavement, when required, should also be limestone. There are a variety of local limestones available, with very different appearances and uses. Most of the existing lime-



*The range of park furniture now in the Tree Court. This visible location deserves a more coordinated, higher quality approach to park furniture.*



*Carefully built stonework, including natural boulders as accents, fits with both the historic and the natural landscapes of Barton Springs.*

stone in the park is weathered limestone flags, with natural surface. When adding or joining existing limestone, the addition should match the original. Where new paving surfaces are introduced, a harder, smoother limestone flag like Dryden stone may be appropriate, and often more comfortable for people in wheelchairs or pushing strollers. Dryden stone, when mortared in place, will support heavy vehicular traffic. It is the stone used for the forecourt of the Alamo.

In some areas, gravel paving is more appropriate or practical than limestone. Gravel paving is much less expensive and much less formal in appearance. It does, however, require regular maintenance to keep it level and free of vegetation. In addition, gravel pavement is generally considered a permeable surface by the City of Austin when used only by pedestrians. This may make it more suitable for use in the vicinity of large trees. To make a usable, more easily maintained gravel surface, it is recommended that decomposed gravel according to City of Austin standard specification 1301S Granite Gravel Hike and Bike Trail be used.

Where gravel paving is being installed over compacted soil, like in the Sandbox Grove, it is recommended that enough gravel be added that when compacted, there is a 4" minimum thick layer of gravel. In general, gravel paving areas should be edged, with weathered limestone flags of varying sizes, laid flat.

Gravel is also appropriate for use as mulch in some cases, like the Tree Court planters. In those cases, larger gravel should be used, with all gravel larger than 1/4". In gravel of that size, a variety of colors are available, with Texas Black gravel and Fairfield pink granite being two beautiful choices.

Edging for planting beds is another improvement that adds initial cost but saves maintenance time in the long run, if the edging is selected well. For the Barton Springs area, using weathered limestone flags of varying sizes, laid flat, and mortared in place would work with the existing landscape and be easier to maintain than either chopped block or steel edging.



*The grounds of Barton Springs should include natural areas, waterside trails, and also lawns for sunning and playing. Additional planting should aim to increase plant diversity in the area, and to replace invasive exotics with native plants.*







# THE NORTH GROUNDS

## ZILKER PONDS

The Zilker Ponds are a collection of man-made stone ponds arrayed along the base of a rock ridge that separates the Zilker Hillside lawn from an upper parking lot and picnic area. They were built in the 1930s, but public enthusiasm waned and they have been dry since at least the 1960s. Stone walks and four sets of steps link the several ponds in the collection. Even though the features of the site are overgrown and difficult to recognize, they are heavily, though perhaps unintentionally, visited because the steps provide a direct route from the Pool to the picnic and park levels above.

The stonework of the ponds themselves remain in reasonably good repair as is the stonework of the paths. But the four sets of steps are in various states of disintegration.

Returning the Zilker Ponds to their former use does not seem to fit with today's park. Aside from the substantial maintenance, the liability associated with an unsupervised water attraction would be an undue burden. Furthermore, challenges such as West Nile Virus and high water use demands make pond use seem more appropriately a thing of the past.

### *Recommendations*

#### *Drain the ponds permanently*

Punch holes in the bottoms of the ponds to prevent standing water from accumulating. Fill the ponds with decorative gravel as a way to interpret the water's surface, but without water. The ponds do not appear to have level bottoms, and water tends to accumulate in the lower corners of the ponds. It is in those areas that holes should be drilled into the concrete bottoms of the ponds to allow water to seep out, rather than stagnate. When the drainage of the ponds has been addressed, gravel that contrasts in color and kind from the surrounding limestone should be installed, such as Texas Black basalt gravel or Fairfield Pink granite. If it is not possible to maintain the pond gravel free of leaves, installing flagstone pavement, perhaps in a sandstone, will contrast with the limestone of the retaining walls and walks, would be an acceptable alternative. The large flagstone patios that would be created would be a lovely overlook for the Pool area.

#### *Rehabilitate the steps and walkways*

Rehabilitate the steps to make these popular passageways safer, including masonry repair, handrails and lighting in the stair rehabilitation scope. The stairs into the pond area are uneven and unstable and should be rehabilitated for a smoother walking surface. Hand rails will be required and are an opportunity for an art project, perhaps ornamental iron in



*Zilker Ponds in use. They were maintained by City maintenance personnel, and they were filled using City drinking water (Source: Jack Robinson, former Director, Parks and Recreation Department). Note the spray fountain in the lower photo. PICA 01001, Austin History Center, Austin Public Library, above. PICA 20146, Austin History Center, Austin Public Library, below.*



*The empty vessels as they appear today. With better definition of landscape and paths, plus attention to interpretation, the ponds would be easier to understand and enjoy.*



*The four sets of steps at the Zilker Ponds are well-used routes from upper parking lots to the pool. With maintenance and new lighting, they would be safer and easier to negotiate.*

keeping with both the rustic and the Victorian character of the ponds. The ponds are currently hidden in the midst of the park, and this is part of their charm. Stabilizing the stairs on both the lower and upper sides of the ponds, as well as continuing the path to the east, would integrate the ponds more into the park without losing their ‘secret garden’ character. Small, irregular flagstone landings at the stair entrances into the ponds could help those who are looking to find the stairs and enter the ponds.

*Clear overgrown vegetation, and replant*

Clear the site of excess vegetation, and selectively plant drought-tolerant native plants along the bluff and in the stone vessels within the site. The ponds have some of the largest and most beautiful persimmons and live oaks in the Pool area. There are some large ligustrum, overgrown ornamentals, and annual weeds that should be removed. On the downhill side, clearing woody non-native shrubs over 2-3’ tall would allow the rockwork and native trees to be better seen and appreciated. On the uphill side, because of the topography, non-native shrubby vegetation should be removed while maintaining a dense barrier of vegetation at the top of the gardens.

Small stone pocket planters are a feature of the Zilker Ponds. Some were built for waterlilies in the center of the pond, while others were built for trailing plants along the retaining walls. Filling these pockets with a good planting mix and adding a single low water use native plant to each would be a lovely addition to the ponds, and an excellent opportunity for an adopted volunteer garden. Good plant choices would be bamboo muhly, Mexican feather grass, red yucca, and zexmenia.

The slopes on the south side of the Zilker Ponds are very steep for, in places, about ten feet from the pond walk south. Most of these areas are shady as well: some with the deep shade of old live oaks. We recommend replacing the sparse, difficult to maintain lawn in that approximately ten foot wide area with a mass of inland sea oats (*Chasmanthium latifolium*), perhaps with some interplanting of beautyberry (*Callicarpa americana*).

*Increase access and interpretation of the ponds*

Provide interpretive materials to the site to tell the story of the Zilker Ponds and the times from which they emerged. Extend the stone path to the east to link the Pond site to the Zilker Playscape. Route this extension past the two stone lamp posts flanking Zilker Drive, and add interpretive materials to explain their significance (they were built in the 1920s, and they are made from stones collected from across the State of Texas).

Because much of the foot traffic through the pond areas is from people passing from the parking lots to the Hillside theatre, very selective and subtle lighting is appropriate. Small

'moonlight' down lights in a few of the large trees, with a very few low level path lights at changes of level or direction are appropriate.

#### *Enlist Volunteers for Maintenance*

Maintaining the Zilker Ponds as they were originally intended is no longer possible or desirable. However, after some repairs and minor redesign, it may be possible to use periodic volunteer maintenance to keep the ponds in a more usable condition than they are at present. The most pressing ongoing maintenance activities are 1) spring and fall removal of invasive tree seedlings, especially hackberry, ligustrum and nandina. 2) winter raking of leaves from pond gravel.

#### *Opportunities*

The recommendation for a low-maintenance approach to the Zilker Ponds was influenced by a PARD staff expression of concern about their ability to successfully maintain it if it were intensively landscaped. If, in the future, a garden club or a pond society were to take an interest, then opportunities to develop them differently would certainly be possible.

Another possibility would be to develop the Ponds as a Rain Garden, an attractive storm-water mitigation device, where a landscaped depression catches water from its surrounding area, allowing it to recharge the soil rather than simply run off. This could be a demonstration project for the Watershed Protection and Development Review Department, that is promoting rain gardens along with a number of other stormwater mitigation strategies. This, too, would require an advocate with the willingness and resources to provide consistent maintenance.

### **SANDBOX GROVE**

The Sandbox Grove is a tree-covered lawn located to the west of the existing Bathhouse. Its name is taken from the circa 1920 concrete sandbox in its northeast corner. The Sandbox Grove is often used for quiet pursuits like reading or working on laptops, but on summer weekends, it is a popular picnic area. During dry years, the lawn is patchy, and exhibits significant wear from the picnic traffic. Even during an especially wet year, significant areas of the lawn are threadbare. The grass is not irrigated, and there are no plans to do so. The concrete perimeter of the historic sandbox is in good repair, but the sandbox itself is not used. The sand itself is weed strewn and, presumably, a popular litter box for park animals.

#### *Recommendations*

##### *Install a crushed granite picnic area*

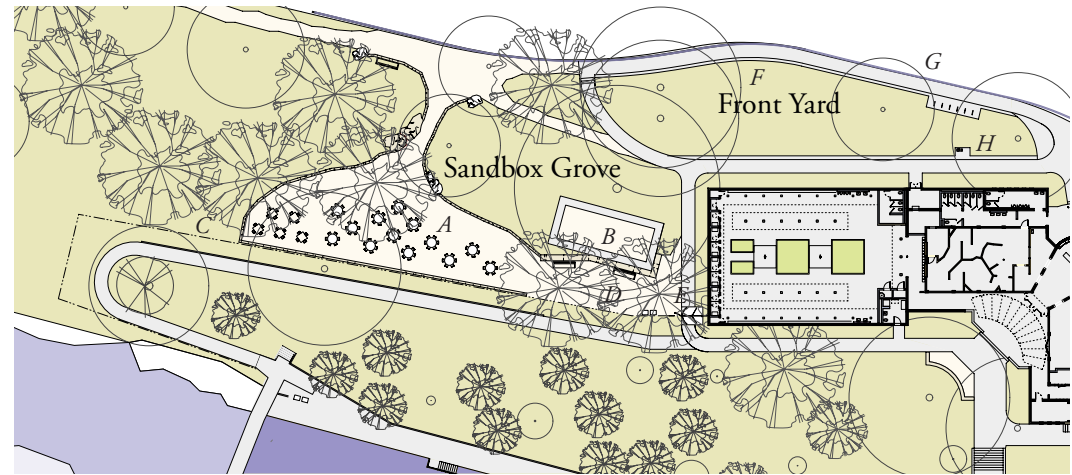
Recognizing the Sandbox Grove as a popular picnic area, and recognizing that grass has not been successful in places, install a crushed granite picnic area. This will serve as a low-key



*Two views of the Sandbox Grove. The grass is worn, even during an exceptionally wet season (below). The sandbox itself is unmaintained.*

*Sandbox Grove and Front Yard*

- A. Replace worn dirt with new crushed granite surface, creating new picnic area.
- B. Replace sand with decorative gravel to attractive opportunity for public art installation.
- C. New decorative fence.
- D. Using a low stone retaining wall to define the space, create a new observation area.
- E. New exit turnstile.
- F. Widen sidewalks to reduce foot-traffic wear.
- G. New bike racks.
- H. New drinking fountain.



western counterpart to the Tree Court to the east of the Bathhouse. The areas presently used for picnicking are well-defined at present by the worn grass: people are generally gathering closer to the fence on the flatter areas. These areas would benefit from being made slightly more formal by adding compacted decomposed granite gravel, with some limestone accents.

*Redevelop the sandbox itself*

Using a low stone retaining wall as separation, add a seating area between the sandbox and the fence line for quiet Pool viewing. Add an accessible turnstile to the fence. Replace the sand in the sandbox with decorative gravel, and through a public process, commission and install permanent sculptures in the gravel. Add interpretive materials, with a potential topic being the rock outcroppings on the south side of the Pool that are part of the Balcones Fault. A limestone flag retaining wall, level with the top of the sandbox should be used to define an overlook area for the Pool. Benches and interpretive materials should be included. Presently there is chainlink fence in this area, topped with 3 strands of barbed wire. Replace this fencing with more ornamental metal grid fencing for a more welcoming overlook to the Pool.

*Add trees*

Some of the largest and most beautiful pecans in the Pool area are in the Sandbox Grove. Additional planting of native shade trees should be undertaken to maintain and diversify the grove. Almost all of the trees in the Sandbox Grove are pecans. We recommend that

*Sandbox, two views.*



the canopy be diversified with the addition of cedar elm (*Ulmus crassifolia*), Texas Red Oak (*Quercus buckleyi*), River Walnut (*Juglans microcarpa*), and Texas Ash (*Fraxinus texensis*). While ashes may be subject to borer attack, they still merit use in small numbers. There is not a functioning irrigation system in this area, but because the parking lot is adjacent, newly planted trees can be watered for the two years required to establish the trees by water trucks.

#### *Connect to the Barton Creek Greenbelt*

The paved walk in front of the Bathhouse presently ends, continuing as a dirt trail to the head of the Barton Creek greenbelt at the end of the parking lot. Adding signage directing newcomers to the entrance to the Bathhouse and to the head of the trail should be considered. The worn dirt trail connecting the Bathhouse to the Barton Creek greenbelt trail should be made slightly more formal, with decomposed granite paving and some limestone accents and edging.

### THE FRONT YARD

The Front Yard, to the north of the Men's public restroom and the Men's Dressing area of the existing Bathhouse, is generally characterized by St. Augustine grass under pecan trees. It is bounded by two east-west sidewalks that connect the main activity zones on the north side (the playscape, the concession stand, the main entry to the Pool) to the more subdued areas to the west (the Barton Creek greenbelt, the Sandbox Grove and parking). Due to the heavy foot traffic near the entry to the Sheffield Center, the grass is worn bare in that area. Along the edge of both of the sidewalks the grass is also worn, suggesting that the width of the walks is insufficient for current demands.

#### *Recommendations*

##### *Widen sidewalks*

The Front Yard should generally remain as it is, a lawn under tree cover. To mitigate the excessive wear, additional width should be added to each of the sidewalks and to the area nearest the Bathhouse rotunda. Widening the walkway adjacent to the parking lot will require some regrading of the parts of this area, because there is a change of grade. With careful grading where the two walks join together at the front of the Bathhouse, a retaining wall should not be necessary. The additional paving should be a pervious paving material that allows rainwater to drain through it.

##### *Add drinking fountain and move bike racks*

A drinking fountain should be added and the bike racks in the Tree Court should be relocated here. The space between the existing large trees, along the west front of the Bathhouse, may be the best location for a bank of bike racks.



*Front Yard grass worn by heavy foot traffic.*



*Tree Court with Philosopher's Rock in foreground. For most visitors, this is the place of introduction to the Pool. Note the drifts of crushed granite in the gutter.*



*Potential for enhancing the overlook thwarted because picnic tables encroach and because the stadium seating is difficult to walk on.*

#### *Add trees*

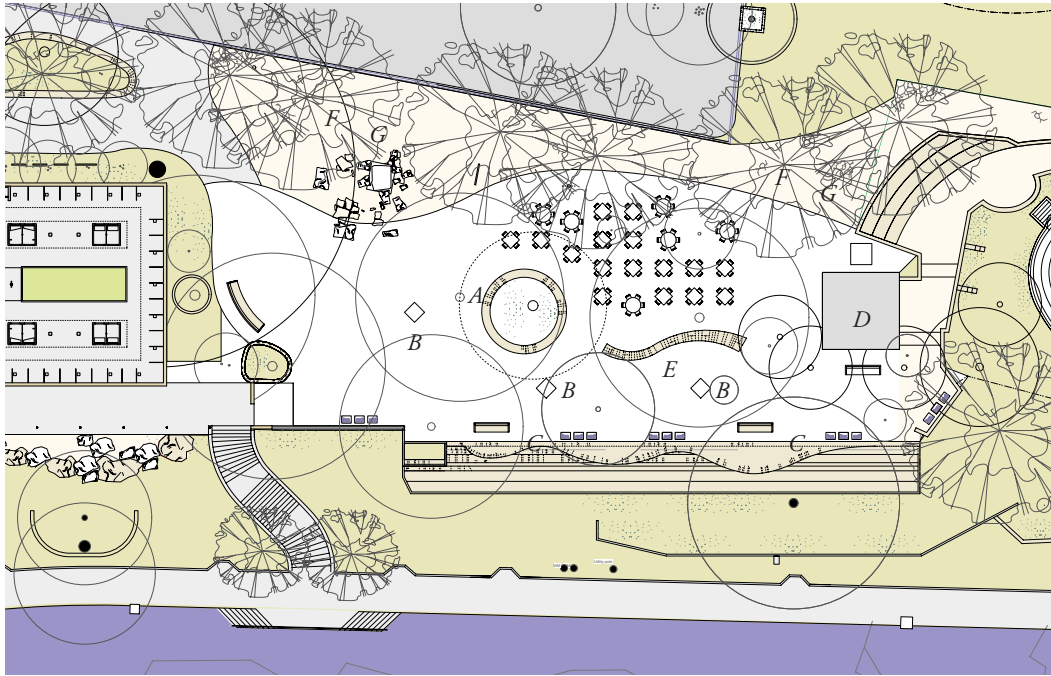
Several large pecans and elms in this area have been lost in the last decade. Replacement planting of large native shade trees is needed. Since there is no irrigation in this area, provision should be made for temporary watering.

#### *Replant Bathhouse perimeter beds*

The planting bed along the front of the Bathhouse has become overgrown with non-native English ivy, which is invasive and detracts from the beauty of the Bathhouse. It should be removed, along with the ligustrum by the south entrance into the rotunda. Small trees should be limbed up to at least 6' clearance, so that they are branching close to the roof line of the Bathhouse. Shrub / perennial plantings should be kept to 2' maximum height, so that the Bathhouse walls are largely visible. In places the concrete block planter wall is broken, apparently during utility repairs. To the east of the entrance, the lush nandina hedge, while beautiful, is a noxiously invasive plant that is causing serious damage to the native vegetation upstream in the Barton Creek greenbelt. This problem can be managed by removing the seed heads before they set berries, but this is an ongoing maintenance problem, and cannot help but intermittently fail. In addition, the use of fruiting nandina in such a public place is not a good example for the City of Austin to be setting. Removal of those nandina, and replanting of that bed with low growing native shrubs and perennials is recommended. The nandina hedge could be replaced with a mixed planting of dwarf yaupon (*Ilex vomitoria* var *nana*), river fern (*Thelypteris kunthii*), dwarf ruellia (*Ruellia* hybrids), mountain pea (*Orbexilum nova*) and cedar sage (*Salvia roemeriana*).

#### *Add rainwater harvesting*

Rainwater cisterns at the west end of the building could provide drip irrigation water storage for use in these beds. Several small lined galvanized cisterns, shorter than the Bathhouse roofline, could be placed in the bed at the west end, by the Sandbox Grove. The capacity of cisterns of that general size would be sufficient to provide irrigation for the Bathhouse perimeter planting beds.



## TREE COURT

The Tree Court is the area between the Bathhouse and the concession stand, and is bounded by a parking lot on the north and a stone “stadium seating” arrangement from the 1930s on the south. The southern edge is also defined by the Pool fence and by three interpretive plaques, each describing aspects of the ecology of the Barton Creek ecosystem. This is a popular vantage point from which to view the Pool. The Tree Court has a crushed granite walking surface, and is situated under a random arrangement of pecan trees. The space is bisected by a stone planter, creating two sub-zones: one, the concession stand zone and the other the entry to the Pool zone.

For most visitors, the Tree Court is the place of introduction to the Pool. Yes, it is literally the place for the main entry to the Pool grounds. But it is also the place for first-time visitors to start to know the place and to get oriented. It is the most popular place for non-swimming visitors (and there are several hundred thousand each year) to actually see the Pool and begin to understand its unique beauty and its importance in the Central Texas geography. Every major park needs a place of introduction. For Barton Springs Pool, this is it.

### *Tree Court*

- A. *Replace the existing stone planter with new round shape to encourage pedestrian flow. As with all planters in the park, it should be designed for comfortable sitting.*
- B. *Include interpretive materials to tell the story of the park*
- C. *Extend the overlook by adding benches and interpretative materials. Modify the stone stadium seating for easier access. Replace the stone fence with new “Art” fence.*
- D. *Design a new concession with a smaller footprint at this location to allow for smoother inclusion of Eliza Spring into the life of the Tree Court.*
- E. *Add new stone bench to foster sense of community and to clearly define overlook space.*
- F. *Plant new trees along northern edge to extend shade canopy.*
- G. *Using flagstones, build a more stable walking surface to connect the zone in front of Bathhouse to Eliza Spring. One benefit would be a reduction in drifting granite gravel washing into storm drains and on into the creek.*
- H. *Designate a zone for eating (as shown). Replace existing picnic tables with new, more attractive furniture.*



*The overlook is a valued experience at Barton Springs. It offers the opportunity for the casual visitor to enjoy the waters of the pool and its beautiful surroundings without investing the time or energy in swimming. For many, this is the primary way they know and love Barton Springs.*

*Curiously, the overlook seems squeezed into one corner of the Tree Court, while over 150 ft. of available edge condition lies underused.*

The Tree Court is different from any other place in the park. While other parts revel in their sense of naturalness, the Tree Court is clearly intended for significant human use. It is entirely paved (paved with crushed granite, but paved nonetheless). It has a place to eat. It has places to sit and enjoy the best view of the Pool that does not cost money. It is a great place to people-watch. It is a place to learn about the Pool. It is shady and cool relative to more exposed areas. Because it is flat, it is easily accessible, even for the mobility-impaired.

And all this is as it should be. The park needs a place of introduction, a place of greeting, a place of shared experience. But as the most prominent element in the entry sequence to Austin's most cherished natural amenity, the Tree Court is not what it could be or should be. The Tree Court should be thought of as a central space from which the experience of the entire park can be understood and enjoyed.

### ***Recommendations***

#### ***Redesign the planters and pavement***

Remove the stone planter that bisects the Tree Court into two sub-zones and redefine the Court as more of a large shared space. Add new stone planters, whose low walls are designed for sitting and whose shapes encourage social interaction but do not impede pedestrian flow. The planting bed in the center of the Tree Court does not contribute to the area, and should be removed along with the groundcover and other low plants within it. Clearly, the pecan tree should not be removed.

Minimize planting in new planters, using boulders, gravel, and occasional specimen low water use native plants instead. New planters should serve primarily for seating, with occasional planting for accent. The pavement in front of the Bathhouse and north of Eliza Spring is exposed aggregate concrete. Emphasizing the different character of the Tree Court by using a different, and complementary, paving material such as large size Dryden or other limestone flags is recommended. For ease of maintenance, these flags should be mortared in place with a mortar coordinating in color with the adjacent decomposed granite plaza. The planter walls in the Tree Court are presently in several different materials. The walls by the Bathhouse are concrete paving blocks on end. Others walls are cut limestone, rough limestone retaining wall stone, and irregular limestone boulders.

Using irregular cut limestone blocks, to match that used on the walls of the Bathhouse and the concession stand, would help to identify the Tree Court as a single distinct area. Large irregular limestone boulders, like those around the Philosopher's Rock, can be used to accommodate minor changes of grade and for accent.



Recognizing that its excellent views to the Pool are what makes the Tree Court most special, create a distinct sense of promenade along the entire length of the south edge. To that end, rework some of the stonework of the “stadium seating” to make this element easier to walk on. Replace the chain link fence, and commission a new decorative “art fence” to depict the story of the park and the Pool. Add benches along the promenade and add more interpretive materials to enrich the experience by presenting more of the story of the park.

#### *Reconnect to Eliza Spring*

Eliza Spring holds a unique position in both the cultural and the ecological history of the park. It is the home of the most robust population of the endangered Barton Spring Salamander, and its concrete amphitheater construction, is credited to Andrew Zilker himself. It is simply too important to let it remain in such poor condition and in such isolation, marooned as it is behind the concession stand. Eliza should be as much a part of the introductory experience to Barton Springs as the Tree Court itself. Clearly it cannot be moved, but efforts should be made to include Eliza Spring in the life of the Tree Court. To that end, redesign the existing path along the north edge to make the connection between Eliza and the Tree Court more legible and easier to negotiate. To further attract visitors, redesign the concession stand to make it smaller and easier to see around. Model it after Jo’s on South Congress; more of a food kiosk than a full-service food outlet. Position it so that foot traffic at the promenade can extend past it all the way to Eliza. There are concrete sidewalks in front of the entry rotunda to the Bathhouse, and there are stone walks in the vicinity of Eliza Spring. Connect them with a flagstone walk. This will provide sure footing and will cut down on the drifting of crushed granite into the storm drains.

#### *Plant more trees*

All the shade trees in the Tree Court now--the large ones and the newly planted ones--are pecans. Some of the oldest and most potentially fragile pecans in the park are in the Tree Court. In addition to the tree repair and tree replacement that may be recommended by a tree inspection, new trees should be planted to extend the tree canopy to the north. Adding a line of 6” caliper minimum native shade trees along the new walk along the parking lot side of the Tree Court would help maintain its shaded character as the pecans age. Live oaks are available and can be successfully transplanted at that size, and occur naturally in the terraces above the springs.

Replacement shade trees should in general be planted in the largest caliper size possible for the Tree Court, because of the prominence and heavy wear to be expected at the site. As



*Eliza Spring holds a unique position in both the cultural and the ecological history of the park. It is the home of the largest population of the endangered Barton Springs salamander, and its concrete amphitheater construction is credited to Andrew Zilker himself. It is simply too important to let it remain in such poor condition and in such isolation, marooned as it is behind the concession stand.*

#### *Notes on the Concession Stand*

*Food is an important offering for a major public park. The concession stand is a successful vending operation, and provides a valued amenity to the park experience. Reducing the size of the Tree Court concession stand is not an attempt to diminish the food offerings at the park. Instead, it is thought of as part of a larger initiative to add broader offerings. While the Tree Court concession stand should be made smaller, a new concession stand should be added to round out the menu. The open area to the north of the playscape could be a promising location.*



*Despite its location, tucked behind the concession stand, Eliza Spring is a popular park destination.*



*Growing conditions for trees in the Tree Court are difficult, because of the compacted soil and heavy traffic.*

sunlit spots develop in the interior of the Tree Court, we recommend that Chinquapin oaks (*Quercus muhlenbergii*) and cedar elms (*Ulmus crassifolia*) be added to the existing pecan grove.

While there is not a functioning irrigation system for the Tree Court, this is one area to which irrigation should be extended, to run regularly for the two years required to establish the new trees, and intermittently after establishment to compensate for the heavy wear and compaction of the soil.

This is the most compacted and most visible entry to the Pool. Trees in this area need to be considered ‘street trees’ with the additional care and infrastructure that is provided for street trees. Specifically, Tree Court trees should be provided with 1) drip irrigation to each newly planted tree, to compensate for the compaction of the soil; 2) an assessment of the subsurface drainage of the planting pit of each newly planted tree, to make sure that it drains adequately, and provision for adequate drainage if it does not; and 3) the planting mix used for each tree should be ‘structural’ – able to be compacted enough to support a stable walking surface while still providing enough openness for tree roots to penetrate and find water and oxygen. Suitable structural soil mixes are available from Cornell University (produced locally by JV Dirt and Loam) and TXI in Houston. While invisible to the visitor, this will allow a stable walking surface over the rootballs of new trees, while still allowing oxygen and water to reach tree roots.

#### *Reconfigure the rotunda plaza*

When the Bathhouse is rehabilitated, the Pool entry should be relocated to the center of the building, much like it was historically. When the Bathhouse is rehabilitated, part of the Bathhouse should be devoted to Visitor Center and Gallery functions to complement the educational exhibit, “Splash!”. This change will move some of the pedestrian flow toward that location. To facilitate that flow and to reinforce the connection between the Bathhouse and the Tree Court, modest modifications should be undertaken to the planter in the walkway between the wall of the women’s dressing area and the parking lot. The planting in this planter is dedicated to Jimmie Martinez, long-time park maintenance worker, so modifications to the planter should be done in consultation with his family, if possible. The stone planter walls should be replaced with stonework that occupies the same footprint, but is level with the walkway. In this subtle way, the walkway will be gently widened, while the shape and location of the planter is maintained. In conjunction with this work, the small scale trees should be replaced by larger shade trees. Cypress or live oak trees are likely candidates.

The sign that identifies the entrance to Barton Springs is hidden behind an evergreen yaupon holly. A more prominently located sign would let the thousands of newcomers and visitors to Austin in on the secret.

#### *Park Furniture*

Remove bike racks from the Tree Court and relocate them to the Front Yard. Consideration should be given to replacing the existing portable wood park furniture with consistent, high quality permanent park furniture, including benches, tables and trash containers, in this area. Specific suggestions for park furniture are made in the ‘Grounds Overview’ part of this document.

### **NORTH LAWN** *WEST END*

Like all of the North Lawn, the western portion is generally characterized by its St. Augustine lawn and its collection of pecan trees. The western portion sweeps down from the Bathhouse to the edge of the Pool and overlooks the shallow end with the rock outcroppings of the South Bluff beyond. An accessible path courses along its northern edge, connecting the Bathhouse to the Pool deck near the upstream dam. The western boundary of this area is defined by the perimeter fence. The eastern boundary is defined by a concrete walk and stair running north-south, connecting the Bathhouse to the Poolside walkway. A spiny Burford Holly hedge parallels this walk.

Due to the geometry of the Bathhouse, the slope of this lawn is shallower than other parts of the North Lawn. This area is popular for sunbathing, and due to its proximity to the shallow end and its proximity to the restrooms, it is especially popular with families with small children.

#### *Recommendations*

##### *Plant more trees*

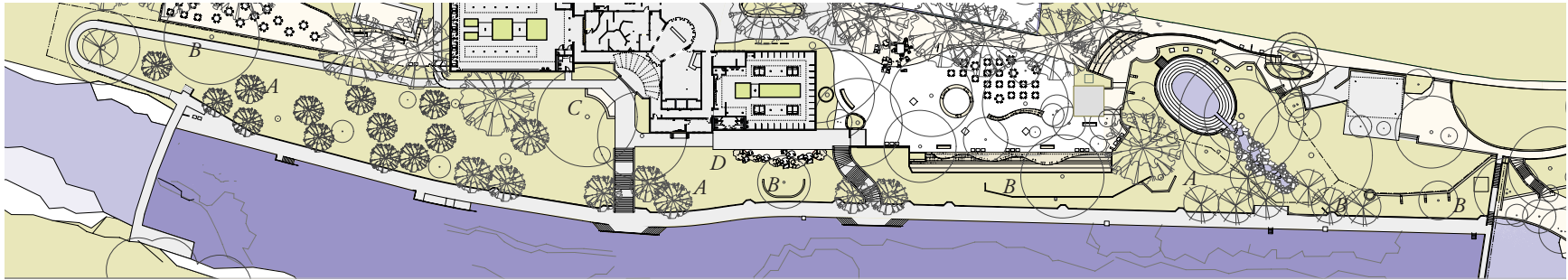
This portion of the North Lawn is generally as it should be, a lawn for lounging and sunbathing and enjoying the social life of the Pool. To further beautify the grounds and to preemptively replenish the tree collection, more trees should be planted. Since the west side of the North Lawn is the sunniest lawn within the Pool fence, this will also help to decrease irrigation demands for the lawn. Some small trees have been planted – almost all pecans – but many have been damaged, especially by squirrels. Using trees that are at least 4” caliper may improve the tree’s survival rate. In this area, there is not an established grove, so new trees should be planted in small groves of one variety, with fairly close spacing. An example of this kind of planting in the park now is the grove of soapberry east of



*The slopes on the northside accessible route should be measured to verify that they meet the requirements of the ADA.*



*A sliver of grass atop a low retaining wall that is awkward to mow. It is also used for very visible pool equipment storage.*



*North Lawn*

- A. *Plant more native Texas trees to add shade and to diversify the tree stock at the pool.*
- B. *Replace grass in difficult-to-maintain places with attractive, low-water-use native plants.*
- C. *Widen intersection with a low stone wall, and wider walk.*
- D. *New Boulder Garden.*

the Hillside Theater. Good trees for this kind of planting are big tooth maple, Texas red oak (*Quercus buckleyi*), and cedar elm.

*Add a modest stone patio at the Bathhouse corner*

At its northeast corner, this portion of the Lawn meets the central part of the Bathhouse where foot traffic from both the men's and the women's dressing areas emerges. The grass in this area is generally threadbare. To acknowledge this activity, a modest stone patio should be added under the large pecan tree to extend the circulation space and to create a flat social space for visiting and enjoying the shade of the large pecan tree.

Anticipating heavy foot traffic on lawn areas nearest the Bathhouse, the most vulnerable areas should be reinforced with an engineered sod solution (such as GrassPave2) that allows the grass to grow, while protecting the underlying ground from compaction.

*Replace lawn above accessible walk*

The grass between the accessible walk and the Pool fence is currently used to store pool hoses and other equipment. It is recommended that, where decomposed granite or flagstones are being added on the north side of the fence, in the Sandbox Grove, that the grass be removed on the south side of the fence as well, and replaced with native plants no taller than 2' to minimize the maintenance both within the Pool fence and in the Sandbox Grove. The planting bed between the accessible route and the Sandbox Grove requires dense spreading groundcover that can resist invasion by bermuda grass. A bed designed to include Gregg Dalea (*Dalea greggii*), wooly stemodia (*Stemodia lanata*), or big muhly (*Muhlenbergia lindheimeri*), among others, could serve that purpose. A portion of the bed could be left unplanted for the continued storage of pool equipment.

### *BELOW THE BATHHOUSE*

The North Lawn below the Bathhouse is a St. Augustine lawn defined by a concrete walk and stair on its western edge and a picturesque serpentine stair on its eastern edge. It slopes up from the top of the retaining wall at Pool's edge to a "Spectator's Gallery", a shaded patio attached to the Bathhouse.

The most memorable element here is a large old pecan tree that leans out over the Pool walkway. Its root area is captured by a U-shaped concrete retaining wall. This tree is quite old (it can be seen in photos from the 1920s), and it does not appear to be in good health.

#### *Recommendations*

##### *Design and install a Boulder Garden on the steep Slope*

Design and install a boulder garden along the south edge of the "Spectator's Gallery" composed of naturalistic groupings of limestone boulders arranged to echo the stone outcroppings visible across the Pool. This garden should be planted with native Texas plants, and should have places for people to perch and to enjoy the scenery of the Pool. It should also have flat areas that extend the "spectator's gallery". This boulder garden will accomplish several goals. It will replace lawn areas that are difficult to maintain and to irrigate. It will add a naturalistic element to the grounds that will soften the architectural presence of the Bathhouse as it is viewed from the Pool. And it will enrich the social space of the "Spectator's Gallery", making it more lively and interesting in a "pool-appropriate" way.

The boulders for the new boulder garden should be individually selected weathered limestone boulders, varying in size. All boulders should be installed flat and level, with the uphill side of the boulder buried in the slope. Low growing, cascading plants like wooly stemodia, silver ponyfoot, nolina, different muhly grasses, lantanas, zexmenia, red yucca, as well as the non-native trailing rosemary and trailing lantana would be lovely among the rocks where there is sufficient sun. A garden of this visibility and complexity would require thorough planting and construction design and documentation.

The North Lawn below the Bathhouse is presently shaded by the leaning ancient pecan and the pecan that was apparently planted many years ago to replace it – now a very large tree in its own right. Shade tree planting in this area should be limited and carefully placed, to minimize blocking the view from the porch. No planting of small trees or shrubs over 3' tall should be done. Individual cedar elms, chinquapin oaks and Texas Ash may be appropriate.

##### *Treatment of the old pecan*



*North Lawn below concession stand. Replace grass in area between middle retaining wall and toe of stone stadium seats with attractive, low-water-use native plants.*



*A shady Hill Country boulder garden, with native limestone boulders added to an existing rock ledge, and planted with flowering and trailing shrubs and perennials. A garden in this style could replace the grassy slope below the Bathhouse*



*North Lawn below the Bathhouse. Two short term goals are to bury all overhead wiring and to replace site lighting.*



*North Lawn near the downstream dam. Replace grass in this area with attractive, low-water use native plants.*

Develop recommendations for treatment of the old pecan tree. If in the worst-case it does not survive, then it should be removed to allow the nearby pecan to take its place. Should the ancient pecan be removed or die, trailing plantings should be planted on the top of the retaining wall enclosing the ancient pecan; for example, nolina, silver ponyfoot, trailing lantana and rosemary.

#### *EAST END*

The eastern portion of the North Lawn extends from the picturesque serpentine stair to the perimeter fence at the downstream dam. This portion of the lawn has a number of noteworthy elements. The stone “stadium seating” of the Tree Court provides a hard edge along the western part of its northern boundary. Further east, the grades flatten, and its lawn extends northward to Eliza Spring. Still further east, between Eliza and the downstream dam, the grounds are punctuated by stone and concrete retaining walls. Some of them date to at least the 1930s, and were part of an earlier concession stand that used to sit where the picnic pavilion sits today. For the most part, the perimeter fence hugs these walls. The fence line is thickly vegetated with nuisance plant materials, some of which is poison ivy.

#### *Recommendations*

##### *Replace lawn with native plantings in some areas*

One goal of this master plan is to reduce irrigation demands by identifying portions of the St. Augustine lawn that, due to inaccessibility, are not used for sunbathing and are difficult to irrigate and maintain. This portion of the North Lawn holds a number of opportunities in this regard, such as below the “stadium seating” or above certain retaining walls near the downstream dam. The grass should be removed in these areas, and should be replaced with carefully selected, drought-tolerant native Texas plantings. The lawn atop the retaining wall below the playscape fence is one such area: largely inaccessible, separated from the Pool sidewalk by a 4’-5’ retaining wall. We recommend removing the grass from this area and establishing a planting bed that does not require mowing or intensive maintenance.

The native shrubs and perennials introduced should be not so tall as to block the view from behind the playscape fence: probably less than 4’ at the Pool edge of the planting bed. The section above the retaining wall, between the Pool and the playscape, could be planted with vegetation no taller than 3’, including some that would cascade over the tall retaining wall. Examples could include coralberry, nolina (away from walkways), cedar sage, and inland sea oats.

##### *Manage vegetation in playscape fence*

Between the playscape shelter and the Pool, the fence is thickly overgrown with hackberry, ligustrum and other invasive vegetation, including poison ivy. All such nuisance vegetation should be removed from this fence line, allowing views from the playscape area to the Pool and vice versa.

*Reestablish the spring run of Eliza Spring*

When the natural course of Eliza Spring is re-established, and a rebuilt spring run is introduced in the hillside between Eliza and Barton Springs, additional creekside planting would be appropriate, with, for example, river ferns, equisetum, inland sea oats, buckthorn and palmetto. Additional discussion of this topic is found in the 'Eliza Spring' part of this document. Bald cypress (*Taxodium distichum*, from a hill country seed source only), would be a lovely and distinctive shade tree to mark the spring flow. In the strip between the playscape and the Pool, the view through should be preserved, with individual plantings of cedar elm, big tooth maple, and Texas red oak (*Quercus buckleyi*) appropriate on the slope.



*Naturalizing planting beds and boulders can help recreate some of the natural environment that would originally have been around Barton Springs.*





# THE SOUTH GROUNDS

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## SOUTH LAWN

The South Lawn is generally characterized by St. Augustine grass under a canopy of pecan trees. It extends from the diving board all the way to the eastern fence, some 400 ft. In the other direction, it slopes up from the Pool deck to level ground some 30 ft. higher. The slope faces the water, and is a popular place for sunbathing, and, clearly visible from sight-seeing points along the northern edge of the Pool, it is one of the enduring icons of Barton Springs. Further from the water, where the ground flattens, it is popular for yoga, tai chi and other life-affirming activities.

### *Recommendations*

#### *Plant more trees*

The huge pecans on the South Lawn towering over the lush lawn is one of the most inviting vistas of Barton Springs. Because the South Lawn is such a beloved feature, care should be taken to avoid temptations to either re-imagine it or to use it to solve functional problems. (Handicapped accessibility or maintenance truck accessibility come to mind.) It is a tree-covered lawn today. It should be a tree-covered lawn going forward. It should not be a tree-covered lawn with accessways cutting through it.

The tree canopy should be inspected to determine the health of the trees and to make recommendations for remedial action or tree replacement. Regardless of the inspection outcome, new trees should be planted to preemptively replenish the canopy and to densify the shade. More shade will reduce irrigation requirements. As with all new trees at Barton Springs, they should be selected from the native Texas tree palette, and should be chosen for their beauty, their durability and their appropriateness to their waterside location. In general, this plan recommends diversifying the canopy from a close to pecan monoculture, to a forest of more diversity but similar form. Where there is sufficient sun, Chinquapin oak, a stately native tree that can grow beside creeks in the Hill Country, would be lovely and have a form similar to the existing large pecans. Another suitable oak may be the Bur Oak. Both of these native oaks are large, majestic, long-lived trees.

#### *Intensify lawn maintenance*

The lawn should be cared for using approved methods that acknowledge the environmental sensitivity of the site. Thus, soil aeration should be considered, but fertilization should not. A more specific description of lawn maintenance issues is included in the 'Grounds



*The South Lawn as seen from the Tree Court.*



*South Lawn*

- A. *Plant more native Texas trees to add shade and to diversify the tree stock at the Pool.*
- B. *New, more attractive fence.*
- C. *New turnstiles*
- D. *New, modest South bathhouse.*



Overview' part of this document.

*Replace difficult to maintain lawn areas with planting beds*

Beside the steps up from the Pool sidewalk, beside the downstream dam, the lawn is too steeply sloping to be easily maintained or usable. Replace the lawn with a planting bed, planted with a spreading native groundcover like mountain pea, stemodia or gregg's dalea.

*Minimize runoff into south path*

The existing path to the south gate should be maintained without any changes, at this time. It is the kind of casual, almost accidental element that makes the Barton Springs Pool seem to work so effortlessly, and is used by City staff for small vehicular access to the Pool deck. In heavy rains, however, runoff can course from the south parking lots down

the path toward the Pool. Efforts should be made to divert that runoff into a ‘rain garden’, of planted flat depressions to slow runoff and allow it to percolate into the ground. After an accessible route is built from the south entrance, this path may be reconsidered.

### **SOUTH WOODS**

The South Woods is a two-thirds acre densely wooded area outside the Pool fence, located just south of the diving board. Its tree canopy is dominated by cedar elms, though hackberrys can also be seen. Its understory is punctuated by nuisance nandinas, Japanese ligustrums and poison ivy as well as numerous desirable species, such as maidenhair ferns and other native plants. Its land form is characterized by a gully running south to north, which used to carry runoff from the hills beyond until public works diversion projects were installed. Now it only carries water from its immediate surrounds. Even so, during intense downpours, water running through it will overwhelm the stormwater mitigation features already in place and bring turbid water into the Pool. The bottom of the gully is wet in places due to minor spring activity.

Its thick vegetation and its proximity to park amenities have made the South Woods an attractive encampment location for homeless men. Historically, this has posed a park operations problem, where several times a year, campers are arrested for disorderly conduct or indecent exposure. Less serious, but unpleasant, is the occasional harassment of Pool goers as they walk to their cars.

The path from the south parking lot to the Pool is not accessible. Though there is not an ADA requirement for accessibility, the planners believe that it will be a welcome amenity that is consistent with the City of Austin value: to be an accessible city.

#### ***Recommendations***

##### ***Relocate the fenceline***

The fence line for the Pool should be relocated to bring the South Woods into the Pool precinct. This would enable better supervision and use of the area.

##### ***Manage vegetation***

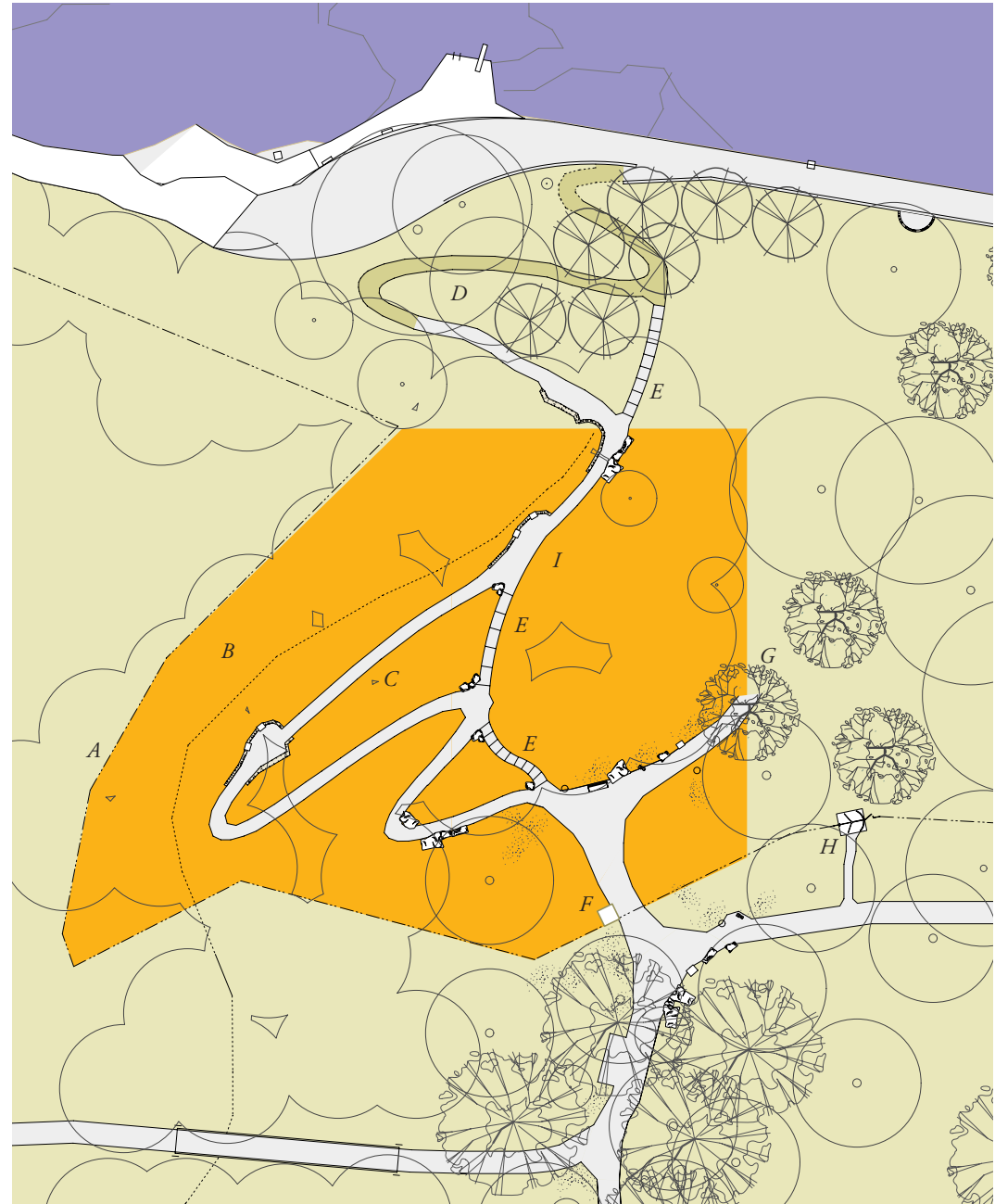
Much of the existing vegetation in the south woods is invasive and low quality, like ligustrum and hackberry. Nuisance vegetation should be removed. The tree canopy should be assessed for density, and if required, should be augmented by native Texas trees such as red oak or bald cypress. Planting (other than seeds and perhaps seedlings) in the woods as it exists now is unlikely to be successful, since new plantings would be difficult to maintain and monitor. Should a trail be built through the south woods, that would be a good opportunity to introduce some higher quality native forest vegetation. The landscape should



*The South Woods should be restocked with native vegetation as required.*

*Accessible Route*

- A. Relocate fence line to include South Woods in the Pool precinct using new, more attractive fencing.
- B. Remove nuisance vegetation, such as poison ivy, nandina, ligustrum and chinaberry. Repopulate with appropriate native Texas plants and trees.
- C. New accessible route, pervious paving.
- D. New accessible route, "Grass-pave".
- E. Steps for shorter, more direct travel.
- F. New gatehouse. New location, but same size as existing.
- G. Existing path to Pool remains.
- H. New turnstile.
- I. Lighting for safe travel at dusk (not shown).



be restocked with native understory plantings, especially those acclimated to wet, shady conditions, like inland sea oats or maidenhair ferns. Good trees to introduce would be rusty blackhaw viburnum (*Viburnum rufidulum*), Eve's necklace (*Sophora affinis*), and escarpment black cherry (*Prunus serotina* var *eximia*).

There is not a functioning irrigation system in this area. As the trail is extended through these woods, it would be appropriate to extend a water line as well, that can provide temporary irrigation for establishing larger plants.

#### *Build an accessible path*

Within the South Woods, build an accessible path to connect the south parking lot to the water's edge. Aside from the obvious amenity for wheelchair accessibility, this path will also accommodate parents with strollers, people with joint problems and those who may simply enjoy a walk in the woods.

The slope of this path should intentionally stay shallower than 5% to satisfy accessibility requirements while not invoking handicapped ramp requirements. It should wind through the woods as naturalistically as possible, and it should have the occasional place to sit and the occasional overlook. Keeping it narrow (generally 5 ft. or so) should help it to blend into its surroundings. Interpretive graphics should be integrated into the experience, offering commentary on the natural surroundings. This path may also include steps for the less-patient, able bodied people who wish to make the trip more directly.

The path surface should be suitable for accessibility and it should be pervious to minimize runoff. For retaining walls, steps or other details, Central Texas stone should be used. Numerous examples of appropriate stonework can be found within the park including the stonework at Sunken Garden and the stonework scattered throughout the Zilker Nature Preserve. Other examples can be found at the West Cave Preserve. Since this path will be in use after dark, convenience lighting should be installed.

As this path emerges from the Woods towards the diving board, care should be taken to make it as inconspicuous as possible to preserve the Pool ambiance as it exists today. To that end, consideration should be given to changing the paving surface from a hard pervious paving (like Eccocreto) to a vegetated paving surface (like Grasspave2).

The design of this new route should integrate improved runoff mitigation features in the gully. For example, a "rain garden" design could capture runoff in low depressions planted with native vegetation.



*The accessible route should feel like a walk in the woods. It should integrate natural features where possible.*





*The south parking lot should be heavily planted with trees for beauty and shade. It should be paved to reduce dust and to reduce turbid runoff.*

## SOUTH ENTRY

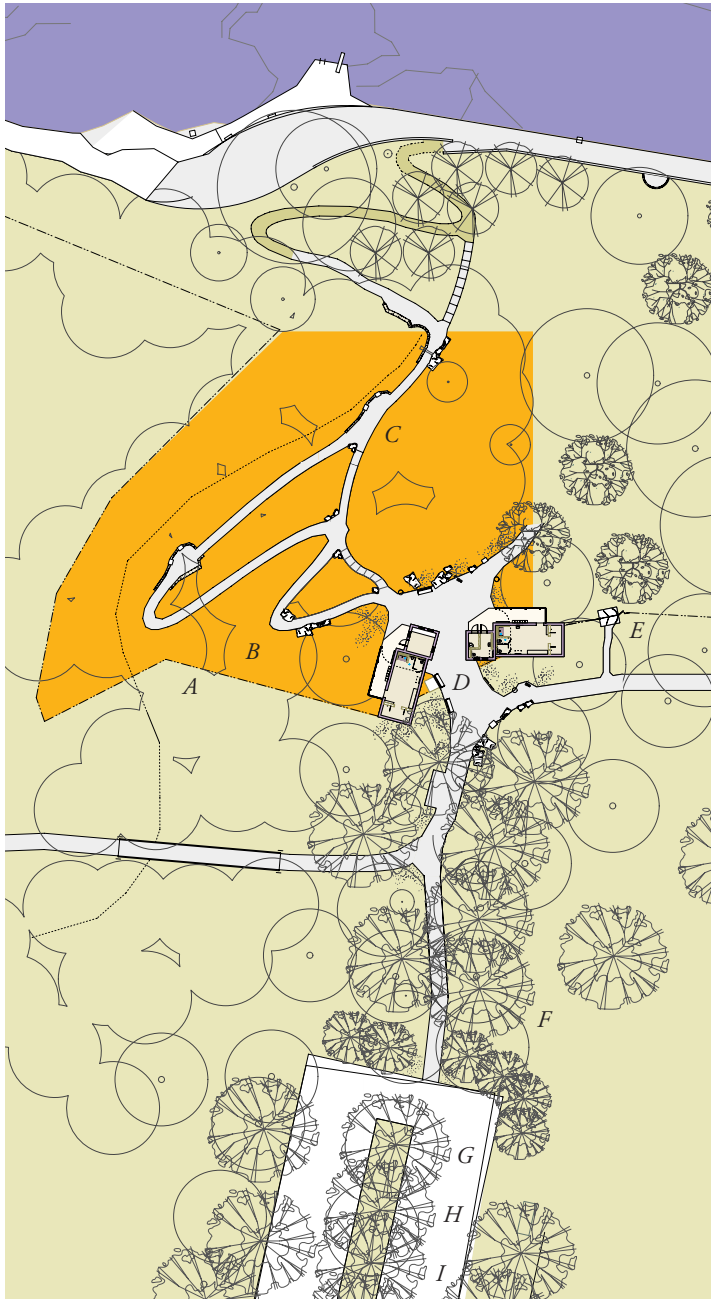
The character of the south entry to the Pool contrasts sharply with the entry experience on the north side. The north side, with its Tree Court, its concession stand, the “Splash!” exhibit and its substantial Bathhouse, is practically urbane by comparison to the south. The south side features a dusty, unpaved parking lot and a simple, crushed granite path that passes through an unmanicured open field to a simple guard shack at the fence line. While the south side is usually quiet, the north side is sometimes carnivalesque.

For many nearby neighbors, the south entry is thought of as a neighborhood entry. The fact that it is casual is seen as a plus. It feels natural. It feels like a walk to an old-time swimming hole. For others, the south entry is a convenient entry for a swim before work. While the north entry is by far the most heavily used access point to the Pool, the south entry is popular for its convenience and because the parking is free.

The public participation element of this project found a divergence of opinion on appropriate next steps for this area. For some, leaving it as it is seemed right. That way, the experience remains “natural”, and traffic congestion—always a concern on Robert E. Lee Drive—is not exacerbated. For others, changing and restroom amenities are lacking. For these people, an accessible route to the Pool would be a welcome addition. While there was some divergence of opinion on the question of paving the parking lot, the level of emotion seemed to be lower, as did the number of people opposing it. Opinions converged on the question of improving the landscape in this area. Planting more trees, especially around the parking lot itself, was seen as a good idea as was planting wildflowers in the field between the parking lot and the south gate.

The idea that the feel of the south side should be different and more casual than the north side should continue to be appreciated and preserved. It should always be mellower, quieter and feel somehow more private. At the same time, it should be acknowledged that contemporary park demands suggest the addition of certain basic amenities. Accessibility, whether it is a legal imperative or not, is an important Austin value and should be addressed. And the south side, like all aspects of the park, is subject to heavier usage now than in the past. The desire for dressing and restroom facilities here is reasonable, and consistent with good park management practices.

The apparent contradiction in wanting to keep the south side low-key while also adding amenities is not a foregone conclusion if the new amenities are discretely designed and their scale is kept down.



#### *South Woods/South Entry*

- A. Relocate fence line to include South Woods in the Pool precinct using new, more attractive fencing.
- B. Remove nuisance vegetation, such as poison ivy, nandina, legustrum and hackberry. Repopulate with appropriate native Texas plants and trees.
- C. New accessible route.
- D. New, modest South bathhouse.
- E. New turnstile.
- F. Plant Texas wildflowers and more native trees to beautify and add shade to path between south parking lot and south entry.
- G. Plant native trees in parking lot.
- H. Pave parking lot to reduce dust and turbid runoff.
- I. Locate a solar-powered electric-bike, electric-scooter recharge station (provided by Austin Energy) .

#### *Notes on Paving the Parking Lot*

*The planning team initially sought to improve this less-than-perfect situation with pervious paving, a type of concrete that allows water to drain through it. The thought was that pervious paving would eliminate air-borne dust during dry conditions and eliminate turbid runoff from what is now a powdery crushed limestone surface. Pervious paving does allow stormwater to pass through it. Unfortunately, it also allows oil and other vehicle drippings to drain through as well. Recognizing the proximity of this site to the Pool, this once-promising idea was abandoned in favor of a more conventional, less environmentally fraught paving solution.*



*The space along the path between the south parking lot and the south entry (above) should be planted with trees and with Texas wildflowers (below).*

The fields outside the south entrance to the Pool have some very large pecans, but are mostly open. For the league and informal playfields, this is appropriate. However, trees lining the roads and parking lots, and shading those areas that are not used as playfields would make the area more pleasant and usable.

*Plant more trees*

First and foremost, add no new parking to the south side. Instead, add substantial quantities of new trees. These trees should shade the parking lot itself and they should shade the path from car to gate. This tree canopy should also extend toward Robert E. Lee. Add a row of trees along the Zilker Trail as it approaches the south gate from the east. These trees will shade the path and they will help to distinguish the zone for the trail from the outfield of the playing field to its south. They will also echo the rhythm of the row of trees on the other side of the path, creating a beautiful tree-covered archway experience.

The park lanes on the south side should be planted with lines of shade trees to shade the cars that park along those lanes and to screen the body of the park from the road and parked cars. Cedar elms, Mexican White Oak (*Quercus polymorpha*) and Texas ash could be used to line the roads and parking lots. Majestic bur oaks and chinquapin oaks would be appropriate as solitary specimen trees in those open areas on the south side that are not used for field sports. A line of Chinquapin oaks following the curve of the highest Sunken Garden wall, between the wall and the trail, would be a beautiful addition to the area.

There is not a functioning irrigation system in the south fields, but much of the area is fairly accessible from paved areas so that new trees could be watered by the watering truck.

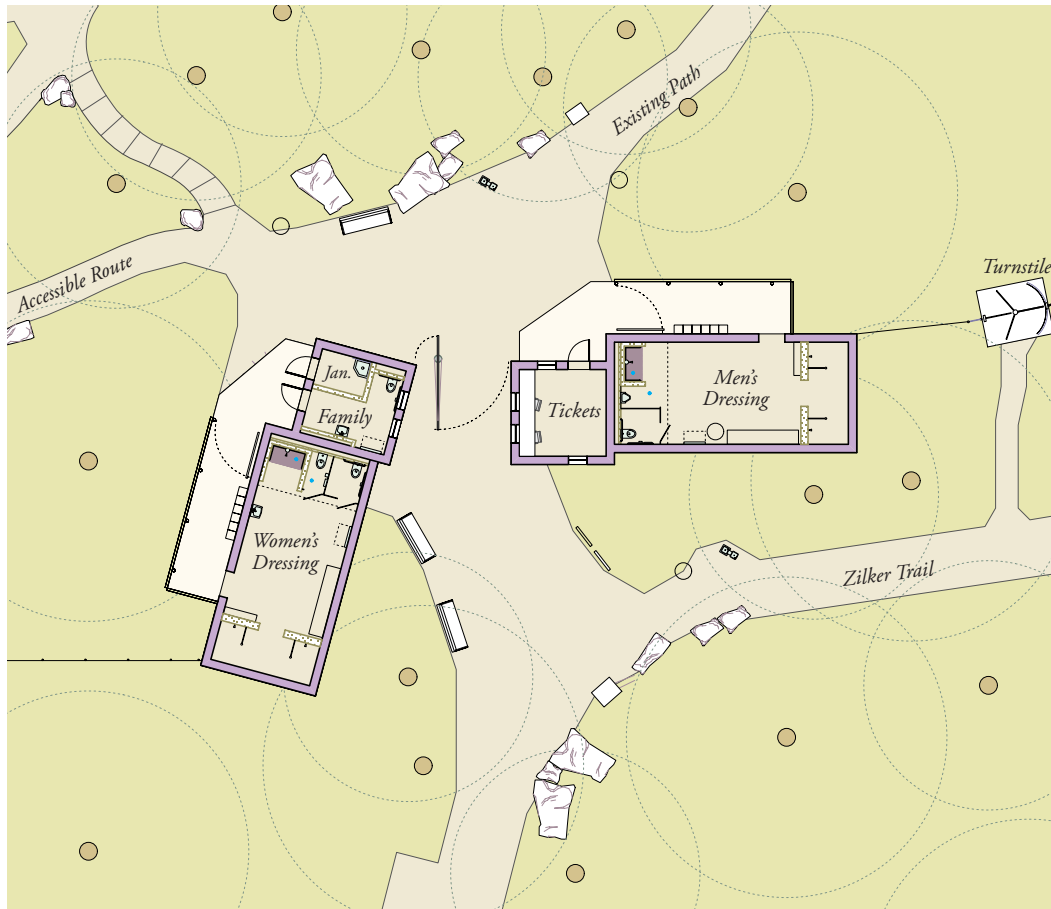
*Add a wildflower meadow*

Plant wildflowers all around the parking lot, especially in the field between car and gate. This meadow could be combined with the ‘Rain Garden’ described below.

*Pave the existing parking lot*

Paving the existing parking lot would eliminate dust and the potential for crushed limestone grit to be washed into the gully during heavy rain events. Grading should be carefully reviewed and modified as required to direct runoff away from the gully (which flows toward the Pool). Use vegetated swales and other best management practices to mitigate stormwater runoff from the parking lot. This is a perfect location for a ‘Rain Garden’: a series of swales and depressions planted with native moisture tolerating plants, that can slow runoff enough to allow percolation into the soil.





*Build a new, though modest, south bathhouse.*

While the design and the scope of this amenity should be refined through a public participation process, initial studies by the planning team suggest that it can be quite compact and still satisfy its function. It can be as small as two toilet fixtures on each side with a modest changing area. One shower on each side will likely satisfy. Whatever the outcome of the public process regarding the numbers and arrangement of fixtures, the building should be built with its low-key park setting in mind. The design should eschew materials and structural techniques that suggest an inappropriate urbanity for this context. Instead, the building should revel in its natural setting, and should seek to blend or complement it's

*South Bathhouse, Three Considerations:*

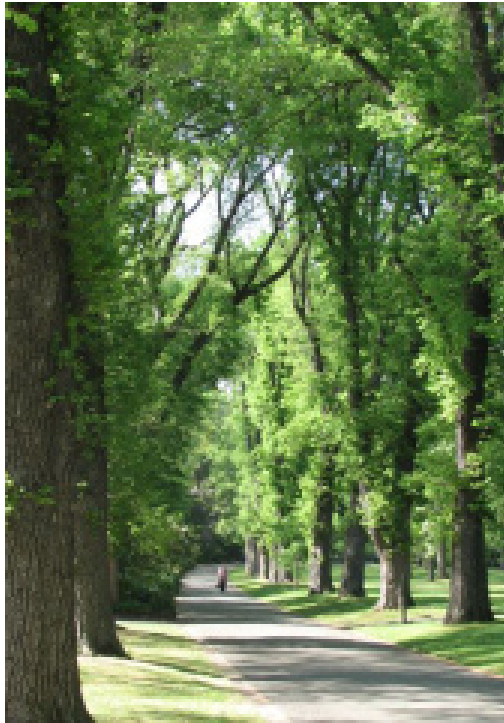
*One--Barton Springs Pool is Austin's most popular pool by far where 484,067 people passed through its gates during the 2005-2006 swimming season. Its next most popular pool is Deep Eddy, with 95,315 users during the same period. If only 20% of the Barton attendance came through the south entry, that number would be 96,813, roughly equaling the Deep Eddy attendance. (Source: Aquatic Department statistics).*

*Two--From the center of the South Lawn, a round trip to the existing north Bathhouse is almost 1/2 mile, and includes a 32-step climb from Pool deck to Bathhouse, almost two flights of stairs.*

*Three--Anecdotal. In response to the question put to a number of south gate users: Where do you go when you need to go?, a frequent response was: 'I go in the Pool.' or, 'I find a tree'.*



*The South bathhouse should revel in its natural setting. Central Texas limestone should be strongly encouraged as the dominant building material.*



*The south fields can be bordered with trees and still maintain the open playfields.  
Photo: Melburnian*

setting. Central Texas limestone should be strongly encouraged for the dominant building material. Stonework patterns might draw inspiration from Sunken Garden. The bathhouse should be an open-air experience as much as possible. But if some areas require roofs, then “green roofs” should be considered for reasons of sustainability and for their ability to literally merge the building into its landscape. And the paving, both within the dressing areas and around the outside should be pervious paving wherever possible to minimize the building’s stormwater runoff impact.

*Improve the entrance on Robert E Lee Road*

The drainage channel along Robert E Lee Road is the first view of the Barton Springs area for many. The drainage channel is overgrown with johnsongrass and other noxious weedy vegetation, with bank sides that are too steep to be easily maintained. In consultation with the City drainage utility, native creekside vegetation should be established along this channel.

The overhead utilities along the drainage channel should be relocated or buried, as should the extensive network of overhead lines throughout the south side of the park. Signage that indicates the Pool entry should be installed.

*Define the edges of the existing little league parking lot*

By the north little league field, much more extensive asphalt paving has been installed than is required for a standard width parking lot. A reasonable sized parking lot should be delineated; the edges defined with wheel stops; and the excess asphalt removed. Maintenance of sports facilities is done primarily by the leagues that use them. Stricter control of permitted facilities, and how they are maintained should be considered.

## SOUTH BLUFF

The bluff across from the Pecan Grove is one of the most beautiful and distinctive features of the Barton Springs area. It is the one place on the Pool grounds today where we can see what the area was like before it was graded, dammed and developed as a park. The concrete walk across the north dam ends at a rough, largely natural ledge on this bluff. This ledge ends in the lawn just south of the diving board.

### *Recommendations*

The ledge along the top of the bluff serves as an undeveloped informal path from the diving board area to the north side, and to make it more passable, some minor improvements have been made to it over the years. Rocks have been moved aside to make passage easier in places, and rocks have been mortared into rough steps here and there. This ledge is not, and cannot be made accessible, without causing harm to the bluff, a significant natural feature. Because the rest of the Pool area is or can be made accessible by other routes, we recommend that no improvements be made to the south bluff ledge, to make it more accessible. We recommend that this ledge remain largely as it is, an undeveloped informal path that is posted as potentially hazardous.

Up the bluff from the ledge is heavily vegetated, with poison ivy being the vegetation closest to the ledge in some places. Control of noxious vegetation should be regularly undertaken in this area. However because of the proximity of the springs, no chemicals, organic or otherwise, are appropriate for use in the south bluff area. Poison ivy, nandina, ligustrum and other vegetation identified by the City of Austin Grow Green program as invasive should be regularly removed by hand. This bluff is a good place to install acorns, seeds and seedlings of hill country bluff plants, like nolina, Mexican buckeye, and eupatorium.



*The ledge along the top of the South Bluff should generally remain as it is, an undeveloped informal path that is posted as potentially hazardous.*

*Photo: Megan Peyton*



*The south entry road, paralleling Robert E Lee Rd, now. To the left is a drainage channel, often overgrown with johnsongrass. To the right are the playfields.*



# THE BATHHOUSE

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One of the primary goals of this plan is to rehabilitate the Bathhouse and in doing so, to return the ticket sales to their original location, the central rotunda. From the beginning it was obvious that all spaces were in use (and some were cramped at that), and that a plan that involved moving the ticket-taking operation (and by implication, abandoning the current location) would be impossible if functions could not shift, and in some instances move out of the building.

It was also observed that the building is operated by two entities, Aquatics to operate the Pool and Nature Center staff to operate the Sheffield Center. Both work in the Parks Department, but they have different missions and they serve different, though overlapping populations. Currently, each operation is well defined within the building. If a new concept emerged that muddled areas of responsibility, it would likely fail if the details were left unresolved. While these matters were discussed with staff during this process, and encouraging possibilities were identified, the complexity and long-range implications of significant changes will require further study by staff beyond the reach of this plan. The recommendations made here assume that solutions to the logistical and operational issues can be resolved, and that a commitment to the budgeting requirements can be reached.

## *The Bathhouse in 1947*

The existing Bathhouse was built in 1947 to replace an earlier wooden structure at the same location. Its design is credited to Dan Driscoll, who designed Deep Eddy a decade earlier, and like Deep Eddy, its plan is organized around a central transaction area flanked by two open-air dressing areas. It is a one-story masonry building with design influences of the Streamline Moderne style, which explains its abstract “ocean liner” appearance. It is listed in the Barton Springs National Register Archaeological and Historical District of 1985, where its condition was described as follows, “While a corner of the women’s dressing area is now used as ticket office and basket room, the structure has not otherwise been modified; even the original landscaping remains substantially intact.” It was designated a City of Austin Landmark in 1990.

Originally, tickets were purchased at the central glass rotunda, much the way movie tickets are bought today, with patrons walking up to ticket windows paying the clerks sitting inside. Depending on the size of the crowd, as many as five clerks would be deployed while the waiting patrons were shaded by the deep canopy that still exists today.



*Grand opening for existing Bathhouse, 1947. Tickets were originally sold from the central rotunda. PICA 20162, Austin History Center, Austin Public Library.*



*Existing 1947 Bathhouse. Originally, tickets were sold through ticket windows in the glass rotunda.*

With tickets in hand, women would head left and men would head right, each passing through the Bathhouse to gender-specific dressing areas and then on to the Pool.

One of the defining functional aspects of the Bathhouse was its double-level basket storage spaces; one for men and one for women. These spaces were designed for cross ventilation; they have operable windows on the Pool side and tall openings filled with no more than a security mesh on other sides. While the use of baskets is a thing of the past, the spaces are still intact. One of them houses the “Splash!” exhibit and the other houses classroom spaces; both parts of the Beverly S. Sheffield Education Center.

The Bathhouse is, perhaps, most famous for its open-air dressing areas. They are characterized by benches under concrete shade structures, and outdoor showers and landscape plots in the middle. The men’s area is largely open, so it has clear lines of sight from one end to the other. The women’s area has open areas and structures for private cubicles, so lines of sight are less open there.

The Bathhouse also includes restrooms for public, non-swimmers’ use, and can be accessed from the park side without the requirement of buying a ticket. While the Bathhouse generally closes when the Pool closes, these restrooms are open 365 days a year, except during freezing conditions. They provide the main restroom facilities for the north side of the Pool.

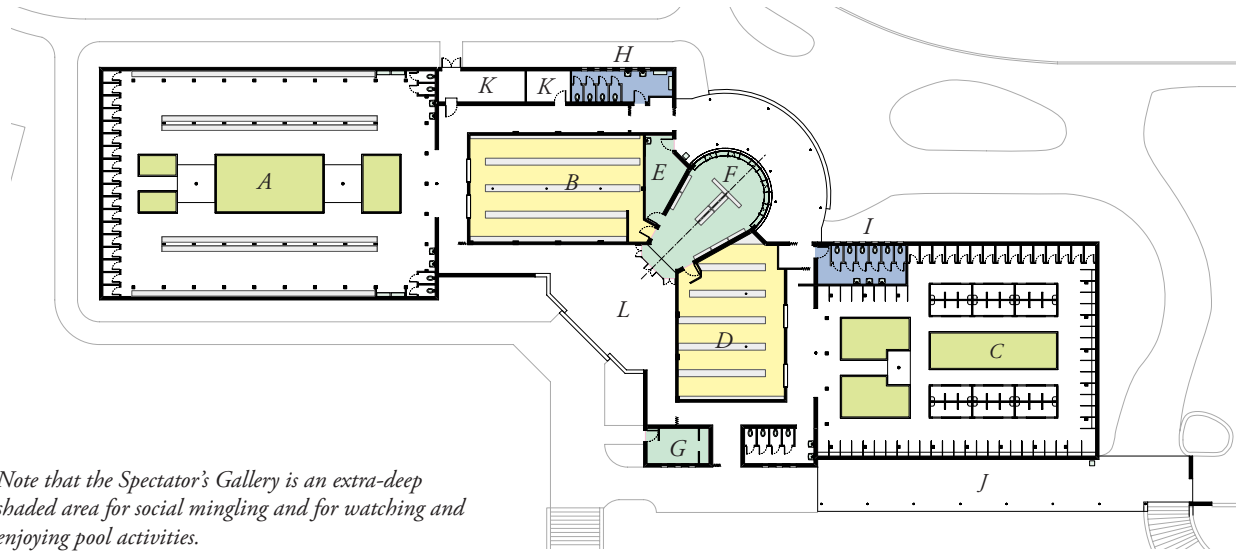
#### *The Bathhouse Today*

The Beverly S. Sheffield Education Center occupies the three central spaces of the building, the glass rotunda and the spaces to either side originally designed for basket storage. The Sheffield Center was installed in the early 1990s, and is dedicated to public education on matters related to the aquifer. It includes the Splash! exhibit, located where the men’s basket room was, a Gallery in the rotunda and two classrooms, located where the women’s basket room was. Splash! is an immersive exhibit, where the visitor is given an experience intended to mimic a walk through underground aquifer passages. Though it could use some freshening, it is attractive and well-designed and continues to be popular.

The Gallery features exhibits in the naturally lighted rotunda. They range in approach from posters and photographs to rocks and other natural artifacts. There is a rack of brochures, too. Generally the Gallery is a second stop after taking in Splash!

The two classrooms provide an educational program venue, mostly for school groups.

The outdoor dressing areas are still in use, much as they have been since the building



1946 Plan

- A. Men's Dressing Area
- B. Men's Basket Storage
- C. Women's Dressing Area
- D. Women's Basket Storage
- E. Manager's Office
- F. Ticket Sales
- G. Lifeguard's Lounge
- H. Men's Public Restroom
- I. Women's Public Restroom
- J. Spectator's Gallery
- K. Storage
- L. Entry Forecourt

Note that the Spectator's Gallery is an extra-deep shaded area for social mingling and for watching and enjoying pool activities.

opened. The Men's Area is generally the same open-air dressing space as always with wood benches under concrete shade canopies, outdoor showers and attractive areas of vegetation. More noticeable changes can be seen in the Women's Area, where some of its space was lost when the lifeguard and manager's offices were relocated in the 1960s. To accommodate that construction, some of the bench and shade canopy system was lost.

The public restrooms are also in their original locations, but they have been modified to satisfy the ADA, which has resulted in a decrease in fixture numbers.

Since storage is at a premium, equipment can be found in spare locations throughout the building including the former Lifeguard's Lounge and in the original passageway between the rotunda and the Men's Dressing area. Some of it is pool operations equipment, some of it is lawn and pool cleaning equipment and some of it is Watershed equipment (scuba gear and emergency response gear).

All of the occupied spaces are on the ground floor, but a computer space above Splash! deserves mention. It houses a handful of the computers that generally run on their own. But they sometimes require time and attention, and because the space is only accessible by a ladder located in another cramped room, a goal was set to try to find a new location on the ground floor.



The central rotunda was designed as a generous space, intended to accommodate as many as five ticket takers plus a substantial towel and bathing suit rental operation. PICA 17393, Austin History Center, Austin Public Library.



*The current main entry to Barton Springs Pool.*

For more than a generation, the Lifeguard's Lounge/Manager's Office has been located in a 1960s addition placed in the southeast corner of the Women's Dressing area. Tickets are sold through a window that faces the Tree Court. A small canopy over the window was added to protect the customer from the elements. Facing south, two windows look out onto the Pool, and a door gives access. Originally the area just outside was a "Spectator's Gallery", a deep, shaded loggia intended for lounging and socializing and taking in the view of the Pool. Today it is bisected by a handicapped ramp, which makes it more of a passageway than the social space it was originally designed to be.

#### *Building Condition*

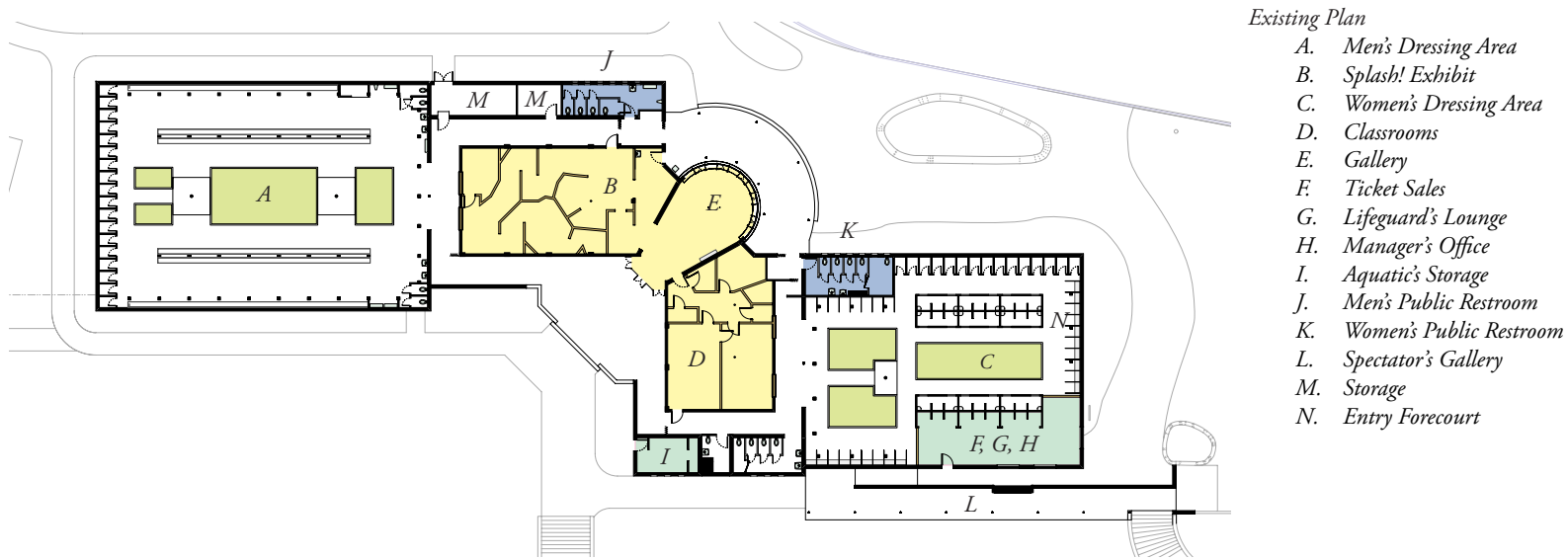
For the purposes of this plan, the building's condition was evaluated by examining drawing archives and by visual observations at the building by architects, engineers and roofing consultants. The planners also asked the operations staff, maintenance staff and swimmers for observations that could be of interest.

The building shell is load-bearing masonry on continuous concrete footings. The exterior is white limestone and the interior is glazed structural clay tile. The exterior appears to be stable and to be in generally good condition. Many of the interior structural clay tiles are experiencing cracking and spalling. In some cases, it appears to be due to corroding reinforcing steel expanding within the block, leading to cracks and breaks. In other cases, it is due to stresses from door hinges mounted directly to the blocks. And in still other cases, breakage appears to have been caused by heavy use in confined spaces. While all of this is unsightly, and it has certainly weakened the construction in the areas of the damage, it does not appear to be of such severity as to be threatening the structural integrity of the building at this time. Nonetheless, the structural clay tile is so important to the character of the building, that repairing and/or replacing it will be an important component of any rehabilitation effort.

The wood framing of the roof structure appears to be intact as do the steel beams and columns that support it. All of the original steel windows remain. Some show some surface rust and some have areas of compromising corrosion. In general, they appear serviceable. As was normal of the era, all of the glass is clear single pane.

One of the defining features of the two dressing areas are the concrete canopies and their "T" shaped concrete supports. As a collection, they seem to be structurally sound. Aside from the repair of minor spalling, they should generally be reused as they are.





The roof was evaluated by a roofing consultant who observed some leaks and that its general condition is poor. More troubling, several areas of the roof are designed with parapet walls on all sides. These areas have primary drains but not overflow drains, a code violation and a safety hazard. Roof replacement is a short-term recommendation of this plan.

The staff reported that the current air conditioning system is faltering, an assessment echoed by a mechanical engineer. HVAC system replacement is a short-term recommendation of this plan.

The electrical service appears to be adequate for future needs, but the location of the panels in the outdoor corridor between the rotunda and the Men's Dressing Area is noisy and not convenient to a new design. The electrical fixtures are generally not energy efficient and should be replaced with new, more efficient fixtures. Furthermore, numerous surface-mounted conduits can be seen on the building, suggesting a series of alterations and additions over the life of the building. Removing these and relocating their service in less conspicuous routes should be a part of any rehabilitation effort. From a practical standpoint, this could result in the replacement of all of the electrical service.

There are a range of ages and types of plumbing fixtures in the building. None of them appear to be water-conserving fixtures. To the extent that this plan will likely involve mov-

*Three components of the Beverly S. Sheffield Education Center now occupy the building's central spaces, the Splash! Exhibit (B), the Classrooms (D) and the Gallery (E). The relocated ticket-taking operation required the installation of a ramp and stair apparatus to manage level changes, effectively eliminating the social space of the Spectator's Gallery. Note that the public restrooms are still located in their original spaces, but that their fixture numbers have been reduced due to ADA retrofits.*



*Men's Dressing Area, open and attractively landscaped, should retain its historic character.*



*The Women's Dressing Area should be redesigned for a more open feel, while still offering a range of privacy options. This image shows the relocated Lifeguard's Lounge/Manager's Office, and the space it took from the Women's Area.*

ing and redesigning restrooms, and recognizing that this rehabilitation effort is intended to extend the life of the building for many decades, this plan is using a total plumbing replacement as its working assumption. It should also be said that the addition of rainwater collection and shower and lavatory water reuse systems would also necessitate significant replumbing.

#### *OBSERVATIONS ON EXISTING FUNCTIONS*

*Men's Dressing Area*--Anecdotal reports from users and staff indicate that the number of showers and toilets is thought to be adequate, and that the cubicles at the west end of the space are under used. There generally seemed to be openness to the possibility of dedicating some of the space to another use if it contributed to an overall success. Open-to-the-sky showers were considered to be an essential feature of the Dressing Area experience. The planners were cautioned against any effort that might shroud them or put them under a canopy.

*Women's Dressing Area*--Anecdotal reports from users and staff indicate that the number of showers is adequate, but some felt that some additional toilets would be welcome. There were also some reports, from this group and from others, indicating that the Women's Area was under used in general and the cubicle dressing accommodations were under used in particular, especially in the aisle along the north wall. Suspecting that a possible explanation might be the design and condition of the cubicles, the planners compared for the women the design of the Men's side with the design of the Women's. In general, the idea that more openness, while keeping a range of privacy options, was seen as an improvement. A tour of the recently-opened bathhouse at Deep Eddy with a different group confirmed the sentiment. Like the men, the open-to-the-sky showers on the women's side were considered to be an essential feature of the Dressing Area experience.

*Lifeguard's Lounge/Manager's Office*--The Lifeguard's Lounge/Manager's Office was relocated to its current space in the 1960s as an experiment to improve the ability to see the Pool, and it has been there ever since. The change did, indeed, improve visibility, but it came at a cost. It made the Pool entry more difficult to find, and it required construction to manage a level change that diminished the viability of the Spectator's Gallery as the social space it was originally designed to be. It also made ticket sales (and crowd management) more difficult during peak periods, since the physical arrangement only accommodated one clerk.

In discussions with Aquatics staff, the planners learned that the currently accepted pool-management practice involves the manager walking the perimeter of the Pool; not sitting

in an office. They also learned that the sophistication of today's communications equipment diminished (but did not eliminate) the importance of visual proximity to the Pool. In short, the current location was not so sacrosanct that it could not be moved if a suitable alternative could be found, and significantly, the same level of visual access was not a requirement.

*Sheffield Center*--For many people, the Splash! exhibit is the Beverly S. Sheffield Education Center, not realizing that the Sheffield also includes the Gallery and two classrooms. Splash! is announced by a large banner draped over the building, and a visit to it is instantly compelling. Its immersive design literally envelops the participant in its enthusiasm and its message. Splash! is professionally designed and it is rigorously maintained, and it continues to be popular.

In the interest of exploring options, planners discussed a number of possibilities for Splash! with staff; moving it, reconfiguring it, reimagining it. Part of the motivation was to simply be thorough, but another was to look for ways to relieve crowding within the building. If there was an opportunity to be found, it would be in reassigning the space to a function that could take advantage of the extra tall space and the potential for daylighting through the large Bathhouse windows.

But moving Splash! would be expensive and any other location would be less prominent, which would likely dampen its important educational mission. In the end, the planners came to believe that Splash! has become a vital component of the Barton Springs experience, and that it should remain where it is. In fact, its prominence (along with the rest of the Sheffield Center) should be amplified.

By comparison to Splash!, the Gallery seems undernourished. Splash! looks like professional exhibitry, and (with apologies to an overworked, underfunded staff) the Gallery looks homemade. The Gallery is self-guided, which is fine for casual exploring, but it frequently leads would-be visitors to wonder whether the space is open to the public, diminishing the impact this important amenity could offer to the park and to the city.

The classrooms seem incongruous in their proximity to the Gallery. When they are not in use, Gallery visitors frequently venture awkwardly into them, not knowing that they are not a logical next step for the visit. Nature Center staff confirms that observation, explaining that they are located in the Bathhouse because space was available there at the time they were needed. In further discussions, the planners learned that the classroom programs generally involve a long walking trip to the creekbed downstream from the Pool to collect



*With a single area drain, and no overflow drain, a clog could lead to a catastrophic roof collapse.*



*Aside from the deterioration, the preponderance of masonry toilet partitions gives the place a crowded feel. A rehabilitated Bathhouse should include more generous maneuvering clearances throughout.*



*Aside from the masonry deterioration, some of the Women's Dressing area seems cramped and dank. Regular swimmers report that this area is rarely used.*



*Electrical upgrades are installed unattractively, rendering this otherwise usable space good only for storage.*

rocks, bringing them back to the classroom to discuss them. From a practical standpoint, this is inconvenient, plus, it brings considerable noise and mud through an otherwise contemplative space. It should also be mentioned that the classrooms are windowless additions that missed an opportunity to take advantage of a space with tall ceilings and generous windows. A new, more convenient location, if one could be found, could free up some space in the Bathhouse, and allow for a use more complementary to the Splash! and the Gallery experiences, and one that would take better advantage of the existing architecture.

A related matter, near, but not in the Bathhouse, is the Nature Center storage of bicycles in the vault below the bandstand, the 1920s construction just across the parking lot from the Bathhouse. These bikes have a program use, but that particular storage location is more a matter of availability than necessity. Again, if a more convenient location could be found, some equipment currently stored in the Bathhouse could be moved into the vault.

**Restrooms**--In the original design, the restroom spaces were designed to tighter tolerances than is customary today, giving them a somewhat claustrophobic feeling by today's standards (not even accounting for ADA clearances). Part of that feeling is traceable to the decision to use glazed structural clay tiles for the partitions, which at 4" thick, consume considerable floor space. And because they are solid all the way to the ground, they make the restrooms difficult to clean. Furthermore, because they are opaque, they contribute to an impression that someone may be lurking just out of view; an unpleasant thought in public restrooms.

Staff emphasized the special importance of the two public restrooms, since they are the only restrooms for much of the north side including the Zilker Hillside Theater. Their importance dictates that they remain open every day of the year except when it freezes. Finding a way to add fixtures would be seen as a plus.

**Storage**--Discussions with staff revealed that much of the stored equipment needs to stay in the Bathhouse, but that some pool cleaning equipment only needs to be convenient to the Pool, but not necessarily in the Bathhouse. The Watershed equipment definitely needs to be in the Bathhouse, and the location for the emergency response gear would be improved if it could be relocated from the attic above the classrooms to the ground floor.

**Connections**--The Bathhouse is strategically located with respect to three important trails. A new 31 1/2 mile Austin-Kyle trail system was announced in the Fall of 2007. For the most part, it will link parcels of land acquired to protect them from development and to preserve water quality in sensitive recharge areas, including Barton Creek. Its Austin trail-

head will begin at the Barton Springs Bathhouse. The Barton Creek Greenbelt is Austin's most popular greenbelt, and it also begins at the Bathhouse.

The Zilker Trail currently exists, but in an incomplete form. This trail grew from the observation that foot travel from the north side to the south side is not possible without paying for admission to the Pool. When complete it will extend the Town Lake Hike and Bike Trail west along the south bank to a bridge upstream of the Pool, then return to Lady Bird Lake along the north bank. The bridge is scheduled for construction within the year.

One might reasonably expect that the new Austin-Kyle trail and a completed Zilker Trail will bring more interest and attention to the park (and the Bathhouse) than already exists.

### ***Recommendations***

#### ***Upgrade gallery and create a Visitor's Center***

The Beverly S. Sheffield Education Center serves a valuable service by offering a depth of enjoyment to the park experience that is not available elsewhere in the park. And by virtue of its location in Zilker's most prominent building, it serves as a natural place of beginning, especially for the first time visitor. This plan recommends raising the profile of the Sheffield Center by upgrading the Gallery and by creating a Visitor's Center to replace the two classrooms. The idea is intended to extend and give official voice to the long tradition of love and advocacy for the place, and to create a central organizing experience for the visitor, where the rich historic and natural stories of the place are easy to access and enjoy. This invigorated Sheffield Center would feature real-time data on spring flow, water chemistry and flood activity among other things. The Visitor's Center would feature exhibits on areas of interest; the people, the events, the natural wonder. It could also serve as an event location, for lectures, receptions and small performances. A number of successful local models can be emulated--the Visitor's Center at the Texas State Capitol and the Visitor's Center at Westcave Preserve are but two examples. Even the nearby Umlauf Sculpture Garden & Museum might suggest possibilities as a venue for events and small performances.

Indeed, the mission of the Sheffield Center should be seen as extending beyond the walls of the Bathhouse; it should be felt throughout the park by means of a comprehensive interpretive plan.

#### ***Return ticket purchasing to the rotunda***

This plan also recommends returning the ticket purchase transaction to its original location, the central glass rotunda, to give a personal face to the park's most prominent building, and to allow for ticket-sales flexibility, especially during periods of peak demand.



*Plumbing fixtures vary in age and condition. Trough urinals (right) do not meet current code. None of the fixtures are low water-use fixtures.*



*The relocation of the Lifeguard's Lounge/Manager's Office in the 1960s required this elevated passage to account for a level change, changing what was designed to be a shaded social space into more of a passageway.*



*What were originally designed as generous openings into the basket rooms are covered with vinyl siding. A rehabilitated Bathhouse should replace the siding with glass to create a light-filled, double-height space.*

### *Upgrade Bathhouse*

This plan recommends updating the bathhouse parts of the building, making them more comfortable and making them more modern, while respecting their historic architectural heritage. One significant modification would be in the Women's Dressing Area, where a new sense of air and light should replace some of what seems cramped and dank to today's eyes. And this plan recommends removing the current Lifeguard Lounge/Manager's Office.

Both Bathhouse dressing areas – the men's side and the women's – have courtyards with planting areas that are open to the sky. Both have panels of well-watered St. Augustine that offer opportunities for private sunbathing. Both also have planting beds with exotic vegetation. The Men's Dressing Area courtyard, tended for many years by Frank Fisher, is especially lovely. The bamboo grove, the banana planting, and the planters by the entry and foyer show care, affection and intelligence, and are a delight. The Women's Dressing Area is also lovely, with cannas and violets. Adding roof planters, like those on the men's side to the women's side, would be a wonderful and exotic addition, since there are volunteers available to care for them.

### *Reconfigure public restrooms*

This plan also recommends reconfiguring the public restrooms to increase their number of fixtures and to make them more comfortable.

### *Significant Assumptions*

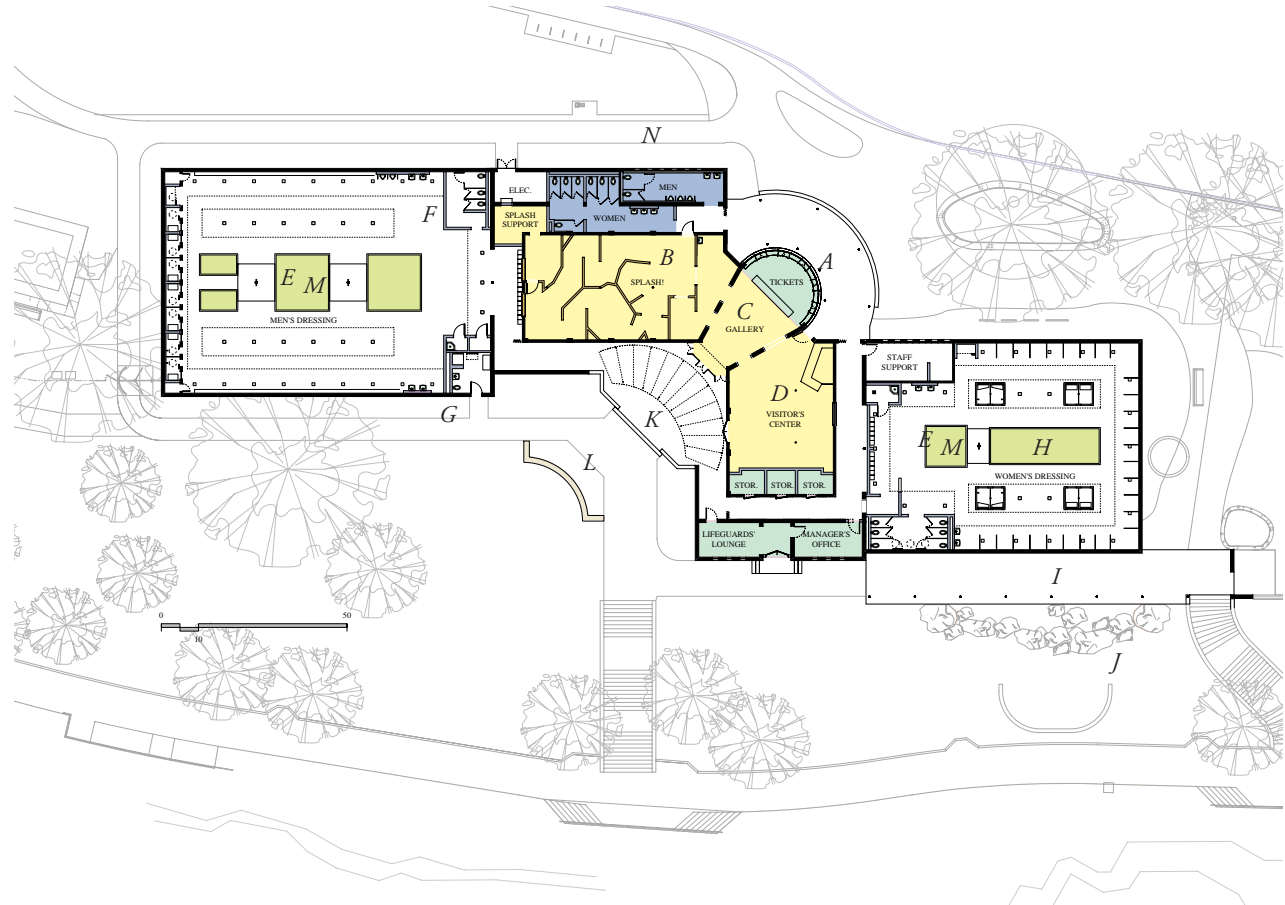
This proposal rests on two significant assumptions whose resolution is beyond the scope of this report. One, that alternative accommodations can be found for certain program spaces and storage requirements. The maintenance yard (assuming that maintenance operations can be relocated) offers tantalizing possibilities for relocating the Sheffield classrooms and the Nature Center bikes as well as some pool operations equipment. But the fate of the maintenance center is uncertain at this time, and in any event is beyond the scope of this plan.

And two, that staffing and operational requirements brought on by amplifying the role of the Sheffield Center by adding a Visitor's Center and expanding Gallery can be resolved. Clearly, this proposal will require more staff and a larger operations budget.

These two assumptions are so fundamental to this proposal that the planners believe that no rehabilitation effort of significant scope should be undertaken at all unless they are addressed and satisfied.

*Proposed Bathhouse*

- A. Return ticket sales to their original location.
- B. Splash! exhibit remains in its current location.
- C. New Visitor Center function offers park history and information, while serving as “lobby” for the Splash! exhibit.
- D. New Gallery to display real-time technical data, such as flow rates and water chemistry, about springs and aquifer.
- E. Outdoor showers. No umbrellas, no canopies.
- F. New water closet space for greater privacy.
- G. New Unisex Restrooms for family convenience.
- H. Women’s Dressing area redesigned for more open feel, while still offering a range of privacy options.
- I. Remove non-original construction to recreate full-depth “Spectator’s Gallery”.
- J. New Boulder Garden.
- K. New overhead shade canopy.
- L. Widen intersection with a low stone wall, and wider walk.
- M. Solar hot water for men’s and women’s showers.
- N. Consolidate public restrooms in this location.



*Returning the ticket-taking operation (A) to the central rotunda improves service during “peak” hours, and gives the building a much-needed human face. And without the level-change apparatus, the Spectator’s Gallery (I) is once again a social space. The new importance of the Entry Forecourt as a gathering and dispersal space is acknowledged with the addition of the shade canopy (K) and the widened intersection (L).*



Seen from above, the Visitor's Center takes advantage of the double height space and the generous windows.



The Gallery should feature real-time data on spring flow, water chemistry and flood activity among other things. Photo: Clark Hancock

#### *Process*

*The planners met with staff and swimmers on numerous occasions, asking questions, sharing sketches and discussing alternatives. They also visited the Pool and Bathhouse at various times watching users as they engaged in a range of activities. The intention, of course, was to learn about the patterns of use in hopes of uncovering opportunities for a successful outcome. The process began with a discussion of current uses and how well they function.*

*As they formulated an approach to treating the building itself, the planners considered two general propositions:*

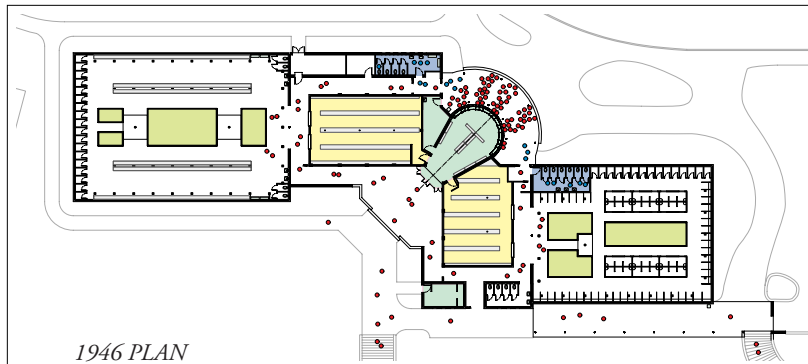
*Because of the building's historic status, alterations to the exterior of the building were avoided where possible. In a related sense, alterations to the dressing areas were undertaken with sensitivity and attention to retaining the character of the existing architecture.*

*Proposals that might add new buildings (to add more storage, for example) were seen as a last resort. First, the north side of the park, particularly along the edge of the creek, is already appropriately full. And second, because the site is on the National Register of Historic Places, its general ambiance was seen as something important to respect and to preserve.*

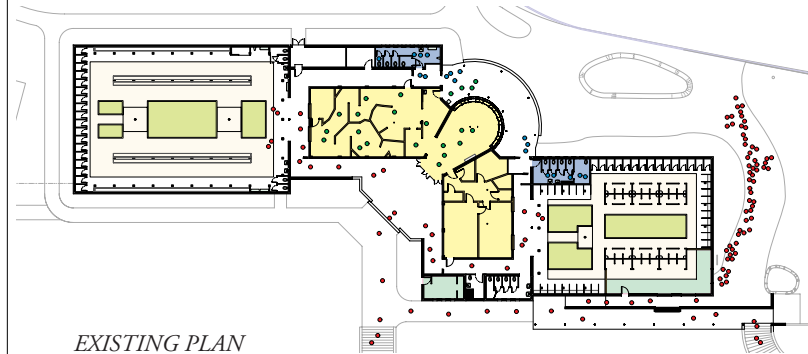
*The search for solutions to functional and space-related challenges led the planners to consider a wide range of options, rejecting many:*

- *Add a second level. This would have relieved overcrowding, but it would have greatly complicated crowd management. Plus, it would have added building code complications that would have been difficult to overcome.*
- *Move the Splash! exhibit. This would have freed up space, but where would it go? It is in a logical place now. Plus, moving it would have been very expensive.*
- *Add storage to the west end of the Men's Dressing Area. This would have satisfied some storage needs, but would have required a series of doors on the western exterior wall.*
- *Relocate public restrooms to the east end of the Women's Dressing Area. This would have taken substantial space from the Women's Dressing Area. Plus, it would have added doors to the east wall.*
- *Make an addition to the building to ease overcrowding. But where? The north, south and east sides are fully accounted for. And the west side is the Pecan Grove, a lightly used (by Barton Springs standards), but lovely space.*

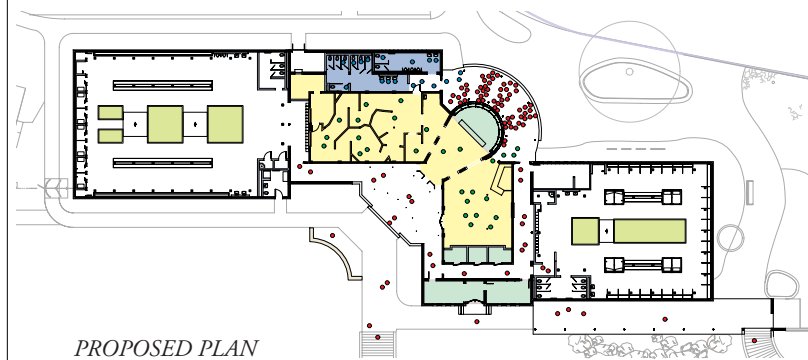




1946 PLAN



EXISTING PLAN



PROPOSED PLAN

*The planning process compared circulation patterns of the 1946 plan, the existing plan and the proposed plan. At the request of Aquatics staff, special consideration was given to "peak usage"; those summer afternoons when thousands of swimmers can show up all at once.*

*Each of these three diagrams show the same number of swimmers (red dots), the same number of public restroom users (blue dots) and the same number of Sheffield Center visitors (green dots), except for the 1946 Plan, when the Sheffield did not exist.*



*The Men's Dressing Area remains much like it is today, generally open with benches under concrete canopies and landscaped squares in the middle. Note the addition of the Unisex Restroom and the water closet room, both near the taller volume.*



*The Entry Forecourt features a new shade canopy for comfort and to create a more human scale. The low wall is intended to widen the sidewalk intersection and to create a social space under the shade of a mature tree. Note the rooftop solar hot water collectors.*

### *Notes on Sustainability*

The rehabilitation of the existing Bathhouse offers a number of exciting opportunities for using resources more wisely including the following:

- Solar hot water.
- Improved roof insulation.
- Improved energy performance of windows.
- Energy efficient lighting.
- Low water-use plumbing fixtures.
- Rainwater harvesting.
- Shower and lavatory water collection and reuse.
- High performance air conditioner, such as the “geothermal” unit seen at the Westcave Preserve.
- A new Pool side-shade structure at the Entry Forecourt to improve visitor comfort and to shade the exposed windows of the rotunda.

There are also opportunities in the areas immediately surrounding the building:

- Hybrid car-only parking spaces.
- Additional trees in the Tree Court to improve the building microclimate.
- More bike racks to encourage alternate modes of transportation.
- Boulder garden to soften the modern architecture and to introduce native Texas plants in areas that are now difficult to maintain and to irrigate.
- Native Texas, xeriscape landscape around building perimeter.



*The Women's Dressing Area is redesigned to introduce a new sense of air and light, while offering a range of privacy options. Note that the existing Lifeguard's Lounge/Manager's Office has been removed. Note the Boulder Garden, softening the modern architecture while also extending the social space of the Spectator's Gallery.*



*Many of the subordinate roofs are flat, and are surrounded by parapet walls. Because they are designed with a primary roof drain and no overflow drain, they do not meet today's code (above). Some of the roof membranes are pulling away from their substrates and puckering (below).*

## ***BUILDING***

### ***Rehabilitate Existing Bathhouse (Phase 1)***

In the course of the public input process, a strong sentiment in favor of focusing on water quality issues emerged, which led to assigning most bathhouse rehabilitation matters to a lower priority. Nonetheless, because the roof was old, the planning team had commissioned a roof conditions assessment, and learned that the roof is designed in a way that does not meet current safety standards.

Specifically, many of the subordinate roofs are flat, and are surrounded by parapet walls. Today's code requires such roofs to have both a primary roof drain as well as an overflow drain. The purpose is to protect against a clogged primary drain allowing water to accumulate and a catastrophic roof failure to result. These existing roofs do not have overflow drains. Clearly, this is a life-safety matter.

Instead of replacing parts of the roof, this plan recommends that the entire roof be replaced at this time. The existing roof is old and it leaks and its insulation is questionable anyway, so an entire roof replacement makes sense from an economy-of-scale standpoint. This work should include new insulation, flashings and new code-compliant drains.

This plan also recommends that rooftop solar hot water collectors be installed at the same time. Since their support fittings will necessarily penetrate the roof, using the roof replacement as an opportunity to perform both tasks seems advisable.

# SPECIAL CONSIDERATIONS

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*“Two Underwater”, Will van Overbeek*

*This chapter is intended to discuss matters that have global significance for the plan. In setting them apart in this way, the hope was to help the reader understand each issue and its role in shaping recommendations throughout the park.*

*Also included is a proposal to enlarge the Pool, an idea the team was asked to evaluate after the master plan project was underway. Enlarging the Pool did not seem to fit into the fabric of the original master plan proposals, therefore, the planning team did not recommend it. The planning team's thoughts on enlarging the Pool are discussed in this chapter.*





# INTERPRETIVE PLAN

Currently, only fragments of the Barton Springs story are offered to visitors. The Splash! exhibit, of course, does a fine job of educating the public about the aquifer, the watershed and the contributing zone. But otherwise, the story is only offered in the occasional historical plaque and a few strategically placed information panels.

A better, more comprehensive telling of Barton Springs' rich cultural and environmental stories would surely enrich the enjoyment of visitors. At the same time, it could play a significant stewardship role by helping to sensitize people to the fragility of this precious (and threatened) ecosystem. An interpretive plan would do just that. As the name implies, an interpretive plan is the art of assembling the important storylines of a place and presenting them in ways that are accessible, enjoyable and informative for the public.

An interpretive planning firm should be commissioned to "tell the story of Barton Springs". The planners should coordinate their efforts with Parks Department staff; especially the Nature Center exhibit staff, whose knowledge of the park, its history and available historical/scientific resources will prove invaluable. This plan should endeavor to include stories throughout the geography of the park, and it should be open to a breadth of topics. The process should consider a full range of presentation strategies ranging from static information panels to interactive exhibits to hand-held electronic devices.

It should plan for the long-term goal of raising the profile of the Beverly S. Sheffield Center by creating a Visitor's Center and a Gallery in the existing Bathhouse, recognizing that these can help to expand on the topics that are so thoughtfully introduced in the Splash! Exhibit.

This plan should result in both short-term and long term strategies, and it should include a wayfinding component to help visitors locate the significant elements in the park and how they are arranged.

Short-term strategies should be implemented immediately. While it is important that the shape of this implementation emerge from the planning process itself, it is perhaps worth noting that suggestions such as adding kiosks to the Tree Court or installing interactive features with real-time data streams in the rotunda of the Bathhouse have been offered, and should be considered. The Splash! exhibit is now over 10 years old, and its computer equipment is in need of updating. A consultant should be hired to make equipment update recommendations as part of the short term recommendations.



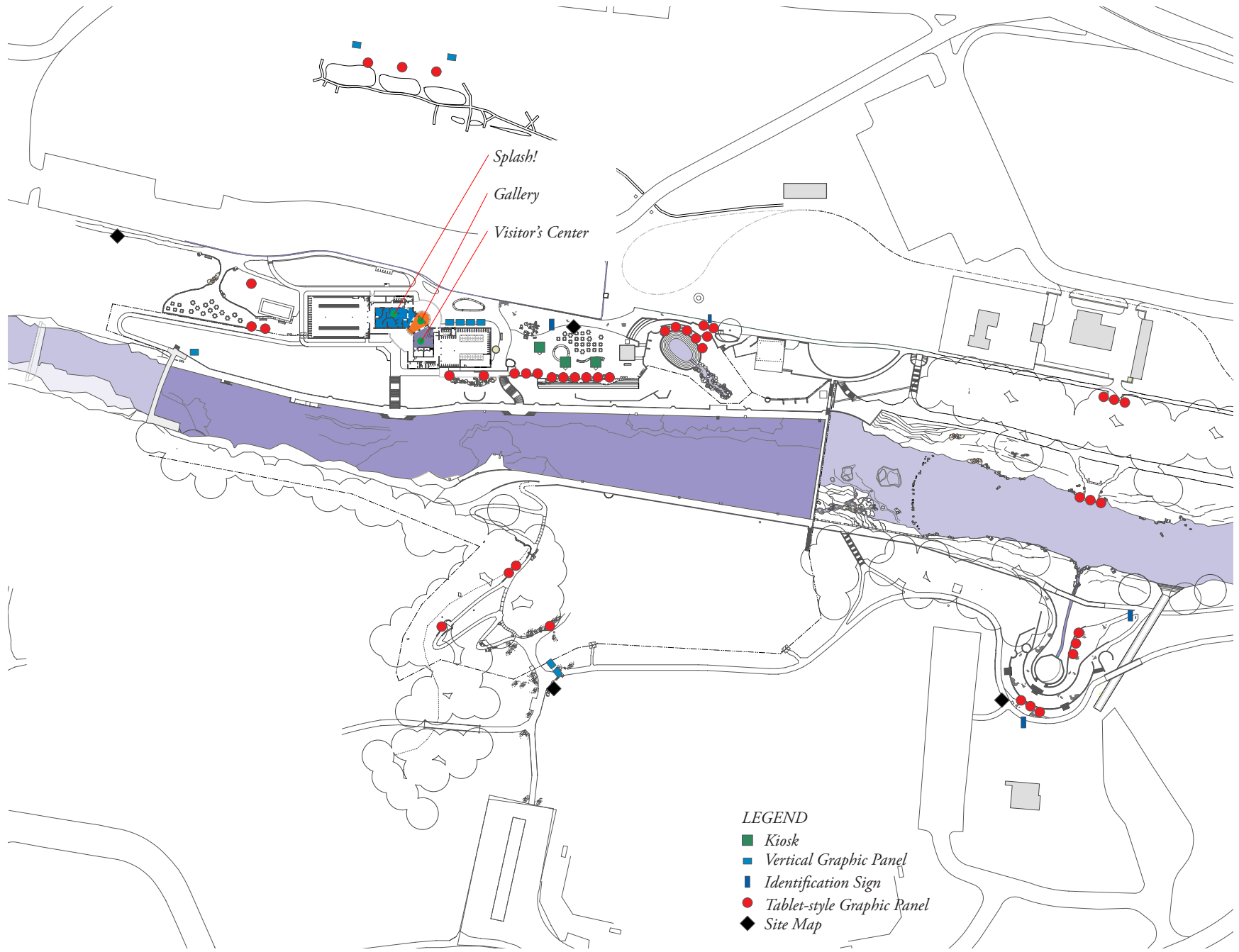
*Vertical displays are sometimes appropriate for their ability to explain complex topics attractively and inexpensively, and without adding a high maintenance burden (above). Interactive displays can be exciting ways to display information dynamically (below).*

*Photos: FD2S (above), Clark Hancock (below).*

*The Beverly S. Sheffield Education Center was installed in the early 1990s, and is dedicated to public education on matters related to the aquifer. It includes the Splash! exhibit, a Gallery and two classrooms. It was paid for with mostly private funds, and stands as a reminder of the longstanding tradition of advocacy that can be found today in groups like the Save Barton Creek Association and the Save Our Springs Alliance.*

*This plan recommends raising the profile of the Sheffield Center by upgrading the Gallery and creating a Visitor's Center. It also recommends extending its reach, so that its mission can be felt throughout the park.*

*The graphic to the right is intended to identify potential interpretation opportunities, and in so doing, to convey such a plan's rich potential. It does not intend to supplant the work of the yet-to-begin interpretive planning process, where global strategies as well as strategies for each site will be thoughtfully considered. This master plan recognizes that a successful result may or may not include the specific elements portrayed here.*





# SUSTAINABILITY

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The City of Austin has long been a leader in sustainability matters. Its Green Building program has long been a national leader, and the City's commitment to alternative energy is well known and respected nationally. The City recently codified its interest in sustainability with its embrace of LEED (Leadership in Energy Efficient Design), a program administered by the U.S. Green Building Council. The City generally requires all new buildings to be built to LEED Silver standards. LEED is designed as a scoring system, where gold is higher than silver and platinum is higher than gold.

LEED is organized into six categories of concern:

- Sustainable Sites
- Water Efficiency
- Energy and Atmosphere
- Materials and Resources
- Indoor Air Quality
- Innovation and Design Process

The work resulting from this plan will take place over a period of many years, and is spread across numerous efforts, so tracking it through LEED would likely prove cumbersome if not impractical. Plus, much of this work is site work and repair work, so would likely be exempt from the City's LEED requirements. Even still, the planning team recognizes that sustainability is an important value for the City, so it analyzed its recommendations with LEED in mind, and found that opportunities for sustainable design and construction can be found in all categories, and with appropriate stewardship, sustainability goals can be achieved.

This team recommends that LEED be formally included as part of the process wherever possible. Even if LEED certification is not formally sought for all of the parts of this master plan, this team recommends that the LEED organizational framework be used to organize and track sustainability performance. It is the experience of this team that LEED can be useful in bringing focus to issues, and it can keep that focus present throughout the design and construction process.

Many of this plan's recommendations have a sustainability underpinning. Some of them



*This is a free-standing solar collector at Westcave Preserve. To meaningfully impact energy usage at Barton Springs would require many times more collector area, potentially degrading the park ambiance. But a single collector like this might be enough to power the path lights at the Zilker Ponds.*

were identified as LEED matters, and some of them were the result of public input expressing interest in green building.

#### ***Water Use***

At a place whose very reason to exist is water, it is perhaps ironic to note that the team found that water use and water conservation issues are areas where much progress can be made. Three, in particular, stand out:

- The showers alone can account for over 40,000 gallons a day at peak demand. This water should be reused for toilet flushing and irrigation.
- Rainwater should be harvested from the roofs and all paved surfaces in the Bathhouse dressing areas, and should be used for irrigation.
- Fire hoses are currently used for high-pressure pool cleaning functions, using City of Austin drinking water for the task. When conditions are right (when the water is not too turbid), pool water should be used instead.
- City of Austin drinking water is currently used for irrigation. Other sources should be explored including rainwater harvesting, shower water harvesting; possibly even Lady Bird Lake water harvesting. Furthermore, more attention should be paid to landscape water demands through careful plant selection and a new, more sophisticated irrigation system.

#### ***Solar Energy***

Solar energy is always a tantalizing prospect, and it should be considered in any sustainability effort in Central Texas. To be suitable, a site must have locations for the collectors that are free of shading objects and that face south and southwest. Also, because the collectors can be quite large, their appearance must be considered.

For this plan, the obvious location for collectors would be the existing Bathhouse, and all of its roofs, even those on the concrete shade structures were initially considered. In the end, concern that the collectors could be visually intrusive led to a more subdued plan to use only the highest roof for collectors, because they would be inconspicuous there. Austin Energy performed a “sky window” analysis and determined that the highest roof was suitable for solar hot water, but due to tree shade, was less suitable for solar electricity generation. Felicitously, the AE recommendation dovetailed with the team’s internal analysis, indicating that the solar resource would be used more efficiently if it were used locally, that is, on-site, and directly, that is, using collected energy for hot water, rather than converting it to electricity.

Free-standing solar panels for general electrical generation were also considered but were rejected for general use out of fear of degrading the park ambience, because it would require a conspicuous display of numerous collectors.

Even though solar generation seems infeasible for general energy production, it can and should be considered for special circumstances, with two instances bearing mention:

Austin Energy is currently working to develop a solar-powered electric scooter/electric bike recharge station. As envisioned, it would collect and store enough energy for a stream of users throughout the course of a sunny day. It would be attractively designed and it would be small and portable enough so that it could be moved by truck (to a sunnier spot, for example). The money for this project is coming from SXSW, whose goal is to make their 2008 conference carbon neutral. The plan is to make as many as 20 of these stations, and Austin Energy has agreed to locate one of them at Barton Springs.

The path lighting requirements for the Zilker Ponds may (possibly) be another opportunity for solar power. Feasibility will depend on the extent of the lighting scheme and its specific design parameters. Further, it will depend on when this is undertaken. A scheme that is infeasible today may--with technological advancements--well be feasible in the future. In the meantime, it is encouraging to note that there is--even today--a modest solar-powered path lighting project on the hike and bike trail in Zilker Park.

Finally, long-time observers of the solar energy scene frequently tout technical advancements “just around the corner”. While this has been a common refrain for decades, even when the results were underwhelming, the technology currently being developed does show special promise in terms of both collecting efficiency and cost. With this in mind, the recommendations of this plan should be revisited from time to time as better hardware emerges.

### *Hydroelectric Energy*

Perhaps the most tantalizing prospect for energy generation at Barton Springs is hydroelectric power. Clearly, the water source is there, as is a precedent for water power in the construction and operation of mills at Barton Springs during the 19th century. But the planners were not successful in identifying equipment that seemed suitable for this scale of undertaking. Nonetheless, the thought is presented here to suggest that this idea should be revisited from time to time in hopes that future generations of hydroelectric equipment will be suitable.



*While this example is larger than would likely be required at Barton Springs, it nonetheless illustrates the point that, when the ambition is to generate enough power to satisfy significant demands, the solar collectors can be large.*

### ***Water Quality***

In its endeavor to approach sustainability holistically, LEED acknowledges that water quality matters are important to consider along with the more building-oriented criteria. They are given specific consideration in Sustainable Sites credits 6.1 and 6.2. They are also touched on obliquely throughout the Water Efficiency section. The LEED emphasis on water quality serves to reinforce the concerns of the Texas Commission on Environmental Quality, the City's Watershed Protection and Development Review Department as well as the U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Department; all of which have jurisdiction over this site.





*The vegetated swale is a water-quality concept for reducing stormwater runoff by collecting it in shallow depressions that allow it to infiltrate the soil, thus recharging groundwater and interrupting the flow of suspended particulates to waterways. In this example, water flows from the right into the upper swale. As the swale fills, its overflow spills into the lower swale. These swales are about 6" deep. Opportunities for vegetated swales can be found in and around the Pool, and throughout Zilker Park. They are inexpensive to construct and easy to maintain. They should be integrated into improvement projects wherever possible.*

*Photo: Tom Hegemier, P.E., LCRA*

### *LEED-based Chart*

To assist in understanding the master plan from a sustainability standpoint, a chart was prepared using LEED as a basis. Following the LEED organizational framework, it indicates whether particular considerations are deemed to be feasible or not. LEED is, of course, based on a scoring system, where points are counted, and a ranking is assigned. LEED Silver, for example, falls between 33 and 38 points. Scoring was deliberately left off of this chart to underscore the point that a specific LEED score cannot be determined at such an early stage of project consideration. And also to discourage the conclusion that a particular LEED score is even possible, since the LEED protocol is very specific, and is built to address issues that are found in normal building projects, not park master planning projects. Nonetheless, LEED is a useful framework for organizing thoughts and strategies for sustainability, and it is for that reason that the chart was prepared.

*This chart is based on the five LEED categories of consideration, with items marked “yes” or “no” to indicate how the master plan addresses particular matters. They are not intended to convey the impression that an actual LEED point is, or could be possible, since the LEED protocol is very particular, and may not apply well to this planning effort. Nonetheless, LEED offers a useful organizational framework, and to the extent that it is a well-known system, it can be seen as a common language.*

	DESCRIPTION	COMMENTS	FEASIBILITY	
			YES	NO
<b>SUSTAINABLE SITES</b>				
SS Prerequisite 1:	Construction Activity Pollution Prevention	Seeding, mulching, earth dikes. silt fencing , sediment traps, sediment basins	X	
SS Credit 1 : Site Selection	Avoid development of inappropriate site	Parkland, and endangered species habitat		X
SS Credit 2 : Development Density	Channel development to urban areas	Renovate previously developed site, community connectivity	X	
SS Credit 3: Brownfield Redevelopment	Develop on a brownfield site		X	
SS Credit 4.1: Alternative Transportation	Public Transportation access	Develop w/in 1/4 mi of public bus stops	X	
SS Credit 4.2: Alternative Transportation	Bicycle Storage & Changing Rooms for 5% users		X	
SS Credit 4.3: Alternative Transportation	5 % Preferred Parking for fuel efficient vehicles		X	
SS Credit 4.4: Alternative Transportation	5 % Preferred Parking for carpools and vanpools			X
SS Credit 5.1: Site Development	Protect or restore habitat, limit site disturbance	Plant 50% with native vegetation/ possible green roof at south bathhouse	X	
SS Credit 5.2: Site Development	Maximize open space, twice bldg footprint	Provide vegetated open space or pedestrian-oriented hardscape equal to bldg. footprint	X	
SS Credit 6.1: Stormwater Design	Quantity Control for stream channel protection	Rainwater collection. Promote infiltration	X	
		Use for irrigation, toilet/urinal flushing	X	
SS Credit 6.2: Stormwater Design	Quality Control: capture & treat 90% of stormwater	Green roof:/pervious pavers/vegetated swales & filters/ rainwater collection		
SS Credit 7.1: Heat Island Effect: Non -Roof	Shade or Hi SRI or open grid for site hardscape	provide shade w/in 5 yrs/reflective paving mats	X	
SS Credit 7.2: Heat Island Effect: Roof	high SRI for roof or green roof	roofing to min level reflectance, open grid pavers	X	
SS Credit 8: Light Pollution Reduction	Reduce exterior lighting and limit spread	orientation of interior & exterior lighting	X	
SUBTOTAL SS:				

	DESCRIPTION	COMMENTS	FEASIBILITY	
			YES	NO
<b>WATER EFFICIENCY</b>				
WE Credit 1.1: Water Efficient Landscaping	Reduce potable water use by 50%	Plant low water-use species, irrigation efficiency, recycled rainwater or grey water, alternative water sources, reclaimed shower water	X	
WE Credit 1.2: Water Efficient Landscaping	No potable water use or no irrigation			X
WE Credit 2: Innovative Wastewater Technologies	Reduce potable water use for sewage by 50%	Water conserving fixtures, recycled rainwater or grey water	X	
WE Credit 3.1: Water Use Reduction	Reduce water use by 20%	Water conserving fixtures, recycled rainwater or grey water/occupant sensors/flush toilets w/ grey water	X	
WE Credit 3.2: Water Use Reduction	Reduce water use by 30%	Water conserving fixtures, recycled rainwater or grey water/occupant sensors/flush toilets w/ grey water	X	
<b>SUBTOTAL WE:</b>				
<b>ENERGY &amp; ATMOSPHERE</b>				
EA Prerequisite 1: Fundamental Commissioning	Verify building's energy systems functioning	Hire commissioning agent-do commissioning plan, incorporate into construction docs/verify/do summary report	X	
EA Prerequisite 2: Min Energy Performance Req'd	Establish min level of energy efficiency	High efficiency HVAC, lighting	X	
EA Prerequisite 3: Fundamental Refrigerant Mgmt Req'd	Reduce ozone requirements	zero use CFCs/phase out old equipment	X	
EA Credit 1: Optimize Energy Performance	Achieve increasing levels of energy performance		X	
EA Credit 2: On-Site Renewable Energy	Use on-site renew energy systems to offset energy cost	Solar hot water/ geothermal HVAC/ solar electrical vehicle recharge station	X	
EA Credit 3: Enhanced Commissioning	Begin commissioning early and after project complete		X	
EA Credit 4: Enhance Refrigerant Mgmt	Do not use refrigerants			X
EA Credit 5: Measurement & Verification	Accountability of energy consumption over time.		X	
EA Credit 6: Green Power	35% of electricity from renew sources: 2 yr contract		X	
<b>SUBTOTAL EA:</b>				

	DESCRIPTION	COMMENTS	FEASIBILITY	
			YES	NO
<b>MATERIALS &amp; RESOURCES</b>				
MR Prerequisite 1: Storage & Collect Recyclables	Provide easily accessible area for recycling	Provide recycling areas	X	
MR Credit 1.1: Building Reuse	Maintain 75% of Exist Walls, Floors & Roof		X	
MR Credit 1.2: Building Reuse	Maintain 95% of Exist Walls, Floors & Roof			X
MR Credit 1.3: Building Reuse	Maintain 50% of Interior Non-Structural Elements			X
MR Credit 2.1: Construction Waste Mgmt	Divert 50% from Disposal	Set up plan for const waste/ follow-thru	X	
MR Credit 2.2: Construction Waste Mgmt	Divert 75% from Disposal			X
MR Credit 3.1: Materials Reuse 5%	Use 5% salvaged, refurbished, or reused materials	find uses/sources for salvaged matls		X
MR Credit 3.2: Materials Reuse 10%	Use 10% salvaged, refurbished, or reused materials			X
MR Credit 4.1: Recycled Content 10%	Use 10% recycled content materials		X	
MR Credit 4.2: Recycled Content 20%	Use 20% recycled content materials			X
MR Credit 5.1: Regional Matls	10% Extracted, Processed & Mfr'd Regionally		X	
MR Credit 5.2: Regional Matls	20% Extracted, Processed & Mfr'd Regionally		X	
<b>SUBTOTAL MR:</b>				
<b>INDOOR ENVIRONMENTAL QUALITY</b>				
EQ Prerequisite 1: Min IAQ Performance Req'd	Meet min IAQ reqs of ASHRAE		X	
EQ Prerequisite 2: Tobacco Smoke (ETS) Control Req'd	Prohibit smoking in bldg; designated areas 25' away		X	
EQ Credit 1: Outdoor Air Delivery Monitoring	Install monitoring systems on ventilation		X	
EQ Credit 2: Increased Ventilation	Increase ventilation min 30% above min rates			X
EQ Credit 3.1: Construction Indoor Air Quality Management Plan: During Construction	Develop and implement constr phase IAQ plan		X	

	DESCRIPTION	COMMENTS	FEASIBILITY	
			YES	NO
EQ Credit 3.2: Constr IAQ Management Plan: Before Occupancy	Develop and implement pre-occupancy phase IAQ plan	IAQ flush out	X	
EQ Credit 4.1: Low-Emitting Materials	Adhesives & sealants to meet volatile organic compounds (VOC) limits	select low VOC products	X	
EQ Credit 4.2: Low-Emitting Materials	Paints and coatings to meet VOC limits	select low VOC products	X	
EQ Credit 4.3: Low-Emitting Materials	Carpet systems to meet VOC limits		NA	
EQ Credit 4.4: Low-Emitting Materials	Composite wood & agrifiber products to meet VOC limits	select plywd, door cores, MDF w/ no urea formaldehydes	X	
EQ Credit 5: Indoor Chemical & Pollutant Source Control	Entryway cleaning, air filtration	special entry, negative pressure utility rms, air filtration	X	
EQ Credit 6. 1: Controllability of Systems: Lighting	Provide individual lite controls for 90% of users	individual controls		X
EQ Credit 6.2: Controllability of Systems: Thermal Comfort	Provide individual comfort controls for 50% of users	individual controls		X
EQ Credit 7.1: Thermal Comfort: Design	Design HVAC & bldg envelope to meet ASHRAE reqts		X	
EQ Credit 7.2: Thermal Comfort: Verification	Implement thermal comfort survey w/in 6-18 mos post-occupancy		X	
EQ Credit 8.1: Daylight & Views	Daylight 75% of spaces	open air facilities	X	
EQ Credit 8.2: Daylight & Views	Views for 90% of spaces	open air facility	X	
<b>SUBTOTAL ER:</b>				
<b>INNOVATION &amp; DESIGN PROCESS</b>				
ID Credit 1-1.4: Innovation in Design	Exceptional performance above min reqts	geothermal, solar hot water, rainwater collection, shower water reuse, solar recharge station	X	
ID Credit 2: LEED AP	Include LEED AP on project team		X	
<b>SUBTOTAL ID:</b>				



# ART IN THE PARK

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*Philosophers' Rock, an example of an art object that helps to define an area.*

The Glenna Goodacre sculpture of Roy Bedichek, J. Frank Dobie, and Walter Prescott Webb in the Pecan Grove has become a landmark since it was installed in 1994. Named 'Philosophers' Rock', it speaks of both Austin and Barton Springs as they once were. Functionally, it helps identify the entrance to the Pool, and to give form to the Pecan Grove. Philosophers' Rock is an example of how art can enliven and add meaning to a landscape.

Several general categories of art would be appropriate for the Barton Springs area, developed either by private donors, or through the City of Austin Art in Public Places program as part of rehabilitation projects in the springs area using City Capital Improvement funds. Philosophers' Rock is an example of one kind of art: an art object that helps define the space in which it is placed. The Treaty Oak seating area at the Austin City Hall is another space defining art object. A second type of art for the Barton Springs area is artist-designed



*Art Fence at Town Lake Park*



*'Waterworks', directed and choreographed by Dee McCandless and Gene Menger. These seven events cumulatively involved 300 performers and attracted 14,000 people. The first performance was in 1978; the last was in 1997.  
Photos: Scott Von Osdol*



craft projects, which serve a functional purpose. The Zilker Botanical Garden front and back gates, the gazebos in Zilker and Town Lake Park, part of the Zilker Playscape, as well as some of the benches along the hike and bike trail, are examples of this sort of functional art. Finally, temporary art installations continue to be appropriate in the springs area. In November 2007, a Germaine Keller temporary art piece from her Women and their Work exhibit 'Pattern Pattern Pattern' was on display at the Pool. Dee McCandless' performance art pieces 'Waterworks' are important and exciting parts of the Pool's history.

This plan proposes some specific art works for the Barton Springs area. One, discussed in the section describing the Tree Court, is for an artist designed 'Art Fence' at the overlook in the Pecan Grove to replace the current dingy chainlink fence. Using local vegetation as a motif, this Art Fence would be in the tradition of artist designed, exquisitely crafted iron fences that is developing in Lady Bird Lake area. A second specific art proposal is for the historic sandbox in the sandbox grove to the west of the Bathhouse. The sandbox is no longer used as a sandbox, but is an identified contributing structure in the springs historic designation. Reusing the area as a setting for art, overlooking the Pool and the south bluff, has the potential to help define the Sandbox Grove.

Much of what is interesting in the built environment around Barton Springs are hand-crafted relics from the earlier days of the springs: the Elk mural at Eliza, the entry lamp-posts, the masonry of the Zilker Ponds. These works, with the Bathhouse and the rows of pecan trees, remind us of the intelligence and craft of people who have built around the springs in the past. Appropriately commissioned art pieces can continue and expand that tradition.



*'Fruit Cisterns', a proposal by sculptor John Christensen for rain water collection cisterns. An example of an artist-designed craft project (at a large scale).*





*Salamander Chalk Drawing, 2007, Germaine Keller.  
An outdoor site work, part of the Women and Their  
Work exhibit, "Pattern, Pattern, Pattern".  
Photo: Germaine Keller*



# ENLARGE THE POOL

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In the course of preparing this plan, a proposal was made by the Barton Springs Scientific Advisory Committee to enlarge Barton Springs Pool, and the planning team was asked to evaluate that proposal from a master planning point of view.

## *PROPOSAL*

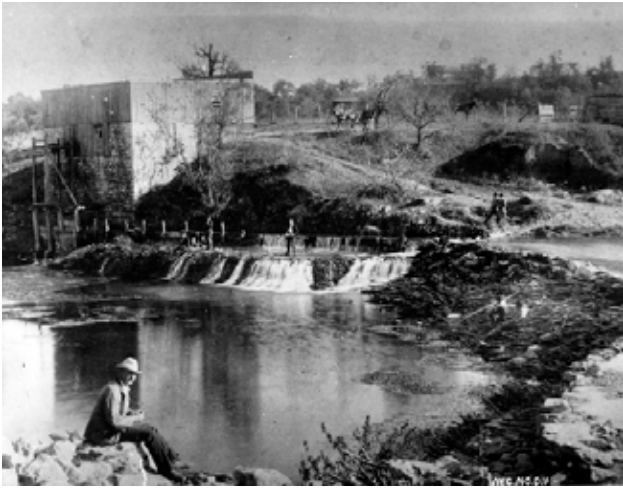
The basic elements are to move the downstream dam further downstream below the outflow of Sunken Garden. This would unite the three major springs into one body of water, a change thought to be positive for the salamander habitat by providing dispersal corridors among the springs and by increasing the ease of interbreeding among salamander populations.

Additionally, because the salamander is more a shallow water species, the proposal involves lowering the water level in the Pool by some two feet. This would have an especially positive impact on the habitat at Main Springs.

## *EVALUATION*

At the outset, it must be noted that complete scientific data to support the proposal to enlarge the Pool has not been prepared. Therefore, the planning team can make no comment on this aspect of the proposal; nor should it, as it lacks the required expertise to do so. However, the planning team evaluated this proposal as one part in the larger context of the master planning effort for Barton Springs, where environmental considerations must be balanced with park user needs and with the need to respect the cultural history of the place. The team met with U.S. Fish and Wildlife Service and the City's Watershed Protection and Development Review Department seeking preliminary regulatory opinion on the proposal. And it met with the Texas Historical Commission to understand their jurisdictional response to this proposal, because its impact on the historic resources at Barton Springs would be profound. The team also met with City of Austin code officials to understand the requirements for new facilities and infrastructure. With all this as background, they made projections regarding the impact such a proposal would have on the life of the park itself.

Against the breadth of this evaluation, it is the conclusion of the planning team that enlarging the Pool should not be recommended. Our evaluation of the likely physical changes to the park raised concerns on multiple levels. Again, this team does not recommend enlarging the Pool as part of this master plan.



*The Pool as we know it was built in the late 1920s, but for at least a half century prior, this portion of Barton Creek was the subject of dam building, much of it separating Sunken Garden from the two other springs. C00077A, Austin History Center, Austin Public Library.*

### ***FEDERAL PERMITTING CONSIDERATIONS***

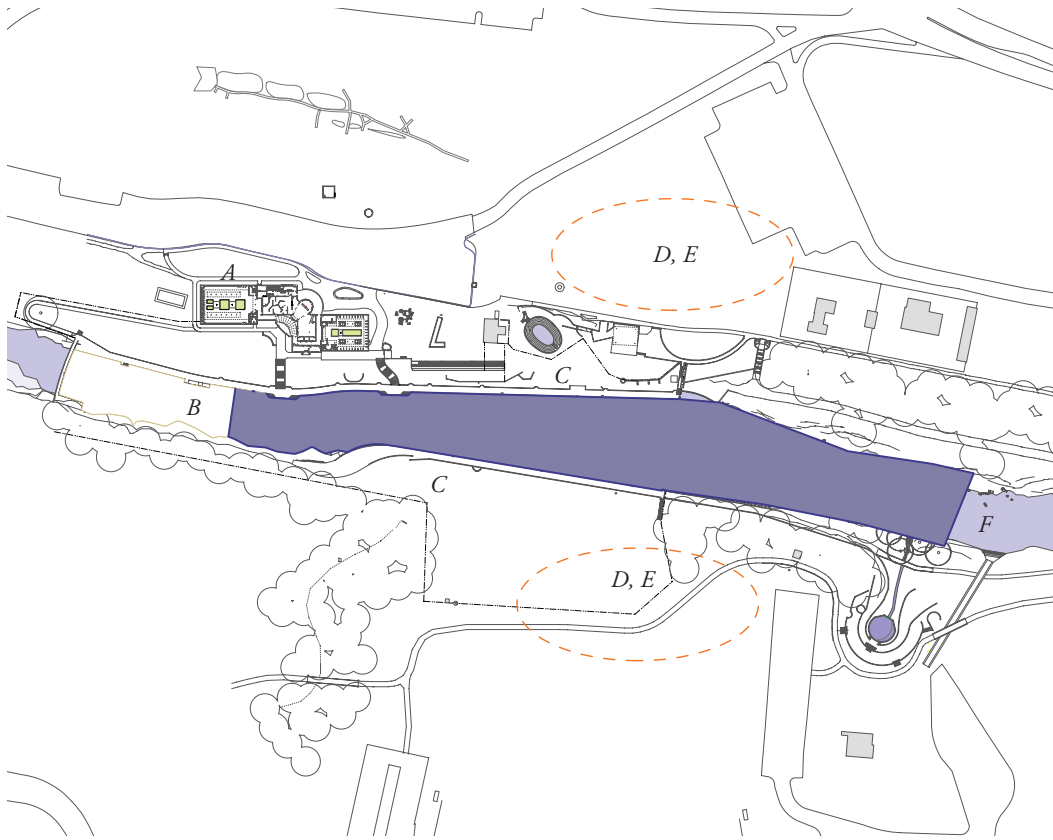
The proposal to enlarge the Pool was discussed with U.S. Fish and Wildlife Service staff in several meetings. From these discussions, we learned that the review and approval process under the 10(a) permit for this proposal would be quite complex. (This is in contrast to many of the other master plan items reviewed with the USFWS. Many things discussed were conceptually acceptable in principle, although a rigorous permitting process would still apply.) There would be a number of scientific questions considered. These would likely include whether uniting the waters would, in fact, unite the habitats, in light of the possibility that the salamanders had adapted to their separate environments during their nearly 100 years of manmade interventions at the site. Also, the question of whether harm from possible predators in the intervening waters might make salamander interactions difficult, even impossible, would be considered. Possible genetic consequences of this proposal would also be evaluated. The evaluation would also include consideration of other related federal laws applicable to this site. In discussions with Texas Historical Commission staff, the proposal was met with stiff resistance, citing concerns of numerous negative adverse effects on the historic fabric of the place. The Barton Springs Archeological and Historic District is listed on the National Register of Historic Places. From these preliminary reviews with the primary regulatory authorities for the required federal permits, it seems that the approval process would be quite challenging.

### ***DESIGN CONSIDERATIONS***

#### ***Lower Water Level and the Pool Deck***

When we visualize a swimming pool, we generally visualize an easy relationship between the pool deck and the surface of the water, where the deck is relatively close to the water. Sitting on the edge and dangling feet in the water, and effortlessly slipping into the water are experiences whose importance simply goes without saying. Barton Springs has historically enjoyed this relationship, though it was weakened by the construction of the bypass tunnel in 1975, where the deck toward the west rises away from water level (and diminishes the appeal of this part of the Pool). Lowering the water level without also lowering the decks would so diminish the experience of the Pool that this should not be contemplated. The alternative, lowering the decks all around, is so expensive and intrusive that it should also not be contemplated.

Consider the implications. Lowering the north deck implies rebuilding the bypass tunnel. (The original construction of the bypass tunnel closed the Pool for the entire 1974 season). It implies redesigning all of the stairs and the accessibility ramp. It also implies that the retaining walls would need to be made taller, or new walls added, because the lawns are



*Point of Information: The water surface of the existing Pool about 93,000 sq. ft. Enlarging the Pool and lowering the water as shown, the water surface would be about 140,000 sq. ft., about 50% larger.*

*Enlarge the Pool*

- A. By moving the Pool, the existing Bathhouse is in a poor location for its intended function. The Pool would require a new bathhouse, and the existing building would need a new function.*
- B. Lowering the water level makes much of the shallow end dry, requiring new design consideration for accommodating small children and their families.*
- C. If the water level were lowered, then the walking decks would also need to be lowered. The relationship of the deck to the water is too important to the character of the place and the experience of the Pool to do otherwise. Lowering the decks would require rebuilding the bypass tunnel. It would require adding retaining walls to the lawns on both sides of the Pool. The construction would likely close the Pool for an entire season.*
- D. An ideal location for a new bathhouse would be somewhere near the middle of the reconfigured Pool. It could be one large building located on one side or it could be two smaller buildings located on both sides.*
- E. Because it would be new construction, it would need to meet the requirements of today's building codes. Simply due to today's plumbing fixture requirements, the building would be larger than the existing Bathhouse.*
- F. The unofficial "Dog Park" would be displaced by this proposal. Its new location would have more difficult access.*



*The relationship of the pool deck to the water level has always been important to the character of the place and the enjoyment of the Pool. Lowering the water level would require a corresponding lowering of the decks to preserve the experience as we know it.  
Photo: Will van Overbeek.*

already as steep as they can reasonably be. These reasons contribute to the recommendation against enlarging the Pool.

#### *Plumbing Fixtures*

Were Barton Springs a newly proposed swimming pool, its number of required plumbing fixtures would be calculated by criteria set forth in the International Plumbing Code, using factors for the surface area of the water, the pool decks and the usable lawn area. The intention is to match the number of fixtures to the size of the user population. By these standards, today's Barton Springs would require over 160 water closets. By comparison, this plan proposes to rehabilitate the existing Bathhouse with ten water closets (not counting those dedicated to public, non-pool users).

#### *Plumbing Fixture Math*

To many, the numbers reported here may seem so staggeringly high as to be unbelievable. It is important to recognize that these numbers are based on the sizes of pool elements, and Barton Springs, with its two acres of water surface and two acres of usable lawn areas, is an exceptionally large facility.

Because it is historic, Barton Springs Pool enjoys an exemption from these requirements. But if the Pool were enlarged, the exemption would be lifted, and modern requirements would govern. Enlarging the Pool would require somewhere between 200 and 225 water closets, depending on final configuration. There is a corresponding increase in requirements for lavatories and urinals.

Even if these preliminary fixture requirements are high, it would be imprudent to estimate the size requirements for bathhouses at anything less than 14 times current numbers. This could be accommodated in a single facility or multiple facilities. But the substantial increase begs the reasonable question, where would this be located? These facilities are best sited somewhere near the middle of the Pool, but at Barton Springs, Eliza Spring and the Zilker Playscape are on the north and sports fields and Sunken Garden are on the south, making a suitable site difficult, if not impossible to find. Furthermore, the very bulk of the new facilities would change the aesthetic and "natural" aspect of the park experience. All of these reasons contribute to the recommendation against enlarging the Pool.

#### ***MAINTENANCE AND STAFFING CONSIDERATIONS***

An enlarged Pool would require a significant additional commitment of staff and operations budget. Aside from the additional equipment and supplies, more lifeguards, more pool-cleaning staff, more maintenance personnel and more grounds personnel would be required.

**ESTIMATED PLUMBING FIXTURE REQUIREMENTS**

	EXISTING POOL			ENLARGED, LOWER WATER			ENLARGED, DON'T LOWER WATER		
	<i>AREA (sq. ft.) ÷ FACTOR</i>			<i>AREA (sq. ft.) ÷ FACTOR</i>			<i>AREA (sq. ft.) ÷ FACTOR</i>		
WATER AREA	92,500	50	1,850	140,000	50	2,800	160,000	50	3,200
DECK AREA	16,810	15	1,121	21,810	15	1,454	25,810	15	1,721
LAWN AREA									
south	76,500	50	1,530			1,530			1,530
north	20,000	50	400			400			400
TOTAL OCCUPANTS			4,901			6,184			6,851
men			2,450			3,092			3,425
women			2,451			3,092			3,426
	length	x width	area	length	x width	area	length	x width	area
DECK CALCULATIONS	950	11	10,450	1,200	11	13,200	1,400	11	15,400
	540	9	4,860	790	9	7,110	990	9	8,910
	150	10	1,500	150	10	1,500	150	10	1,500
			16,810			21,810			25,810

	EXISTING POOL	ENLARGED, LOWER WATER		ENLARGED, DON'T LOWER WATER		CURRENT PROPOSAL
WATER CLOSETS						
men	62	42	78	52	86	58
women		121		154		170
URINALS		20		26		28
LAVATORIES						
men		40		51		56
women		40		51		56
DRINKING FOUNTAINS		17		21		23

***PLANNING VALUES***

Every plan is based on a set of values, and this plan's can be found in its goals statement that commits to, "make appropriate additions and renovations. . . .that respect the fragility of this unique natural and historical setting." Enlarging the Pool and all that that entails does not fit with these values.

***FUTURE CONSIDERATIONS***

Were the recommendation against enlarging the Pool not being made for other reasons, these could be issues needing further study.

*Water Quality, Flow Regime*

Everyone knows that Barton Springs is a spring-fed pool. Since neither chlorine nor any other chemicals are used, water quality is simply a function of clean spring water replenishing "older" degraded Pool water spilling over the downstream dam. The "older" water is degraded due to exposure to human use.

This proposal to enlarge the Pool would increase the surface of the Pool water by half, with an estimated volume increase between 70 and 85%. Since the inflow volume is finite, coming from a natural spring, its contribution to overall water quality would be diluted in a larger Pool. Would enlarging the Pool push water quality to a tipping point, where it would be unsafe for swimming?



### *Pool Depth*

Based on the last known bathymetry (in the 2000, Preliminary Algae Control Plan, by Alan Plummer Associates), the Pool gets progressively deeper as it approaches the downstream dam, where it is (was) about 13 ft. deep at its deepest. Informal observations of swimming activity below the dam suggest that, if the dam were relocated, the water would be considerably shallower there. The point is that enlarging the Pool is likely to involve reshaping the creek bottom to diminish the potential for trapping sediment and debris in the current deep part.



# IMPLEMENTATION

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*"Splash", Will van Overbeek*



# SHORT TERM PROJECTS

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From the beginning, one of the goals of this master plan was to identify a collection of short-term projects, and present them to the City Council for funding in the 2007-2008 budget cycle. And that was, indeed, done when 21 projects were presented to and funded by Council in September of 2007. Those projects were chosen on the basis of several criteria:

*Public safety.*

The roof replacement for the Bathhouse and the evaluation of certain existing trees are two projects with public safety components.

*Preliminary steps to a larger goal.*

The topographic survey, structural testing of the dams and the hydrodynamic modeling are all required information-gathering steps leading to a larger goal--actually making flow regime modifications to the Pool.

*Projects with separate funding sources.*

Austin Energy agreed to fund the replacement of site lighting and to make electrical upgrades around the Pool. And the Watershed staff agreed to undertake three pilot studies using available resources.

*Projects agreed to by consensus.*

A proposed list of short-term goals was developed, in part, through a public participation process, where the planning team learned that there was a general preference for seeing water quality improvements as soon as possible. This list was refined through additional public participation. Many of those projects were agreed to by consensus.

*Projects that support City of Austin values.*

The accessible route in the South Woods is one project that satisfies a City value; to be an accessible community.

The short term projects were grouped into five categories:

*Water Quality Improvements*

- Remove Gravel Bar
- Replace Bypass Tunnel Inlet Grate
- Repair Bypass Tunnel Joints
- Renovate Sunken Garden (part 1)

*Water Quality Studies*

- Topographic Survey
- Hydrodynamic Modeling
- Structural Testing of Dams
- Pilot Study for Water Recirculation at Beach
- Pilot Study to Determine Effects of Creek Flows on Pool Water Quality
- Pilot Study for Ultrasonic Algae Control

*Pool Cleaning Improvements*

- Additional Electrical Power at Pool Side
- New Pump to Increase Water Pressure and to Facilitate Cleaning
- New Algae Skimmer
- Disposal for Silt and Nuisance Algae

*Grounds Improvements*

- Tree Assessment and Treatment
- General Grounds Improvements
- New Accessible Route on South Side  
Evaluate Existing Accessibility Improvements on the North Side
- Interpretive Plan

*Building*

- Rehabilitate Existing Bathhouse (phase 1)

# IMPLEMENTATION

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## *WATER QUALITY IMPROVEMENTS*

### *Remove Gravel Bar*

Because removing the gravel bar is such a serious challenge, it should only be undertaken with a professional engineer in charge and an environmental engineer to consult on mitigation criteria and to coordinate permitting efforts. A landscape architect may be required to lead the site restoration efforts, to repair damage to plantings that might occur during the course of the work.

In addition to writing the proposal, a significant aspect of this project will be the administration of the gravel removal contract during the removal operations. The downstream dam must be protected, environmental controls (booms, etc.) must be kept secure, load constraints on the south walk must be respected, the South Lawn must be protected and the site must be restored as the work is finished. All of this work should be administered by the engineer of record.

Efforts should be made to undertake this work during the normal Pool cleaning period in February. Even so, it will take longer than that to execute, so it will be a disruption to normal Pool operations. For this reason, and for reasons of effective Pool administration policy, the public should be kept informed on its progress.

### *New Algae Skimmer*

Since a new algae skimmer as long as the one under consideration will have flow-regime implications, its effects should be confirmed through the efforts of the hydrodynamic modeling effort

### *Replace Bypass Tunnel Inlet Grate*

For the most part, this is a stand-alone task. It does not rely on the completion of any other tasks as a precondition for proceeding, although it may be preferable to do this in coordination with the bypass joint repair work. This work can and should begin promptly. This work should be jointly led by a civil engineer, experienced in working in environmentally sensitive areas, and a design professional, either an architect or a landscape architect. This unusual team composition is recommended to acknowledge the fact that this element has both a functional and an aesthetic component. The design professional should be counted on for graphic depictions of design proposals.

<i>Water Quality Improvements Estimated Costs</i>	
<i>Remove Gravel Bar</i>	905,600
<i>Replace Bypass Inlet Grate</i>	233,478
<i>Repair Bypass Tunnel Joints</i>	285,362
<i>Renovate Sunken Garden (part 1)</i>	278,495
<i>Subtotal</i>	1,702,935
<i>Contingency (25%)</i>	425,734
<i>TOTAL</i>	\$2,128,669

*These estimated costs include construction costs, professional fees, administrative and soft costs and a factor for price escalation.*

Because this is a rather small task, it may be cumbersome to administer. So the City may choose to bundle it with other, larger efforts for administration efficiency. In that case, it may want to add it to the scope of the hydrodynamic design team.

*Repair Bypass Tunnel Joints*

This is a stand-alone task. It does not rely on the completion of any other tasks as a pre-condition for proceeding, although it may be preferable to do this in coordination with the bypass inlet grate work. This work can and should begin promptly.

While this task is likely to take a number of months, most, if not all of this work will be accomplished from inside the tunnel. Nonetheless, the required drawdowns may impact the operation of the Pool. The swimming public will likely be interested in understanding the project. So the consultant, together with City staff should anticipate a need to report on progress as required.

Because this is a rather small task, it may be cumbersome to administer. So the City may choose to bundle it with other, larger efforts for administration efficiency. In that case, it may want to add it to the scope of the hydrodynamic design team.

*Renovate Sunken Garden (Part 1)*

This plan recommends renovating Sunken Garden in two parts, with the first part concentrating on the spring vessel, the spring run and the next wall in the concentric series. The second part should concentrate on the renovation of the remainder of the walls. Because it is important that both renovation efforts be coordinated, even if they are separated by an interval of time, the remediation strategies for the masonry restoration for the entire complex should be designed in Part 1.

The renovation of Sunken Garden should be led by an architect experienced in historic preservation. The team should include a structural engineer (for the walls), a civil engineer for grading and drainage issues, a dam engineer for the operable gate and a landscape architect. Because significant salamander biology efforts are already underway, the team should work to coordinate with them, and should rely on City Watershed scientists for habitat expertise. Even so, if unanticipated mitigation requirements present themselves during the design process, an environmental engineer should be included on the team.

The permitting requirements for this effort are not entirely clear at this time. Nonetheless, the team should anticipate consulting with U.S. Fish and Wildlife Service and City Water-



shed Protection and Development Review Department regulatory staff. And because this is a historic site, the team should anticipate a review by the Texas Historical Commission and the City Historic Preservation Office will be required.

Part 2 should be seen as a continuation of the work of Part 1, and should be undertaken by a similarly composed team.

**WATER QUALITY STUDIES**

*Topographic Survey, Hydrodynamic Modeling, Structural Testing of Dams, Pilot Studies*

The topographic survey, hydrodynamic modeling and structural testing of the dams are three components of a larger effort to improve the flow regime in the Pool. Since they are so related, these efforts should not be separated into individual tasks, but should be coordinated by one team of professionals, the hydrodynamic design team. The new skimmer design is proposed to eliminate nuisance algae, but it will require water flow to operate, so it will have a flow-regime consequence, so it should be included, too. Significantly, all of this work will be influenced by the results of two proposed pilot studies: the study for water recirculation at the Beach and the study to determine effects of creek flows on water quality. While these studies are related to flow regime questions, they need not be the work of the hydrodynamic design team. Indeed, they should be the work of the City Watershed Protection and Development Review staff.

It is important to stress that the hydrodynamic design team should be looked to for structural and hydrological concepts. But they are not scientists trained in the nuances of stream ecology, and should, therefore, not be expected to make judgements on matters of ecological impact. Those should be made by a scientific team formed for the purpose of providing leadership on these matters.

The recommendations that emerge from the hydrodynamic design efforts will likely impact the Pool in many ways, subtle and profound, from adjustments to the flow regime (obviously), to construction closures, to design changes (recirculation at the Beach, for instance). Because the public will have a keen interest in any changes, a mechanism for public involvement should be included in this process.

This work should flow as follows:

1. City Watershed staff should conduct Pilot Studies, with results communicated to hydrodynamic design team.
2. A scientific team should be created whose charge is to provide scientific leadership and advice to this project. This can be any combination of in-house City Water-

<i>Water Quality Studies Estimated Costs</i>	
<i>Pilot Study for Water Recirculation at Beach</i>	**
<i>Pilot Study for Ultrasonic Algae Control</i>	***
<i>Pilot Study to Determine Effects of Creek Flows on Pool Water Quality</i>	**
<i>Topographic Survey</i>	106,275
<i>Hydrodynamic Modeling and Dam Design</i>	250,809
<i>Structural Testing of Dams</i>	141,700
<i>Subtotal</i>	498,784
<i>Contingency (25%)</i>	124,696
<b>TOTAL</b>	<b>\$623,480</b>

*These estimated costs include professional fees, administrative and soft costs and a factor for price escalation.*

*\*\* These costs are not enumerated here, because the work is being done by Watershed's own forces.*

*\*\*\* This cost is not enumerated here, because Watershed intends to pay for the ultrasonic device with available funds.*

- shed expertise or outside consultants. It will likely include City Watershed engineers, geomorphologists experienced with fluvial processes and other professionals as may be deemed appropriate and necessary.
3. The scientific team should establish the goals for the modeling exercise that should include flow, temperature and other relevant criteria.
  4. The hydrodynamic design team should write proposal criteria for a topographic survey. City of Austin should commission the survey.
  5. With the topographic survey in hand, the hydrodynamic design team should write a proposal for a flood study. City of Austin should commission the study.
  5. The hydrodynamic design team should write proposal criteria for structural testing of dams. City of Austin should commission the testing.
  6. The hydrodynamic design team should install temperature and vector sensors in the Pool to gather information on temperature stratification and flow direction, as may be appropriate.
  7. Using the gathered information and working with the criteria developed by the scientific team, the hydrodynamic design team should test flow regime improvement concepts. Concepts should include flow-regime impact of skimmer. Results should be evaluated by the scientific team, so that modified concepts can be identified and tested as required.
  8. At regular intervals, and as promising concepts are developed, the public should be informed, and public input should be sought.
  9. Final recommendations should be published in anticipation of future implementation funding. If, however, results are inconclusive or if they point to the need to replace dams, the public should be informed, and—with significant public input—a full range of options should be explored.

#### *HYDRODYNAMIC DESIGN TEAM*

##### *Team Leader*

A professional engineer with special expertise in dam design. This individual should coordinate the efforts of others within the team, and should be the chief author of engineering findings.

##### *Hydrodynamic Modeler*

A hydrologist with special expertise in flow-regime modeling. The model should be capable of analyzing flow speed and direction, the influence of insolation (sun heat), the influence of wind and the influence of temperature differences across the cross section.

This professional is likely to be found at a nationally recognized modeling laboratory, such as the Utah Water Research Laboratory.

*Design Professional*

An architect or a landscape architect to interpret potential impacts on the physical experience of the Pool. Their work could include graphic depictions of proposals. And if concepts emerge that suggest a new built feature (like a bubbling element in the shallow end, for example), the design professional should design it.

*Environmental Scientist*

An engineer experienced in mitigating environmental impacts of construction projects in environmentally sensitive circumstances. This individual should be experienced in the regulatory requirements associated with such projects.

*PILOT STUDIES*

*Pilot Study for Water Recirculation at Beach*

This is a stand-alone project to be conducted by City Watershed staff, and is intended to generate useful design criteria for the hydrodynamic modeling team and its scientific team. The results of this project should be integrated with the preliminary calculations on this same topic that can be found in Appendix B, Consultant Reports. Since this project is to be undertaken with City Watershed's own forces, no money was budgeted for this task.

*Pilot Study to Determine the Effects of Creek Flow on Water Quality*

This is another stand-alone project to be conducted by City Watershed staff, and again, it is intended to generate useful design criteria for the hydrodynamic modeling team and its scientific team. Since this project is to be undertaken by City Watershed's own forces, no money was budgeted for this task.

*Pilot Study for Ultrasonic Algae Control*

This is a third stand-alone project to be conducted by City Watershed staff. It is intended to verify that ultrasonic algae control technology is effective in the control of nuisance algae and that it is harmless to beneficial plant and animal life. The results of this study will be used to determine if this technology is suitable for being deployed in the Pool on a permanent basis. The device to be tested will be purchased using City Watershed operating funds, and the tests will be conducted by City Watershed's own forces. Therefore, no money was budgeted for this task.

<i>Pool Cleaning Improvements Estimated Costs</i>	
<i>Additional Power at Pool Side</i>	***
<i>New Pump to Increase Water Pressure to Facilitate Cleaning</i>	258,848
<i>Remove Overhead Wiring</i>	***
<i>New Algae Skimmer</i>	278,495
<i>Disposal for Silt and Nuisance Algae</i>	35,000
<i>Subtotal</i>	572,343
<i>Contingency (25%)</i>	143,086
<i>TOTAL</i>	\$715,429

*These estimated costs include professional fees, administrative and soft costs and a factor for price escalation.*

*\*\*\* These costs are not enumerated here, because Austin Energy has agreed to pay for them.*

### **POOL CLEANING IMPROVEMENTS**

*Additional Electrical Power at Pool Side,  
New Pump to Increase Water Pressure to Facilitate Cleaning,  
Remove Overhead Wiring*

These three tasks should be done together, and the efforts should be led by a mechanical, plumbing and electrical engineer. The team should include an architect to design the pump house and to detail the visible elements. It should also include an environmental engineer to consult on construction mitigation matters. This work should coordinate with the efforts of Austin Energy, which has agreed to fund the replacement of all site lighting and the addition of electrical power at Pool side.

While it seems unlikely that extensive permitting will be required for these tasks, consultations with U.S. Fish and Wildlife Service and the City's Watershed Protection and Development Review Department should be anticipated.

Because all of these tasks will likely be subjects of public interest, the consultant should anticipate a need to report on progress and to receive input.

#### *New Algae Skimmer*

A new algae skimmer should be designed for installation along the south wall of the Pool generally extending from the diving board to the downstream dam. Discussions with U.S. Fish and Wildlife Service officials suggest that extensive permitting will not be required for this intervention. The design of this skimmer should be led by a civil engineer, and the effort should be coordinated with the hydrodynamic modeling study, since the basic premise of the skimmer is to divert flow. The effects of that flow should be understood in advance of deploying the skimmer.

#### *Disposal for Silt and Nuisance Algae*

After flood events, one part of the clean-up effort involves pumping turbid water out of the Pool. The 10(a) permit describes a method of pumping this water to a distant destination for filtering, but this method proved so cumbersome that it was abandoned in favor of the current, non-compliant method; pumping unfiltered turbid water into deck drains. This method is also used during routine cleaning. The intention of this task is to design a practical, permit-compliant method.

This task involves hiring an environmental engineer to write filtration protocols. It will require working with the Aquatics staff to tailor a solution that fits with their capabilities. The effort will also involve consulting with the U.S. Fish and Wildlife Service and the City's Watershed Protection and Development Review Department.

Nuisance algae removal appears to be a less troublesome task. It appears that it can be taken to the park brush pile and composted by mixing it with organic matter collected in the park (primarily tree leaves). The finished compost can be used to fertilize plants around the Bathhouse. The algae removal and composting effort should be done by PARD gardening staff. Staff should consult with the Texas Compost Advisory Council or similar entities as appropriate.

**GROUND IMPROVEMENTS**

*Tree Assessment and Tree Treatment*

In the course of preparing this plan, certain trees were identified as needing additional assessment to better determine their health. This work should be performed by a nationally recognized tree expert, and should use advanced tree assessment techniques. Using this assessment, the expert should make recommendations for accelerated tree care or tree replacement. Recommendations, including routine tree-care protocols, should be compared with the City's existing tree care manual, and appropriate adjustments should be made.

The tree canopy is one of the defining features of Barton Springs, so it is a certainty that any work, whether pruning or removal will be a subject of keen public interest. PARD staff and the consultant should plan for an appropriate public participation process.

*Accessible Route on South Side*

The design of an accessible route on the south side should be led by a landscape architect or an architect. The team should include a civil engineer for hydrology issues, an electrical engineer for lighting and an environmental engineer for construction mitigation. If an architect is leading this team, a landscape architect should also be included to consult on plant selection matters. None of this work can begin until the topographic studies have been completed.

This project may require an exemption from the SOS Ordinance. Consultation with U.S. Fish and Wildlife Service and the City's Watershed Protection and Development Review Department should be anticipated.

<i>Grounds Improvements Estimated Costs</i>	
<i>Tree Assessment and Tree Treatment</i>	**
<i>General Grounds Improvements</i>	1,010,975
<i>Accessible Route at South Side</i>	571,106
<i>Accessibility Improvements on North Side</i>	***
<i>Interpretive Plan</i>	121,862
<i>Subtotal</i>	1,703,943
<i>Contingency (25%)</i>	425,936
<b>TOTAL</b>	<b>\$2,129,928</b>

*These estimated costs include construction costs, professional fees, administrative and soft costs and a factor for price escalation.*

*\*\* This cost is not enumerated here, because the Parks Department intends to pay for this work with available funds.*

*\*\*\* This was not treated as a separate item when presented to Council. Its cost is included in the Accessible Route at South Side figure.*

<i>Building Estimated Costs</i>	
<i>Rehabilitate Bathhouse (part 1)</i>	476,875
<i>Subtotal</i>	476,875
<i>Contingency (25%)</i>	119,219
<i>TOTAL</i>	\$596,094

*These estimated costs include construction costs, professional fees, administrative and soft costs and a factor for price escalation.*

During the master planning process, the accessible route concept has been the subject of broad differences of opinion and heated debate. The staff and consultant team should anticipate a need for an appropriate public participation process. This process will likely involve studying alternatives to the concept articulated in this plan. Further, this process should discuss with the public a vision for the experience beginning at the south parking lot and ending at the water's edge. It should include concepts for a small bathhouse for public consideration as well.

*Accessibility Improvements on North Side*

Accessibility improvements currently exist on the north side, but questions have been raised as to their compliance with the ADA. Those improvements should be evaluated for compliance, and remediation recommendations should be made and implemented. Again, an appropriate public participation process should be anticipated.

*Interpretive Plan*

This work should be seen as a joint effort of an interpretative planning consultant and the City's Nature Center interpretive staff, with staff taking the first step. The staff should gather the raw information on interpretation topics and it should assemble preliminary thoughts on themes and storylines. This should provide the consultant with a place to begin.

The staff and the consultant should expect that the stories to be told and the planning process itself will be matters of keen public interest. They should plan for an appropriate public participation process.

The essence of this plan should be to describe a comprehensive approach to the matter of interpretation. Most of the implementation should be expected to accompany other tasks (renovating Sunken Garden, for instance). But the initial planning effort should include some installations. During the master planning process, interactive exhibits in the Gallery and information kiosks at the Tree Court were discussed, and should be considered as possibilities.

## ***BUILDING***

### *Rehabilitate Existing Bathhouse (Part 1)*

The recommendation to replace the roof is made, because a recent roof assessment raised life-safety concerns about the design of certain drains. It makes sense to add solar hot water collectors in the same effort, because their attachment to the roof must be detailed and coordinated anyway. The roof replacement team should be led by an architect experienced in historic preservation, and should include a structural engineer, a plumbing engineer for the solar hot water, a civil engineer for stormwater management and a roofing consultant. While the stated goal is to correct a life-safety problem, the consultant team should anticipate a future rain water collection system and plan accordingly.

Like all visible changes at Barton Springs, keen public interest should be anticipated and planned for with an appropriate public participation process.





# LONG TERM PROJECTS

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In addition to the short-term projects, another goal of this master plan was to identify long-term projects. The short-term projects were funded by the City Council in 2007, and are on their way to implementation, but the long-term projects are not funded, so their implementation trajectory is less clear. And, because they vary in terms of cost and complexity, their trajectories will vary from project to project. But even in the face of these uncertainties, implementation is discussed here as a way of fostering an understanding of the kinds of challenges--scheduling, funding, professional resources--each project might require, hoping that a clearer picture will assist the process of one day making each project a reality. To understand how and when long-term projects may be undertaken, it may be useful to understand them in terms of three general sets of constraints and opportunities:

*Projects awaiting clarification.*

Projects relating to improving the flow regime fall into this category, since even their scope will be determined by studies undertaken as short-term projects. Similarly, the rehabilitation of Eliza Spring awaits progress (when and if it happens) in improved habitat conditions and greater salamander population at Sunken Garden.

*Projects that might be broken into phases.*

Landscape projects lend themselves to being tackled in parts. And they even lend themselves to different project delivery methods; hiring professional landscape contractors, performing the work with Parks Department landscape forces, or using volunteer forces.

*Projects awaiting funding.*

Rehabilitating the existing Bathhouse (part 2) is a good example as is the construction of a new south bathhouse. Each of these are stand-alone projects, and each should be done in a single effort.

*\*\* The use of categories can be tricky, because some projects fall into more than one. Renovating Eliza Spring, for example, is a water quality improvement, but it is at the same time a grounds improvement. Even so, for purposes of establishing some order, they have been assigned to the category that seems to define them best.*

*\*\*\* These projects are listed here even though they are beyond this scope, because they are mentioned in the text of the master plan, and because they, generally speaking, complete the logic of the plan. They will not be further elaborated in this chapter, but by listing them here, it is hoped that they will not be forgotten.*

The long term projects can be grouped into four categories\*\*:

*Water Quality Improvements*

- Flow Regime Improvements
- Renovate Eliza Spring
- Renovate Sunken Garden (part 2)

*Grounds Improvements*

- Rehabilitate Zilker Ponds
- “Dog Park” Improvements
- Further Downstream Improvements
- General Grounds Improvements, North Side
- Grounds Improvements, South Side

*Building*

- Rehabilitate Existing Bathhouse (part 2)
- New South Bathhouse

*Projects by Others \*\*\**

- Complete the Zilker Trail
- Relocate the train tracks
- Convert Maintenance Yard to New Function
- Build New Restroom/Concession Stand North of Playscape
- Build New, Smaller Concession Stand in Tree Court
- Grounds Improvements at Drives near Robert E. Lee

## **WATER QUALITY IMPROVEMENTS**

### *Flow Regime Improvements*

Discussing flow regime improvements in any detail is impossible at this time, because even the act of making these recommendations awaits the results of hydrodynamic modeling studies yet to be undertaken. Even still, anticipating that they might include some combination of installing new operable openings in the dams, and some water recirculation, it is reasonable to suppose that the team should be led by a civil engineer experienced with water impoundment issues and in mitigating environmental impacts of construction projects in environmentally sensitive areas. And it should include a design professional, either an architect or a landscape architect. This unusual team composition is recommended to acknowledge the fact that these improvements are likely to have both functional and aesthetic components. The design professional should be counted on for graphic depictions of design proposals.

These kinds of improvements will almost certainly require permits at the federal level from U.S. Fish and Wildlife Service, the Army Corps of Engineers, as well as permits at the state and local levels. And since these kinds of improvements strike at the very core of the place, a process for soliciting public input should be anticipated.

### *Renovate Eliza Spring*

Renovating Eliza Spring involves a collection of tasks spread across a number of disciplines. The reconstruction of the spring run will involve civil engineering and landscape architecture as well as stream ecology specialists. The removal of concrete and stone from the amphitheater will involve an architect with experience in historic preservation as well as a civil engineer. And the construction of new landscape steps, paths and walls will involve an architect or landscape architect. The new plant materials will, of course, involve a landscape architect. This project also anticipates an interpretive planning component, so specialists in that discipline should be made a part of the effort. And a plan for an appropriate public participation process should be anticipated.

### *Renovate Sunken Garden (part 2)*

This plan recommends renovating Sunken Garden in two parts, with the first part concentrating on the spring vessel, the spring run and the next wall in the concentric series. The second part should concentrate on the renovation of the remainder of the walls and surrounding landscape. Because it is important that both renovation efforts be coordinated, even if they are separated by an interval of time, the remediation strategies for the masonry restoration for the entire complex should be designed in Part 1.

<i>Water Quality Improvements Estimated Costs</i>	
<i>Flow Regime Improvements</i>	***
<i>Renovate Eliza Spring</i>	779,569
<i>Renovate Sunken Garden (part 2)****</i>	613,431
<i>Subtotal</i>	1,393,000
<i>Contingency (25%)</i>	348,250
<i>TOTAL</i>	\$1,741,250

*These estimated costs include construction costs, professional fees, administrative and soft costs.*

*\*\*\* Because the scope of this item cannot be determined at this time, it is not possible to offer an estimated cost.*

*\*\*\*\*This estimated cost does not include a "new, more attractive, more transparent" bridge. It is included in Further Downstream Improvements.*

<i>Grounds Improvements Estimated Costs</i>	
<i>Rehabilitate Zilker Ponds</i>	319,035
<i>“Dog Park” Improvements**</i>	431,681
<i>Further Downstream Improvements</i>	777,282
<i>General Grounds Improvements, ***</i> <i>North Side</i>	123,012
<i>General Grounds Improvements, ****</i> <i>South Side</i>	73,427
<i>Subtotal</i>	1,720,437
<i>Contingency (25%)</i>	430,109
<i>TOTAL</i>	\$2,150,546

*These estimated costs include professional fees, administrative and soft costs.*

*\*\* For the purpose of this estimate, it is assumed that the stonework abutting the dam will be included in the work emerging from the yet-to-be-determined flow regime recommendations, and is, therefore, not included in this number .*

*\*\*\* For the purposes of this estimate, it is assumed that the work in the Tree Court is to be included in the estimate for the rehabilitation of the existing Bathhouse (part 2), and is, therefore, not included in this number.*

*\*\*\*\* This estimate only includes improvements to the South Lawn and the area around the diving board.*

The renovation of Sunken Garden should be led by an architect experienced in historic preservation. The team should include a structural engineer (for the walls), a civil engineer for grading and drainage issues, a dam engineer for the operable gate and a landscape architect. It should also include an interpretive planner. Because significant salamander biology efforts are already underway, the team should work to coordinate with them, and should rely on COA Watershed scientists for habitat expertise. Even so, if unanticipated mitigation requirements present themselves during the design process, an environmental engineer and other appropriate scientists should be included on the team.

The permitting requirements for this effort are not entirely clear at this time. Nonetheless, the team should anticipate consulting with U.S. Fish and Wildlife Service and City of Austin Watershed Protection regulatory staff. And because this is a historic site, the team should anticipate that a review by the Texas Historical Commission.

#### *GROUND IMPROVEMENTS* *Rehabilitate Zilker Ponds*

The renovation of the Zilker Ponds should be led by an architect or landscape architect experienced in historic preservation. The team should include a civil engineer for grading and drainage issues, an electrical engineer for lighting and, if the team is led by an architect, a landscape architect to consult on the use and placement of plant materials. Because this is a historic site, the team should anticipate that a review by the Texas Historical Commission.

#### *“Dog Park” Improvements*

The “Dog Park” improvements fall into three distinct categories; one, the stonework abutting the dam intended to replace the concrete armored slabs, the stairs and associated flatwork and the plant materials.

Because the stonework abutting the dam appears to be part of the structural mechanism holding the dam in place, its design and construction should be included with work associated with improving the flow regime. Another consideration supports this thought; the proposed solutions for improving the flow regime may involve rethinking the depth of the stream on the downstream side.

Two, the stairs involve the construction of two new stone stairs and rehabilitation work on the existing stair on the north side. It also involves some stone walking surfaces on the north side. This can be a stand alone project, or it can be bundled with other, larger projects. In any event, the team should be led by an architect or a landscape architect.

The permitting requirements for the stairs are not entirely clear at this time. It seems likely that they will not trigger a permit from either of the federal agencies, U.S. Fish and Wildlife Service or the Corps of Engineers. But because it is an historic site, the team should anticipate a review by the Texas Historical Commission.

Three, the plant materials should be planned by a landscape architect. This work can be installed in one of three ways: by a landscape contractor, the Parks Department landscape personnel or volunteers. And it may be possible to combine the project delivery methods. This installation also lends itself to being done part by part over periods of time. Even this work should anticipate a review by the Texas Historical Commission.

#### *Further Downstream Improvements*

The improvements further downstream generally involve stonework for the overlooks, stone paving and planting materials, so the team for this work should be led by an architect or a landscape architect. The need to improve the wide gravel road on the north side may require a civil engineer, and there is a modest requirement for irrigation design. There is also some interpretive planning.

Because it is an historic site, the team should anticipate a review by the Texas Historical Commission.

#### *General Grounds Improvements, North Side*

The general grounds on the north side can be divided into two distinct parts: the Front Yard and the Pecan Grove; and the Tree Court. A variety of approaches to plant material installation would be appropriate, but in any event, the work should be based on professionally designed plans.

These grounds improvements are largely a landscape architecture exercise, so, not surprisingly, they should be designed by a landscape architect. Automatic irrigation will be required for the trees in the Tree Court, so an irrigation designer will be required. The hard-scape should be installed by experienced landscape contractors. Because it is an historic site, the team should anticipate a review by the Texas Historical Commission. It is perhaps appropriate to mention here that this master plan discusses replacing the existing concession stand with a new building on the same site with a smaller footprint, and discusses augmenting these food services with a new facility north of the Zilker Playscape. Both of these efforts are complements to the thinking of this plan, and are logical extensions to it, but they are distinctly beyond the scope of this plan. Therefore, they are not further elaborated here or elsewhere in the plan. It is also worth saying that, while the general rationale

<i>Building Estimated Costs</i>	
<i>Rehabilitate Bathhouse * (part 2)</i>	3,581,775
<i>New South Bathhouse **</i>	892,253
<i>Subtotal</i>	4,740,028
<i>Contingency (25%)</i>	1,118,507
<i>TOTAL</i>	\$5,858,535

*These estimated costs include construction costs, professional fees, administrative and soft costs.*

*\* This estimate includes the work in the Tree Court and work associated with the Boulder Garden.*

*\*\* This estimate includes work in the South Grounds between the bathhouse and the parking lot as well as work in the parking lot, such as paving and new trees. Even though they are discussed, the trees lining the drive near Robert E. Lee and the riparian planting in the drainage ditch are beyond the scope of this plan, and are, therefore, not included in estimated costs.*

for building a smaller concession stand is to strengthen the connection between the Tree Court and Eliza Spring, the other work related to this goal should not wait for the smaller concession stand.

*General Grounds Improvements, South Side*

This work generally includes the area between the proposed new bathhouse and the existing parking lot and the parking lot itself. While this can be done as a stand-alone project, it can also be included in the scope of work for the bathhouse. Since most of this landscape work, if it is a stand-alone project, the team should be led by a landscape architect. A civil engineer will be required to design the paving for the parking lot and to design drainage and stormwater mitigation measures.

**BUILDINGS**

*Rehabilitate Existing Bathhouse (Part 2)*

This project includes the rehabilitation of the Bathhouse architecture, and it includes enhancements to the Beverly S. Sheffield Education Center, including the design and installation of a new Visitor’s Center. It will include substantial sustainability features including rainwater collection and a system to reuse shower and lavatory water for flushing toilets and irrigation.

This project should include the construction of the Boulder Garden, and in the event the work in the Tree Court has not been done previously, that should be included in this project.

This project will close the Bathhouse for the better part of an entire swimming season, so it must include provisions for providing alternative bathhouse services and alternative education services during the construction.

This project should be led by an architect experienced in historic preservation, and should include a structural engineer, mechanical, electrical and plumbing engineers, a civil engineer and a landscape architect. It should also include interpretative planners and exhibit designers.

This project will require a variance from the SOS Ordinance. Because it is an element of an historic site, the team should anticipate a review by the Texas Historical Commission. And because it has been designated a City of Austin Landmark, it will require a Certificate of Appropriateness from the Historic Landmark Commission.

Like all visible changes at Barton Springs, keen public interest should be anticipated and planned for with an appropriate public participation process.

*Build New South Bathhouse*

The centerpiece of this project is, of course, the construction of a new bathhouse. But an important corollary is its integration into the arrival sequence as it begins in the parking lot and proceeds down to the Pool. If it has not been done previously, that should be included in the scope of this project.

This project should be led by an architect, and should include a structural engineer, mechanical, electrical and plumbing engineers, a civil engineer and a landscape architect. It may also include interpretative planners.

This project will require a variance from the SOS Ordinance. Because it is an historic site, the team should anticipate a review by the Texas Historical Commission.

Like all visible changes at Barton Springs, keen public interest should be anticipated and planned for with an appropriate public participation process.





# SELECTED SCHEDULES

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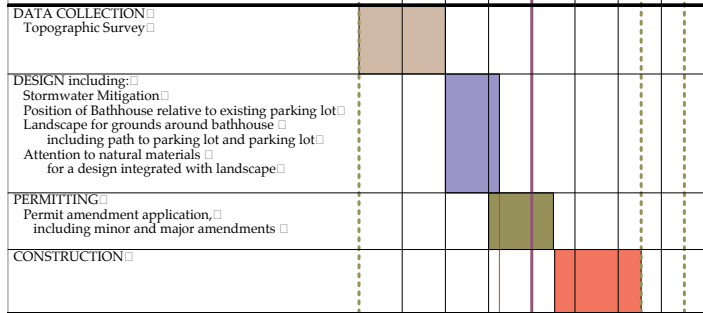
The purpose of this section is graphically portray the sequence and interrelationship of tasks required to accomplish the more complex of the proposed projects. It intends to communicate to the public the kinds of disruptions certain projects are likely to have on pool operations. It also suggests project milestones and opportunities for public participation and input.

Every project is not represented here. Some projects are sufficiently straightforward that a graphic depiction seemed to be a needless duplication of information conveyed elsewhere verbally. For other projects, the breadth of possibilities for project delivery was so substantial that choosing one for the purposes of depiction was thought to be arbitrary and more than likely not useful. The work “further downstream” is an example where the entire project could be done by a single landscape contractor, or it could be broken into small pieces, with some of it done professionally and some done by volunteers. Moreover, it could all be done at once, or it could be done in bits and spread over a number of years.

All of these schedules are estimates, and they are based on the preliminary understandings of project scope and complexity that exist today. It should be expected that they will not be fully accurate. But their value should be seen, not in their precision or imprecision, but in their ability to convey relationships and an overall vision of a project trajectory.

## SOUTH BATHHOUSE

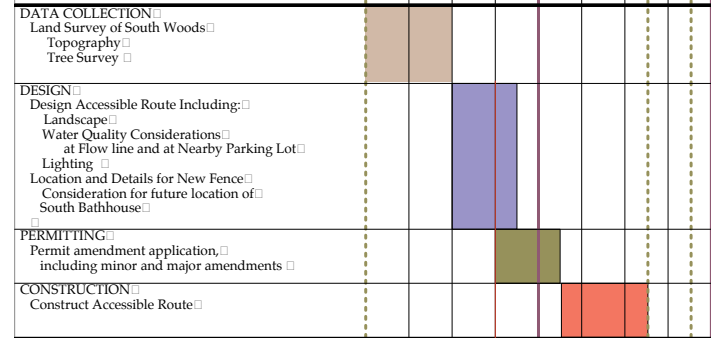
0 3 6 9 12 15 18 21 24 (MONTHS)



●  
PUBLIC PROCESS

## ACCESSIBLE ROUTE

0 3 6 9 12 15 18 21 24 (MONTHS)

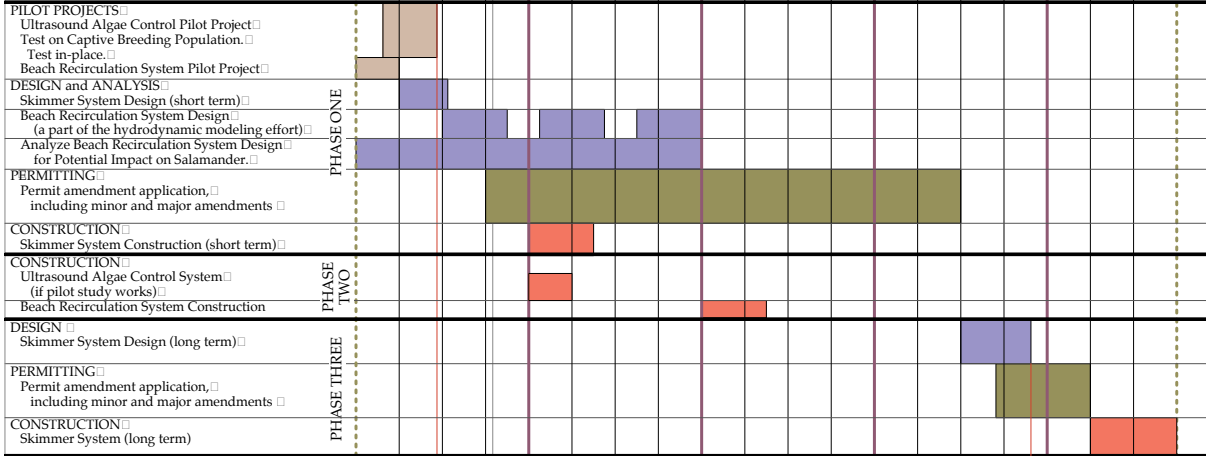


●  
PUBLIC PROCESS

# ALGAE CONTROL

(MONTHS)

0 3 6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54 57 60

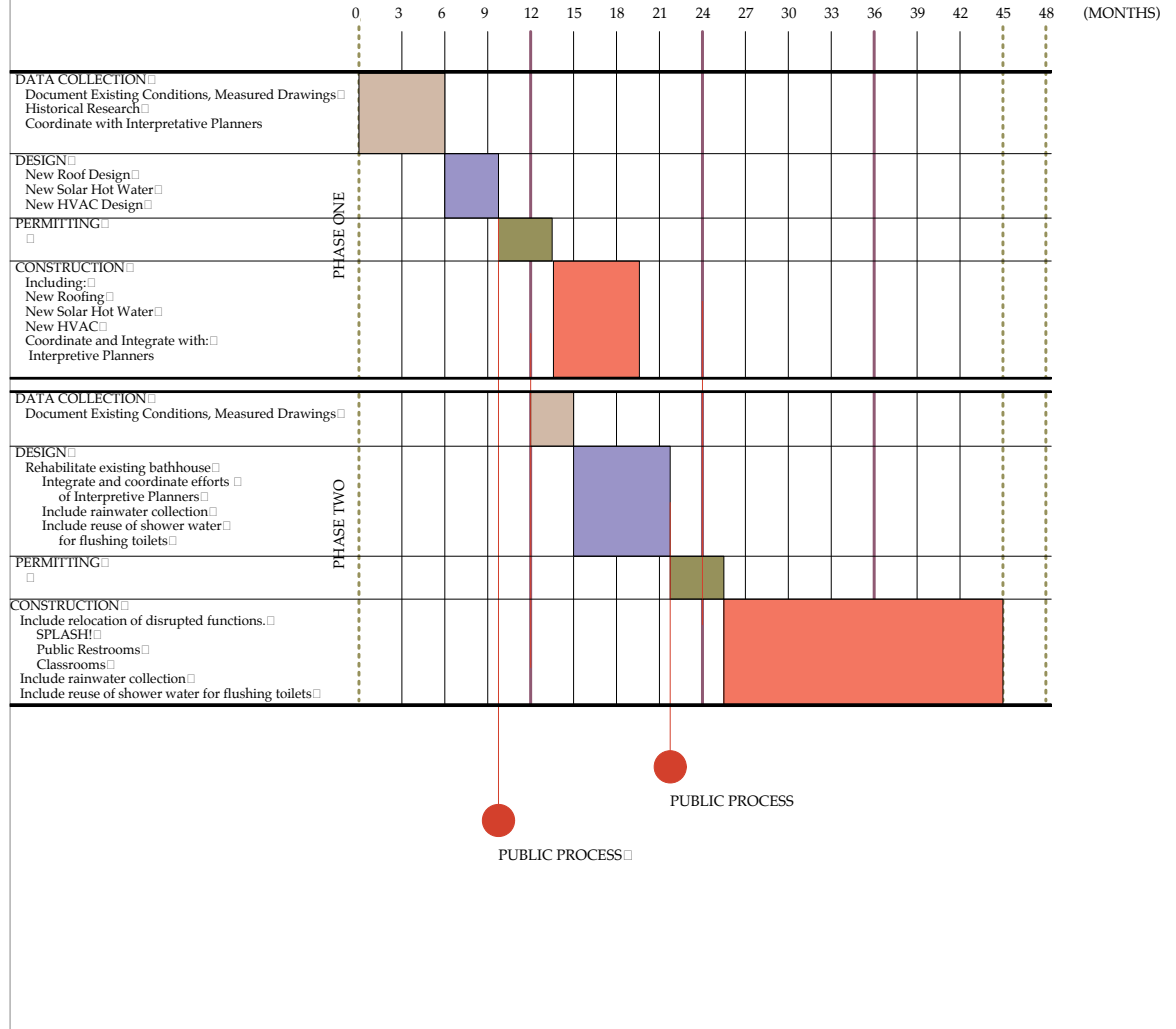


PUBLIC PROCESS

PUBLIC PROCESS

PUBLIC PROCESS

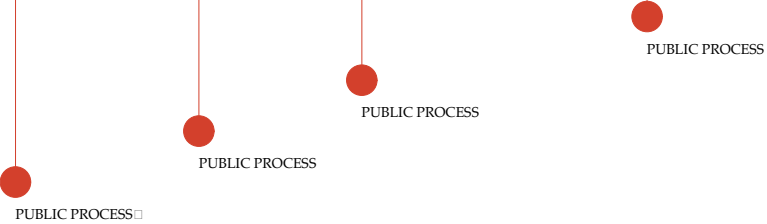
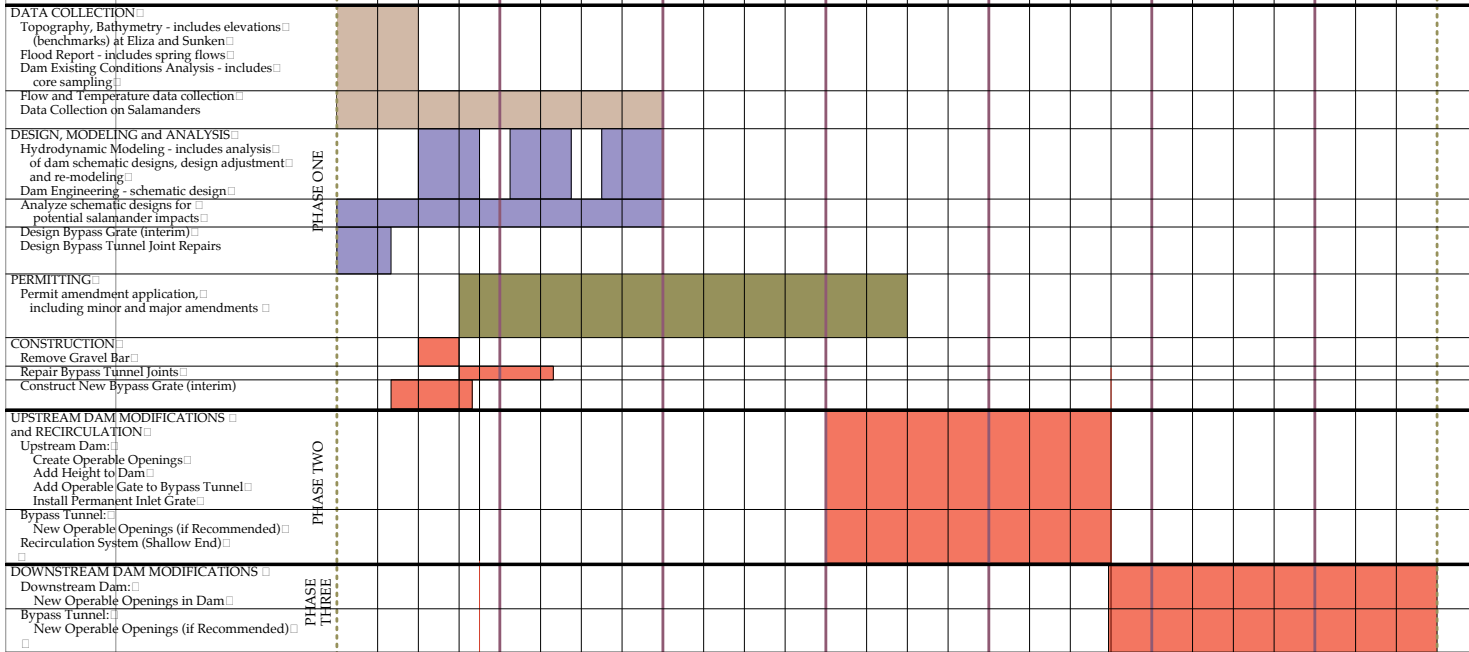
# REHABILITATE EXISTING BATHHOUSE



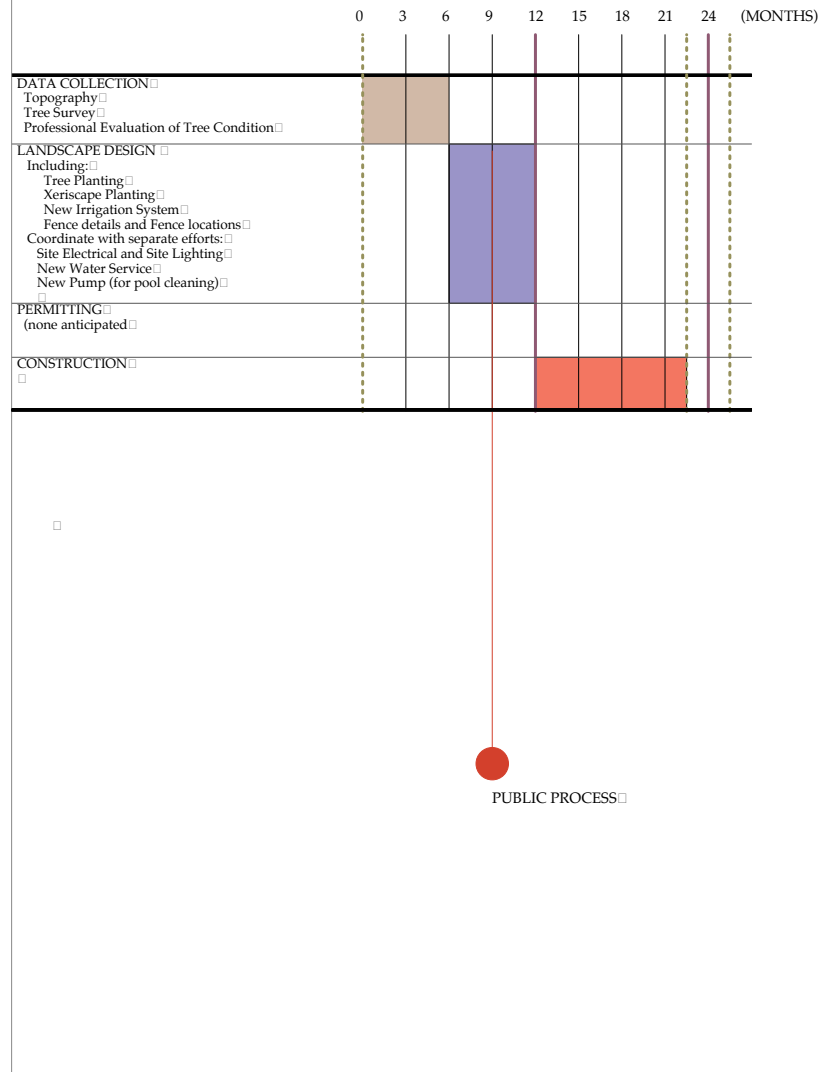
# FLOW REGIME

(MONTHS)

0 3 6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54 57 60 63 66 69 72 75 78 81 84



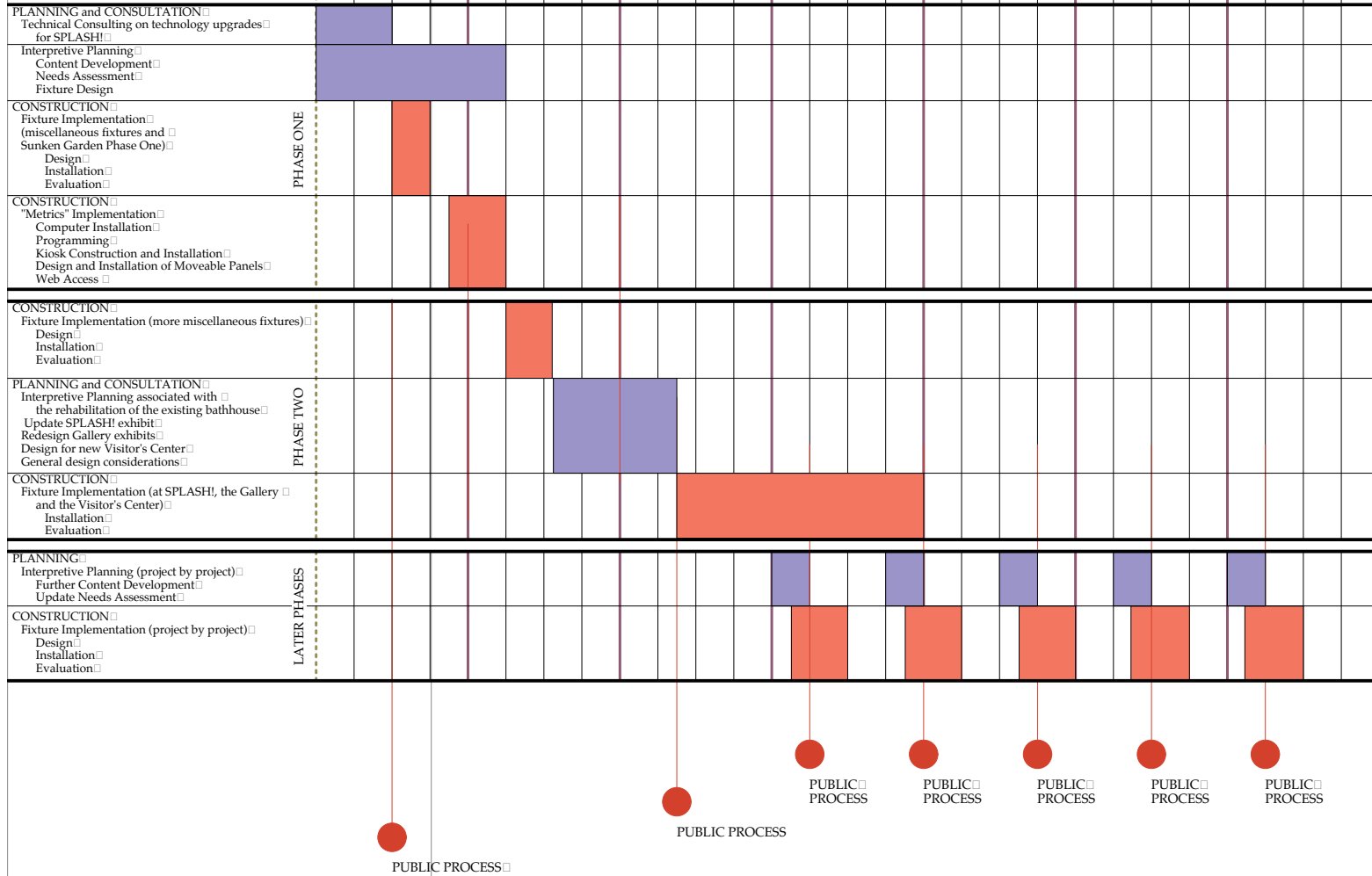
## GROUNDS - general



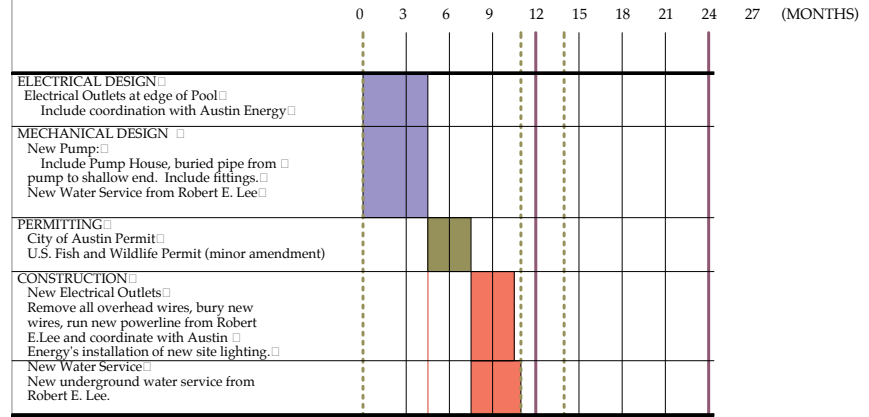
# INTERPRETIVE PLANNING

(MONTHS)

0 3 6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54 57 60 63 66 69 72 75 78 81 84



# SITE WATER and ELECTRICAL



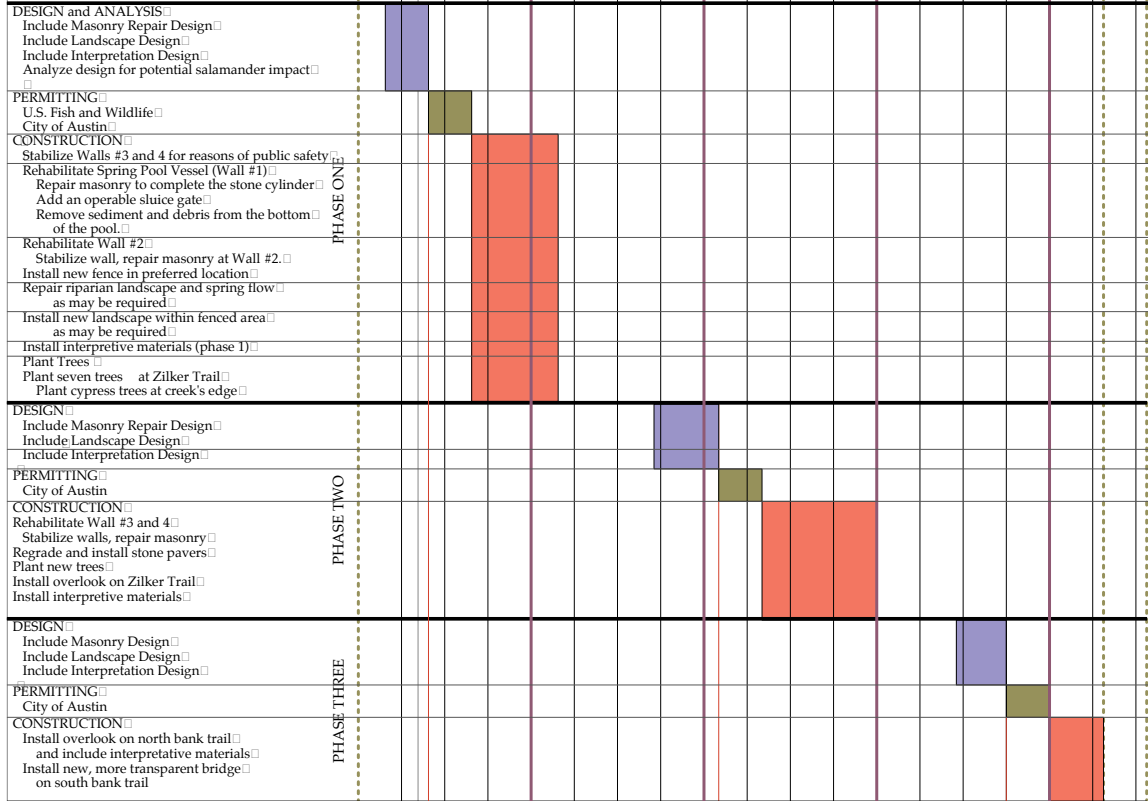
 PUBLIC PROCESS



# SUNKEN GARDEN

(MONTHS)

0 3 6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54



PUBLIC PROCESS

PUBLIC PROCESS

PUBLIC PROCESS



# FINAL WORDS

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*"Swimmers", Will van Overbeek*



# FINAL WORDS

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## *PROCESS*

Antoine Predock famously said that Austin has too much democracy for his taste. Nonetheless, his City Hall building has been a success, so he apparently, though perhaps begrudgingly, overcame his aversion. Without taking a position on the merits of his observation, it can certainly be said that public participation in highly visible Austin projects is a force to be reckoned with.

Barton Springs is, of course, one of Austin's most cherished icons, so this master plan brought out a spirited outpouring. This process has involved the public in numerous meetings, some informational and some interactive. It has posted preliminary materials in a public venue and it has posted them on a public website. It has harvested input in public settings and by e-mail. The planners have met with individuals, neighborhood groups and interest groups. They have reported to City boards and commissions, and they have reported to the City Manager and the City Council.

Yet for some, this is insufficient. In its most extreme form, staff is criticized even for meeting among themselves, without fully notifying the public. And planners are criticized if they meet with anyone without inviting the entire community. In this view, the public would be given ample notice for even the most routine fact-finding meeting. While all of this may seem extreme and beyond reasonable to the casual observer, this planning team believes that it should not be dismissed out of hand. It may, in fact, be a symptom of deeper community sentiments that the process used, however well-managed or well-intentioned, missed some important benchmarks of public expectation.

It is probably also useful to examine this process from the staff and consultants' point of view. Presumably, a master plan should represent a moment of pause, where larger considerations are contemplated, and attempts are made to knit together seeming unrelated matters into a coherent whole. Presumably, staff and consultants should work together to fashion responsible, nuanced recommendations that are respectful of the place and mindful of community sentiments. In the most favorable of circumstances, this is complicated. But under the current system, where they are thrust into an environment where trust and good intentions are not a given, the job is made more difficult. A reasonable question to ask all around is, can we do better?

### ***OBSERVATION***

This planning team believes that Barton Springs deserves a new kind of enlightened stewardship. Not for the convenience of staff or consultants, but because the place itself deserves it. Barton Springs is simply too important to leave it to a process where only the most battle-hardened proposals and battle-hardened people can survive. To return it “to its rightful glory” will take many years and the work of many committed citizens and professionals, and it will need the very best they can offer. Shouldn’t the process in which they work be one that nurtures such inspiration?

A place to start might be to create a task force whose sole charge is the stewardship of this important place. It would learn the history and complexity of the place, and be prepared to offer deeply reasoned counsel. It would serve as Barton Springs’ primary public client, and would be broadly composed to reach out beyond the most well-known interest groups. And because its members would be chosen for their community stature and their intelligence, they could offer everyone from the daily swimmers to the City Council, a base-level of trust in the process. This group could also seek to understand, not only the unique problems of this place, but also to place it in the larger context of park-planning thought from around the world so that lessons from afar might inspire us, too.

This suggestion is not to exclude other interested citizens from having avenues for involvement; they certainly should. But the expectation that all citizens should have the right to be involved at every single step is simply too cumbersome to be practical. Austin needs a better system. Barton Springs needs a better system.

### ***BEYOND THIS SCOPE***

Every master plan finds itself caught in a contradiction where the breadth of its ambitions collide with finite boundaries. Without boundaries, a master plan loses its value, because it is never reaches an end; but instead spins further and further into the distance. So boundaries are necessary.

Nonetheless, the process of master planning tends to be less tidy than its boundaries, so it is not uncommon for observations to emerge for matters lying just outside the study perimeter. This planning team has identified four such matters:

#### ***Move the Maintenance Yard***

The maintenance yard for all of Zilker Park sits behind an 8 ft. privacy fence, perched on

the bluff overlooking Barton Creek.

The maintenance yard should be moved to more secluded place, and its current site should be converted to public use. One possible use might be a new educational center to complement the mission of “Splash!” and the interpretive plan. Other possible uses might be a small events center for intimate concerts or for outdoor weddings.

#### *Transit Connections*

Lack of parking has long been a source of frustration in the park. Charging for parking on the north side is an attempt at control, but it only creates a barrier to access without creating more parking. A longer-term solution would bring transit into the park. This would be consistent with current city planning concepts and it would make remote parking more convenient. Any park transit system should provide easy linkages to City transit services.

#### *More Public Restrooms*

The north side, where most of the public activity takes place, is under served. More public restrooms are needed to satisfy demand and to relieve pressure on the under sized Bathroom facilities. One suitable location might be the grass area north of the playscape, a popular attraction for families with small children.

#### *Rethink the Train Route*

The miniature train tracks currently runs along the north bluff overlooking Barton Creek east of the Pool, and loops to a terminal within 50 ft. of Eliza Spring. This end of the line could be realigned with the station on the north side of the Zilker Playscape and the tracks running along the north of the maintenance yard, connecting back to its current alignment to the east in the Pecan Grove. By moving the tracks from the path along the bluff, it would allow for a wider, less constricted path bike and pedestrian circulation. Plus, it would eliminate some congestion near Eliza Spring.



*The maintenance yard occupies a prime location overlooking Barton Creek. Relocating it would free its current site for a more public use. The 1937 quonset hut (left), for instance, could be used for educational purposes or for small events.*



*The train tracks and the 8 ft. privacy fence make this stretch of trail seem claustrophobic. Relocating the track and replacing the fence with a low stone wall (assuming a relocated maintenance yard) would make this important connection to Lady Bird Lake more appealing.*





# APPENDIX

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*"Pink Boys", Will van Overbeek*



# APPENDIX A

## *ORIGINAL CONSTRUCTION DOCUMENTS*

As an aide to understanding the history and development of the site and structures and buildings, the project team attempted to locate original construction documents at archival repositories. While many of the original construction documents were found, there are still gaps in the record, and the search for original construction documents should continue. On the following pages, an index of drawings discovered to date is given.

<i>TITLE</i>	<i>DATE</i>	<i>AUTHOR</i>	<i>SHEET NO.</i>	<i>SUBJECT</i>	<i>NOTES</i>
<b><i>DAMS</i></b>					
Dam, Barton Springs Park	10/19/1928	Office of City Engineer: J. C. Richardson, C. G. Levander		Cross sections, elevations, details	Downstream dam, record drawing. Annotation dated 6/26/1931, showing new opening in dam. Two copies of this drawing on file.
Miscellaneous Details, Barton Springs Park	10/22/1928	Office of City Engineer: J. C. Richardson, C. G. Levander		Plan, longitudinal section, wall sections, details of children's wading pool	Children's wading pool no longer extant. Was located in the west end of the Pool.
Trap Dam and Retaining Walls, Barton Springs Park	12/28/1929	Office of City Engineer: C. G. Levander		Plan, elevation, sections, details of upstream dam	Annotated to show "as-built" conditions.
Plan of Proposed Concrete Channel Slab Extension at Barton Springs (Below Pool)	undated			Plan, section of apron extension below downstream dam	Appears to be a drawing produced by the Office of City Engineer
<b><i>POOL and SPRINGS</i></b>					
Details of 10 ft. Diving Platform at Barton Springs Pool	2/11/1930	Office of City Engineer: C. G. Levander		Elevation and plan views of diving platform and board, details.	

<i>TITLE</i>	<i>DATE</i>	<i>AUTHOR</i>	<i>SHEET NO.</i>	<i>SUBJECT</i>	<i>NOTES</i>
Contours of Barton's Springs Below Upper Dam	12/2/1930	Office of City Engineer: Osburn		Plan of west end of Pool, showing upstream dam, children's wading pool, retaining walls, rustic bridge, spot elevations and contour lines in the bottom of the Pool	
Profile, Centerline of Barton Creek, Dam to Colorado River	10/19/1933	Office of City Engineer: V. W. Pannell		Profile section through Barton Creek	It appears that the bed of the creek was regraded from the dam down to the bridge at Barton Springs Road.
Barton Springs Pool at North End of Trap Dam	2/10/1942	Office of City Engineer: J.D.L.	33	Site plan sketch in surveyor's field book	These field notes were made to record a large washed out area at the north end of the trap dam.
"	"	"	34	Elevation field notes in surveyor's field book	"
Barton Springs Park, X Sec., Washed Area at N. End of Trap Dam for Final Quantities	3/31/1942	Office of City Engineer: G.S.E.	35	Calculations in surveyor's field book	"
Barton Springs Pool and Vicinity	3/26/1943	Office of City Engineer: R. Rountree, Jr.		Site plan drawing, showing tree locations, bathhouse/dance pavilion, Eliza Spring, mill concession stand, Pool, dams and children's wading pool.	Annotated to describe areas of wash out and damage, apparently from flooding.
untitled	undated (ca. 1970s)	City of Austin, Parks and Recreation Department		Site plan, showing Pool with select contour information in the Pool	
Barton Springs Pool Floodwater Bypass Improvements	11/27/1974	Travis Associates, Consulting Engineers	cover	Site plan, estimated quantities	Two sets of these drawings on file - original issue for construction and record drawing set.
Barton Springs Pool Floodwater Bypass Improvements, Concrete Box Culvert-Plan Profile	"		2	Plan, profile views of east end of bypass, record drawing	Existing Eliza Spring outlet, 24" dia reinforced concrete pipe, run thru north wall of bypass

<i>TITLE</i>	<i>DATE</i>	<i>AUTHOR</i>	<i>SHEET NO.</i>	<i>SUBJECT</i>	<i>NOTES</i>
Barton Springs Pool Floodwater Bypass Improvements, Concrete Box Culvert-Plan Profile	“		3	Plan, profile views of center section of bypass, record drawing	
Barton Springs Pool Floodwater Bypass Improvements, Concrete Box Culvert-Plan Profile	“		4	Plan, profile views of west end of bypass, record drawing	
Barton Springs Pool Floodwater Bypass Improvements, Cross Sections	“		5	Cross section views at various points along the length of the bypass	
Barton Springs Pool Floodwater Bypass Improvements, Cross Sections & Details	“		6	Walk drain detail, stair details, reinforcing schedule	
Barton Springs Pool Floodwater Bypass Improvements, Details	“		7	Inlet, outlet openings to bypass, trash grate details	
Barton Springs Pool Floodwater Bypass Improvements, Details	“		8	Outlet grate details, retaining walls, reinforcing schedules, ancient tree support detail, record drawing	
Barton Springs Pool Improvements	2/5/1999	PBS&J	cover		Consolidated site plan construction drawing set
Barton Springs Pool Improvements, General Notes	12/17/1998	“	2 of 10		“
Barton Springs Pool Improvements, Site Plan & Topographic Map	“	“	3 of 10		“
Barton Springs Pool Improvements, Erosion, Sedimentation Control & Tree Protection Plan	“	“	4 of 10		“
Barton Springs Pool Improvements, Construction Details	“	“	5 of 10	Steel slide gates at downstream dam details	“
Barton Springs Pool Improvements, Construction & Tree Protection Details	“	“	6 of 10	Section at “beach” area, tree protection details	“
Barton Springs Pool Improvements, Sections and Details	3/17/1999	“	7 of 10	Elevation view of dam, details of piping, pump supports	“
Barton Springs Pool Improvements, Electrical Details	4/18/1997	“	8 of 10	Pump electrical schematic, control panel details	“

<i>TITLE</i>	<i>DATE</i>	<i>AUTHOR</i>	<i>SHEET NO.</i>	<i>SUBJECT</i>	<i>NOTES</i>
Barton Springs Pool Improvements, Plans, Sections & Details	2/4/1999	Elliot & Hamill Architects	9 of 10	Accessibility improvements at Pool, grounds	“
Barton Springs Pool Improvements, Plans, Sections & Details	2/4/1999	Elliot & Hamill Architects	10 of 10	Accessibility improvements at Pool, grounds	“
Barton Springs Pool Improvements Phase II, Cover Sheet	2/8/2000	PBS&J	1 of 21	Cover page, site development permit application	
Barton Springs Pool Improvements Phase II, General Notes	7/30/1999	“	2 of 21	General notes	
Barton Springs Pool Improvements Phase II, General Notes	1/31/2000	“	3 of 21	General notes, continued	
Barton Springs Pool Improvements Phase II, Eliza Springs & Sunken Gardens Site Plans, Sections & Details	7/30/1999	“	4 of 21	Site plans, details of site plan improvements at the springs, per the 10a permit requirements	
Barton Springs Pool Improvements Phase II, Erosion/Sedimentation, Tree Protection & Kiosk Details	2/30/1998	“	5 of 21		
Barton Springs Pool Improvements Phase II, Robert E. Lee and Barton Hills Channel Improvements Location Map	1/31/2000	“	6 of 21	Partial site plan	
Barton Springs Pool Improvements Phase II, Robert E. Lee and Barton Hills Channel Improvements, Erosion/Sedimentation/Tree Protection/Traffic Control Plan	1/31/2000	“	7 of 21		
Barton Springs Pool Improvements Phase II, Drainage Area Map	1/31/2000	“	8 of 21		
Barton Springs Pool Improvements Phase II, Diversion Berm Plan View	1/31/2000	“	9 of 21		
Barton Springs Pool Improvements Phase II, Sidewalk/Berm construction Plan & Profile Sheet	1/31/2000	“	10 of 21		
Barton Springs Pool Improvements Phase II, Line “A”, 60” Dia Storm Sewer Plan & Profile, Sta. Begin to Station End	1/31/2000	“	11 of 21		

<i>TITLE</i>	<i>DATE</i>	<i>AUTHOR</i>	<i>SHEET NO.</i>	<i>SUBJECT</i>	<i>NOTES</i>
Barton Springs Pool Improvements Phase II, Storm Sewer Line "B" Sta. Begin to End, Storm Sewer Line "C" Sta. Begin to End	1/31/2000	"	12 of 21		
Barton Springs Pool Improvements Phase II, Standard Project Details	1/31/2000	"	13 of 21		
Barton Springs Pool Improvements Phase II, Standard Project Details	1/31/2000	"	14 of 21		
Barton Springs Pool Improvements Phase II, Robert E. Lee Road, Diversion Berm Plan View	1/31/2000	"	15 of 21		
Barton Springs Pool Improvements Phase II, Standard Project Details, Headwall Details	1/31/2000	"	16 of 21		
Barton Springs Pool Improvements Phase II,			17 of 21	Traffic control plans, details	
Barton Springs Pool Improvements Phase II			18 of 21	Traffic control plans, details	
Barton Springs Pool Improvements Phase II			19 of 21	Traffic control plans, details	
Barton Springs Pool Improvements Phase II			20 of 21	Traffic control plans, details	
Barton Springs Pool Improvements Phase II			21 of 21	Traffic control plans, details	
<b><i>SITE</i></b>					
Zilker Park, Irrigation System, Site A	2/23/1973	City of Austin, Parks and Recreation Department	2 of 4	Irrigation system plan, area north of parking lot, by bandstand and Zilker Hillside Theater	
Zilker Park, Irrigation System, Site B	2/23/1973	City of Austin, Parks and Recreation Department	3 of 4	Irrigation system plan, area around Eliza Spring, concession stand, train station, picnic shelter	
Philosopher's Rock	10/3/1994	Stephen K. Domigan, Landscape Architect	1 of 1	Site plan showing area between Bathhouse and concession stand, tree locations, details for sculpture installation	Stamped: Preliminary, not for construction
<b><i>BATHHOUSE</i></b>					
Bathing Pavilion at Barton Springs	11/29/1922	H. F. Kuehne, Architect		First Floor Plan	
"	"	"		Second Floor Plan	

<i>TITLE</i>	<i>DATE</i>	<i>AUTHOR</i>	<i>SHEET NO.</i>	<i>SUBJECT</i>	<i>NOTES</i>
“	“	“		Sections, Details, Elevations	
Proposed Bathhouse, Barton Springs	undated (ca. 1938)	Driscoll and Groos Architects		Floor/Site Plan	Unbuilt
Work Sheet	4/27/1942	J. Roy White (assumed)		Site plan showing contours, tree locations, existing buildings and paving, west side	Apparently used by Recreation Department architects to prepare design studies for a new bathhouse
untitled	undated (ca. 4/27/1942)	J. Roy White (assumed)		Site plan showing contours, tree locations, existing buildings and paving, east side	Apparently used by Recreation Department architects to prepare design studies for a new bathhouse
untitled	undated (ca. 4/1942)	J. Roy White (assumed)		South exterior elevation view of bathhouse design study	Unbuilt
untitled	undated (ca. 4/1942)	J. Roy White (assumed)		Floor plan, exterior elevation sketches of bathhouse design study	Unbuilt
untitled	undated (ca. 4/1942)	J. Roy White (assumed)		South exterior elevation view of bathhouse design study	Unbuilt
Scheme “A” of Preliminary Sketches for a Proposed Bath House at Zilker Park	4/24/1942	J. Roy White, architect		Floor/site plan sketch of bathhouse, located east of “remodelled” pavilion	Unbuilt. Shown built over Eliza Spring.
Scheme “C-1” of Preliminary Sketches for a Proposed Bath House at Zilker Park	4/25/1942	J. Roy White, architect		Floor/site plan sketch of bathhouse, located east of “remodelled” pavilion	Unbuilt.
untitled	4/23/1942	J. Roy White (assumed)		Floor/site plan sketch of bathhouse, located east of “remodelled” pavilion	Unbuilt. Noted “N.G. (too involved!). N.G. probably means no good.
Elevation of Stadium Promenade and Bath-House from Pool	5/21/1942	J. Roy White (assumed)		South exterior elevation view of bathhouse, appears to be Scheme A	Unbuilt.



<i>TITLE</i>	<i>DATE</i>	<i>AUTHOR</i>	<i>SHEET NO.</i>	<i>SUBJECT</i>	<i>NOTES</i>
Principal (North) Elevation, Pool (South) Elevation, Scheme A	undated	J. Roy White (assumed)		North and south exterior elevation views of bathhouse Scheme A	Unbuilt.
Development of Promenade and Stadium	5/20/1942	J. Roy White (assumed)		Site plan view of stadium seating and promenade south of bathhouse	Unbuilt.
untitled	4/1942	J. Roy White (assumed)		floor plan sketch for bathhouse	Unbuilt.
untitled construction document drawing set for a new bathhouse	undated (ca. 5/1942)	J. Roy White		Plot and roof plan	Unbuilt.
“	“	“		Plot and roof plan, annotated	“
“	“	“		Floor plan, schedules	“
“	“	“		Floor plan, schedules, annotated	“
“	“	“		Foundation plan	“
“	“	“		Exterior elevation views (north, west, south, east) of bathhouse and stadium seating	“
“	“	“		Detail plans, wall sections	“
“	“	“		Wall sections, details	“
“	“	“		Wall sections, details	“
“	“	“		Building sections	“
“	“	“		Detail plans, wall sections, details	“
Alterations and Additions to Barton Springs Bathhouse	6/23/1942	J. Roy White, architect	1 of 1	Detail plan, exterior elevation, details of addition to the north side of the existing bathhouse	
Details for Installation of an Electric Fan in Barton Springs Bathhouse	8/1/1942	J. Roy White, architect	1 of 1	Longitudinal section, elevation, detail of fan and duct added to existing bathhouse	

<i>TITLE</i>	<i>DATE</i>	<i>AUTHOR</i>	<i>SHEET NO.</i>	<i>SUBJECT</i>	<i>NOTES</i>
untitled sketch	4/9/1943	J. Roy White (assumed)		Site plan sketch of area between proposed bathhouse and mill concession, north of Eliza Spring, showing contours, tree locations, proposed paving revisions	Unbuilt. Annotation: "scheme finally approved, June 1943"
Plot Plan, Barton Springs Bathhouse and Pavilion	undated (ca. 1943)	J. Roy White (assumed)		Site plan drawing showing proposed bathhouse, remodelled pavilion, proposed parking revisions.	Unbuilt
Scheme "B"	10/4/1943	J. Roy White (assumed)		Floor plan sketch of remodelled dance hall pavilion	Unbuilt
untitled construction drawing set for remodelled dance pavilion	undated (ca. 10/1943)	J. Roy White		Foundation plan	Unbuilt
"	"	"		Floor plan, schedules, wall section	"
"	"	"		Exterior elevations, building sections	"
"	"	"		Roof plan, site plan, details	"
untitled sketch	undated (ca. 1943)	J. Roy White (assumed)		Plan, section sketches of remodelled dance pavilion	Unbuilt
untitled notes	undated (ca. 1943)	J. Roy White (assumed)		Hand-written notes, questions, comparing several schemes for remodelled dance pavilion	Unbuilt.
Zilker Springs Bathhouse	1945	Dan Driscoll, architect	cover	Cover page	Zilker Springs Bathhouse, City of Austin, Texas, Plans Prepared by City Engineering Department
Zilker Springs Bathhouse, Plot Plan	"	"	1	Site plan, topography, grading, tree locations, site details	"
Zilker Springs Bathhouse, Plot Plan of Present Conditions	"	"	1A	Site plan, topography, tree locations	"

<i>TITLE</i>	<i>DATE</i>	<i>AUTHOR</i>	<i>SHEET NO.</i>	<i>SUBJECT</i>	<i>NOTES</i>
Zilker Springs Bathhouse, Foundation Plan	“	“	2	Foundation plan, roof framing plan, curb inlet details	“
Zilker Springs Bathhouse, Floor Plan	“	“	3	Floor plan, roof plan, schedules	“
Zilker Springs Bathhouse, Elevations	“	“	4	Exterior elevations, building sections	“
Zilker Springs Bathhouse, Structural	“	“	5	Reinforcing schedules, sections, details	“
Zilker Springs Bathhouse, Details	“	“	6	Interior elevations, interior details, louver and basket room details	“
Zilker Springs Bathhouse, Details	“	“	7	Door, window details, cabinet details, spectator’s gallery details	“
Zilker Springs Bathhouse, Details	“	“	8	Women’s dressing details, service window and ticket window details	“
Zilker Springs Bathhouse, Electrical	“	“	9	Power, lighting plan	“
Zilker Springs Bathhouse, Plumbing	“	“	10	Plumbing plan	“
Zilker Park Bathhouse Remodel	5/6/1986	Interior Consultants, Incorporated	cover	General notes, schedules, legends	Remodel basket rooms, service office and original entry for use as exhibit, meeting, office, gift shop space
“	“	“	A1	Floor plan, notes	“
“	“	“	A2	Reflected ceiling plan	“
“	“	“	A3	Building section, cabinet, display details	“
“	“	“	A4	Partition, door, cabinet details	“
Adaptive Use Facility Plan: Renovation Schematic	6/15/1995	Active Learning Resources	1 of 1	Floor plan, notes, of renovated classroom, gallery, exhibit space.	Unbuilt. Noted Not for Construction.
Accessibility Modifications at Zilker Pool and Bathhouse	12/16/1996	Elliott & Hamill Architects	A-1	Site key map	Accessibility improvements to building and site
“	“	“	A-2	Building key plan	“
“	“	“	A-3	Detail plan, Central area of parking lot	“

<i>TITLE</i>	<i>DATE</i>	<i>AUTHOR</i>	<i>SHEET NO.</i>	<i>SUBJECT</i>	<i>NOTES</i>
“	“	“	A-4	Detail plan, S.E. end of parking lot	“
“	“	“	A-5	Curb ramp details	“
“	“	“	A-6	Paving transition detail	“
“	“	“	A-7	Curb details	“
“	“	“	A-8	Cane detection device detail plan	“
“	“	“	A-9	Plan, ramp no. 1	“
“	“	“	A-10	Plan, ramp no. 3	“
“	“	“	A-11	Plan, ramp no. 4	“
“	“	“	A-12	Plan, ramp no. 5	“
“	“	“	A-13	Plan, section, ramp no. 6	“
“	“	“	A-14	Plans, ramp, stairs, drinking fountain	“
“	“	“	A-15	Plans, ramp, stair	“
“	“	“	A-16	Plans, stairs	“
“	“	“	A-17	Gate details	“
“	“	“	A-18	Plans, entry ramp	“
“	“	“	A-19	Details, cabinets	“
“	“	“	A-20	Plan, women’s public toilet	“
“	“	“	A-21	Plan, women’s toilet	“
“	“	“	A-22	Plan, women’s new accessible shower	“
“	“	“	A-23	Plan, men’s public toilet	“
“	“	“	A-24	Plan, men’s toilet and accessible shower	“
“	“	“	A-25	Details, ramp	“
“	“	“	A-26	Details, stair	“
“	“	“	A-27	Details, stair	“
“	“	“	A-27a	Section, stair	“
“	“	“	A-28	Details, ramp	“

<i>TITLE</i>	<i>DATE</i>	<i>AUTHOR</i>	<i>SHEET NO.</i>	<i>SUBJECT</i>	<i>NOTES</i>
“	“	“	A-29	Details, railing	“
“	“	“	A-30	Details, lavatory	“
“	“	“	A-31	Details, urinal	“
“	“	“	A-32	Details, water closets	“
“	“	“	A-33	Details, accessible shower	“
“	“	“	A-34	Details, drinking fountain	“
“	“	“	A-35	Key plan, sign locations	“
“	“	“	A-36	Sign schedule	“
Barton Springs Bathhouse Open Air Shower Drains	12/1999	Parks and Recreation Department	1 of 3	Men's shower drain	
“	“	“	2 of 3	Women's shower drain	
“	“	“	3 of 3	Shower drain riser diagram	
<b><i>CONCESSION STAND</i></b>					
Concession Stand for Barton Springs, Austin, Texas, Plans	4/19/1929	H. F. Kuehne, Architect	1	Foundation plan, floor plan, schedules, service window details	
Concession Stand for Barton Springs, Austin, Texas, Elevations	“	“	2	Exterior elevations, window details, mill wheel details	
Study No. 1, Concession Stand at Barton Springs	undated (ca. 1959)	Paul R. Roesele	1	Exterior elevations, site plan	
Concession Building at Zilker Springs	9/22/1959	Paul R. Roesele	1 of 7	Plot Plan	Eliza Spring is called Zilker Springs
“	9/15/1959	“	2 of 7	Foundation plan, details, exterior elevation, building section, door and window schedule	
“	9/16/1959	“	3 of 7	Floor plan, exterior elevations	
“	9/25/1959	“	4 of 7	Wall section, cabinet details, service window details, door details, finish schedule	
“	10/29/1959	“	5 of 7	Electrical plan, structural details	
“	2/8/1960	B. Segall, Jr., Consulting Engineer	6 of 7	Electrical plan, notes fixture schedules	



# APPENDIX B

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## *CONSULTANT REPORTS*

In addition to information written into the main body of the report, members of the master plan consultant team provided reports on topics related to their respective areas of expertise. These reports are included here for additional information and detail.



JASTER-QUINTANILLA

### *Barton Springs/Sunken Garden Evaluation of Existing Retaining Walls August 15, 2007*

The existing retaining walls and tree wells, constructed of masonry in the 1930s, are well constructed but have seen the wear of growing trees, vegetation, and eroding soil. The large tree well to the east of the Sunken Garden has two vertical separations of at least 6" width spanning the full height of the well (see Photos 1-2). The separated portion of the well is approximately 8" out of plumb, and leaning toward the basin. The retaining wall to the west and below this tree well has numerous vertical cracks, and is approximately 10" out of plumb (see Photo 3). The retaining wall just west of the basin and north of the medium sized tree well also has numerous separations and is exceeding 1'-0" out of plumb, and leaning toward the spring (see Photos 4-5). The impact of soil settlement can be seen inside each of the stairs to each level of the Sunken Garden, where the main retaining walls have separated from the perpendicular stair walls (see Photos 7-9).

Due to the multiple cracks and separations observed in the walls that are currently greater than 3" out of plumb, and that retaining walls have separated for adjoining stairs, it is recommended that many walls and tree wells be replaced with new stone walls. Plan XS-1 indicates the locations where walls were observed to be a minimum of 3" out of plumb and/or contain significant vertical separations. Walls separated from adjoining stairs are also indicated and recommended to be repaired. Section XS-2 and schedule XS-3 depict a recommended method of replacement of the failing walls. Existing masonry should be disassembled and replaced after the construction of the new concrete retaining wall.



*Photo 1: Large tree well east of spring*



*Photo 2: Large tree well east of spring*



*Photo 3: Retaining wall west and below large tree well*



*Photo 4: Retaining wall below medium tree well and west of spring*

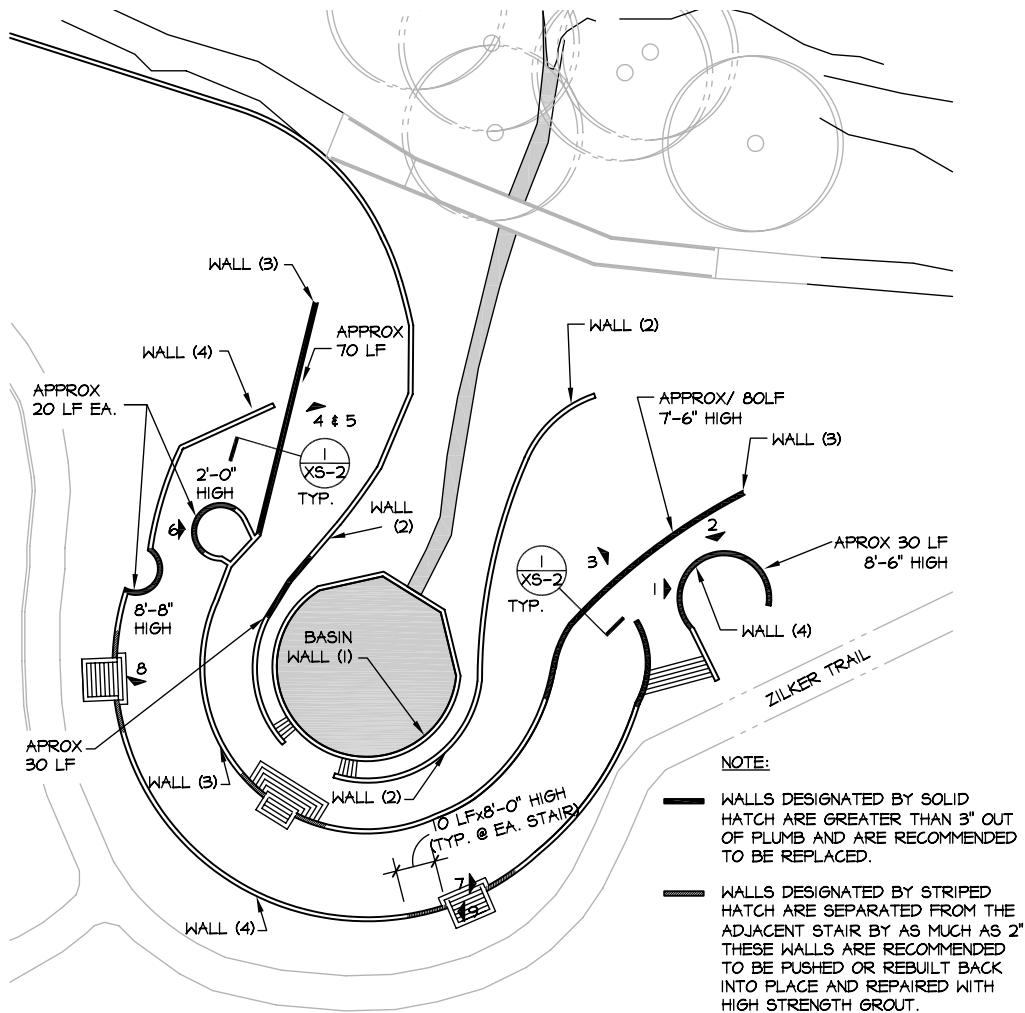


*Photo 5: Retaining wall below medium tree well and west of spring*



*Photo 6: Medium tree well west of the spring*





- NOTE:**
- WALLS DESIGNATED BY SOLID HATCH ARE GREATER THAN 3" OUT OF PLUMB AND ARE RECOMMENDED TO BE REPLACED.
  - WALLS DESIGNATED BY STRIPED HATCH ARE SEPARATED FROM THE ADJACENT STAIR BY AS MUCH AS 2". THESE WALLS ARE RECOMMENDED TO BE PUSHED OR REBUILT BACK INTO PLACE AND REPAIRED WITH HIGH STRENGTH GROUT.
  - 1 ▸ INDICATES PHOTO LOCATION

**BARTON SPRINGS SUNKEN GARDEN RETAINING WALLS**  
SCALE: NONE



Photo 7: Inside wall of a typical stair.

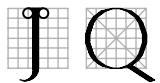
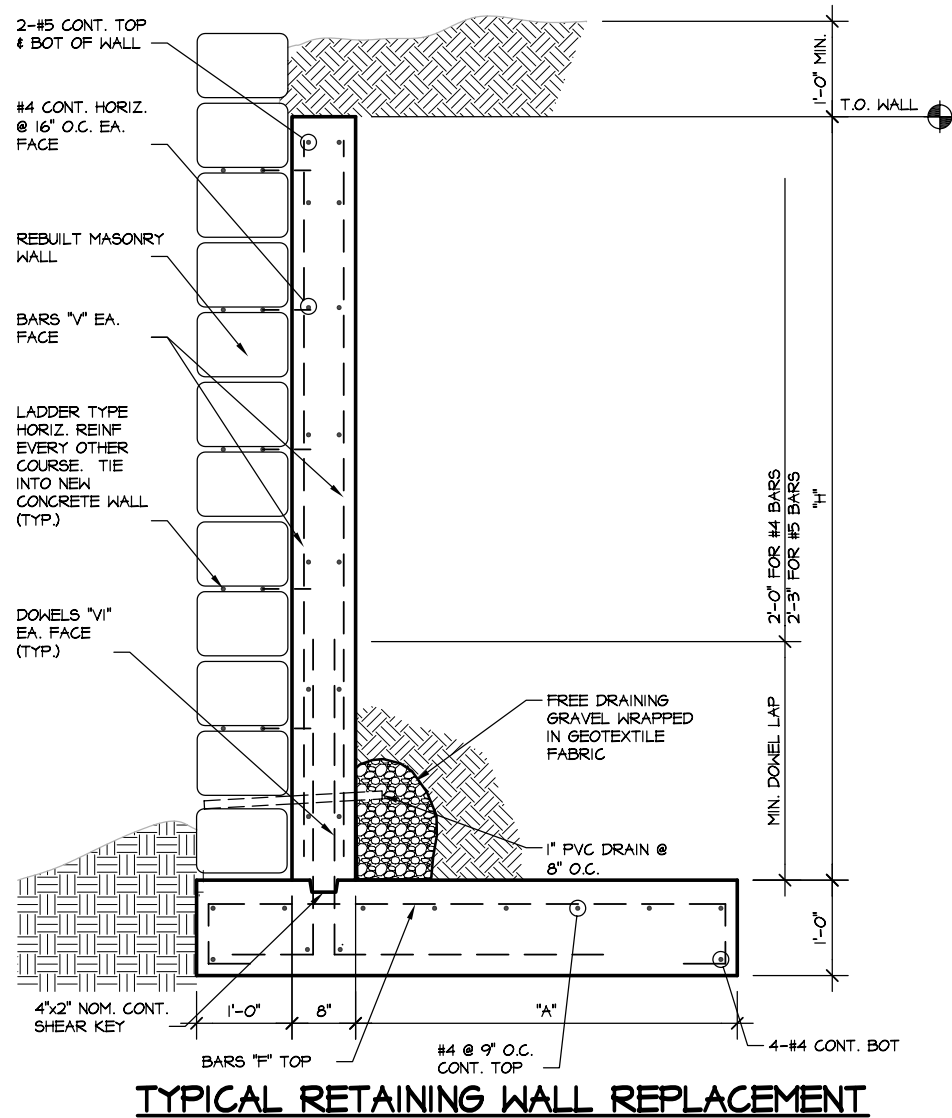
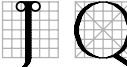
 <p>J-<b>Q</b> JOB NO.: 6079580</p> <p><b>JASTER-QUINTANILLA &amp; ASSOCIATES INC</b> CONSULTING ENGINEERS 1608 WEST SIXTH SUITE 100 AUSTIN, TX 78703 512.474.9094 FAX 512.474.9179</p>	PROJECT <b>BARTON SPRINGS POOL &amp; BATHHOUSE MASTER PLAN</b>		
	CLIENT <b>LIMBACHER &amp; GODFREY ARCHITECTS</b>		
REF.	REV.	DATE	SHEET
		08/15/07	<b>XS-1</b>









Photo 8: Inside wall of a typical stair.



### TYPICAL RETAINING WALL REPLACEMENT

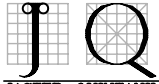
 <p>J-Q JOB NO.: 6079580</p> <p><b>JASTER-QUINTANILLA &amp; ASSOCIATES, INC.</b> CONSULTING ENGINEERS 1608 WEST SIXTH ■ SUITE 100 ■ AUSTIN, TX 78703 512 474-9284 ■ FAX 512 474-9179</p>	PROJECT		BARTON SPRINGS POOL & BATHHOUSE MASTER PLAN	
	CLIENT		LIMBACHER & GODFREY ARCHITECTS	
REF.	REV.	DATE	SHEET	
		08/15/07	XS-2	

RETAINING WALL SCHEDULE					
"H"	"A"	"V" BARS	"VI" BARS	"F" BARS	NOTES
≤ 6'	2'-6"	#4 @ 12" O.C.	#5 X  @ 12" O.C.	#5 X  @ 12" O.C.	
≤ 8'	3'-0"	#4 @ 9" O.C.	#5 X  @ 12" O.C.	#5 X  @ 12" O.C.	
≤ 10'	3'-6"	#5 @ 9" O.C.	#5 X  @ 12" O.C.	#5 X  @ 12" O.C.	

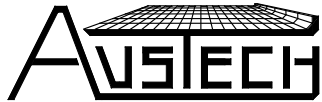
**RETAINING WALL SCHEDULE**



*Photo 9: Inside wall of a typical stair.*

 <p>J-Q JOB NO.: 6079580</p> <p><b>JASTER-QUINTANILLA &amp; ASSOCIATES, INC.</b> CONSULTING ENGINEERS 1608 WEST SIXTH □ SUITE 100 □ AUSTIN, TX 78703 512.474-9094 FAX 512.474-9179</p>	PROJECT BARTON SPRINGS POOL & BATHHOUSE MASTER PLAN	
	CLIENT LIMBACHER & GODFREY ARCHITECTS	
	REF.	REV.
		SHEET XS-3





*BARTON SPRINGS BATHHOUSE  
ROOF EVALUATION  
JULY 27, 2007*

**SCOPE**

We have conducted an examination of existing roofs to determine their general condition, and provide recommendations. Opinions, comments, and recommendations expressed below are based on available information, and may require subsequent revision.

**SUMMARY**

Roofs include modified bitumen low-sloped area, composition shingles, and sloped metal. Roofs include various penetrations such as vent pipes, drains, scuppers, conduit and refrigerant lines, etc. Roofs are in fair to poor condition with numerous deficiencies noted. We recommend replacement as the best long-term solution. We suggest addressing limited number of deficiencies until roof replacement can be designed, funded, and scheduled.

- A. Low-sloped roofs are white granular-surfaced modified bitumen sheet set in hot asphalt.
- B. There is one small area of sloped exposed fastener metal panel system over a canopy on the northeast portion of the Facility.
- C. There is one area of sloped composition shingle roofing over an area near the east center section of the Facility.

**OBSERVATIONS & COMMENTS**

- A. General: Items below were found during a cursory review (non-destructive evaluation). Important items, such as actual attachment techniques used to fasten roof, were not observed during this review. If additional items are discovered in future site visits, they would need to be added to below list.
- B. Drainage: Drainage is achieved by varying slopes to roof drains in certain locations, to the roof edge in other locations, and to scuppers in still other locations. The slopes vary from 2 percent to 12.5 percent in area considered low-sloped and approximately 33 percent at shingle and metal roof areas. Drainage is poor at most low-sloped roofs.
- C. Drainage: Certain roof areas are bordered by parapet walls that vary in height from a few inches to over three feet. These areas are drained by roof drains but



*Barton Springs Bathhouse*



*Certain roof areas are bordered by parapet walls that vary in height from a few inches to over three feet. These areas are drained by roof drains, but do not include overflow drainage provision.*



*Blistering of roof membrane noted in several areas.*

do not include overflow drainage provision. Blockage of roof drains in these areas could result in a catastrophic failure.

- D. Drainage: Roof drains in most locations are semi-blocked with debris resulting in slow drainage and standing water on the roofs. In addition, the roof drains do not include sumps which will likely result in some standing water remaining after debris has been removed.
- E. Drainage: Other locations are drained by slope to the roof edge and the water is collected in gutters and directed down by downspouts. The roof debris has filled the gutters and semi blocked most of the downspouts.
- F. Roof: Blistering of the roof membrane was noted in several locations. Blistering is typically a function of water vapor infiltrating the roof system, becoming trapped, heating and expanding which results in separation of the roof assembly.
- G. Roof: Cracking of the granular surface of the modified bitumen roof was noted throughout the Facility. Cracking is typically the result of the sheet losing some of the oils. As cracking continues it will open the sheet exposing the reinforcing scrim layer resulting in accelerated deterioration of the sheet.
- H. Roof: Scraping of the membrane is occurring in certain locations. Trees have overgrown the Facility roofs in certain locations and are scraping the surface of the membrane.
- I. Roof: Membrane base flashings are loose and voided in certain locations. This condition is allowing water into the roof system and likely manifesting as leaks inside the Facility.
- J. Roof: Solar panels have been installed on the roofs. The mounts for these panels are installed directly over, and bolted through the roof membrane without flashings.
- K. Roof: There is debris on the roofs in several locations. The Facility is surrounded by large trees which are depositing debris on the roofs. The debris is impeding drainage flow, causing accelerated deterioration of the roof membrane, and allowing growth on the roofs.
- L. Roof Equipment: Electrical junction boxes and conduit have been placed directly on the roof membrane. In certain locations electrical junction boxes are in stand-

ing water. Supports for electrical boxes have been set directly on the roof surface. One vent top has been removed exposing the interior to the elements.

- M. Roof Equipment Penetrations: Most penetrations for roof top equipment electrical and refrigerant lines are voided and open. Some have hood assemblies which are elevated above the penetration likely allowing water to enter.
- N. Parapet Walls: Certain parapet walls are capped with metal flashings. The metal flashing in these locations has been anchored through the top of the flashing and fastener penetrations are voided. In addition, fastener spacing is random ranging from approximately 18 inches to over 30 inches on center.
- O. Parapet Walls: Certain parapet walls are capped with coping stones. Mortar joints at the coping stones are deteriorated.
- P. Windows: Certain locations include above roof windows. Window frames are rusted, and exterior seals are deteriorated.
- Q. Flashing: Certain locations include counter flashings at rise walls. Those metal flashings are voided in several locations.
- R. Metal Roof: There is one small location of sloped metal roofing on the Project. The metal roof is in fair condition with limited maintenance actions required.
- S. Composition Shingle Roof: There is one area of sloped composition shingles on the Project. The shingles are deteriorated. In addition, the transition area of this roof to the main Facility is deteriorated with mastic repair attempts evident.
- T. Open Air Dressing Areas: The open air dressing areas include exposed concrete roof areas. The exposed concrete is in fair to good condition. There is limited cracking evident and the surface of most surface areas are stained.

### **RECOMMENDATIONS**

- A. Due to the general condition of the modified bitumen roofs and the composition shingle roof and the scope of repairs necessary we recommend replacement as the best long-term solution. We recommend installing overflow drainage provisions where required as soon as possible. We recommend accomplishing temporary repairs to address current and future leakage until such time as the replacement Project can be designed, funded, and accomplished.
- B. We recommend remedial repairs at the sloped metal roof.



*Certain locations include counter flashings at rise walls. Those metal flashings are voided in several locations.*



*Most penetrations for roof top equipment electrical and refrigerant lines are voided and open.*



- C. We recommend addressing the drainage issues in two phases. We recommend installing overflow drainage provisions where they are required immediately. This work should be accomplished to compliment the roof replacement work that would follow. The second phase would be when the roof replacement work is designed we recommend including provisions to address the current slow drainage such as sumps at drains, and crickets between drains. In addition, we suggest including gutter screens in the roof replacement design to help keep debris out of gutters and downspouts.
- D. There are several roof replacement options available for this Project. We suggest those options should be explored during the design development phase of the Project and a replacement that fits the Facility selected. The current modified bitumen system with certain refinements such as adhesive in lieu of asphalt installation, and reflective surfacing is a good system for this area.
- E. We recommend trimming the trees and vines that are currently resting on the roof.
- F. The mounting of solar panels, electrical boxes, and other equipment should be addressed during the roof replacement design. As well as metal flashings, penetrations, and walls.
- G. We recommend addressing the parapet wall caps during the roof replacement operation.
- H. We recommend accomplishing remedial repairs such as fastener replacement, and flashing attachment at the sloped metal roof during the roof replacement operations.
- I. The concrete roof areas at the open air dressing areas are not considered a water proofing concern but could be coated to provide a more pleasing appearance. Those options could be explored during the design development phase of the Project.
- J. We recommend addressing the above roof windows during the roof replacement operations. The small windows over side areas could be replaced or refurbished and the window assembly over the main entrance should be sealed.

#### ***PRELIMINARY ESTIMATE OF PROBABLE COSTS***

- A. There are many roof replacement options available which can be explored and priced during the design development portion of the Project. For general budget-





ing purposes the amounts listed below are for a two ply modified bitumen system over board insulation. The insulation thickness should be sufficient to meet the current resistance value requirements. The add alternate portion below indicates upgrading the system to a reflective surface. The repair amount listed is for immediate repairs to address current leakage, and includes installing overflow scuppers at various locations. The amounts listed below are for general budgeting purposes and will need to be revised during the design development portion of the Project.

B. Estimates of Probable Construction Cost

C. Estimates of probable construction cost above reflect repairs to above roof windows and coping stones at parapet walls, but do not include replacement of win-





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*Consulting Civil Engineers*

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*Dredging is the engineer's term for removing the gravel bar.*

## DREDGING

### I. INTRODUCTION

The dredging process involves five primary processes which are discussed in subsequent sections:

1. Remove silts, sands, gravels, sediments, and debris all mixed with water (i.e. the unfiltered dredged material) from the pond.
2. Transport the unfiltered dredged material to filtration hoppers.
3. Filter the water (filtrate) from the dredged solid material.
4. Dispose of the filtrate.
5. Dispose of the filtered dredged material.

At the Barton Springs Pool, it is estimated that there are between 1200 to 1500 cubic yards of solids to be removed (i.e. dredged) from the submerged bottom surfaces of the pond; 600 to 750 cubic yards of volume are estimated to be less than 5 inches in size, and 600 to 750 cubic yards of volume are estimated to be over 5 inches in size, up to about one foot in diameter.

The last dredging operation of the pond took place during the winter of 2007 using a suction dredging method. The suction dredging did not use a cutter head assembly, so only the smaller solids (i.e. less than 3 inches) were removed. Larger rocks were removed by hand. It is estimated that 650 cubic yards of dredged materials were removed. Recent flooding on Barton Creek has likely deposited additional materials that need to be removed.

## II. RESTRICTIONS TO THE DREDGING PROCESS

The following restrictions were considered in assessing the feasibility of various dredging options:

- Minimize disturbance of the existing aquatic habitat, especially salamander habitat.
- Minimize disruption of the public's use of the Pool and surrounding park areas and facilities; therefore, all construction staging and activities take place on the south side of the Pool (except the barge might be deployed from the west end of the Pool).
- Minimize disturbance to the Pool facilities and to the park areas surrounding the Pool.
- Minimize point source discharges of unfiltered water.
- Proper containment and disposal of filtrate and filtered dredged materials.
- Obtaining proper permits and approvals for the dredging operations.

## III. REMOVAL OF SILTS, SANDS, GRAVEL, ROCKS AND DEBRIS

The removal of silts, sands, gravel, rocks, and debris (all mixed with Pool water) involves two primary alternative methods: (1) suction, or (2) scraping. Suction dredging involves siphoning the solids and water up through a tube, similar to a vacuum cleaner. If the solids are too large for suction, a cutter head can be used at the suction tube to grind the solids into smaller particles. Rocks will slow the grinding process and cause considerable wear and tear on the equipment. Scrape dredging involves picking up the solids by mechanical means, such as using a bucket mounted on a backhoe or crane. Due to the size and volume of the materials to be removed, at least initially, scrape dredging is considered to be the most feasible method to dredge. The use of vacuum dredging might be feasible for subsequent dredging if materials that remain after the initial scrape dredging or are deposited after the initial scrape dredging have predominant sizes below 3 inches.

Two alternative methods for the initial scrape dredging appear feasible for the Pool: using a standard backhoe excavator or using a clamshell bucket mounted on a crane.

**Backhoe Dredging:** The backhoe would be mounted on a barge, floating in the middle of the pond. The backhoe would need a horizontal reach of at least 50 feet to the south bank of the Pool. The backhoe and barge would be serviced by a work boat. Since the backhoe is hydraulically driven, substantial secondary oil containment systems, including oil booms, would need to be installed. The dredging of materials would be performed by excavating

the materials from the pond. The backhoe would swing each load over to the bank and dump the unfiltered dredged materials into a filtration hopper or into the transport system that takes the materials to the filtration hopper.

**Clamshell Dredging:** A clamshell bucket would be operated by a dragline crane. The crane would move along the south hill of the Pool, with a horizontal reach of at least 200 feet. Due to restraints in siting the dragline crane and its overhead clearance requirements, clamshell dredging does not appear to be as feasible as backhoe dredging.

Aquatic turbidity curtains would be installed around the peripheries of the aquatic habitats to help reduce turbidity and the deposition of silts and sediments onto the habitat surfaces during the dredging process.

#### IV. TRANSPORT THE UNFILTERED DREDGED MATERIAL TO FILTRATION HOPPER

The unfiltered dredged material must be transported from the dredge bucket to the filtration hopper. If the filtration hopper is located on the south bank of the Pool and the hopper is mobile, then the backhoe or dragline should be able to dump each load directly into the hopper, without intermediate transport. If the filtration hopper is not mobile along the south bank, then intermediate transport of the dredged materials from the dredge bucket to the filtration hopper is needed. If the hopper can not be located on the south bank of the Pool, but must be located on top of the south hill, then intermediate transport of the unfiltered dredged materials will be needed. The filtration hopper would not be located on the bank of the Pool if:

- The weight of the loaded hopper is too much for the concrete walkway and/or Pool retaining wall.
- The weight of vehicles transporting the loaded hopper to the top of the hill is too much for the concrete walkway and/or Pool retaining wall.

If the filtration hopper is located on top of the south hill, then the unfiltered dredged materials can be transported to the hopper by crane, vehicles, or conveyor belt.

**Vehicle Transport:** Vehicle transport is the most versatile and common method to haul the materials to the hopper. There are a variety of vehicles that could be used to haul the materials up the hill from the bank of the pond. However, the use of vehicles to haul the materials will require a reliable haul road, the construction and use of which may result in considerable disturbance to the park area surrounding the Pool. Also, it is not known if ei-

ther the existing concrete walkways or retaining walls can support loaded vehicles running along the bank of the Pool.

**Conveyor Belt Transport:** A conveyor belt system could be installed from the south bank of the pond and routed up the hill to the hopper in a manner similar to sand and gravel handling facilities. However, the conveyor would need its own containment system to contain materials spillage from the belt and unfiltered water flowing from the materials on the belt. Also, some type of intermediate transport would be required to get the materials from the dredge bucket to the conveyor belt. A materials hopper to feed the dredged materials onto the conveyor would be required; the hopper would need to be located on the south bank where the ground surface could support the loaded hopper. Conveyors are not commonly rentable equipment; it is likely that a specialty company would need to be hired to provide the conveyor.

**Crane Transport:** Crane transport would have the least impact to the Pool and surrounding park area. A crane could be situated at an intermediate point on the south hill between the south Pool bank and the filtration hopper and would need about 150 feet of horizontal reach to pick up each load of unfiltered dredged material and swing the load around to the filtration hopper.

#### V. FILTER THE DREDGED MATERIAL

The purpose of the filtration hopper would be to filter the water from the solids. The water quality requirements for the discharged filtered water (i.e. the filtrate) will dictate the fineness of the filter medium to be used. A filtration hopper can be simply an industrial waste hopper (or concrete bucket) that is lined with a filter medium, such as filter cloth, with a discharge assembly in the bottom of the hopper to discharge the filtrate. The unfiltered dredged material is loaded into the top of the hopper over the filter medium, and the water filters from the solids by gravity.

#### VI. DISCHARGE OF FILTRATE

Depending upon the quality and chemical composition of the filtrate, the filtrate could be discharged: back into Barton Creek downstream of the Pool, or into a nearby storm drain system, or into a nearby wastewater collection system, or irrigated onto open fields. Water quality regulations may dictate the receiving body of the discharged filtrate.

#### VII. DISPOSAL OF FILTERED DREDGED MATERIALS

As long as the filtered dredged materials do not contain hazardous compounds, the materi-

als will likely be classified as a Class [classification] waste for disposal purposes. The material should be disposed at a licensed waste disposal facility. Testing of the chemical composition of the materials might be needed to confirm the waste classification of the materials.

## VIII. SUCTION DREDGING

As mentioned above, suction dredging might be feasible for subsequent dredging if materials that remain after the initial scrape dredging or are deposited after the initial scrape dredging have predominant sizes below 3 inches. The process of suction dredging would likely be similar to the process used for the suction dredging performed during the winter of 2007:

- A work barge with suction pumps would be located in the Pool. A diver would operate the suction head.
- A discharge line, routed from the work barge pumps to the top of the south hill, would discharge the dredged materials into the filtration hopper.
- The filtering of the material and disposal of the dredged material and filtered water (filtrate) would be performed in a similar manner as discussed above for scrape dredging.

## IX. ENVIRONMENTAL PROTECTION AND PERMITS

Dredging may have environmental impacts. The following was taken from Wikipedia:

“Dredging can create disturbance to aquatic ecosystems, often with adverse impacts. In addition, dredge spoils may contain toxic chemicals that may have an adverse effect on the disposal area; furthermore, the process of dredging often dislodges chemicals residing in benthic substrates and injects them into the water column.”

“The activity of dredging can create the following principal impacts to the environment:

- Release of toxic chemicals (including heavy metals and PCB) from bottom sediments into the water column.
- Short term increases in turbidity, which can affect aquatic species metabolism and interfere with spawning.
- Secondary effects from water column contamination of uptake of heavy metals, DDT and other persistent organic toxins, via food chain uptake and subsequent concentrations of these toxins in higher organisms including humans.

- Secondary impacts to marsh productivity from sedimentation.
- Tertiary impacts to avafauna which may prey upon contaminated aquatic organisms.
- Secondary impacts to aquatic and benthic organisms' metabolism and mortality.
- Possible contamination of dredge spoil sites.”
- In order to address environmental impacts by the dredging operations the following features have been included in the cost estimates (see Section X below):
- Turbidity curtains around the Pool's aquatic habitats.
- Secondary containment systems (e.g. oil booms) within the Pool where there is equipment on or near the Pool.
- Temporary erosion and sediment controls where ground surfaces are disturbed by construction and where surface runoff might be laden with sediments.
- Filtration hoppers.
- Disposal of filtered dredged materials.
- Dredging of the Pool might require the following permits and approvals:
- City of Austin site development permit.
- TCEQ Edwards Aquifer Recharge Zone permit.
- State Land Office sand and gravel permit.
- U.S. Fish and Wildlife approval.
- Solid waste disposal permit.
- TCEQ point source pollution control permit.
- TCEQ non-point source pollution control permit
- U.S. Army Corps of Engineers Section 404 Permit (possibly a Nationwide Permit).

## X. SCHEDULE

It would take approximately 4 weeks to perform the scrape dredging work: 2 weeks to dredge, plus 2 weeks for on-site mobilization and demobilization. Establishment of any required re-vegetation to restore the site will take a longer period of time.

It would take approximately 3 to 4 weeks to perform subsequent suction dredging.



*Notes on Project Delivery Method for Dredging Operation:  
Contracting Method*

The dredging report assumes that the professional services and construction contracting will follow the City's normal CIP process. However, the City has the option to perform the engineering/bidding/contracting with internal staff, as it did the last time. If the City uses its own staff, then the City might want to hire an outside consultant to QC its bid documents. The City also has its own internal environmental staff, so it might use its own environmental staff to perform the required environmental assessments. Otherwise an outside environmental consulting firm would be hired. The environmental scientist (city staff or consultant) would need to be involved during the design stage and stay involved throughout the construction phase, so the environmental scientist needs to be independent of the contractor. If the City does not use its own internal environmental staff, then the environmental scientist can be hired directly by the City or hired by the prime consulting engineer (if the City hires a consulting engineer to prepare the dredging construction documents).

*Technical Specifications*

The development of the technical specifications and accompanying construction plans and bid and construction contracting documents (all together called the Project Manual) can be developed by City staff or by a consultant; that is a City decision. The specifications that go into the Project Manual will be comprised of City standard specifications and special tailored provisions and specifications for the dredging that are not covered by the standard specifications. To a great degree, the special provisions will be performance specifications (e.g. the means and methods of dredging will not be specified, but the performance of the dredging will be specified, such as remove 99%? of existing loose materials within the pool, do not disturb certain areas within the pool, do not damage the dam, retaining walls, and sidewalks, cranes and hoppers must be situated only within certain areas, etc.). During dredging, tests must be run on the dredged materials to confirm that they do not contain contaminants and to confirm their waste classification for proper disposal or for re-cycled use. These tests will be run under the guidance of the environmental scientist. The environmental scientist also coordinates the paperwork required of the City as "owners" of the waste to document the ultimate disposal (or re-cycled use) of the waste. The required tests are included in the specifications and either the City or the contractor has the tests run (however it is specified).

*Because the gravel bar removal operation is the most aggressive task contemplated by this master plan, and because it is so unusual for Barton Springs (requiring both delicacy and significant mechanical power), these notes were prepared to answer certain questions about the technical aspects of writing and administering this contract.*

### *Construction Services*

If an engineering consultant is hired, then the consultant can provide construction-phase services; however, the dredging operation will be small enough that the contractor should provide the CM services, not the City or the engineering consultant. The City has sufficient capabilities to provide inspectors for the construction. If needed, the engineering consultant can supplement the City inspection staff. Quality control tests will be performed by the contractor (e.g. waste classification tests). Quality assurance tests might be performed by the City if needed. As mentioned above, the construction-phase services will also involve the services of an environmental scientist. If for LEED- certification purposes the dredged materials are re-cycled for re-use, then additional tests will probably be required to insure that the re-cycled materials are properly used (e.g. to re-construct eroded sections along the Lady Bird Johnson Lake path).



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## BYPASS TUNNEL TRASH SCREEN AND DEBRIS BARRIER

### I. INTRODUCTION

During flood events on Barton Creek, the trash screen for the inlet to the 6ft by 10ft bypass tunnel gets clogged with debris, reducing the capacity of the flow bypass system. The clogging of the trash screen is significant enough to increase the frequency of creek flows overtopping the upstream dam. The trash screen has been damaged to the point that the public is able to climb through the bent structural members and access the interior of the tunnel. The trash screen needs to be replaced to improve the hydraulic capacity of the tunnel, to prevent unauthorized access into the tunnel, and to improve the maintainability of the screen.

During flooding events, flood flows along Barton Creek overtop the crest of the upstream Pool dam and deposit debris, silts, sands, gravel, and rocks within the Pool area. Some means of catching the material before being deposited within the Pool is desirable for maintenance purposes.

### II. BYPASS TUNNEL TRASH SCREEN

The primary purposes of the trash screen at the inlet of the bypass tunnel are to serve as a barrier to prevent the public from accessing the interior of the tunnel from the inlet end of the tunnel and to prevent debris from clogging the interior of the tunnel. Impact and corrosion damage to the structural members of the screen prevent the screen from effectively fulfilling either primary purpose, and the damage is sufficient to warrant complete replacement of the screen.

A replacement screen was sized for cost estimating purposes to consist of inclined pipes with 4-inch clear spacing between each pipe. The pipe screen would be similar to a Tx-DOT traffic safety device used on culverts. The total area of clear opening between the

screen's pipes was sized to be at least 4 times the cross-sectional flow area of the bypass tunnel (i.e. 4 times 60sf) to account for frictional losses and 50% clogging of the screen. To provide for 240 square feet of effective flow area through the pipe screen, the screen would extend 18 feet away for the inlet face of the tunnel.

### III. DEBRIS BARRIER

The construction of a barrier upstream of the upstream dam to trap sand/gravel/rock would probably not be effective. Currently, the existing upstream dam traps very little material against its upstream face, so it is likely that an upstream barrier would not be any more effective in trapping soil and rock material.

A debris barrier cable could be installed to span the width of the creek upstream of the upstream dam. The horizontal barrier cable would float on the rising creek water surface with the aid of floating barrier buoys. The cable, along with vertical chains attached to the cable at one end and to the creek bed at the other end, would snag some percentage of the floating debris before reaching the Pool dam and bypass trash screen. The impact from floating debris and the lateral thrust of flowing water against the snagged debris would exert high lateral pressures against the cable and chains, so each end of the cable would be anchored by a reinforced concrete drilled pier.

The primary disadvantages of the debris barrier include:

- The barrier, especially the barrier buoys, would be subject to vandalism.
- The barrier buoys would be susceptible to debris damage.
- Debris would need to be removed from the barrier on a frequent basis so as not to form a debris dam that could adversely influence upstream flood levels.
- The barrier cable would be subject to oxidation (i.e. rusting). A stainless steel cable could be used in lieu of a normal steel cable; however, the stainless steel cable would not be as strong.
- The connectors between the chains and the cable and between the cable and the end pier anchors would be susceptible to breaking under high impact loading and hydraulic thrust.

### IV. SCHEDULE

It would take approximately 1 to 2 months to fabricate the new bypass tunnel trash screen and another 1 month to install it.

It would take approximately one month to install a cable barrier across the creek channel upstream of the upstream dam.



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## REPAIRS TO BYPASS TUNNEL CONSTRUCTION JOINTS

### I. INTRODUCTION

The vertical construction joints within the bypass tunnel are exhibiting signs of distress, including cracking and spalling. At some locations, the spalling has exposed the reinforcing steel at the joints. The joints need to be repaired to restore the concrete's integrity and to provide adequate coverage over the reinforcing steel.

### II. JOINT REPAIR

The cracked and spalled concrete along each joint should be removed to sound concrete and to such a depth to completely expose the first reinforcing bar parallel to the joint. The existing exposed reinforcing bar can be used to anchor the repair grout to the repair section without having to use anchors or dowels. A pumpable non-shrink, non-metallic grout can be used to restore the concrete sections.

### III. SCHEDULE

It would take approximately 4 months to complete the repairs, assuming there are virtually no flows within Barton Creek: 1 month for mobilization, 2 months for repairs, and 1 month for de-mobilization and site restoration.



## BATHYMETRIC AND LAND SURVEYS

### I. SCOPE

#### A. Survey Barton Creek floodplain upstream of the upstream dam

1. Use City of Austin (COA) and/or Lower Colorado River Authority (LCRA) existing GIS database for topographic and aerial photographic information for the hydrologic and hydraulic analyses of the watershed for the design of the dam and site improvements. GIS data should encompass the entire contributing watershed of Barton Creek upstream of the Pool.
2. Perform field surveys, tied to the Texas State Plane Coordinate System and to City GPS horizontal and vertical controls, using normal GPS survey methods at critical hydraulic control points along Barton Creek within the anticipated 100-year backwater created by raising the crest of the upstream dam to confirm and supplement the existing GIS data; to delineate floodplains, land rights tied to specific ground elevations, critical environmental features, critical water quality zones; to provide detailed topography at the existing upstream dam site for design of improvements at 1-ft contour intervals on 50-ft grid; to locate the alignments and grades of existing above-ground and buried infrastructure and utilities that might be impacted by the improvements. Locations of field surveys will depend upon final design and land rights acquisition requirements.

- B. Survey the locations, dimensions and grades of dam and Pool structural features, including the upstream dam, bypass tunnel, walkways along the Pool, retaining walls, and appurtenances using normal GPS survey methods. Tie survey to the Texas State Plane Coordinate System and to the City's GPS horizontal and vertical

controls.

- C. Survey within the Pool area its terrain and habitat, tied to the Texas State Plane Coordinate System and to the City's GPS horizontal and vertical controls, to include:
  - 1. Topographic survey of terrain and habitat exposed above Pool level using normal GPS survey methods at 1-ft contour intervals on 50-ft grid pattern.
  - 2. Bathymetric survey of terrain and habitat topography and features submerged by the Pool using one or a combination of the following methods: (i) using a GPS-linked sounding survey using survey rod from wading positions and from a boat (where too deep to wade), (ii) using a GPS-linked sonar from a manned or remote-controlled boat. Survey at 1-ft contour intervals on 50-ft grid pattern.
  - 3. Bathymetric survey of selected habitat areas within the Pool to better define the boundaries and physical characteristics of the habitats. Survey at 1-ft contour interval at 25-ft grid patterns.
- D. Survey the "south woods" above the south bank of the Pool, tied to the Texas State Plane Coordinate System and to the City's GPS horizontal and vertical controls, to include:
  - 1. Topographic survey using standard GPS survey methods at 1-ft contour intervals on 50-ft grid pattern.
  - 2. Tree survey of locations, trunk diameters and tree species of trees with diameters of 4 inches or greater. Tag all trees.
- E. Survey Barton Creek Floodplain downstream of the downstream dam
  - 1. Use COA and/or LCRA existing GIS database for topographic and aerial photographic information to be used for the hydrologic and hydraulic analyses of the watershed runoff and of the discharge from the Pool for the design of the dam and site improvements. GIS data should encompass the entire contributing watershed of Barton Creek from the Pool downstream to the Colorado River.
  - 2. Perform field surveys using normal GPS survey methods, tied to the Texas State Plane Coordinate System and to the City's GPS horizontal and vertical

controls, at critical hydraulic control points along Barton Creek from the dam downstream to the Colorado River to confirm and supplement the existing GIS data; to delineate floodplains, land rights tied to specific ground elevations, critical environmental features, critical water quality zones; to provide detailed topography at the existing downstream dam site for design of dam improvements; to provide detailed topography at the proposed downstream dam site for design of dam improvements at 1-ft contour intervals at 50-ft grid patterns; to locate the alignments and grades of existing above-ground and buried infrastructure and utilities that might be impacted by the improvements. Locations of field surveys will depend upon final design and land rights acquisition requirements.

3. Set permanent benchmarks on the Eliza Spring and Sunken Garden concrete structures. Tie benchmarks to the Texas State Plane Coordinate System and to the City's existing GPS horizontal and vertical controls.

F. Survey to locate existing property and easement lines along Barton Creek, extending from the upstream extent of the 100-year backwater created by the improvements to the pond dam(s) to the downstream extent of improvements to the existing dam or to spring run from Sunken Garden, whichever is further downstream.



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## ALGAE REMOVAL

### 1. INTRODUCTION

Floating algae is creating a nuisance within the Pool up to about eight months out of the year. Prevailing winds usually drive the algae to the south bank of the Pool. The City desires a temporary or permanent system whereby the algae can be collected and removed from the pond with a method that is not labor intensive and that minimizes disruption of the public's use of the Pool. The City reported success with a temporary half pipe system



mounted to the south retaining wall. The following sections describe temporary and permanent systems to remove algae.

## I. TEMPORARY ALGAE REMOVAL SYSTEMS

### A. DEWATERING BAG

A dewatering bag system to remove algae consists of a portable, gasoline-powered trash pump and a filtration sock (dewatering bag) on the discharge end of the pump. Algae is siphoned from the Pool surface through the suction pipe of the pump and is filtered from the water as the water flows through the filtering cloth of the dewatering bag. This method is commonly used on construction sites to filter turbid water. The filtered water (i.e. the filtrate) is allowed to flow back into the Pool or is discharged into Barton Creek downstream of the Pool's dam. Point source pollution control regulations may dictate the receiving body of the filtered water. To minimize the labor requirements of moving the pump, the hoses, and the dewatering bag, up to four portable systems are provided to be located anywhere along the banks of the Pool.

The dewatering bag system requires maintenance of the pump its gasoline generator power source, requires set up and dismantling of the system for each use, and requires disposal and replacement of the dewatering bag after each use. However, this system has the lowest initial cost to implement.

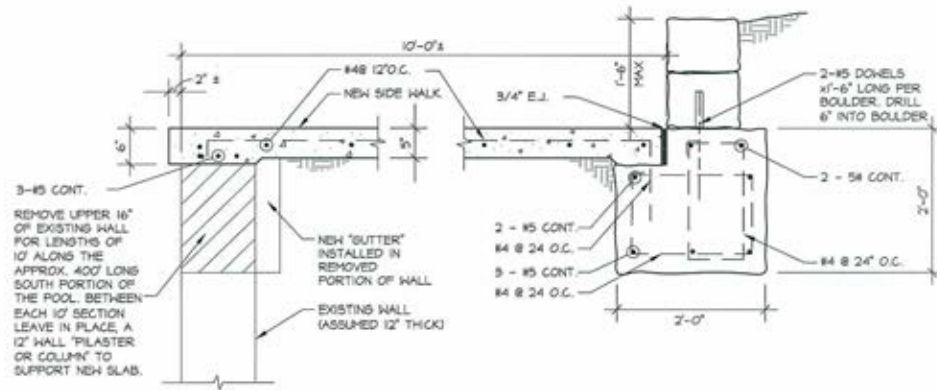
### B. TEMPORARY SKIMMER SYSTEM

A temporary skimmer system to remove algae consists of 350 feet of a removable/adjustable gutter that is temporarily mounted by brackets along the south bank of the Pool. The gutter is a pipe with openings along its crown to allow water to flow into the gutter. The gutter can be dismantled and removed by City staff hand labor from the support brackets without the use of a crane. The removable support brackets are attached to the south bank wall by threaded inserts. Algae is removed from the Pool as the algae-laden water flows into the gutter and is directed by gravity flow or by pump to a filtering screen and then discharged either back into the Pool or into Barton Creek downstream of the Pool's dam. Point source pollution control regulations may dictate the receiving body of the filtered water. As water levels fluctuate within the Pool, the gutter level can be vertically adjusted at each support bracket to maintain a sufficient flow of water (with algae) into the gutter.


In the course of planning team discussions, questions were raised about the structural capacity of the sidewalk along the south edge of the Pool. Typically, sidewalks are designed to a 200 pounds/sq. ft. standard. But for sidewalks near the water's edge like this one, the soils below them are frequently washed out, leaving them considerably more fragile. In a conversation with a contractor experienced in these situations, 56 pounds/sq. ft. was offered as a reasonable planning assumption. The following excerpt from an August 15, 2007 e-mail is a response from Byron Hicks, P.E. to an inquiry about reasonable planning assumptions for bearing capacity, and in particular, does 56 pounds/sq. ft. seem reasonable:

*Some of the typical roll-off dumpsters are about 8'-0" wide by 22'-0" long, and contain four separate point loads. Yes, we can distribute the loading for each hopper by utilizing wooden skids or large plates at the point loads. This should be OK on the south sidewalk.*

Thank you,  
Byron Hicks, P.E.  
Jaster-Quintanilla, Structural Engineers



*A permanent algae skimmer was one of the concepts the planning team was asked to explore. Because of cost and the disruption to pool operations the construction would cause, this idea was not further pursued.*

 <b>J Q</b> JASTER-QUINTANILLA & ASSOCIATES, INC. CONSULTING ENGINEERS 1408 WEST SIXTH • SUITE 100 • AUSTIN, TX 78703 512 474-8894		PROJECT		BARTON SPRINGS POOL	
		CLIENT		LIMBACHER & GODFREY ARCHITECTS	
REF.	REV.	DATE	SHEET		
		07/31/07	XS-1		

The temporary skimmer system requires the initial fabrication and installation of the support brackets, slotted pipe, structural inserts for the brackets, filtering system, and discharge system. Each installation and dismantling of the pipe sections may be difficult without lifting equipment. The structural integrity of the south bank wall must be confirmed to be able to receive the structural inserts for the support brackets. This system requires dismantling after each use. The initial fabrication and installation cost of this system is less than the cost of a permanent skimmer system, but has a greater cost than the dewatering bag system.

## II. PERMANENT ALGAE REMOVAL SYSTEM

The permanent skimmer system consists of 350 feet of a stainless steel trough that is mounted underneath the south bank walkway deck (see the Jaster-Quintanilla section).

The trough is configured to allow fluctuations in Pool levels up to about 4 to 6 inches below normal level. The flows within the trough are directed by gravity flow to a filtering screen and then discharged either back into the Pool or into Barton Creek downstream of the Pool. Point source pollution control regulations may dictate the receiving body of the filtered water.

The permanent skimmer system is configured based upon the following general principals:

- a. Wind drives the floating algae over to the south bank to the gutter.
- b. The gutter will have ½” to 1” diameter openings in a vertical plate against which the Pool’s water surface will lap. The openings must be small enough so that the flow rate through the holes is not so great that the gutter behind the vertical plate overflows. The vertical plate with holes must have sufficient height (about 5’ to 6”) so that most normal Pool water levels will always be in contact with the plate.
- c. Even though the holes in the vertical plate will be small enough to limit the flow rate into the gutter, the velocity of flow going through the holes must be fast enough so that the algae will either be sucked through the holes into the gutter or will be filtered on the face of the vertical plate.

In order to install the permanent stainless steel trough, 350 feet of the existing south bank concrete deck, rock retaining wall, and top 16 inches of Pool wall must be removed. The new reinforced concrete deck would cantilever over the trough, thereby hiding the trough under the outer lip of the deck. After constructing the new 10 foot wide deck walkway, the 18-inch high rock retaining wall would be rebuilt back in place.

The permanent skimmer system is the most costly of the algae removal systems and requires the greatest amount of modifications and alterations to the Pool’s south bank wall. Since this system is a permanent system, it will not require removal after each use.



*Recirculation along North Bank Estimated Costs*

<i>Recirculation</i>	<i>444,500</i>
<i>Subtotal</i>	<i>444,500</i>
<i>Contingency (25%)</i>	<i>111,125</i>
<b><i>TOTAL</i></b>	<b><i>\$555,625</i></b>

*These estimated costs include construction costs, professional fees, administrative and soft costs and a factor for price escalation.*

*A careful reading of the bullet points in this report reveals that the solution described does not provide recirculation for the entire "Beach" area. In a subsequent communication, the report's author describes the kinds of challenges this idea is likely to face:*

*The flow rate that can be discharged from the spring over to the north bank is limited by the flow rate coming out of the spring (to some degree), but mostly by the pipe sizes from the pump to the north bank area. I assumed a flexible 3-inch diameter pipe would be used if it is laid across the bottom of the Pool. Assuming a pumped flow velocity of 20 feet per second (which is too high) being pushed through the pipe, only 1cfs can be pumped through the pipe. In reality we would probably design the 3-inch pipe to carry a velocity of only 10fps, which would result in a flow rate of only 0.5cfs. A 6-inch diameter pipe could carry about 2cfs (900gpm) at a velocity of 10fps, but 2cfs is still not enough flow to cover the 8,200sf area (410ft by 20ft). I suspect that the flow rate needed to cover the 8,200sf area with at least 1/2fps velocity spring water might approach, or even exceed the flow rate of the spring.*

*John King, PE*

## RECIRCULATION ALONG NORTH BANK HABITAT

### I. INTRODUCTION

The City desires to re-circulate water from the deep portion of the Pool to the submerged habitat along the north bank of the Pool to simulate stream flow as reasonably as possible.

### II. ASSUMPTIONS

The following assumptions were the basis of the cost estimate to provide re-circulation flows:

- The source of water for re-circulation purposes would come from the deep part of the Pool at its southeast corner. Water would be pumped by up to 3 submersible pumps at a total rate of about 2cfs (880gpm).
- Water would be pumped through a flexible 6-inch pipe over to the north bank area and connected to a 6-inch dia. steel header pipe. The diameter and length of the two 6-inch dia. pipes and the maximum allowable flow velocity in the pipes (about 10fps) would control the pumping rate (i.e. 880gpm).
- 20 flexible 1.5-inch dia. hoses would be connected on one end to the header pipe and on the other end to 20 submerged spray nozzles. The flow rate through each hose and nozzle would be about 0.1cfs (i.e. 44gpm).
- The maximum discharge velocity at the opening of each spray nozzle would be about 5fps so as not to scour the gravel surface.
- The minimum flow velocity would be 1/2fps, which would define the outer limits of the effectiveness of each spray nozzle simulating flowing stream water. At a flow rate of 0.1cfs (44gpm) this effective flow area would extend about 3 feet out in front of each nozzle, covering an area of about 2.3 square feet per nozzle with flow velocities between 1/2 to 5fps.



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## TURBIDITY REMOVAL

### I. INTRODUCTION

Following a flood, City staff uses high pressure fire hoses and brooms to clean the shallow end of the Pool. The turbid, muddy water within the Pool is concentrated within a confined area and a trash pump is used to pump the turbid water from the Pool into the deck drains. The discharge of the turbid water creates a potential point-source pollution discharge into Barton Creek downstream of the Pool's dam. It can take up to 20 hours to discharge about 240,000 gallons of turbid water from the Pool with the City's existing resources. The following section discusses a temporary system that can be used by the City to filter the turbid water before it is discharged into Barton Creek within one day.

### II. DEWATERING BAG

A dewatering bag system to filter turbid Pool water consists of a portable, gasoline-powered trash pump and a filtration sock (dewatering bag) on the discharge end of the pump. Turbid Pool water is siphoned from the Pool through the suction pipe of the pump and is filtered from the water as the water flows through the filtering cloth of the dewatering bag. This method is commonly used on construction sites to filter turbid water. The filtered water (i.e. the filtrate) is allowed to flow back into the Pool or is discharged into Barton Creek downstream of the Pool's dam. Point source pollution control regulations may dictate the receiving body of the filtered water. To minimize the labor requirements of moving the pump, the hoses, and the dewatering bag and to minimize the time required to discharge 240,000 gallons of turbid water (i.e. discharge the volume within one day), four portable systems (each with 150gpm capacity) are provided.

The dewatering bag system requires maintenance of the pump and its gasoline generator power source, requires set up and dismantling of the system for each use, and requires disposal and replacement of the dewatering bag after each use.





*This document was prepared by Austin Energy. AE is a public entity, and not a consultant to this team. Nonetheless, their analysis provides useful background information for planning purposes, so is included here. The diagram indicates potential locations for rooftop solar collectors. Note the influence of nearby trees.*

*In a July 18, 2007 e-mail, Austin Energy also supplied the planning team with the following analysis:*

*We figure that each square foot of solar water heating collector can furnish approximately 400 gallons of hot water per year, or on average 1.09 gallon per day. The summer will of course be higher than the annual average and the winter lower. During June through August the average would be about 1.4 gallons per day per square foot of collector. So if you could use all 3400 square feet for solar collectors, figure a little over 4000 gallons per day of 140 F water.*

*Mark Kapner  
Senior Strategy Engineer  
Strategic Planning Group  
Austin Energy*

*Tom Green & Company Engineers, Inc.*

Barton Springs Pool Bathhouse Master Plan  
Austin, Texas  
Feasibility Study Phase MEP Systems Description  
December 21, 2007

A. General:

1. Presented herein are descriptions of current concepts for the mechanical, electrical, and plumbing (MEP) systems for the Bathhouse and Pool area renovation. These represent our current understandings of the overall project scope and systems approaches.
2. In general, the existing building will be remodeled and brought up to current codes to accomplish at least two purposes: restoration and renovation of a historically significant “landmark” structure; and revitalization for current and anticipated uses in a sustainable, energy conserving, and water conserving manner.
3. This preliminary report is intended as a platform for discussion and review so that MEP design evolution and convergence can proceed.
4. Recommendations for MEP system are based on information obtained from City Utility maps, conversations with Parks and Utility company personnel, and limited site observations. No record documentation on the existing facility was available.

B. Applicable Standards and Codes:

1. International Building Code – 2003 Edition
- 2.\* Uniform Mechanical Code – 2003 Edition with City of Austin Local Amendments
- 3.\* Uniform Plumbing Code – 2003 Edition with City of Austin Local Amendments
4. International Energy Conservation Code – 2003 Edition
5. International Fire Code – 2003 Edition with Appendixes B, C, D, and E



6. NFPA 13 – Installation of Sprinkler Systems
7. NFPA 54 – Natural Fuel Gas Code
8. NFPA 70 – National Electrical Code - 2005 Edition with Appendixes A through E
9. NFPA 90A & 90B – Standards For Installation of HVAC Systems, 2002 Edition
- \* International Mechanical and Plumbing Codes are being considered for adoption by the City of Austin. If such is accomplished or clearly scheduled at the onset of design, the applicable codes will be adjusted for design phases of the project.

C. Mechanical Systems Description:

1. Heating, Ventilating, and Air Conditioning (HVAC) Systems: Various system types have been considered for this facility. These considerations have included sustainability features inherent within the systems. These considerations have also recognized that mechanical cooling and heating components will serve only a small part of the overall facility, and that special performance needs (such as dehumidifying large quantities of ventilation air) are not likely to be encountered.

Two primary candidates have emerged from these systems considerations. The following are descriptions of the characteristics of each candidate, including overview discussions of pertinent advantages and disadvantages of each.

- a. Air Source Heat Pumps (ASHP): This system is a conventional approach. It consists of an indoor heat pump unit with backup electric heat and a remotely located air-cooled outdoor heat pump unit (condensing unit). Units are available with dual compressors or two stage compressors and with variable speed indoor fans. These features provide improved load matching and energy savings. Indoor units will require mechanical rooms or accessible attic/ceiling space for mounting. External low velocity filter enclosures will be provided where space can be made available.

A system “desuperheater” option can also be applied that provides domestic water pre-heating from the compressor waste heat. This option also improves the cooling operation efficiency of the air-cooled heat pumps.

A single unit may serve several rooms of the Bathhouse that have common use and/or exterior exposures. Ductwork may be routed in ceiling spaces/furr

downs or as exposed double wall ductwork. An accessible remote area will be required for each outdoor unit.

This system type has an energy efficiency rating (EER) of up to 14 (a seasonal energy efficiency rating –SEER– of up to 21). It is one of the lower first cost options.

- b. Ground Coupled Heat Pumps (GCHP): This system is somewhat less conventional than the ASHP system. GCHPs consist of an indoor unit with an integral compressor and a water-cooled condenser. The condenser has refrigerant on one side and re-circulated water on the other. The recirculated water uses the ground for its heat sink. Therefore, the outdoor units (condensing units) do not exist in this system.

Instead, the heat exchange part of the outdoor units (condensing units) is replaced with piping in the ground (hence the term “ground coupled”). Although other forms of this ground-coupled piping can be used, the normal and more economical form is to use boreholes.

The boreholes are basically wells approximately 280 feet deep and 15 to 20 feet apart, in which a piping loop is installed from the top to bottom and back to the top. Hence, the piping is a closed system, not extracting water from nor pumping water into the ground. The void spaces in the borehole around the pipe are filled with a material to allow the ground to absorb or reject heat as required. This fill material also serves as a well plug to prevent communication through the borehole from one strata to another. Approximately ten to fifteen boreholes would be needed for this system.

Permits for drilling the boreholes are required to be obtained from the Barton Springs/Edwards Aquifer Conservation District. Although permits have not been obtained at this time, it is not expected that the District would disallow drilling of boreholes. Based on available information from the Barton Springs/Edwards Aquifer Conservation District, and local bore-hole drillers experienced with drilling in the area, we have reasonable confidence that vertical bore holes are achievable without environmental impact.

The GCHP indoor units are potentially noisier than ASHP systems due to the compressor being located in the indoor blower unit. A small hum or buzz of the compressor is often noticeable through the unit casing. Therefore, design

would need to consider unit locations and would need to implement features to address sound concerns. This issue is not expected to be a major concern in this facility.

The GCHP system can achieve EER ratings up to 24, provided sufficient boreholes are included. This system can also be purchased with an optional desuperheater heat exchanger at the indoor unit to preheat domestic water. Due primarily to the boreholes and the related piping and (small) pumps, the GCHP system is a higher first cost system than the ACHP system. Depending on site and geological conditions, this added cost is roughly \$1,500 to \$2,500 per ton of cooling.

For GCHP systems, the added costs of both design and construction are typically counterbalanced by their higher efficiencies. Given this balance and the Owner's stated preference for the GCHP system, it is judged that the GCHP system is preferable to the ASHP system for this project. If the energy savings features of this GCHP system (rather than the feature of not having outdoor condensing units) are of primary concern, appropriate energy modeling should be performed in the Schematic Design phase to confirm acceptable energy performance and payback.

2. Pretreated Outside Air/Dehumidification systems: A pretreatment system for outside air (ventilation air) may be advisable to acceptably pressurize the building during cooling seasons. If so, a small dedicated outdoor air system to cool and dehumidify ventilation air should be included. The need for this system will be partly dependent on the number of doors and operable windows in the conditioned space, the expected frequency of doors operation (opening, closing), and other air sealing conditions in the building envelope. This outdoor air system could be arranged to use a heat sink (air or ground) consistent with the overall system.
3. Air Distribution: Air distribution will consist of rigid sheetmetal ducts with external duct insulation and flexible ducts for concealed installations. If exposed ducts are needed, double wall ductwork will be used. Acoustical liner will be utilized in select ductwork for sound attenuation.
4. Exhaust air will be drawn from bathrooms using ceiling and/or roof mounted exhaust fans. Electronic/programmable time clocks with manual overrides will control on/off operation. If natural ventilation of restrooms can achieve the required

ventilation, exhaust fans will not be required.

5. Thermostats will be programmable electronic type with remote sensing if needed for the particular application. Direct digital controls (DDC) are not expected to be needed for this facility.

D. Electrical Systems Descriptions:

1. Bathhouse:

- a. The existing 480 volt, 350 amp electrical service to the Bathhouse is of adequate size to serve the building. However, the service must be relocated to accommodate the new outdoor women's toilets. The equipment has also served most of its useful life. For these reasons and to extend the life of the completed project, the feeder and panels will be replaced and relocated. Conduit/wiring within the building will also be replaced, as it is old and haphazardly routed .
- b. Lighting on and with-in the building and will be replaced with current technology energy efficient lighting.

2. Site:

- a. The existing overhead wiring around the Pool will be removed and replaced with underground wiring. (This wiring currently serves two Pool lighting circuits and one Pool cleaning circuit, as well as the old emergency communication system).
- b. To facilitate the removal of overhead wiring, a new electric service will be brought to the south side of the Pool from Robert E Lee Street (600 ft) to serve south side lighting and power. This service will be sized at 300 amps, 120/208 volts, 3 phase to allow the addition of a small south side bathhouse in the future.
- c. At seven pole locations on the north side of the Pool and four locations on the south side, additional/new underground circuits will be provided for pool cleaning equipment. Two 50 amp 3 phase circuits and six 30 amp 3 phase circuits will be provided at each pole. All will be ground fault protected.
- d. To provide electric service for a new high pressure cleaning pump, the existing Bathhouse service disconnect at the concession building will be replaced with

a panelboard. A circuit will be taken underground from the panelboard to the pump location.

- e. New tree mounted downlighting will be provided for the new accessible path to the Pool from the south side entrance.
- f. Existing pole mounted lighting for the Pool will be replaced by Austin Energy. Hinged metal poles are recommended to allow maintenance without Parks Department personnel having to climb poles.
- g. Tree mounted downlighting will be provided at the Zilker ponds and at the Sunken Gardens to allow safer stair travel.
- h. A new wireless emergency communication system will be provided at the Bathhouse and lifeguard locations for use of Pool lifeguards.

## E. Plumbing Systems Description

### 1. Utilities

- a. General: Site utilities to the building will include sanitary sewer, natural gas and city water for domestic, landscape irrigation, pool cleaning and fire protection services. These utilities are to be provided as part of the civil construction to a coordination point near the building, typically to a point five feet from the building line.
- b. Sanitary Sewer: The existing sanitary sewer piping will, in general, be abandoned in place. A new 6" building sanitary sewer will connect to a city manhole located in the parking lot approximately 50' north of the building (near the northwest corner). It is anticipated that this manhole will have to be rebuilt and that the 6" branch from it to the City sanitary main will have to be replaced. The City sanitary main is a 42" line located in the parking lot and in William Barton Drive.
- c. Storm Sewer: Current Utility maps do not indicate any storm sewer system on site, although there are curb inlets in the parking lot and a diverter valve on the outdoor shower drains, indicating that there is a private storm sewer system. Neither a new city system nor an expansion of the existing system is anticipated or planned at this time. (See also rainwater collection system description below.)

- d. City Water: The existing 4” service will be capped at the service tap. New 6” city water service will connect to the 6” city main located in the parking lot directly north of the building. This combined main will provide water for fire protection and domestic services. (A separate tap will be provided for landscape irrigation service, designed by others.) Metering will be as described in “E.2.d” below. (The approximate load is 250 GPM for fire protection, 130 GPM for domestic, including water for drinking fountains located on site.) Below grade piping will be ductile iron pipe.
- e. Fuel gas (natural gas): There is currently no fuel gas service on the property. New fuel gas service is to be provided by the serving utility (Texas Gas). The load is roughly 300 CFH (allowance of 200 CFH for the building water heating and 100 CFH for future). This preliminary estimate does not include the concession stand load, as that facility is not within the scope of this feasibility study.

## 2. Interior Plumbing Systems

- a. General: Evaluation of modern plumbing systems include not only aesthetics and convenience but also water conservation, energy conservation, maintenance, protecting the health of the public and the individual, and how the selection of materials impact the environment.
- b. Sanitary Waste and Vent Systems: The existing sanitary waste and vent system below slab will be abandoned in place except where new waste piping will be run, and then the existing will be removed. The existing above slab waste and vent system will be removed. New fixtures will be connected to a new building drainage, waste and vent system. Sanitary waste and vent piping within the building will be hubbed cast iron pipe below grade and no-hub cast iron pipe above grade.

The current intent for the building is to have only the water closets, urinals, and mop sink to be connected to the sanitary waste and vent system. All lavatories, drinking fountains (within the building), and showers will be connected to a new greywater system (see system description below). The overflow from the greywater system will be connected to the sanitary sewer outside the building.

- c. Storm/Roof Drainage Systems: Currently there is a combination of roof

drains to a private storm sewer system and sloped roofs to surface drainage. Currently the open air showers have a diverter valve that are controlled by a weather indicator, in that when it rains, a signal is sent to divert the water going through the drain to be diverted to the private storm sewer system. It is recommended that a rainwater collection system be considered for the building. (Refer also to section E.2.h for more information.)

- d. Domestic Water System: The existing domestic cold water system will be disconnected upstream of the existing meter and capped. New domestic cold water system will connect to the water service utility indicated in part “E.1.d”. A new 2” domestic water meter will be located in a ground vault outside of the building. The new building service will be routed from the meter vault to the building. Since static pressure is assumed to be above 80 psig, a pressure reducing station will be needed at the building entry. All existing domestic water piping in the building will be replaced (or, if not accessible, abandoned).

It is presumed at this time that the building is not located in a flood plain. If it is later determined that the building is located in a flood plain, then a reduced pressure zone backflow preventer will be provided on the domestic water service.

Cold water distribution piping will be type “L” copper with lead free solder joints insulated with ½” fiberglass insulation (2” if subject to freezing temperatures). Some means of freeze protection will need to be provided, and this feature will be developed as part of the design. Presumed methods will include locating piping in heated enclosures/chases, heat tracing, drain-down, and insulation with or without other passive measures.

- e. Fuel Gas (Natural Gas) System: Natural gas will be required for domestic water heating and for possible future needs. Preliminary location for the water heater is in the existing mechanical room. The fuel gas piping system will be constructed of schedule 40 black steel pipe.
- f. Plumbing Fixtures: Existing fixtures will be removed and new fixtures provided. Fixtures and equipment will be connected to domestic water systems and will be provided with backflow/back siphonage protection using air gaps, backflow preventers (double check or reduced pressure as required) or vacuum breakers.

Water closets will be wall mounted low consumption (1.6 GPF) flush valve type. Stainless steel type are recommended for durability and for greater resistance to damage due to freezing.

Urinals will be low consumption (0.5 GPF) flush valve operated type. Stainless steel type are recommended for freeze protection and for durability and for greater resistance to damage due to freezing.

Lavatories will have 0.5 GPM metering operated faucets. Cold and hot water will be provided to lavatories. A point of use mixing valve will be required at each lavatory. P-traps will be insulated for freeze protection. Heat tracing may be considered.

Shower heads will be low flow (1.5 to 1.75 GPM). Shower valves will be pressure and temperature balancing type with fail safe to cold, and high-level limit stops set at 110 degrees F. Provisions for draining shower columns will be provided for freeze protection.

- g. Water Heaters: It should be anticipated that the water heaters would provide a minimum of 140 degrees F hot water. This temperature is needed for confident protection from bacterial influences.

The existing water heating source is a combination of a small (single panel) and old solar water heating system with an electric storage tank water heater supplementing during periods when solar heating cannot meet demand. This system will be replaced with a higher efficiency solar water heating system supplemented by heat recovery from HVAC system desuperheaters. A high efficiency gas water heater will be provided for periods when solar heating and heat recovery cannot meet demand. The water heater will be a gas-fired condensing type with relatively high capacity (199MBH input).

- h. Landscape Irrigation: The existing landscaping irrigation system will be replaced. Existing drinking fountains will be removed from the existing system and will be provided with a separate potable water source.

A rainwater collection system planned as a supplemental irrigation water source. The cistern would be located underground at the site of the recently-abandoned lift station and/or in cisterns located in the Men's and Women's Dressing areas. Size and configuration of a rainwater collection and distribu-



tion system will require further study.

- i. Pool Washdown System: The existing pool cleaning process uses both Pool and City water, and high pressure sprays to clean the Pool bottom and sides. The spring flow is diverted and the Pool is, in general, drained during this process. The environmentally sensitive areas of the Pool are separated and protected during the spray cleaning.

Once the spray cleaning is complete, the Pool is rinsed using water pumped from the upstream side of the dam. Portable pumps and fire hoses are used for this rinsing. When the source water for the pumps becomes too cloudy to be used as rinse water, city water is used to complete the rinsing process.

The new cleaning system will provide for permanent pump(s), pipes, valves, and connections as needed to accommodate the rinsing process without the need for portable pumps and extended length hoses. The new, permanent pump(s) will be skid mounted in a new small pumphouse on the site. An underground pump discharge manifold with 2 1/2" hose connections on roughly 50' intervals along the Pool length is anticipated. The new cleaning system will also seek means of further minimizing the need for city water in the rinsing process. Ductile iron pipe is expected to be used for the permanent piping.

A new 4" water connection will extend to the washdown system to serve as the city source rinse water. Two 4" extensions will route to the 6" city supply in the parking lot north of the building. Coordination with the City water department is required to determine exact location and water meter size.

- j. Fire Protection Systems: Currently there is not a fire suppression system. Due to the historic significance of the structure, it is recommended that an automatic wet pipe fire sprinkler system be provided for all enclosed/heated spaces. (This recommendation is included in the opinions of probable costs offered in a section/exhibit below). The sprinkler control valve would be located within the Exhibit area.

Below grade piping will be ductile iron pipe. Above grade piping will be schedule 40 black steel.

- k. Greywater System: A Greywater system will be provided for flush water (water closets and urinals) and possibly for landscaping irrigation. Greywater will be

collected from the lavatories, drinking fountains (within the building) and the showers. Drainage piping from these fixtures will be piped to a small septic tank. This water is pumped through an appropriate treatment system and stored in a holding tank. The treated water is piped back into the building to the flushvalves at the water closets and urinals. The holding tank has a make-up domestic water line for back-up. Overflow from the holding tank is piped to the sanitary sewer. The septic tank and small lift station will be located underground on the west side of the building, while the holding tank, pump, and treatment system will be located remotely, north of the Zilker Hillside Theater. Preliminary sizing indicates that the holding tank will need to be approximately 6,000 gallon.



## INITIAL TREE ASSESSMENT

The goal of the initial tree assessment was to evaluate the kind and condition of the trees in the Barton Springs area in order to have a clearer idea of the general condition of the tree canopy. It was not intended to provide conclusive information about the condition of any particular tree; but rather was intended as a planning tool, to establish how much attention the existing trees needed, and, generally, how many additional trees might need to be planted.

A professional tree survey, locating and identifying all the trees in the project area, does not exist. Some trees in the Sandbox Grove area had been tagged as part of another project. However, the base plan prepared for the project team by LGA included most trees, and the rest were located using aerial photos. After that, each tree was assigned an identifier: “Front01” for the first tree identified in front of the Bathhouse. No identifying tags were affixed to the trees. Each tree was then measured at about 4’ above ground to establish its caliper size. The team Landscape Architect then assessed each tree, on a one through five rating scale, with one being a tree in excellent condition, of a type that can be expected to survive in good condition for many years, and five being a tree that appeared to be severely compromised and that should be considered for removal. The classifications are as follows:

- 1 Great condition, long life expected
- 2 Good condition, of a variety that may not have a long life, or may tend to become hazardous
- 3 Compromising factors apparent, that can be expected to effect longevity or tendency to become hazardous
- 4 Should be assessed, to minimize the potential for hazard
- 5 Compromising damage apparent

That assessment was then confirmed, tree by tree, with Certified Arborist Chris Poth of the

Tree Clinic. It is important to note that both the initial survey and the confirming survey were done from the ground, visually, using no special equipment.

An appropriate next step would be a Hazard Tree Assessment, in which the mechanical stability of the trunk and scaffold branches are assessed. This assessment would be appropriate for all trees in areas of heavy pedestrian activity, and especially for all of the older pecans. Another appropriate assessment technique would be a Root Crown Examination, for any significant tree that will have any modification - such as paving, excavation, or utility work - undertaken beneath its canopy. In general, because of the size and visibility of the project, further assessment and evaluation of the trees at Barton Springs should be undertaken by a nationally known expert.

***CONDITION OF EXISTING SHADE TREES***

<i>IDENTIFICATION</i>	<i>KIND</i>	<i>SIZE</i>	<i>CONDITION</i>	<i>NOTES</i>
Front 01	Pecan	32"	4	
Front 02	Yaupon	6"	1	2-2" trunks
Front 03	Pecan	34"	4	
Front 04	Pecan	29.5"	4	
Front 05	Pecan	26"	4	
Front 06	Pecan	16"	3	
Front 07	Pecan	4"	2	
Front 08	Pecan	10"	2	
Front 09	Pecan	31"	4	
Front 10	Pecan	4"	3	
Front 11	Pecan	8"	2	
Front 12	Pecan	6"	4	
Front 13	Pecan	6"	3	
Front 14	Cottonwood	45"	4	
Front 15	Chinese Tallow	12"	3	
Front 16	Yaupon	6"	1	3-6" trunks
Front 17	Pecan	8"	4	
Front 18	Crepe Myrtle	5"	4	
Front 19	Pecan	11"	2	

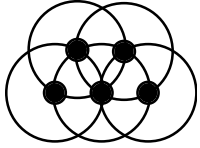
<i>IDENTIFICATION</i>	<i>KIND</i>	<i>SIZE</i>	<i>CONDITION</i>	<i>NOTES</i>
Front 20	Chinese Tallow	26"	4	
Front 21	Crepe Myrtle	4"	3	3-4" trunks
Front 22	Pecan	12"	3	
Front 23	Crepe Myrtle	5"	1	7-5" trunks
Front 24	Crepe Myrtle	4"	1	3-4" trunks
Front 25	Pecan	22"	3	
North Creek 01	Pecan	24"	4	
North Creek 02	Pecan	42"	4	
North Creek 03	American Elm	6"	4	
North Creek 04	American Elm	8"	3	
North Creek 05	Hackberry	6"	4	
North Creek 06	Pecan	30"	4	
North Creek 07	American Elm	6"	4	
North Creek 08	American Elm	12"	4	
North Creek 09	American Elm	14"	4	3 trunk tree
North Creek 10	Hackberry	8"	4	
North Creek 11	American Elm	10"	4	3 trunk tree
North Creek 12	Cottonwood	20"	4	
North Creek 13	Sycamore	10"	3	
North Pool 01	Pecan	34"	3	Survey 156
North Pool 02	Pecan	2"	4	Weedeater damage
North Pool 03	Pecan	8"	3	
North Pool 04	Pecan	6"	3	
North Pool 05	Pecan	8"	3	
North Pool 06	Pecan	6"	4	
North Pool 07	Maple	4"	3	Weedeater damage
North Pool 08	Pecan	36"	3	
North Pool 09	Cninquapin Oak	6"	4	
North Pool 10	Pecan	32"	3	
North Pool 11	Walnut	14"	2	

<i>IDENTIFICATION</i>	<i>KIND</i>	<i>SIZE</i>	<i>CONDITION</i>	<i>NOTES</i>
North Pool 12	American Elm	44"	4	
North Pool 13	Elm	4"	4	
North Pool 14	Pecan	1"	2	
North Pool 15	Pecan	2"	2	
North Pool 16	Pecan	1"	1	
North Pool 17	Pecan	1"	1	
North Pool 18	Pecan	30"	3	
North Pool 19	Pecan	40"	5	
North Pool 20	Pecan	19"	2	
South Entry 01	Pecan	42"	3	
South Entry 02	Pecan	31"	4	
South Entry 03	Pecan	31"	3	
South Entry 04	Pecan	31"	3	
South Entry 05	Pecan	38"	3	
South Entry 06	Pecan	31"	3	
South Entry 07	Pecan	28"	3	
South Entry 08	Live Oak	10"	2	
South Entry 09	Monterrey Oak	8"	1	
South Entry 10	Burr Oak	8"	2	
South Entry 11	Live Oak	6"	1	
South Entry 12	Live Oak	6"	1	
South Garden 01	Pecan	35"	3	
South Garden 02	American Elm	34"	4	
South Garden 03	Cottonwood	33"	3	
South Garden 04	Pecan	30"	4	
South Garden 05	Pecan	37"	4	
South Garden 06	Pecan	30"	3	
South Garden 07	Pecan	23"	5	
South Garden 08	American Elm	8"	3	
South Pool 01	Cottonwood	25"	4	

<i>IDENTIFICATION</i>	<i>KIND</i>	<i>SIZE</i>	<i>CONDITION</i>	<i>NOTES</i>
South Pool 02	Cottonwood	38"	3	
South Pool 03	Cottonwood	24"	5	
South Pool 04	Pecan	14"	3	
South Pool 05	Pecan	16"	3	
South Pool 06	Pecan	10"	3	
South Pool 07	Chinquapin Oak	2"	1	
South Pool 08	Pecan	24"	2	
South Pool 09	Pecan	37"	2	
South Pool 10	Cedar	35"	1	Registered
South Pool 11	Pecan	34"	4	
South Pool 12	Pecan	38"	2	
South Pool 13	Pecan	20"	3	
South Pool 14	Pecan	23"	3	
South Pool 15	Pecan	35"	2	
South Pool 16	Pecan	32"	3	
South Pool 17	Mimosa	24"	5	
South Pool 18	Pecan	48"	4	
South Pool 19	Pecan	35"	2	
South Pool 20	Pecan	34"	3	
South Pool 21	Pecan	30"	3	
South Pool 22	Pecan	33"	3	
South Pool 23	Pecan	10"	4	
South Pool 24	Hackberry	12"	5	
South Pool 25	Mimosa	2"	4	
South Pool 26	Burr Oak	2"	2	
South Pool 27	Pecan	2"	2	
South Pool 28	Pecan	2"	2	
South Pool 29	Chinquapin Oak	6"	1	
South Side 01	Pecan	56"	4	
South Side 02	Mulberry	12"	4	

<i>IDENTIFICATION</i>	<i>KIND</i>	<i>SIZE</i>	<i>CONDITION</i>	<i>NOTES</i>
South Side 03	Elm	12"	3	
South Side 04	Pecan	34"	3	
South Side 05	Pecan	42"	3	
South Side 06	Pecan	26"	3	
South Side 07	Pecan	37"	3	
South Side 08	Pecan	33"	3	
South Side 09	Pecan	32"	3	
South Side 10	Pecan	28"	3	
South Side 11	Pecan	17"	4	
South Side 12	Pecan	36"	3	
South Side 13	Cottonwood	18"	5	
South Side 14	Live Oak	10"	1	
South Side 15	Hackberry	6"	5	2 trunk tree
South Side 16	Pecan	42"	3	
South Side 17	Pecan	19"	2	
South Side 18	Pecan	37"	4	
South Side 19	Pecan	50"	3	





“Professional Irrigation Design and Consultation”

## **SRI and ASSOCIATES**

July 17, 2007

Re: Barton Springs Site Visit - July 3, 2007

I met on site with Carolyn Kelley, L.A., Angel and Lark who both work with the City of Austin. Angel and Lark are responsible for the maintenance of the irrigation system in the Pool and park area. The main purpose of the meeting was to identify the limits of the irrigation within our scope of work. Then, we wanted to know from talking and observing how functional the existing systems are. We also wanted to identify existing water sources.

Irrigation as-build plans were requested. The only plans received were some original drawings Sheets 2 and 3. Sheet 2 shows the hill side theater area irrigation and Sheet 3 shows the play ground area, down around Eliza Spring and up to the back side of the concession building. Our assumption is that the hill side (Sheet 2) irrigation appears to be somewhat similar to the original design. The irrigation system shown on Sheet 3 in the play ground and Eliza Spring area appears not to exist any more. This is what I was told. We know that the playscape area has been redesigned and rebuilt. Our assumption at this point is that the irrigation system was abandoned at that time of construction of the new playscape.

The systems are operated by automatic irrigation controllers. The controllers remain off and do not have a preset automated schedule of operation. Angel and Lark are instructed by Dick Finnigan when to turn on the controllers. They are operated semi-automatically. A complete cycle (group of sections on that controller) come on and in sequence irrigate. Once the cycle is complete, then another cycle doesn't automatically come on but rather needs someone manually to start the cycle. This process is due to the frequent schedule of events that happen in this area of the park.

The source of water for the irrigation systems inside the Pool, hillside theater area and the parking lot area above comes from two water meters. We looked at the 4" water meter on the south side of the Pool area near the parking area on that side. It appeared to be a 4"

meter. From that water meter, a 4" line supplies water to the south side areas outside of the Pool area and inside of the south side Pool area. It continues, attached to the dam crossing over to the north side of the Pool. They then believe it comes up into the playground area and at that point it continues up into the hillside and parking lot areas above the Pool parking lot. There is an isolation valve near the train track inside the playground area, which when cut off, turns off the area on the north side of the Pool. This valve does not shut down all the way. It apparently can't be repaired because Angel and Lark have never been able to locate the meter up in the parking lot north of the playscape. When the south meter is cut off they still have water in the 4" main line. Therefore, the assumption is made (with a fair degree of certainty) that the main lines are connected and somehow being fed by the two meters. This mainline also is reported to feed the drinking fountains and bath house and the McBeth Recreation Center. Let me note that the water feeding the drinking fountains and the bath house should be potable water. The irrigation main line water is not potable water. This is a code violation and should be corrected immediately.

From the isolation valve in the playground area, a 4" main line feeds into the north side of the Pool. This main line continues inside along the bottom of the hill and feeds several automatic irrigation control valves operating the irrigation in this area. It also feeds (4) four fire hose connections. At the west end of the Pool the main line turns and goes up the hill (north). Originally, the 4" main line served one last section inside the Pool, the area west of the Bathhouse outside the Pool, and all the irrigation in front of the Bathhouse and in the plaza area over to the concession stand. We were told that when the sidewalk on the west end was put in to meet ADA requirements, the irrigation main line was redone in this area, and no longer continues outside the Pool fence. Inside the Pool area, the very last (west end) rotor section is not providing head to head coverage. Angel stated that the main line was downsized to 2" prior to this last section valve. There is an apparent restriction in the main line because you can hear it. The sound appears to be coming from the point where the 4" main reduces down to a 2" main.

The irrigation controller (Hunter Pro "C" – 12 station) is located inside a room on the corner of the building. We observed the operation of several of the rotor heads on the north side of the Pool. The head spacing appeared to be appropriate providing head to head coverage. The pressure was very good, possibly above the head pressure needed. There were spray heads located down on the far east of the hill up on top. These were mixed between plastic and mostly brass pop-up heads. I was told that the planting beds along the back of the building had no irrigation system in them.

As we came around the west end of the building on the side and into the front, I was told that at one time there were two sections that operated in this area. It was also noted that the drip sections in the planting beds around the front of the bath house were not operating. Angel stated again that when the sidewalk was installed on the west end, the irrigation main line did not get extended under the sidewalk and reconnected to the main line providing water to these two side sections and the drip sections in the planting beds. I was told that there is no existing irrigation system around the concession stand area and over into the Eliza Spring Area.

On a previous site visit we had the opportunity to talk with the manager of the hill side theater. When asking him about the irrigation schedule he stated he had never seen it work and as far as he knew it didn't. When we met in this area with Angel and Lark, they both said that the controller (Rain Dial Irritrol Plus – 12 Station) was not automated and they operated only when requested. When we located the irrigation controller, we found it behind some shelves, covered up. We had to move the shelves out to get to the controller. It therefore appears that this system doesn't operate very often. I was told that most of the time repairs were made due to large mowers and/or vehicle traffic on the grass area causing damage to the system. I observed some of the sections operating. They were all rotor heads and the head spacing seemed to be appropriate with the heads providing head to head coverage. The pressure was very good, possibly above the required head pressure needed. I was told that the main line (2 ½") runs along the middle of the hillside. Most of the valves, if not all, are 2" in size covered with some sort of a valve box. The last row of heads near the top of the hill are approximately forty feet from the rock ledge areas on top of the hill. Thus, there are dry spots along the top edge of the hill and within the rock ledge areas. There is no irrigation on top of the rock ledge that irrigate into this area. The area at the very far west end of the hill where the drive curves up and out of the parking lot we are told has had no irrigation since it was installed. It was also stated that there is an area above the stage that has irrigation that does not come on. They have not been able to locate a section valve to repair.

We then proceeded over to the south side of the Pool area. We didn't get to turn on any sections inside the Pool due to rain. We located the 4" water meter which feeds from the south side. We also located a 2" meter which provides water to the football field. The football field, if maintained, is maintained by volunteers of the league. There is a controller on a telephone pole near the field which operates the irrigation. There is a baseball field on the east side of the parking lot which also is maintained by the league volunteers and has its own separate irrigation system. I have been told that this system has not been operating for

at least the past 5 years.

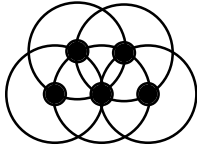
The 4" main line proceeds down and crosses the dam. There is a point of connection for the 2 ½" main line inside the fence on the south side of the Pool with a 2" isolation valve just inside the chain link fence. There are Toro valve-in-head sprinklers installed in the south Pool area. I was told that the heads provide head to head coverage. The irrigation controller (Hunter Pro "C") which operates these heads is located in the guard shack.

I was told that the open field area between the street and up to the fence of the Pool once had Quick Coupler Valves which were used with impact heads. The irrigation in this area is not functional at this time. It is not clear why: perhaps the main line was capped off and there is no longer water in this area.

In summation, we have identified which areas do not have any irrigation; which areas have existing irrigation that is non-functional at present; and in spot checking, which areas seem to have a functioning irrigation system. We do know that for the most part the irrigation systems installed were installed from a range of twenty to thirty or more years ago.

The controllers operate on a semi-automatic schedule. Maintenance is scheduled out of need and not on routine schedules. Most of the maintenance issues are repairing broken off solenoids, broken heads, and broken pipes usually caused by vehicular and/or large maintenance equipment. We also were made aware of the fact that several years ago they had up to twelve or more people on staff who were capable of working on the sprinkler systems. There are presently two people on staff that work on the irrigation systems.

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### IRRIGATION

#### Existing Irrigation

Irrigation is a requirement for planting in Austin. It can be someone holding a hose or an automatic irrigation system, but plants here only occasionally survive planting without supplemental water. In the Barton Springs area, with its heavy use and attendant soil compaction, few seedlings of existing vegetation become established. Most vegetation that becomes established without irrigation in the Barton Springs area is not desirable: ragweed, hackberries, nandina, ligustrum, and poison ivy.

Watering newly planted vegetation by hand can take a long time, and often does not provide the deep soaking required. Using water tank trucks is an alternative for areas fairly close to pavement. In general, however, for extensive lawns like exist at Barton Springs, and extensive planting, automatic irrigation is required. For native and naturalizing plants, irrigation is generally considered required for the two years it takes for plants to become established. There are few plants that do not benefit from occasional watering during dry periods, particularly plants that grow in the generally compacted soil of heavily used parkland.

Automatic irrigation systems, however, are not maintenance free. Heads can be damaged by the heavy trucks that bring scenery to the Hillside theater, or by vandalism, or in a thousand other ways. The number of licensed irrigators maintaining PARD irrigation systems has been dropping steadily over the years, and there are now two licensed irrigators responsible for all irrigation in PARD facilities. This trend is not expected to change in the foreseeable future.

Automatic irrigation systems have been installed over the years throughout the Barton Springs area. Irrigation has been installed and apparently abandoned throughout the South Fields, in the Sandbox Grove and around Zilker Playscape. There are recently functioning irrigation systems within the Pool fence and on the slope around the Hillside Theater. Those irrigation systems were installed between fifteen and thirty years ago. Only

the irrigation system within the Pool fence is still used on a regular basis.

We have not found construction documents of the irrigation system within the Pool fence. There are construction documents for the Hillside Theater area and the Zilker playscape area, but in the playscape area, enough construction was done after the irrigation system was installed to make the drawings obsolete. Because there is no documentation, it is impossible to say with certainty how the irrigation systems are laid out. It appears, however, that all these irrigation systems on the north side of the Pool are served by a water meter in the South Fields, through a pipe strapped to the downstream dam, and perhaps also by a meter north of the playscape, through a looped system.

There is the possibility that the same water lines are providing irrigation water and potable water to park restrooms and drinking fountains. Park facilities like restrooms and drinking fountains require potable – drinkable – water. A water line that provides water for irrigation cannot also provide potable water because of the risk of contamination. With an old, complex system that has been expanded and modified, and is not documented, the risk of cross-connections must be addressed so that the City is not exposed to any public health liability.

Because irrigation technology and efficiency has improved greatly in the last fifteen years, and because we have limited information about the construction of the existing system, it is likely more cost effective to replace the existing system, rather than attempt to update it.

Finally, in this parkland celebrating springs, and bordered by a creek and a lake, all irrigation water is potable – drinking water – provided by the City of Austin. There are several possibilities for replacing all or part of the landscape irrigation in the Pool area with alternative water sources, that will be described below.

The goal of this master plan is to minimize permanent irrigation, while providing sufficient temporary irrigation to establish naturalizing plants and trees, and to replace potable water in irrigation with alternative water sources, where possible. Irrigation systems should support the landscape goals for the springs area: lawns only where they are used, diversified native/naturalized plantings in other areas, and a diversified tree canopy throughout. Lawns where people sit, that are shaded or are planned to be shaded, should have permanent rotor or spray sprinkler head automatic irrigation. Shrub and perennial beds should have spray or drip irrigation for at least the first two years, and a quick coupler valve close enough to provided emergency supplemental water when needed. All newly planted trees should have temporary bubblers or drip irrigation, or be close enough to pavement to be

watered for two years by a water truck, or be in an area with automatic turf irrigation.

#### *Alternative Water Sources*

Several alternative sources of water for irrigation are possible in the Barton Springs area: lake water, creek water, graywater and rainwater. While limiting the use of City water and making the irrigation system more sustainable, none of these are considered potable water, and each would increase the hazard posed by possible cross-connections in the existing system. Therefore, before any alternative water sources are installed, the issue of possible cross-connections must be resolved.

Several sources of non-potable water are worth exploring as sources for irrigation water. One of these would be to use raw Town Lake water, from the existing pumping system that provides irrigation water to the Zilker soccer fields on the north side of Barton Springs Road and is currently being upgraded to improve its volume and pressure. This would require piping under Barton Springs Road, and extending a main irrigation line south to the Pool area. A second alternative source of landscape irrigation water would be to pump water directly from Barton Creek on either the upstream or downstream sides of the lower dam. A third alternative is to collect rainwater from the Bathhouse roof and store it in cisterns for irrigation use. A fourth alternative is to treat the water used in the Bathhouse showers and store it in cisterns for irrigation use.

The first, second and fourth alternatives – pumping water from Town Lake or from Barton Creek or using greywater – are potentially complex both in terms of regulation and in terms of engineering, and should be the subject of a separate study. The third alternative, harvesting rainwater, will not provide much irrigation water, because the roof area from which to collect is not large. It could, however, be a fairly simple system, with water collected from the Bathhouse roofs in small cisterns at the west end of the Bathhouse and used for drip irrigation in the Bathhouse perimeter planting beds.

#### *Irrigation Within the Pool Fence*

The irrigation system within the Pool fence currently works, and appears to offer close to complete coverage of the lawns in the Pool area. It appears to be around fifteen years old, and there are no ‘as-built’ drawings. Because of that, it is difficult to resolve the cross-connection question. The system is also, because of its age and maintenance, likely to be inefficient. We recommend that, when an alternative source of landscape irrigation water is identified, the area within the Pool fence be provided with a newly designed efficient irrigation system using non-potable water.

#### *Tree Court*

Automatic irrigation for the new trees installed in the Tree Court should be part of the new Pool irrigation system. New large caliper trees should not be installed in the Tree Court without automatic irrigation; partly because it is impossible to water larger trees adequately without slow drip irrigation, and partly because the surrounding soil is so compacted that a high rate of runoff from higher volume water would be expected.

#### *Emergency Irrigation*

We recommend that, when an alternative source of landscape irrigation water is identified, quick coupler valves be installed throughout the park, within 100 feet of any areas that will have tree or other planting. This will allow plants to be watered on an emergency basis if required.



# APPENDIX C

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## MEETING NOTES

The planning team held many meetings with stakeholder groups, neighborhood groups and interested citizens throughout the course of the development of the project. Four Town Hall public meetings were held, and public presentations were made to the Parks and Recreation Board, the Environmental Board, the Joint Subcommittee of the Parks Board and Environmental Board, the Historic Landmark Commission, the Design Commission, the Planning Commission and the City Council. Preliminary review and information meetings were held with regulatory officials as the master plan concepts were developed. In addition, there were periodic meetings with City staff through the course of the project.

The attached meeting notes are included for additional information. The meeting notes are organized in to two categories - stakeholder meetings, including public meetings and presentations, and meetings with regulatory officials.

# STAKEHOLDER GROUP MEETINGS

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## *Friday, February 16, 2007, Stakeholder Group*

*Attendees: FBSP/swimmers-Robin Cravey, Steve Barnick, Molly Bean, Suzanne Mason, COA/WPDRD-Nancy McClintock, Laurie Dries, COA/PARD-Farhad Madani, Tom Nelson, LGA-Al Godfrey, Laurie Limbacher*

The purpose of the meeting was for PARD to introduce the project and LGA to the Friends of Barton Springs Pool (FBSP), who had worked to get funding committed to the care and maintenance of the pool and the master plan project.

FBSP was started about a year ago and has worked to raise awareness about the cleaning of the pool and the care and maintenance of the facilities. They have advocated for funding for this and the Council passes a resolution last fall authorizing funding on an ongoing basis. They envision implementation of master plan projects in a timely way, recognizing that phasing of work will be required. In the short term, they are working with staff on a pool operations manual.

LGA has been reviewing the list of tasks they are to study in the master plan, and asked the attendees for their personal sense of prioritization on these tasks. The following tasks were mentioned in this discussion:

- Renovate the existing Bathhouse, restoring the original entry
- Add small bathhouse at south gate
- Relocate overhead electrical to underground
- Solar power for lighting
- Tree maintenance and care
- Upgrade fencing
- Upstream, downstream dam modifications
- Restore Eliza Spring, enhance salamander habitat
- Restore salamander habitat at Sunken Garden

PARD will set up a group stakeholder meeting to go over the master plan project, inviting representatives of Save Our Springs Alliance

(SOS), Save Barton Creek Association (SBCA), Hill Country Conservancy (HCC), other stakeholders.

## *Tuesday, March 6, 2007, Multiple Stakeholder Groups*

*Attendees: SOS-Colin Clark, FBSP/swimmers-Robin Cravey, Grant Thomas, Debby Gardner Molly Bean, Sarah Searcy, COA/WPDRD-Nancy McClintock, David Johns, Laurie Dries, Tom Ennis, COA/PARD-Farhad Madani, Tony Arnold, Tom Nelson, Sarah Macias, Mark MacDougal, LGA-Al Godfrey, Laurie Limbacher*

The purpose of the meeting was to review the analyses and tasks LGA has been asked to complete in the course of preparing the Barton Springs Pool Master Plan.

A draft power point presentation, illustrating the analyses and tasks to be done, was presented and discussed. Comments on the draft as presented were as follows:

- Stakeholders: Add the adjacent neighborhood associations, Zilker NA and Barton Hills NA, to the list. Invite City of Rollingwood to the public hearings.
- Regulatory Oversight: Include the TCEQ and the Barton Springs/Edwards Aquifer Conservation District HCP on this list.
- Farhad reported that the utility department (is this Austin Energy?) has made a commitment to replace the exterior site lighting. LGA would like to be involved in the process of selecting and locating the proposed fixtures. FBSP would also like to be informed of what is proposed.
- Schedule: Tony added that the goal for the end of May is to have all the needs identified, with preliminary budget numbers for all.
- Boundaries: The group discussed the extent of the area to be included in this study. It is to include the pool and the Bathhouse (generally the area within the existing fence line), the area above the north parking lot that includes the Rock Garden/Zilker Pools, the

south grounds, and the area around the Bathhouse entry. There will also be recommendations made for the area around Eliza Springs.

- Public Meeting locations: All agreed it would be best to have them near the pool, if possible. Suggested locations included the Zilker Clubhouse and the Zilker Hillside Theatre. Also, all agreed that the meetings should be in the evenings, so people wouldn't have to take off from work to attend.
- Goals Statement: Consider including an overall goal to return the pool back to its former glory. FBSP members want the pool to be kept clean.
- Tasks: This should include the need to engage in a process for public input.
- Buildings: There is some termite damage that need to be addressed. The building rehabilitation, improvements and additions should incorporate sustainable building practices and technologies, such as rainwater collection, green roofs and water conservation. The proposed new South Gate bathhouse will be a small, modest building. It needs to be located to avoid the flood plain. A suggestion was made to use composting toilets in this building.
- The group discussed concerns about operational issues. Grant suggested that attention be paid to staffing and leadership issues in the operation and maintenance of the Pool. He cited an example of a condition of watering/lawn maintenance that took quite a long time for staff to address. A suggestion was made to reward staff for taking initiative, and to develop a set of standards for maintenance. The group discussed the pool operations manual, being developed by PARD and FBSP, which is intended to address this issue. Debby noted the potential for an organizational problem, with two different departments involved at the Pool, yet acting separately. She cited an example of difficulty in finding annual report data, and expressed concern about maintaining the 10A permit and coordination between the two departments. She is most concerned that the Pool be cleaned regularly and properly. These will be ongoing issues, and may be best addressed in an effort independent of this master plan process.
- Colin suggested that a website or a webpage on the COA website

be created for Barton Springs Pool, to keep people informed of the master plan effort.

- Colin noted that there is a great deal of interest in an arts project at the site. He knows of an artist who very much wants to work at the springs. Any forthcoming projects at the site will include an Art in Public Places component, which will give the opportunity for this kind of arts project.
- Grounds: Nancy suggested that the dog park area be included in the master plan effort. Robin suggested that the concrete apron at the dog park also be included.
- Pool Environment: Tony noted that the flow studies referenced here would likely be completed by others, as a future effort.
- Pool Infrastructure: Colin asked about the possibility of installing fish ladders on the downstream dam. Nancy noted that this might be best determined as a species-based issue: the fish species in the creek don't need fish ladders.
- Additional Studies: The BS/EACD HCP is still in progress, so the evaluation of those recommendations can only progress to a certain point. Call this section something different than "Additional Studies". Perhaps "Algae Control Strategies" would be a better heading to use. Perhaps include a review of a drawbridge element at the downstream dam. Also, the master plan will not address relocating the downstream dam.
- A suggestion was made to include improvements in the educational and interpretive aspects of the site. The bat displays at the Congress Avenue bridge are a good example of educational/interpretive displays. An outdoor, interactive computer for educational information is another possibility. The current maintenance complex building might be a good location for interpretive and educational displays, and an expanded food operation. (The maintenance complex is to be relocated in the near future, and the existing building will be available for new uses. It is part of the National Register district, and the interpretive/food use might be a good one.)
- A suggestion was made to add a hot tub at the site.
- A suggestion was made to improve the signage within the park directing people to the Pool. Currently, there is only one sign and it

is not very evocative or visible.

- A suggestion was made to provide some (or more) times when people can use the Pool without an admission charge. This may require special action by the Parks Board and the Council, and may not be a master plan item.

The group asked for copies of the power point presentation, in order to review it with members of their respective groups who could not attend today. To avoid confusion, the copies will be conspicuously marked as “draft”, and will be revised in accord with the discussions today prior to distribution.

It was noted that the master plan is a conceptual design process, and the images prepared during this effort may not reflect what might actually be constructed in the future. The conceptual design recommendations will be further refined and developed in future implementation phases.

The group discussed the public hearing process a bit more. A suggestion was made to have some materials available for previewing on a COA website, prior to the meeting. Also, it may be useful to devise a way to receive comments via the website, in addition to comments made during the public hearings.

The next standing PARD/WPDRD joint staff meeting is set for Wednesday, March 14, at 2:30 pm (or 3:30 pm) at the PARD Board Room. The group will discuss the building program for the Bathhouse, old and new. Also, as WPDRD is already preparing their budget items, the group will further discuss budgets for “additional studies”.

*Wednesday, April 11, 2007, Technical Stakeholder Group: Barton Springs Salamander Scientific Advisory Committee, US Fish & Wildlife Service, Barton Springs/Edwards Aquifer Conservation District*  
*Attendees: BSS SAC-Tom Wilcox, Joe Martin, USFWS-Will Amy, BS/EACD-Brian Hunt, COA PARD-Tony Arnold, Tom Nelson, Mark MacDougal, COA WPDRD-Tom Ennis, Ed Peacock, David Johns, Laurie Dries, LGA-Al Godfrey, Laurie Limbacher*

The purpose of the meeting was to hear a presentation from members of the Barton Springs salamander Scientific Advisory Committee regarding modifying the dams to alter the flow regime in hopes of reducing

sediment and nuisance algae accumulations, uniting the spring runs by removing the downstream dam and enlarging the Pool in hopes of enhancing salamander habitat, collecting more biological and hydrological data and hiring a full-time conservation biologist for the site. A draft memorandum describing these proposals, still under review by the members of the Scientific Advisory Committee, was presented to the group.

Discussion included:

- It seems like moving the dam and enlarging the Pool will create a bigger spot for sediment to settle in, making the conflict between sediment and salamanders worse.
- Permitting for new dams is hard to do.
- It is not clear how, or if, salamander movement among the springs would take place.
- Some types of algae form in swift flowing water.
- The maximum operational flexibility of a dam is limited.

All agreed that more information is needed before these proposals can be further studied. Most important is hydrodynamic modeling to study the impact of dam modifications on the flow regime. The master plan project is an opportunity to identify scopes for studies to assist in these efforts. The Scientific Advisory Committee will provide additional information to the planning team for these studies.

*Saturday, April 14, 2007, Friends of Barton Springs Pool Membership Meeting*

*Attendees: FBSP-approximately 50 members, LGA-Al Godfrey, Laurie Limbacher*

Mr. Godfrey summarized the scope of work on the master plan project and noted the upcoming Town Hall Meeting about the master plan project. FBSP comments included:

- Putting the overhead wiring underground would be a visual improvement.
- Tell the story of the place in historic photos.
- Don't allow a south bathhouse to encroach on the hill overlooking

- the Pool. Keep it outside the current fence line.
- Restore Eliza Spring. Keep the flow levels stable, to facilitate pool cleaning.
- Consider upstream baffles to catch debris, before it stops up the bypass tunnel inlet.
- Consider a request in the 10(a) permit to open the downstream dam gates in times of flood to reduce silt build up.
- Eliza Spring was once called the Polio Pit.

*Monday, April 16, 2007, Public Hearing/Town Hall Meeting #1*  
*Attendees: See sign-in sheet on file with PARD*

The meeting was a public hearing to provide information about the proposed scope and content of the Barton Springs Pool Master Plan project.

Introductory remarks were made by Farhad Madani, COA PARD, Nancy McClintock, COA WPDRD, and Tony Arnold, COA PARD. The purpose of the meeting was to hear from the public about the BSP MP project.

An informational presentation on the site and the MP project was given by Laurie Limbacher and Al Godfrey, LGA. The presentation was illustrated with images projected on the monitors in the meeting room. A handout with a list of study tasks included in the MP project was provided. Comment sheets were provided, and the web address of an informational website and the email address for public comment were presented.

The floor was opened for questions. Comments were as follows:

- Peter Steinhardt: How was the task list developed?
- Colin Clark, SOS: Suggests that educational materials be enhanced, including interpretive signage. Also signage to direct people to the Pool. There should be increased vertical signage at the site, but it should emphasize that one is entering a place of nature. The Splash exhibit is a little tucked away, so may want to publicize more about it. He is in support of improvements to the flow regime in the Pool. Suggested posting USGS data at the Pool site, showing current flow, turbidity, etc. (A person from the audience offered the comment

that they were against the signs.)

- Mark Nowaki: Suggested consideration of the Pool as a marine park, which should be addressed as an ecological system. Supports increasing the size of the Pool and increasing the size of the park. Suggested the use of native and adapted plant species, in lieu of things like ligustrum, which are found on the south side of the Pool. Perhaps a green area devoted to prairies and meadows. Concerned about tree care and maintenance. Small trees are being installed as replacement trees, but need to use big trees for this. Maybe relocate trees from the median on Barton Springs Road, where bigger trees were installed. Suggested the use of wild rice of San Marcos in the water.
- Robin Cravey, FBSP: Regular swimmer at the Pool, member of FBSP. Thrilled that the project is underway, thanks to all the COA staff, Council and City Manager. Concerned about the maintenance of the trees, which are in bad shape. Overhead wires are an eyesore and dangerous, would like to see these go underground. Supports renovation of the historic Bathhouse. The more contextual projects, like the Zilker Ponds, are good projects, but would prefer to focus on the Pool area first.
- Ron Whaley, Sierra Club: His primary issue is to maintain the water quality. Take care of the species. Like the Bathhouse, but prefer to do the Pool first. Love the idea of restoring Eliza and reconnecting it to the Pool/creek. Zilker Ponds are nice, but not a priority. Also, need to go beyond the Pool proper -- consider a fertilizer ban. (A person from the audience offered the comment that the water was crystal clear just 7 years ago.)
- Pam Thompson: Don't want to change the character of the Pool with new signs. Don't cut down existing trees, or at least let people know before it's done so that they can commune with or document the tree before it is removed. Emphasize the water quality issues, testing and the SPLASH education facility. Provide a solar shower in the Men's dressing area. Don't add new buildings or change the south entrance path - the dirt is fun for kids. Concerned about Eliza Spring work, but supports putting the water in the Pool, if possible to do without changing the temperature. Don't have an

operable downstream dam - no motors or remotes.

- Steve Barnick, FBSP: Have spent a year volunteering at the Pool during clean ups. Maintaining adequate maintenance of the site, including associated staff and equipment costs, is a big issue. This is not an easy process, as the Pool conditions change regularly with flow, flood, drought cycles. Need a metric or a device to measure pool cleaning processes. Agree with having USGS information at the site in real time, as the conditions change regularly.
- Steve Beers, swimmer: Need to deal with upstream development. The MP is a beginning, and an improvement over a previous effort when the salamanders were first listed as endangered and the bifurcation of the Pool was proposed. Likes the fundamental premise that both people and salamanders prefer clean water. More draw downs would help with this, but in low flow conditions may need to augment the flow by recirculating to allow for cleaning. Can the public access at Eliza be improved?
- Molly Bean, FBSP: Watched the progress of the gravel removal last fall for a frustratingly long time. There is a 15 year accumulation of gravel in the Pool, and about 1/3 was removed in this effort using vacuum tubes. May need to get the accumulation out with more aggressive methods, and then go back to the vacuum tube method after that.
- Robert Corbin, FBSP: About 7,000 cubic feet of debris to remove from the deep end-roughly two times the volume of the Council chambers. To lower Eliza Spring, need to keep the Pool levels high. Baseflow through the Pool to increase circulation through the Pool. Might like the idea of increasing the size of the Pool, and keeping the old dam as a footbridge. Change the caretaker and maintenance area into an educational facility.
- Karen Blizzard, FBSP: Impressed with the MP and stakeholder input. South bathhouse is needed - people do change under towels. Should be modest in scale, light, natural materials, accessible to people with disabilities. Keep the current open space at the top of the hill clear, and put the bathhouse toward the parking lot or near the woods. Should have a compatible look and feel with the north Bathhouse. Feels south bathhouse should have priority over north Bathhouse. Also, dislikes the idea of enlarging the Pool. The downstream area is one of the few places where people can swim with dogs, and should remain .
- Sarah Searcy, FBSP: Try to make this a green building showcase for Austin. Use native plants in the landscape, reduce the St. Augustine grass. Austin's greatest natural asset should be surrounded by other natural assets. Replace the chain link fence with wrought iron or other more attractive fencing. Capture rain water. Water quality in the Pool is a priority.
- Suzanne Mason, FBSP: Feels the process is going well, appreciates the work done to get to this point. Change can be scary, but can learn as a community. Keep lines of communication open, we can envision Austin together. Remember the relationship between upstream and downstream. Want to see the site treated as a living place, as a garden. Focus on the ecosystem, and avoid the temptation to laminate the park.
- Johnny Barnett, regular swimmer: Like the proposed flow improvements. Main concern on the south gate is to see it open all the time. Currently, doesn't open until 10 on weekdays and 9 on weekends. If you come before then, have to go all the way around. Maybe this change could happen now. Doggie Springs (downstream of Pool)-should maintain that, and keep some access that's free and allows dogs.
- Garrett Nick, SOS and swimmer: Agree with the south gate being open more. Main concern is to maintain springs and water quality. Upstream development is the key. Perhaps this plan can influence regulations on upstream development, and require developers to invest in the quality of the environment.
- Peter Steinhardt: The MP needs to emphasize community. The Pool is all about community. Suggests more benches and things like Philosopher's Rock. Pool suffers from poor management and maintenance. Need the MP for bigger views.
- Craig Smith, BS/EACD: Barton Springs/Edwards Aquifer Conservation District is currently developing a Habitat Conservation Plan. Their list of preferred methods does not include structural measures or the use of dissolved oxygen. BS/EACD wants to work

cooperatively with the COA on this MP.

- Haley Gillespie, graduate student, research assistant with BS salamander biologist: Renovations to structures are important, but may also want to add new facilities for scientific research at the site. Also, need more research on BS salamander.
- Mark Gentle, FBSP: Appreciates the work of Tom Nelson and the Aquatics staff in managing and maintaining the Pool. As part of this MP, is the drawdown schedule subject to revisions? (It was noted by Laurie Dries that the COA can ask USFWS for revisions to this schedule.) Suggests consideration of adjusting the number of drawdowns, increasing them, if these infrastructure changes are implemented. Need to study nuisance algae in the deep end, as well. Need to plan around drought conditions. Last year the “pond effect” took over the Pool, and heavy nuisance algae accumulations were bad for swimming.
- Dorothy Richter, FBSP: Related to drawdowns and cleaning, suggest that permission to open the gates in the downstream dam in times of flood would be good, letting debris and silt flow through the Pool instead of accumulating so much. (It was noted that the COA does have the authority to do this and has worked on a better process so that people at the site can open these gates.) Suggests some parking lot management, to keep runoff from coming in to the Pool. Suggests some upstream baffles, to catch debris before it gets to the bypass tunnel grate. A little concerned about creek water in the Pool.
- Robin Cravey, FBSP: To respond to earlier comment, FBSP is working on funding a graduate fellowship for study of Pool and water quality issues.

*Tuesday, May 8, 2007, Barton Hills Neighborhood Association Steering Committee*

*Attendees: BHNA-John Luther, Kimberly Erlinger, Clay, Eddie Torres, Dave Kemptner, LGA-Al Godfrey, Laurie Limbacher*

Mr. Godfrey summarized the scope of work on the master plan project and noted the upcoming public hearings about the master plan project. BHNA has dedicated funding for new landscaping around the Sunken

Garden. What is the timeline for the Sunken Garden work studied in the MP, and should they wait to install the new landscaping? Ms. Limbacher noted that this is only a master plan, and not a fully developed or permitted design or construction project. Also, master planning is ongoing, and it is not yet clear whether this would be recommended as a short term or a long term project. If any work does occur at Sunken Garden, it won't happen anytime in the next year.

The BHNA requested a presentation on the project during their next full membership meeting, in June.

*Thursday, May 10, 2007, Bathhouse User Group*

*Attendees: FBSP/swimmers-Robin Cravey, Steve Barnick, Sarah Searcy, COA PARD-Tom Nelson, Farhad Madani, LGA-Al Godfrey, Laurie Limbacher*

Dressing Rooms: The need for private versus open dressing facilities was discussed. In the Men's dressing, don't need as many private cubicles as are provided. In the Women's, the cubicles provided are not used, perhaps because many of them are too remote. Last year, 500,000 people used the facility. Need maintenance, and keeping things clean, which new staff people should address. In the Men's area, people usually need the length between two pylons to lay out, sit, change, etc. Amount of lawn is OK. In Women's more lawn and showers would be good. Both could use better (bigger, sturdier, more secure) lockers, hooks, benches, mirrors, shelves at mirrors. Open trash cans are OK. A full length mirror is desired. May want to have service functions in the dressing areas, like baskets and towels. PARD discontinued the basket service for liability reasons, and would probably not want to do that again. But, a towel service might be a good paid service, if patrons desire it. More hot showers in the Men's are desired. PARD would like for all the showers to be hot, as the building is rehabilitated. Also, more open showers desired - when the new showers were installed a few years ago, the number of heads was reduced from 4 to 2. At the showers, would like a shelf for soap or shampoo, and a bench and hook in the vicinity of the shower. At Stacy, there is a heated towel bar, which might be nice on cold days.

Toilets: In Men's, folks don't line up too much, unless one toilet is not in working order. In Women's, may need more toilets, although PARD

doesn't have complaints about this. The Women's toilet room needs refreshing, and is always damp. Study weatherizing all the fixtures in the Bathhouse. May want to do Men's toilets grouped in a room. Family/unisex facilities are desired on both sides. Baby changing tables are desired on both sides. PARD noted that the toilets do get packed during the summer, when groups of children come in for camps. There is a need for more restrooms in this part of the park, since the Bathhouse serves the Zilker Hillside Theater, the playscape, the trail and the picnic areas, in addition to the Pool.

Operations: More tool storage space is desired, maybe in a remote shed or in a south bathhouse, if one is done. At peak swimming times, there can be a long line at the entry, and it would be good to have 2 or 3 cashiers during these times. Communication to the life guards is done by walkie-talkie, which works well.

South Gate: If a bathhouse were to be added there, it might be a little bigger than the one at Stacy, and not as big as the one at Deep Eddy. Perhaps 4 toilets and 4 showers for women, 2 toilets and 2 urinals and 4 showers for the men, and a unisex family restroom, although this would need to be managed if it became attractive to transients. Space for a cashier and maybe a guard area. Storage for janitorial supplies, hoses, rakes, brooms, supplies, and a security system. Also, an information kiosk and interpretive signage. All fully handicapped accessible. Keep it out of the lawn area. Improve the walkway at the bluff, and make handicapped accessible if possible. Also control flooding that comes down the ravine into the Pool.

***Friday, May 18, 2007, Bathhouse User Group***

*Attendees: FBSP/swimmers-Robin Cravey, Steve Barnick, Sarah Searcy, COA PARD-Tom Nelson, Sarah Macias, Michael Adair, Clark Hancock. Lizette, COA WPDRD-Laurie Dries, LGA-Al Godfrey, Laurie Limbacher*

South Gate: A preliminary floor plan for a south bathhouse was presented. For shower stalls, prefer walls as the screen, and not curtains. Exterior access to the janitor closet, tool storage, is preferred. A conceptual path to the Pool was presented. Prefer to have both accessible path and "short cut" sections with stairs. Interest in graywater system, if

permissible in this location.

Existing Bathhouse: A preliminary scheme for rehabilitating the existing Bathhouse was presented. The scheme studied the insertion of a second level in the former basket room volumes, to incorporate space for classrooms while restoring the Women's dressing area and the original entry. For this to work the things stored in what is now attic space in these volumes (which is a code violation) need to be accounted for. Several options for this storage were discussed—a new building for storage on the site, carving out storage space in the dressing areas, or using the old bandstand enclosed space for storage. The group also discussed the possibility of using the ballcourt and caretaker's cottage as part of an educational facility. These spaces are currently used for maintenance operations, but these are slated for relocation sometime soon. The former basket room and entry areas in the Bathhouse could then be used as SPLASH, with some modernization of the exhibits, and as a visitor center for the park and Pool, including realtime information about the conditions at the Pool.

***Monday, May 21, 2007, City of Austin Historic Landmark Commission***  
*Attendees: City Historic Preservation Office staff, members of Historic Landmark Commission, general public in the audience and televised viewing, LGA-Al Godfrey*

Mr. Godfrey gave a brief illustrated presentation, summarizing the scope of work on the master plan project. A handout with a project summary, description of tasks and projected schedule for the MP project was provided. The web address of an informational website and the email address for public comment were presented.

***Tuesday, May 22, 2007, City of Austin Parks and Recreation Board***  
*Attendees: PARD staff, members of Parks and Recreation Board, general public in the audience and televised viewing, LGA-Al Godfrey, Laurie Limbacher*

LGA gave a brief illustrated presentation, summarizing the scope of work on the master plan project. A handout with a project summary, description of tasks and projected schedule for the MP project was provided. The web address of an informational website and the email address for public comment were presented.



***Wednesday, May 23, 2007, Austin Neighborhoods Council***

*Attendees: members of Austin Neighborhoods Council, general public in the audience, LGA-Al Godfrey,*

Mr. Godfrey gave a brief illustrated presentation, summarizing the scope of work on the master plan project. A handout with a project summary, description of tasks and projected schedule for the MP project was provided. The web address of an informational website and the email address for public comment were presented.

***Friday, May 25, 2007, Bathhouse User Group***

*Attendees: FBSP/swimmers-Robin Cravey, Steve Barnick, Sarah Searcy, COA PARD-Tom Nelson, Clark Hancock, COA WPDRD-David Johns, LGA-Al Godfrey, Laurie Limbacher*

Existing Bathhouse: A revised preliminary scheme for rehabilitating the existing Bathhouse was presented. The scheme included a restored entry and Women's dressing area, exhibit spaces including SPLASH and a park visitor center, and a family restroom. Overflow storage would go in the bandstand, and the classrooms would go to the ballcourt and caretaker's cottage area. The group asked to see more green space and a greater sense of openness in the Women's dressing area, and access to the family restroom from the Terrace.

***Tuesday, May 29, 2007, Save Our Springs Alliance staff***

*Attendees: SOS-Bill Bunch, Colin Clark, COA PARD-Tony Arnold, Tom Nelson, COA WPDRD-Laurie Dries, LGA-Al Godfrey, Laurie Limbacher*

Process: Suggestion to have meetings where all stakeholders can participate in the same meeting, and to have interactive meetings. One town hall meeting and several public hearings at boards and commissions have been held, with more to follow. PARD noted that this is a master plan, only. Any projects that might be implemented will have their own design and public process phases. This would include tree maintenance and removal work. Also, PARD has notified stakeholder groups of organizational and progress meetings on the master plan, and will continue to do so.

Scope: Suggestion to start with fixing what exists, before starting new ventures. Enhance the natural and cultural heritage, with displays,

signage, informational brochures. Mr. Bunch opposed to a south bathhouse, especially as a priority. Also feels that moving the dams would need a lot of study before an action. Suggestion to identify ways to reduce impervious cover and provide more parkland, such as trees along the path to the parking lot and trees around the parking lot. Suggestion for better signs to mark the Pool from city roads and park roads. More and better signage for SPLASH, and fill the vacant staff position for nature staff. Suggestion to have more staff at the south gate, or to use an electronic lock that allows unmanned access before the gatehouse is staffed, as is at main entry gate. New, more attractive fencing may be OK, but depends upon the specific fence. Need to include discussion of issues upstream of the Pool, when talking about water quality. Need to provide a way for fish to travel to and from the Pool-fish ladders (WPDRD noted these aren't effective with the species found here) or other dam modifications.

***Thursday, May 31, 2007, Polar Bear swimmers***

*Attendees: Polar Bears-Karen Kreps, Ralph Webster, Ann Bower, Francis Fisher, Robin Cravey, Mary Warren, Ginny Rohlich, Steve Barnick, Mary rohlich, Nancy Hancock, Scott Cook, COA PARD-Warren Struess, Farhad Madani, Tom Nelson, LGA-Al Godfrey, Laurie Limbacher*

PARD introduced folks and noted that the meeting is for swimmers to learn about the master plan. To date, there has been a town hall meeting, various stakeholder meetings, public presentations to boards and commissions, and an informational website and email address for public comment have been set up.

LGA summarized the scope of the work on the master plan project. A handout with a project summary and description of tasks was provided. The floor was opened to questions:

- Did someone give \$500,000 to PARD? Who? It was noted that the ACL Festival had given this sum, which was being spent on the soccer fields. Related to the Pool, the Council and City Manager have committed to \$500,000 per year.
- Opening the upstream dam to baseflow may be a conflict with the swimmers, as it is hard to swim against a current. This is proposed for operational flexibility, and to improve water quality. It won't be

used at all times.

- Who cleans the bypass grate? PARD does.
- Suggestion to prevent debris from coming in to the Pool from upstream, and open the bottom of the downstream dam to let through things that do get in. What was the result of the recent big silt pumping effort? Some was removed, but subsequent flooding moved material down the Pool.
- Current gates in the downstream dam can be raised and lowered with relative ease, in comparison to the old gates.
- If lower dam can be opened to allow debris to pass through Pool, then upstream dam work might not be needed and staff time for cleaning might be reduced.
- There is some heavy drainage down the south hillside, and this is the first filthy water that comes in to the Pool in a heavy rain event. This should be addressed. The accessible walkway is intended to address this.
- Keep the Pool opened to the public as much as possible. Concern that extensive periods of work will close the Pool. Already concerned about closings during flood periods.
- Most morning swimmers have no interest in a south side bathhouse. Other swimmers and Pool patrons do have an interest in it. Also, can be used when existing Bathhouse is rehabilitated. A south bathhouse needs toilets, for sure, but some did not feel the need for changing facilities. May also want to study something smaller than first presented.
- Suggestion for electrical outlets for computers at the Bathhouse. Others said they would rather keep cell phone and computer use at a minimum at the Pool. The Bathhouse should be just for changing and showering, and not an office environment.
- Suggestion for better food and hot coffee at the concession stand. Others suggested removing it completely.
- Suggestion for hand ball courts, horse shoe pits above the Pool, near the Bathhouse.
- Discussion of process for prioritizing projects and spending funds. PARD explained that the projects will be defined as short term or long term, with the short term projects being done first. In general

building and ground renovations will probably be short term projects, and water quality changes will be long term projects because there are further study and data gathering steps needed before these projects may be begun. Several swimmers noted that water quality is the highest issue, more important than Bathhouse renovations or improvements to the south gate. Water quality projects must be done with care to ensure that the salamander habitat is not degraded or damaged. Will first require flow modeling to study and inform the design of any modifications to the dams.

- Will there be other meetings for swimmers? Yes- large and small stakeholder group meetings, town hall meetings, presentations to boards and commissions. Members of FBSP suggested that folks get involved with that organization for information, as well.
- Written suggestions were provided by two swimmers who could not attend the meeting.

*Friday, June 1, 2007, Bathhouse User Group*

*Attendees: FBSP/swimmers-Robin Cravey, Molly Bean, Steve Barnick, COA PARD-Clark Hancock, Sarah Macias, LGA-Al Godfrey, Laurie Limbacher*

Existing Bathhouse: A preliminary floor plan, revised in accord with the comments made in the previous Bathhouse user group meeting, was presented. Preference for some private cubicles and some more open dressing booths in the Women's dressing area. Suggestion to add closets in the Visitor Center for chair and table storage.

South Bathhouse: A preliminary floor plan, reduced in size in accord with comments received from stakeholders, was presented.

Water quality, grounds suggestions: Much interest in flow regime revisions-provide maximum gate area in downstream dam, allow periodic baseflow through upstream dam, enable natural forces to clean the Pool. Rethink the bypass - can it be eliminated? Viewing platforms from the dams for Pool and creek. Rubberized surface treatment on concrete paving, a la Schlitterbahn. Native plants, trees for shade. Move diving board-choke point for lap swimmers. More social spaces for sitting and talking. Maintain natural beauty. Many of the recommendations

made in the Nuisance Algae Report, completed in 2000, have not been implemented.

***Friday, June 8, 2007, Stakeholder Group Meeting***

*Attendees: FBSP/swimmers-Robin Cravey, Molly Bean, Steve Barnick, Sarah Searcy, Susan Fein, Brian Leonard, COA PARD-Clark Hancock, Sarah Macias, Tom Nelson, Farhad Madani, LGA-Al Godfrey, Laurie Limbacher*

Existing Bathhouse: A preliminary floor plan, revised in accord with the comments made in the previous Bathhouse user group meeting, was presented.

Town Hall Meeting #2: Discussion to have an interactive meeting, for all interested stakeholders and participants, in conjunction with the free swim day in July. Hold this at the Pool, display information in the gallery before the town hall meeting, have a moderator for the town hall meeting.

Public presentations: Upcoming event at Austin Museum of Art, in conjunction with a photo exhibit of images taken at Barton Springs over the years. Will have a display table with information about the master plan and how to comment or become involved. Also upcoming presentations to the Environmental Board and the Barton Hills NA. Still awaiting reply from Zilker NA to schedule that meeting.

Dam designs: Without hydrodynamic modeling data, this work will remain very conceptual. Different types of gate configurations can be presented, to prompt public discussion.

Flood strategies: Susan and Brian expressed frustration that Pool must close in times of flood. Suggest raising upstream dam, much higher than the one or two feet mandate given to the planning team. Also, frustrated with time required to clean Pool after flooding. The group discussed the need to educate people on what must be done to clean up after a flood episode. Also, any increase in the height of the upstream dam must take in to account the potential for inundation of the upstream areas.

***Wednesday, June 20, 2007, City of Austin Environmental Board***

*Attendees: WPDRD staff, members of Environmental Board, general public in the audience and televised viewing, LGA-Al Godfrey, Laurie Limbacher*

LGA gave a brief illustrated presentation, summarizing the scope of work on the master plan project. A handout with a project summary, description of tasks and projected schedule for the MP project was provided. The web address of an informational website and the email address for public comment were presented.

Questions, comments from Environmental Board members:

- The time frame for completion is to present preliminary findings by the end of the summer, for possible action on short term projects in the city budget development.
- All of the proposed projects, should they be implemented, must be completed in accord with the USFWS permit requirements. Additional studies of the salamander habitat are recommended in this plan.
- The project is being done by the Parks and Recreation Department, and the Watershed Protection Development and Review Department is a member of the project team.
- Discussion of the latest salamander counts and the breeding program, noting about 180 Barton Springs salamanders and about 20 Austin Blind salamanders in recent counts.
- The changes in the flow regime are intended to increase water quality and enhance salamander habitat. Physical modeling will be done before things are further studied and any implementation might begin.
- A question was raised about how much revenue Barton Springs Pool generates, which PARD answered after the meeting.

Public comment was made by three people:

- Sarah Searcy, FBSP: Supports the master plan process, and the idea of short term and long term projects. Also supports more free days at the Pool.
- Steve Barnick, FBSP: Supports the process. Following the process by participating in many of the public meetings.

- Bill Bunch, SOS: Speaking for himself, not SOS. Concerned that the process has not brought people together, and can't see comments made by others. Encourage more meetings. Suggests priority on restoring the Pool, and not building new things around it. Against a south bathhouse, but do support new restrooms there. Suggests the priority projects should be things like the restoration of the Eliza Spring run, burying the power lines, enhancing the exhibits. The possibility of moving the dam is a very complex issue, and needs much more study. Need to get more people to the Pool, working with Capitol Metro. Need to provide additional access at the south gate, so folks can get in that way more hours of the day. Need a presentation to the Zilker NA. Emphasis should be placed on maintaining the natural environment. Also, upstream issues should be addressed before calling it a master plan.

***Friday, June 22, 2007, Stakeholder Group Meeting***

*Attendees: FBSP/swimmers-Robin Cravey, Steve Barnick, Sarah Searcy, COA PARD-Clark Hancock, Tony Arnold, Tom Nelson, Farhad Madani, Donita Hautman, COA WPDRD-Laurie Dries, LGA-Al Godfrey, Laurie Limbacher*

Brief reports were made on meetings with the City Historic Preservation Officer, the City Environmental Officer and the Development Assistance Center to go over the master plan projects.

Related to the meeting with the City Environmental Officer, the group discussed greywater systems studied in the planning effort. The leach field would be quite large. One possible location for this is the Polo Field area, which PARD is looking to irrigate. TCEQ regulations related to greywater are changing, and there may be a NPDES permit requirement associated with the USFWS 10(a) permit. Geothermal systems would be supported by Austin Energy as a demonstration project, but there may be concerns with habitat and performance issues.

Three different sized preliminary plans for a south bathhouse were presented. Related to public comments about the need for restrooms at the ball fields, PARD reported that there are restrooms at the ball fields, and they are quite far away from the Pool grounds. People walking and biking to the Pool need a restroom, and the general sentiment is

to continue to study a restroom/bathhouse closer to the Pool area. The landscaping and entry sequence in the preliminary plan struck the group as very appealing. The medium sized scheme, about 2,200 square feet, should be included in future presentations.

The Zilker NA has not responded to previous requests for a meeting time to present information about the master plan. LGA will contact them again, in hopes of setting a meeting soon.

WPDRD staff is working on criteria for hydrologic modeling data. Once these criteria are available, this will define the approach and assumptions to be used in the master plan. The group discussed water quality improvements that might be considered for short term projects, including removal of the gravel bar, new bypass inlet grate, new openings and gates in upstream dam, recirculation system and nuisance algae skimmer. WPDRD will ask other staff people - watershed engineer, geomorphologists - to attend a team meeting to further discuss these issues.

Town Hall Meeting #2 will be on July 14, an open house and community forum at the Pool. Arrangements for the event were discussed by the group.

***Tuesday, June 26, 2007, Barton Hills Neighborhood Association***

*Attendees: members of Barton Hills Neighborhood Association, general public in the audience, LGA-Al Godfrey, Laurie Limbacher*

LGA gave a brief illustrated presentation, summarizing the scope of work on the master plan project. A handout with a project summary, description of tasks and projected schedule for the MP project was provided. The web address of an informational website and the email address for public comment were presented.

***Thursday, June 28, 2007, Austin Museum of Art event***

*Attendees: patrons of Austin Museum of Art, general public in attendance, LGA-Al Godfrey*

LGA presented an informational slide show about the master plan and answered questions about the master plan. The web address of an informational website and the email address for public comment were presented.

***Friday, June 29, 2007, Stakeholder Group Meeting***

*Attendees: FBSP/swimmers-Robin Cravey, Steve Barnick, Sarah Searcy, COA PARD-Clark Hancock, Tom Nelson, COA WPDRD-Laurie Dries, David Johns, LGA-Al Godfrey, Laurie Limbacher*

Most of the meeting was spent discussing the arrangements for the upcoming Town Hall Meeting #2. The group also preliminarily discussed potential short term projects. The FBSP suggests that as many water quality related projects as can prudently be done, dependent on having adequate data on conditions and anticipated impacts and on approval in the context of the USFWS 10(a) permit, be included in the short term projects. Several projects were suggested as potential short term projects: bypass grate, upstream dam openings, rehabilitate the gate and cylinder at Sunken Garden, algae skimmers, gravel bar removal, repairs to bypass tunnel, water recirculation on the beach, and power, water and pumps for pool cleaning.

***Thursday, July 5, 2007, Zilker Neighborhood Association Steering Committee***

*Attendees: members of Zilker Neighborhood Association Steering Committee, LGA-Al Godfrey, Laurie Limbacher*

LGA gave a brief illustrated presentation, summarizing the scope of work on the master plan project. A handout with a project summary, description of tasks and projected schedule for the MP project was provided. The web address of an informational website and the email address for public comment were presented.

LGA was invited to attend the Zilker Neighborhood Watermelon Social, a membership meeting set for later in July. Steering Committee members offered the following questions and comments:

- What is the source for the funding for the master plan projects?
- Make sure there is proper study of the environmental impact on the salamander, before projects are implemented.
- Concern about upstream development, continuing to allow projects over the aquifer.
- Heard some concerns about the south bathhouse and making sure priorities are logical.
- Don't over light the Pool.
- Proposed work at Eliza Spring and Sunken Garden important to do.

- Fix the Pool, fix Eliza Spring, take care of what is already there.
- Provide a public gathering point at Eliza Spring.
- Add a bridge across the creek at Sunken Garden to allow crossing to the other springs.
- Make a stronger connection between the greenbelt and the Pool. Make the trail more attractive from the Pool.
- Concern about putting Pool above recreational aspects of the site.
- Interpretation of habitat, to educate the public.
- Flow regime improvements, dam improvements, Eliza Spring and Sunken Garden projects are priorities, but not the Bathhouse. Not sure about Zilker Ponds.

***Friday, July 6, 2007, Stakeholder Group Meeting***

*Attendees: FBSP/swimmers-Robin Cravey, Steve Barnick, SOS-Kelly Davis, Bill Bunch, COA PARD-Farhad Madani, Tom Nelson, COA WPDRD-Laurie Dries, LGA-Al Godfrey, Laurie Limbacher, Moderator of Town Hall Meeting #2-Leon Barish*

Most of the meeting was spent discussing the arrangements for the upcoming Town Hall Meeting #2.

Mr. Madani explained that a key issue emerging from the stakeholder input was water quality, to address nuisance algae accumulations, turbidity, water clarity and cleanliness. Also, enhancement of salamander habitat areas. Several safety issues are a concern to PARD and will need to be addressed in the short term, including bypass leaks, tree maintenance and site electrical wiring.

Mr. Bunch asked about the schedule after Town Hall Meeting #2, set for July 14. Mr. Madani explained that the short term projects will go to Council in August for budget review and action. To be incorporated in the information presented to Council, comments should be received by August 1.

***Saturday, July 14, 2007, Public Hearing/Town Hall Meeting #2***

*Attendees: See sign-in sheet on file with PARD*

The meeting was held in conjunction with a free swim day at the Pool. Prior to the Town Hall Meeting, called the Community Forum, a day long Open House was held in the Gallery at the Bathhouse. Presenta-

tion boards with drawings, photographs and text were displayed in the Gallery and consultants and staff were there to answer questions. Comment sheets were available, and attendees were also encouraged to make comments on sticky-backed note paper, which were then affixed to the presentation boards. Smaller stations on specific topics were also set up in several places on the Pool grounds.

The Community Forum was an interactive public hearing to provide information about the proposed scope and content of the Barton Springs Pool Master Plan project and discuss comments from the public. The forum was moderated by Leon Barish, swimmer.

Introductory remarks were made by Farhad Madani, COA PARD, Nancy McClintock, COA WPDRD, and Robin Cravey, FBSP. Al Godfrey gave an overview presentation of the master plan information. The presentation was illustrated with images projected on a screen in the tented meeting space. A handout with a project summary and a list of study tasks included in the MP project was provided. Comment sheets were provided, and the web address of an informational website and the email address for public comment were presented.

Mr. Barish led a discussion of master plan information. Comments were made, as follows:

- Q: How will the prioritization be done, and who will do it? A: Mr. Madani explained that the short term projects will be determined in mid-August, and presented to Council for budget consideration. There will be another public meeting to do the prioritization. From public participation to date, the water quality issues are of great concern. PARD is also concerned about safety issues, and will consider these a priority. The staff will make the prioritization recommendations, with the assistance of the consultants, regulatory authorities and stakeholders. Information will be provided through the COA website and the FBSP.
- Q: As far as making the water cleaner, is it just the algae skimmer and the added electrical power for cleaning? A: Ms. McClintock explained that other master plan items are intended to abate nuisance algae, such as the ultrasonic algae control and increased

flow in the Pool. Removing the gravel bar accumulation will also reduce sediment accumulation. This will also enhance the health of appropriate aquatic plants in the Pool, which will in turn enhance water quality. There is not a specific “measure” for water quality, and the turbidity level can change during the course of a day.

- Comment: Suggestion made to pursue grant funds for master plan projects.
- Comment: The answer is to protect the aquifer, and provide public education about the health of the aquifer. There are a few simple things that would be good, efficient uses of the funding, including fixing holes in the south wall of the Pool, providing more funding for guards and training for guards. Don't like any idea that is going to keep the Pool closed. Don't like the silt problem being described as anything other than a problem of upstream development. Test the effects of other tree species on the salamanders. Thanks to the FBSP for working on this effort. Hate to see the process be open meeting, open meeting, closed decision.
- Comment: Not from here, only visiting for a few days, but the Pool is a spiritual experience.
- Comment: Don't feel that short term solutions, like algae skimmers, are going to solve the problem. Need to educate about issues upstream of the Pool. Against the south bathhouse, as just more concrete. Need to put toilet tissue and soap in the existing restrooms.
- Comment: Like the idea of dam gates that might allow for natural scouring and cleaning during floods. The city has changed, and we need to understand that this will have an impact. Concerned about needing to lower the water if the dam is moved and the Pool is enlarged, and also about the loss of the shallow end. Would be good to have more use of the Pool.
- Comment: In flood, very muddy water enters the north side of the Pool from the bypass tunnel. A: The joints in the bypass tunnel have developed leaks. The City has permission from the USFWS to do the required repair work, but are waiting for the right flow conditions to do so. Q: Will that close the Pool? A: May take a few days to complete. Will try to schedule on a cleaning day or

when otherwise closed.

- Comment: Thanks for listening to the community. The water is sacred. Would like to see the barbed wire fence replaced with a more appropriate, attractive fence. Also, work to educate newcomers about the Pool. And, provide funding for local musicians and artists to prepare works at and about the Pool.
- Comment: The master plan should focus on renovation and restoration prior to new construction. There is a sense of nature here, and that should be enhanced. Like the interpretive signs and exhibits proposed. Suggest adding an electronic lock on the south gate, to allow for longer hours of entry through that gate. Like the suggestion to provide data on Pool conditions in real time at the Bathhouse. Like the idea of paying lifeguards more. Suggestion to train the lifeguards in ecology, similar to tour travel guide training in the Galapagos. Suggest some signs that acknowledge public investment and lands upstream. Maybe match master plan funding with money for conservation easements of land purchases upstream. Like the idea of art in the Bathhouse or out in nature. Support an open decision making process.
- Comment: FBSP is working to make things better at the Pool. All are invited to become part of the volunteer process and to send their comments and recommendations on the master plan.
- Comment: Hope to become more involved. Good to see Barton Springs Pool improved, and the aquifer and the creek. Need to make Zilker Park and Barton Springs Pool a more high profile place.
- Comment: The notion of using dam gates to scour the Pool in floods seems a little sketchy to this speaker. Suggests a flier in the monthly utility bill with educational material about fertilizer use, encouraging folks to use less fertilizer.
- Comment: As a diver, concerned about lowering the water level associated with enlarging the Pool. Even a change of as little as 2' may eliminate the diving board.
- Comment: The area between the path and the woods should be a wildflower meadow.
- Comment: The water quality is a big concern, but also like some of the facility improvements. Like the rainwater collection and solar

power ideas.

- Comment: Would like a hot tub, or maybe a solar powered hot tub.
- Q: How is the decision making process on the short term projects be documented? Will there be minutes? A: Mr. Madani will explore posting minutes on the City website. Recommendations will definitely be posted there.
- Comment: Concerns about lack of community communication. This venue not a good one for a meeting. Need to use modern communication channels - website, email - and do a better job of publicizing who is on the project team, who is the project manager.
- Comment: Need more signs, and signs explaining why there is not food allowed in certain places here.
- Comment: Appreciate the comments about public communication. Concerns about more efficient flood clean up, to get the Pool open faster. A: Ms. Dries noted that an advantage of creating a more natural flow regime is the likelihood of less flood damage.
- Comment: For anyone who paid for parking for this community meeting, please refund their money. A: PARD has already directed that parking fees be waived for meeting attendees.
- Comment: There seems to be a smaller crowd here than expected, because there was no notice given of the event. Also why was there no notice about the Pool being opened after flooding? A: Ms. Dries noted that the Pool opening had been delayed by flood waters coming upstream from Town Lake, which dirtied the Pool. Mr. Nelson noted that each flood is different and unpredictable. The staff has developed effective methods of cleaning the Pool after a flood, and works hard to open the Pool as soon as possible.
- Comment: There was a good deal of notice about this event. It was publicized in the local newspapers, television news programs and radio stations.
- Comment: This master plan is our master plan. We need to work together on it, keep aiming high, have back and forth dialogue.
- Comment: Have music and dancing at the site, down at the end across from the big hill.
- Comment: Not everyone likes this idea to have music and dancing.
- Comment: Don't swim here, but feel it is the heart and soul of

Austin. Don't like the south bathhouse.

- Comment: Like the idea of burying the electrical lines.
- Q: Is it possible to build a screen upstream of the Pool area to catch debris. A: The bypass grate does this already. It needs to be re-designed to work more effectively and not get clogged up so readily. A screen upstream will create a larger task of keeping the screen clean and maintained. Better to do it at the bypass grate.
- Comment: Suggest that the City give free swim passes to physically and mentally disabled people.
- Comment: Consider a fee of 25 cents added to each monthly utility bill to fund this project. Also, apply for grants, such as those from the Dell Foundation.

Closing comments were made by Robin Cravey, FBSP. Two good ways to keep informed on this project are through the websites of FBSP and PARD. Provide comments to the master plan email address or on the comment forms provided here. A good way to get more involved is to participate in the FBSP Advocacy Committee. The presentation drawings presented today will be on the two websites and will be on display in the Gallery at the Pool.

***Monday, July 23, 2007, Save Barton Creek Association***

*Attendees: members of Save Barton Creek Association, general public in the audience, LGA-Al Godfrey*

Mr. Godfrey gave an illustrated presentation, an overview of the preliminary recommendations on the master plan project. A handout with a project summary, description of tasks and projected schedule for the MP project was provided. The web address of an informational website and the email address for public comment were presented.

SBCA members expressed concerns that the master plan was endorsing enlarging the Pool. Mr. Godfrey clarified that the planning team had been asked to study this, and our preliminary assessment is that there are many serious challenges associated with this possibility. It is not something we recommend.

SBCA members offered comments on both sides of the south bathhouse issue, some in support and some not. Also, the future presentations ab

city boards and commissions and council were discussed.

***Wednesday, July 25, 2007, Stakeholder Group Meeting***

*Attendees: FBSP/swimmers-Robin Cravey, Steve Barnick, Sarah Searcy, COA PARD-Farhad Madani, Tom Nelson, Tony Arnold COA WPDRD-Nancy McClintock, Tom Ennis, David Johns, Laurie Dries, LGA-Al Godfrey, Laurie Limbacher*

PARD has compiled the comments from the Open House and Community Forum. The group discussed appropriate responses to the comments. The presentation boards have been on display at the Pool since the event. The presentation boards are on the FBSP website. The comments and presentation boards will go on the City website shortly.

Several items presented have emerged as items of special concern or great confusion. These will be addressed in the FAQ portion of the City website.

A large stakeholder group meeting, similar to the one held at the beginning of the project, will be held on August 8, to go over the proposed short term projects in the master plan.

***Monday, July 30, 2007, Zilker Neighborhood Association***

*Attendees: members of Zilker Neighborhood Association, general public in the audience, LGA-Al Godfrey, Laurie Limbacher*

LGA informally presented presentation drawings and answered questions about the master plan during the Zilker Neighborhood Association Watermelon Social. The web address of an informational website and the email address for public comment were presented.

***Wednesday, August 1, 2007, Stakeholder Group Meeting***

*Attendees: SBCA-Susan Bright, SOS-Colin Clark, FBSP/swimmers-Robin Cravey, Steve Barnick, Sarah Searcy, COA PARD-Farhad Madani, Tom Nelson, Tony Arnold, Mark MacDougal, Dolores Posada, Clark Hancock, COA WPDRD-Tom Ennis, Ed Peacock, David Johns, Laurie Dries, LGA-Al Godfrey, Laurie Limbacher*

The group discussed potential short term master plan projects proposed by the attendees, including:

- Replace, improve bypass inlet grate



- Improve stone walls, outflow gate at Sunken Garden
- Algae skimmer system
- Gravel bar removal
- Joint repairs at bypass tunnel
- Water recirculation at the beach pilot project
- Relocate overhead power lines to underground, add power to south side of Pool
- New pumps to increase water pressure for pool cleaning
- Hydrodynamic flow modeling
- Salamander data collection
- Grounds improvements-trees, fences, natural grasses
- Accessible path at south side of Pool
- Silt and algae disposal system
- Ultrasonic algae control system pilot project
- Topographic survey of the grounds, including Sunken Garden and bathymetric survey of creek, Pool
- Flood modeling of the creek upstream of the Pool
- Interpretive signage, educational displays
- Informational kiosk with realtime data about the Pool
- Free swim passes for people who are disabled (Mr. Madani noted that this is an operational issue that can be further discussed with PARD, but is not a master plan item)
- Signs to the Pool from other areas of the park
- Flow control structure in front of the dam (This can be studied in the course of the hydrodynamic flow modeling, and does not need to be a separate item)

The possibility of some first phase renovation at the existing Bathhouse was also discussed.

The group also discussed the issue of funding for staffing, since recommendations for additional staffing sometimes come up in public comments. Mr. Madani explained that funding for staffing comes from a different source than the funding identified by the City Manager and Council for the master plan projects. The master plan funding is for improvements to the Pool, grounds and buildings. Money for staffing comes from the operating budget, which is not addressed by this

master plan. As a point of information, there have been several new full time employees added for maintenance and salaries for life guards were recently raised.

Staff and consultants were assigned the task of drafting prioritization recommendations for discussion during a follow up meeting, set for next week. Consultants presented draft versions of project schedules, which help in determining the order in which some of the short term projects should logically be completed.

A public meeting, Town Hall Meeting #3, to discuss the short term projects and associated prioritization recommendations, has been scheduled for the evening of August 27. The short term projects will be presented during the Parks and Recreation Board meeting of August 28, and at Council on August 30.

*Wednesday, August 8, 2007, Multiple Stakeholder Group Meeting*  
*Attendees: SBCA-Susan Bright, SOS-Bill Bunch, FBSP/swimmers-Robin Cravey, Steve Barnick, Bill Adorno, Dorothy Richter, Brian Leonard, Susan Fein, Ralph Webster, Mark Lang, Mark Nowacki, Karen Kreps, Peter Steinhardt, several others (sign in sheet on file with PARD), BSS SAC-Tom Wilcox, Hill Country Conservancy-George Cofer, COA PARD-Farhad Madani, Tom Nelson, Tony Arnold, Mark MacDougal, Dolores Posada, Clark Hancock, COA WPDRD-Nancy McClintock, Tom Ennis, Ed Peacock, David Johns, Laurie Dries, LGA-Al Godfrey, Laurie Limbacher*

The group discussed potential short term master plan projects, one by one, for comment.

- Replace/improve bypass inlet grate: No comments.
- Improve stone walls, add outflow gate at Sunken Garden: This is recommended to hopefully enhance the salamander habitat at this spring. Suggestion to include this in general parks budget, instead of in the master plan budget, but not possible per PARD.
- Interim skimmer system to remove surface nuisance algae: This is a temporary installation, on the sidewall of the Pool. While other master plan items are aimed at reducing the algae, this is an acknowledgement that there will still be nuisance algae at the Pool, particularly during low flow times.
- Gravel bar removal: This is a continuation of the effort began last

year, which removed smaller sized gravel. There is a large accumulation that still need to be removed.

- Barton Creek bypass joint repairs: This will use the same repair methods developed for the ACWP project.
- Pilot study for water recirculation at the beach: A pilot study for pushing water across the beach, using submersible pumps. Swimmers expressed concerns about creating strong currents, making swimming difficult. The pilot study will test a very low rate of flow.
- Replace overhead wiring with underground wiring, and provide additional electric power to south side of Pool: No comments, except to break this in to two items, for clarity.
- Provide new pump to increase water pressure for cleaning: In low flow conditions, this will also be tied to city water for cleaning. One person requested that the scope be shown with a schedule, instead of a diagram. If this were an actual construction project, that sort of drawing might be done, but this is a master plan, so drawings are conceptual.
- Conduct flow modeling in the Pool, studying flooding, baseflow without openings in upstream dam, baseflow with openings in upstream dam: No comments.
- Data collection on salamanders: To study impact of creek inflows in to Pool on water chemistry, etc.
- Grounds improvements (trees, native grasses, plants, fences): This will include a thorough assessment of the existing trees, some of which are in a state of decline.
- Accessible path to Pool at south gate entry: The concept diagram shows a possible path. A specific design can be developed once topographic information is available. Concerns raised that the woods as they are now are natural, and a path might change that. The path is envisioned as “a walk in the woods”, and is intended to be a natural experience. Concerns raised that runoff during construction might be a problem in the Pool. Best management practices, as required by code, are intended to address this concern. Concerns raised that accessibility not required by law here. The path is intended for all kinds of users -- families with strollers, people with difficulty walking, and people with disabilities.

- Disposal system for silt and algae debris resulting from routine cleaning:
- Pilot study on ultrasonic algae control:
- Topographic survey and cross-sections of Barton Creek upstream of Pool and grounds:
- Flood modeling up creek of Pool:
- Interpretive plan for Barton Springs: Educational signs, kiosks, displays.

Mr. Arnold and Mr. Madani explained the actions from here forward. The short term projects list will be presented in another group stakeholder meeting on August 15, at a Town Hall Meeting on August 27, at the Parks Board on August 28 and in a Council briefing on August 30. The Council is not yet posted for action on the short term projects, but may set that up after the briefing date. Mr. Madani briefly described costs spent or encumbered to date from the master plan funds.

Some attendees expressed acrimony about the master plan. Mr. Madani explained that the goal is to gain a good pool for future generations of Austinites. Information about the master plan is available on the city website and the project email address may be used for comments or questions. Ms. McClintock encouraged interested stakeholders to look at the information provided there, and come to future meetings prepared to discuss the agenda items.

*Wednesday, August 15, 2007, Multiple Stakeholder Group Meeting*  
*Attendees: SBCA-Susan Bright, SOS-Bill Bunch, FBSP/swimmers-Robin Cravey, Steve Barnick, Sarah Searcy, Susan Fein, Ralph Webster, Karen Kreps, Peter Steinhardt, several others (sign in sheet on file with PARD), COA PARD-Farhad Madani, Tom Nelson, Tony Arnold, Mark MacDougal, Dolores Posada, Clark Hancock, Margaret Russell, COA WPD RD-Nancy McClintock, David Johns, Laurie Dries, LGA-Al Godfrey, Laurie Limbacher*

Mr. Madani and Mr. Arnold passed out a three page chart with the list of twenty short term projects, identified by project number and described in terms of problem and proposed solution, for the group to review. Three project priority groups have been identified, designated by letter A, B or C. The group discussed the list, item by item:

- A1, Pilot study for water recirculation on the beach: No comments.
- A2, Pilot study for ultrasonic algae control: There is real science behind this device, and the cost for the pilot project is just that of the device, itself.
- A3, Pilot study to determine if creek inflows into Pool will impact water chemistry and algae growth: One swimmer expressed concern about swimming in creek water. It is hoped that creek water will aide in clearing the Pool water after floods and enhance ecologic viability in the Pool.
- A4, BS Pool grounds tree assessment and treatment: One swimmer felt this should come from a maintenance budget, but there are not funds for this purpose in the maintenance budget and the work is overdue. There are advantages to having a diverse tree species mix, and a high priority will be put on planting trees that are ecologically appropriate.
- A5, Replace all overhead wiring with underground wiring and add new lighting: The group discussed aesthetic criteria for new light fixtures. This topic will be fully addressed during Design Development, but is broadly addressed at the master plan phase.
- A6, Provide additional electric power to south side for cleaning: This will likely be done in conjunction with Item A5. The group discussed routing of the new power supply.
- A7, Topographic survey and cross-sections of Barton Creek upstream of Pool, Pool grounds and bottom of Pool: This information is needed for flow modeling and for documentation of topography of the site.
- A8, Gravel bar removal: There is a large accumulation of gravel, including about a 5' drift deposited this year, that needs to be removed from the Pool. This work will be scheduled during the major spring clean period, to minimize impact on pool operations. The fish are not breeding at the spring clean time of year, so there will be no impact on their eggs.
- A9, Phase I rehabilitation of the main Bathhouse: There are some code issues with the roof that need to be addressed. The group asked about accessibility upgrades; a major accessibility upgrade was completed at the Bathhouse a few years ago. The toilet paper holder in the Women's accessible restroom should be repaired.
- A10, Replace and improve Barton Creek bypass grate: The current grate clogs up easily, and flood waters then enter the Pool. A replacement grate should solve this problem. Adding barriers to catch debris upstream would solve more problems than they would solve.
- A11, Barton Creek bypass joint repairs: This work can only be scheduled when the flow conditions are just right to allow the work to proceed, and may require that the Pool be closed for a few days as a result.
- A12, Provide new pump to increase water pressure to facilitate cleaning: This will allow for more efficient cleaning of the deep end of the Pool.
- B13, Improve access to Pool to comply with Americans with Disabilities Act: Concerns about damage to the woods, runoff during construction. The concept for the path is as a walk in the woods, and best management practices would be employed during construction.
- B14, Conduct flow modeling of Pool; flooding, baseflow without openings in upstream and downstream dams, baseflow with openings in upstream and downstream dams: This is needed to study improvements to the flow regime.
- B15, Flood modeling upstream of Pool: This is needed to study flood elevations upstream of Pool, relative to possible raising of the upstream dam.
- B16, Disposal system for silt and algal debris resulting from draw-down and flood cleaning: Need a system to move cleaning debris off site for composting or other disposal.
- C17, Interpretive plan for Barton Springs: Suggestion to give this item a higher priority.
- C18, Temporary skimmer system to remove the surface nuisance algae: Discussion about whether this should have a higher priority. As long as there is not a drought period, this is not as urgent as some other items.
- C19, Grounds improvements (landscaping, fences, irrigation, seating): The group discussed fence types and bench locations proposed

in the master plan. Suggestion to lower the fence height on the dam.

- C20, At Sunken Garden, renovate walls and add gate: This will allow regulation of spring flows to improve habitat management.

The next public meeting will be on August 27, when the proposed short term items will be presented and discussed, item by item.

***Monday, August 27, 2007, Public Hearing/Town Hall Meeting #3***

*Attendees: See sign-in sheet on file with PARD, about 60 attendees from the swimmers/general public, COA PARD-Farhad Madani, Tom Nelson, Tony Arnold, Ricardo Soliz, Mark MacDougal, Dolores Posada, COA WPDRD-Laurie Dries, David Johns, LGA-Al Godfrey, Laurie Limbacher*

Mr. Madani introduced the meeting, held to present and discuss the proposed short term projects of the master plan project. Ricardo Soliz will moderate the discussion. There will be a brief informational presentation for each item, then we will stop to discuss each item.

Mr. Madani also noted the presentation at the Parks Board and at the Council of the short term projects later this week. The team is working to get funding for each item on the list, so the priority order indicated may not be an issue. The budgets for each project are still being prepared, and will be provided as soon as all the information is completed.

Mr. Godfrey presented a brief overview of the entire master plan, which considers an array of issues associated with the Pool and infrastructure, the grounds and the buildings. The short term project recommendations have emerged from public comment, concerns for public safety and site management issues.

The short term projects were then presented and discussed. Questions posed by the attendees were answered by the staff and consultants. The short term projects and discussion are briefly described below:

- A1, Pilot study for water recirculation on the beach: This is intended to enhance salamander habitat and mitigate nuisance algae.
- A2, Pilot study for ultrasonic algae control: The pilot project will be done with the captive breeding salamander population, before anything shows up in the Pool.

- A3, Pilot study to determine if creek inflows into Pool will impact water chemistry and algae growth: If the pilot project is successful and a long term project is done later, this would only happen during the times of year when the creek conditions are acceptable for introduction in to the Pool. During the pilot project, there may be some pump noise. During times of flood, creek water clears faster than the aquifer does; this could be beneficial in restoring water quality after a flood.
- A4, BS Pool grounds tree assessment and treatment: All are concerned about the loss of old trees, but all understand the hazards and public safety issues with deteriorating trees. Need to be sure to take good care of the trees that remain. Also consider commemorations or art pieces from trees that are removed.
- A5, Replace all overhead wiring with underground wiring and add new lighting: The actual light fixtures will be selected in the future, and not during the master plan.
- A6, Provide additional electric power to south side for cleaning: No comments.
- A7, Topographic survey and cross-sections of Barton Creek upstream of Pool, Pool grounds and bottom of Pool: Some attendees wanted to make sure this data would not be used in an effort to move the dams.
- A7a, Structural testing of existing dams: This is an addition to the short term projects lists discussed in previous stakeholder meetings. This information is needed in order to determine the capacity of the dams, with respect to the proposed flow regime improvements.
- A8, Gravel bar removal: The gravel in the deep end accumulates to an ever higher level, changing the velocity of the water through the deep channel. The accumulation needs to be removed, and future maintenance should then be more manageable. Swimmers expressed concern about having the Pool closed for a long time. The anticipated time for this work is 3 to 6 weeks. It may be possible to have a portion of the Pool open for swimming as the gravel removal is ongoing.
- A9, Phase I rehabilitation of the main Bathhouse: This work includes repair and maintenance issues, primarily.

- A10, Replace and improve Barton Creek bypass grate: The intent is to mitigate clogs that occur during “pop up” floods.
- A11, Barton Creek bypass joint repairs: This work can only be scheduled when the flow conditions are just right to allow the work to proceed, and may require that the Pool be closed for the repairs.
- A12, Provide new pump to increase water pressure to facilitate cleaning: This will allow for more efficient cleaning of the deep end of the Pool. Currently, all cleaning is done with city water. This will allow the use of Pool water for cleaning, unless the flows are too low.
- B13, Improve access to Pool to comply with Americans with Disabilities Act: This includes enhanced access from the north side and a new accessible trail from the south side to the Pool. The concept is a “walk in the woods” using permeable paving, built as a winding walkway, at a low enough slope to be without rails. A more detailed design would be prepared after the topographic data is available, and more public presentations and dialogue would take place at that time. Some expressed concern about this being invasive to the woods and the natural feel of the south lawn. Others noted accessible paths in parks and greenbelts, and felt it could be well done and should be done for people with disabilities, and even for people with knee issues or elderly folks. Some suggested that it be coordinated with parking and expressed support for bathrooms on the south side. (These are not included in the short term projects.) Mr. Madani noted that an accessible path is a values issue and an important thing for the city to do and do well.
- B14, Conduct flow modeling of Pool; flooding, baseflow without openings in upstream and downstream dams, baseflow with openings in upstream and downstream dams: This is needed to study improvements to the flow regime.
- B15, Flood modeling upstream of Pool: This is needed to study flood elevations upstream of Pool, relative to possible raising of the upstream dam.
- B16, Disposal system for silt and algal debris resulting from drawdown and flood cleaning: A low key, low intensity solution is proposed.
- C17, Interpretive plan for Barton Springs: Discussion about giving this item a higher priority. Since the goal is to pursue funding for all of the short term projects, doesn't seem necessary.
- C18, Temporary skimmer system to remove the surface nuisance algae: Discussion about what this will look like.
- C19, Grounds improvements (landscaping, fences, irrigation, seating): Discussion of irrigation system, fence types proposed. Turf and plant species also discussed.
- C20, At Sunken Garden, renovate walls and add gate: This is a “salamander-centric” solution in the short term projects, with more rehabilitation work needed in the long term.

Some suggestions for additional items that might be added or considered in the master plan were made by a few attendees. One suggestion was for more parking spaces. Another was to contemplate an irrigation system for the Zilker Ponds. Several people expressed concern about the lack of restroom facilities on the south side of the Pool, which results in people urinating and defecating on the ground, and washes in to the Pool. This should also be addressed, and portable toilets might be a short term solution. One person asked whether Eliza Spring couldn't be rehabilitated in the short term. There is an interest in enhancing the salamander habitat at Sunken Garden before work is done at Eliza Spring.

*Tuesday, August 28, 2007, City of Austin Parks and Recreation Board  
Attendees: PARD staff, members of Parks and Recreation Board, general public in the audience and televised viewing, LGA-Al Godfrey, Laurie Limbacher*

Mr. Godfrey presented a brief overview of the entire master plan, which considers an array of issues associated with the Pool and infrastructure, the grounds and the buildings. The short term project recommendations have emerged from public comment, concerns for public safety and site management issues. A brief illustrated presentation of the 21 short term projects was begun, but was stopped by the PARB at Item 7.

The Park Board members asked for a description of the process of presentation and acceptance going forward. The master plan process has

been underway for the past six months, with many meetings and presentations on the projects the consultants were asked to study. Projects to be completed in the short term versus in the long term were identified, as well. Mr. Madani, with PARD, explained that the short term projects will be presented to Council later this week. The Council may consider funding for these short term items in the near future. The full master plan, including the long term projects, will be presented later, in the fall, through another series of public meetings. The full master plan will be presented to the Parks Board at that time. Mr. Arnold, with PARD, explained that as each project is implemented, there will be a design phase during which there will be public presentations and opportunities for public comment.

Public testimony was taken from several members of the audience, as follows:

- Jackie Goodman, SBCA: Thanks to the FBSP and swimmers who have participated in this process. Suggests a longer process for the remainder of the master plan, and concerned about the use of the term master plan. Offered comments on several short term items, including tree removal, new pump and topographic survey. Suggests that the interpretive plan be given a higher priority. Suggests that the accessible path at the south side be given more study before implementation.
- Bill Bunch, SOS: Suggests that this hearing be held at another time, since it was quite late at night already. Suggests more community-wide meetings. Concerned about the push to include the short term projects in the current budget. Concerned about the 1-3 year time frame for short term projects, feels this is too long.
- Suzanne Mason, FBSP: FBSP started this process with the City after coming together as a grass roots organization over water quality in the Pool. This is an opportunity to move forward with some things. Personally interested in cleaning up the facilities, including the Bathhouse. Looks forward to further public process on the remainder of the master plan.
- Robin Cravey, FBSP: Has been a great effort getting the master plan process this far along. FBSP and swimmers got together to

put emphasis on the Pool. Many meetings have been held, but not always well attended. Feels the short term projects are a well balanced list of improvements and studies needed to inform future master plan items. Supports making the south side of the Pool accessible to the citizens of Austin.

***Thursday, August 30, 2007, City Council***

*Attendees: PARD staff, WPDRD staff, members of City Council, general public in the audience and televised viewing, LGA-Al Godfrey, Laurie Limbacher*

Mr. Godfrey presented a brief overview of the entire master plan, which considers an array of issues associated with the Pool and infrastructure, the grounds and the buildings. Over the course of the master plan process, the emphasis has changed from simple facilities improvements to the more complex water quality issues. The recommendations for short term projects, which have emerged from public comment, concerns for public safety and site management issues, were also presented.

Mr. Struess, with PARD, presented budget figures associated with the recommended short term projects.

***Thursday, February 28, 2008, Joint Subcommittee of the Parks Board and the Environmental Board***

*Attendees: PARD staff, WPDRD staff, members of the Joint Subcommittee general public in the audience. LGA-Al Godfrey, Laurie Limbacher*

An organizational meeting for the Joint Subcommittee, to meet the board members, exchange information and review timeline for the Barton Springs Pool Master Plan. No action was taken during the meeting.

***Thursday, March 6, 2008, Joint Subcommittee of the Parks Board and the Environmental Board***

*Attendees: PARD staff, WPDRD staff, members of the Joint Subcommittee general public in the audience. LGA-Al Godfrey, Laurie Limbacher, Carolyn Kelley*

Mr. Godfrey and Ms. Limbacher presented a brief overview of the entire master plan. The Joint Subcommittee members' questions were answered. The minutes of the meeting are on file with the Parks and Recreation Department.

*Wednesday, March 19, 2008, Heritage Society of Austin*  
*Attendees: members of the Heritage Society of Austin Preservation Committee, general members in attendance, LGA-Al Godfrey, Laurie Limbacher*

Mr. Godfrey gave an illustrated presentation, an overview of the master plan during the monthly meeting of the HSA Preservation Committee. The web address of an informational website and the email address for public comment were presented.

*Thursday, March 27, 2008, Austin Parks Foundation*  
*Attendees: members of the Austin Parks Foundation board of directors, general members in attendance, LGA-Al Godfrey, Laurie Limbacher*

Mr. Godfrey gave an illustrated presentation, an overview of the master plan during the monthly meeting of the Austin Parks Foundation board of directors. The web address of an informational website and the email address for public comment were presented.

*Saturday, April 5, 2008, Public Hearing/Town Hall Meeting #4*  
*Attendees: See sign-in sheet on file with PARD*

The Town Hall Meeting was hosted by the Joint Subcommittee of the Parks Board and the Environmental Board. Introductory remarks were made by Linda Guerrero, Chair of the Joint Subcommittee. Al Godfrey and David Johns, COA WPDRD, gave an overview presentation of the master plan information. Tony Arnold, COA PARD, explained the future design and implementation process for the topics studied in the master plan.

A series of three small group break out sessions on the three major topics addressed in the master plan -- the pool and infrastructure, the grounds and the buildings -- were held. Each break out session was repeated three times, to allow attendees to participate in one break out session on each topic.

Linda Guerrero and Dave Anderson, Joint Subcommittee members, led a discussion of master plan information. Comments were made as follows:

- Comment: The speaker is a regular swimmer and member of the

Scientific Advisory Committee to the 10A permit at the site. He noted that the City of Austin has changed dramatically, and he supports changing the pool in accord with current demands.

- Comment: The speaker is a regular swimmer, and supports the notion of an advisory joint subcommittee on an ongoing basis to be involved in further consideration of master plan topics.
- Comment: The speaker is a regular swimmer, and asked that information about projects that might emerge from the master plan be provided to the public, including timelines, budget information and completion status. He also noted that he found the landscape format of the master plan report difficult to use.
- Comment: The speaker is a regular swimmer, and wants to know more about how long the pool might be closed as master plan topics might be designed and implemented. She also offered comments on the lifeguard activities at the pool. She suggested selling copies of the master plan report at the pool, and encouraged more and better communication.
- Comment: The speaker is a regular swimmer, and would like to receive an abbreviated summary of the master plan topics, without any of the background information included in the master plan report. He would like to know how much money has been spent on the short term projects. He objected to the tree species planted at the pool site.
- Comment: The speaker is a regular swimmer, and asked who the director of PARD is. He later advocated for a national search for the new PARD director.
- Comment: The speaker is a member of the Scientific Advisory Committee to the 10A permit at the site, and expressed support for the provision of information to the public about projects that might emerge from the master plan. He also advocated removing the evidence of the human footprint -- the buildings and the pool -- from the site, in an effort to make the natural environment more resilient.
- Comment: The speaker is a regular swimmer, and objected to the format of this Town Hall Meeting, advocating instead a large group discussion. He claimed that the consultants hired to produce the

master plan report were liars and manipulated the system. He advocated for an open process.

- Comment: The speaker is a regular swimmer and member of the Scientific Advisory Committee to the 10A permit. He objected to the remarks of the previous speaker. He also noted that those who feel that information is not available about the master plan should read the master plan report.
- Comment: The speaker is a regular swimmer, and has followed the master plan process through several organizations with an interest in the master plan topics. He advocated for quarterly updates on progress on projects that might emerge from the master plan on the PARD website.
- Comment: The speaker is a regular swimmer, and expressed enthusiasm for the changes and improvements studied in the master plan. He supports a small bathhouse on the south side of the pool and supports the accessibility improvements, such as the accessible route proposed on the south grounds.
- Comment: The speaker is a regular swimmer and has been involved in the master plan process from the beginning. She stated that there has been no lying or manipulation by the consultants hired to produce the master plan report, and noted that she was insulted by that comment. She noted that there have been many public meetings, of many different types, offering opportunities for all to participate in the way they felt most comfortable.
- Comment: The speaker is a member of the Joint Subcommittee, and noted that part of their role is to help get the facts about the master plan out to the public.
- Comment: The speaker is a member of the Joint Subcommittee, and objected to the notion that the format of the Town Hall Meeting was intended to divide or subvert the group of attendees. The effort of the meeting today was to get public input on the draft master plan report.

***Thursday, May 15, 2008, City of Austin Design Commission Project Review Task Force***

*Attendees: members of the Design Commission Project Review Task Force, LGA-Al Godfrey, Laurie Limbacher*

Mr. Godfrey gave an illustrated presentation, an overview of the master plan. A packet of summary information, excerpted from the master plan report, was distributed. Copies of the complete master plan will be provided to the task force members, for their use in preparing their recommendation to the full Design Commission.

***Tuesday, May 27, 2008, City of Austin Parks and Recreation Board***  
*Attendees: members of the Parks and Recreation Board, general public in the audience and televised viewing, PARD staff, WPDRD staff, LGA-Al Godfrey, Laurie Limbacher, Carolyn Kelley*

Mr. Godfrey gave an illustrated presentation, an overview of the master plan topics and public participation process. A packet of summary information, excerpted from the master plan report, was distributed. The Parks Board had been presented with a letter from some members of the Scientific Advisory Committee to the 10A Permit the day of the meeting, and the Parks Board members discussed the recommendations made in the letter. The majority of the recommendations are consistent with the master plan; the recommendation for funding for dedicated scientific staff is beyond the scope of the master plan.

The Board discussed the possibility of changing the name of the master plan, and a draft resolution from the Joint Subcommittee of the environmental Board and the Parks Board. The Parks Board heard testimony from Bill Bunch, who urged the board to postpone action on this item. He advocated for dismissing the master plan, and beginning a new effort using students from the University of Texas.

The Parks Board asked that the item be placed on the agenda for their next regularly scheduled meeting. Minutes of the meeting are on file with the Parks and Recreation Department.

***Thursday, May 29, 2008, City of Austin Historic Landmark Commission***

*Attendees: members of the Historic Landmark Commission, general public in the audience and televised viewing, PARD staff, WPDRD staff, LGA-Al Godfrey*

Mr. Godfrey gave an illustrated presentation, an overview of the master plan topics and public participation process. A packet of summary



information, excerpted from the master plan report, was distributed.

The Commission recommended adoption of the master plan. Minutes of the meeting are on file with the City Historic Preservation Office and the letter of recommendation is on file with the Parks and Recreation Department.

***Monday, June 2, 2008, City of Austin Design Commission***

*Attendees: members of the Design Commission, general public in the audience, PARD staff, WPDRD staff, LGA-Al Godfrey, Laurie Limbacher*

Mr. Godfrey gave an illustrated presentation, an overview of the master plan topics and public participation process. A packet of summary information, excerpted from the master plan report, was distributed.

The Design Commission recommended adoption of the master plan, and provided additional recommendations in a review letter. Minutes of the meeting are on file with the Neighborhood Planning and Zoning Department and the letter of recommendation is on file with the Parks and Recreation Department.

***Monday, June 16, 2008, Joint Subcommittee of the Parks Board and Environmental Board***

*Attendees: members of the Joint Subcommittee, general public in the audience, PARD staff, WPDRD staff, LGA-Al Godfrey, Laurie Limbacher, Carolyn Kelley*

PARD staff provided updates on the status work on a maintenance manual for the pool, the interpretive plan for the site and the Barton Springs Pool Master Plan website. PARD staff also presented background information on the origins of the master plan topics, which emerged from stakeholder input prior to the initiation of the master plan project.

The Joint Subcommittee considered a resolution recommending adoption of the master plan. The group discussed the name of the master plan report, and proposed the addition of a phrase following the name, reading “concepts for preservation and improvement”. Members of the Scientific Advisory Committee to the 10A Permit were called on to discuss their letter regarding the master plan, and indicated that the concepts in the master plan do not prohibit realization of their goals for

the site. Their primary concern is making sure that the hydrodynamic modeling is done appropriately. The Joint Subcommittee passed the resolution recommending adoption of the master plan. Minutes of the meeting and the resolution are on file with the Parks and Recreation Department.

***Tuesday, June 24, 2008, City of Austin Parks and Recreation Board***  
*Attendees: members of the Parks Board, general public in the audience and televised viewing, PARD staff, WPDRD staff, LGA-Al Godfrey, Laurie Limbacher*

Mr. Godfrey gave an illustrated presentation, an brief overview of the master plan short term and long term projects. He presented a re-designed cover for the master plan report, incorporating the name revision recommended by the Joint Subcommittee during their meeting of June 16, 2008.

PARD staff presented the recommendation of the Joint Subcommittee to adopt the master plan. The Parks and Recreation Board recommended adoption of the master plan. Minutes of the meeting are on file with the Parks and Recreation Department.

***Wednesday, July 16, 2008, City of Austin Environmental Board***  
*Attendees: members of the Environmental Board, general public in the audience and televised viewing, PARD staff, WPDRD staff, LGA-Al Godfrey, Laurie Limbacher*

Mr. Godfrey and COA staff gave an illustrated presentation, an brief overview of the master plan short term and long term projects.

The Environmental Board recommended adoption of the master plan, and provided additional recommendations in a review letter. Minutes of the meeting are on file with the Watershed Protection and Development Review Department and the letter of recommendation is on file with the Parks and Recreation Department.

***Tuesday, July 22, 2008, City of Austin Planning Commission***  
*Attendees: members of the Planning Commission, general public in the audience and televised viewing, PARD staff, WPDRD staff, LGA-Al Godfrey, Laurie Limbacher*

Mr. Godfrey gave an illustrated presentation, an brief overview of the

master plan short term and long term projects. The Planning Commission recommended adoption of the master plan. Minutes of the meeting are on file with the Neighborhood Planning and Zoning Department.

# REGULATORY MEETINGS

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*Friday, March 16, 2007, City of Austin Building Officials*

*Attendees: COA-Ron Menard, J.B. Meier, LGA-Al Godfrey, Laurie Limbacher*

Plumbing fixture counts: The existing fixture counts at the Bathhouse are acceptable as is. The building officials won't require an increase in plumbing fixtures, if the facility isn't increasing in size. In this case, the "facility" refers to the size of the Pool and the size of the pool decks and sunbathing areas. There is no prohibition against adding fixtures, if that is desired. And, adding a new bathhouse, with more fixtures, is also acceptable.

However, if the size of the Pool is increased or the size of the deck or sunbathing areas are increased, this will trigger full compliance with current code requirements for plumbing fixture counts. To figure the occupant loads for the fixture calculations, use 50 square feet per person in the pool and 15 square feet per person on the deck/lawn area.

Existing Bathhouse: As an existing building, this would need to comply with the Uniform Code for Building Conservation.

New south bathhouse: As a new building, this would need to comply fully with the International Building Code, and associated code requirements. This would also require an accessible route from the new bathhouse to the pool.

Composting toilets: The use of composting toilets has been suggested by stakeholders. The building officials indicated this would need more research, and may not be permissible. Waterless urinals are explicitly prohibited in the code. There is a Zurn urinal that uses 1/8 gallon of water per flush that is approved.

*Tuesday, April 3, 2007, Texas Historical Commission*

*Attendees: THC-Caroline Wright, Brad Patterson, Mark Denton, LGA-Al Godfrey, Laurie Limbacher*

Permitting and review procedures: Eliza Spring, Sunken Garden and the

existing Bathhouse are all designated State Archeological Landmarks, as are several other sites in the vicinity. Work on these will require a historic structures permit review process through the THC.

The various federal entities and laws involved at this site all have authority. The US Fish and Wildlife Service 10(a) permit in place triggers the Section 106 review under the National Historic Preservation Act, even if there are no federal funds involved. The same would apply to any Section 404 permit through the US Army Corps of Engineers. The US-FWS, USACE and THC work cooperatively on sites such as these, with authority for their respective areas of oversight. If there is an adverse effect on an endangered species, the USFWS would have the top slot; but an adverse effect on historic and cultural resources would also need to be mitigated in some way.

It may be useful to work with the THC to develop an investigative program for archeological resources, perhaps with some selective backhoe trenches in areas expected to contain archeological artifacts and information.

*Thursday, June 14, 2007, City Historic Preservation Office*

*Attendees: COA CHPO-Steve Sadowsky, LGA-Al Godfrey, Laurie Limbacher*

The scope and tasks included in the master plan project and the preliminary concepts prepared to date were reviewed.

Existing Bathhouse: The rehabilitation concepts, with the restored entry, visitor's center, women's and men's dressing area, was a focus of discussion. The CHPO felt that the concept was respectful of the historic Bathhouse, and maintained a good flow through the building.

South Bathhouse: No concerns with the concept to date, and a 2 WC scheme would be acceptable.

Landscape and Grounds: Suggests retaining a pecan grove around the Philosopher's Rock and entry area. Acceptable to intermix species in

other areas.

*Thursday, June 14, 2007, City Development Assistance Center*

*Attendees: COA DAC-Kevin Autry, Chris Johnson, Kathy Haught, LGA-Al Godfrey, Laurie Limbacher*

The scope and tasks included in the master plan project and the preliminary concepts prepared to date were reviewed.

There is a general permit in place for PARD, which will apply for much of the work studied in the master plan.

Graywater laws have changed recently, so may want to contact the folks at Austin Water Utility about this.

If there is an increase in impervious cover, will need to participate in the regional stormwater management program. Pervious pavement for pedestrian use does not count against impervious cover allowance, although it may need to be considered in water quality provisions. Vegetative filter strips would be encouraged on a site like this.

Would like to see the parking lot on the south side improved, in terms of runoff protection and water quality.

For a conditional use permit, if the limit of construction is less than 1 acre, an administrative approval will apply.

*Thursday, June 14, 2007, City Environmental Officer*

*Attendees: COA CEO-Pat Murphy, COA WPDRD-David Johns, LGA-Al Godfrey, Laurie Limbacher*

The scope and tasks included in the master plan project and the preliminary concepts prepared to date were reviewed.

Using creek or pool water for irrigation is not an issue for the CEO, from a development permit standpoint. May need an intake permit from LCRA, but not sure.

Rehabilitating the existing Bathhouse also not an issue for CEO, from a development permit standpoint, as all work is on existing impervious cover.

Pervious paving at new walkways would be acceptable, even encouraged. However, the CEO would be concerned about using products like GrassPave or GravelPave at the existing south parking lot. Suggest the use of impervious paving and vegetative swales or filter strips at this location, due to proximity to the Pool.

A graywater system for showers and lavatories is possible. The location of the discharge would need further development, and one should probably use a working assumption that it would need to be pumped to the Zilker Hillside Theater, and used in an irrigation system with a holding tank.

If a new south bathhouse is added, CEO suggests collecting and treating the roof run-off. Would prefer to treat parking lot runoff, and mitigate the roof with vegetative areas. Green roof is a possibility, but would need more information.

Rainwater collection is encouraged at the Bathhouse and any added bathhouse. Even if it is on a small scale, due to the relatively small roof areas, it would be a good demonstration project.

The bypass tunnel can not be eliminated. (In a previous meeting, stakeholders had asked that this possibility be investigated.)

Expanding the pool would require exploration of many checks and balances to get to the point of making the determination to do this. Then, would require special permitting efforts.

The algae skimmer is not a problem, from a development permit standpoint.

In terms of permitting, LDC 25-8-516(A)(2) does not apply, 25-8-261(B)(2) does. Best to assume that special approval from Council will be required for things like the south bathhouse, expanding the pool, reconnecting the Eliza Spring spring run, dam modifications, etc., for work within the Critical Water Quality Zone or the Barton Springs Zone.

*Thursday, June 28, 2007, Texas Historical Commission*

*Attendees: THC-Caroline Wright, Brad Patterson, Mark Denton, LGA-Al*

*Godfrey, Laurie Limbacher*

The scope and tasks included in the master plan project and the preliminary concepts prepared to date were reviewed. Comments were made on a few items, as noted below.

Regarding the overall site plan, the THC recommends refurbishing the entry gate posts and light fixtures. (This is not in the scope of the master plan area.)

From an archeological standpoint, the new south bathhouse and accessible path would probably not be a problem, but will require an Antiquities Permit application. THC staff would be happy to walk the area with the master planning team, to further review the conditions. The design of new buildings should be compatible with the overall historic nature of the park, but not derivative of the existing bathhouse building.

As an aside, it was noted that there are some forthcoming archeological investigations to be conducted in the vicinity of the master plan study area, associated with the ACWP project there. If the COA wants to install interpretive signage associated with these investigations, this might qualify for a TPTF grant.

Installing a new dam in the same location may trigger archeological investigations and other forms of mitigation of adverse impacts. If the dam abutments are larger, this could be an especial challenge.

Moving a dam and expanding the pool introduces a number of complex issues. Impounding the water in a different location changes the context, a special issue for Sunken Garden. This would be a very complex permitting issue, as well, and the adverse effects would be numerous. It would trigger coordination with other federal agencies and could require several years to complete the process.

*Thursday, July 5, 2007, US Fish and Wildlife Service  
Attendees: USFWS-Will Amy, COA PARD-Farhad Madani, COA  
WPDRD-Laurie Dries, LGA-Al Godfrey, Laurie Limbacher*

In general terms, amendments to the Habitat Conservation Plan under which the 10(a) permit is issued, are possible. They must be reviewed

and approved by USFWS, as either a minor or a major amendment. A major amendment will be time-consuming (a few years) to complete. The amendment information needs to include a thorough description of the change proposed, scientific analysis, environmental analysis, options considered as applicable, information on estimated take by activity, cleaning activity, best management practices during construction, etc. Include both positive and negative impacts on the habitat. Preferable to make one comprehensive request for all amendments. Once submitted to USFWS, they review, work through any issues. Once resolved, amendment request published in the Federal Register for public review and comment. Might also be a public hearing, if so deemed through the NEPA process. In some cases, prior public hearings may be adequate. If the USACE is involved, there is potentially a different mechanism to be used for review and approval. They work under Section 7. But, will probably will defer to the 10(a) permit.

Ms. Dries will provide the full copy of the 10(a) permit and annual reports to LGA. The USFWS Barton Springs Salamander Recovery Plan is an advisory, guideline document.

Mr. Amy noted that restoration projects for endangered species have potential to apply for Section 6 grant funds, with applications administered by TPWD. Money goes from USFWS thru the state to TPWD. May be evaluated through regional office, or at national level. Potentially up to 75% from government, and 25% from owner. Some of the master plan projects may be eligible for this type of funding.

The scope and tasks included in the master plan project and the preliminary concepts prepared to date were reviewed with Mr. Amy.

New (or restored) openings in upstream dam: Could be considered an adaptive management change. Monitor to see if desired results are achieved. Use best management practices during construction – oil containment plans during construction and operation of the gates.

Repair bypass tunnel joints: Already have approval to repair several joints. Would use the same methods for additional joints. New leaks are depositing lot of sediment on the beach. All joints are in some level

of disrepair. Probably already have broad USFWS approval to do this, from previous approval of several years ago. Should be fairly straightforward to add joint repairs.

Algae control methods, skimmer and ultrasonic: For the ultrasonic, COA needs to test the effect on the salamanders in the captive breeding population. Also, need to finalize the appropriate locations for the devices. May want to keep algae around the main spring, particularly since the higher current velocity promotes the beneficial algae in these locations. USFWS – to evaluate the proposal would need some info on effect on captive group, and info on the effect on other aquatic species in general (need to maintain food source). USFWS will need to have some information to demonstrate that this algae reduction is not harmful to the salamanders and their habitat. May require a minor amendment, if can demonstrate that the take is not increased.

Sediment/gravel removal: Proposed crane location seems OK. May also be able to use the old clam shell. Perhaps the cleaning would be in the realm of the current permit, since an amendment was not required for the vacuum effort. Could be incorporated in to the spring clean covered under the current permit.

Downstream dam: relocate, increase number of gates. Timing of draining the pool would need to be considered in evaluating this proposal. Discussion of possible problems with the gate types. These changes would be a major amendment.

Moving the downstream dam: From this preliminary discussion, it appears this would be a complex amendment and approval process. Discussed logistical issues with expanding the pool and with relocating the pool. The environment is highly altered from the natural condition. To move dam based on the goal of reconnecting the salamander habitat would rely heavily on modeling. Salamanders are not a lake species, but a stream species. Not likely that this would enhance the salamander habitat, because they are not lake species. Already exposed to almost 100 years of adaptations in response to the changes already made to the environment. Don't need to move a dam to enhance migration. Can amend the permit to allow the moving of salamanders from one spring

to another. Potential cost for the project may be better spent on other water quality improvements.

Sunken garden: Protect the stream and riparian habitat. For both Sunken and Eliza, USFWS interested in a project that looks in a holistic fashion at both the structures and the salamander habitat. Suggests doing Sunken first, before Eliza. Once there is a more stable population at Sunken, could move on to Eliza.

Eliza: Concept to create a meandering stream, maintaining the velocity and expanding the natural stream habitat. The 11,000 SF of managed habitat on the beach does not provide good habitat. But, expanding Eliza could provide more habitat area.

*Tuesday, July 10, 2007, US Fish and Wildlife Service*

*Attendees: USFWS-Will Amy, COA PARD-Tony Arnold, Tom Nelson, COA WPDRD-Laurie Dries, LGA-Al Godfrey, Laurie Limbacher*

The discussion of master plan projects and preliminary concepts to date, begun in the meeting of July 5, 2007, was continued in this meeting.

Re-circulation of spring water across the beach area: More flow over beach area will improve the habitat, particularly for algae control and for accumulated sediment. Algae is worst during a drought. Discussed putting a pump in the cave area, near the main spring. This pump location is a concern to USFWS, because of the proximity to habitat. Also, the pump may need to be fairly large to effect improvement. Seems best to do a pilot or test installation, to further explore this possibility. Related to this item, another pump for cleaning is OK in concept. Could be a minor or a major amendment, depending on its design.

Sediment/gravel removal: A slightly different possibility than was previously discussed. Barge/clam shell digger to small truck carts to parking lot. The clamshell digger might be acceptable, in terms of generated turbidity, since it would not be used in a sensitive salamander area. COA has some prediction formulas for anticipated turbidity, changes in dissolved oxygen. Would need to provide a design document, with scientific data. Address concerns about depositing sediment on the beach area, by using underwater booms to separate excavation area from

salamander areas. City has to look at options, do a cost benefit analysis to show impact on salamander. Once system is more focused, need to see a biological analysis. Potentially a relatively short review period, perhaps under the context of the existing HCP. Amendments involve additional take of salamander that was not envisioned under the HCP. If seems benign, and no additional take, would be similar to the dredging done previously.

Gates in the dams: Simple option – modify existing dams with new weir type gates. Complex option – bascule gates. Held in the upright position by hydraulic mechanisms. Both gates are throttleable. Weir gates open from the bottom, so more tendency to scour the bottom. Bascule gates open from the top, so more useful in flood mitigation. USFWS has no problem in principle with the bascule gates, but would be a major amendment. Height of new dam would be an issue in terms of effecting the hydrology of Eliza and Sunken.

Trees, grass, electrical: Depth and placement of trenches for underground electrical need to be coordinated with the existing spring system at the fault line. No issues with trees, grass. Maintain IPM program-no fertilizers or pesticides.

Bathroom: no issues

Downstream park: no issues

South bathroom: Conceptually seems OK. Use best management practices to minimize runoff into the pool.

Eliza: Like idea of creating destination for interpretation and historic restoration. Habitat restoration for salamander is also good. Discussed methods to remove the concrete slab. Tread very lightly, approach well thought out, some contingencies to allow for field adaptation to respond to actual conditions. Also, assume that work will be done with smaller equipment, more man power. Try to provide some precaution against flood washing out – raised berm or bank to divert water. May be able to do this project in the short term, if it is determined that the take is minimal, and the benefit is high. Preference is still to raise the population in Sunken Garden first. May be able to coordinate changes in Eliza

with further research on the mark-recapture program. Will study the population size, growth rate of salamanders, mortality rate, fecundity, other things to determine whether population is increasing or decreasing. Funding will come in to place hopefully in the fall – then should be doing the study for 2 years before work begins in Eliza.

Sunken: Discussion of the proposed rehabilitation modifications. Fence seems to be in the same place, which is preferred.

Discussed the Section 6 grants again, as some of the master plan projects would probably be good candidates.

*Monday, August 20, 2007, Texas Department of Licensing and Regulation*

*Attendees: TDLR-Robert Posey, LGA-Laurie Limbacher*

The scope and tasks included in the master plan project and the preliminary concepts prepared to date were reviewed. Comments were made on a few items, as noted below.

Rehabilitation of the existing Bathroom must comply with the alterations to existing buildings/historic preservation sections of TAS.

If a new bathroom is added, there must be an accessible route from the accessible parking to the building, only. If a path to the Pool from the new bathroom is provided, it must be accessible. But, under the ADA as currently written, the primary function occurs at the building and not at the Pool.

Major revisions to the ADA have been written by the Access Board, are through the public review and comment period and are awaiting action by the Department of Justice. These revisions will require accessible routes to the pool, as a primary function. TDLR is poised to revise TAS immediately, to incorporate these revisions.

A platform lift is not a preferred method of access, and requires variance approval before use is allowed. Lifts must be independently operable, and available for independent use during all hours of operation.





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# ACKNOWLEDGEMENTS

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Betty Dunkerley, Mayor Pro Tem  
Lee Leffingwell  
Mike Martinez  
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Brewster McCracken  
Sheryl Cole

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## *CITY OF AUSTIN BOARDS AND COMMISSIONS:*

*Parks and Recreation Board*  
*Environmental Board*  
*Design Commission*  
*Historic Landmark Commission*  
*Planning Commission*  
*Joint Subcommittee of the Parks Board and the Environmental Board*

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