RIVERSIDE BOARDWALK INVESTMENT STUDY

Completing the Town Lake Trail

September 2007

Town Lake Trail Foundation

"The Town Lake Trail sees as many as 15,000 visitors on some days – people seeking not just fitness and recreation but also spiritual rejuvenation. In completing the Trail, we'll be able to dramatically expand those opportunities and make downtown Austin an even more vibrant place to live, visit and play.

Mayor Will Wynn

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EXECUTIVE SUMMARY

The Town Lake Trail is a critical part of Austin's civic infrastructure but it remains incomplete. Created in the 1970s and expanded in several phases over 15 years, Austin's most widely used trail is forced away from its namesake location for over one mile along its southeast route. This gap in the Trail's path along Lady Bird (Town) Lake is much more than an inconvenient detour - it diminishes the Trail's overall utility to the Austin community and it threatens the safety of its users.

This document, the Riverside Boardwalk Investment Study (RBIS) addresses the issues related to completing the Trail and outlines the options for the stakeholders and the community at large to consider.

The key findings of the RBIS are as follows:

- The gap in the Trail is a considerable safety issue with over 53 accidents over the last 6 years resulting from collisions between vehicles and pedestrians/bicyclists.

- The increase in population density near the Trail will continue, resulting in increased Trail usage and the potential for vehicle/pedestrian accidents unless the current route is changed and the lakefront Trail is completed.

- A combination of topography, obstruction posed by the interstate highway and private property issues will necessitate an over water boardwalk solution in some sections, and possibly over the entire length of the Riverside Gap, if the Trail is to be completed. The Riverside Boardwalk could be constructed in "Segments of Independent Utility" because some sections could be stand-alone projects even in the absence of the adjoining section(s).

- While there are considerable issues of permitting, route alignment, aesthetics, public access and funding to be addressed, there is a clear possibility that the Trail can be completed so its entire path is in close proximity to Lady Bird Lake, maintaining a continuity of experience along all 10 miles of Trail.

INTRODUCTION

The purpose of this document is to inform stakeholders and decision-makers about key issues that must be considered and addressed if the Austin community is to complete the Town Lake Trail ("the Trail") by closing the Riverside Gap. The Riverside Gap is the 1.1 mile section where the Town Lake Trail leaves Lady Bird Lake and users are directed to surface streets and over a dangerous multi-lane walkway over I-35. This Investment study will present all the major issues and options that need to be resolved before the project can move forward.

One of our City's primary attractions is the Trail, a critical feature in making Austin one of the most livable cities in America. The Trail's easily accessible central location, its orientation around Lady Bird Lake and wooded green spaces make the Trail one of the most unique urban trails in America.

The Trail is primarily used as a place of recreation and leisure for walkers, runners and bikers and as an entry point for boaters, fishermen and picnickers. As new residences and commercial buildings continue to expand downtown and in the surrounding area, the Trail is increasingly used as a transportation route for workers, tourists and students traveling around Austin.

Most users are residents, but according to a City of Austin Parks and Recreation Department study, 10% of its daily users are tourists and other visitors. Over three-quarters of all users enter at four popular locations: Austin High, Butler Shores, Auditorium Shores and near the Austin Nature Center.

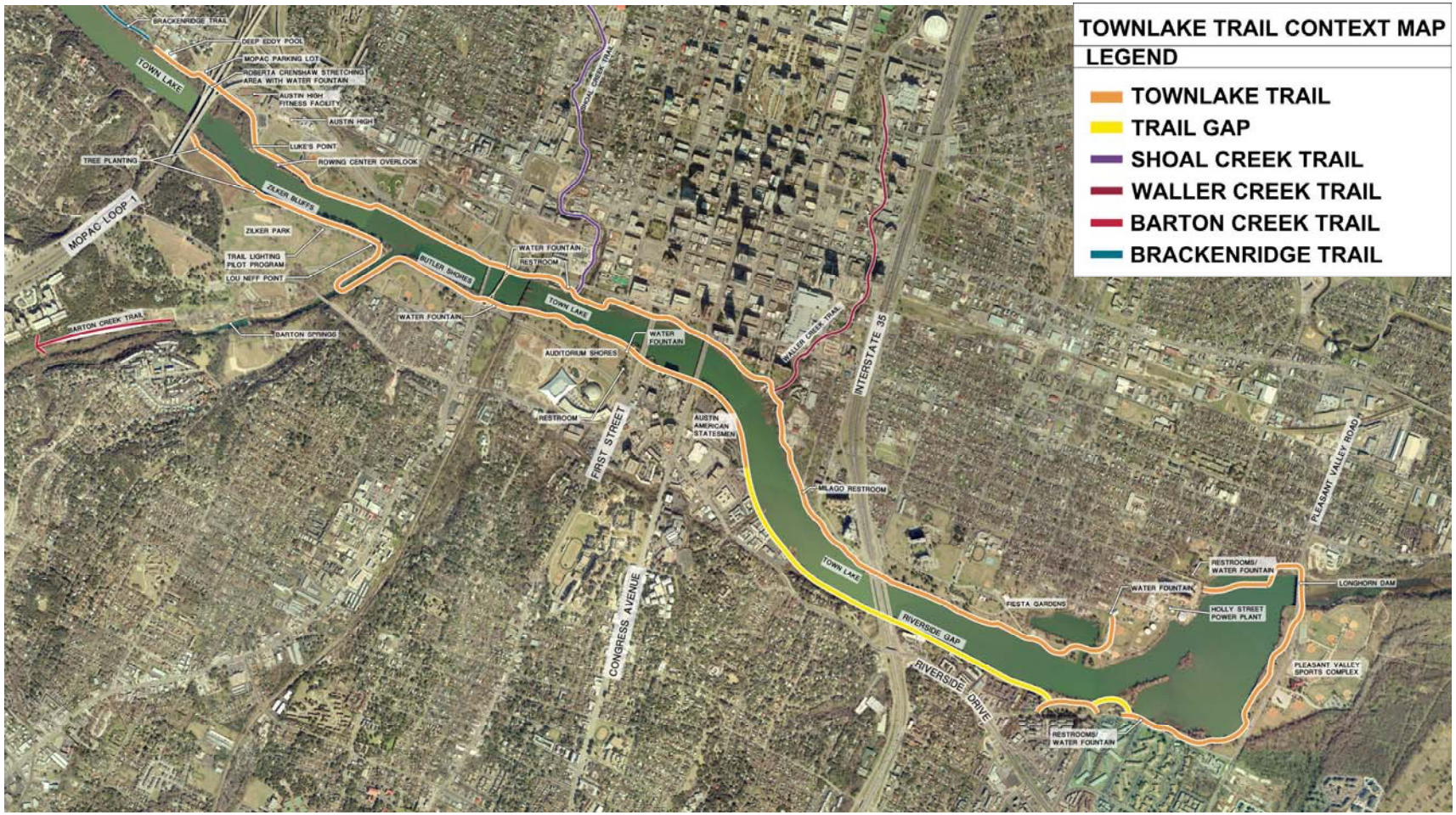
Currently, the Trail on the south side of Lady Bird Lake is incomplete along the section between the Austin American Statesman and Lakeshore Park, east of I-35. Trail users must detour to the sidewalk along Riverside Drive and S. Lakeshore Blvd. which crosses an exit and an entrance ramp to I-35 and more than 35 driveways, curb cuts and side street intersections. Approximately 7,000 feet of new trail construction is necessary to complete the Trail thereby providing a safer route for Trail users.

Current Trail Termination at Austin American-Statesman

Completing the Trail by closing the Riverside Gap has been recommended by various city-sponsored studies and master plans including the Town Lake

Comprehensive Plan (1968) and the Town Lake Corridor Study (1985). The Town Lake Waterfront Overlay Ordinance encourages extension of the trail through mandates placed on redevelopment projects along the waterfront. In addition, the Parkland Dedication Fee Ordinance provides a funding source for park projects such as the Boardwalk.

This document will outline the steps necessary to implement the Town Lake Trail Foundation's vision for a safe and complete Town Lake Trail.



PURPOSE AND INTENT OF PROJECT

The lack of a complete Trail along the Lady Bird Lake negatively impacts Austin in many areas. The Riverside Boardwalk Investment Study addresses four of the most pressing needs driving the development of the Riverside Boardwalk. They are:

- Safety
- Recreation
- Transportation
- Community Connectivity

Safety

The current route of the Trail along Riverside Drive and over I-35 is dangerous to its users and motorists alike. Current conditions require users to exit the Trail at the Austin American Statesman and divert onto the narrow sidewalk along Riverside Drive. This 1.3 mile stretch involves crossing multiple lanes of I-35 frontage roads as well as other dangerous vehicle/pedestrian conflict points along Riverside Drive. Approximately 70,000 cars per day move along Riverside Drive adjacent to the sidewalk with no barrier between them and pedestrians[1]. Furthermore, the volume of traffic entering and exiting I-35 at Riverside Drive is incompatible with heavy pedestrian usage associated with the urban trail.

Current Trail Experience along Riverside Drive

Dangerous crossing at I-35 hinders pedestrian access for new developments east of interstate

Motorists entering and exiting Riverside businesses and cross streets endanger pedestrians and other Trail users. Along the stretch of road from the Austin American Statesman to Lakeshore Park there are 35 points of conflict, including four signalized intersections.

[1] Capital Area Metropolitan Planning Organization – Regional Data

The intersection of Riverside Drive and I-35 is one of the most dangerous nodes. With six lanes of traffic and two ramps to cross, its non-demarcated walkways provide no warning or protection to vehicles or pedestrians.

Based on Austin Police Department report statistics of accidents along this stretch of road, there have been fifty-five vehicle-pedestrian or vehicle-bicycle conflicts from January 2001 to July 2004. A new route along Lady Bird Lake would give the community an opportunity to reduce accidents like these and help ensure the safety of Trail users.

Recreation

As many as 15,000 people use the Trail per day and up to 1.5 million visitors access it every year[2]. At least 15 formal and hundreds of informal running groups use the Trail every week for training and recreation. Thousands of bicyclists, walkers, fishermen, families and boaters also use the Trail, its access points to the lake and its parklands every week. Many of Austin's most prominent recreational attractions can be accessed from the Trail including Zilker Park, the Congress Avenue Bridge bat colony, Auditorium Shores, Barton Springs and Deep Eddy pools, Town Lake Park, Guerrero Park and the Palmer Event Center.

As the City grows and new developments emerge, it is vital that park resources are dedicated to accommodate current and future Trail users such as the proposed extension of the Blunn Creek Trail, which is anticipated to cross under Riverside Drive and extend to the shores of Lady Bird Lake. Providing recreational opportunities like those afforded by the Trail helps meet the goals of the Mayor's Fitness Council and keeps Austin high in the rankings of both Fit and Livable Cities[3].

Officials at the Parks and Recreation Department, the Town Lake Trail Foundation, the Austin Parks Foundation and community recreational leaders like RunTex and the Texas Bicycle Coalition all state that the popularity of the Trail is tied to its unique placement along the lake and its separation from vehicular roadways[4]. The unique experience of jogging or walking in a scenic green space near water and wildlife draws people to the Trail and encourages recreation and exercise.

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[2] Bowman Melton Study
[3] Ranked 10 Healthy City, Sperling's Best Places & Ranked 23 Most Fit, Men's Fitness magazine
[4] Per conversations with Paul Carrozza (RunTex) and Robin Stallings (Texas Bicycle Coalition)

But the gap in the Trail along Riverside Drive represents a marked contrast in the "Trail experience" found on other sections. Where the Trail leaves the lakefront, usage dramatically decreases; many users simply discontinue their run, walk or ride, and turn around rather than detouring to the City street. The abrupt beginning of the detour deters longer runs by visitors and residents alike and tends to concentrate most foot traffic on Trail sections west of I-35. Were the Trail only lightly or moderately used, this congestion would likely be a merely inconvenient outcome. But as Trail usage – already the highest among all Central Texas' trails - continues to grow every year, congestion is becoming marked enough to diminish its effectiveness and long term appeal as a recreational resource.

Completing the Trail so that there is no break in the continuity of the Trail experience would greatly enhance the number of people the Town Lake Trail can serve without diminishing the recreational experience of its users.

Current route to Riverside Drive from Trail termination

Current Riverside Drive Pedestrian Experience

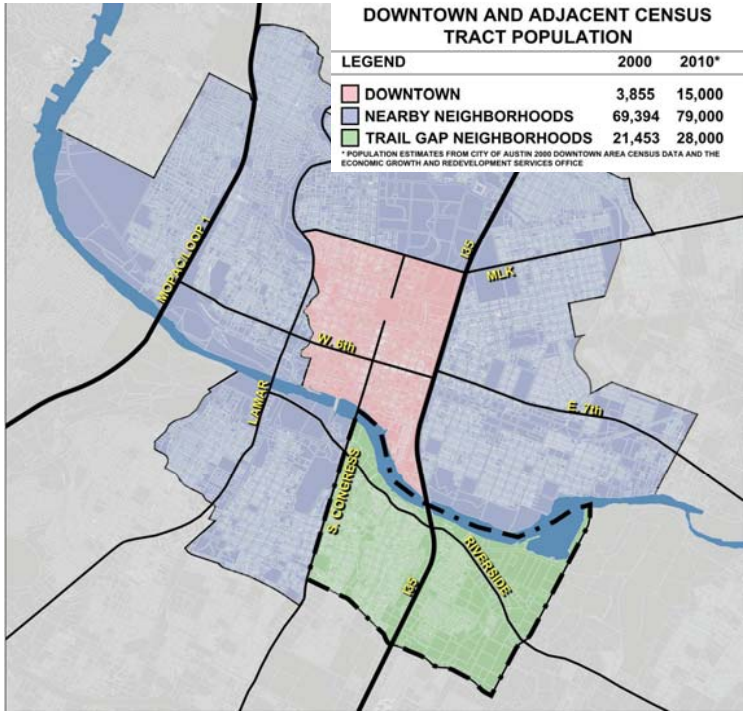
The Boardwalk would allow pet owners to access Norwood Park without interaction with traffic on Riverside Drive

Transportation

While the Town Lake Trail is mostly recognized as a place of recreation and scenic beauty, it also serves a vital role as a transportation corridor. The Trail serves as a well-used bike and foot path for thousands of Austinites who live or work near the Trail or along one of its "spoke trails" like the Shoal Creek Greenbelt. Furthermore, were the Trail to be completed, it is likely that transportation-related usage by area residents would increase.

Currently, 21,453 people live and work in the census districts located along the Riverside gap. With new development proposed, this number will increase by approximately 6,800 people over the next three years. New development also includes 100,000+ square feet of office/retail space in the same time frame.[5] Completing the Trail would benefit existing and future residents, giving them an additional pedestrian-oriented transportation route as encouraged in the Town Lake Corridor Study.

Demographics of the downtown Austin area indicate there are 90,000 employees, 58,000 university students and thousands of visitors to the downtown area daily.[6] Traffic in and around downtown is a sore subject for most Austin residents and with many more trip generating housing developments being constructed, strains on the vehicular transportation network will



continue to rise. More than 6,700 residential units are planned or under construction, joining the 1,300 units already downtown. When completed in 2010, these projects will more than double the number of people living downtown to over 11,000. The amount of retail and office space will increase approximately two-million square feet over the next three years, supporting approximately 8,000 new employees.[7]

In addition to existing and future residents and employees, many students are able to use the Trail to go to and from school.

[5] Austin Downtown 2000 Census Data
[6] Downtown Austin Alliance
[7] City of Austin Economic Growth and Redevelopment Services Office

Downtown Emerging Projects as Trip Generators

As of June 2007

Complete		
Retail	289,943	Sq.Ft.
Restaurant/Entertainment	82,114	
Office	1,946,491	Sq.Ft.
	6,758	Estimated Employees
Hotel Rooms	1,747	
Residential	1,427,172	Sq.Ft.
	1,381	Units
	2,347	Estimated Residents
Total Square Feet	**6,550,390**	*****

Site Cleared / Under Construction		
Retail	58,964	Sq.Ft.
Restaurant/Entertainment	25,110	
Office	127,607	Sq.Ft.
	569	Estimated Employees
Hotel Rooms	254	
Residential	1,441,575	Sq.Ft.
	2,031	Units
	3,454	Estimated Residents
Total Square Feet	**2,749,384**	*****

Planned		
Retail	428,227	Sq.Ft.
Restaurant/Entertainment	90,481	
Office	983,861	Sq.Ft.
	606	Estimated Employees
Hotel Rooms	1,869	
Residential	1,803,031	Sq.Ft.
	3,323	Units
	5,649	Estimated Residents
Total Square Feet	**4,370,798**	*****

Summary		
Total Residential	4,671,778	Sq.Ft.
Total Residential Units	6,735	
Estimated Residents	11,450	
Total Retail	777,134	Sq.Ft.
Total Rest/Enter	197,705	Sq.Ft.
Total Office	3,057,959	Sq.Ft.
Total Hotel Rooms	3,870	
Estimated Employees	7,933	
Total	**13,670,572**	*****

* Many projects have not provided a breakdown of sq. ft. by use, this number will not equal the total of individual uses;

**Source-City of Austin Economic Growth and Redevelopment Services Office

Three of the Austin Community College (ACC) campuses, Eastview, Riverside and Rio Grande have combined populations of 17,000 students commuting to those campuses each day. The highest concentration of students per zip code is located along the Trail gap and south of Lady Bird Lake.[8] The proposed section of Trail would add an additional route in accessing these campuses.

In addition to the ACC and Acton campuses, many other school's students would benefit from completing the Town Lake Trail Loop. The completion of the loop would allow students living along Lady Bird Lake to access the many other sidewalks and trails which connect to the various educational institutions in Austin.

The population density of central Austin is expanding dramatically. The expansion of the Trail may provide a safer and faster pedestrian and bicycle transportation alternative within the growing population center.

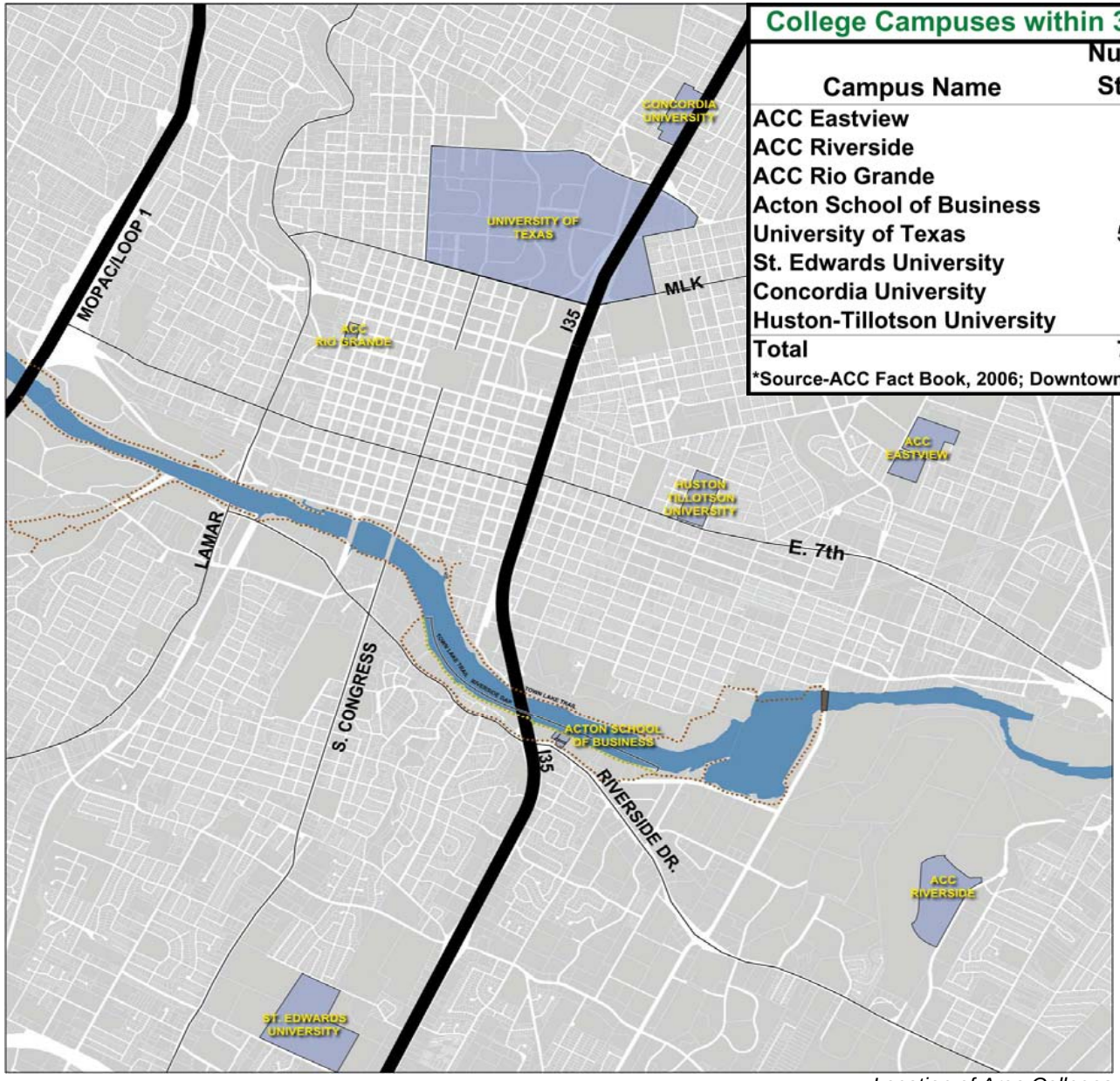
Planned projects, such as the Lakeshore PUD and Star Riverside will continue to increase the demand and necessity for access as they bring additional residents and employment opportunities to the Town Lake Trail corridor. Moreover, the completed trail would allow better access to Colorado River Park, Lakeshore Park and Metro Park.

[8] Austin Community College Fact Book Preview Fall 2006

Barton Springs Pool

Trip Generators and Distances to Trail

Attraction	Distance from Trail
Auditorium Shores	Along Trail
Barton Springs	0.3 Miles
Capital Complex	0.7 Miles
City Hall	.01 Miles
Concordia University	3.2 Miles
Congress Bridge	Along Trail
Fiesta Gardens	Along Trail
Huston Tillotson University	1.7 Miles
Lakeshore Park	Along Trail
Paramount Theatre	0.5 Miles
Royal G. Guerrero Baseball Fields	Along Trail
St. Edwards University	1.6 Miles
Texas State Cemetery	1.0 Miles
Treaty Oak	0.4 Miles
University of Texas	1.8 Miles
Whole Foods	0.3 Miles
Zilker Botanical Gardens	0.2 Miles
Zilker Park	Along Trail

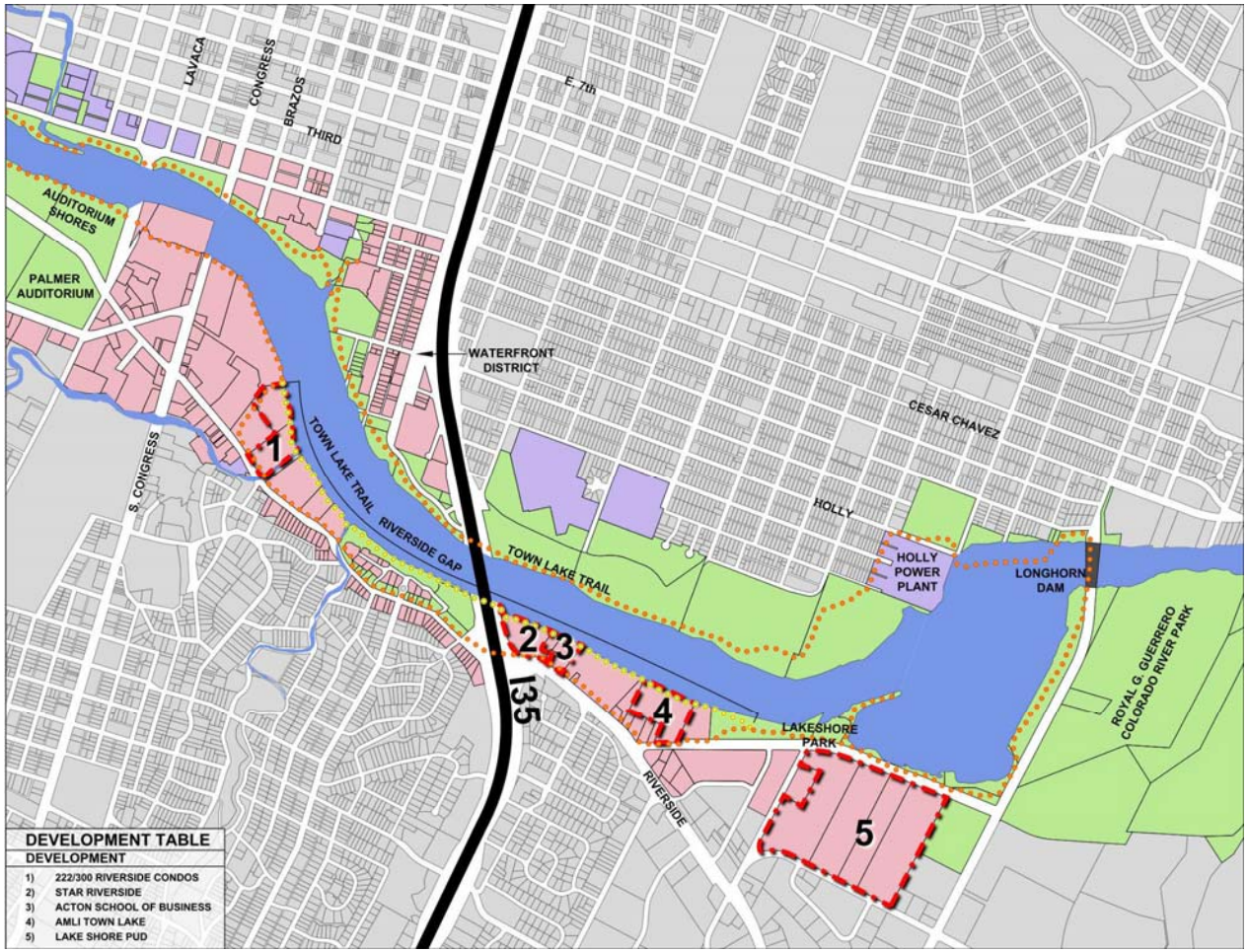


Location of Area Colleges

College Campuses within 3.5 miles of the Trail

Campus Name	Number of Students	Distance from Trail
ACC Eastview	3,416	1.1
ACC Riverside	6,612	2.7
ACC Rio Grande	7,120	1.6
Acton School of Business	50	0.8
University of Texas	51,000	1.8
St. Edwards University	5,200	1.6
Concordia University	1,211	3.2
Huston-Tillotson University	674	1.7
Total	**71,867**	

*Source-ACC Fact Book, 2006; Downtown Austin Alliance



Planned Residential Development Along the Gap

	Population	Units	Office/ Retail (sf)
222/300 Riverside	1,424.6	838	
Star Riverside	431.8	254	3,600
AMLI Town Lake	714	420	10,000
Lakeshore PUD	4,250	2,500	100,000
Total	**6,820.4**	**4,012**	**113,600**

*Source-City of Austin Economic Growth and Redevelopment Services Office – June 2007

DEVELOPMENT ALONG THE GAP
LEGEND

- INSTITUTIONAL PROPERTY
- PRIVATE PROPERTY
- PARKLAND
- TOWNLAKE TRAIL
- TRAIL GAP

* COMPILATION OF DATA FROM AUSTIN CHRONICLE AND THE ECONOMIC GROWTH AND REDEVELOPMENT SERVICES OFFICE

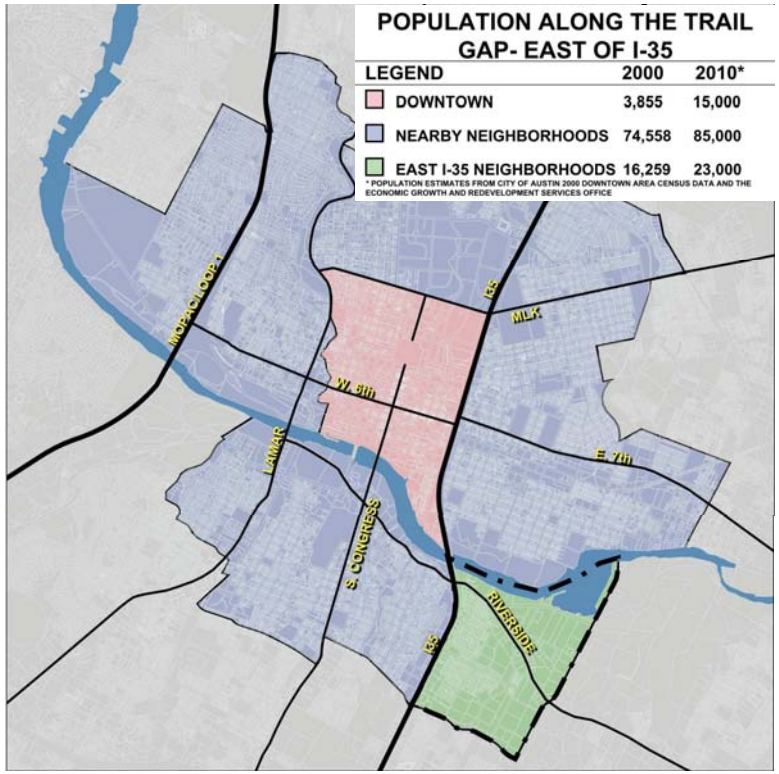
Community Connectivity

Of the 21,453 people living in census districts along the Riverside Gap, over 16,000 live east of I-35. Long considered a physical as well as a community barrier, I-35 could be bridged with a new trail connection. Completing the Trail would be a big step towards integrating a divided community.

"This one-mile stretch may only be a small part of the whole 10-mile loop, but the continuity and connectivity we'll realize by closing the gap will bring exponential benefits to the city. This is a key step in bridging east and west Austin – not just geographically, but as a community.

Mayor Will Wynn

Current pedestrian crossing at Riverside Drive and I-35



EXISTING CONDITIONS OF THE PROJECT AREA

The existing conditions within the Riverside Gap comprise the set of constraints that will drive the alignment and design decisions as the project moves forward. This chapter of the Investment Study contains a detailed photographic inventory of the entire Trail extension segment. A series of detailed panels have been prepared to illustrate the site specific constraints and physical conditions that need to be considered. This analysis will serve as the framework for the Trail design and placement options presented later in this Investment Study.

Steep slopes located along the Trail corridor

Physical Conditions

Factors present in the Riverside Gap and their potential effects on the design and alignment of the Boardwalk are tabulated as follows:

Existing Physical Constraints	
Physical Condition	**Potential Effect on Trail Alignment or Design**
Existing boat launches and docks	Need to consider current access points
Existing topography including steep slopes and rock bluffs	Rock slides require Boardwalk to be positioned away from shore
Stream confluence/Drainage outflows	Need to provide access for City crews to access floating pollution control booms
Existing development	Placement of observation/rest areas to minimize impact on existing residential property
Future development	Waterfront Overlay and Parkland Dedication Ordinances encourage redevelopment projects to provide public access along waterfront (which may obviate need for the corresponding section of over water Trail) as well as trailhead access connecting trail to Riverside and S. Lakeshore Blvd.
Town Lake high water elevation (established by LCRA)	Freeboard (distance between water level and bottom of structure) should be sufficient such that structure is not immersed in normal high water events.

Property Ownership and Existing Development Conditions

The City of Austin Department of Real Estate Services has compiled a comprehensive inventory of property boundaries within the Riverside Gap. Based on an analysis of this data, the alignment of the Trail is not anticipated to require any real estate or easement acquisition. A report titled *Boundary Limits along the South Bank of Town Lake between Congress Avenue and South Lakeshore Boulevard* by Gary Glover, City of Austin, Department of Real Estate Services may be found in Appendix A of this study. The full report and all electronic attachments are on record with the City of Austin, Department of Real Estate Services.

The following images document the current site conditions of the Riverside Gap area. Information shown on the following images was compiled from the City of Austin Department of Real Estate Services report described above and City of Austin GIS data, plat and deed records.

NORTH

0 500 1000 2000

Base mapping for the corresponding sheets is compiled from City of Austin GIS Data, Plat and Deed information and research done by City of Austin Real-estate Services. All map data should be considered as representational and preliminary, in need of verification, and subject to change. This land plan is conceptual in nature and does not represent any regulatory approval.


PROPOSED REDEVELOPMENT SITE
RIVERSIDE SQUARE APARTMENTS
PROPOSED CONDOMINIUM DEVELOPMENT
AUSTIN AMERICAN-STATESMEN PARKING
EXISTING KAYAK DOCK AND WOOD DECK
WOOD DECK
1
2
3
4
LADY BIRD LAKE
LEGEND
APPROXIMATE PROPERTY BOUNDARY
SECTION A
NORTH
0
40
80
160

1 - EXISTING KAYAK DOCK & WOOD DECK

2 - STEEP ROCK SLOPES CLOSE TO BUILDINGS

3 - STEEP SLOPES CLOSE TO BUILDINGS

4 - EXISTING WOOD DECK AND STEEP SLOPES

SECTION A


RIVERWALK
CONDOMINIUMS
EAST BOULDIN CREEK
PROPOSED
REDEVELOPMENT
SITE
RIVERSIDE
SQUARE
APARTMENTS
4
EXISTING KAYAK
LAUNCH
3
2
1
EXISTING
WOOD DECK
LADY BIRD LAKE
LEGEND
APPROXIMATE PROPERTY
BOUNDARY
SECTION B
NORTH
0
40
80
160

1 - EAST BOULDIN CREEK OUTFALL

2 - EXISTING WOOD DECK AT EAST BOULDIN CREEK

3 - RIVERWALK CONDOMINIUMS CLOSE PROXIMITY TO LADY BIRD LAKE

4 - EXISTING KAYAK LAUNCH

SECTION B

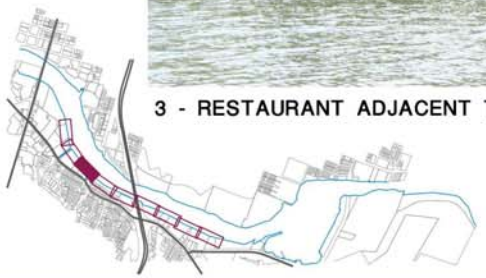

CITY OF AUSTIN PARK LAND
BLUNN CREEK
JOE'S CRAB SHACK RESTAURANT
1
2
3
4
LADY BIRD LAKE
LEGEND
APPROXIMATE PROPERTY BOUNDARY
SECTION C
NORTH
0
40
80
160

1 - EXISTING OFFICE BUILDING

2 - JOE'S CRAB SHACK RESTAURANT

3 - RESTAURANT ADJACENT TO BLUNN CREEK OUTFALL

4 - BLUNN CREEK OUTFALL AND NATURAL EDGE



SECTION C


Park Pl.
Edgecliff Ter.
SINGLE-FAMILY PRIVATE RESIDENTIAL
CITY OF AUSTIN PARK LAND
ROCK BLUFF
3
2
1
LADY BIRD LAKE
LEGEND
APPROXIMATE PROPERTY BOUNDARY
SECTION D
NORTH
0
40
80
160

1 - EXISTING SHORELINE

2 - STEEP SLOPES

3 - WOODED EDGE

SECTION D


DOG
PARK
Edgecliff Ter.
CITY OF AUSTIN
PROPERTY
CITY OF AUSTIN PARK LAND
FRONTAGE ROAD
IH-35
ROCK BLUFF
3
2
1
LADY BIRD LAKE
LEGEND
APPROXIMATE PROPERTY
BOUNDARY
SECTION E
NORTH
0
40
80
160

1 - STEEP SLOPES

2 - STEEP SLOPES

3 - STEEP ROCK SLOPES BELOW FREEWAY

SECTION E


PROPOSED CONDO DEVELOPMENT
HARPERS BRANCH
FRONTAGE ROAD
IH-35
ROCK BLUFF STEEP SLOPES
EXISTING WOOD DECK
LADY BIRD LAKE
1
2
3
4
LEGEND
APPROXIMATE PROPERTY BOUNDARY
SECTION F
NORTH
0
40
80
160

1 - STEEP ROCK SLOPES BELOW FREEWAY

2 - STEEP ROCK SLOPES

3 - HARPERS BRANCH OUTFALL

4 - EXISTING WOOD DECK

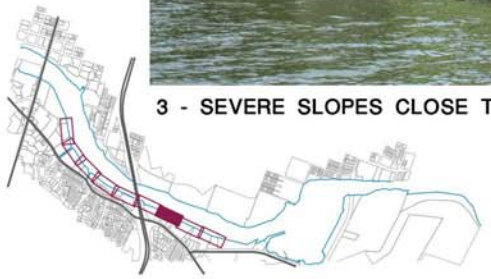
SECTION F


SIGNIFICANT
RETAINING WALL
BREAKERS
APARTMENTS
ACTON SCHOOL
OF BUSINESS
3
2
1
SIGNIFICANT
SLOPES
ROCK BLUFF
STEEP SLOPES
LADY BIRD LAKE
LEGEND
APPROXIMATE PROPERTY
BOUNDARY
SECTION G
NORTH
0
40
80
160

1 - ROCKY, STEEP, WOODED SLOPES

2 - STEEP ROCK SLOPES CLOSE TO BUILDINGS

3 - SEVERE SLOPES CLOSE TO BUILDINGS



SECTION G


FORTY LOVE FILMS, INC.
LAKESHORE APARTMENTS
BREAKERS APARTMENTS
BULKHEAD
STEEP SLOPES
LADY BIRD LAKE
1
2
3
4
LEGEND
APPROXIMATE PROPERTY BOUNDARY
SECTION H


NORTH
0
40
80
160

1 - STEEP SLOPES ADJACENT TO CLUBHOUSE, POOL

2 - STEEP, VEGETATED SLOPES

3 - EXISTING DRAINAGE

4 - EXISTING BULKHEAD AT LAKESHORE APARTMENTS

SECTION H


THE WATERFRONT CONDOMINIUMS
LAKESHORE APARTMENTS
LAKESHORE PARK
DRAINAGEWAY
BULKHEAD
1
2
3
4
EXISTING WOOD DECK
LADY BIRD LAKE
LEGEND
APPROXIMATE PROPERTY BOUNDARY
SECTION I
NORTH
0
40
80
160

1 - EXISTING BULKHEAD

2 - EXISTING DRAINAGEWAY

3 - SHORELINE AT WATERFRONT CONDOMINIUMS

4 - EXISTING WOOD DECK

SECTION I

PERMITTING AND CODE REQUIREMENTS

The following agencies will play a role in implementing the construction of the Trail.

Texas Department of Transportation (TxDOT)

Considerations

The Town Lake Trail extension would pass directly underneath Interstate 35 (I-35). Due to this intersection, coordination with TxDOT will be necessary.

Assuming there will be no attachments or physical impacts to the I-35 bridge structure, there are no permits required from TxDOT; however, the Boardwalk structure will have to be constructed in a manner that accommodates maintenance and potential future modifications to the I-35 structure.

Recommendations to address TxDOT concerns

Coordination with TxDOT should be conducted during the design phase to ensure that the Boardwalk alignment, construction techniques and maintenance requirements are compatible with ongoing and potential future maintenance and construction operations of I-35.

U.S. Army Corps of Engineers

Considerations

Because the majority of the proposed Town Lake Trail extension will be constructed as a boardwalk with pilings and fill placement within the bed and banks of the Colorado River, a Section 404 permit from the U.S. Army Corps of Engineers will be necessary. The Corps has two levels of Section 404 permits: individual and nationwide, depending upon the magnitude of impact to "Waters of the U.S."

The applicability of these permits is based on the area extent of piling and fill placed within wetlands and river beds. A nationwide 404 permit can be obtained if the Corps of Engineers determines that a minimal amount of impact is being created. If the Corps determines that a significant amount of impact is being proposed by the development, the Corps may require a 404 individual permit. Individual 404 permits require extensive submittal requirements, acquisition of mitigation land or other forms of mitigation and considerable permit processing time of one year or more.

Based on a "worst-case" assumption of the 7,000 ft. trail completely over water, with 2 ft diameter pilings spaced

I-35 Bridge Structure

at 50 ft intervals, the project would not meet the one half acre area threshold for an individual 404 permit. It is likely that the project would qualify for a 404 nationwide permit, which requires preconstruction notification to the Corps.

Recommendations to address concerns
It is recommended that a joint agency meeting be conducted during preliminary engineering with the Corps of Engineers and other stakeholder agencies. Supporting documentation should be presented including a preliminary schematic plotted along with surveyed wetland areas and ordinary high water marks of the river. Piling footprints and other fill area calculations should be presented to allow the Corps to confirm Section 404 the permitting requirements. An environmental assessment, including historical survey, endangered species evaluation and cultural/archaeological inventory of the impacted area should also be presented at this meeting. The compilation of this information will also be necessary in addressing the requirements of other federal, state and local regulatory agencies, such as U.S. Fish and Wildlife, Texas Historical Commission, TCEQ, City of Austin and FEMA, as discussed below.

US Fish and Wildlife

Considerations
A biological survey should be conducted to assess the potential impacts of Boardwalk construction on federally-listed threatened and endangered species.

Recommendations to address concerns
Coordination with the U.S. Fish and Wildlife may be conducted in letter form and in individual or joint meetings as described above. In the event that a "taking" of endangered species habitat is required, a Biological Opinion and an individual permit may be required in accordance with the Endangered Species Act.

Texas State Historical Commission

Considerations
Section 106 review process was established by the Congress as part of the National Historic Preservation Act of 1966 (NHPA). Section 106 of NHPA requires that every federal agency take into account how each of its undertakings could affect historical properties.

Recommendations to address concerns
It is not anticipated that any additional permits will be necessary from the Texas State Historical Commission. However, the environmental assessment study should identify any historical impacts or assess any effects on historic properties.

It is recommended that the proposed project and environmental assessment be reviewed with the State Historic Preservation Officer (SHPO) to verify if any additional requirements will be necessary regarding historic preservation in the project area.

City of Austin

Considerations

Any construction activity associated with the Town Lake Trail extension will require a site development permit from the City of Austin. The site plan must comply with the Austin Land Development Code. Factors that will be evaluated by the City include:

- Land Use
- Zoning
- Safety
- Transportation
- Drainage
- Environmental

As part of the review process, it is anticipated that the site plan application will be reviewed by the Austin Parks and Recreation Board. Due to the high profile of the project, the City may also require review from the Austin Environmental Review Board and potentially the Austin Planning Commission.

Federal Emergency Management Agency (FEMA)

Considerations

The boardwalk gap is located within the special flood hazard area designated by FEMA. However, construction is permitted in this zone. A map revision of surveyed flood zones is not anticipated to be required.

Recommendations to address concerns

The design team should work in close contact with the City of Austin's Flood Plain Administrator to develop and design the boardwalk to ensure compliance with local, federal and state regulations.

Lower Colorado River Authority (LCRA)

Considerations

Due to the location of the Town Lake Trail extension along the Colorado River, the LCRA may have interests in any impact to the river corridor system.

Recommendations to address concerns

After communication with the LCRA, it was determined that there is no specific regulatory approval required. LCRA indicated that the Authority would be satisfied with the Corps of Engineers 404 permit determination and the City of Austin site plan approval.

Texas Commission on Environmental Quality (TCEQ)

Considerations

One of the requirements for obtaining a Corps of Engineers 404 permit is certification from TCEQ that the permit will comply with state water quality standards. TCEQ has developed a tiered system of review for all individual 404 permit applications based upon the project size and the amount of state water affected.

The TCEQ application is referred to as a 401 certification. A Tier I certification is generally for smaller projects which affect less than three (3) acres or less than 1,500 linear feet of streams. If the applicant agrees to certain Best Management Practices (BMP's), completes the TCEQ Tier I checklist and includes the project as part of the Corps of Engineers 404 permit, no further review or certification is required by TCEQ.

Any project that does not qualify for Tier I review will be considered a Tier II project. Tier II projects are subject to an individual certification review by TCEQ.

Recommendations to address concerns

Because the Town Lake Trail will be built on individual piers, the total disturbance will involve the installation of the piers on the bottom of the lake. Using this rationale, the actual affected area may fall into the Tier I certification. In any case, a 401 certification application will be necessary to submit to TCEQ for a Tier level determination.

It is recommended that the total amount of disturbance be calculated as a justification for a Tier I certification.

In addition to the 401 certification process, a Storm Water Pollution Protection Plan (SW3P) will be required as part of the TCEQ requirements for construction plan submittals. The pollution protection plan must be submitted to the City of Austin as well. A notification letter must be submitted to TCEQ at least seven days prior to the commencement of construction and the pollution protection plans must be available at the job site.

ALIGNMENT, CONCEPTS & COSTS

Alignment, design and ultimately, the cost of the boardwalk will be determined by constraints associated with existing conditions of the project area and regulatory requirements as discussed in the preceding sections. This chapter discusses the options available which would accommodate these constraints. The final determination of alignment and design will be the City's task and responsibility as the project moves forward.

Boardwalk Alignment Alternatives

Several alignment options were considered based on the site characteristics and boundaries of adjoining private properties. These options included continuing the existing decomposed granite trail along the shoreline, expanding the shoreline to create a platform for the trail by constructing a bulkhead, constructing the trail over water utilizing a boardwalk and a combination of over water and on land sections. Each of these alignment alternatives are discussed below.

Continue Existing On Land Trail

This alternative involves extending the decomposed granite trail on the bank of Lady Bird Lake.

Construction costs for an on land trail are a fraction of the cost of a corresponding trail structurally placed over water. There are, however, several factors limiting the construction of the Trail on land.

The majority of the property along the gap is privately owned. Construction of the Trail on privately held property can only happen with the agreement of the property owner or during re-development of the property. Private property constraints posed by existing development, could be accommodated as economic forces promote future redevelopment in accordance with the Town Lake Waterfront Overlay Ordinance; however, the timetable for such activity is uncertain. City acquisition of greenbelt, in easement or fee simple, can be part of the redevelopment process.

Existing physical conditions preclude the possibility of constructing the Trail entirely on land within the Riverside Gap. This is due to extreme topographic conditions comprised of steep slopes and rock bluffs at the lake edge through much of the area. An additional concern is that in areas where overhead rock outcroppings exist, there is a safety risk for trail users associated with falling rock and debris.

Environmental impacts associated with extending the on land trail (in the areas where such an approach is feasible) include loss of mature trees and loss of existing vegetation along the bank of Lady Bird Lake.

Bulkhead Trail

This alternative involves use of on land sections where property access is available and physical conditions provide for safe and feasible trail construction. Where the existing conditions do not provide opportune conditions for on land construction, the riverbank may be widened through the use of fill structurally contained by sheet piling or other bulkhead materials. This approach would provide a contiguous trail along the shoreline and minimize intrusion into private developments

Construction costs for a trail constructed utilizing a bulkhead would be more than a trail constructed on existing land but less than a corresponding trail structurally placed over water.

Much of the same limiting factors experienced by an on land alignment exist for the bulkhead option. Access through private property would still be required in some areas and if steep slopes and rock bluffs are avoided there is still a concern about the safety risk for trail users associated with falling rock and debris.

Environmental impacts associated with the bulkhead approach would be significant to the riparian environment of Lady Bird Lake which provides critical habitat to area waterfowl, shorebirds and other water-associated bird species. The bulkhead approach has the potential to displace significant areas of important riparian habitat. Fewer mature trees would have to be removed in this scenario compared with the on land trail extension alternative; however, construction impacts to tree roots may be unavoidable. Additionally, permitting by the US Army Corps of Engineers for bulkhead and fill would require a demonstration that a less impactful alternative was not available.

Boardwalk Trail

This alternative avoids the constraints posed by existing physical conditions within the Riverside Gap and minimizes impact to existing development. As discussed previously, based on a real estate assessment conducted by the City, an over water solution would not require direct impacts in the form of acquisition of fee simple or easement rights from privately-owned property.

As previously mentioned the cost of placing the Trail over the water is the most expensive option.

Previous discussions with private property owners associated with the TEA 21 Town Lake Boardwalk Grant Application applied for in 1999 by the City of Austin Parks Department[9] indicate that there is a preference to position the Boardwalk approximately 25 feet from the shoreline. It is believed that this would provide the optimal spacing to balance privacy with visual impact. During these discussions, the option for private property owners to construct, at their own cost, access walkways with lockable gates was viewed favorably. Based on comments from City staff, this

[9] Town Lake Boardwalk -TEA 21 Boardwalk Grant Application 1999

twenty-five foot spacing from the shoreline would also be beneficial from an environmental standpoint by minimizing stagnant water under the boardwalk and allowing sunlight and air circulation to preserve natural riparian conditions on the existing shoreline of the lake.

There are several concerns that are unique to this option that will have to be considered during the design process. Access under or around the boardwalk will be necessary to allow residents to use existing private boat docks. Similar access will also be needed for City crews to provide maintenance and litter control between the shore and the boardwalk. Access to the boardwalk from the shore for maintenance of the boardwalk and for emergencies would have to be provided at regular intervals. Impediments to the recreational use and water flow of Lady Bird Lake will also have to be considered.

Many of these items may be resolved in the horizontal and vertical alignment of the trail. However, the maximum limitations on percent grade imposed by the Americans with Disabilities Act and accommodation of vertical curvature in the structure may be problematic. To address this, mechanical access options may need to be considered including drawbridge or gate structures.

Environmental concerns are also unique to this option. Impacts such as drilling into the lake bed, construction over water and the need for off-site construction staging will all have to be studied early in the process.

Combination of over water and on land sections

In this alternative it may be possible to take advantage of the positive aspects of each of the options discussed above. Taking advantage of opportunities where property access and topography do not limit constructing the Trail on land can reduce the construction costs as well as address some of the access issues inherent in the boardwalk alternative. Combining the alternatives may also resolve other problems such as the flow and alignment of the Trail moving between the on land and over water options.

Trailhead Access Points

There are several natural trailhead access points from Riverside Drive to the Trail that suggest themselves because they are naturally-occurring tributaries to the Colorado River including East Bouldin Creek, Blunn Creek (City park property) and Harpers Branch. Other trailhead access points may be determined to be opportune as the project moves forward.

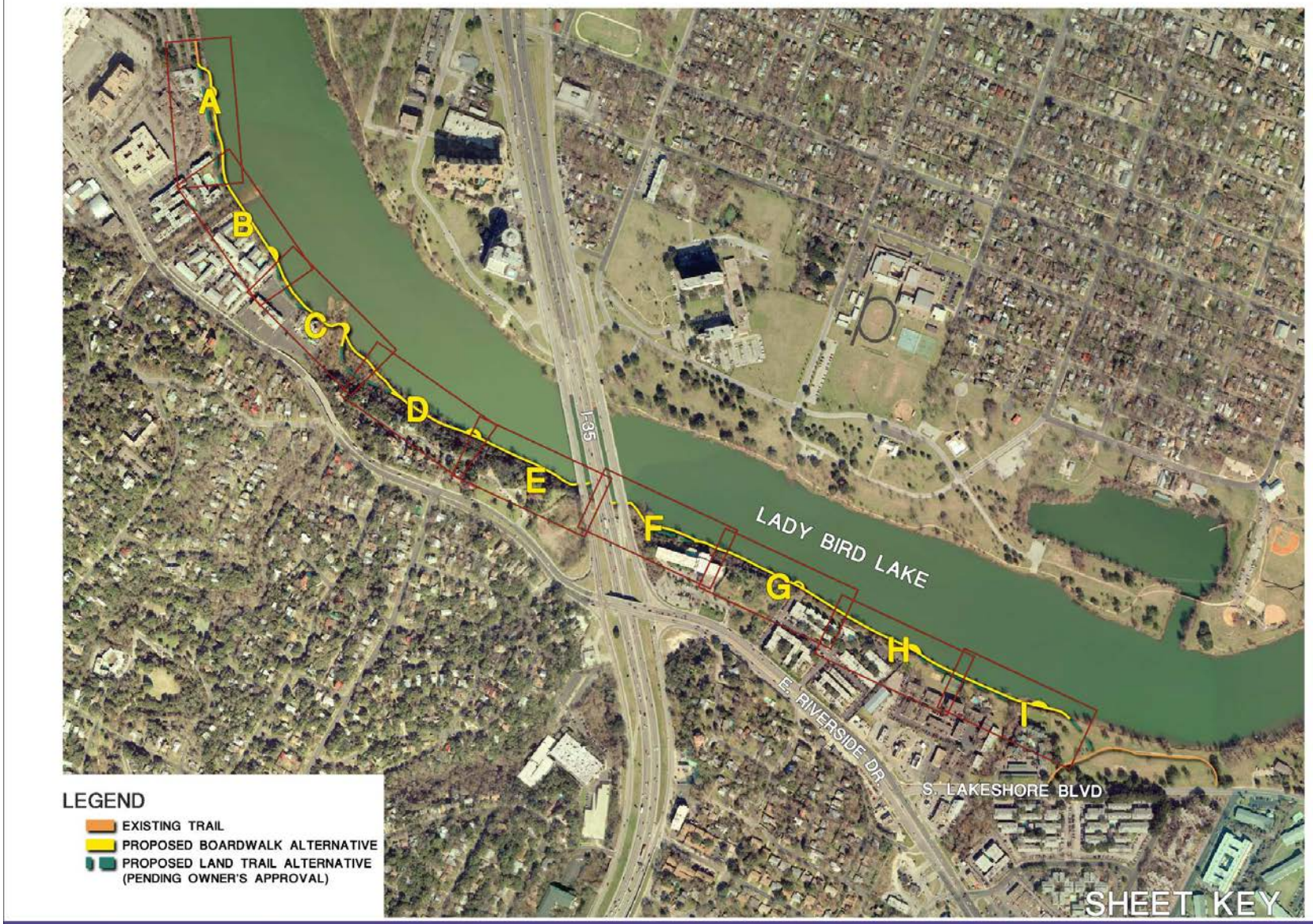
Trailhead access must be comprehensively considered as the project moves forward in order to address the concept of construction phasing. In this scenario, the Riverside Boardwalk may be constructed in segments comprised of “Sections of Independent Utility.” For example, the Boardwalk section from Blunn Creek to Harpers Branch would be a useful/utilitarian project even in the absence of the remaining sections. Such segmentation would obviously require trailhead access to Riverside Drive at Blunn Creek and Harpers Branch,

both of which are privately owned properties which are currently poised for redevelopment.

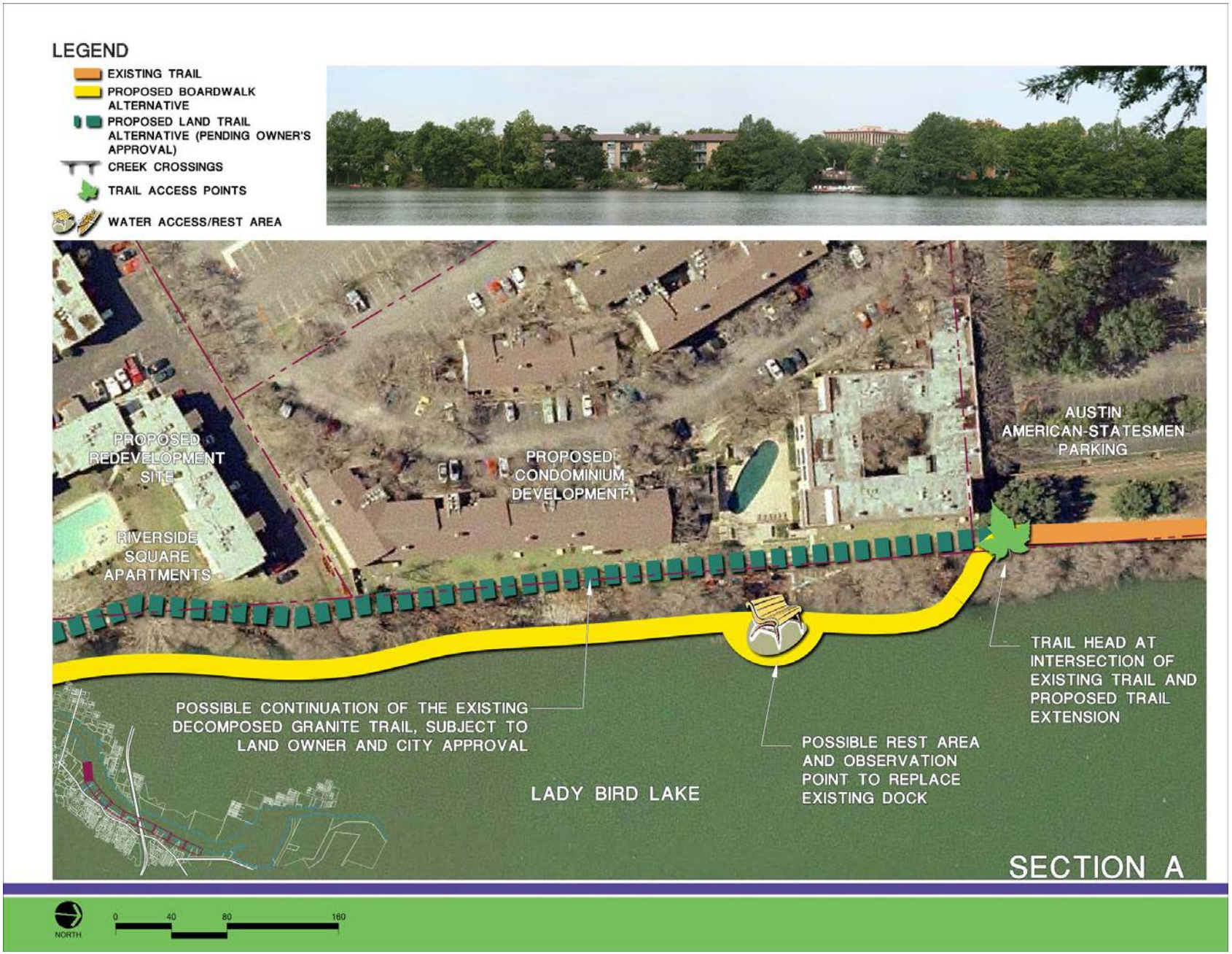
A thorough discussion of trailhead access points is beyond the scope of this study because it necessarily involves a consideration of access through private property. Whether through donations or redevelopment mitigation, in accordance with the Waterfront Overlay Ordinance and Parkland Dedication Ordinance, trailhead access must be comprehensively considered as the project moves forward in order to address not only trail access by users but also for maintenance, emergencies and the ability to provide construction phasing.

Boardwalk Alignment Schematic Plan

The following schematic plan illustrates possible alignment alternatives and access locations. This schematic represents the application of the alignment alternatives discussed above combined with the physical constraints and property ownership information discussed earlier in this document. It is not intended to be a final alignment for the Trail. Final design of the Trail alignment is dependent on many factors outside the purpose and intent of this study.



Base mapping for the corresponding sheets is compiled from City of Austin GIS Data, Plat and Deed information and research done by City of Austin Real-estate Services. All map data should be considered as representational and preliminary, in need of verification, and subject to change. This land plan is conceptual in nature and does not represent any regulatory approval.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PROPOSED LAND TRAIL ALTERNATIVE (PENDING OWNER'S APPROVAL)
CREEK CROSSINGS
TRAIL ACCESS POINTS
WATER ACCESS/REST AREA
PROPOSED REDEVELOPMENT SITE
PROPOSED CONDOMINIUM DEVELOPMENT
AUSTIN AMERICAN-STATESMEN PARKING
RIVERSIDE SQUARE APARTMENTS
TRAIL HEAD AT INTERSECTION OF EXISTING TRAIL AND PROPOSED TRAIL EXTENSION
POSSIBLE CONTINUATION OF THE EXISTING DECOMPOSED GRANITE TRAIL, SUBJECT TO LAND OWNER AND CITY APPROVAL
POSSIBLE REST AREA AND OBSERVATION POINT TO REPLACE EXISTING DOCK
LADY BIRD LAKE
SECTION A
NORTH
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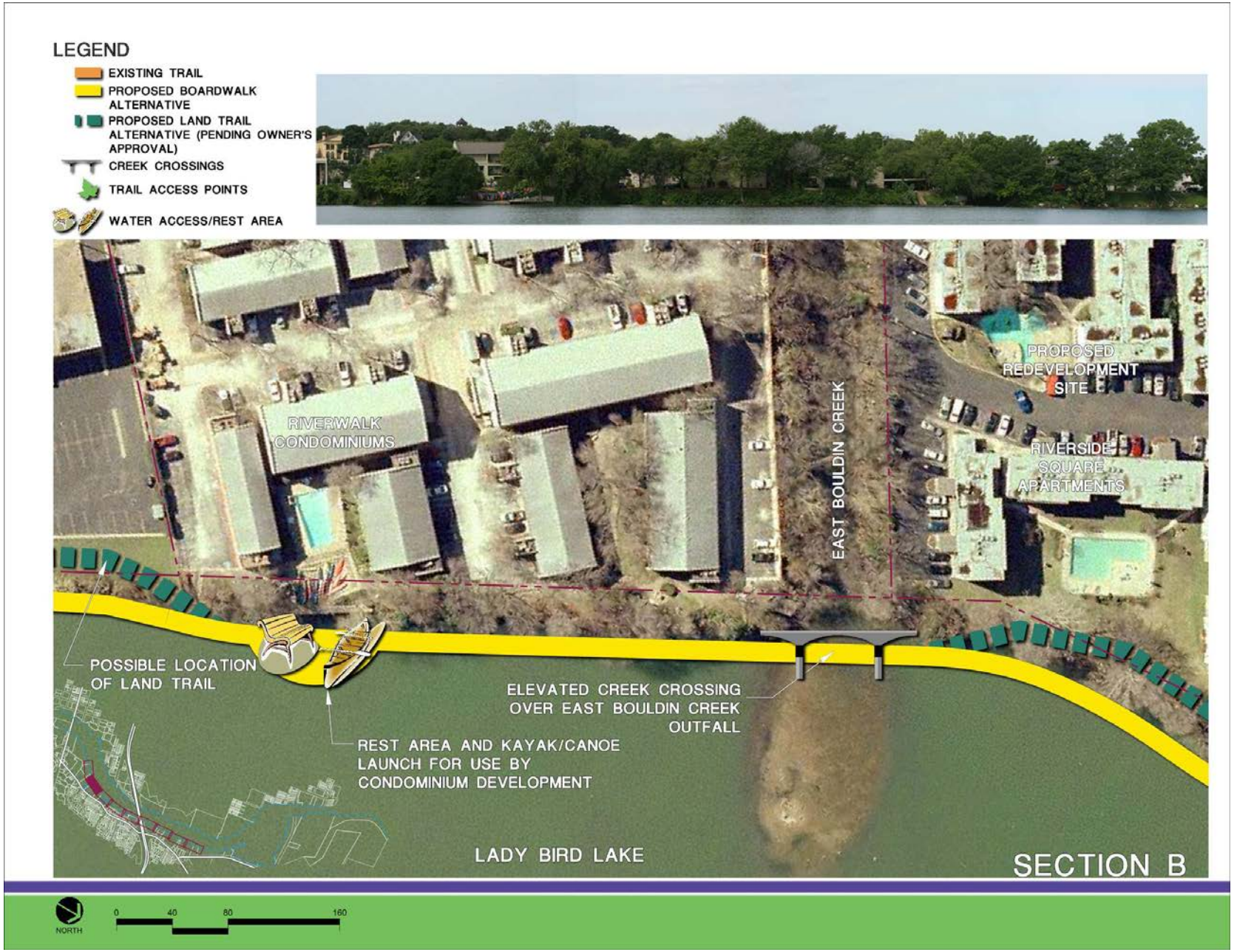
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WATER ACCESS/REST AREA
RIVERWALK CONDOMINIUMS
EAST BOULDIN CREEK
PROPOSED REDEVELOPMENT SITE
RIVERSIDE SQUARE APARTMENTS
POSSIBLE LOCATION OF LAND TRAIL
ELEVATED CREEK CROSSING OVER EAST BOULDIN CREEK OUTFALL
REST AREA AND KAYAK/CANOE LAUNCH FOR USE BY CONDOMINIUM DEVELOPMENT
LADY BIRD LAKE
SECTION B
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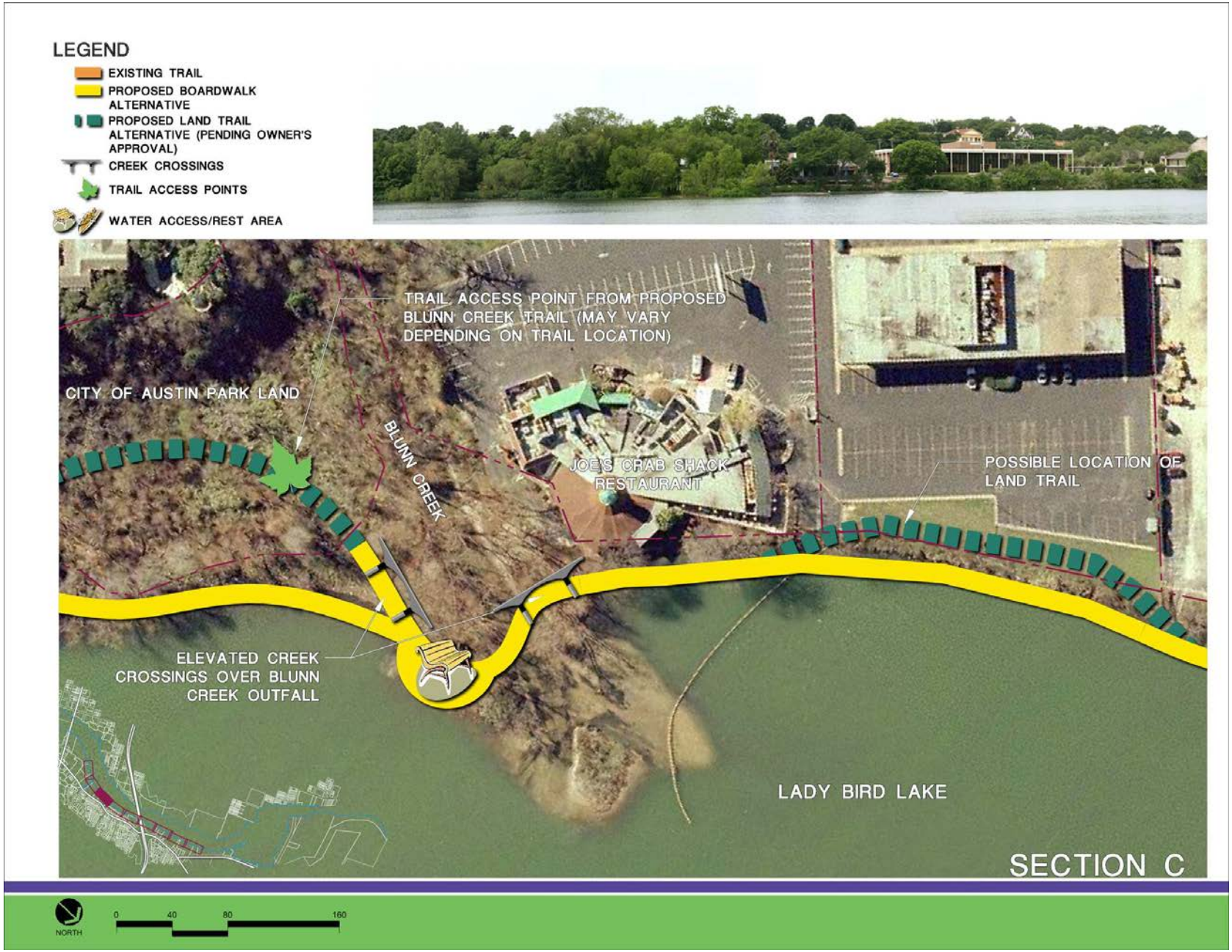
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TRAIL ACCESS POINTS
WATER ACCESS/REST AREA
TRAIL ACCESS POINT FROM PROPOSED BLUNN CREEK TRAIL (MAY VARY DEPENDING ON TRAIL LOCATION)
CITY OF AUSTIN PARK LAND
BLUNN CREEK
JOE'S CRAB SHACK RESTAURANT
POSSIBLE LOCATION OF LAND TRAIL
ELEVATED CREEK CROSSINGS OVER BLUNN CREEK OUTFALL
LADY BIRD LAKE
SECTION C
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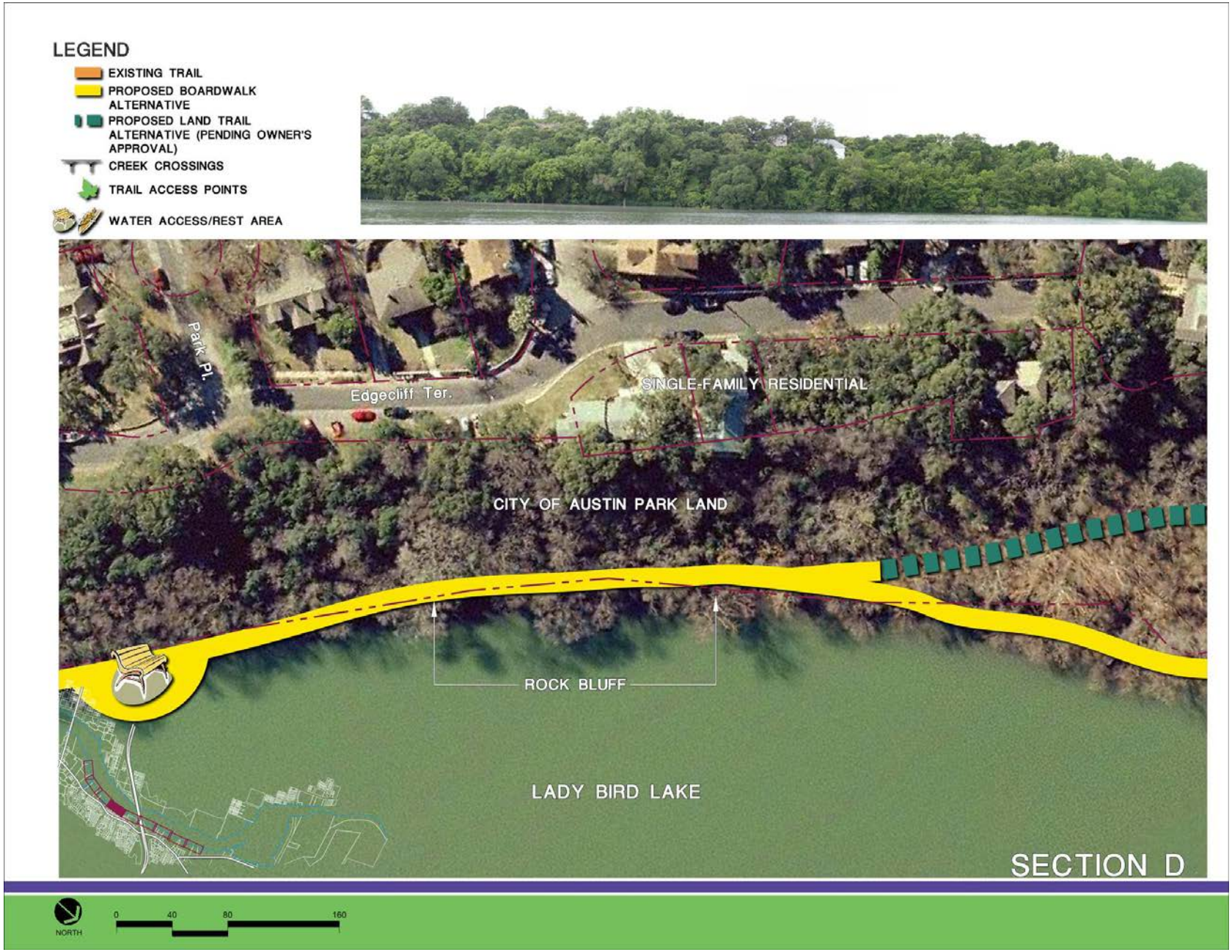
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WATER ACCESS/REST AREA
Park Pl.
Edgecliff Ter.
SINGLE-FAMILY RESIDENTIAL
CITY OF AUSTIN PARK LAND
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LADY BIRD LAKE
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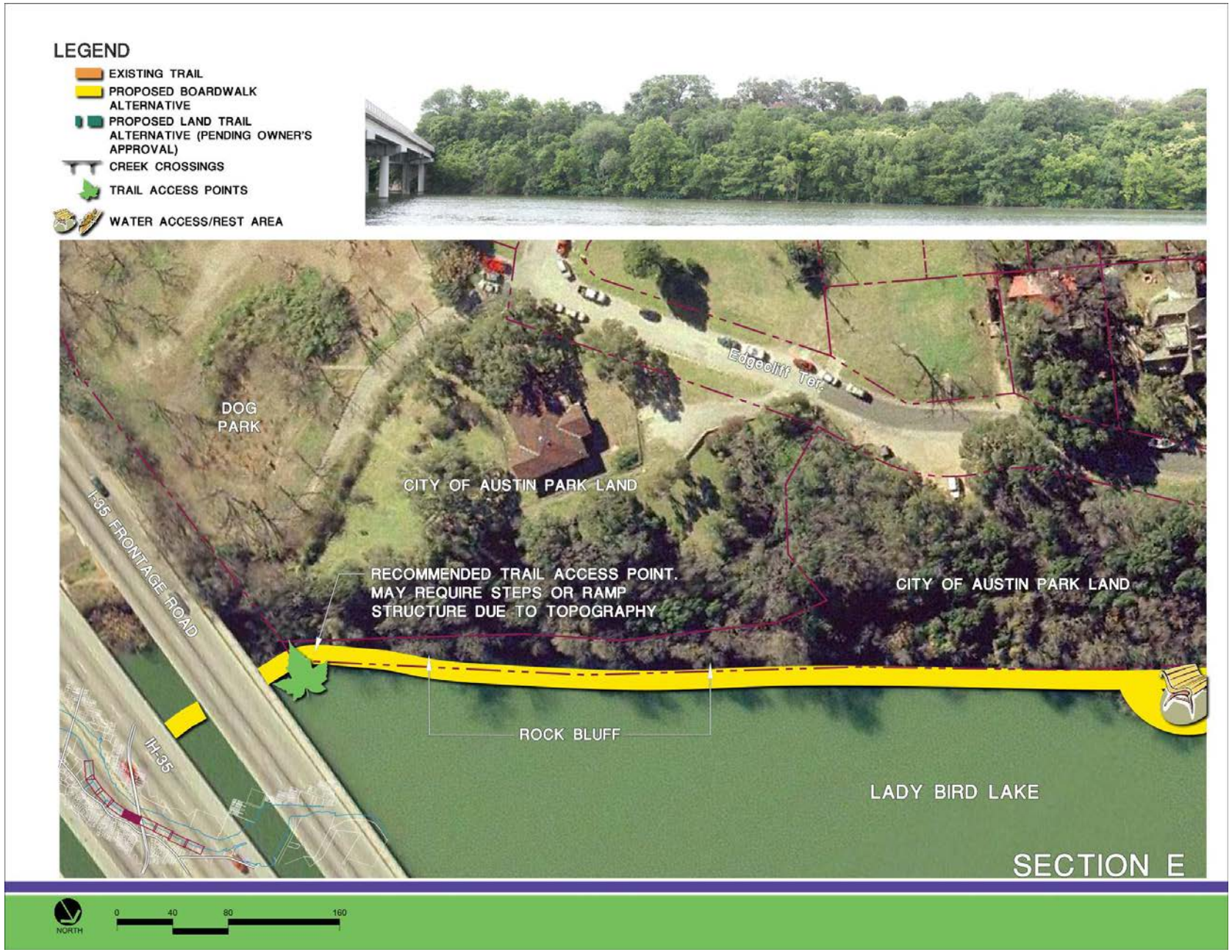
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WATER ACCESS/REST AREA
DOG PARK
Edgecliff Terr
CITY OF AUSTIN PARK LAND
I-35 FRONTAGE ROAD
RECOMMENDED TRAIL ACCESS POINT. MAY REQUIRE STEPS OR RAMP STRUCTURE DUE TO TOPOGRAPHY
CITY OF AUSTIN PARK LAND
ROCK BLUFF
IH-35
LADY BIRD LAKE
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LEGEND
EXISTING TRAIL
PROPOSED BOARDWALK ALTERNATIVE
PROPOSED LAND TRAIL ALTERNATIVE (PENDING OWNER'S APPROVAL)
CREEK CROSSINGS
TRAIL ACCESS POINTS
WATER ACCESS/REST AREA
PROPOSED CONDO DEVELOPMENT
HARPERS BRANCH
FRONTAGE ROAD
IH-35
TRAIL ACCESS POINT INCLUDED IN CONDOMINIUM DEVELOPMENT
ROCK BLUFF STEEP SLOPES
ELEVATED CREEK CROSSING OVER HARPERS BRANCH OUTFALL
LADY BIRD LAKE
SECTION F
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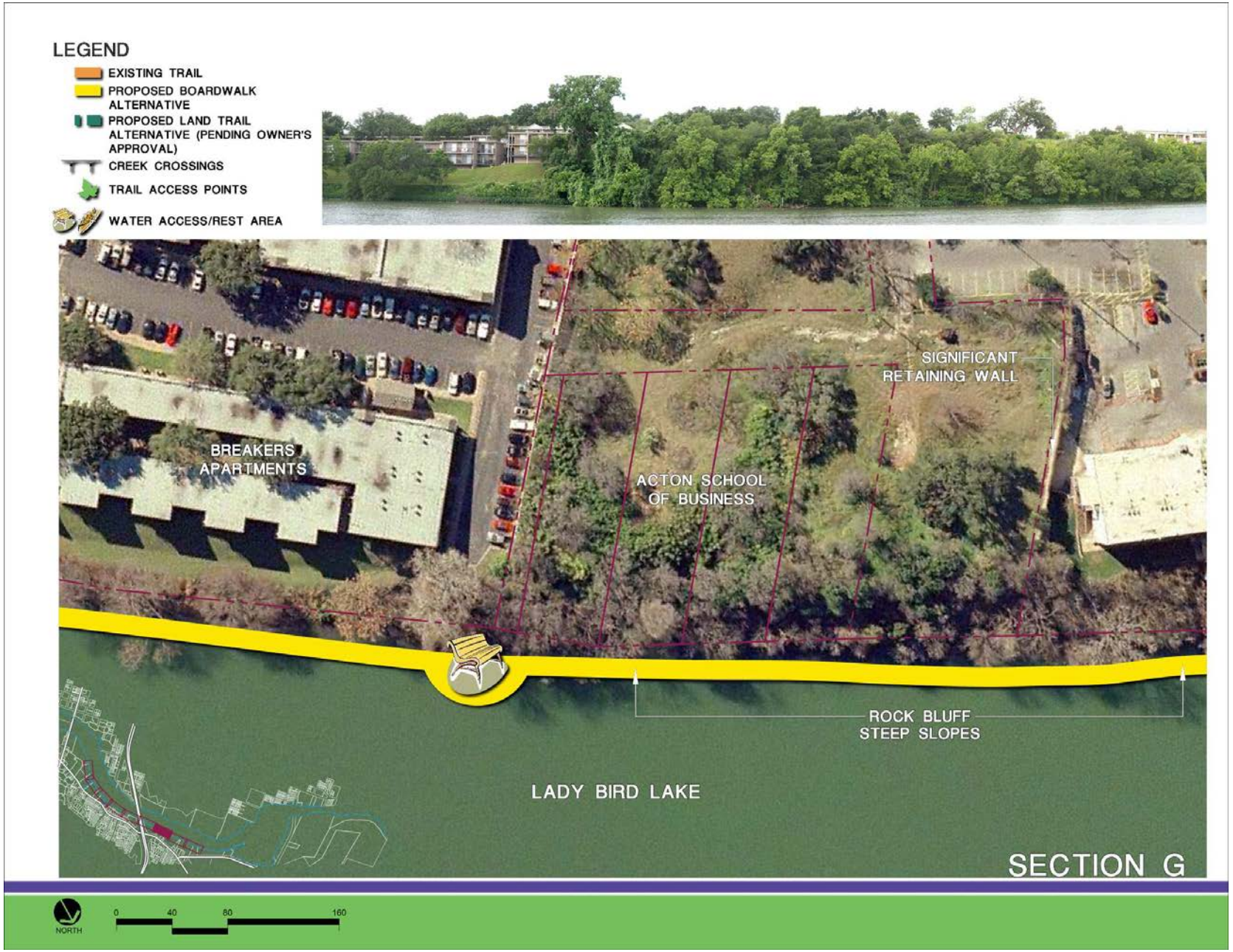
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TRAIL ACCESS POINTS
WATER ACCESS/REST AREA
SIGNIFICANT RETAINING WALL
BREAKERS APARTMENTS
ACTON SCHOOL OF BUSINESS
ROCK BLUFF STEEP SLOPES
LADY BIRD LAKE
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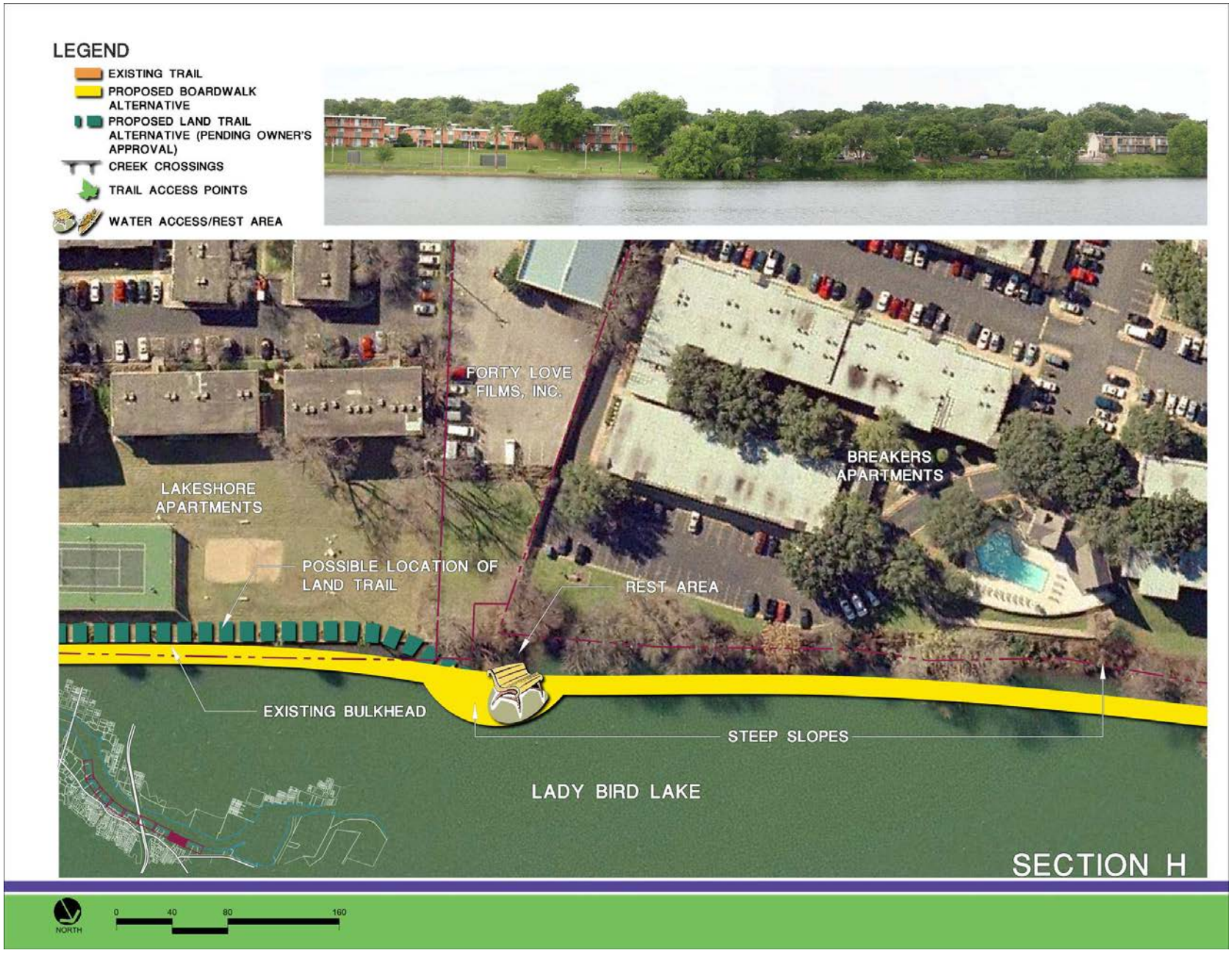
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TRAIL ACCESS POINTS
WATER ACCESS/REST AREA
FORTY LOVE FILMS, INC.
BREAKERS APARTMENTS
LAKESHORE APARTMENTS
POSSIBLE LOCATION OF LAND TRAIL
REST AREA
EXISTING BULKHEAD
STEEP SLOPES
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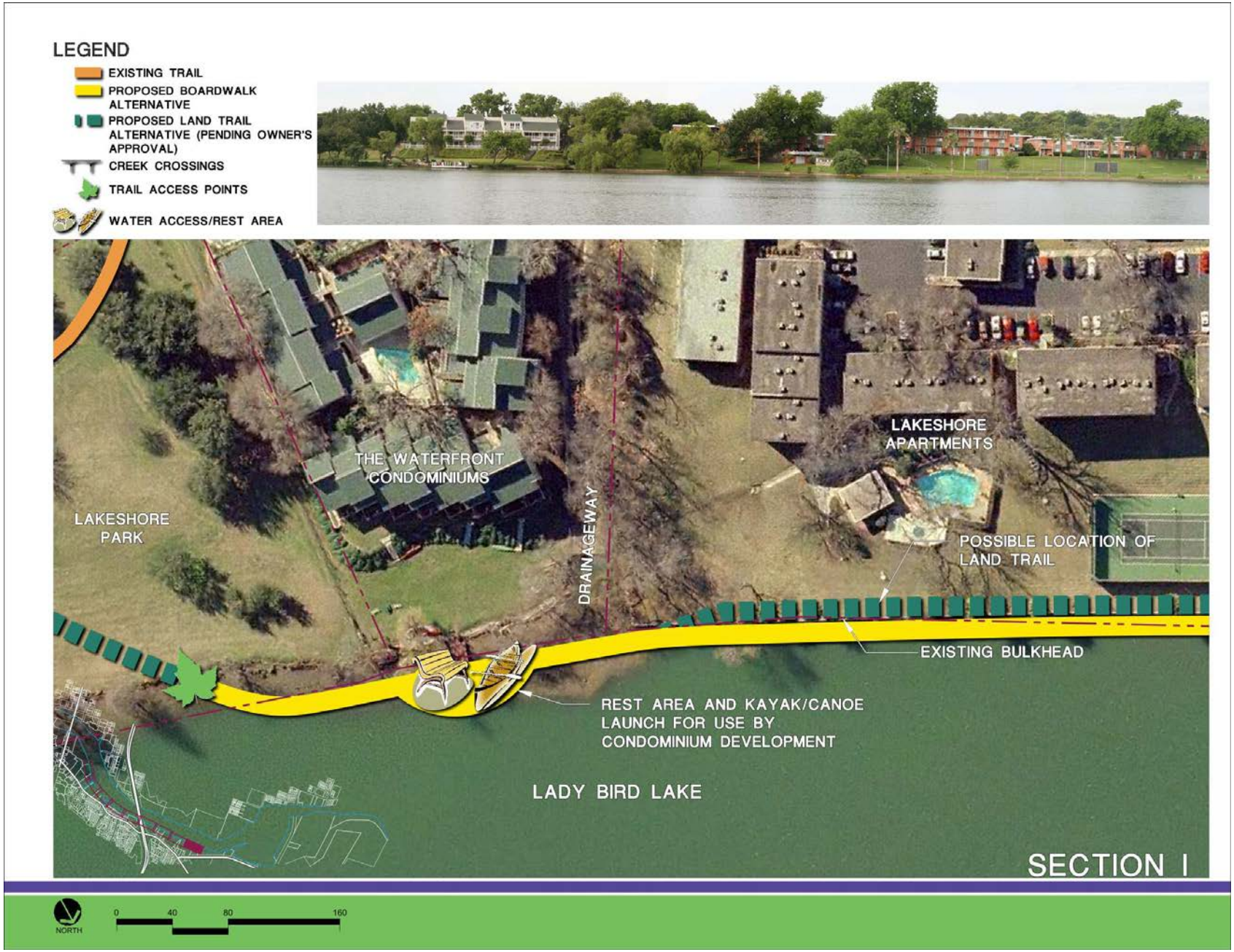
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TRAIL ACCESS POINTS
WATER ACCESS/REST AREA
THE WATERFRONT CONDOMINIUMS
LAKESHORE APARTMENTS
LAKESHORE PARK
DRAINAGEWAY
POSSIBLE LOCATION OF LAND TRAIL
EXISTING BULKHEAD
REST AREA AND KAYAK/CANOE LAUNCH FOR USE BY CONDOMINIUM DEVELOPMENT
LADY BIRD LAKE
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Design Concepts

As discussed in the previous section, a boardwalk structure of some type will be unavoidable in order to accommodate physical and private property constraints in the Riverside Gap. The selected alignment alternative may consist of segments of boardwalk connected by land-based or bulkheaded trail sections or it may be entirely over water. In either case, the design of the Boardwalk, as well as any trailhead access structures will be designed in consideration of sound engineering principles, environmental protection, aesthetics, cost and long term maintenance.

This study presents three methods of constructing the boardwalk. All three of the methods were selected based on the considerations listed above and the understanding that submersion of the boardwalk is an inevitability because there is a fourteen foot difference between the normal lake level and the fully developed 100 year floodplain.

The primary reason for this study to consider specific construction methods for the boardwalk is to provide an understanding of the magnitude of cost involved in undertaking such a project. The concepts presented are not intended to represent the final design of the boardwalk structure. Final design of the boardwalk will be subject to the many processes and regulatory entities listed in this report as well as the introduction of additional construction methods during the design process.

The following three design concepts are: Option A – Pre-Cast Hollow Core Concrete Panel System; Option B – Concrete and Steel Composite Cast in Place Deck System; Option C – Whole-Span Prefabricated Concrete System.

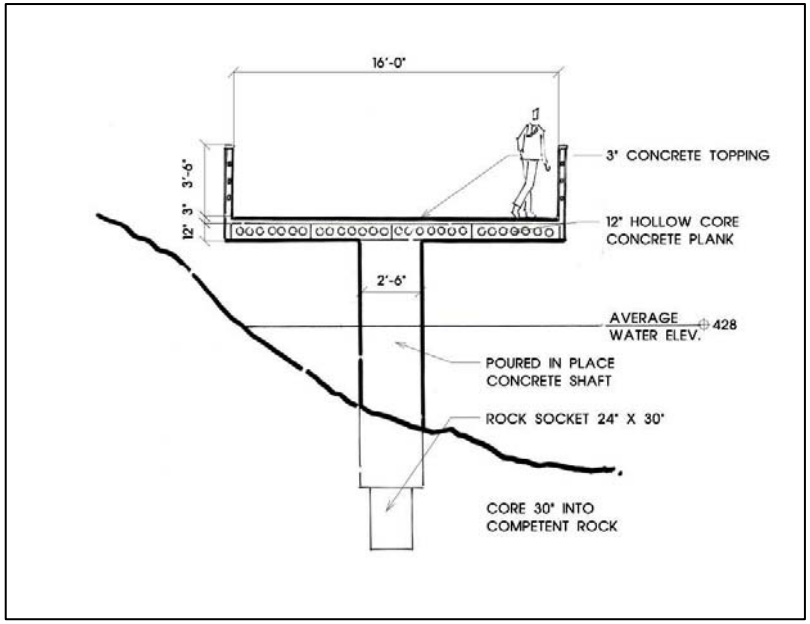
Option A - Pre-Cast Hollow Core Concrete Panel System

The Hollow Core Concrete System is a simple, cost-effective pre-formed concrete system. Hollow Core is manufactured in a standard 4' width and 8", 12" and 12.5" thicknesses.

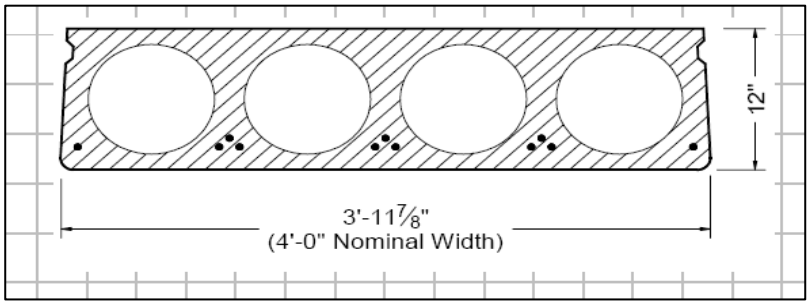
Option A would consist of four, 4' x 12" x 45' concrete hollow core panels, mounted on a 30" (approx.) diameter concrete pier anchored into the earth and spaced at about 45' on center. A finished coat of 3" of concrete would be placed on top of the hollow cores to cover the horizontal joint between the panels. The final elevation for the trail surface would rest approximately 4' above the average water level of Town Lake. The trail width for this system without modification can be 12' or 16'. If a different width is desired, such as a 14' wide section, the hollow core panel can be ripped into 2' or 3' wide sections. However, this increases the labor and cost of the system. Therefore the recommended size for the trail is 16' with this system. A 16' wide trail can comfortably accommodate four runners side by side and is more cost effective than a 14' or 15' wide trail.

Advantages of this system include a greater ease and faster rate of construction due to the prefabricated nature of the structure, the smaller size of the pieces and the ability to keep the vertical profile of the boardwalk very thin, reducing its aesthetic impact on the lake. A disadvantage of this system is the inability to curve the trail within the 45' spans.

Probable construction costs for Option A at the time of this study are in the range of $70 to $90 per square foot.



Option A – Hollow Core Boardwalk Section-SEC Group



Option A – Hollow Core Panel Section –
Image Source: Concrete Technology Corporation

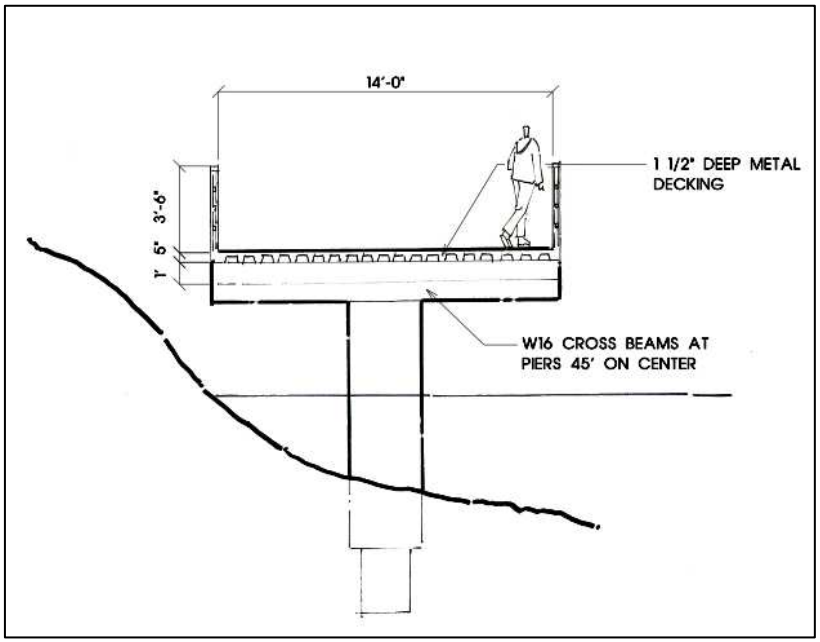
Option B – Concrete and Steel Composite Cast in Place Deck

The Concrete and Steel Composite System is a simple, cost-effective site formed concrete system.

Option B is constructed by placing cross-beams (a.k.a. bent caps) at each pier. Steel beams span between the piers and are supported by the cross-beams. A pre-formed metal deck (PMDF) is placed between the beams and acts as a stay-in-place form for the concrete slab. The PMDF is galvanized and permitted to remain, thus allowing the contractor to eliminate the difficult and time-consuming step of form removal. A concrete slab is cast and connected to the steel beams not only by direct bearing, but by protruding steel studs welded to the beams. This system prevents slip between the concrete and steel and allows the slab and beams to work together to carry live loads.

This system would consist of a 14’ x 2.5’ x 45’ section of decking between each pier. The piers would be approximately 30” diameter concrete piers anchored into the earth and spaced at about 45’ on center.

Advantages of this system include the flexibility in design provided by a cast in place system and a relatively common construction method. Disadvantages include construction difficulty and environmental concerns with pouring large amounts of concrete over water and an end product with exposed steel in a wet environment.



Option B – Composite Boardwalk Section-SEC Group

Option B – Concrete & Steel Composite Section-
Image Source: Corusconstruction.com

Probable construction costs for Option B at the time of this study are in the range of $100 to $120 per square foot.

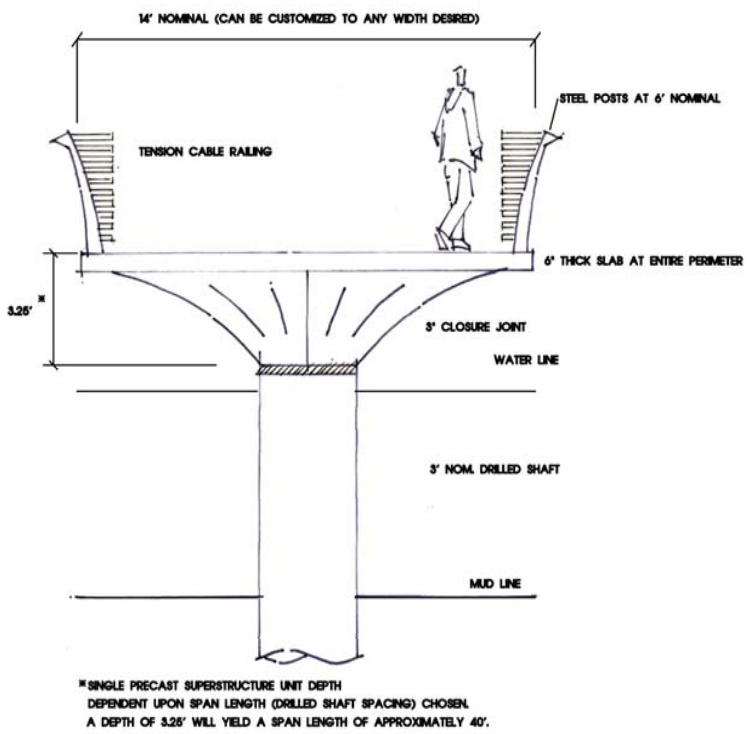
Option C – Whole-Span Prefabricated Concrete System

Whole-Span prefabricated concrete is a custom made system that can be built primarily on land and placed along the boardwalk alignment.

Each boardwalk segment consisting of both the structure and trail surface can be cast on land, transported by barge and crane-mounted onto approximately 30” diameter piers with no need for cast-in-place bent caps.

Advantages of this system include improved construction scheduling because individual segments of boardwalk may be in production concurrently with construction of the piers and the need for only small amounts of concrete (the closure slabs) to be poured over water. In addition, this system provides the most opportunity for the aesthetic design of the structure itself because it is custom fabricated. A disadvantage of this system is that due to its unique nature, it requires special design and construction considerations.

Probable construction costs for Option C at the time of this study are in the range of $70 to $90 per square foot.



Option C – Whole Span Prefabricated Boardwalk Section – Design by Dean Van Landuyt

Option C – Whole Span Prefabricated Boardwalk Elevation – Design by Dean Van Landuyt

Comparison of Substructure Design Options

Superstructure Design Option	Estimated Cost ($/sf)	Environmental Impact	Aesthetics	Comments
A-Pre-Cast Hollow Core Concrete Panel System	80	Pier Drilling Concrete casting over water (3" topping slab).	Thin profile. No simple way to form smooth horizontal curves.	Fairly common system. Ease of construction due to smaller, pre-fabricated, standard pieces.
B- Concrete and Steel Composite Cast in Place Deck	110	Pier Drilling Concrete casting over water (slab).	Exposed steel creates utilitarian appearance.	Fairly common system. More maintenance required with exposed steel.
C- Whole-Span Prefabricated Concrete System	80	Pier Drilling Small closure slabs at ends of prefabricated segments will be cast over water.	Arched profile and smooth horizontal curves	On-site construction time reduced by fewer construction steps. Will require more design expertise as this is a completely unique system.

Additional Design Considerations

As proposed in the trail alignment graphics, the placement of access points, rest areas and boat docks have been proposed to maximize convenience for both trail users and private land owners along the boardwalk. These additional considerations combined with key design elements such as railings and lighting will have a considerable impact on the design process and construction costs.

Rest Areas

Rest/Observation areas provide opportunities for pedestrians to rest and observe water and shore features out of the flow of runners and bicyclists. The rest areas themselves consist of simple expansions in the boardwalk, which will be constructed of the same materials and in the same manner as the boardwalk. These rest areas could incorporate site furnishings such as benches, trash receptacles and lighting fixtures, combining to create nodes along the boardwalk for users to relax and enjoy the views of Lady Bird Lake.

Railings

A significant design feature of the boardwalk will be the railings. These are an important aesthetic aspect of the boardwalk as they will be a prominent feature from both onshore and from Lady Bird Lake. The design of the railings is also an important factor in the safety of the boardwalk. Users must feel secure while using the boardwalk, so sturdy, durable railing options are necessary. The railings must also be able to withstand inundation and the force of water flow and debris in flood events.

Design alternatives for the railing can include concrete, simple steel pipe, cable systems and ornate metal. Probable costs for constructing the railing can vary greatly from $120 per linear foot to over $350 per linear foot. During the design phase it may be decided that some portions of the boardwalk have a more ornate railing than others. This can be an effective way to reduce costs while maintaining key aesthetic elements.

NEXT STEPS

It is anticipated that much of the work associated with Riverside Boardwalk project will be performed by private consultants and contractors. The City of Austin will determine how the work will be executed; however, it is anticipated that the next steps of the project will include the following scopes of services: Public Involvement; Preliminary Engineering; Design and Construction.

Following is a description of the tasks associated with each of these phases.

Public Involvement

Involvement of and coordination with interested stakeholders is critical to the completion of the Trail. The approach to public outreach should be active. Participants and stakeholders must have their interests be truly and respectfully considered.

The public participation program should reach out to stakeholders in a variety of settings: at community events, along the Trail and in their homes. Varied outreach tools should be used so that those desiring information and/or input are afforded easily assessable opportunities for either. The potential tools include: focus groups/targeted meetings, public forums, the Internet, media coverage, presentations to public and private entities, public exhibitions, design charettes and online response and comment.

Public Involvement Goals

Public outreach is critical. The public outreach goals are to:

- Inform interested stakeholders and the public about the Trail project and its goals;
- Provide meaningful opportunities for stakeholders to provide input and influence the project with ideas, enthusiasm and support;
- Use public input to help make alignment, design and other decisions;
- Build a base of support for the project by responding to questions, providing information and incorporating feedback; and,
- Satisfy public involvement requirements associated with environmental permitting and government grant and funding programs.

Challenges to Effective Public Outreach

Challenges associated with successfully involving the public and building public support for the Boardwalk project include:

Competition for time and attention – Many activities compete for an individual's valuable time. Work. Play. Family commitments. Austinites must be made aware of the project, its importance to the community and convinced their input will be considered.

A complex issue – All efforts should be made to ensure participants understand the complexities of the issues associated with completing the Trail.

Obtaining broad input – Traditional outreach efforts may disproportionately represent the views of the "active few". Community activists are often organized and able to respond in large numbers, making those with differing views less likely to speak up or even attend workshops. However, this lack of participation does not reflect agreement. Those who need to be "at the table" must be identified and encouraged to attend.

Reaching underrepresented audiences – Lady Bird Lake is an asset of all of Austinites. Care must be taken to ensure that the elderly, non-English speaking populations, low-income residents and disabled populations are reached by outreach efforts.

Techniques will need to be developed and used to identify and minimize these barriers to effective public participation.

Preliminary Engineering

Note: It is anticipated that the delivery model for the Boardwalk project will be design-bid-build because design-build does not accord with the level of architectural stylizing and environmental protection that will be required.

Preliminary engineering will include the following steps:

- Public agency coordination, including Corps of Engineers, US Fish & Wildlife Service, Texas Park and Wildlife Department, Texas Historical Commission, LCRA and the Austin floodplain coordinator
- Produce architectural renderings of design concepts
- Provision of exhibits and expertise to public design charrettes
- Evaluate several alternative design concepts and develop cost estimates for each
- Using input from charrettes and agency coordination, refine and finalize alignment and conceptual design including context sensitive architectural detailing, e.g. colored concrete, lighting concepts and surface material
- Production of a Preliminary Engineering Report including plan and profile schematic showing vertical and horizontal alignment as well as ancillary details such as locations of trailhead access ramps, elevated sections and any public viewing areas
- Geotechnical/foundation field testing
- Land survey and location of all utilities
- Constructability analysis – eg, cast-in-place vs. precast
- Refinement of the construction cost estimate
- Development of the scope of services for design RFP

Design

The design phase will include the following:

- Geotechnical engineering – using structure loads, determine exact type and depth of foundations
- Prepare structural plans: material quantities, bridge layout, elevations, cross section geometry, substructure and superstructure geometry and reinforcing detail, railing, lighting, viewing areas (if any), landscape and trail surfacing
- Final architectural detail (superstructure shape and appearance, lighting, railing, trail surface, viewing area (if any), landscaping)
  - Construction traffic control plan
  - Site plan for city permitting
  - Storm water pollution prevention plan
- Plans, specs and estimates including for contractor procurement. Plan set to include EPIC sheet (environmental permits, issues and commitments)
- Obtain all permits not requiring contractor application

Construction

The construction phase will include the following:

- Mobilization
- Implement environmental protection program, including erosion and sediment controls
- Implement traffic control plan
  - Design Engineer task: review contractor shop drawings
  - Design Engineer task: review and approve contractor pay requests
  - Design Engineer task: review and approve change order requests
  - Drill shafts/cast columns
  - Superstructure
  - Landscaping
  - Demobilization, final acceptance

SOURCE LIST

Austin Community College Fact Book Preview Fall 2006

Austin Town Lake Corridor, South Shore Central, Travis Heights Development Standard, 2000, ROMA Design Group

Bowman Melton Study

Capital Area Metropolitan Planning Organization-Regional Data

City of Austin Development Assistance Center

City of Austin Economic Growth and Redevelopment Services Office

City of Austin Fire Department Inspection and Review

City Of Austin Parks Department – Parks Survey 2003

City of Austin Police Department Crime Statistics

Downtown Austin Alliance

Lamar Bridge – Architectural Team Technical Memorandum, 1995

Pfluger Bridge Environmental Assessment, 1999

Texas Commission on Environmental Quality

Town Lake Boardwalk TEA-21 Grant Application 1999

Town Lake Comprehensive Plan, 1968

Town Lake Corridor Study, 1985

Town Lake Trail Extension: Needs Assessment, Strategic Planning, Financial Mechanisms, and Evaluation *by July Murray, Seth Otto and Justin Stewart, Financing Public Services, May 6, 2005*

U.S. Army Corps of Engineers

U.S. Census Bureau

BOUNDARY LIMITS ALONG THE SOUTH BANK OF TOWN LAKE BETWEEN CONGRESS AVENUE AND SOUTH LAKESHORE BOULEVARD AUSTIN, TEXAS

The purpose of this report is to examine the extent of private ownership along the south bank of the Colorado River (Town Lake) and the City of Austin's ownership extent of the bed of the river (lake) between Congress Avenue and the 1800 block of South Lakeshore Blvd. These limits involve approximately 1.5 miles of shoreline. This study is with regard to the feasibility of a boardwalk joining the Town Lake Hike and Bike Trail from in front of the Austin American Statesman building immediately east of Congress Avenue to the existing trail on City owned land along South Lakeshore Blvd. west of Longhorn Dam. The specific goal is to determine if the City of Austin can design and build a boardwalk on or above the lake bed on its own property or will the City require easements across privately owned land inundated by the lake. It is common knowledge that there is abundant land along Lake Austin above Tom Miller dam owned by individuals, the City having an inundation easement granting the right to flood that privately held land dating back to the late 1800s when the original dam was constructed. In the process of researching the various parcels of land included in this study an effort was made to collect copies of the inundation easements acquired by the city for Town Lake and a file was compiled and is housed in the Real Estate Services Division of the Public Works Department.

The City of Austin's title interest to the bed of the Colorado River stems from a 1945 patent issued on the basis of legislation approved by the Texas legislature granting the City the bed and banks of the river within the City limits (together with other property) as they existed in that year (see Attachment-A). This is not the whole extent of the City's interest today as will be explained below.

For the purposes of this report the span of this study is divided into three segments. The first includes the area along the south bank of Town Lake between Congress Avenue and the confluence of Blunn Creek. The second segment is from the confluence at the mouth of Blunn Creek to the East right-of-way line of Interstate 35 and the third segment being from the east right-of-way line of Interstate 35 to the existing hike and bike trail on a tract of land described as 8.28 acres which the City acquired in August of 1963, the record of which can be found in Volume 2639 at Page 415 of the Real Property Records of Travis County, Texas. Each of these segments are summarized in the following paragraphs.

In September of 1960 a boundary line agreement was executed between the City of Austin, Martha Ola Sheppard and Mina Miller defining a common line and distinguishing the ownership interest between the parties. The line as of this date is fixed and unchanging regardless of the affects of avulsion, accretion or

reliction caused by the flow of the Colorado River as set forth in the terms of the agreement (see attachment "B"). In affect this agreement transferred title to some thirty acres of land commonly known at the time as the "Island' and "Martin's Sand Bar" to the City of Austin. The current subdivisions between South Congress and the mouth of Blunn Creek and fronting on Town Lake adhere to limits specified in this document recorded in Volume 2221 at Page 69-92 of the Real Property Records of Travis County, Texas.

The boundary line defined above and the north lines of the subdivisions adjoining Town Lake which adhere to this boundary agreement can best be characterized as following the current margin of Town Lake with only minor exceptions. Another way of saying this is that essentially the present south bank generally follows the boundary line as stipulated in the 1960 agreement with property corners falling on or near the bank.

The second segment encompassing the area between the mouth of Blunn Creek and the east right-of-way line of Interstate 35 can be summarized by the statement that the City holds title to the area known as Travis Park as depicted on the plat of Travis Heights, a subdivision in Travis County, the plat of which is recorded in Book 3 at Page 15 of the Plat Records of Travis County, Texas. Travis Park includes generally the area between the south bank of Town Lake and the top of the bluff overlooking the river (see attachment "C"). Unfortunately there is little compiled survey information on this area. Due to vagaries and omissions on the recorded plat and because of the steepness of the topography few surveys have been attempted. Having said that, the stated goal of this particular study is to determine the relationship of the City's ownership and that of private property interest. Based on this it can be concluded that while the extent of the City's property interest in this segment has not been clearly defined, it can be said that the City owns the bed of the river and the banks as well, extending to a significant area beyond and south of the bank. (see Volume 440 Page 317 and Volume 9277 at Page 755 RPRTCT).

In the early 1950s, the City acquired title to multiple individual parcels to create the right-of-way for what was then U.S. Highway 81. I have been unsuccessful in finding a record of conveyance of these parcels to TxDot in fee or for right-of-way. It may not have been the practice at that time as it is today where the conveyance in fee by TxDot is required. It was in 1956 that the Federal Highway Act creating the interstate highways was passed and I believe that federal guidelines required states to acquire fee title and this formed the basis for TxDot policy after the act took effect. Since the individual parcels making up the right-of-way for Interstate 35 were acquired by the City for street purposes, it may be presumed that the use of the land for public right-of-way included the use by TxDot for the highway now in existence. Following this logic it may also be presumed that the City still owns the underlying fee in these parcels, that TxDot has use of the land as right-of-way and that the City may use its fee interest for purposes that do not interfere or are not inconsistent with TxDot's use of the land as right-of-way. More research may need to be done on the area

of this right-of-way to ascertain possible property rights and use limitations.

This then brings us to the last segment of this study from the east right-of-way line of Interstate 35 to the called 8.28 acre City owned tract along South Lakeshore Blvd. Title to several of the properties in this segment extend short distances into the waters of Town Lake but not by more than 12-15 feet. I was able to build an AutoCAD file on the basis of a recent survey of the 4.020 acre tract at the intersection of the east right-of-way line of Interstate 35 and the north right-of-way line of East Riverside Drive, a condominium project by Constellation Property Group, LP. From this I took recorded plats and deeds connecting the parcels as the coverage moved east.

While it was not the primary purpose of this effort, a shape file of the general outline of these properties has been created. Some caution in the use of this shape file is warranted in that the geo-referencing of the file was primarily done using City of Austin 2003 digital aerial photos where infrastructure was visible and matched to as-built surveys showing property lines relative to that infrastructure (Attachment-D). Included also are two shape files which were geo-referenced by GPS positioning and can be regarded as control files where accuracy is needed or required (Attachment-E,F).

Observations & Conclusions

There are two hike & bike trail easements across property that Cox Texas Newspapers (Austin American Statesman) currently owns. These easements are twelve and fifteen feet in width and at the easternmost end are not contiguous with the north line of Lot 1, Miller Subdivision or Lot 1, Waterford Subdivision. A small area of additional easement will be necessary at this location to access the waterfront in order to connect an offshore boardwalk to the existing trail. There are other issues as of this date not yet resolved in this area that could change the circumstances. See Attachments-G and H for hike and bike trail easements.

Based on general observations of property boundaries maintaining a centerline alignment of the proposed boardwalk (depending on proposed width) of 25-30 feet off the present bank would be prudent. This recommendation does not apply to segment two where the City owns the area of the bank.

Some coordination and compliance with TxDOT regulations regarding boardwalk materials (non flammable), lighting and alignment with respect to the bridge at Interstate Highway 35 is in order.

Access (to the lake) rights of riparian owners along Town Lake will need to be accommodated in the alignment and design of the boardwalk along with access by emergency services groups.

This report is intended to be distributed on a CD with all attachments, legible scanned subdivision plats and four aerial photos (2003).

I wish to acknowledge George Sanders and the staff at Metcalfe & Sanders for generously making available as built surveys and documents in their archives.

September 13, 2007
Gary Glover

A copy of this full report including attachments is on file at the City of Austin, Department of Real Estate Services.