THE TOWN OF

Highland Park

TEXAS

An American Community Making a Difference

HACKBERRY CREEK CORRIDOR

Conceptual Design & Development Report

MESA

PRELUDE

What an exciting time for Hackberry Creek - a community collectively coming together and developing a vision and conceptual plan for the renovation and preservation of our beloved picturesque creek where memories are made every day. Memories of children splashing in the creek's waters, family photos captured along the adjoining park, to the leisurely walks with the family pet. The Hackberry Creek Conceptual Design & Development Report (Plan) establishes a framework to continue Hackberry Creek's (Creek) prominence in our parks system.

Nine months ago, the Town Council (Council) embarked on the development of preparing a master plan for the Creek by initiating creative and visionary thinking about the present and future of the area through the exploration of a range of exciting possibilities. The planning process was designed to generate community discussion and ideas at the beginning of the project. As such, preparing the Plan is seen as the first step in a progression of steps guiding the development of the Creek and adjoining park over the short and long terms. The Plan itself does not seek to be a definitive, complete document as nothing is set in stone. Instead, the Plan was prepared to have flexibility accommodating the inevitable changes that occur over time.

The Plan provides a vision for future building on the Creek's natural features and its many man-made improvements laid-out over a century ago. Comprising today 29.4 percent of our parkland, the Creek was no doubt quickly recognized by the Town's founding developer, John S. Armstrong, for its natural beauty. During my forty years of tending to the Town's parks, I often stood on the Creek's many foot-bridge crossings wondering if their whimsical designs were drawn from an inspiration offered by New York City's Central Park's foot bridges designed by famed Landscape Architect, Frederick Olmsted, who mentored George Kessler, who himself played a part in planning our Town and parks system.

While the planning efforts in 1992 addressing the Creek were, on reflection, possibly too bold, Mother Nature's hand nevertheless has continued its erosion causing the loss of invaluable trees and park land. Coupled with this is time and weather itself impacting many of the stone retaining walls - some laid in the 1930's by the Civilian Conservation Corps. Certainly, the Town has attempted piecemeal repairs, but regrettably, the work led to an overall pattern of neglect with respect to the Creek and its park amenities.

Recognizing a call to action, the Council solicited planning proposals to aid in addressing the condition of the Creek, and identify opportunities for its preservation and restoration. With staff's assistance, the Council selected MESA Design Group (MESA). Assembling a team of experts, MESA conducted site inspections, prepared hydraulic modeling, compiled geologic/soil analyses, inventoried soft and hard landscaping, and prepared a horticultural assessment of the Creek and its adjoining park land.

The early months of work led MESA to identify several key assets and challenges. The Creek offers residents a rare opportunity to enjoy its natural features, where other cities' encase a creek's waterways in underground pipe. Fortunately for all of us, the Creek's beautiful natural character bisects the heart of the community and gives rise to a historically important landscape. While still a picturesque backdrop to the adjoining houses, the Creek does have its blemishes including erosion, floodplain challenges, pedestrian connectivity, and maintenance.

Drawing the public's input and direction, coupled with conversations with the Council and staff, MESA addressed the Creek's challenges and opportunities in a comprehensive multi-year plan. The Plan goes about this work in five key areas. Overall, the Plan introduces design enhancements, drawing attention to special places or nodes, pathways, and gateways. The inclusion of conceptual sketches throughout the study offers a better understanding of MESA's suggestions.

A clear vision expressed during the community engagement process was to promote, where appropriate, a return of the Creek to its more natural environment. Achieving this, MESA's attention was driven by the use of a "soft-hand" addressing erosion less with stone walls, and more with the inclusion of plants and shaping slopes in a more natural context. A side benefit of all this care is the improvement of the Creek's ecological system.

A dream of possibilities for the Creek is nothing without the development of a suggestive implementation plan. Such a plan gives the Council a framework for considerations going forward. While the Council previously allocated capital funding to the project, MESA expands the possibility of work substantially more than initially anticipated. Once the general principles of the Plan are adopted, the next stage becomes the detailed design development, where notional ideas contained in the Plan can be analyzed and discussed in more detail.

In summary, our community has a unique opportunity to continue benefiting future generations by the care and love John S. Armstrong gave developing the Town we proudly love and know today. Our important work with the Creek will improve its natural conditions, keeping it as a centerpiece of our park system where children can experience the wonders of a natural creek in the center of urban living.

Respectfully submitted,

Ronnie Brown,
Town Services Director

ACKNOWLEDGEMENTS

A special thanks to the residents of the Town of Highland Park for their attendance at the Public Engagement Workshop and completion of the online survey.

THE TOWN OF HIGHLAND PARK COUNCIL MEMBERS

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Bob Carter	Mayor Pro Tem
David L. Dowler	Town Council Member
Eric Gambrell	Town Council Member
Margo Goodwin	Town Council Member
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Kathleen Stewart	Assistant Director of Town Services
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Joshua McClure	Senior Project Manager
Mio Matsumura	Water Resources Task Manager

PUBLIC INFORMATION ASSOCIATES (COMMUNITY ENGAGEMENT)

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Judy Meyer	Partner

MESA (MASTER PLANNING AND LANDSCAPE ARCHITECTURE)

Stan Cowan	Principal in Charge
Fred Walters	Design Principal
Mary Ellen Cowan	Design Principal
Joe Steffes	Associate
Tyler Tucker	Landscape Designer
Robin Frye	Conceptual Illustrator

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REPORT

INTRODUCTION

Central Park was the first landscaped public park in the United States. Designed by Frederick Law Olmstead, it was inspired by grand open space parks in Europe. It was envisioned as an haven in the late 19th century Manhattan and as a place to relax and experience fresh air away from the urban environment. Its completion influenced City Planning, Park Design, and the urban landscape for a half century. The scenic boulevards and surrounding landscape embodied the vision of a pastoral environment contrasting with the dense urban environments characterizing cities at the time. Its design inspired a generation of Planners and Landscape Architects throughout the United States such as Wilbur David Cook and George Kessler.

Cook designed a Beverly Hills Master Plan in 1907 which was a departure from the monotonous grid patterns of other cities. His design led to his hiring by John Armstrong for the initial design of Highland Park. Later phases of the Town's design were led by George Kessler. As Cook and Kessler were influenced and mentored by the Olmstead brothers, their ideas were firmly based on the concepts of the City Beautiful Movement, a philosophy of North American architecture and urban planning that promoted beauty not only for its own sake, but also to create moral and civic virtue among urban populations.

Cook originally laid out the streets of the Town with the intent of preserving 20 percent of the land for public open space. The resulting meandering streets and green spaces, like the Hackberry Creek corridor, provided residents with a welcome respite from the rigors of urban living and the opportunity to experience nature within their community. Davis and Prather Parks today provide casual destinations along with the Town Hall grounds and the remainder of the Hackberry Creek corridor, forming an emerald ribbon through the heart of Highland Park. Over time, this little meandering creek has become a place of nurturing, adventure, imagination, and a background for photographs capturing milestone moments in the residents' lives. These spaces are cherished for their natural beauty and fairy tale character embodied in the form of meandering pathways, whimsical statues, and graceful bridges crossing over the creek. The mature trees and undulating topography are a pastoral treasure within the surrounding fabric of the community. Preserving and enhancing these qualities will be the guiding principle for this project.

The Town's architectural character is diverse, but the vernacular of the civic improvements is rooted within the Moorish and Spanish influences. This is evident at Town Hall, Highland Park Village, the Ashley Priddy Fountain, and other associated architectural elements found around the Town. The Town logo is a distinct architectural detail in its quatrefoil form. The bridges and hillside staircases in Davis and Prather Parks embody this vernacular as well. It is imperative to preserve the architectural integrity of these elements and appropriately integrate any future improvements aesthetically into the parks and open spaces.

The critical path for the project will be defined by creatively addressing erosion and flood control, creek restoration, and preservation while working within an environment of fluctuating water levels. Waterways are constantly changing environments and understanding their characteristics and patterns is vital to creating a successful and enduring design. With that understanding, our task is to provide a Plan proposing unique design solutions intended to be built harmoniously within the pastoral surroundings, utilize appropriate materials, and enhance residents' experience of this special place.

MISSION STATEMENT

After reviewing the site and visiting with the Council, the importance of this place to the legacy of the Town, as well as the neighborhood, became self-evident. Its preservation for generations to come, so that they may enjoy this place is the driving philosophy for the project. In order to achieve that end, the Plan must respond to and be the product of the residents' experiences, input, and discussion. It is therefore, the project mission to provide a Plan which guides the enhancement and preservation of the Hackberry Creek corridor for the use and enjoyment of the residents of Highland Park.

REPORT SUMMARY

The Hackberry Creek corridor is a cherished green space in one of the older parts of Highland Park. It has been a neighborhood destination and place for children to explore and play for generations. The study area for the project begins at a storm sewer outfall west of Byron Avenue and runs generally southward until it flows past Armstrong Avenue into Connor Lake. Town Hall and adjoining private property between Miramar Avenue and Euclid Avenue are not part of the study. The study focuses on the creek corridor between St. Johns Drive and Drexel Drive and Prather and Davis Parks. The drainage way between Alice Circle and Crescent Avenue are also included in the report.

The design team was tasked with surveying the site and performing an analysis to determine conceptual design solutions for erosion control systems, and restoring channel banks and walls, bridge abutments, and headwalls that are deteriorating. Restoration and preservation of the architectural stone bridges and landscape within the creek corridor and parks were to be considered, as well as enhancements such as walkways, benches, lighting, irrigation, and other site amenities. The planning team conducted thorough research of the corridor's physical condition and surrounding influences, uncovering many layers of historic, cultural, and ecological influences. This included assessment of the historic bridges, channel walls, and other architectural elements present. Additionally, the design team identified and delineated a series of "experiential zones" in the corridor and parks. Each of these zones is significant in its relation to the form of the corridor and visitors' corresponding sensory experiences. Understanding these experiences is critical to propose enhancements that are appropriate and appealing to the residents.

A previous master plan was completed by another consultant in 1992. That plan focused on the northern portion of the current study area, but was never implemented due to resistance from residents. The previous effort did not solicit public input for the project, and the resulting opposition prior to the Council's adoption of the plan led to the cancellation of the project prior to its adoption. The residents' resounding concerns at the time were that the master plan was overdeveloping the creek and "making it look like a Colorado stream."

To foster resident support for the current project, the design team, working with the Council and the staff, undertook great efforts to notify the public and solicit their input for the planning process. A public meeting was held to gather input from residents, and an on line survey was made available for those who did not attend in person.

Photographic boards documenting the experiential zones were on display at the public meeting to establish a common understanding of the corridor for the design team, Town officials, and residents. The data collected from the residents led to identification of project goals that were most important to them and those which were of least importance. This information guided the design team and Town Staff in the creation of the Plan.

The Plan identifies and organizes various projects into five initiatives: preservation, restoration, reconstruction, reestablishment of natural plant species, and enhancements.

The projects respond to the goals and objectives identified by the residents and the Council in work sessions, and a public engagement process which included a public meeting, and an online survey. The public engagement process is discussed further on page 11. Important projects include developing preservation and restoration guidelines for architectural elements; landscape and tree preservation guidelines for the corridor and adjoining public property; rebuilding the bridge near the end of Oxford Avenue. Also, there is an opportunity to consider re-envisioning the Lexington Avenue parking area and the pedestrian tunnel; and the reconstructing of the Beverly Drive and Miramar Avenue street crossings over the creek. These projects are described further in the Suggested Projects (pg. 12).

The realization of this vision for the Town requires a phased approach. In order to ensure the foundation of this Plan, the design team recorded the research, public input, and analysis phases in a sequential and highly illustrative manner within this document for future reference. Most importantly, this document describes in detail each project identified in the Plan. The project descriptions preserve the architectural, visual character, and natural systems of the corridor, while addressing critical issues associated with preservation, restoration, and enhancement. Ultimately, the Plan builds upon the culture and legacy of the corridor and surrounding community to ensure its preservation and enjoyment for future generations.

AN ENDURING VISION

The adjoining newspaper clipping from 1916 describes "making a park" in the picturesque Hackberry Creek corridor on land received from E.L. Flippen and Hugh E. Prather. The initial allocation of $15,000 was to create tennis courts, plant flowers, excavate a wading pool, and erect a restroom and bandstand. In the 1940s, the trees were small and growing with the Town (Exhibit 2). The modern aerial shows the change in tree canopy in the community and the corridor within the last 75 years (Exhibit 3).

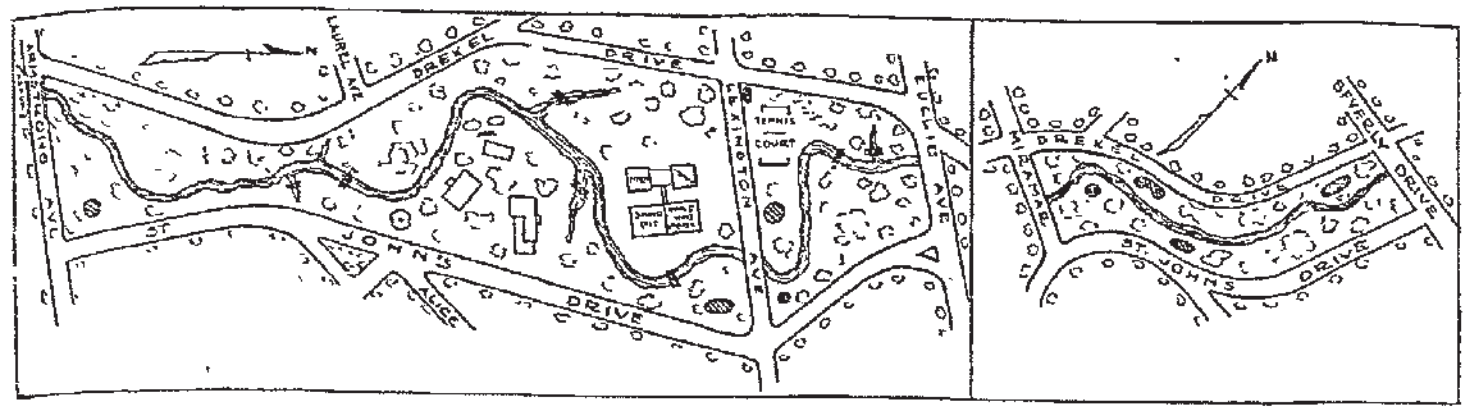


Exhibit 1: 1916 Historical Plan Sketch (From Newspaper Article)

Exhibit 2: 1942 Historical Aerial

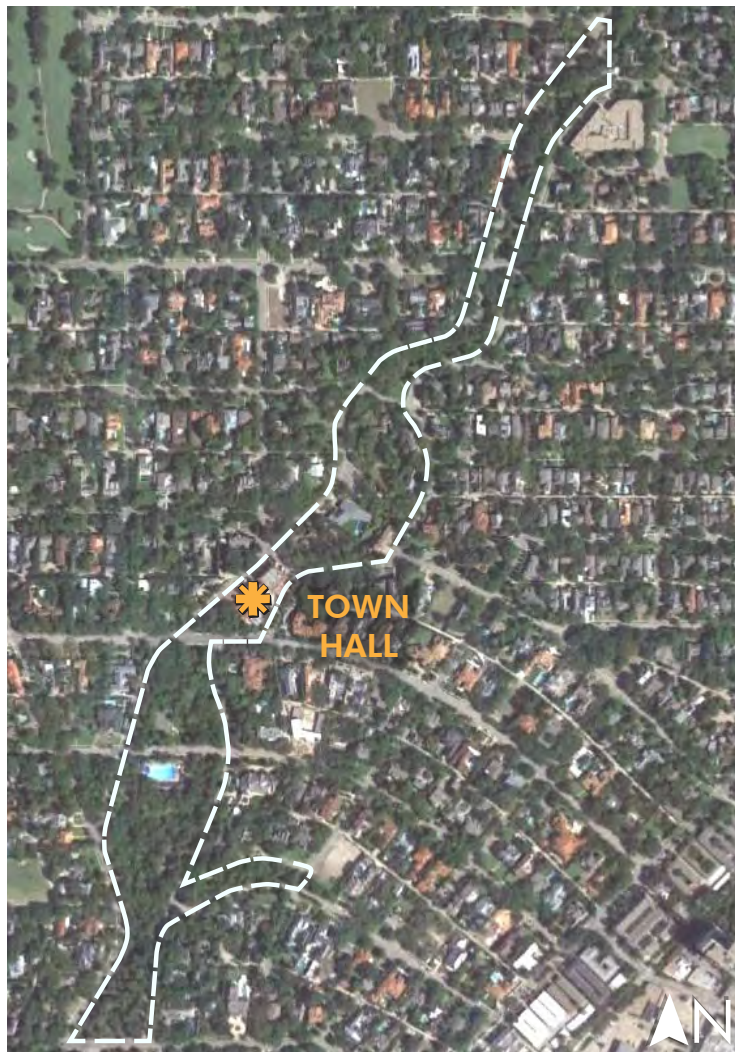


Exhibit 3: Current Aerial

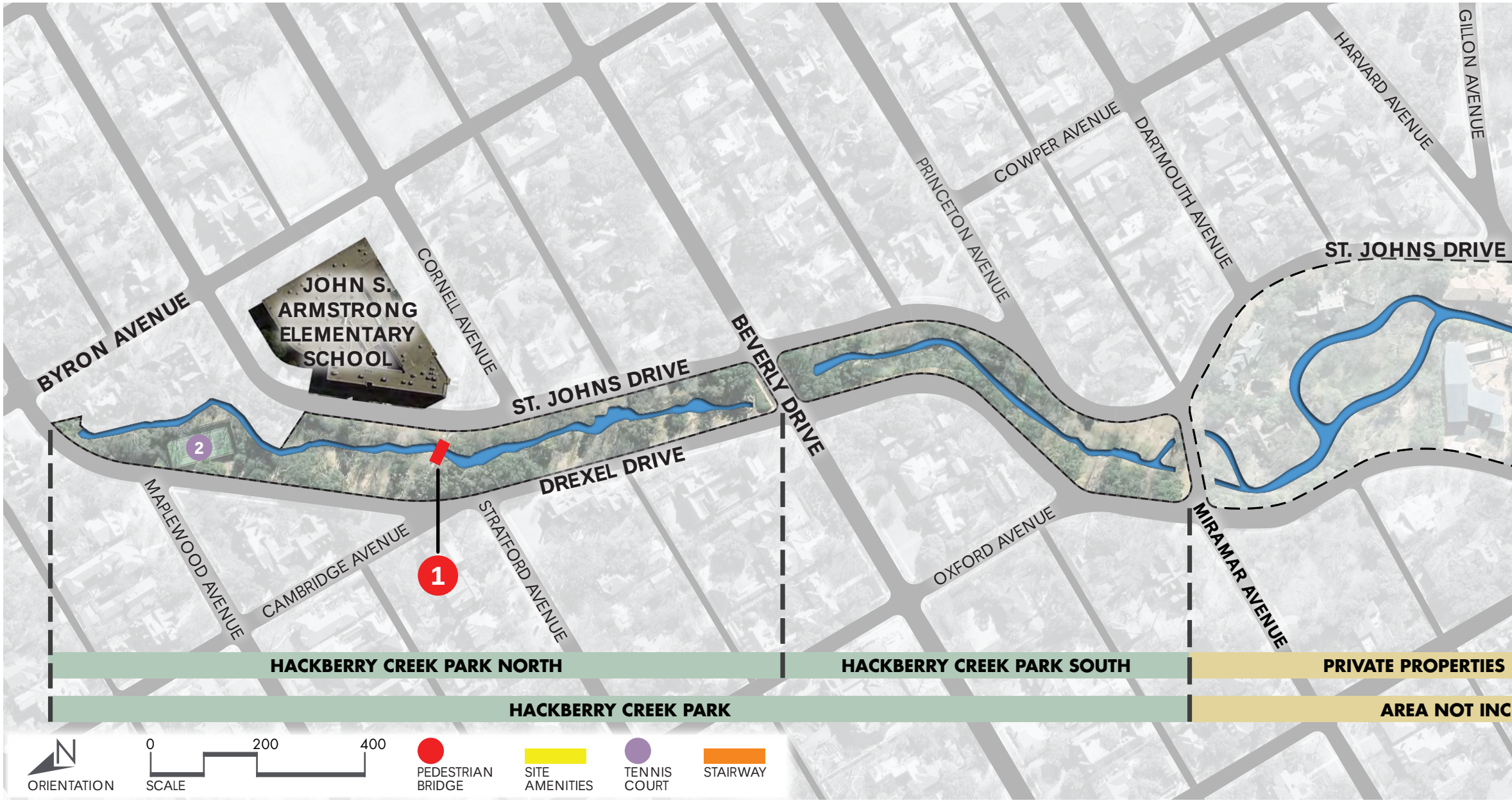


Exhibit 4: Hackberry Creek Park Plan Project Area

PLAN PROJECT AREA

The Plan for the Hackberry Creek corridor is concentrated on the portion of the corridor between St. Johns Drive and Drexel Drive, including Prather and Davis Parks. The drainage way between Alice Circle and Crescent Avenue flowing into the creek is also included in the report (See page 9). Town Hall and the adjoining private properties between Miramar Avenue and Euclid Avenue are not part of the study, but are recognized for their proximity and influence.

Envisioned over 100 years ago, the amenities in the corridor have endeared this part of the community to residents and visitors since they were built. Eight masonry arch bridges and twelve rambling staircases nestled in the mature tree groves and rolling topography form the architectural spirit of the Park. It is a place for residents to enjoy nature in close proximity to their homes.

The bridges, tennis courts, and civic landmarks are mapped on Exhibit 4 and Exhibit 5. Town Hall spans the creek, and is an important social hub as well as the government center for the Town's residents. Armstrong Elementary School, named for the Town's founder, overlooks the creek and one of the signature bridges. The Town Swimming Pool and tennis courts are popular recreational and community attractions for the residents.

Exhibit 6: John S. Armstron Elementary School

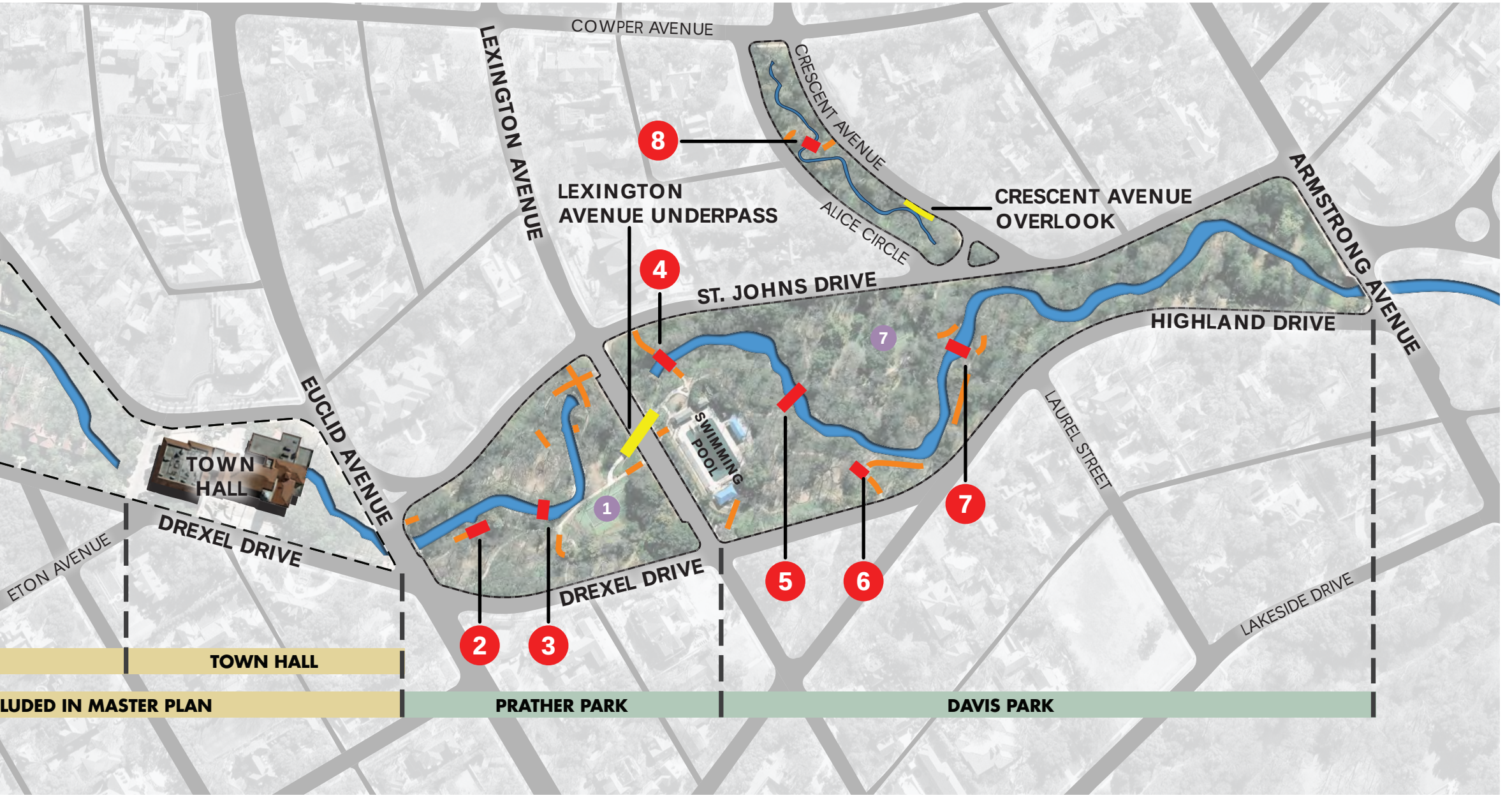


Exhibit 5: Prather and Davis Park Plan Project Area

Exhibit 7: Davis Park Playground

Exhibit 8: Hackberry Creek

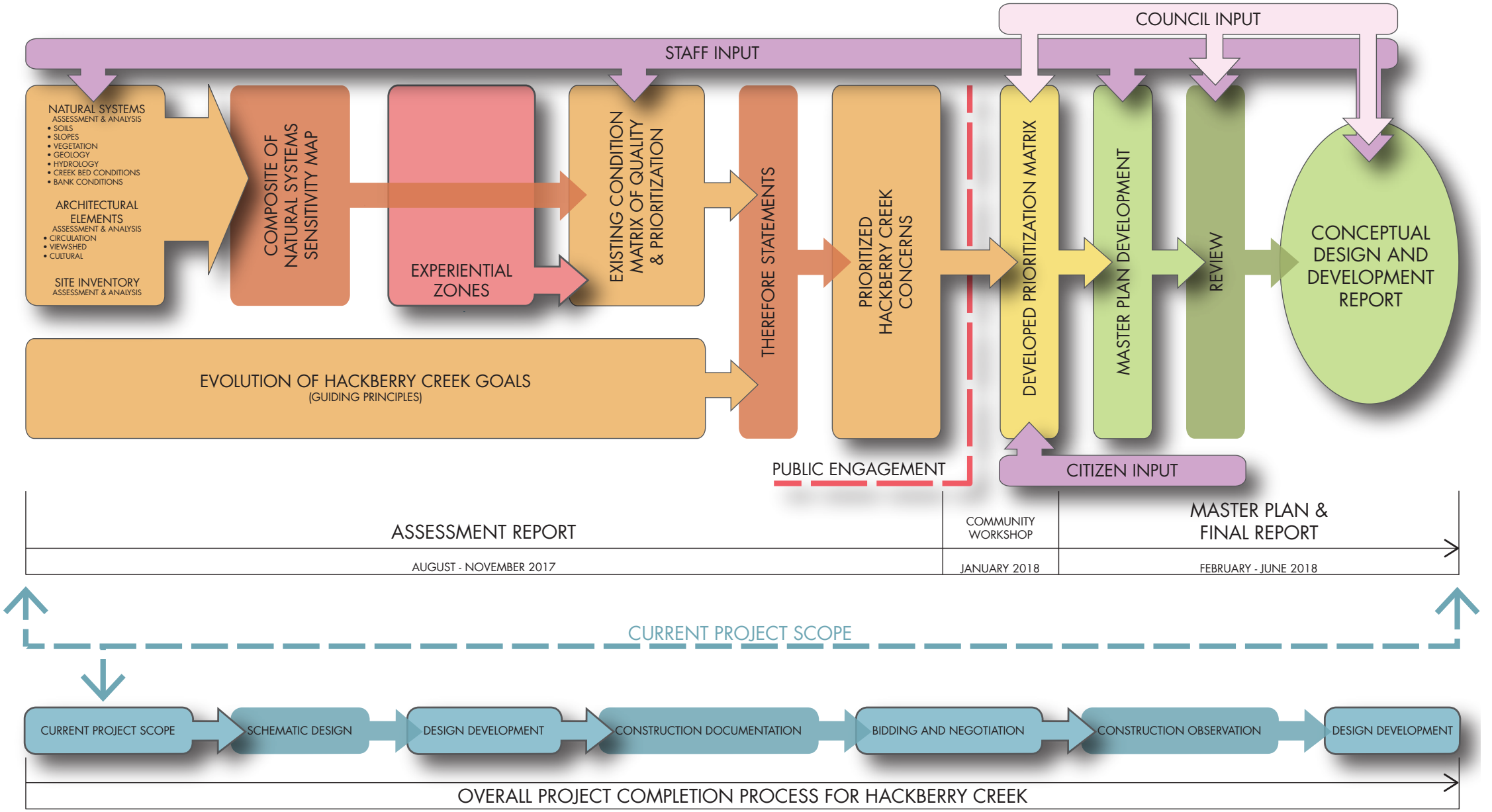


Exhibit 9: Overall Project Completion Process for Hackberry Creek

CONCEPTUAL DESIGN & DEVELOPMENT PROJECT PROCESS

The scope of work identified by the Town in the Request For Qualifications was used to define an initial set of project goals for evaluation in the site inventory process. The ensuing site assessments led to a preliminary list of issues and implications which formed the initial planning framework presented to the Council and staff for input and comment. Their thoughtful contributions led to a refined set of goals and objectives presented to the public for their consideration and feedback to determine the final project planning framework. The residents' responses, concerns, and preferences were used to identify the preferred project initiatives cataloged in this report.

The project framework is the result of a thoughtful and thorough site analysis to understand, categorize, and document the physical conditions of the site. The inventory of existing site conditions and implications was used to evaluate the apparent conflict or compatibility with the prioritized project goals identified by the Council and the residents.

The physical conditions are categorized by environmental systems, architectural appropriateness and condition, as well as their experiential or sensory quality. The evaluation criteria was used to assess each condition to provide a synthesized or weighted score for each category graded, and thereby, creating a prioritized organization of strategic initiatives for the Plan. The findings were reported to the staff for review and direction. A public engagement approach briefing was provided to the Council on December 7, 2017, prior to the public meeting on January 25, 2018. After public input and revision by the design team, the resulting Plan and accompanying graphics were compiled into a draft report for presentation to the Council for final review and consideration for adoption. The final adopted Plan may then be used as a guide for the development of the strategic projects identified during the planning process.

PUBLIC ENGAGEMENT

The design team in conjunction with the Council and the staff, conducted a public workshop on January 25, 2018, at Armstrong Elementary School. Attendance at the meeting was enthusiastic, with fifty-one area residents taking part in the evening's discussion. The meeting gathered input from residents about the creek corridor and parks within the study area, focusing on seven broad goal statements about the creekway and parks derived from the Request For Qualifications and the design team's field observations. The seven goal statements are intended to gauge the factors that are most important to the community, in order to prioritize future planning initiatives and objectives.

Attendees at the workshop were divided into groups, each with the opportunity to discuss the corridor holistically. Group discussions were facilitated by the staff and documented by annotating maps positioned at each table. Notes from the group discussions were taken by "scribes" from the design team for record. At the end of the discussion, a representative from each table conveyed the highlights of their group's discussion to the greater audience. As the crowd was lively, the design team and the staff had individual conversations with some attendees, ensuring everyone had the opportunity to voice their concerns and issues of importance. The comments collected from these discussions were added to the notes taken from each table.

An online survey was available for Town residents as a supplement to the public meeting to maximize the opportunity for public input. All photographic materials and presentations were also made available for reference. The preferences from the public meeting were very consistent from the reporting groups and online respondents. A detailed accounting of the public engagement process, instruments, and findings may be reviewed in the Appendix.

In general, the residents at the workshop indicated they desire to preserve the parks and the creek in their "natural" or pastoral state, without the introduction of active use amenities to enhance or attract activity in the corridor overall. They like the idea of preserving and enhancing the natural character of the creek and agree that the landscape should be designed and managed in a way that promotes this visual character and encourages the presence of wildlife.

The public meeting attendees and online survey respondents agreed that they are concerned about improvements to the creek channel to manage high storm flows, but definitely want such improvements to be consistent and harmonious with the aesthetic character of the parks' amenities whenever possible. Further, they would like to see a plan or guidelines that outline procedures for protecting the architectural heritage of the parks, potentially including historic or informational markers (interpretive signage) where appropriate. Rebuilding the Oxford Avenue Bridge was discussed and suggested as an action item for the Plan.

The tables below summarize the most important and the least important goals, based on reports from each table. Goal #2 and Goal #4 are shown to communicate all goals that received votes a the workshop.

Exhibit 10: Town Services Director, Ronnie Brown, introduces Mayor Joel T. Williams, III to the attendees at the Public Workshop

WORKSHOP VOTER RESULTS

MOST IMPORTANT GOALS

GOAL 6: Preserve and enhance, as possible, the unique natural areas of the Hackberry Creek corridor and within its parks.
(3 OUT OF 4 TABLES) *PUBLIC WORKSHOP
(19 OUT OF 44 RESPONSES) *ONLINE SURVEY

GOAL 1: Establish guidelines for the appearance and upkeep of historic structures and architectural site amenities as well as appropriate lighting and planting enhancements to these locations.
(3 OUT OF 4 TABLES) *PUBLIC WORKSHOP
(11 OUT OF 44 RESPONSES) *ONLINE SURVEY

GOAL 2: Plan for and locate areas where landscape beautification and enhancement are appropriate within the larger context of the Hackberry Creek corridor and parks.
(1 OUT OF 4 TABLES) *PUBLIC WORKSHOP
(3 OUT OF 44 RESPONSES) *ONLINE SURVEY

LEAST IMPORTANT GOALS

GOAL 5: Plan for expanded bicycle and pedestrian amenities.
(4 OUT OF 4 TABLES) *PUBLIC WORKSHOP
(18 OUT OF 44 RESPONSES) *ONLINE SURVEY

GOAL 7: Integrate enhancements into existing spaces along the corridor to create active recreational spaces that are flexible and can accommodate multi-seasonal and multi-generational users.
(2 OUT OF 4 TABLES) *PUBLIC WORKSHOP
(9 OUT OF 44 RESPONSES) *ONLINE SURVEY

GOAL 4: Enhance accessible connections to and improve connections between recreational activities within the Hackberry Creek Corridor.
(1 OUT OF 4 TABLES) *PUBLIC WORKSHOP
(6 OUT OF 44 RESPONSES) *ONLINE SURVEY

*GOAL 3 did not receive votes in either category. Residents stated that the phrase "aesthetically appropriate" was too ambiguous for voting purposes

GUIDELINE STUDIES & SUGGESTED PROJECTS

The Plan proposes the following project initiatives for the preservation, restoration and enhancement of the Hackberry Creek corridor including Prather and Davis Parks, and Alice Circle. The projects address erosion control, infrastructure, and aesthetic issues. In an effort to manage the plan, the projects were organized into the following categories:

1. Preservation Projects
2. Restoration Projects
3. Reconstruction Projects
4. Natural System Reclamation and Landscape Projects
5. Enhancement Projects

Prior to starting on some of the suggested projects described in this section of the Plan, supplemental plan studies and guidelines addressing the details unique to those projects should be completed. These studies will build upon the general recommendations of this Plan, and address project specific issues such as geologic and structural stability, approved construction materials and procurement, processes for salvage and preservation, and administrative approval procedures. The required detail and precision of these studies is beyond the scope of this Plan. The following guidelines and studies address particular areas of interest to the residents identified during the stakeholder and public engagement process.

Exhibit 11 After: Prototypical treatment for "on-channel" outfall into creek

GUIDELINE STUDIES

A. Preservation and restoration standards for bridges, stairs, and architectural elements
Management and repair standards should be developed to guide maintenance and repair efforts as well as control restoration activities to preserve the architectural integrity of the bridges and other elements. These guidelines are separate from this study, and suggested to be completed prior to any majors repairs or alterations to existing elements within the corridor and parks.

B. Town Swimming Pool: Programming and conceptual design study
A design study should examine year-round programming opportunities for residents, corresponding upgrades and enhancements for accessibility and service. These guidelines are supplemental to this study. See page 55 for a detailed description.

C. Corridor and parks lighting design guidelines
The consultant team recommends a lighting program and design by a qualified lighting designer to balance key issues of aesthetic appropriateness, impacts on wildlife, the local ecology, and pedestrian safety, as well as maintenance, operational, and lifecycle costs. Theses lighting projects are best served on an area-by-area basis, so as to foster support from residents living nearby. These guidelines are supplemental to this study.

Exhibit 12 Before: Head wall and pipe flowing into creek channel located in Hackberry Creek Park North

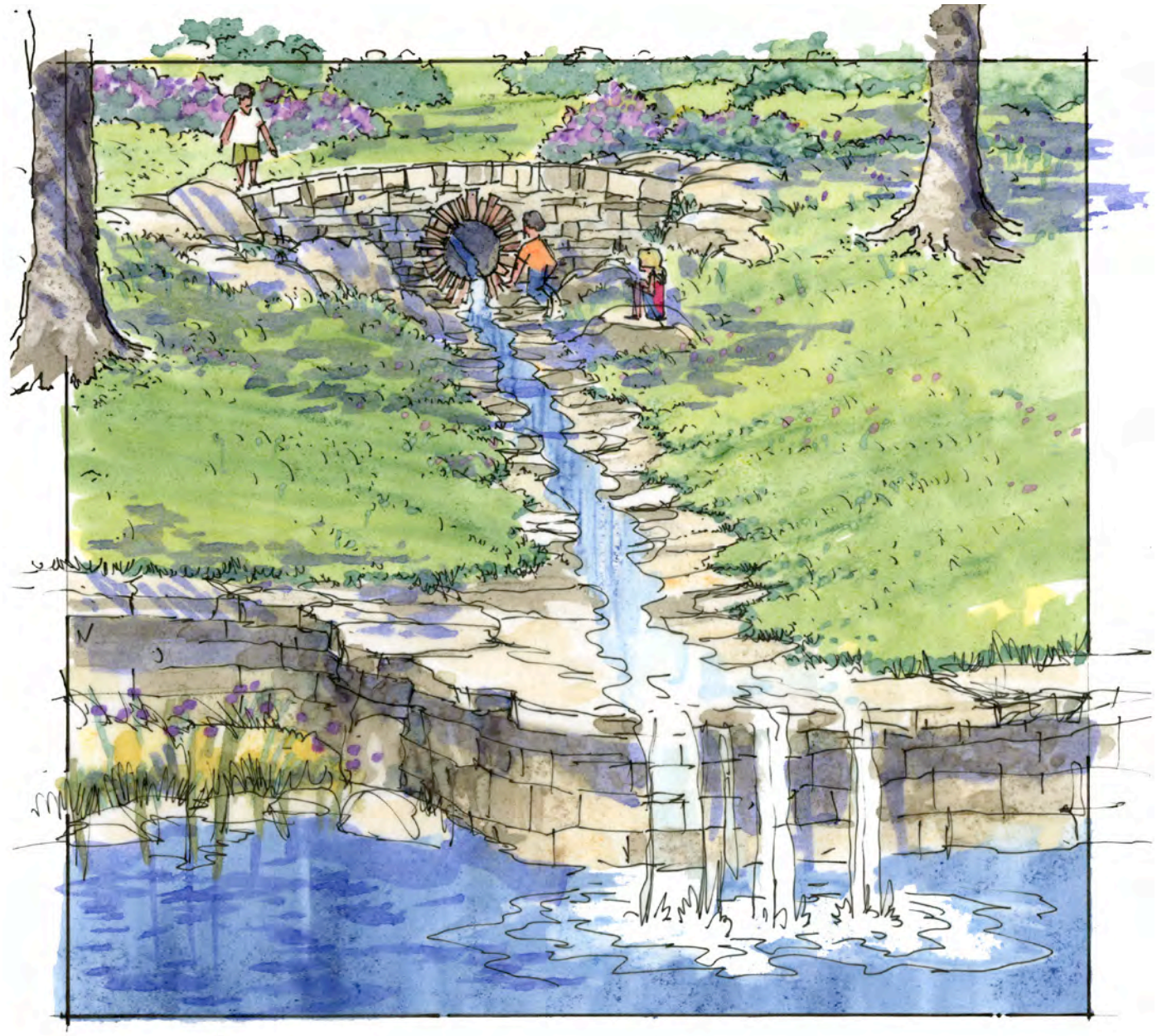


Exhibit 13 After: Prototypical treatment for "above-channel" outfall into creek

Exhibit 14 Before: Existing culvert and headwall near Princeton Avenue and St. Johns Drive

D. Signage and interpretive graphic design guidelines
To support the preservation, restoration, and enhancement efforts within the Plan, as well as residents' desire for historical and informational markers in the corridor and parks, a complete signage program (wayfinding, identity, and interpretive) should be considered. A qualified wayfinding and graphics consultant should be commissioned to formulate a comprehensive vision for the project. These guidelines are supplemental to this study.

PRESERVATION PROJECTS

A. Hackberry Creek channel walls and outfalls
Repairs to the channel walls should include stabilization and restoration where feasible, utilizing the existing concrete pieces where possible. Should this prove impractical, all effected masonry should be replaced with a material deemed appropriate for all of the walls in the corridor.

The numerous outfalls into the creek are generally of two types: "on-channel," or creek bank flowing directly into the creek, or "above-channel," flowing over the ground and top of the channel into the creek. Exhibit 11 on page 12 is located in Hackberry Creek North and shows the existing headwall and clay pipe enhanced with coursed and radial stone to blend and enhance with the existing vernacular rather than detract from it. Exhibit 13 on page 13 shows an existing headwall and culvert located at Princeton Avenue and St. Johns Drive similarly enhanced to be visually appealing and a potential point of interaction and exploration for children along the creek. These conditions are conceptual prototypes, but could be applied in a variety of similar situations throughout the corridor.

B. Existing concrete walkways, and paving
Over time, these walkways have acquired a distinctive appearance due to the weathering of the surface layer, revealing the creek sand and dark colored aggregates within. As some of these walks are need of repair or enhanced accessibility, it is recommended that the historic alignments be maintained where possible to preserve the heritage of the corridor and parks. Care should be taken during enhancements or repairs to properly match the existing hardscape color and finish by using regionally located creek sand and aggregates rather than the sharp sand and white limestone typifying modern concrete mixes. Similar measures should be taken with the associated metal work such as hand rails, guardrails, etc.

In exhibit 15 on page 14, the raised pedestrian walkway between Pedestrian Bridge #6 and Pedestrian Bridge #7 indicates erosion of the bedrock undermining the existing sidewalk. Picturesque holly fern has established a colony in the crevices creating a unique landscape encounter along the walkway. As a measure to preserve the historic (and scenic) alignment of the sidewalk, the rendering

(Exhibit 16) on page 15 depicts a new walkway being constructed on top of a platform supported by steel pilings or piers drilled into the bedrock. A guardrail satisfying modern codes would be built to coincide with the drilled pilings, while its aesthetic would be guided by existing railings in the park.

C. Existing stairways
There are several staircases within the park and corridor. In order to preserve the aesthetic, they should be preserved in place and repaired and cleaned only as needed to maintain structural stability. Specific stairway restoration projects may be related to the Guidelines (pg. 12) and Vision Projects (pg. 32), and should be considered accordingly.

RESTORATION PROJECTS

A. Creekside seating area in Davis Park
This area is located on the south side of Pedestrian Bridge #7. It is an informal gathering area. ADA-compliant, accessible walks, as well as bank stabilization and hillside revegetation, should be included in this project.

B. Pedestrian Bridge #2 (footbridge in Prather Park)
This foot bridge crosses over a drainage swale. This bridge requires treatment for efflorescence, repair of cracked stones, and repointing of joints. Replacement stones should match the composition/color of existing materials.

C. Pedestrian Bridge #3 (Prather Park)
This masonry arch bridge crosses over Hackberry Creek. The bridge requires surface treatment for oxidation, repair of some cracked stones, repointing of the joints, and future abutment repairs. It is recommended to use stone matching the bridge for any abutment repairs.

D. Pedestrian Bridge #4 (Davis Park, near Lexington Avenue)
Recommendations for this masonry arch bridge include raising the side walls and repairing the abutments using stone to match the bridge construction and integrating them into the banks or channel walls.

E. Pedestrian Bridge #5 (Davis Park)
This bridge is located south of the Swimming Town Pool. Consideration should be given to amending the chain rail to an appropriate height and restoring the column lights. Repairs to mortar and cracked stones are recommended.

F. Tennis Court #7 (Davis Park)
The Town's current Capital Improvements Plan has this scheduled for renovation. The improvements include construction of a post tension concrete slab, fencing, windscreens, backboard, bench, and accessibility improvements. The court lighting needs to be restored or replaced. Landscape enhancements are recommended to soften the utilitarian appearance of the fence.

G. Pedestrian Bridge #7 (Davis Park, south of Tennis Court #7)
This is near Alice Circle. The bridge face and underside of the arch exhibit minor cracking and missing stones, and should be repaired. Portions of the abutment have cracks and a section of wing wall has detached and collapsed and should be restored.

H. Armstrong Bridge
The Town's current Capital Improvement Plan has the bridge scheduled for renovation. The proposed improvements include repair and restoration of the bridge pedestals, cleaning and repainting, installation of ornamental light fixtures, and seasonal color baskets. The guardrail and wing wall east of the original structure should be rebuilt to a more appropriate architectural character with the bridge.

I. Pedestrian Bridge #8 (Alice Circle)
This bridge crosses over a small tributary of Hackberry Creek. The masonry arch is in poor condition, with loose, missing, and cracked stones. The banks in proximity of the bridge show slight erosion. The bridge requires repair of the cracked stones, and repointing of the mortar joints.

RECONSTRUCTION PROJECTS

A. Beverly Drive headwalls and culverts
The consulting engineer's assessment indicates that the interior of the structure exhibits signs of significant deterioration. The structure is potentially in need of replacement. A feasibility study should be conducted to formulate a design response guiding the reconstruction of the culverts, headwall, and street crossing.

B. Miramar Avenue headwalls and culverts
The relief culvert channel is often obstructed by sediment and has been an ongoing maintenance issue. The consulting engineer's assessment indicates that main and relief culverts show signs of disintegration and deterioration, including cracks in the headwall and pipe interior. A feasibility study should be conducted to formulate an appropriate plan and design response for potential replacement.

C. Tennis Court #1 (Prather Park)
The Town's current Capital Improvement Plan has this tennis court scheduled for renovation. The proposed improvements include construction of a post tension concrete slab, new fencing, windscreens, backboard, bench, lighting, and accessibility improvements. It is recommended that the court be reconstructed elsewhere. The existing windscreens and fencing block views of the exposed stone face of the "grotto" from outside of the court. This is one of the most unique and picturesque areas within the creek corridor and parks, and it should be available for enjoyment by more than just one user group. The removal of Tennis Court #1 would result in a beautiful open space suitable for a variety of passive enhancements

Exhibit 15 Before: Walkway in Davis Park

Exhibit 16 After: Perspective view of the walkway over the Creek in Davis Park

such as stone benches, landscape improvements, and an open lawn area. This area could remain passive, or be designated for other uses deemed appropriate by the Council.

D. Oxford Avenue Bridge
Comments gathered from the public meeting and the online survey indicate that the residents desire to rebuild this crossing and trail connection. It is recommended that design studies be commissioned to determine the most appropriate methods to rebuild this crossing, in keeping with the architectural heritage of the corridor and the parks.

E. Pedestrian Bridge #6 (Central Davis Park)
This bridge crosses over a drainage swale leading to the creek. Overall, the bridge is in poor structural condition and should be rebuilt using limestone materials matching the other bridges in the corridor and the parks.

F. Creek channel walls
Some of the channel walls are failing due to erosion and undermining of their foundations. Specific designs should be commissioned for areas of reconstruction to best respond to the local geology and field conditions. The exhibits on page 16 show two preferred methods for transitioning new and repaired walls back into soft banks and integrating them into existing walls. Exhibit 17 depicts an elevation and plan view of a limestone veneered wall blending into the coursing of an existing masonry creek channel wall. The limestone coursing would match the coursing of the adjacent existing wall and then transition into a graduated pattern with larger "boulder" stones on the bottom of the wall and smaller "builder" stones on the higher courses. All of these stones would be roughly rectangular on the front, top, bottom, and sides. The plan view indicates the monolithic would have a regular front profile and an irregular rear profile transitioning back into the soft bank or landscape terrace. Exhibit 18 shows how the walls will terminate into the soft bank or terrace using larger rectangular boulders transitioning into irregular boulders anchored into the bank, giving the wall the appearance of being built into the native geology. The specific limestone used for these walls and boulders should resemble the native bedrock and limestone used for constructing the historic pedestrian bridges. The consulting engineer has proposed three conceptual methods for the reconstruction of the walls based on field observations. Conceptual applications and details for these walls may be found in the Appendix.

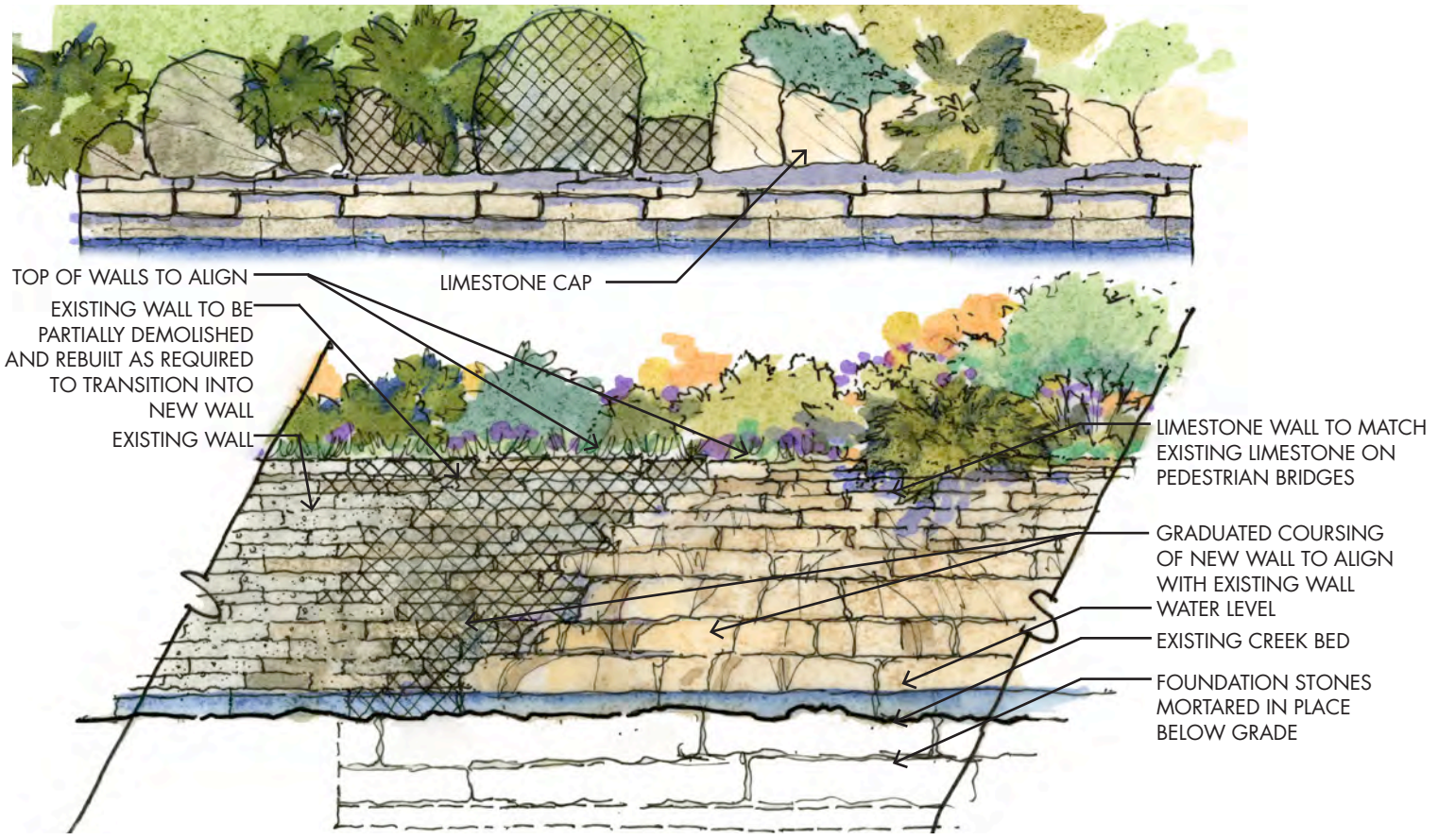


Exhibit 17 Elevation and plan of limestone veneered wall

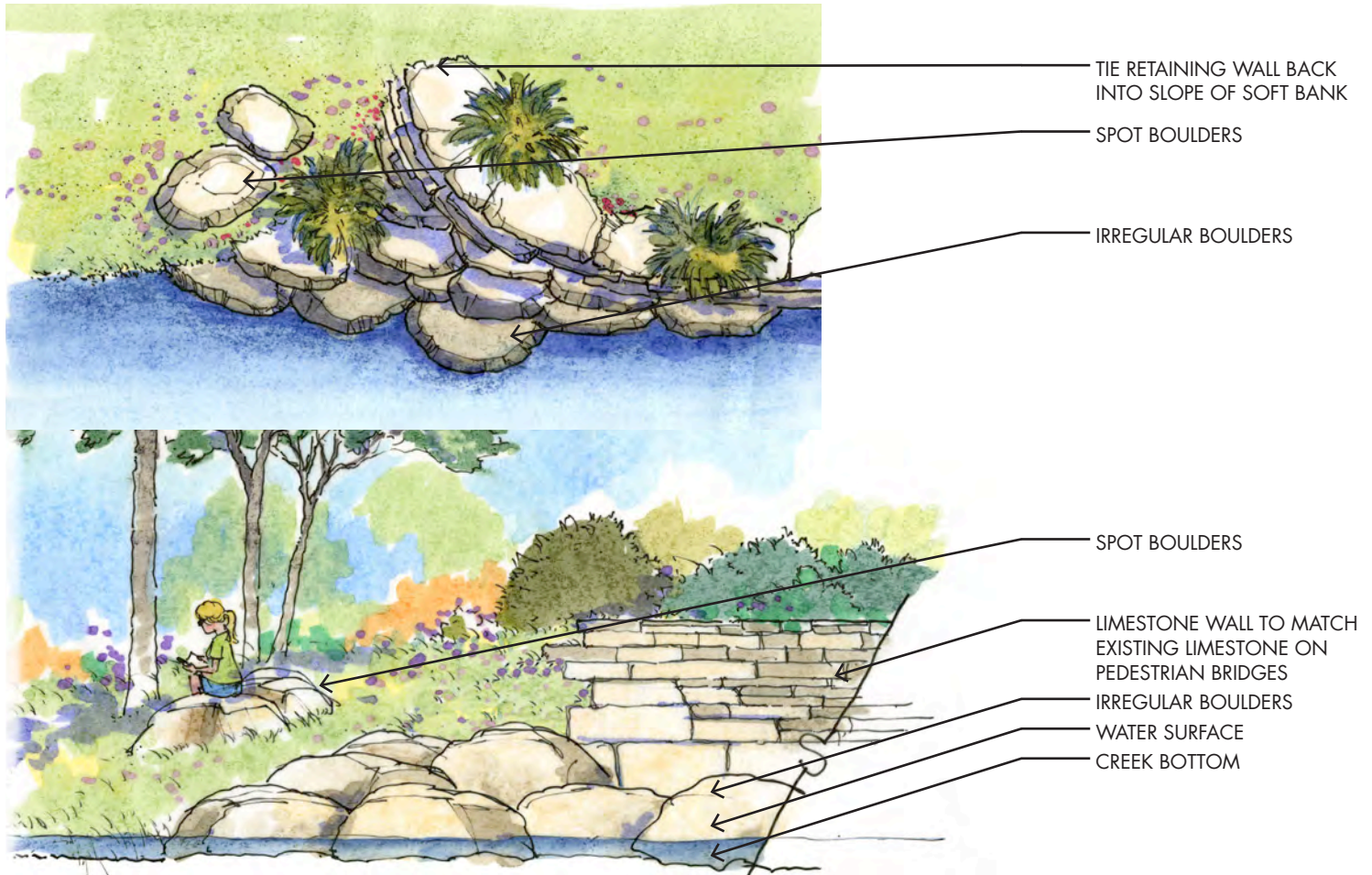


Exhibit 18 Wall transition

NATURAL SYSTEM RECLAMATION & LANDSCAPE PROJECTS

A. Tree removal and mitigation
In an effort to maintain the aesthetic of the corridor neighborhood streets in the area, a plan with management standards should be created to govern the removal of healthy trees on public property. These standards should contain tree replacement or mitigation standards, including suitable species.

B. Beverly Drive landscape beautification
The shrubs along the Beverly Drive crossing now obscure views of the creek from the street. The height of these shrubs may affect visibility of pedestrians in the roadway by motorists. The shrubs should be lowered or removed as part of a beautification project to improve overall visibility.

C. Future landscape beautification projects
Landscape beautification projects utilizing non-native or adapted ornamental species should be identified for locations outside of the corridor and parks, reserving areas of the corridor and parks for a natural landscape.

ENHANCEMENT PROJECTS

A. Tennis Court #2 (Hackberry Creek North)
This tennis court is planned to be resurfaced in Fiscal Year 2018-2019, in conjunction with the Town's capital improvement plan. Immediate enhancement needs include repairing the existing sidewalk access, and consider adding a drinking fountain.

The perspective sketch in Exhibit 19 on page 18 delineates a design concept intended to gentrify the appearance of the court. The enhancements would remove the chain link fence and windscreen, and replace them with steel lattice and masonry. Windscreen may be incorporated on the court side of the lattice. The height of the fence's middle section would be lowered, giving the court an inviting gardenesque appearance that blends with the architectural form of the corridor. The lowered fence enables public safety patrols to maintain a vigil when the court is not in use. Supplemental landscape around the perimeter of the court would suggest a more harmonious relationship with the surrounding natural landscape. Though this illustration is for Tennis Court #2, the proposed improvements are suitable for Tennis Courts #1 and #7 as well.

B. Pedestrian Bridge #1 (across from Armstrong Elementary School)
Located near John S. Armstrong Elementary School, this structure is in generally good condition. The bridge opening is partially obstructed by fill and a future study should be conducted to analyze the hydraulic benefit of increasing the open area underneath the bridge. Exhibit 21 on page 19 is a sketch of Pedestrian Bridge #1 looking north. The photo of the existing condition, shown in Exhibit 22 (pg. 19), clearly shows landscape on either side of the bridge diminishing its scale and presence over the creek. There is an existing retaining wall on the north side of the bridge, adjacent to the abutment, which constricts flow through the creek. The wall appears to be a remnant of a planter or perhaps armoring a tree no longer there. The suggested enhancements include removing the protruding wall to open the channel and remove the overgrown planting on either side of the bridge. The removed shrubs would be replaced with low growing material cascading over the existing abutment walls.

The western channel wall is shown to be replaced with stepped back slabs of limestone intended to blend with the geology and surrounding landscape. The wall on the east bank would remain in this scenario as the flow of the creek would be unimpeded with the removal of the protruding retaining wall on the north side of the bridge.

C. Access points to Hackberry Creek
These access points could provide informal seating, but also be used as a method to control erosion by stabilizing slopes which are currently barren. These areas would be designed to slow water movement in storm events, decreasing erosion on the banks and channel walls.

D. Lexington Avenue masonry headwalls
Located on either side of the street, these structures are arch culverts with masonry headwalls. The arch liner and concrete footing are in good condition. Bank stabilization measures should be considered at this area.

E. Lexington Avenue pedestrian access tunnel façade
This structure provides passage beneath Lexington Avenue for pedestrians using the Hackberry Creek Corridor. Its appearance strongly contrasts with the other architectural elements within the corridor and parks. Enhancements should be considered to blend with the style of other nearby park elements. Specific tunnel façade enhancement projects may be related to the Vision Projects (pg. 32).

F. Lexington Avenue Esplanade
Lexington Avenue is the most utilitarian and car-centric crossing. It lacks thematic relationship to the corridor. Enhancements should be considered to create an accessible entry to the parks and the swimming pool in conjunction with the tunnel façade enhancements. A more detailed description for these enhancements may be found under Vision Projects (pg. 32).

G. Staircases
Existing staircases in the parks with non-compliant safety barriers will likely need them when eventually rebuilt or repaired. Therefore, aesthetic guidelines and conceptual construction standards need to be written and adopted controlling construction methods and detailing for future restoration and enhancement efforts.

H. Playground location and layout
The Plan anticipates the eventual decline and replacement of the existing playground structure. When the playground is replaced, it should be relocated farther from the surrounding streets. The replacement playground should be an inclusive design, structured around a philosophy of nature play.

Exhibit 19 After: Perspective view of Tennis Court #2

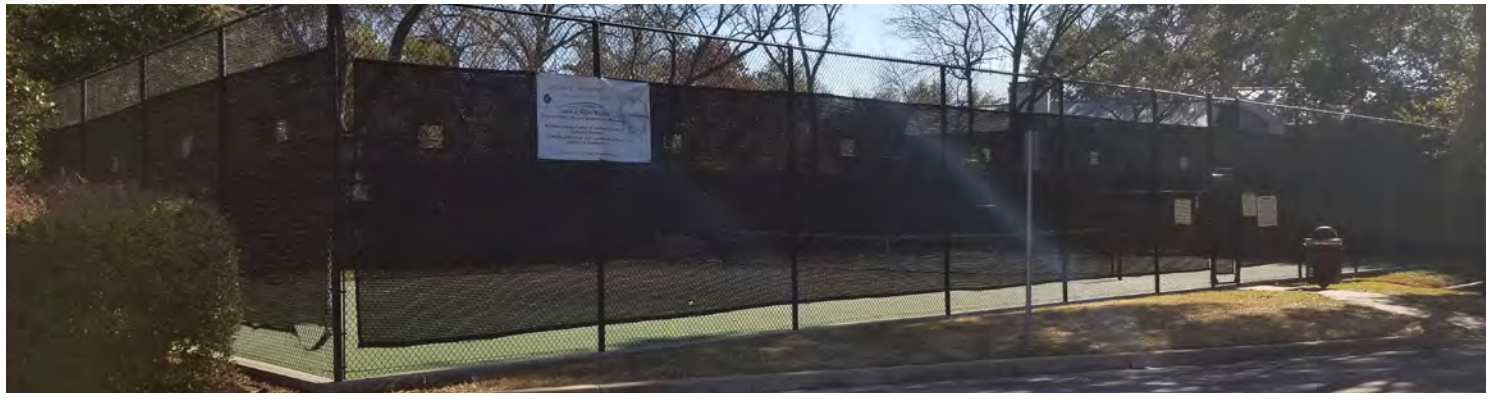


Exhibit 20 Before: Existing conditions of Tennis Court #2

Exhibit 21 After: Perspective view of Pedestrian Bridge #1

Exhibit 22 Before: Pedestrian Bridge #1 and the nearby channel walls and landscape

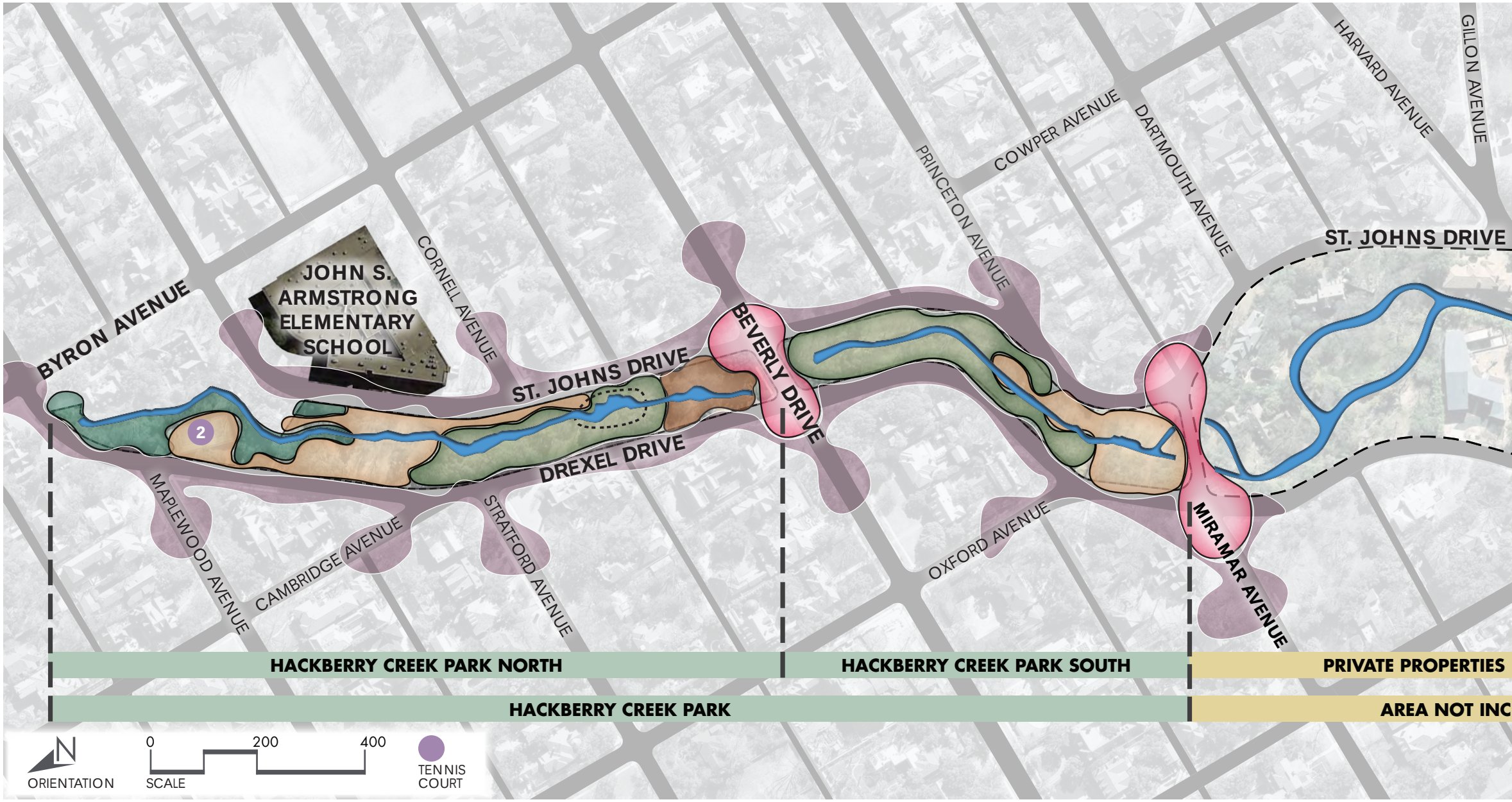


Exhibit 23: Hackberry Creek Park Experiential Zones

EXPERIENTIAL ZONES

The Hackberry Creek corridor is a distinctive environment, the value of which was recognized by Wilbur David Cook when he designed the Town. As the Town developed, the corridor (perhaps regarded as an extension to Turtle Creek and Exall Lake) quickly became a destination within the community, and has persevered in its prominence despite changes within the surrounding Town. Its preservation and relationship to the surrounding community are a legacy for area residents seeking respite from the city and meaningful connections with their neighbors and the natural environment.

The Hackberry Creek Corridor, Davis Park, Prather Park, and Alice Circle can be segregated into individual settings or experiential zones as shown in Exhibit 18 and 19. The zones are categorized by a recognizable set of physical characteristics, patterns, and contextual influences which contribute to the sensory perceptions about them. The corridor and parks are a tapestry of experiential settings comprised of the creek, trees, dramatic rock formations, and historic architectural elements. When experienced together, these distinct zones comprise the corridor's experiential fabric.

PICTURESQUE CREEK

- Passive, tranquil, meditative qualities
- Distinct, dramatic rock outcroppings
- Grassy undulating, soft landforms
- Dramatic creekway movements with reflective water
- Compositionally framed views

URBAN PARK

- Open, grassy ground plane, pastoral character
- Rolling landforms with small flat areas
- Large overhead canopy trees providing dappled to sunny areas
- Sculptural trees, i.e. picturesque Eastern Red Cedars
- Combination of man-built creek walls, Cotswold in character and soft earthen banks

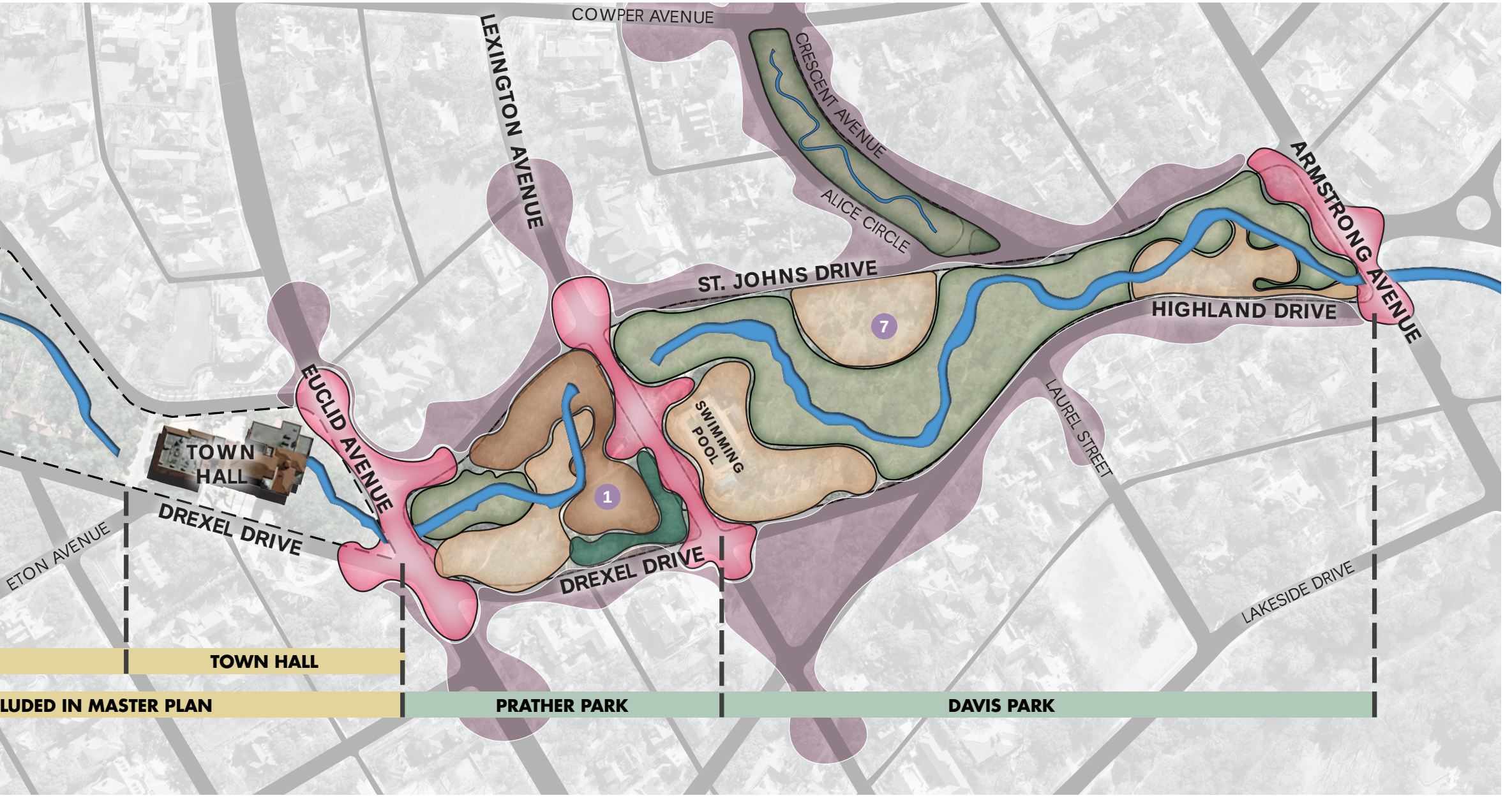


Exhibit 24: Prather and Davis Park Experiential Zones

- Exposed sculptural roots along creek banks
- Deep views with visual connections to architectural follies and landscape features
- Pleasure grounds for casual and passive play

WOODLAND CREEK

- Open views into woodland forest, no mid-story vegetation with low woolly groundcover ground plane to barren exposed soil
- Large tree canopy, cathedral-like, with deep shade
- Landform can have steep to moderately sloped areas
- Eroded soft creek embankments
- Small creek pools/brook character
- Exposed sculptural tree roots along creek banks
- Creek channel wide, meandering and picturesque

WOODLAND THICKET

- Impassible, enclosed, private, dense understory thicket, wilderness character
- Large overhead woodland canopy giving dense shade
- Ground plane is unruly native and adaptive plants
- Heavy clay soils with organic leaf litter
- Natural Austin Chalk rock vertical creek banks and creek bottom
- Gives buffering for adjacent residential homeowners
- Providing excellent protection for wildlife habitats

PARK CROSSING

- Suburban vehicular street character
- Limited visual connections and engagement to park
- Utilitarian pedestrian sidewalks, no overlooks
- Non-themed regulatory street signage
- TXDOT Handicap ramps with limited landings

RESIDENTIAL PARKWAY

- Intermittent tree tunnel creating dappled, shaded view
- Landscape has pastoral and wilderness characteristics
- Direct creek views limited
- Winding, curved streets respond to park natural forms

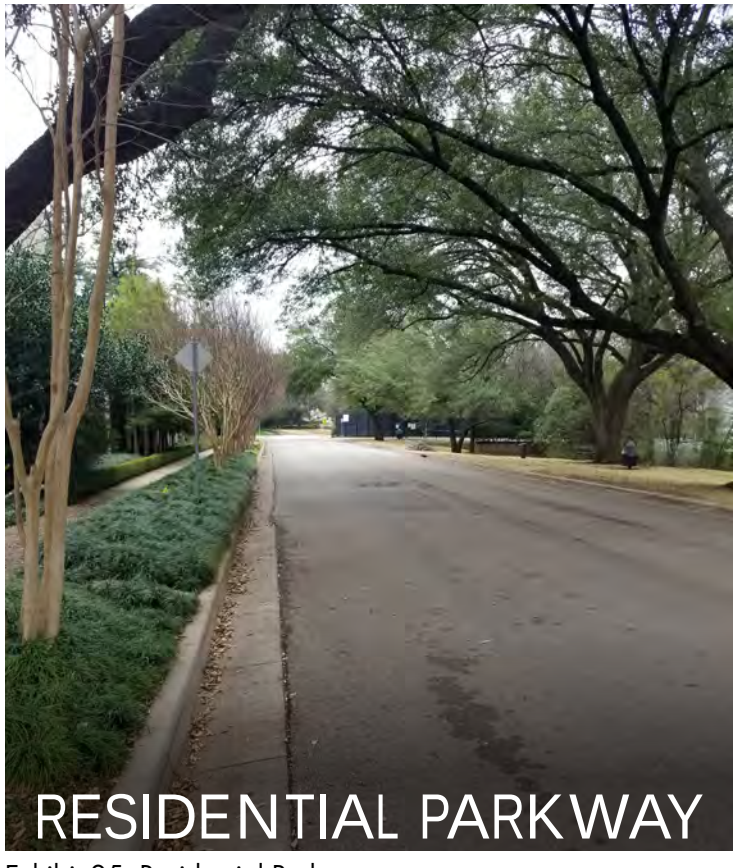


Exhibit 25: Residential Parkway

Character

Characterized by an intermittent tree tunnel creating dappled, shaded views; the Residential Parkway zone acts as the connective corridor bringing residents to and from Hackberry Creek. Winding streets curve in response to the parks' natural forms, piquing interest at the visual edges. Though direct creek views are limited from the public realm, hints of the lowlands beyond encourage curiosity and discovery, inviting residents deeper into the park.

Vegetation

Residents are encouraged to consult, as needed, with qualified arborists regarding the health of their trees. They may also consider the overall streetscape and neighborhood appearance prior to any substantial pruning or removal of trees.

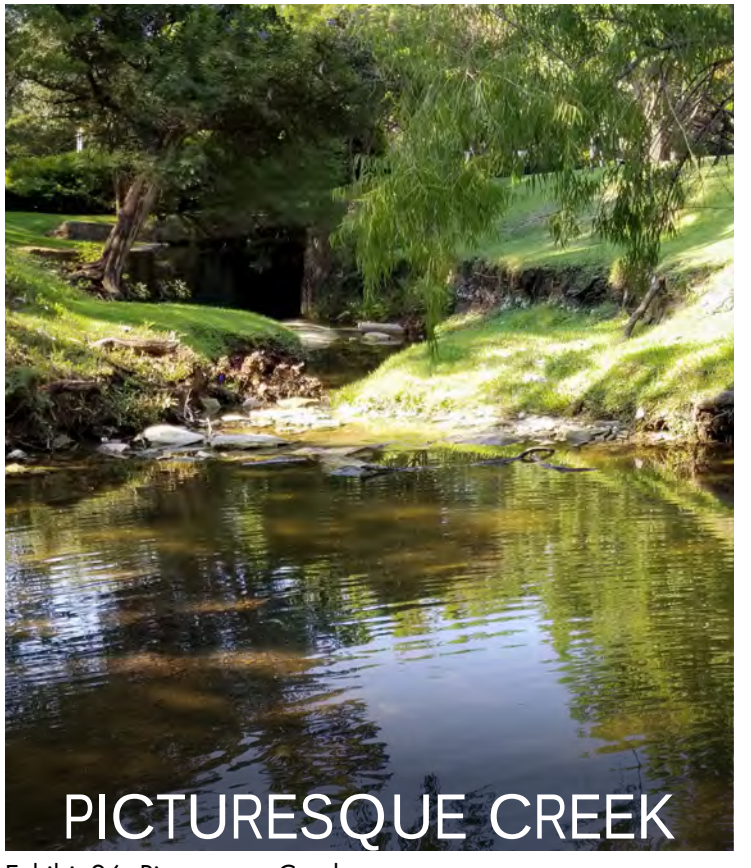


Exhibit 26: Picturesque Creek

Character

This zone is named for the visual quality and passive feeling of the spaces within. There are passive activities such as enjoying the tranquil surroundings for meditative reflection. The landscape is typified with gently sloping topography, periodic exposed bedrock, and rock outcroppings which lend a rugged feeling to the landscape. The views within are purposeful compositions, framing the undulating creek in dramatic, picturesque views.

Vegetation

The welcoming rooms of the Picturesque Creek support play and gathering of residents at creek side. Engaging the Japanese garden design philosophy of a defined foreground, mid-ground, and background through their proximity to the forest and the creek, these manicured lawns become interspersed with transitional plantings which speak to the banks of the creek, the edge of the wood, and the essence of a romantic forest clearing. Consistent with resident comments, consideration may be given to relocate the existing bronze statues to enhance views of willows, cedars, and picturesque foliage in this zone.

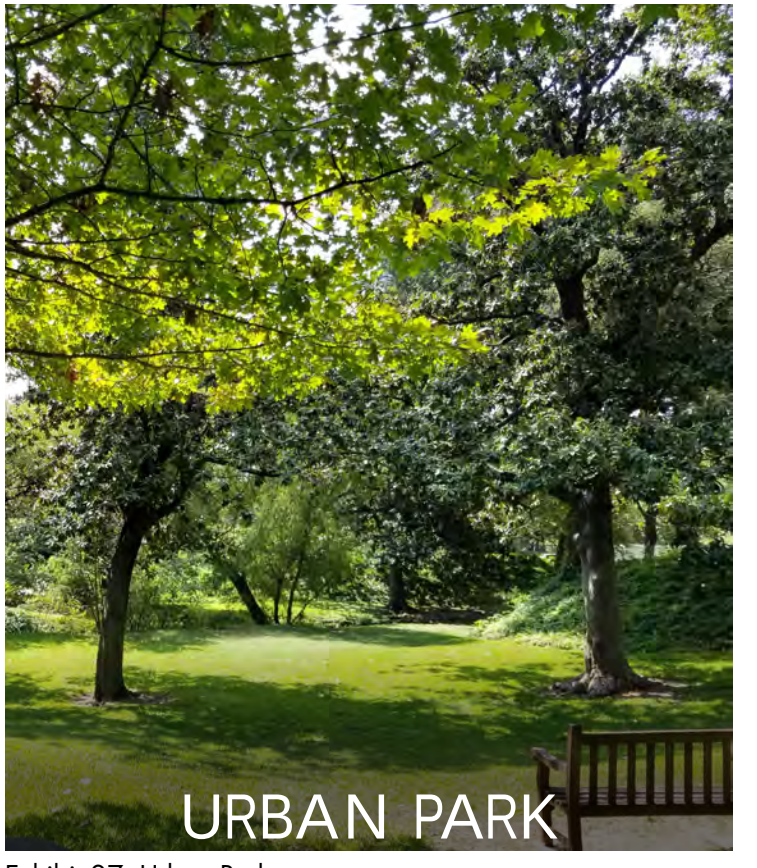


Exhibit 27: Urban Park

Character

The Urban Park Zone is the most gentrified zone within the corridor. It is typified by a maintained ground plane with low evergreen groundcover intermixed along the creek and under the canopy trees. The topography is gentle, with steeper slopes along the creek. Various other ornamental landscape plants may be present. These zones are conducive to flexible programming within its spacious open spaces.

Vegetation

Contrasting the wild nature of the creek, the manicured and controlled Urban Park zones allow for play areas and a place meant to support heavier use from residents. Predominantly turf, intense displays for all seasons provide vibrant focal points to lure and entice users to explore each unique space through the parks. A sense of playfulness and excitement should be delicately intertwined throughout the zones with additions to the Pixie Gardens and enhancements to the Grotto Escarpment. The Grotto Escarpment could benefit from the consideration of removing the existing tennis court. These areas become a subtle hint to the forest and creek edge while providing and maintaining an experience unlike any other along Hackberry Creek.

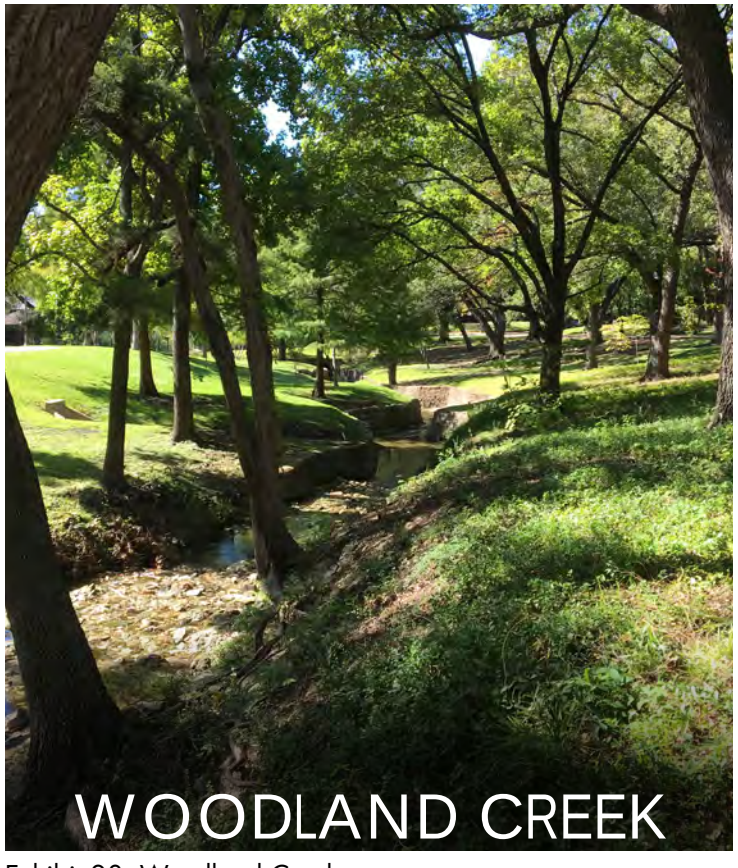


Exhibit 28: Woodland Creek

Character

This zone is inviting as the understory is low, and can be easily seen through. The roots of the overhead canopy trees help to stabilize the creek banks and create some steep slopes along the creek. Some of the tree roots within these zones are sculptural and picturesque, forming some of the “unique encounters” along the creek. The creek form in these zones is the most varied, from deeply channelized to gently meandering with intermittent pools.

Vegetation

A transition between the dense thicket and the open picturesque, this zone invites residents in to experience the forest. Though not turfed in a traditional sense, a walkable tapestry of soft foliage stretches out across the dappled understory. Plantings here speak of water at the confluence of land and creek edge, celebrating the variety of facultative wetland plants whose presence is subconsciously indicative of water’s presence. These semi-aquatic species create a viable habitat for the amphibians and invertebrates who play in the roots, leaves, and pockets. Fissures of the bedrock geology are encouraged to spill over with ferns and native volunteers who further enhance these unique places. In the canopies above, perches for birds of prey and boxes for the bats create a connection to nature for residents.

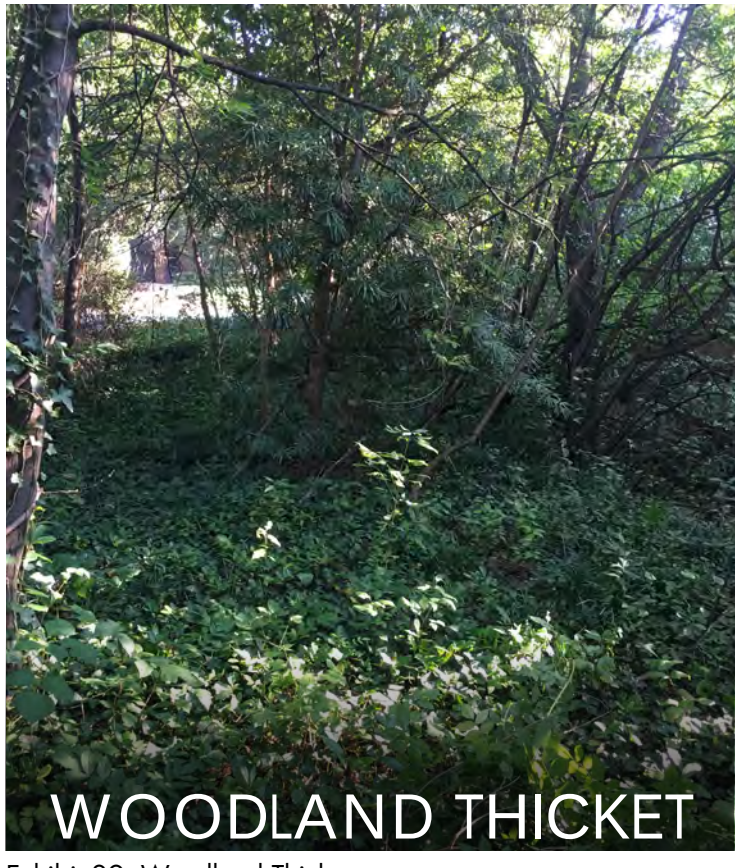


Exhibit 29: Woodland Thicket

Character

The Woodland Thicket Creek Zone is characterized by the thick, understory woody vegetation. The height of this vegetation blocks all but filtered views through it. There may be canopy trees intermixed, but not always. These zones are impassable except for passages created by trails. Notable areas for this zone are at the north end of Hackberry Creek and the west side of the Prather Park tennis court.

Vegetation

The Woodland Thicket is defined by the lush habitat plantings that persist through the seasons. Intended to provide food sources and shelter for myriad species of birds, vegetation should be designed to evolve a thick, wooly, and thorny matrix of dense understory for safe nesting opportunities. Seasonal interest should be maintained for the needs of avian populations through seed, flower, and berry producing plants, which combine to form a unique visual aesthetic. The most ‘natural’ of the zones identified, human elements such as steel edging should be removed to allow nature to adjust her own edges as time passes and the forest matures. Deadfall should be selectively removed to provide additional habitat opportunities in fallen logs, further enhancing the essence of the Woodland Thicket.

Exhibit 30: Park Crossings

Character

In the current state, the Park Crossings maintain a traditional suburban vehicular street character with a linear focus on traffic. Limited visual connections provide little engagement with the parks and creek below the utilitarian pedestrian sidewalks without meaningful overlooks or pausing spots. The crossings blend in with the neighborhood streets and do not celebrate the crossing through themed signage or other visual cues.

Vegetation

Bold displays of seasonal color in Spanish/Colonial style hanging baskets, each unique, yet cohesive are found throughout the network of bridges across the creek, demarcating the Park Crossings and celebrating the essence of Highland Park. Despite being places dominated by brief glimpses of the creek, belvederes and pausing points provide passersby on foot safe options for spaces of reflection and connection. By developing dense displays with visual impact, the planted environments creating natural traffic calming effects which further encourage a more pedestrian pace and safer crossings. Signature trees should replace the aging, failing magnolias along Lexington Avenue, to reinvigorate the esplanade and define this and other crossings with the timeless atmosphere of a stately allée.

RECOMMENDED PLANT PALETTE

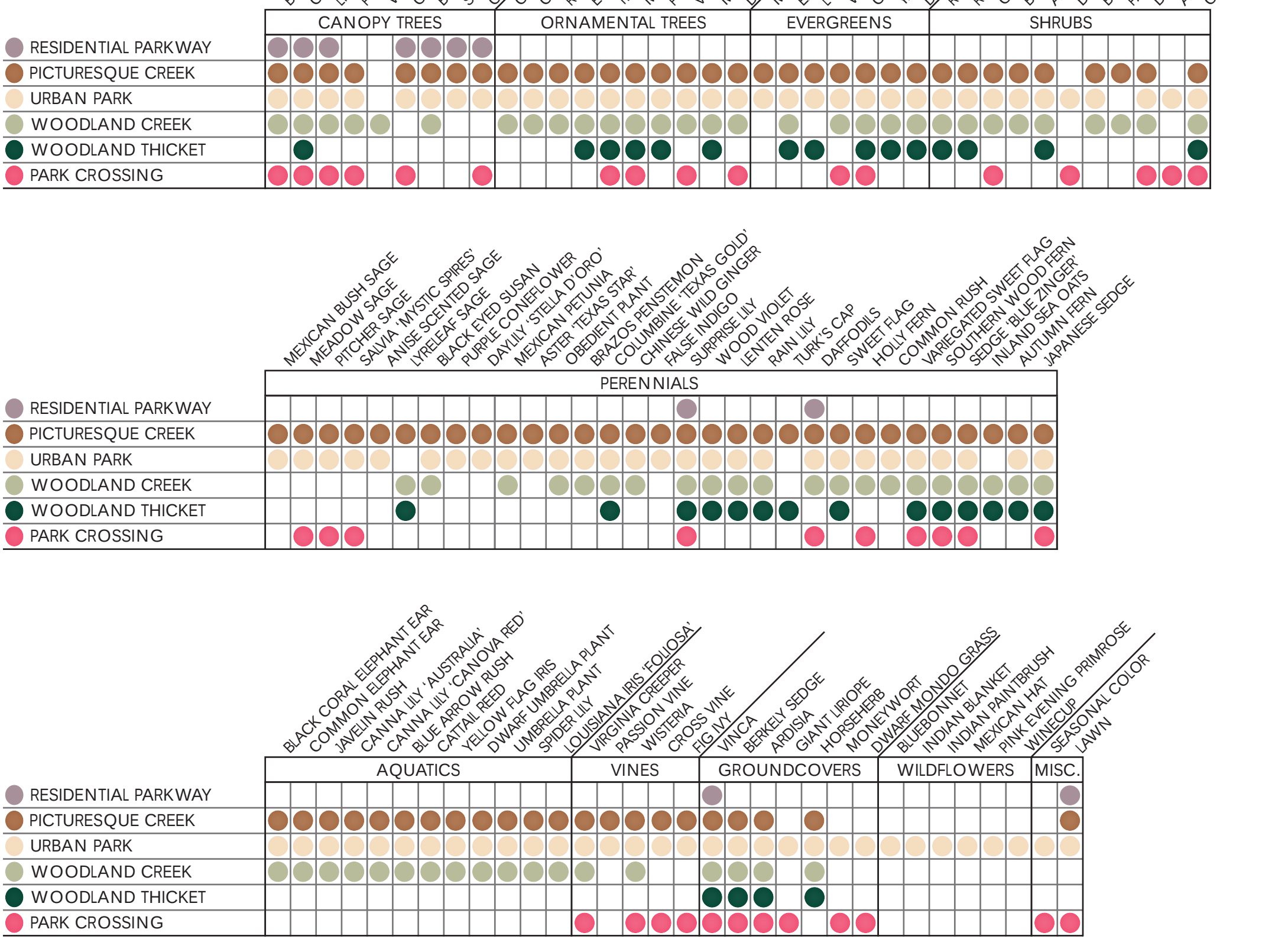


Exhibit 31: Recommended Plant Palette

RECOMMENDED PLANTING AMENDMENTS

BALD CYPRESS
Taxodium distichum

CEDAR ELM
Ulmus crassifolia

LIVE OAK
Quercus virginiana

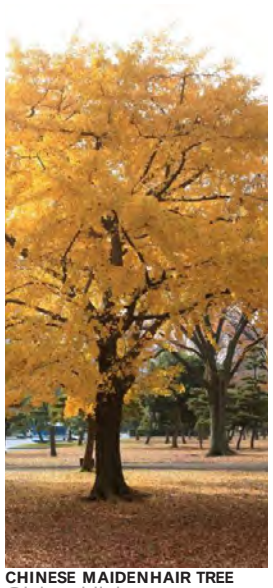
POND CYPRESS
Taxodium ascendens

WEEPING WILLOW
Salix babylonica

CHINESE PISTACHE
Pistacia chinensis

BURR OAK
Quercus macrocarpa

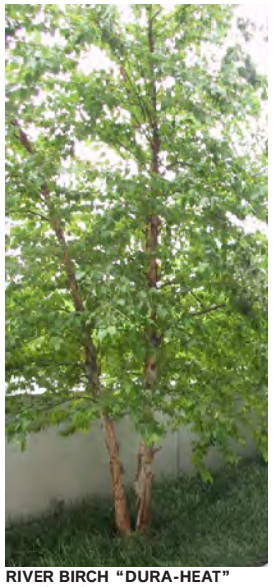
SYCAMORE
Platanus occidentalis



CHINESE MAIDENHAIR TREE
Ginkgo biloba

CHINESE FRINGE TREE
Chionanthus retusus

CRABAPPLE
Malus ssp.



RIVER BIRCH "DURA-HEAT"
Betula nigra 'Dura-Heat'

EVE'S NECKLACE
Sophora secundiflora

POSSUMHAW HOLLY
Ilex decidua

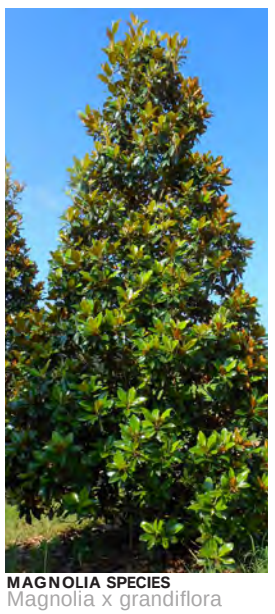
TEXAS REDBUD
Cornus canadensis 'Texensis'

MEXICAN PLUM
Prunus mexicana

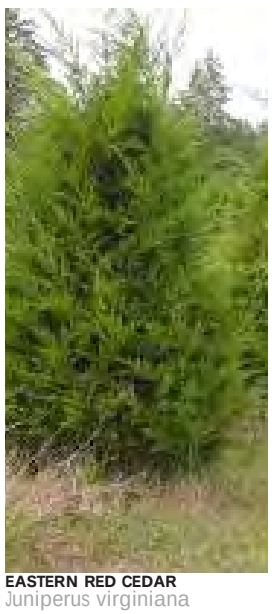
VITEX
Vitex agnus-castus

MEXICAN BUCKEYE
Ungnadia speciosa

DOGWOOD "CLOUD NINE"
Cornus florida 'Cloud Nine'

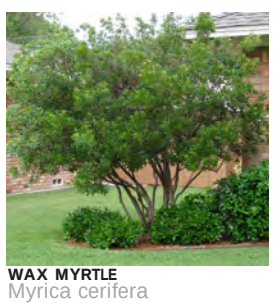


MAGNOLIA SPECIES
Magnolia x grandiflora



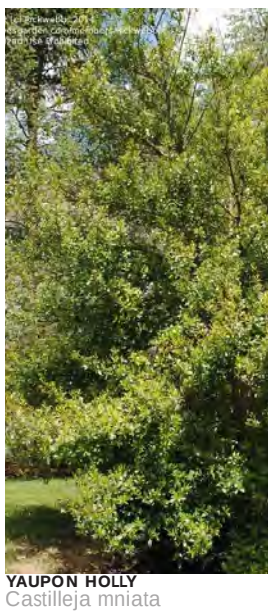
EASTERN RED CEDAR
Juniperus virginiana

LOQUAT
Erobotrya japonica



WAX MYRTLE
Myrica cerifera

CHINDO VIBURNUM
Viburnum awabuki 'Chindo'



YAUPON HOLLY
Castilleja mniata

DAVID VIBURNUM
Viburnum davidii

Exhibit 32: Recommended Planting Amendments

RECOMMENDED PLANTING AMENDMENTS

ROUGH LEAF DOGWOOD
Cornus drummondii

RUSTY BLACKHAW VIBURNUM
Vibornum rufidulum

OAKLEAF HYDRANGEA
Hydrangea quercifolia

DWARF WAX MYRTLE
Myrica puslia

PALE LEAF YUCCA
Yucca pallida

ARALIA
Fatsia japonica

BUTTON BUSH
Cephalanthus occidentalis

AMERICAN BEAUTY BERRY
Callicarpa americana

BUTTERFLY BUSH
Ratibida columnifera

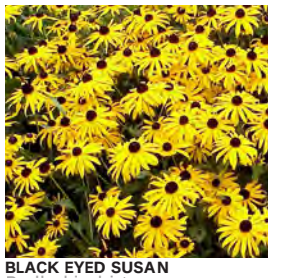
DWARF PALMETTO
Sabal minor

CORAL BERRY
Symphycarpos orbiculatus

MEXICAN BUSH SAGE
Salvia leucantha

PITCHER SAGE
Salvia azurea

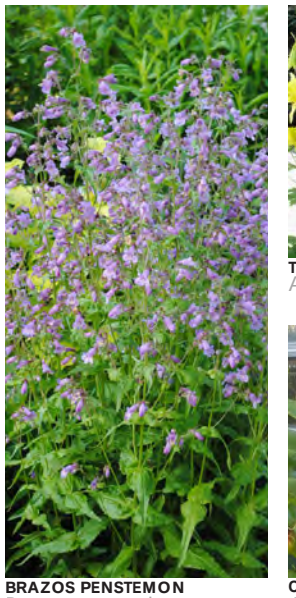
ANISE SCENTED SAGE
Salvia guaranitica



BLACK EYED SUSAN
Rudbekia hirta

DAYLILY
Hemerocallis ssp. 'Stella d'Oro'

TEXAS STAR ASTER
Aster ericoides



BRAZOS PENSTEMON
Penstemon tenuis

TEXAS GOLD COLUMBINE
Aquilegia chrysanthia

MEADOW SAGE
Salvia pratensis

SALVIA 'MYSTIC SPIRES'
Salvia x "Mystic Spires"

LYRELEAF SAGE
Salvia lyrata

PURPLE CONEFLOWER
Echinacea purpurea

MEXICAN PETUNIA
Ruellia brittoniana

OBEDIENT PLANT
Physostegia virginiana

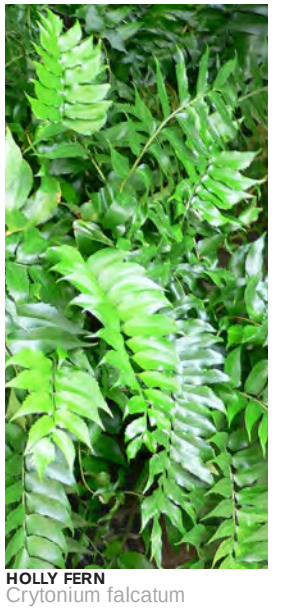
CHINESE WILD GINGER
Asarum splendens

FALSE INDIGO
Baptisia australis

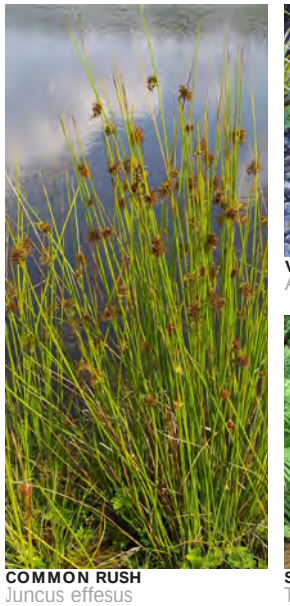
WOOD VIOLET
Viola sororia

RAIN LILY
Zephyranthes canidida

DAFFODILS
Daffodils ssp.



HOLLY FERN
Crytonium falcatum



COMMON RUSH
Juncus effesus

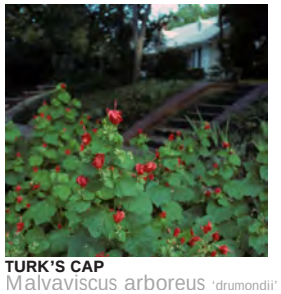
VARIEGATED SWEETFLAG
Acorus graminues 'variegatus'

SOUTHERN WOOD FERN
Thelypteris kunthii

BLUE ZINGER SEDGE
Carex flacca 'Blue Zinger'

SURPRISE LILY
Lycoris squamigera

LENTEN ROSE
Heleborus orientalis



TURK'S CAP
Malvaviscus arboreus 'drumondii'

SWEET FLAG
Acorus calamus

Exhibit 33: Recommended Planting Amendments

RECOMMENDED PLANTING AMENDMENTS

INLAND SEA OATS
Chasmanthium latifolium

BLACK CORAL ELEPHANT EAR
Colocasia esculenta 'Black Coral'

JAVELIN RUSH
Juncus pallida

CANNA LILY 'CANOVA RED'
Canna ssp.

BLUE ARROW RUSH
Juncus inflexus

CATTAIL REED
Typha latifolia

YELLOW FLAG IRIS
Iris pseudacorus

AUTUMN FERN
Drayopteris erythrosora

JAPANESE SEDGE
Carex oshimensis 'Evergold'

COMMON ELEPHANT EAR
Colocasia esculenta

CANNA LILY 'AUSTRALIA'
Canna ssp.

DWARF UMBRELLA PLANT
Cyperus diffusus

UMBRELLA PLANT
Cyperus alternifolia

SPIDER LILY
Hymenocallis speciosa

LOUISIANA IRIS 'FOLIOSA'
Iris foliosa

VIRGINIA CREEPER
Parthenocissus quinquefolia

PASSION VINE
Passiflora aphrodites

WISTERIA
Wisteria sinensis

CROSS VINE
Bignonia capreolata

FIG IVY
Ficus pumila

VINCA
Vinca major

BERKELY SEDGE
Carex oshimensis

ARDISIA
Ardisia crenata

GIANT LIRIOPE
Liriope muscari

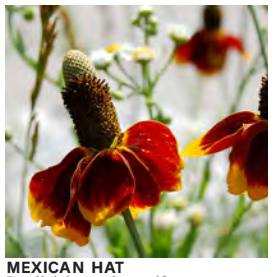
HORSEHERB
Calyptocarpus vialis

MONEYWORT
Lysimachia nummularia 'Aurea'

DWARF MONDO GRASS
Ophiopogon japonicus

BLUEBONNET
Lupinus texensis

INDIAN BLANKET
Gaillardia pulchell



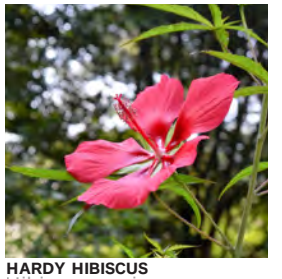
MEXICAN HAT
Ratibida columnifera

WINECUP
Callirhoe involucrata

RUSSIAN SAGE
Perovskia atriplicifolia

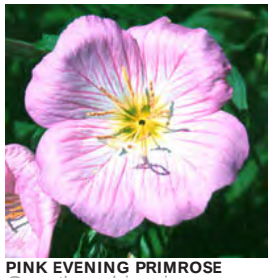
FALL ASTER
Symphyotrichum oblongifolium

MEALY BLUE SAGE
Salvia farinacea



HARDY HIBISCUS
Hibiscus coccineus

INDIAN PAINTBRUSH
Castilleja mniata



PINK EVENING PRIMROSE
Oenothera biennis

GAURA 'WHIRLING BUTTERFLIES'
Gaura lindheimeri 'Whirling Butterflies'

Exhibit 34: Recommended Planting Amendments

COST PROJECTION PRIORITIZATION SUMMARY

The following Cost Projections are divided into five phases, vision projects, and deferred projects based on two-year increments, and mapped according to phase and location. Currently, the Town has $5,400,000.00 in available funding allocated for Hackberry Creek in the ten (10) year Capital Improvements Plan ("CIP"), with $1,640,000.00 available for the phase I. The costs are organized to respond to the budget allocations as they are currently planned within the CIP, while allowing flexibility in dealing with projected development costs.

The costs for the projects include direct construction costs and soft costs, including allowances for project-specific design fees, contingency, and escalation based on current trends. Note that all opinions of construction cost are speculative without further engineering or geotechnical testing.

Phase I projects are primarily focused on the channel walls of Hackberry Creek North. This includes demolition, repair, construction, and the introduction of creek bank terracing and step walls. Along with the creek walls, phase I looks to enhance Pedestrian Bridge #1. Other phase I items include the park railings, water-quality infrastructure, and the Alice Circle Park Overlook. Hackberry Creek North remains the focus of phase II. Moving away from the creek walls, this phase focuses on the hardscape and vegetation in the area. This includes the walkways and vegetation both in and around the park.

Phase III and IV shift focus to Hackberry Creek South. Phase III projects focus solely on the hardscape infrastructure of the area. This being the channel walls, outfalls, and the concrete walkways. Phase IV includes the creek bank terracing, step walls, and landscape throughout Hackberry Creek South.

While including a project in Hackberry Creek South and Davis Park, phase V concentrates onto Prather Park. The main emphasis in Prather Park is the hardscape. This includes channel walls, outfalls, concrete walkways, and restoration of Pedestrian Bridge #2, and #3.

Vision projects include several high impact projects that can be coordinated in the future. The group emphasizes

FY 2018-2020: PHASE I PROJECTS (YEARS 1-2)	PROJECTED COST
*Guideline Study-Preservation/restoration standards for bridges, stairs, & architectural elements (pg. 12)	$35,000.00
*Guideline Study-Corridor and parks lighting design guidelines (pg. 12)	$15,000.00
*Guideline Study-Signage and interpretive graphic design guidelines (pg. 13)	$25,000.00
4. *Prather Park: Update Railings and Barriers (pg. 13)	$100,000.00
5. *Davis Park: Update Railings and Barriers (pg. 13)	$50,000.00
6. Hackberry Creek North: Channel walls and outfalls (pg. 13)	$25,000.00
7. Hackberry Creek North: Channel walls and outfalls (pg. 13)	$600,000.00
8. *Hackberry Creek North: Pedestrian bridge #1 enhancement and repair (pg. 17)	$65,000.00
9. Hackberry Creek North: Water quality improvements at Byron Avenue headwall (pg. 13)	$50,000.00
10. Hackberry Creek North: Creek bank terracing and step walls (pg. 17 & exhibit 43)	$160,000.00
11. Hackberry Creek North: Creek bank terracing and step walls (pg. 17 & exhibit 43)	$27,500.00
12. Hackberry Creek North: Landscape for slope stabilization (pg. 17 & exhibit 43)	$100,000.00
13. Hackberry Creek North: Repair concrete walkways, and paving (pg. 13)	$25,000.00
14. Hackberry Creek North: Tree planting at Byron (gen. lndscp. upg.)	$40,000.00
15. Hackberry Creek North: Landscape for Park Edge and Buffer (gen. lndscp. upg.)	$200,000.00
63. Alice Circle: Crescent Drive Overlook	$13,000.00
TOTAL PHASE I PROJECTED PROJECT COST	**$1,530,500.00**

FY 2020-2022: PHASE II PROJECTS (YEARS 3-4)	PROJECTED COST
20. Hackberry Creek South: Channel walls and outfalls (pg. 13)	$450,000.00
21. Hackberry Creek South: Creek bank terracing and step walls (pg. 17 & exhibit 43)	$405,000.00
22. Hackberry Creek South: Landscape for slope stabilization (pg. 17 & exhibit 43)	$115,000.00
23. Hackberry Creek South: Repair concrete walkways, and paving (pg. 13)	$10,000.00
TOTAL PHASE II PROJECTED PROJECT COST	**$980,000.00**

FY 2022-2024: PHASE III PROJECTS (YEARS 5-6)	PROJECTED COST
24. Hackberry Creek South: Landscape for park edge (gen. lndscp. upg.)	$165,000.00
25. Hackberry Creek South: Tree planting along creek (pg. 17)	$25,000.00
26. Hackberry Creek South: Native Shrub planting for informal pathways (pg. 17)	$200,000.00
28. Prather Park: Channel walls and outfalls (pg. 16)	$135,000.00
29. Prather Park: Landscape for slope stabilization (pg. 17 & exhibit 43)	$50,000.00
30. *Prather Park: Pedestrian bridge #2 restoration and repair (pg. 14)	$15,000.00
31. *Prather Park: Pedestrian bridge #3 restoration and repair (pg. 14)	$25,000.00
32. Prather Park: Repair concrete walkways, and paving (pg. 13)	$150,000.00
33. Prather Park: Assorted landscape restoration and enhancements (gen. lnds. upg.)	$75,000.00
35. Prather Park: Tree planting along creek (gen. lnds. upg.)	$35,000.00
38. Davis Park: Remove collapsed channel walls (pg. 16)	$7,500.00
TOTAL PHASE III PROJECTED PROJECT COST	**$882,500.00**

FY 2024-2026: PHASE IV PROJECTS (YEARS 7-10)	PROJECTED COST
36. Prather Park: Native Shrub planting for informal pathways (pg. 14)	$20,000.00
39. *Prather Park: Lexington Tunnel entrance enhancements (pg. 17)	$125,000.00
40. *Prather Park: Lighting for pedestrian bridges, park entries, level changes (pg. 14)	$75,000.00
43. *Davis Park: Pedestrian bridge #6 reconstruction (pg. 16)	$65,000.00
44. *Davis Park: Pedestrian bridge #4 restoration and repair (pg. 14)	$25,000.00
45. *Davis Park: Pedestrian bridge #5 restoration and repair (pg. 14)	$25,000.00
46. *Davis Park: Pedestrian bridge #7 restoration and repair (pg. 14)	$25,000.00

(PHASE IV AND PHASE V CONTINUED ON PAGE 30)

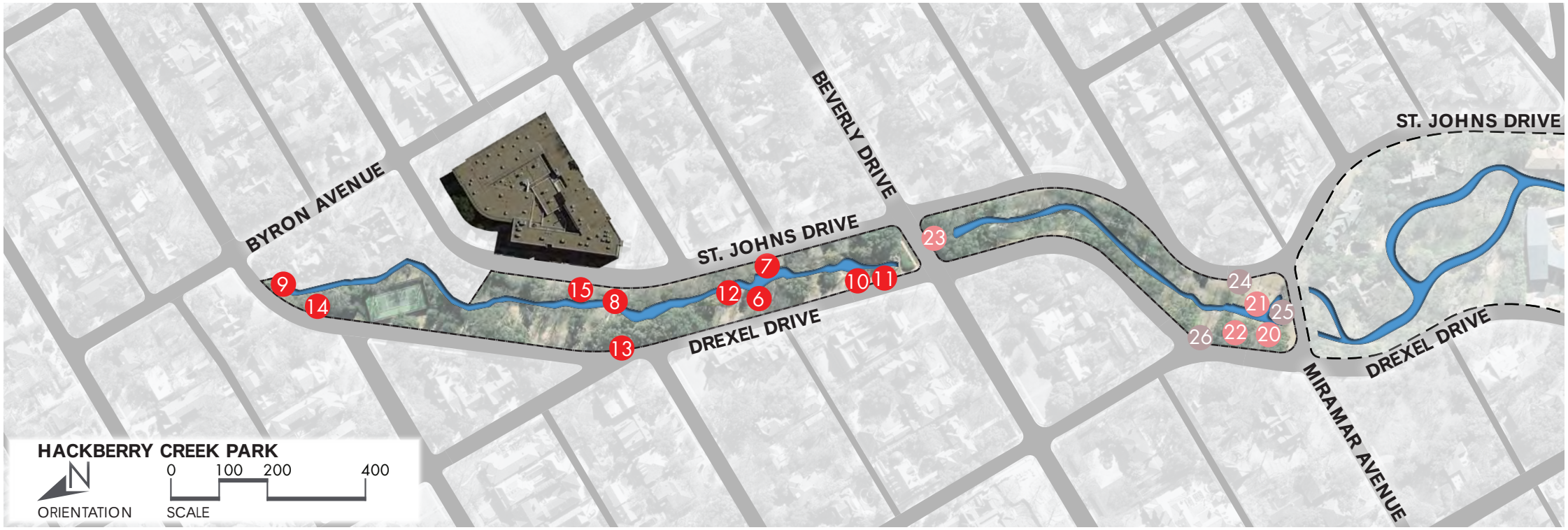


Exhibit 35: Hackberry Creek Park Phased Projects

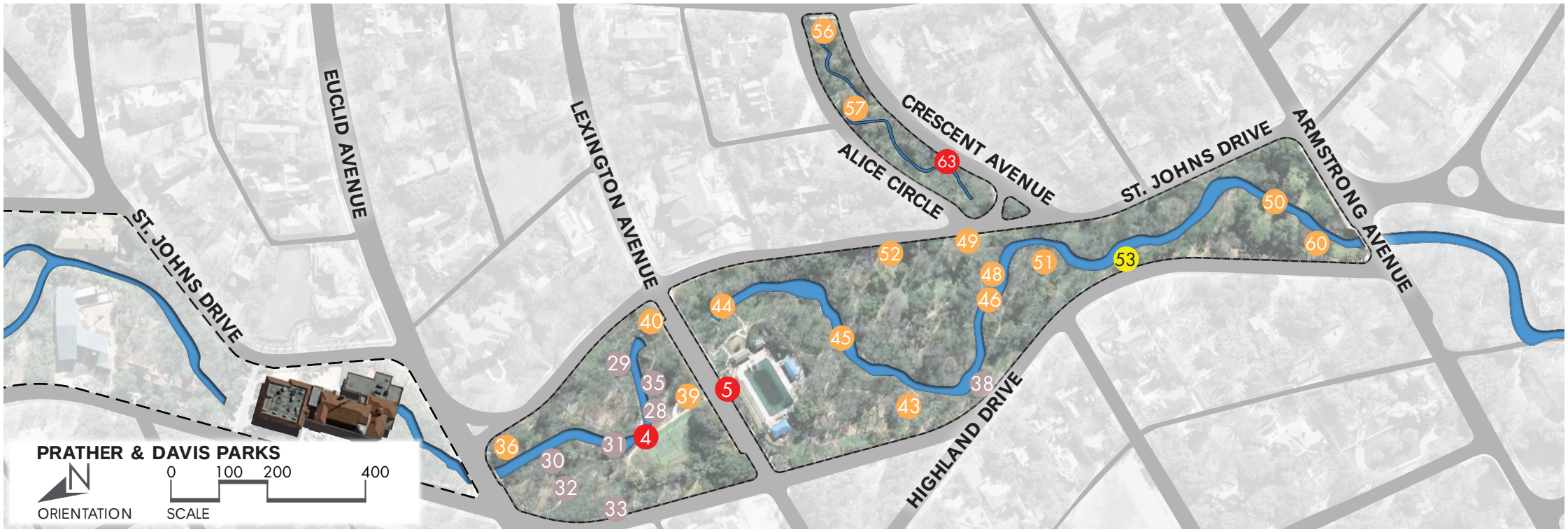


Exhibit 36: Prather and Davis Park Phased Projects

PHASE I - V PROJECT LOCATIONS

- PHASE I PROJECT
- PHASE II PROJECT
- PHASE III PROJECT
- PHASE IV PROJECT
- PHASE V PROJECT

the tennis court enhancements, pedestrian bridge restoration and repair, as well as miscellaneous Prather Park and Davis Park enhancements. Tennis court enhancements address both of the park's tennis courts, and the proposed relocation of Tennis Court #1. Prather park projects include park landscaping, the Lexington Tunnel enhancements, and park signage. Davis Park includes several landscape and hardscape enhancements. Finally, the group includes the highlighted vision projects located on page 32-37. This projects are meant to inspire future development of Hackberry Creek.

Deferred projects includes projects associated with elements that are currently performing as originally intended, but require regular monitoring as they are aging. These elements should be monitored for future development and repair. These elements include lighting and litter receptacles throughout the park, and infrastructure in Alice Circle Park.

48. *Davis Park: Creek side seating area restoration (pg. 14)	$50,000.00
49. Davis Park: Native landscape for creek side seating area (pg. 14)	$30,000.00
50. Davis Park: Landscape for slope stabilization (pg. 17 & exhibit 43)	$150,000.00
51. Davis Park: Native Shrub planting for informal pathways (pg. 14)	$90,000.00
52. Davis Park: Landscape for park edge (gen. lndscp. upgrade)	$75,000.00
56. *Alice Circle Drop structures and outfalls reconstruction (pg. 14)	$200,000.00
57. *Alice Circle: Pedestrian bridge #8 restoration and repair (pg. 14)	$40,000.00
60. Davis Park: Tree planting along creek (pg. 17)	$50,000.00
TOTAL PHASE IV PROJECTED PROJECT COST	**$1,045,000.00**

FY 2026-2028: PHASE V PROJECTS (YEARS 9-10)	**PROJECTED COST**
53. Davis Park: Channel walls and creek bank stabilization (pg. 16)	$1,000,000.00
TOTAL PHASE V PROJECTED PROJECT COST	**$1,000,000.00**

(*) indicates it is suggested that the guidline study is completed prior to the accompanied project

SUBTOTAL - 10 YEAR CAPITAL IMPROVEMENT PLAN (PHASED PROJECTS)	**$5,438,000.00**

DEFERRED PROJECTS (MONITOR FOR FUTURE NEEDS)	**PROJECTED COST**
16. *Hackberry Creek North: Pedestrian bridge #1 lighting (pg. 17)	$45,000.00
17. Hackberry Creek North: Litter Receptacles at Ped bridge #1 (pg. 17)	$5,000.00
37. Prather Park: Litter Receptacles at Pedestrian bridges (pg. 14)	$10,000.00
41. *Prather Park: Lighting in high traffic areas (pg. 12)	$40,000.00
54. Davis Park: Armstrong Avenue bridge restoration and clean (north side only) (pg. 14)	**$25,000.00
55. *Davis Park: Lighting for pedestrian bridges, park entries, level changes (pg. 14)	$90,000.00
61. Davis Park: Litter Receptacles at Pedestrian bridges (pg. 14)	$15,000.00
TOTAL DEFERRED PROJECTED COST	**$230,000.00**

SUGGESTED VISION PROJECTS	**PROJECTED COST**
*Guideline Study-Town Swimming Pool: Programming and Conceptual Design study (pg. 12)	$125,000.00
1. Hackberry Creek North: Tennis court #2 court enhancements & landscape screening (pg.17)	$185,000.00
2. Prather Park: Tennis court #1 reconstruction (pg. 14)	**$285,000.00
3. Davis Park: Tennis court #7 court lighting & landscape screening (pg. 14)	$86,000.00
18. *Hackberry Creek North: Signage and interpretive elements (pg. 13)	$35,000.00
19. *Hackberry Creek South: Oxford bridge reconstruction (pg. 16)	$350,000.00
27. *Hackberry Creek South: Signage and interpretive elements (pg. 13)	$50,000.00
34. Prather Park: Native landscape enhancement for Pixie Garden buffer (gen. lnds. upg.)	$125,000.00
42. *Prather Park: Signage and interpretive elements (pg. 13)	$75,000.00
47. Davis Park: Repair concrete walkways, and paving (pg. 13)	$215,000.00
58. *Davis Park: Playground relocation and layout (pg. 17)	$350,000.00
59. *Davis Park: Playground lighting (pg. 17)	$25,000.00
62. *Davis Park: Signage and interpretive elements (pg. 13)	$80,000.00
Beverly Drive: Street, culvert, headwalls, and architectural enhancement (pg. 32)	$1,300,000.00
Miramar Avenue: Street, culvert, headwalls, and architectural enhancement (pg. 34)	$1,800,000.00
Lexington Avenue: Esplanade, landscape and furnishings (pg. 36)	$1,800,000.00
TOTAL VISION PROJECTED COST	**$6,886,000.00**

TOTAL HACKBERRY CREEK CORRIDOR DESIGN AND DEVELOPMENT	**$12,554,000.00**

(*) indicates it is suggested that the guideline study is completed prior to the accompanied project
(**) indicates that a portion or the entirety of the projected cost is included in the current Town CIP Budget

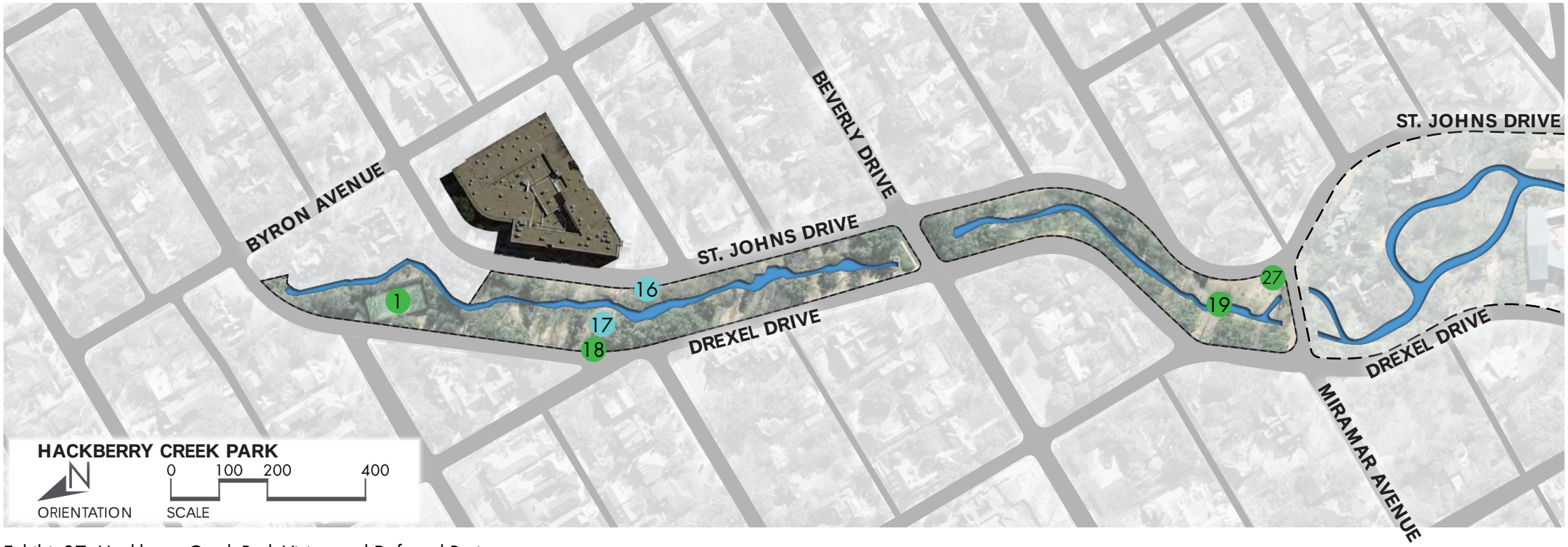


Exhibit 37: Hackberry Creek Park Vision and Deferred Projects

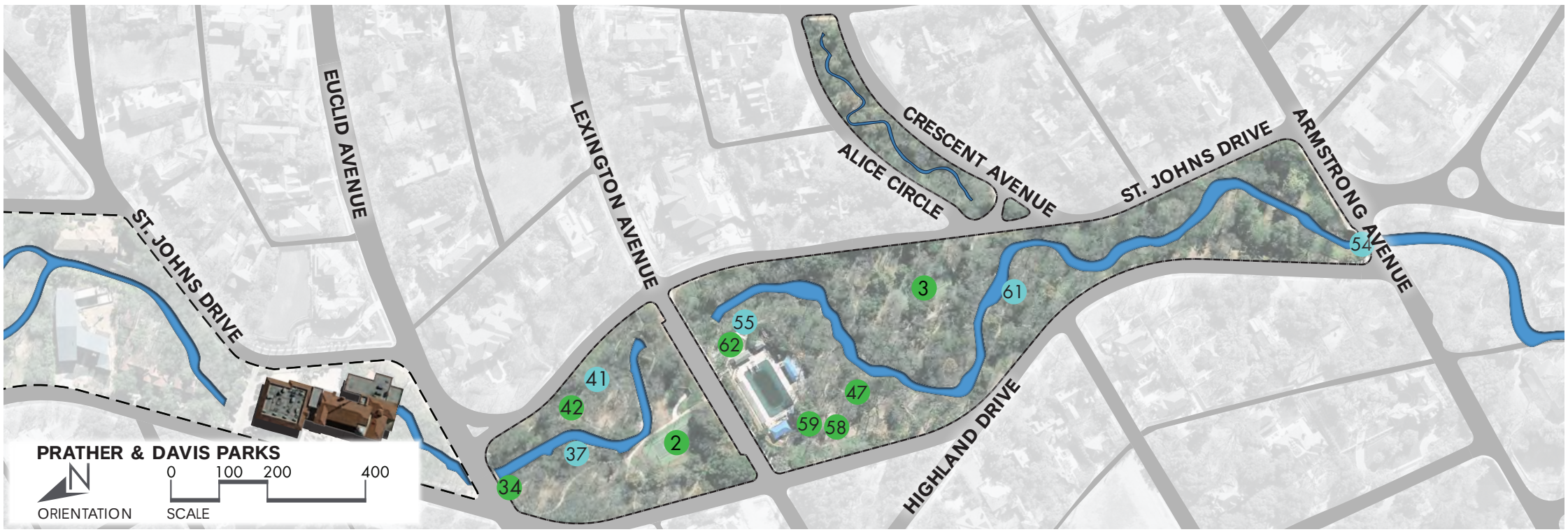


Exhibit 38: Prather and Davis Park Vision and Deferred Projects

VISION AND DEFERRED PROJECT LOCATIONS

VISION PROJECT

DEFERRED PROJECT

VISION PROJECTS

The sketches and plans shown are the suggested Vision Projects intended to inspire community enthusiasm for the Plan; while keeping the residents' wishes to preserve and enhance the integrity of Hackberry Creek. The Vision Projects respond aesthetically to the issues of erosion, failing infrastructure, improving accessibility, and enhancing public safety.

The Beverly Drive and Miramar Avenue headwalls and culverts were selected based on their need for erosion control and drainage improvement. Both of these locations have structurally deteriorating culverts and headwalls which do not have the capacity to properly drain heavy flows under the streets during storm events. The roadways are periodically covered in peak storm events. The Miramar Avenue culverts also have a recurring sedimentation nuisance in the relief channel. The Lexington Avenue Esplanade was selected because of its relationship to the swimming pool, the parks, and the corridor. The parking area and the tunnel are among some of the most utilized Town amenities, yet the treatment of the tunnel entries contrasts with other park elements.

The Vision Projects are proposed enhancements to what could otherwise be utilitarian design measures. Implementation of such measures would not contribute to the legacy of the area, but detract from it. Just as the existing bridges and architectural elements have aged gracefully and enhanced property values, the appearance of the repairs should be equally as graceful. All of these locations are important landmarks within the corridor and the Town. The Vision Projects are not included in the phased cost estimates. If the Council wishes to implement any of the Vision Projects, the design and planning effort for other enhancements in the CIP plan should be considered such as the Playground relocation (Phase I), updating barriers and railings, (Phase II), and the Lexington Tunnel entrance enhancements (Phase II).

Consideration should also be given to the implementation of suggested guideline and plan studies such as the preservation and restoration standards for bridges and architectural elements, the programming and conceptual design study for the Town Swimming Pool, and the guidelines for lighting, as well as the historical and informational signage guidelines. The recommendations within each of these studies may impact the completion of suggested CIP work as well as that of the Vision Projects.

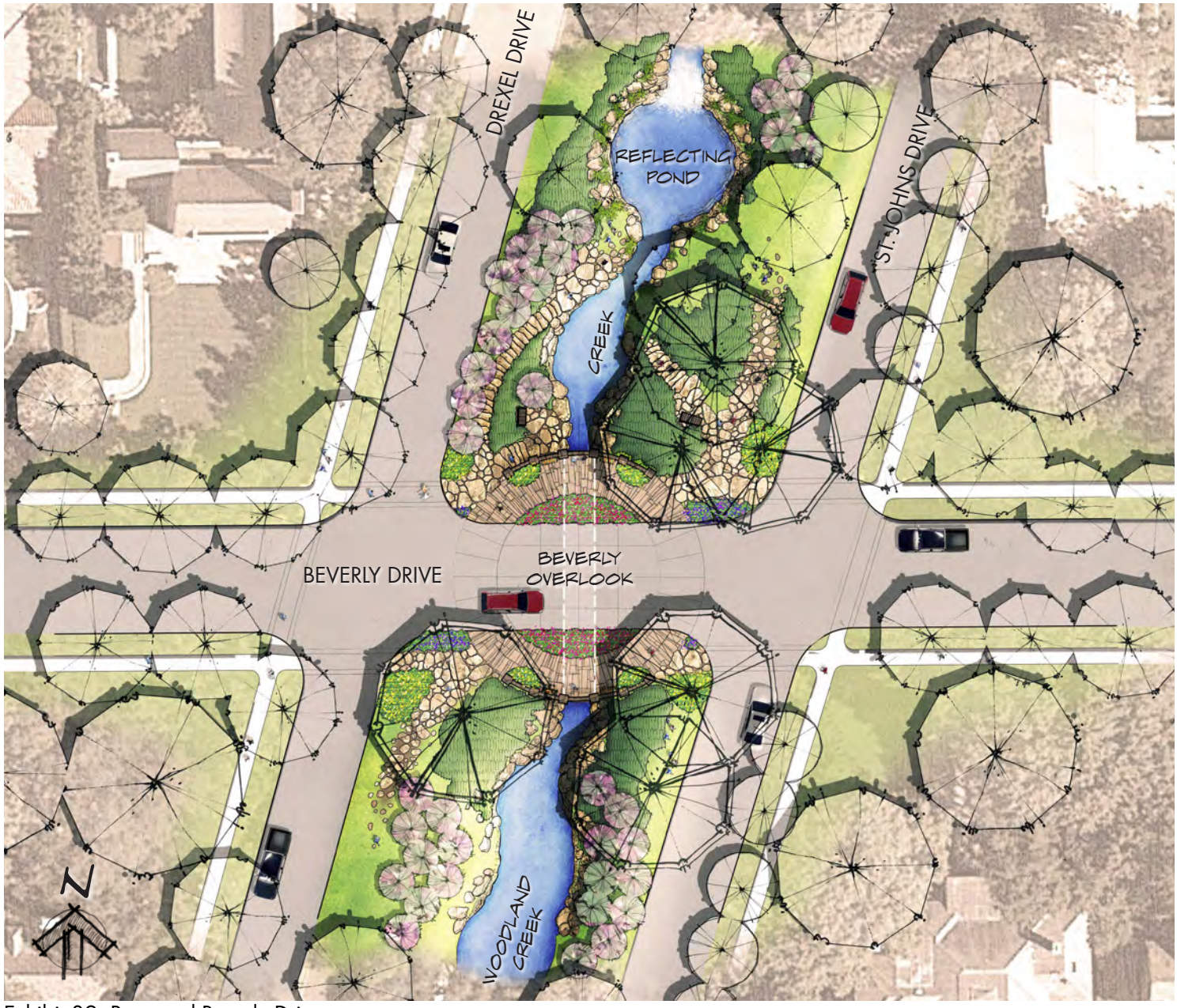


Exhibit 39: Proposed Beverly Drive

BEVERLY DRIVE

Beverly Drive is known in the Town for colorful landscape displays along the roadway. The azaleas and other materials in the area have grown and obscured scenic views of the creek from Beverly Drive, making the creek disjoined from the roadway above. The channel is also eight feet deep with precipitous edges on both sides of Beverly Drive.

The proposed design suggests constructing belvederes (overlooks) similar to the Crescent Drive Overlook, providing views into the creek and the corridor. Crescent-shaped planting areas separate the roadway from the belvederes. Additional planting areas are available at either end of the circular paving along the road. Stone columns with steel rail provide a safety barrier for observers. Mounted iron baskets appropriate to the scale of the belvedere would be included on the rail or columns.

Access to the creek from the belvedere elements would be via terraced stone steps traversing the hillsides. The vertical walls have been laid back into terraced steps, providing energy dissipation during storm flows and casual seating opportunities alongside the creek in fair weather. The masonry would emulate the materials and coursing of the pedestrian bridges in the corridor and parks.

PROJECTED PROJECT COST: $1,300,000.00

Exhibit 40: Perspective view of Beverly Drive

Exhibit 41: Existing walkway on Beverly Drive

Exhibit 42: Existing culvert and headwall at Beverly Drive

Exhibit 43: Perspective view of Miramar Avenue

MIRAMAR AVENUE

Miramar Avenue functions as a low water crossing over the creek in this area, and is periodically under water during peak storm events. The main culvert is undersized to accommodate storm flows which resulted in the subsequent construction of a relief culvert and channel. The relief channel is maintenance-intensive as sediment accumulated during high flows must be regularly removed.

The proposed design suggests raising the road bed to alleviate flooding, and constructing a belvedere overlooking the creek to the north side of the road. Stone columns with heavy steel rail provide a safety barrier for observers above, and stone steps allow access to the creek.

A trail connection is suggested along the east side of the structure leading to the reconstructed Oxford Bridge (see page 16). The relief channel and vertical channel walls have been laid back into terraced steps, providing energy dissipation during storm flows and casual seating opportunities along the creek in fair weather. The masonry would emulate the materials and coursing of the pedestrian bridges in the corridor and the parks. As Miramar Avenue is bounded by private properties to the south coordination with the owners for the improvements described here will be required.

PROJECTED PROJECT COST: $1,800,000.00

Exhibit 44: Existing creek wall near Miramar Avenue

Exhibit 45: Proposed Miramar Avenue

Exhibit 46: Existing headwalls at Miramar Avenue

Exhibit 47: Perspective view of the proposed Lexington Avenue Esplanade

LEXINGTON AVENUE ESPLANADE

The Lexington Avenue Esplanade improves circulation, accessibility, and public safety with proposed widened sidewalks and street paving enhanced with mountable curbs, bollards, benches, and accent lighting. Currently, the sidewalk and the guard rail along Lexington Avenue are near the curb and parked cars, creating confined conditions for pedestrians. The backs of the parked cars often protrude into the driving lanes and impede traffic. Presently, residents with mobility issues or parents with strollers access the area via Euclid Avenue as it is the nearest barrier free route. The design proposes an access ramp on the north side of Lexington Avenue to facilitate easier access to the Town Swimming Pool, see plan p. 37.

Staircases descend on either side of the avenue from overlooks providing views of the pool and the parks. The rendering depicts relocating Tennis Court #1 to create a passive seating area. Enhanced visibility of the pool area underscores the need for a design study to examine improved integration with the surrounding park and introduction of an architectural style complimentary to the area.

PROJECTED PROJECT COST: $1,800,000.00

Exhibit 48: Existing view of Lexington Avenue

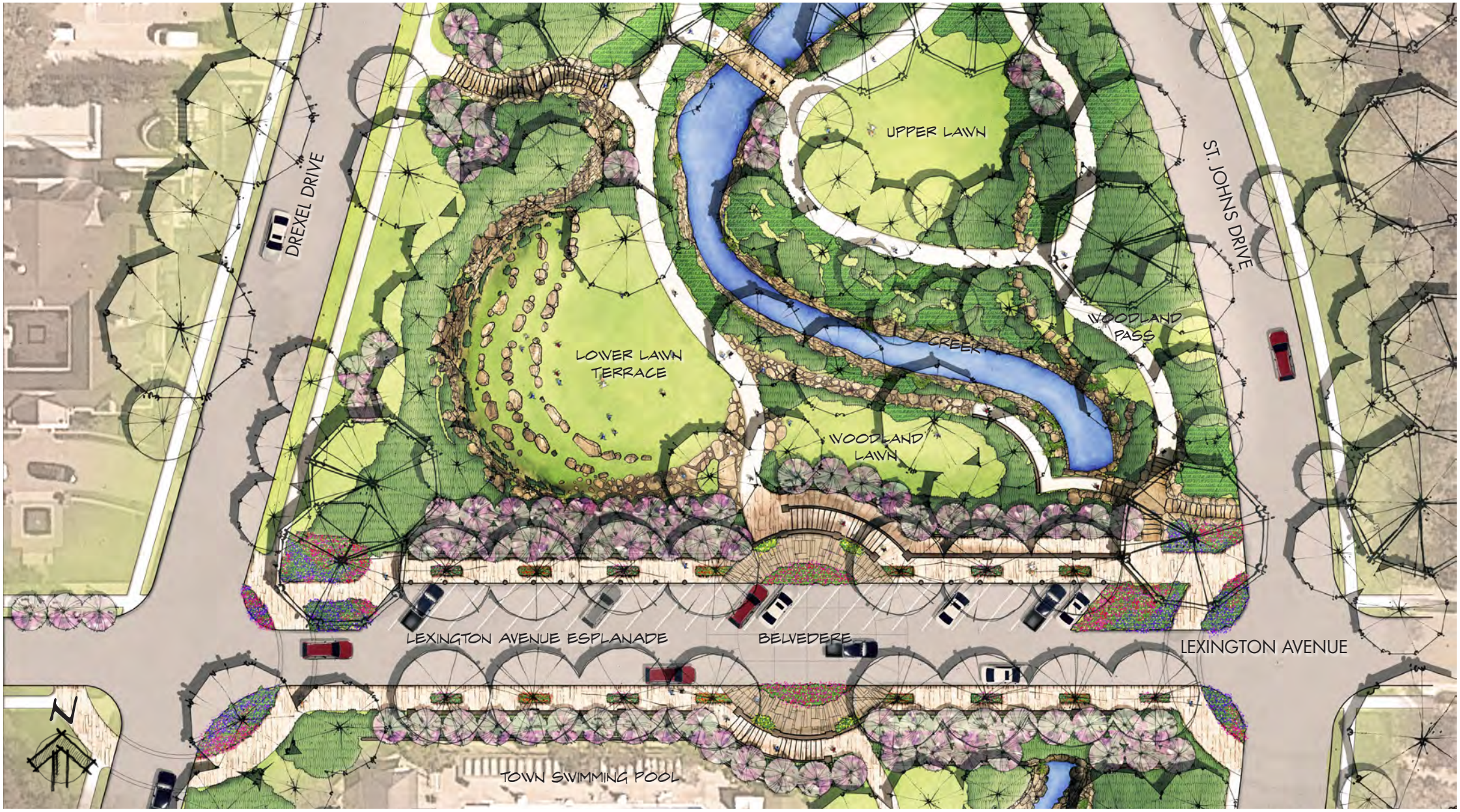


Exhibit 49: Proposed Lexington Avenue Esplanade

Exhibit 50: Existing walkway near Lexington Avenue

Exhibit 51: Existing tunnel under Lexington Avenue for proposed facade improvements, see item E pg. 17

DETAILED REPORT & FINDINGS

HACKBERRY CREEK PARK NORTH EXPERIENTIAL ZONES

The qualities of the landscape, topography, geology, and the architectural elements within create experiential 'rooms' with definable characteristics. This area of the corridor has seven experiential zones ranging from the dense and inaccessible, to the very open and picturesque. The juxtaposition of the Woodland Thicket zone to the Urban Park zone is a great example of the visual and experiential relationships between zones which make the corridor and the parks a unique destination. The Residential Parkway zone (including the St Johns Drive frontage of Armstrong Elementary School) is the area where the surrounding community predominantly interacts with this area of the corridor. Although most pedestrian traffic occurs in this zone, it also accommodates vehicular traffic, along with the Park Crossing zone at Beverly Drive. Though neither of these zones are "within" the corridor, both are considered part of the corridor experience, due to their mutual visibility and proximal relationship to each other.

Overall, the Hackberry Creek North portion of the corridor possesses topography which is relatively gentle, with the creek accessible to the public from both banks, especially in the Urban Park and the Woodland Creek zones. The canal formed by the channel walls is generally shallow, except near Beverly Drive in the Picturesque Creek zone. Notable elements are the old stone bridge across from the school and the "Cotswold" like channel walls made from recycled concrete sidewalks. These elements are picturesque and charming, typical of the architectural flavor found throughout the corridor and the parks. The well manicured ground plane and historic bridge and walls are visually appealing and inviting to passersby, and are easily seen from Drexel Drive. The lack of improved pathways (other than the bridge area) lends a pastoral feeling to this area.

*For an overall Experiential Zone map for Hackberry Creek reference page 20 and 21

Exhibit 52: Woodland Thicket

Exhibit 53: Woodland Creek

Exhibit 54: Picturesque Creek

ENLARGEMENT

Exhibit 55: Hackberry Creek Park North Experiential Zones

EXISTING & APPROPRIATE PLANTINGS

	WT-01		UP 01	WC 01		PC 01	CR-01
EXISTING	Cottonwood	Vinca Major	Willow	Signature Oaks	Spider Lilly	Weeping Willow	Live Oak
	Elms		Magnolia	Willow	Amaryllis	Live Oak	Azalea
	Cherry Laurel		Lorepetalum	Bald Cypress	Daylily	Bald Cypress	Carissa Holly
	Privet		Daylily	Cedars	English Ivy	Cedar Elm	Vinca Major
	Honeysuckle		Holly Fern	Crape Myrtle	Vinca Major	Vinca Major	Seasonal Color
	Cedars		Vinca Major	Redbud	Lawn	Lawn	
	Frasiers Photinia		Lawn	Cherry Laurel			
	Hollies			Beauty Berry			
	Azalea			Lorepetalum			
	Abelia			Azaleas			
	English Ivy			Clematis			
REMOVE	Deadwood/Volunteers		Magnolia	Cherry Laurel		Lawn	Carissa Holly
	Abelia		Willow	Lorepetalum			
	Some Lawn		Lorepetalum				
			Steel Edging				

HACKBERRY CREEK PARK SOUTH EXPERIENTIAL ZONES

This area of the corridor is noticeably 'woolier' than the area north of Beverly Drive. Less manicured overall, this area of the corridor is interesting, due to the dramatic bow in the creek to the west as it flows south. Both the man-made channel walls and eroded bedrock banks are noticeably more dramatic in this area, with dramatic changes in elevation along the bank, creating unique encounters such as the exposed bedrock on the west bank of the creek, while the east bank is more uniformly vegetated. The Woodland Creek zone is perhaps more dramatic in this area due to the deeper channel, slightly steeper slopes and more recognizable changes in topography. The Urban Park zone is visually striking with the deeper channel, denser coverage of canopy trees, and thicker areas of groundcover. These areas are somewhat obscured by the large azaleas planted along Beverly Drive. The stacked concrete channel walls north of Miramar Avenue are more meandering than the corridor area to the north, with a naturalistic, meandering character than one would expect with man-made masonry construction. The topography is relatively gentle between the curb and the channel, but drops quickly at the channel edge, making the creek relatively inaccessible in this area of the corridor. The Beverly Drive 'Park Crossing' zone is currently a focal point in the Town, as it has long been enhanced with a seasonal ornamental landscape design within a framework of mature evergreen shrubs. These shrubs have matured so they now effectively block views of the creek. In contrast, the Miramar Avenue crossing seems very open next to the 'Urban Park' zone with unobstructed views into the creek corridor on the north public side.

*For an overall Experiential Zone map for Hackberry Creek reference page 20 and 21

Exhibit 56: Urban Park

Exhibit 57: Woodland Creek

Exhibit 58: Residential Parkway

ENLARGEMENT

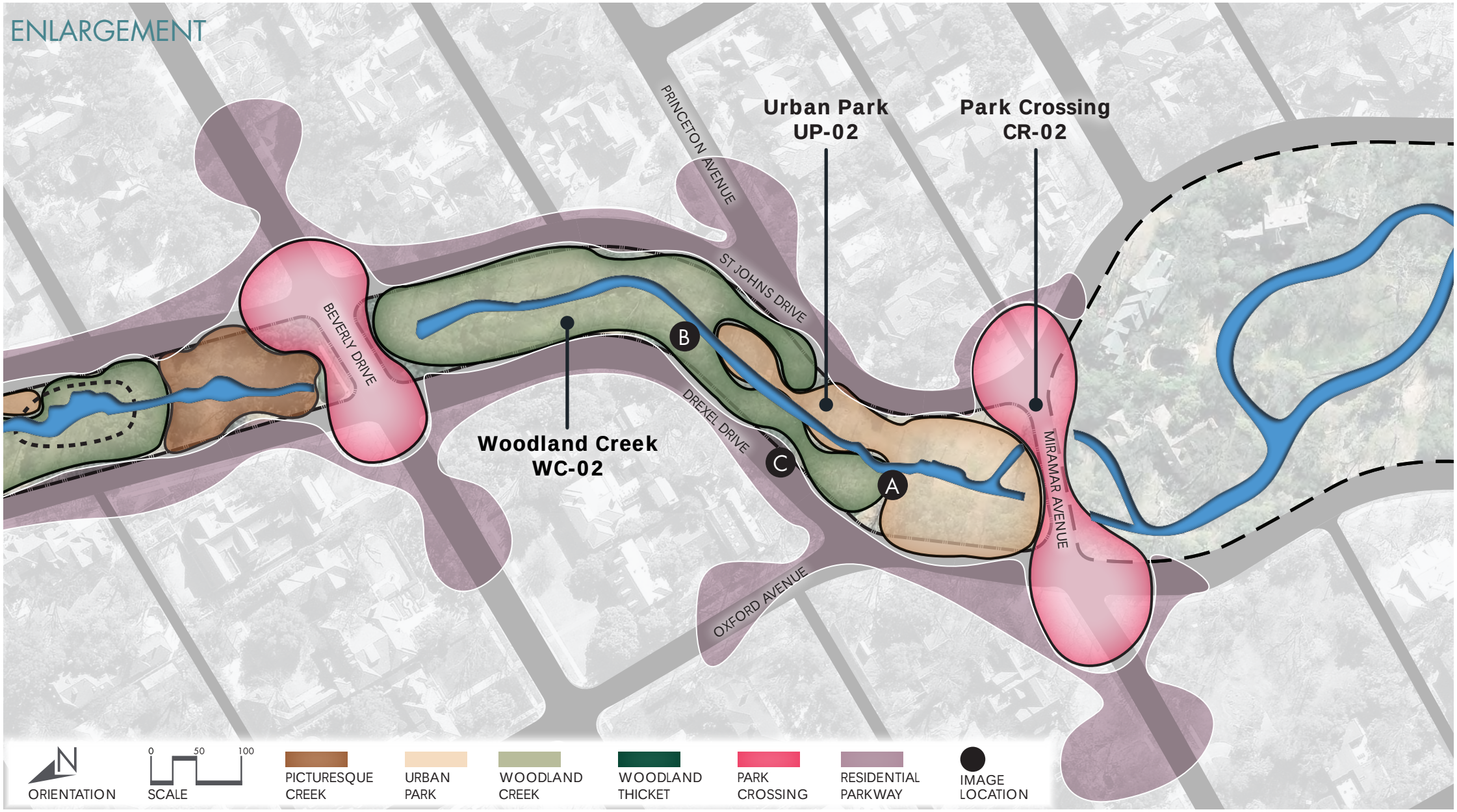


Exhibit 59: Hackberry Creek Park South Experiential Zones

EXISTING & APPROPRIATE PLANTINGS

	WC 02	UP 02	CR-02
EXISTING	Signature Oaks Japanese Maples Redbud N. Honeysuckle Vinca Major Lawn	Live Oak Cedar Elm Sweetgum Maple Cedar Vinca Major Lawn	Signature Oaks Crape Myrtle 'Natchez' Cherry Laurel Lawn
REMOVE		Lawn	Crape Myrtle Cherry Laurel Lawn

PRATHER PARK EXPERIENTIAL ZONES

This area of the corridor appears the most urbanized due to the proximity of Euclid Avenue and Lexington Avenue, both high traffic streets in the Town. The architectural character of the Euclid Avenue Bridge, stairways, and pedestrian bridges suggest an aura of history, longevity, and pride in the community. The concrete pathways are attractively laid out, offering access throughout the park, while providing a sense of interest and anticipation as one enters the whimsical group of sculptures known as the "Pixie Garden" within the Urban Park zone. The path through the Woodland Creek zone along St Johns Drive provides views of the creek below from the street. The proximity of the path to the creek bank enhances the sense of adventure as it winds its way through this experiential zone. Entering the Picturesque Creek zone, residents may be happily detached from the surrounding Town because of the elevated roadways and lower topography between. Approaching the Lexington Avenue underpass there is a wonderful scenic grotto formed by the steep topography and exposed bedrock next to the Woodland Thicket. The topography along this section of Drexel Drive is steep, which makes accessing the park by pedestrians difficult in this area, and protects the tennis court below. The pedestrian underpass, tennis court, and parking improvements along Lexington Avenue are somewhat utilitarian, contrasting with the picturesque quality of the older structures in the park and the surrounding neighborhood.

*For an overall Experiential Zone map for Hackberry Creek reference page 20 and 21

Exhibit 60: Woodland Creek

Exhibit 61: Park Crossing

Exhibit 62: Urban Park

ENLARGEMENT

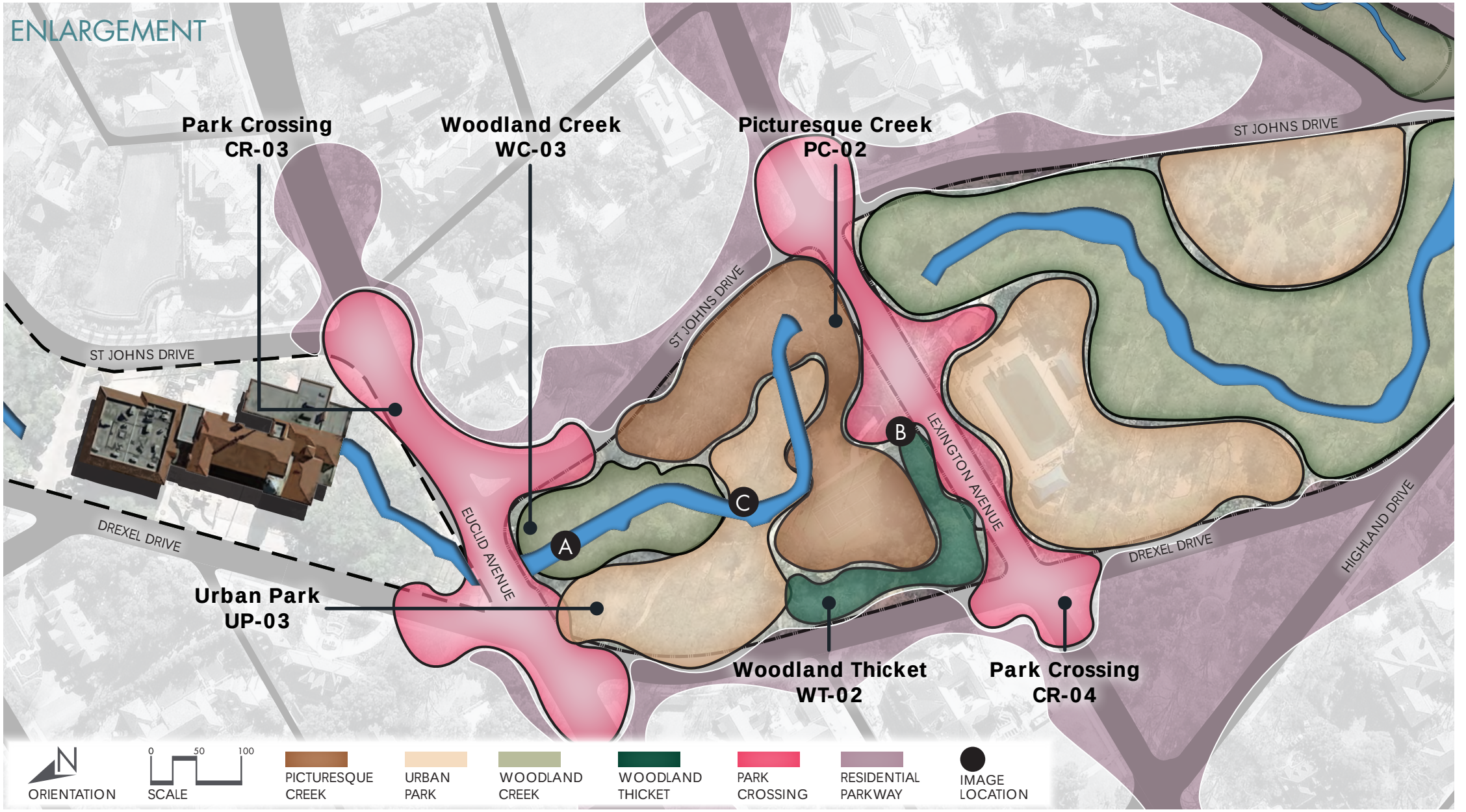


Exhibit 63: Prather Park Experiential Zones

EXISTING & APPROPRIATE PLANTINGS

	CR-03		WC 03		UP 03		PC 02		WT-02	CR-04
EXISTING	Signature Oaks	Azalea	Signature Oaks	Daffodils	Azalea	Redbud	Live Oak	Chinese Pistache	Cedar Elm	Signature Oaks
	Cedar Elm	Aspidistra	Dogwood	Crinum Lilly	Lorepetalum	Cedars	Cottonwood	Japanese Maple	Lacebark Elm	Magnolia
	Pecan	Holly Fern	Mexican Plum	Vinca Major	Japanese Maple		Cedar Elm	Ligustrum	Redbud	Cedars
	Crape Myrtle	So. Wood Fern	Pond Cypress	English Ivy	Holly Fern		Cedars	Iris	Crape Myrtle	Crape Myrtle
	Kwanzan Cherry	Liriope	Dwarf Palmetto		Autumn Fern		Redbud	Daffodil	Ligustrum	Redbud
	Dogwood	Daffodils	Azalea		Vinca Major		Cherry Laurel	Lilly	Cherry Laurel	Vitex
	Mexican Plum	Crinum Lilly	Aspidistra		Red Oak		So. Wood Fern	Lawn	Honeysuckle	Abelia
	Pond Cypress	Vinca Major	Holly Fern		Cedar Elm		Mosses		Vinca Major	
	Dwarf Palmetto	English Ivy	So. Wood Fern		Pecan		Vinca Major		Daylily	
	Euonymous	Seasonal Color	Liriope		Eve's Necklace		English Ivy			
							Lacebark Elm			
REMOVE					Lorepetalum		Ligustrum			Magnolias
					Cherry Laurel					Eleagnus
										Crape Myrtle
										Ligustrum
										Shrub Rose

DAVIS PARK EXPERIENTIAL ZONES

Davis Park is characterized by an upper region dominated by recreational activities and a lower region identifying with the creek and dramatic topography. Most of the park is dominated by the Woodland Creek zone as it winds its way from the Town Swimming Pool to Armstrong Avenue. The built form of the swim area and the adjacent playground seem foreign to vernacular found elsewhere in the park. The pool facilities seem disjointed from the creek and surrounding environment despite their proximity. The concrete path in the Woodland Creek zone along St Johns Drive, provides views of the creek bank which is covered in groundcover. This area has dramatic topographic changes, making it scenic. The playground area feels safe from surrounding traffic, and takes advantage of the shade from large canopy trees. The meandering pathways give access throughout the park, while providing a sense of anticipation. As the creek flows past Tennis Court #7 in the Urban Park zone, the creek corridor feels more primal due to the dense overhead canopy. The creek is nearly invisible from the street because of the difference in elevation. The topography and scenery are the most dramatic of any area, making pedestrian access from the neighborhood difficult. The detachment residents may feel here is enticing by way of the benches and hardscape improvements. The Armstrong Avenue Bridge is the southern boundary. The style of this concrete bridge differs from the nearby masonry arched bridges, but has a similar look to the Euclid Avenue Bridge. Its sense of history amplifies the contrasting metal rails and wing wall, as they do not stylistically blend with the bridge or the other architectural park elements.

Alice Circle is bounded by Crescent Avenue on the south, and Cowper Avenue on the east. At over three quarters of an acre in size, it is tremendously scenic for its size. The grade change on the street from the higher east side to the west is approximately 20 feet. The tributary channel running to Hackberry Creek descends dramatically, creating a metaphoric canyon. The topography highlights a street side overlook on Crescent Avenue, and a rustic masonry arch bridge over the tributary. The mature trees and verdant ground plane are key characteristics of the Woodland Creek zone.

*For an overall Experiential Zone map for Hackberry Creek reference page 20 and 21

Exhibit 64: Woodland Creek

Exhibit 65: Urban Creek

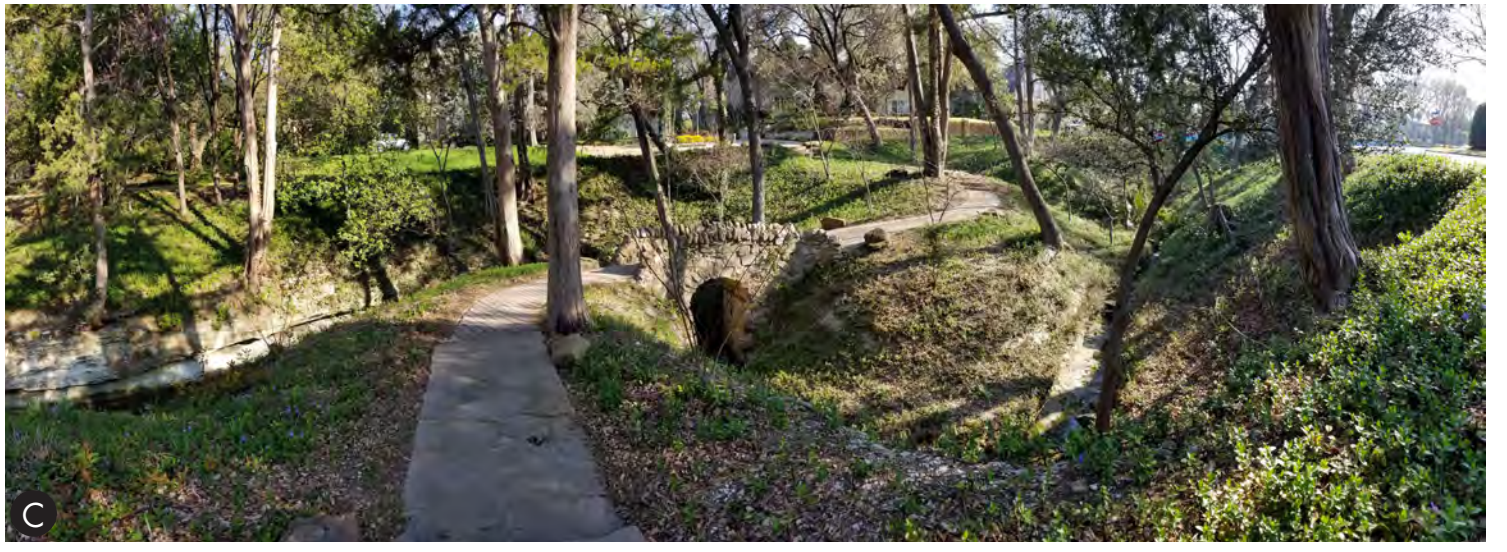


Exhibit 66: Woodland Creek

ENLARGEMENT

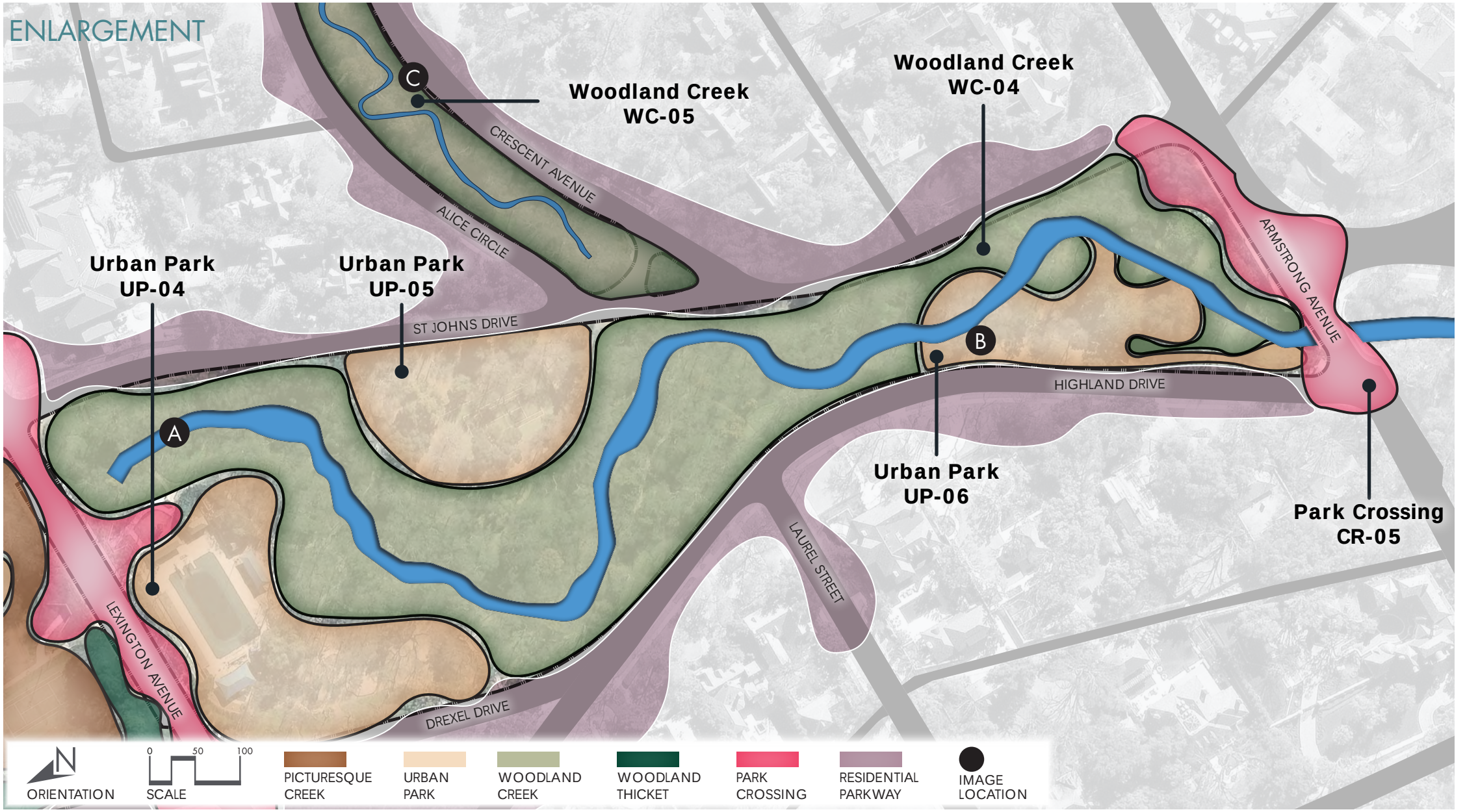


Exhibit 67: Davis Park Experiential Zones

EXISTING & APPROPRIATE PLANTINGS

	UP 04			UP 05	UP 06	WC 04				CR-05	WC 05	
EXISTING	Cedar Elm	Vitex	Canna	Cedar Elm	Magnolia	Cedar Elm	Dogwood	Holly Fern	Red Maple	Signature Oaks	Cedar Elm	Cherry Laurel
	Cedars	Ligustrum	Vinca Major	Live Oak	Live Oak	Live Oak	Redbud	Wood Fern	Willow	Magnolia	Red Oak	Nandina
	Live Oak	Cherry Laurel	Daffodil	Cedars	Red Oak	Red Oak	Mexican Plum	Vinca Major	Nandina	Cedars	Ash	Vinca Major
	Magnolia	N. Honeysuckle	Iris	Redbud	Cedar Elm	River Birch	Ligustrum	Asian Jasmine	Carissa Holly	Crape Myrtle	Pecan	English Ivy
	Red Maple	Frasiers Photinia	Crinum Lilly	Native	Pecan	Pecan	Cherry Laurel	Daffodils	Azalea	Redbud	Cedars	Daffodil
	Pecan	Shrub Rose	Cross Vine	Honeysuckle	Cedars	Hackberry	Abelia	Liriope	Seasonal Color		Redbud	
	Redbud	Nellie. R Holly		Vinca Major	Lawn	Cedars	Native	Crinum Lily			Crape Myrtle	
	Kwanzan Cherry	Banana		Lawn		Crape Myrtle	Honeysuckle	Magnolia			Mexican Plum	
REMOVE	Some Grass				Lawn	Old Redbud	Crape Myrtle			Magnolias	Nandina	
	Vines in Trees					Vines	Privet ‘Volunteers’			Crape Myrtle	Crape Myrtle	
	Steel Edging					Ligustrum				Ligustrum		
	Magnolias (at Tennis Courts)					Nandina						
	Eleagnus					Dead Trees						
	Rose					Poison Ivy						
						Nandina						
						Willow						

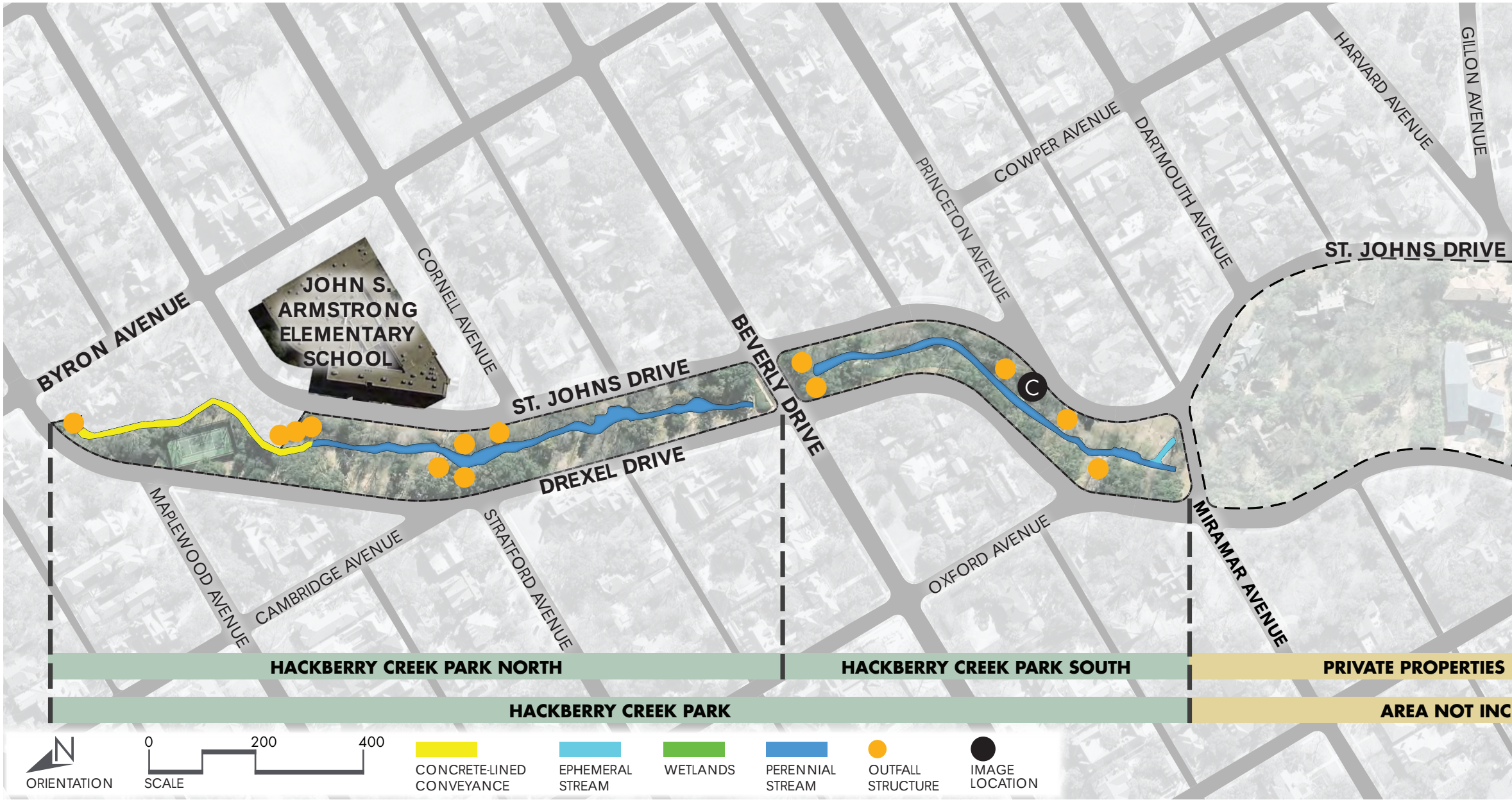


Exhibit 68: Hackberry Creek Park Wetlands & Waters of the U.S.

WETLANDS & WATERS OF THE U.S.

Identifying regulated waters and wetlands is a vital part of the project planning process. It is important to identify these features for permitting considerations during design. The streams and wetlands are all Waters of the U.S.

Waters of the U.S. were evaluated and delineated through the Hackberry Creek Corridor. The majority of the study area was found to be uplands along the riparian zone. The study area generally includes well-drained terraces along Hackberry Creek, which is a perennial stream. The upper reach of Hackberry Creek on the north end of the Corridor was found to have been channelized with concrete retaining walls and a concrete bottom. This section of stream is unlikely to be regulated as Waters of the U.S. Two ephemeral streams were also delineated in the study area; however, they were very limited in length and presence. In addition to the streams, one small wetland was identified in Prather Park. The wetland exists as a hillside seep along the bank of Hackberry Creek.

Several regulatory permitting options are available, depending on the extent of impacts. The U.S. Army Corps of Engineers (USACE) Nationwide Permit 13 covers bank stabilization activities. In some cases, automatic coverage is provided under the permit; however, USACE notification is required in other cases, such as if the activity is: (1) in excess of 500 linear feet; (2) involves discharges into special aquatic sites; (3) involves discharges greater than an average of one cubic yard per running foot, as measured along the length of the treated bank below the plane of the ordinary high water mark. Should the project involve activities not covered under a Nationwide Permit, an Individual Permit may be needed. This permit application requires a detailed description of the project purpose and need as well as evidence of avoidance and minimization measures. Compared to Nationwide Permits, an Individual Permit approval is a lengthy process that adds significant time to project design.

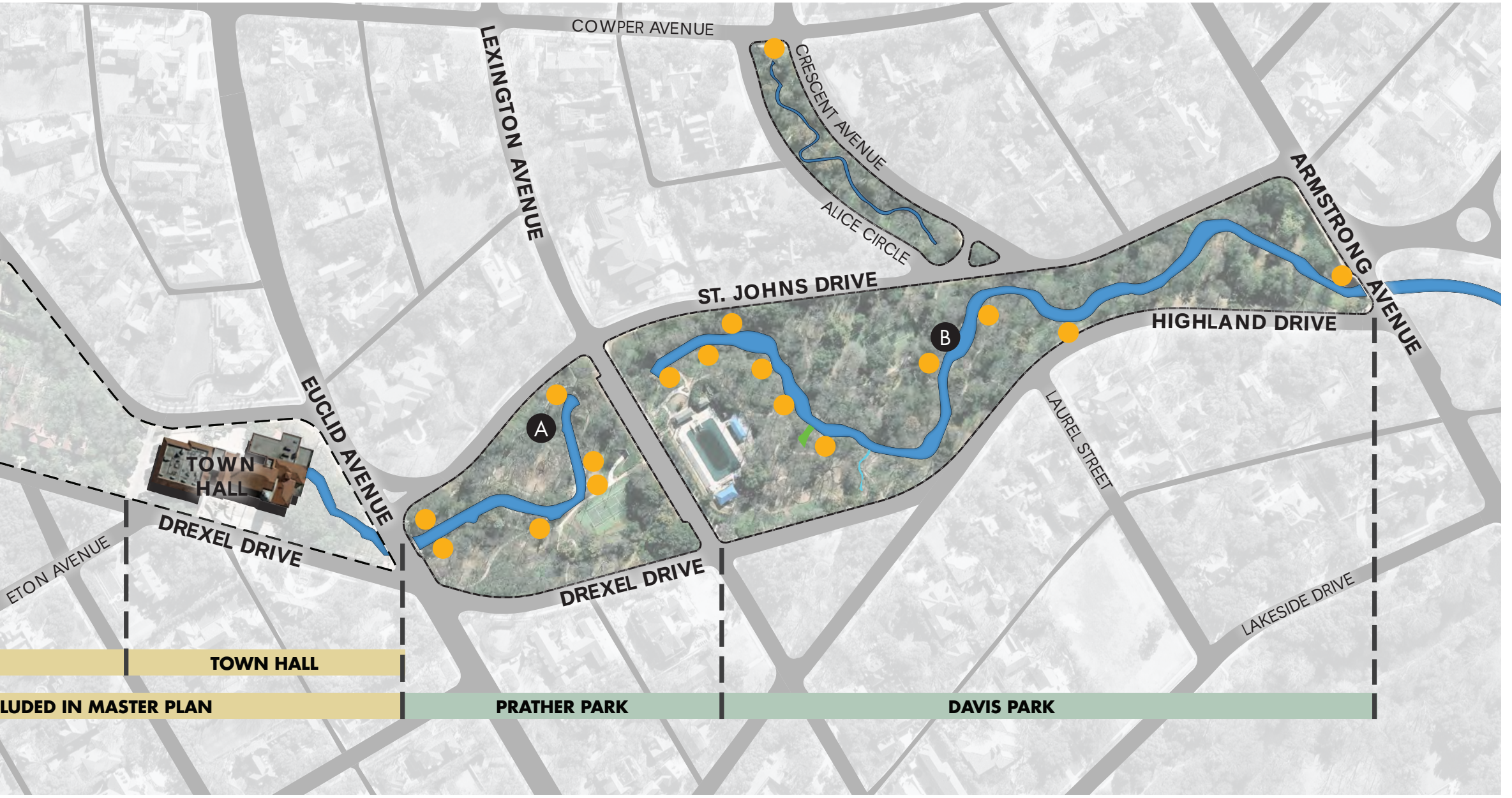


Exhibit 69: Prather and Davis Park Wetlands & Waters of the U.S.

Exhibit 70: Prather Park Drainage Way

Exhibit 71: Outfall structure in Davis Park

Exhibit 72: Outfall structure in Hackberry Creek Park South

ARCHITECTURAL ELEMENTS

The Hackberry Creek corridor and the parks possess a unique set of distinct architectural patterns which contribute to the visual identity of the space, and form its experiential qualities. The predominant element in the park is the channel wall on either side of the creek; however, the element(s) with the most distinct charm are the various bridge crossings located throughout the corridor and the parks. The pedestrian bridges are the most notable and legible as they are seen from all sides within the corridor. Their Spanish-influenced style contributes to the architectural heritage of the Town. Of all the vehicular bridges, the Armstrong Avenue Bridge and the Euclid Avenue Bridge are the most architetually significant, reminiscent of an eclectic Texas Colonial/Deco style. The other vehicular bridges are actually culvert crossings.

The design team identified 12 significant exterior stairways in the corridor and parks. The stairways cataloged here were evaluated primarily as architectural elements or part of a larger element such as a bridge or overlook, rather than a means of primary access, though this issue is addressed in each assessment. As these stairways are not the primary means of access where an accessible route is not otherwise available, they are not considered jurisdictional under the Americans with Disabilities Act Accessibility Guidelines (ADAAG) or The Texas Department of Licensing and Regulation (TDLR). Further, as the existing stairways may be considered as a convenience or landscape amenity, they are not subject to building code regulations regarding handrails, tread and riser dimensions, and required landing intervals. It should be noted that significantly altered or newly constructed stairways would likely be jurisdictional as they would be reviewed for permit under current building codes. Repair or restoration of current configurations would not require updating to current standard unless the Council determined otherwise.

Even though the evaluated stairways are not required to comply with code, this was an evaluation criterion for future reference purposes. The design team evaluated on three points: compliance with current accepted codes or design standards, including accessibility, structural integrity, and aesthetic value compared to the immediate surroundings and the corridor and parks overall. Based on these observations, a brief recommendation is made for each stairway for near and long-term consideration and action by the Town. The following general standards were used in each evaluation:

1. Generally, it is recommended all stairways should have an accompanying handrail. Handrails for exterior stairs should be between 34 inches and 38 inches above the stair nosings. The handrail's height is measured from the top of the stair treads, or horizontal stepping members.

2. The maximum riser height should be 7" and minimum tread depth shall be 11" (TDLR code). The riser height is measured vertically between leading edges of the adjacent treads. The tread depth is measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge.

3. It is recommended that stairways exceeding twelve consecutive stairs or a vertical change of more than eight feet should have a landing between flights of stairs unless impractical due to surrounding topography.

Exhibit 73: Tennis Court #2

TENNIS COURT #2

Located near the northern most point of Hackberry Creek, this tennis court is in good condition. Resurfacing of the tennis court is scheduled in Fiscal Year 2018 - 2019. The existing sidewalk access is slightly deteriorated, and the court's drinking fountain is not immediately accessible.

Exhibit 74: Pedestrian Bridge #1

PEDESTRIAN BRIDGE #1

Located near the upstream extent of the Hackberry Creek Corridor by John S. Armstrong Elementary School, this structure is a single span masonry arch pedestrian bridge crossing over Hackberry Creek. The channel bottom

ARCHITECTURAL ELEMENTS KEY MAP

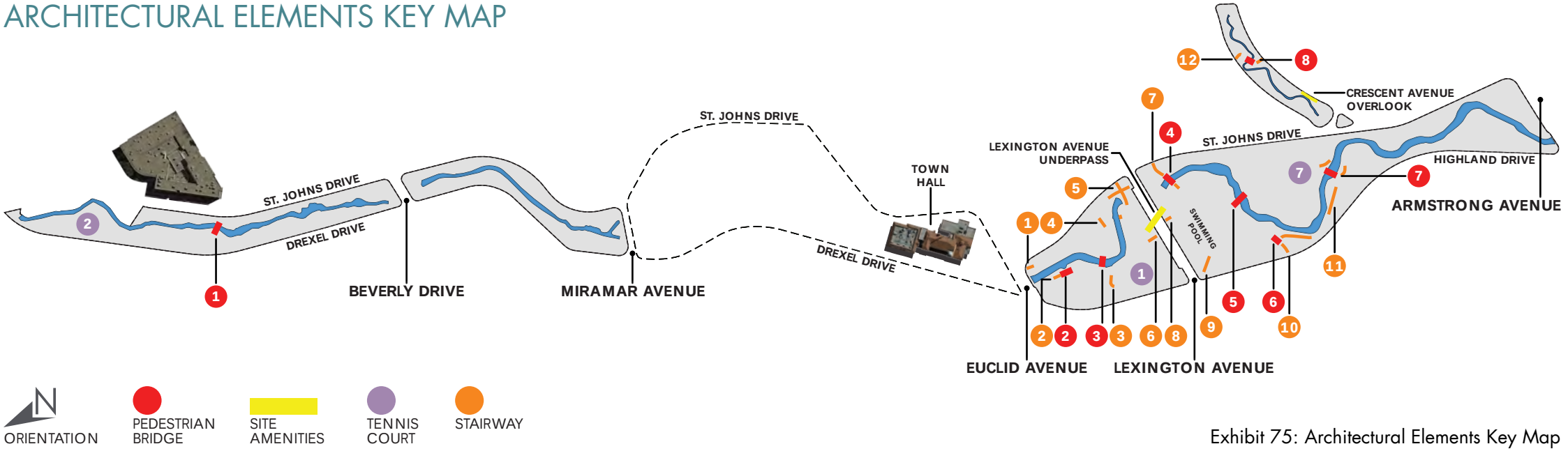


Exhibit 75: Architectural Elements Key Map

through the area consists of limestone. The deck and superstructure exhibit some minor problems including localized areas of missing or loose mortar, but are generally in good condition. The substructure shows minor deterioration and is in satisfactory condition. The bridge opening is partially obstructed by fill. A future study could be conducted to analyze the hydraulic benefit of increasing the open area underneath the bridge.

Exhibit 76: Beverly Drive

BEVERLY DRIVE

This single span structure carries two lanes of traffic and sidewalks over Hackberry Creek. The section of the upstream channel is restricted due to sediment accumulation. Erosion has occurred along the streambanks. The upstream section of the structure is a concrete slab on masonry abutments. The structure then transitions into a concrete arch culvert. The interior of the structure exhibits signs of deterioration including honeycombing, exposed reinforcement bars, and scaling. Voids were evident behind the concrete. The downstream wing walls have cracks.

The hydraulic study for Hackberry Creek shows that Beverly Drive is overtopped by a 10-year storm. This 10-year storm results in approximately 0.5 feet of water. A 100-year storm results in an overtopping depth of over one foot. Considerations should be made for improving the hydraulic opening.

Exhibit 77: Miramar Avenue

MIRAMAR AVENUE

This crossing carries two lanes of traffic and consists of two separate culverts. The main span is a circular concrete pipe culvert and carries the normal flow of Hackberry Creek. The second structure is a concrete box culvert that is intended to be an overflow relief culvert. The channel to this relief culvert is obstructed by sediment accumulation which is an ongoing maintenance issue at this location. The main culvert itself shows signs of initial disintegration, including cracks in the headwall and pipe interior. The relief culvert shows signs of minor deterioration. While the interior shows no significant defects, there is erosion at the headwall. The outfall of these culverts is on private property, which will require coordination with the property owner necessary to modify this crossing.

The hydraulic study for Hackberry Creek shows that Miramar Avenue is overtopped by a 10-year storm, which results in an overtopping depth of nearly two feet, while a 100-year storm would result in a depth of nearly three feet. Considerations should be made for improving the hydraulic opening.

Exhibit 78: Euclid Avenue

EUCLID AVENUE

This single span concrete arch bridge carries two lanes of traffic and sidewalks over Hackberry Creek. It is found near the Highland Park Town Hall and the northern end of Prather Park. The bridge superstructure, substructure, and deck are in satisfactory condition, and appear to have been recently refaced, which could obscure underlying issues. The hydraulic study for Hackberry Creek shows that Euclid Avenue carries 100-year flows without overtopping.

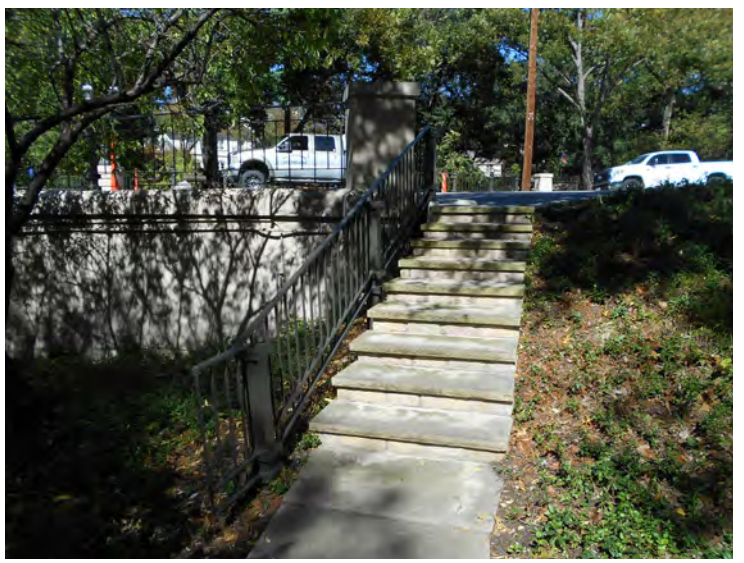


Exhibit 79: Stairway #1

STAIRWAY #1

This stairway is located at the northeast corner of Euclid Avenue and St Johns Drive, leading southward into Prather Park. The railing in place on one side of the stairs does not comply with current codes for accessibility or safety standards. The stairway appears structurally sound and constructed of concrete with stone veneer. A drain pipe on the west side is unsightly and should be concealed. Overall, the steps are attractive and the stone veneer is in good repair. The railing is attractive and in good condition, though it does not meet current codes. The recommendation for this stairway is to maintained in its current condition, though options for future updates to current codes should be considered.

Exhibit 80: Pedestrian Bridge #2

PEDESTRIAN BRIDGE #2

This pedestrian bridge is found in Prather Park and crosses over a drainage swale. It is a single span concrete arch bridge with stone facing. The mortar of the bridge facing exhibits cracking. Several stones have minor cracking. The face has areas of efflorescence. The underside of the bridge has honeycombing with exposed aggregate. Multiple voids were observed between the arch and stone facing.

Exhibit 81: Stairway #2

STAIRWAY #2

Stairway #2 is located south of Euclid Avenue and leads to Pedestrian Bridge #2 in Prather Park. It has no handrail. It is narrower than four feet wide; therefore, current building codes would not require a handrail. The adjoining pathway would not be considered as an accessible route. The steps appear to be of stone masonry construction with some cracking and deterioration of the mortar. Aesthetically, the steps match the brownstone of Pedestrian Bridge #2, but differ from the other hardscape elements in the corridor which are predominantly limestone. The near term recommendation is to maintain the repoint of the mortar joints; however, options for future updates to current codes should be considered.

Exhibit 82: Pedestrian Bridge #3

PEDESTRIAN BRIDGE #3

This masonry arch bridge in Prather Park crosses over Hackberry Creek. The superstructure and substructure are in fair condition. The structure has areas of missing and cracked stones in need of repair. Previous concrete repairs were made to the abutments, where the concrete was textured to mimic the appearance of limestone to match its surroundings, whose banks consist of natural limestone.

Exhibit 83: Stairway #3

STAIRWAY #3

This long, graceful stairway is located at the northwest side of Hackberry Creek, adjacent to Pedestrian Bridge #3. It is flanked on either side by low limestone cheek walls varying in height from 12”-24” above the treads. These walls would not suffice for current codes for accessibility or safety standards. The stairway appears structurally sound with treads and risers constructed of concrete. Overall, the steps are attractive, and the stone veneer is in generally good repair, though some cracking is evident. This stairway should be maintained and preserved in its current condition. If the stairway is altered, it will likely require a compliant guardrail due to adjacent topography.

Exhibit 84: Tennis Court #1

TENNIS COURT #1

Tennis Court #1 is located near Lexington Avenue. The court’s surface shows major deterioration. Other areas of concern include the fencing, windscreens, backboard, seating, lighting, and the accessibility of the area. It is recommended that the court be reconstructed elsewhere. Renovations to the tennis court are identified in the Town’s Capital Improvement Plan.

Exhibit 85: Stairway #4

STAIRWAY #4

This stairway is comprised of two short staircases coming together as a low water crossing. Constructed of limestone, it is flanked on either side by low limestone cheek walls 12” above the treads, terminating in short stone columns. Overall, the steps are attractive; the stone and mortar are in generally good repair, though some minor cracking is evident. This stairway should be maintained and preserved in its current condition.

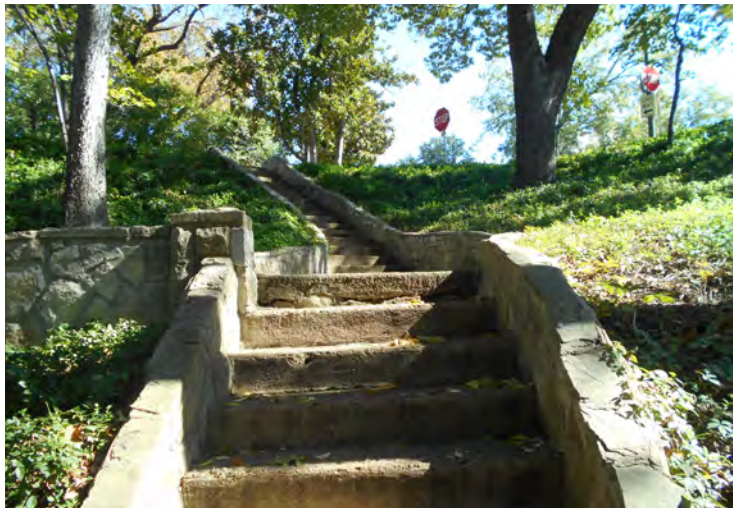


Exhibit 86: Stairway #5

STAIRWAY #5

Located at the southeast corner of Prather Park, this stairway leads down from the street level to either side of the creek, crossing paths above the Lexington Avenue culvert. It is flanked on either side by low limestone cheek walls varying in height from 12”-18” above the treads. The stairways appear structurally sound with treads and risers constructed of concrete, though some cracking is evident due to settling over time. These stairs are a landmark in the park, attractive, and in generally fair condition as treads vary. This stairway should be maintained and preserved in its current condition. If the stairway is repaired in the future, alterations should be as minimal as possible, in an effort to avoid the compulsory addition of modern handrails.

Exhibit 87: Stairway #6

STAIRWAY #6

Located on the south edge of Prather Park adjacent to Lexington Avenue, this stairway is constructed of concrete and is in excellent repair. Constructed of concrete, it has an elegant simplicity, though it does not match the stone masonry appearance of other nearby staircases. The handrail height does not comply with current code, nor do the openings between the mounting posts. The short-term recommendation is to leave this stairway as-is, pending the design and construction of the proposed Lexington Avenue Esplanade.

Exhibit 88: Lexington Avenue

LEXINGTON AVENUE

Located between Prather Park and Davis Park, this structure is an arch culvert with masonry headwalls. It carries one lane of traffic and a sidewalk, as well as parking spaces. A 72-foot segment of the structure, consisting of a brick arch, was previously repaired by installing a metal tunnel liner plate. This segment ties into a section of reinforced concrete arch. The arch liner and concrete footing are in good condition. Signs of deterioration show in the concrete arch barrel and masonry headwalls. A storm drain pipe is located near the culvert. The pipe inlet, found upstream of the culvert, is within a segment of masonry retaining wall. The outfall, approximately 140' downstream of Lexington Avenue, has no headwall. Bank stabilization measures should be considered at this area.

The hydraulic study for Hackberry Creek shows that Lexington Avenue would not be overtopped by a 100-year storm.

The Lexington Underpass provides passage beneath Lexington Avenue to pedestrians using the Hackberry Creek Corridor. During high flow events, it acts as a relief culvert. The structure is in excellent condition with no noticeable or noteworthy deficiencies.

Exhibit 89: Stairway #7

STAIRWAY #7

Located on the eastern edge of Davis Park adjacent to St Johns Drive, this stairway and a shorter flight of three steps a short distance down the path lead to Pedestrian Bridge #4 and the Town Swimming Pool. Constructed of concrete similarly to Stairway #8 on the northern edge of Davis Park, this stairway has an elegant handrail that would comply with current codes. The design would be an appropriate prototype for any future railing enhancements in the area. Constructed of concrete, it does not match the stone masonry appearance of other nearby staircases. The handrail substantively complies with current code, except for the missing extensions at the top and bottom of the stairway. The near-term recommendation is to leave the upper stairway as-is. Redesign of this stairway should be considered in conjunction with that of Stairways #8 and #9 in the future. The lower staircase should be reconstructed to blend architecturally with other limestone elements in the park.

Exhibit 90: Pedestrian Bridge #4

PEDESTRIAN BRIDGE #4

This masonry arch bridge is found at the northern end of Davis Park just downstream of Lexington Avenue. The superstructure is in satisfactory condition. The substructure is in good condition. Previous repairs were made to the bridge abutments by placing a layer of concrete to prevent further deterioration of the masonry stones. In order to camouflage the repairs, the concrete has been textured to mimic the appearance of limestone.

Exhibit 91: Pedestrian Bridge #5

PEDESTRIAN BRIDGE #5

This bridge located in Davis Park south of the Town Swimming Pool. It consists of a concrete slab supported on masonry abutments. Masonry pillars topped with lights form the entrance to the bridge. A chain draped along

the bridge from the pillars acts as a makeshift rail and mimics the appearance of a suspension bridge. The superstructure and substructure are in satisfactory condition.

Exhibit 92: Stairway #8

STAIRWAY #8

Located opposite Stairway #6 on the northern edge of Davis Park, this stairway is similar in vintage, style, and construction to Stairway #6. Leading down to the entrance gate at the Town Swimming Pool, the handrail resembles that of stairway #7, but does not have the required extensions at the top and bottom of the stairway. Constructed of concrete, it does not match the stone masonry appearance of other nearby staircases. The near-term recommendation is to leave this stairway as-is, pending the design and construction of the proposed Lexington Avenue Esplanade.

Exhibit 93: Stairway #9

STAIRWAY #9

Leading to the Davis Park playground from the intersection of Drexel Drive and Lexington Avenue, this stairway is similar in vintage, style, and construction to Stairways #6, #7, and #8. It shares the same handrail design, though it has a common rail in the middle of the wider stairs rather than on either side. Constructed of concrete, it does not match the stone masonry appearance of other nearby staircases. The handrail substantively complies with current code, except for the missing extensions at the top and bottom of the stairway. The near term recommendation is to leave this stairway as-is, pending the design and construction of the proposed Lexington Avenue Esplanade.

Exhibit 94: Town Swimming Pool

TOWN SWIMMING POOL

The Town Swimming Pool has served the Town's residents since its most recent construction in the 1950's. The design of the pool and support buildings is inwardly focused, and the fencing and turnstiles confine pool users, and separate them from the surrounding park, open space, and playground. Though utilitarian, the support buildings (concession, etc.) seem out of sync with the surrounding architectural character of the creek corridor and the parks. The current service access within Davis Park should be improved to include paving for emergency access as well as pedestrian convenience. Currently, the pool is operated only during the warm season, and for special events. The design team recommends a study to examine year-round programming opportunities for residents, upgrades and enhancements for accessibility and service, and improvements to the fencing and support buildings. The addition of architecturally appropriate shade structures, as well as expansion and interface of the fenced pool area with surrounding park and corridor, are much needed improvements for consideration. Remodeling the exterior of the existing buildings with an architectural style complimentary to the area would also be desirable. The Lexington Avenue Esplanade project is one suggested action to address this issue (please see page 36).

Exhibit 95: Pedestrian Bridge #6

PEDESTRIAN BRIDGE #6

This bridge is found in Davis Park and crosses over a drainage swale. It is a single span concrete arch bridge with stone facing. The concrete deck and approaches exhibit cracking, severe in parts. Additionally, the deck has a minor spall. The mortar of the bridge facing exhibits cracking and is starting to separate from the stones at some locations. Several stones have minor cracking. The underside of the bridge has honeycombing. The concrete footers show signs of concrete deterioration which include exposed aggregate. Multiple voids show at the interface between the arch and stone facing. An electric conduit runs from the bridge face and crosses the swale near the water surface. It appears that this conduit was previously buried, but became exposed due to erosion.

Exhibit 96: Tennis Court #7

TENNIS COURT #7

This tennis court is located near Pedestrian Bridge #6. The improvements include construction of a post tension concrete slab, new fencing, windscreens, backboard, bench and accessibility improvements. The court lighting needs to be restored or replaced. Landscape enhancements are recommended to soften the utilitarian appearance of the fence.

Exhibit 97: Stairway #10

STAIRWAY #10

This long, graceful stairway is located on the western edge of Davis Park, adjacent to Pedestrian Bridge #6. It is flanked on either side by low limestone cheek walls with a consistent height of approximately 14” above the treads. A second tier of stairs leads beyond the bridge to a pathway along the creek. The low walls on both flights of stairs would not suffice for current codes for accessibility or safety standards. The upper stairway appears structurally sound, with treads and risers constructed of concrete, while the lower is somewhat deteriorated. The upper steps are attractive and in good repair, and should be maintained and preserved in their current condition. The lower stairway should be considered in conjunction with the proposed reconstruction of Pedestrian Bridge #6 and the reconstructed elevated trail along the western edge of the creek.

Exhibit 98: Stairway #11

STAIRWAY #11

This meandering stairway has a whimsical quality winding down the hillside along Drexel Drive. It is has gently undulating limestone walls on either side blending with retaining walls along the hillside. These walls would not suffice for current codes for accessibility or safety standards. The stairway appears structurally sound with treads and risers constructed of concrete. Overall, the steps are attractive and the stone veneer is in generally good repair, though some cracking is evident. This stairway should be maintained and preserved in its current condition. The lower stairway should be considered in conjunction with the proposed reconstruction of Pedestrian Bridge #6 and the reconstructed elevated trail along the western edge of the creek.

Exhibit 99: Pedestrian Bridge #7

PEDESTRIAN BRIDGE #7

This masonry arch bridge in Davis Park crosses Hackberry Creek south of the tennis court near Alice Circle. The superstructure is in satisfactory condition. The bridge face and underside of the arch exhibits minor stone cracking and missing stones. The substructure is in fair condition. Portions of the abutment have cracks and a section of wing wall is detached and collapsed. The bridge has numerous areas where root growth caused cracking to the substructure elements.

Exhibit 100: Armstrong Avenue

ARMSTRONG AVENUE

The Armstrong Avenue Bridge is found at the southern end of Davis Park and forms the downstream limit of the Hackberry Creek Corridor. It is a concrete arch bridge

that carries two lanes of vehicular traffic and sidewalks over Hackberry Creek. The deck, superstructure, and substructure are all in satisfactory condition.
The hydraulic study shows that the Armstrong Avenue Bridge experiences overtopping due to the backwater effects from Turtle Creek.

Exhibit 101: Pedestrian Bridge #8

PEDESTRIAN BRIDGE #8

This pedestrian bridge crosses over a small tributary of Hackberry Creek, bound by Alice Circle to the north and Crescent Avenue to the south. The wearing surface of the bridge consists of pavers, which are in good condition; however, the masonry arch is in poor condition. Loose, missing and cracked stones show. Sections of the arch are cracked or are missing mortar. The channel bottom under the bridge consists of limestone, and is in stable condition. No scour was observed. The banks in the proximity of the bridge are well-vegetated and show little sign of erosion.

Exhibit 102: Stairway #12

STAIRWAY #12

Considered as one stairway for the purpose of this evaluation, the two small stairways along Alice Circle and Crescent Avenue lead to Pedestrian Bridge #8. The stairs are constructed of limestone and are in somewhat good condition. Little cracking seems evident, though some settling has occurred, creating uneven side slopes and riser heights on both staircases. The rustic appearance is appropriate and harmonious with the appearance of the bridge. These stairways should be maintained and preserved as-is, though the concrete pavers should be removed and replaced with flagstone paving. Any alterations should be considered holistically with the bridge.

Exhibit 103: Crescent Avenue Overlook

CRESCENT AVENUE OVERLOOK

This overlook on the roadside of Crescent Avenue has a wonderful whimsical and romantic quality overlooking the drainage area below. The low wall provides views and casual seating but does not appear to comply with current safety standards. If the overlook is significantly altered, it will likely require a guardrail compliant with current codes due to adjacent topography. The concrete pavers should be removed and replaced with flagstone paving. Such an alteration should be consistent with the belvederes proposed at Beverly Drive and Miramar Avenue (see Vision Projects, pages 32 and 34). A bench may also be added to provide comfortable seating.

APPENDIX

COMMUNITY WORKSHOP CONCERNS BY TABLE

TABLE 1

1 A historic, natural oasis in the Town. The lack of programming and concealed infrastructure offers a chance to explore the natural area reminiscent of Tom Sawyer and Huckleberry Finn.

2 A safe haven away from a developed town for the children and residents of Highland Park.

3 Vegetative guidelines that offer a natural and diverse palette of trees.

4 Infrastructure that moves to preserve the natural landscape and existing stone bridges while solving erosion control issues.

5 Narrow, exploratory pathways that restrict the use of bicycles.

6 The Town should develop and adopt an ordinance that moves to protect Hackberry Creek and adjacent private property from use by commercial photographers.

TABLE 2

7 A native, overgrown landscape that rids the park of concrete/bike paths and promotes wildlife.(No prairie grass) A removal of amenities and art that may impact the natural look of the landscape.

8 Subtle lighting that moves to create a safe park, but does not promote the use of the park at night.

9 Flood control measures that create a full flowing, serene creek. Minimize creek channeling efforts and look to create a natural creek bed. Coordination with University Park in hopes of increasing the water quality of Hackberry Creek.

10 Use existing stone materials to help beautify and conceal the headwalls and outfall structures.

11 A definition of "appropriate enhancements," and how it works to benefit Hackberry Creek. (Different than Katy Trail)

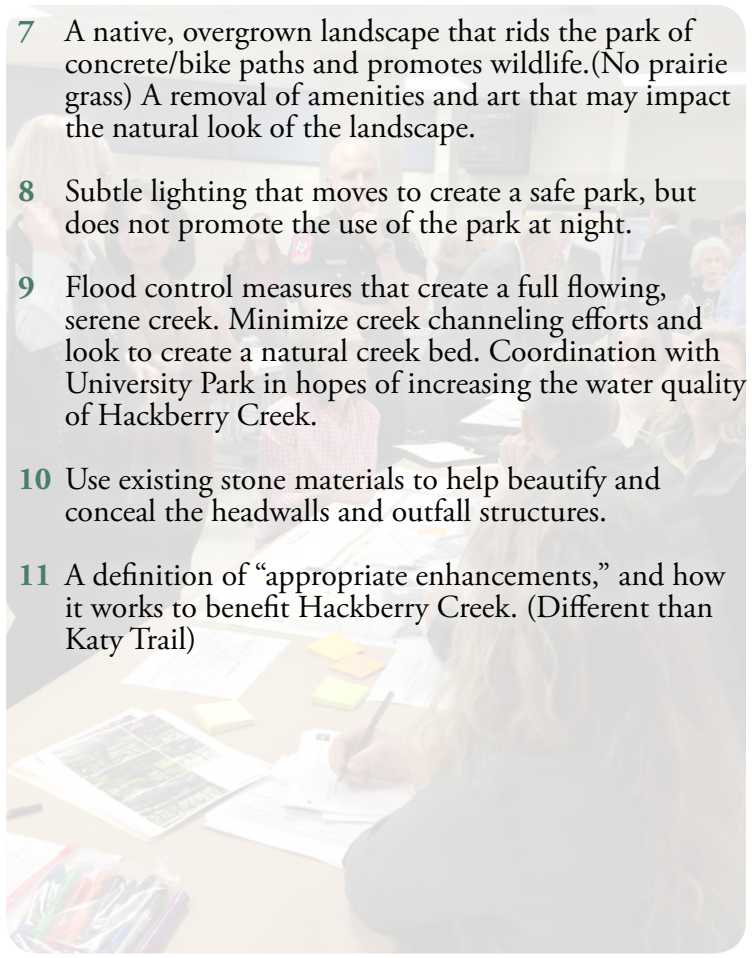


TABLE 3

12 Infrastructure that promotes erosion control, while preserving the natural character of the park. (No concrete)

13 Minimal pedestrian pathways that provide connection inside individual areas, but do not look to create a unified network of paths throughout the park.

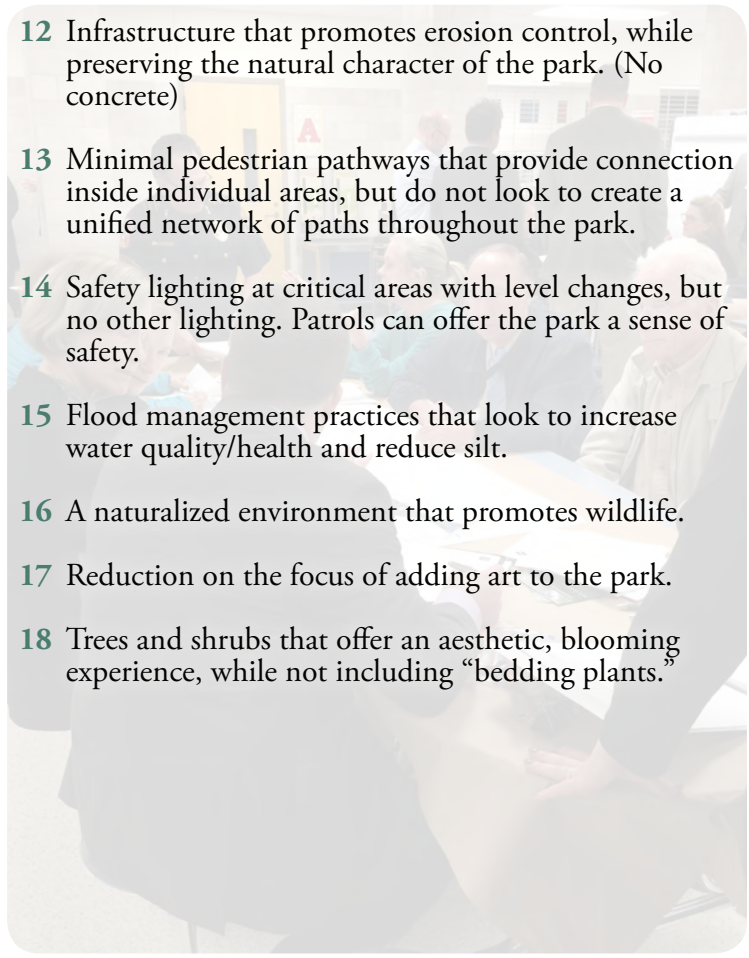
14 Safety lighting at critical areas with level changes, but no other lighting. Patrols can offer the park a sense of safety.

15 Flood management practices that look to increase water quality/health and reduce silt.

16 A naturalized environment that promotes wildlife.

17 Reduction on the focus of adding art to the park.

18 Trees and shrubs that offer an aesthetic, blooming experience, while not including "bedding plants."



MOST IMPORTANT

GOAL 1: Establish guidelines for the appearance and upkeep of historic structures and architectural site amenities as well as appropriate lighting and planting enhancements to these locations.

GOAL 6: Preserve and enhance, as possible, the unique natural areas of the Hackberry Creek corridor and within its parks.

MOST IMPORTANT

GOAL 1: Establish guidelines for the appearance and upkeep of historic structures and architectural site amenities as well as appropriate lighting and planting enhancements to these locations.

GOAL 2: Plan for and locate areas where landscape beautification and enhancement are appropriate within the larger context of the Hackberry Creek corridor and parks.

MOST IMPORTANT

GOAL 6: Preserve and enhance, as possible, the unique natural areas of the Hackberry Creek corridor and within its parks.

LEAST IMPORTANT

GOAL 5: Plan for expanded bicycle and pedestrian amenities.

GOAL 7: Integrate enhancements into existing spaces along the corridor to create active recreational spaces that are flexible and can accommodate multi-seasonal and multi-generational users.

LEAST IMPORTANT

GOAL 4: Enhance accessible connections to and improve connections between recreational activities within the Hackberry Creek Corridor.

GOAL 5: Plan for expanded bicycle and pedestrian amenities.

LEAST IMPORTANT

GOAL 5: Plan for expanded bicycle and pedestrian amenities.

TABLE 4

19 A natural landscape that promotes a diverse tree palette.

20 Historical markers for pedestrian bridges throughout Hackberry Creek.

21 Reintroduction of the Oxford Avenue Bridge.

22 Inclusion of water fountains for canines.

23 Waste prevention infrastructure.

24 Remove unstable or damaged infrastructure while preserving and masking existing infrastructure.

25 Erosion control systems that promote a natural landscape.

26 Meandering, natural pathways that remove concrete and bikes from the park, while promoting natural Huckleberry Finn play.

27 Subtle safety lighting, while not promoting activity in the park at night.

28 Natural landscape and views that are not broken up by art.

29 Practices that promote wildlife quality.

TABLE 5

30 Vegetative buffers to shelter visitors from surroundings. Promote access to the creek, and encourage water fowl. Consider including Alice Circle Park in the Master Plan.

31 Improvements and concealment of the existing drainage and swimming pool infrastructure.

32 Water management practices that increase runoff management, promote a continually flowing creek, and control erosion issues.

33 Create historical markers for existing infrastructure.

34 Security measures that include landscape and infrastructure lighting.

35 A Town tree ordinance plan that promotes a natural, and diverse palette.

*Due to the number of participants Table 5 voted with Table 4

GENERAL COMMENTS

36 Improvements to the existing outfall infrastructure.

37 A Town wide policy that addresses the protection of the heritage of the existing architecture.

RESIDENT SUGGESTIONS

- Town should develop and adopt a ordinance controlling access for photographers or non-residents using the parks.
- Town should develop and adopt a ordinance for tree preservation and replacement ordinance.
- Town should consider adding security cameras in certain areas of the park.
- Do not install anymore public art within the open space and parks.
- Little to no new concrete is desired within the corridor. Any new concrete pathways should be as narrow as possible and discourage bicyclists.

MOST IMPORTANT

GOAL 1: Establish guidelines for the appearance and upkeep of historic structures and architectural site amenities as well as appropriate lighting and planting enhancements to these locations.

GOAL 6: Preserve and enhance, as possible, the unique natural areas of the Hackberry Creek corridor and within its parks.

LEAST IMPORTANT

GOAL 5: Plan for expanded bicycle and pedestrian amenities.

GOAL 7: Integrate enhancements into existing spaces along the corridor to create active recreational spaces that are flexible and can accommodate multi-seasonal and multi-generational users.

**Based on consensus votes by four groups

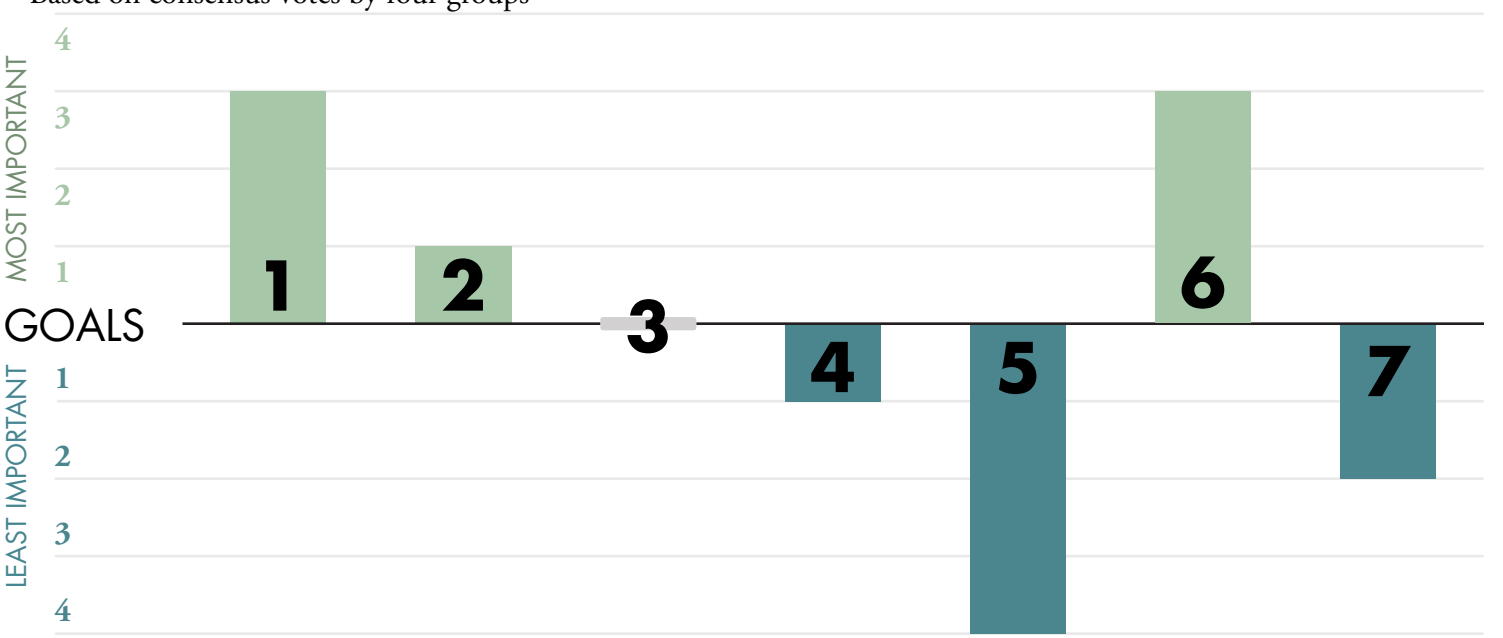


Exhibit 104: Goal Voting Results (Public Workshop)

COMMUNITY WORKSHOP ONLINE SURVEY RESULTS

For residents who wanted to participate in the public input process but couldn't attend the workshop, an online questionnaire was developed to allow responses and input to the same issues discussed at the public meeting. The Town promoted the use of this instrument to maximize the opportunity for residents to contribute to the public input process.

Not surprisingly, the comments from survey respondents and the discussions from the work shop were very similar. As seen in the tabulations, the most import overall goals desired by respondents were for the Town to preserve and enhance the natural areas within the creek and parks and to establish guidelines for the upkeep and preservation of the architectural site amenities. The least important goals identified by respondents any potential plans for expanded bicycle and pedestrian amenities and integrating any enhancements that created active recreational spaces within the park and creek corridor.

Two topics discussed at the public meeting and present in the respondent comments were to address the aesthetic quality of Lexington Street pedestrian tunnel as well the various drains and outfall structures and trash within the parks and corridor.

MOST IMPORTANT GOALS

GOAL 6: Preserve and enhance, as possible, the unique natural areas of the Hackberry Creek corridor and within its parks.
(19 OUT OF 44 RESPONSES)

GOAL 1: Establish guidelines for the appearance and upkeep of historic structures and architectural site amenities and appropriate lighting and planting enhancements to these locations.
(11 OUT OF 44 RESPONSES)

RESIDENT SUGGESTIONS

- Enhance creek to attract more ducks. Also, plant milk weed and other plants that attract Monarch butterflies so this can become a fly way for them in the Fall.
- A process for compromise when plans seems to be at odds with each other.
- Repair the structural banks, pools and damaged/ eroded areas of the creek.
- No artificial grass and no bike paths or parking and play grounds.
- I want to preserve the natural beauty of Hackberry Creek with no added lighting, bike trails, cement, statues, enhancements.

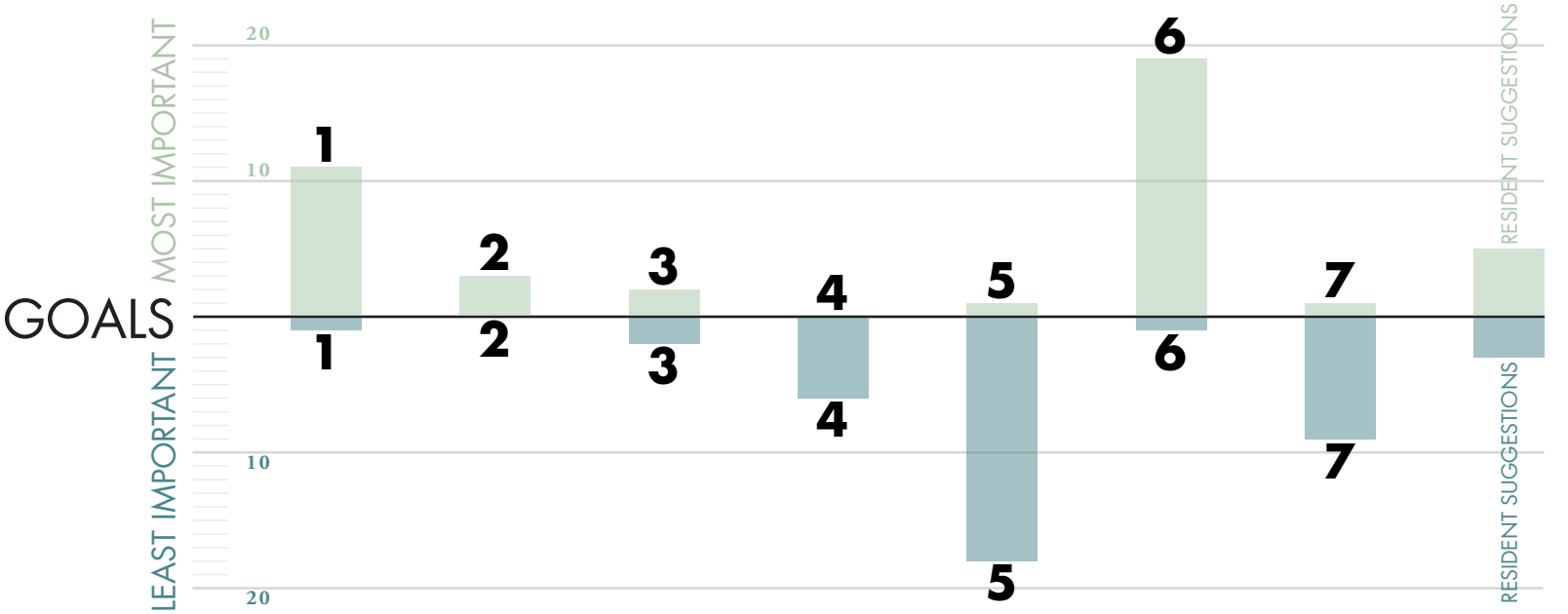
LEAST IMPORTANT GOALS

GOAL 5: Plan for expanded bicycle and pedestrian amenities.
(18 OUT OF 44 RESPONSES)

GOAL 7: Integrate enhancements into existing spaces along the corridor to create active recreational spaces that are flexible and can accommodate multi-season and multi-generational users.
(9 OUT OF 44 RESPONSES)

RESIDENT SUGGESTIONS

- I am a daily biker on the Katy Trail but the idea of a bike path in Hackberry Park seems very ill advised. The park doesn't go anywhere and a bike path is way out of context with the relaxed and natural feel of the park.
- Only preserve water flow and existing structures.
- None of these goals are not important to me because they contain the possible negative encroachment into the naturalness of Hackberry Creek.



* Results for Question 1(Identify Most Important Goals) based on 44 responses to online survey
**Results for Question 2(Identify Least Important Goals) based on 44 responses to online survey
Exhibit 105: Goal Voting Results (online survey)

COMMUNITY WORKSHOP ONLINE SURVEY RESULTS

QUESTION 3: PLEASE TELL US IF THERE ARE ANY PARTICULAR SITES OF FACILITIES CRITICAL TO PRESERVE. PLEASE PROVIDE SPECIFIC INFORMATION THAT WOULD HELP US LOCATE THE SITES OR FACILITIES.

BRIDGES AND TUNNELS

- The stone pedestrian bridges should be preserved and enhanced.
- The foot bridges are so unique and charming!
- Preserve our bridges in the creek area.
- The bridges, walkways and feel that it currently has.
- The storybook bridge linking Drexel Drive to St. John's Drive and Armstrong Elementary.
- Absolutely necessary to preserve the bridge from Drexel Drive to St Johns Drive by Armstrong Elementary, and the bridge just south of HP pool.
- Creek foot bridges and related paths, especially around Tennis courts 1 and 7 near the HP Pool.
- All bridges.
- Bridges.
- Bridges and tunnels.
- The footbridges are critical; it is a bonus that they are aesthetically pleasing and blend in to the environment.
- The bridges and walk are amazing. Please protect and preserve them and upgrade as needed.
- Really important to me to keep the old bridges and steps along the paths. They add to the charm and historic quality of the area. The old stones need to be preserved and use artisans to keep the look consistent.
- Don't add new elements.
- The bridges across the creek.

CREEK AND CORRIDOR

- The creek itself.
- The natural creek.
- Residential sides of the creek stay natural.
- Keep the creek natural...the way it is.
- It should retain an elegant, quaint and personal feel and appearance - in no way feel public, glitzy or commercial. Natural and private places (and Washed out tree roots) are some of my favorite sights.
- My main concern is to not over develop the natural area and beauty of the creek - that is why I love it - because it is an ungroomed and natural area of water and foliage. The idea of adding features or barriers or official paths to it or alongside of it does not appeal to me. I love the open and wild areas of hills and water winding through. Please do not take that special unique feature of our town away.
- Want to preserve the historic bridges, steps and walkways, especially with the stone and rock masonry, and want to preserve the natural beauty of the creek, especially where there are mature tree and exposed rock creek beds, banks and cliffs.
- Love the playground(s) and the sculptures (if those are including in the creek area).

TENNNIS COURTS AND POOL

- I would also ask that tennis facilities be "protected and enhanced" within the Hackberry Creek corridor as defined.
- The HP Swimming Pool.

WATER FLOW AND QUALITY

- Try to check on water that drains into the creek to remove pollutants and improve quality of the water.

BANKS AND FOLIAGE

Eroding banks, sinking banks. Replant trees, foliage and vegetation entire length of repair area of creek.

OTHER

- Outflow areas. Stop further erosion.
- It would be nice if there were steps leading down to the creek that made it easier to access and walk along with kids.

QUESTION 4: PLEASE TELL US IF THERE ARE ANY IMPROVEMENTS OR ENHANCEMENTS THAT YOU BELIEVE NEED TO BE MADE TO THE HACKBERRY CREEK CORRIDOR.

SAFETY ENHANCEMENTS

- Improved safety.
- Unimproved areas, while natural is great, afford safety concerns and could be better utilized.
- Add lighting and pathways for increased visibility and safety.
- I'm mostly concerned about safety and cleanliness. safety for young children, safety as they get older.

WATER FLOWS AND OUTFALLS

- The facade on the Lexington underpass is a real lost opportunity. It is unsightly and out of context with the natural and man-made beauty of the park and the Park Cities. Likewise many of the outfalls are unsightly and could be beautified.
- Some of the pipes that open to drain into the creek could be made a lot more attractive with some rock/ stone masonry similar to the historic bridges.
- Redo large input drains so they are not unsightly. Attention to the water that does not flow at Miramar Avenue and can become stagnant.
- I wish there was a way to keep the creek flowing at a constant pace. It is so stagnant that the mosquitoes have a breeding festival in it.

GENERAL CLEAN UP

- General clean up of overground vegetation.
- The Creek needs to be cleaned & all trash removed -- often there is a lot of paper & plastic that needs to be removed.
- Needs to be cleaned up, control breeding of mosquitoes, coyotes.

LIGHTING

- Improved lighting.
- More Lighting.

FIX EROSION

- Stop erosion of the walls along the sides of the creek.
- Preserve what we have prevent further loss.

LANDSCAPING

- Additional landscaping.

OTHER

- Restoration and repair only.

QUESTION 5: PLEASE PROVIDE AN ADDITIONAL COMMENTS YOU WOULD LIKE TO MAKE ABOUT THE HACKBERRY CREEK MASTER PLAN.

RETAIN NATURAL FEEL

- Keep it natural.
- Important to preserve the natural beauty of the corridor. This aspect is rare in the city and proveds value to HP.
- Maintain it as a natural setting without destroying its natural beauty and contribution to Highland Park.
- Please keep the creek "wild". It is an oasis for all of us, especially for kids who can explore, pretend, and play "Tom Sawyer and Huck Finn" with the illusion of danger amid the reality of safety.
- I hope the creek remains natural looking, without artificial enhancements, and without outdoor fitness apparatus that rarely get used.
- Our entire family loves the "woodsie" feel of our HP's parks and the ability to trounce around in certain wooded areas and underbrush. In this way, the natural beauty of HP's parks is distinguished in a very positive way from the more utilitarian and impersonal feel of the parks in UP.
- It's great to improve functionality, but not at the cost of decreasing the "wilderness" of the creek corridor itself. Our children are in the middle of a big city, and the rustic, wild nature of the creek as it is makes for one of the only ways thay can enjoy unenhances nature on an everyday basis.

PRESERVE AND PROTECT ONLY

- Just preserve and maintain the area. It is a HP gem, as it is.
- I wish for Hackberry Creek to be treated more as a nature preserve maintaining nature without too many man-made additions. Upkeep of current original walkways are sufficient.
- Aside from erosion issues I think it should be left alone.
- Leave it alone other than to control erosion and remove the "art". Keep the unique feature in our town.

ENSURE SAFE AND CLEAN

- Hackberry Creek is a wonderful asset for HP & should be clean & safe for all the residents, especially the kids who frequently play along & in it. Bridges need to be maintained safely & outflows should be renovated to provide healthy elimination of runoff.
- Priorities should be ensuring necessary safety/ infrastructure improvements are done in a manner that are aesthetically appropriate for the natural beauty of the creek.

ADDRESS WATER ISSUES

- Improve/upgrade drainage as needed.
- Looking forward to stopping the damage, and repaining damage done by storms.

BICYCLE INFRASTRUCTURE

- No bike trails or pedestrian paths, please.
- Fuctional pedestrians and bicycle paths are not a priority for me - it would not be ideal for HP to become an extension of Katy Trail. It could lead to too much foot traffic from non-residents. I would not wish for HP to be a destination for non-residents looking for a walking/biking trail. I do not want to see exercise stations installed at existing parks.

OTHER

- Hopefully these plans will include long-term guidelines as a natural by-product of the process of planning the improvements.
- Do not need to bring more people to the creek would erode, potentially damage natural setting very congested area of town with very little parking.
- We need to plant more trees now so that they mature as the existing mature trees everntually die of old age.
- I think what maked it great is that it is really not known to non-residents. Keeping signage and entrances to a minimum will keep it private and avoid turning it into Lakeside park.

HIGHLAND PARK RESIDENT COMMENT

I grew up in Highland Park, and I have fond memories of Hackberry Creek. I spent a lot of my free time as a child playing in Hackberry Creek and its parks. This probably started when I was four or five years old in the late 1940's. Some of my earliest memories are of going to the parks around Hackberry Creek with my mother and sister. My sister got stung by a bug there once. During grade school and maybe even junior high, Hackberry Creek was a place for dam building (the dams never lasted) and looking for crawdads. We rarely found any crawdads, but we looked for them just the same. I can still show you virtually every site on Hackberry Creek where I tried to build a dam. In case you are wondering, dam building just meant moving the rocks that were already there around. When I wasn't dam building or crawdad hunting, wading along the creek was another fun thing to do. Particularly exciting was going through under the town hall and though the tunnel next to the swimming pool. The tunnel next to the swimming pool was particularly scary. In addition to the creek, my friends and I routinely played in the parks along the creek. We played on the swings and the see-saw. We, of course, swam in the pool. We got up early each year so we could get a low tag number for our swim suit tag, and then we would brag about it for days at Armstrong School. When I got older, I took my dog walking in the park, particularly at night. there was never anyone in the park at night, and my dog enjoyed running wild in it. Occasionally, he would sniff out a snake and come running back to me terrified.

I read some of the comments in the local paper about the Hackberry Creek meeting. I would agree with the comment about preserving it as a playground for young children. It would be a shame to "gentrify" it and make it less wild.

Received by Ronnie Brown (Via Email 02/28/2018)

THEREFORE STATEMENTS

To be successful, the Plan requires stakeholders' and residents' input to establish planning priorities, which are used to define specific projects within the Hackberry Creek corridor. In order to categorize relevant issues for consideration by the residents and staff, the design team compiled a list of conditions observed in the field and generated "therefore statements" based on the implications of those conditions. The therefore statements propose objectives that either enhance or diminish the observed condition and implication.

For example:

The design team observed the presence of random pathways worn into the turf and groundcover along the creek. The implication is that residents desire to walk along the creek. Therefore, the Plan must create a system of walkways along the creek. The "therefore statement" generated the consideration of adding sidewalks and planned walkways within the creek corridor for the residents to discuss at the public meeting or respond to via the online survey.

After discussions with Town staff, the therefore statements were separated into two categories according to their particular focus. "Aesthetics and Patterns" focused on issues of architectural style, appearance, and preservation as well as patterns and systems for erosion control. "Programming and Heritage" was focused on issues regarding activities such as access and connectivity, programmed vs. passive recreation, experiential rooms (spaces with particular sensory attributes), maintenance, and planning for future facilities. The design issues and concerns expressed by the residents were cross referenced with the therefore statements to determine the priorities to be addressed in the Plan to best meet the residents' desires for the corridor.

AESTHETICS & PATTERNS

These are issues associated with the material appearance and appropriateness of preservation/restoration efforts within the corridor:

A. Style and vernacular
B. Natural patterns and systems
C. Material appropriateness and authenticity
D. Preservation/restoration/enhancement assessment
E. Development of implementation guidelines (N.I.C.)

Informal discussion with site users indicates that a key component of the Hackberry Creek corridor and the parks is the visual aesthetic of aged masonry features and walls.
1. Therefore, the Plan should prescribe the creation of guidelines to restore and enhance the historic features in a manner that adheres to the original character of the construction.

Much of the existing infrastructure and retaining walls will require replacement, as restoration is not feasible due to the materials being no longer available or unsalvageable. The introduction of new materials and structures will likely be foreign to the existing aesthetic.
2. Therefore, the Plan should prescribe repair guidelines for the selection of materials and setting patterns to integrate maintenance and repairs into the existing visual fabric as harmoniously as possible.

The ability to fully immerse oneself in nature is not possible with undesirable views of traffic, roadway signs, and other reminders of urbanization that are visible from within the Hackberry Creek corridor and the parks.
3. Therefore, the Plan must prescribe appropriate guidelines for landscape screening and screening methods in key locations, dependent upon environmental conditions and critical viewsheds.

The Hackberry Creek corridor and the parks have provided residents with an escape from their suburban neighborhood with a picturesque destination.
4. Therefore, the Plan must seek to preserve the inherent aesthetic qualities of the landscape, facilities, bridges, and other features within the corridor and the parks. Existing and proposed elements should be in harmony within the historic, picturesque design vehicular.

A number of unique natural features such as stone outcroppings, escarpments, natural pools, and distinct root structures have various states of visibility within the Hackberry Creek corridor and the parks.
5. Therefore, the Plan must recognize, catalogue, and celebrate these "unique encounters" as legacy elements and attractions within the context of the planning vision for the creek corridor and the parks.

Site furnishings such as benches, tables, trash cans, and drinking fountains have been added throughout the years, though these elements may respond to a need to maintain economical or consistent supply, they often do not compliment the aesthetic quality of other elements within the creek corridor and parks.
6. Therefore, the Plan must prescribe a program for commercially available site furnishings that enhance and compliment the visual character and aesthetic of the creek corridor and the parks.

PROGRAMMING & HERITAGE

These are issues associated with the corridor's use as an open space and recreational resource:

A. Public access and connectivity
B. Casual and programmed recreation
C. Experiential rooms
D. Unique encounters
E. Facility planning
F. Maintenance

Streets that traverse Hackberry Creek currently function as a physical and visual barrier that inhibits continuity and connectivity to the surrounding community.
1. Therefore, the Plan must address the inclusion and interaction of vehicular crossings within the corridor framework and creek experience, rather than regard them as part of a separate traffic network.

The original plan for Highland Park dedicated 20% of the overall land to public parks and open space.
2.Therefore, the Plan must regard the open space as a public amenity within the context of the Town and local neighborhood, meant for the Town's residents at large, as well as those who live in close proximity.

Hackberry Creek has evolved from a minor drainage creasein a pasture to the scenic greenway it is today, through the establishment of volunteer species, and introduction of native and exotic species by man over the last 100 years. Many of these species, though picturesque, are maintenance-intensive, and detrimental to the habitat of many local species of fauna.

3.Therefore, the Plan must consider future horticultural needs and plant material introductions, recommending landscape materials and practices which are appropriately suited to the environment, utilize less irrigation, and require less overall maintenance.

Hackberry Creek is a unique habitat to many types of wildlife within the urban context of Highland Park. Its nature contributes to the unique visual quality and experience of the place.
4.Therefore, the Plan must discourage the removal of and the impact on existing wildlife habitat and encourage preservation and restoration of habitat where possible within the corridor.

The current maintenance appears focused on creating the appearance of an urban park. Some areas appear to be maintained less frequently, likely due to limitations of equipment and environmental conditions.
5. Therefore, the Plan must be inclusive of the staff to create a maintenance plan that is conservative, purposeful, and focuses on the Plan's vison and purpose.

The presence of unimproved soft trails throughout the corridor and around the perimeter of the site indicates that many visitors enjoy walking through areas where they can interact with nature.
6.Therefore, the Plan must create a hierarchal system of improved and unimproved pedestrian paths through the creek corridor and the parks which features both accessible hard trails and potentially inaccessible soft or historic pathways.

The existing residential sidewalks on the opposite side of the street from the creek and parks are integral to accommodating current pedestrian circulation to and from Hackberry Creek.
7.Therefore, the Plan must include these sidewalks as part of the Hackberry Creek experience, capitalizing on their connectivity to the existing public sidewalks at key circulation nodes.

Other than street parking, there are only 22 dedicated parking spaces near Hackberry Creek along one side of Lexington Avenue between Davis Park and Prather Park. As the demands of each park change over time, more or less dedicated parking may be desired.
8.Therefore, the Plan must consider current and future parking needs and policies responding to user demands and adjacent residents' tolerance.

The existing layout and positioning of some of the recreational structures, such as tennis courts and pool facilities, preclude views and interaction with the surrounding landscape and creek corridor by visitors not engaged in those activities.
9.Therefore, the Plan should attempt to locate recreational amenities in areas appropriate to the activity, with the intent to create more desirable relationships and connections to the landscape for all corridor users.

As recreational needs have changed for the Town's residents, the current number and capabilities of existing facilities do not adequately accommodate the community needs throughout the year.
10. Therefore, the Plan must be inclusive of the staff's recommendations to include future amendments and enhancements to existing recreational facilities within the corridor and parks to meet the programming needs of the Town's residents.

The existing pool facilities are in need of upgrades to serve the Town's recreational needs. The facilities are adjacent to the creek, but have little visual or experiential interaction with the surrounding environment and creek corridor.
11. Therefore, the Plan must prescribe and recommend a detailed analysis of the pool and its facilities to accommodate renovations that enhance the quality of the pool users' experience, and that of park users outside of the pool, to better meet the year-round programming and usability needs of the Town.

There are numerous pieces of dedicated and commemorative artwork within the Hackberry Creek corridor and the parks. This artwork has been accumulated and placed over time without the benefit of a comprehensive art placement program and vision.
12. Therefore, the Plan must inventory existing artwork locations, determine their appropriateness to the holistic vision for the corridor, and prescribe general locations for those pieces, as well as opportunities to place other works which may be acquired in the future.

Within the creek corridor and the parks, there are numerous benches, plaques, and hardscape improvements that have been dedicated as memorial or commemorative elements. These pieces and corresponding signage have aged and do not appear to correspond to a comprehensive guideline or consistency.
13. Therefore, the Plan must recognize the desire of residents to place and/or remove commemorative elements within the creek corridor and the parks and prescribe general locations for those elements, as well as guidelines for appropriate materials, construction, and placement within the context of the corridor and parks.

Environmental stewardship and sustainability are issues at the forefront of the public's awareness and concern for the natural environment. The corridor and the parks are significant green spaces within the Town, providing visitors and residents with a unique 'natural' environmental experience and legacy within minutes from their suburban homes.
14. Therefore, the Plan must incorporate environmentally sustainable enhancements within the corridor and the parks and prescribe appropriate locations to collect refuse and recyclable materials.

HIGHLAND PARK CONTEXT

The Town of Highland Park covers an area of approximately 2.2 square miles which is bounded by the KATY Trail (formerly the old Missouri-Kansas-Texas Railroad, which was known as MKT or the Katy rail line) on the east, and Westside Drive on the west. The main corridors through the Town are Mockingbird Lane on the north side, Armstrong Parkway on the west, and Preston Road centrally. The Town is also bisected by two primary green corridors: The Turtle Creek corridor and the Hackberry Creek corridor. These creeks converge at Connor Lake on the south side of the Town. These creek corridors heavily influenced the Town's planning and street layout.

Many of the parks and open spaces in the Town commemorate Town fathers and benefactors. These spaces serve many of the residents' diverse active recreational needs, allowing the Hackberry Creek corridor to remain in a predominately natural condition. Except for the Town Swimming Pool and Tennis Courts #1, #2, and #7, the Town should conserve the corridor and enhance the unique architectural and natural features, preserving them for passive recreation activities only.

Exhibit 106: Highland Park Boundary Map

Exhibit 107: Highland Park Greenspace Map

Exhibit 108: Hackberry Creek Watershed

HACKBERRY CREEK WATERSHED

The Hackberry Creek Watershed discharges into Highland Park just south of Byron Avenue. At Beverly Drive, the watershed is nearly 0.5 square miles and grows to 0.87 square miles near its discharge into Connor Lake. The following table shows the rainfall totals and FEMA flow rates for various frequency storms. Rainfall totals range from 5.8 inches in 24 hours to 13.7 inches in 24 hours. As you move down in the watershed, the flows increase due to the increase in contributing area. For instance, the 1% annual chance (100-year) flood increases from 1,020 cubic feet per second (cfs) near Byron Avenue to 1,670 cfs below Lexington Avenue. One thousand cfs is enough flow to fill an Olympic swimming pool every 90 seconds.

SUMMARY OF DRAINAGE DISCHARGE				
Return Period	10-year (10% Annual Chance)	50-year (2% Annual Chance)	100-year (1% Annual Chance)	500-year (0.20% Annual Chance)
Rainfall (24-hour Total)	5.8″	8.4″	9.6″	13.7″

STREAM 6A1	DRAINAGE AREA (sq. mile)	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.20% Annual Chance
195 feet below Lexington Avenue	0.87	1,200	1,560	1,670	2,100
275 feet below Euclid Avenue	0.75	1,040	1,330	1,420	1,790
Above Beverly Drive	0.48	850	1,200	1,300	1,800
550 feet above Beverly Drive	0.37	670	940	1,020	1,380

**Directly above the confluence with Turtle Creek, the Hackberry Creek Watershed is approx. 1.05 sq miles (672 acres).*

Exhibit 109: Discharge Summary

Exhibit 110: Beverly Drive North Rain Event

Exhibit 111: Beverly Drive South Rain Event

Exhibit 112: Hackberry Creek Park South Outfall

Exhibit 113: Miramar Avenue Rain Event

Exhibit 114: Lexington Avenue North Rain Event

Exhibit 115: Armstrong Avenue Outfall

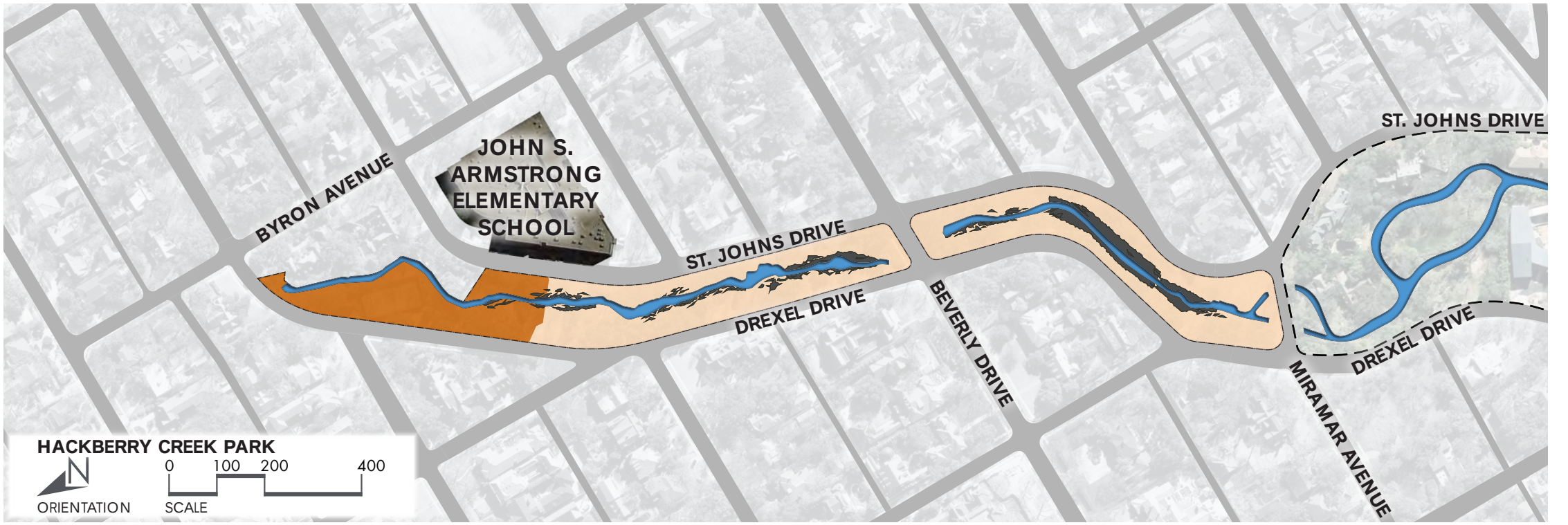


Exhibit 116: Hackberry Creek Park Soil Map

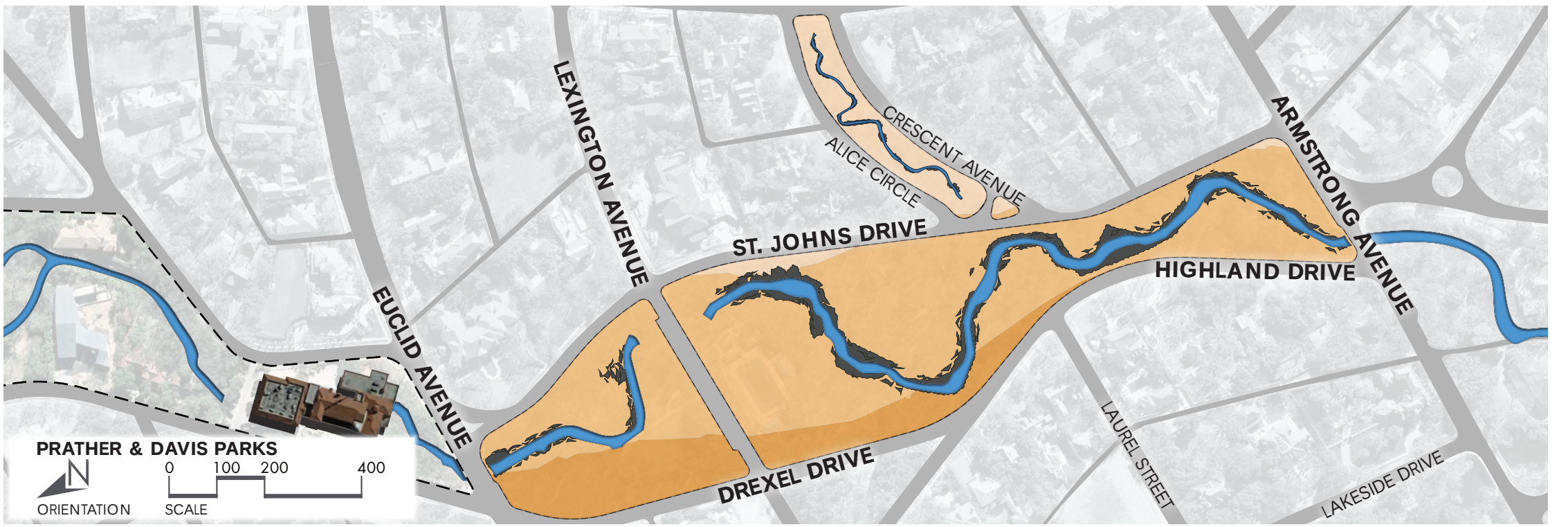


Exhibit 117: Prather and Davis Park Soil Map

SOILS

The soils are comprised of clays and silty clays, with shale and surface limestone being exposed along the creek and the channel bottom. These are typical alluvial soils for this area and will support a variety of riparian plant species in the riparian and upland mesic areas.

- SILTY CLAY (0" TO 32" DEPTH)
  BEDROCK (32" TO 40" DEPTH)
  Suitable for construction
- SILTY CLAY (0" TO 53" DEPTH)
  SILTY CLAY LOAM (53" TO 80" DEPTH)
  Suitable for construction
- SILTY CLAY (0" TO 80" DEPTH)
  Suitable for construction
- CLAY (0" TO 78" DEPTH)
  Suitable for construction Shrink-swell movements & cracking should be considered
- ROCK OUTCROPPING

*Data aquired from USDA Web Soil Survey

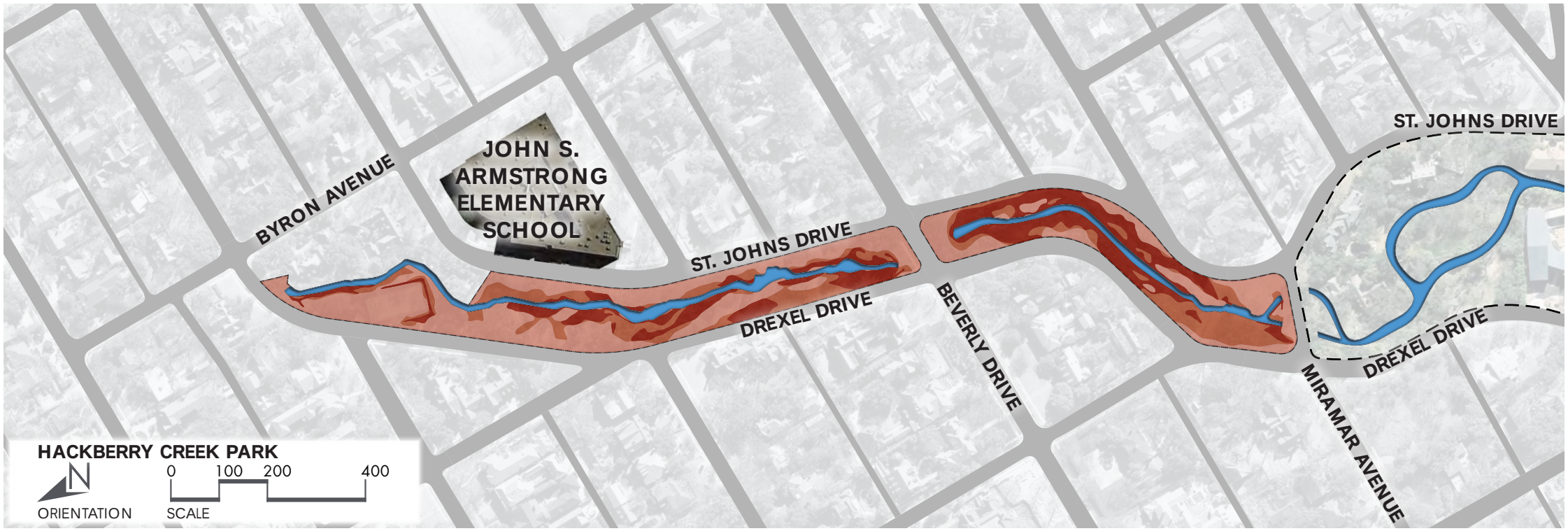


Exhibit 118: Hackberry Creek Park Slope Map

Exhibit 119: Prather and Davis Park Slope Map

SLOPE

Slope is the representation of grade, or steepness of the ground plane, generally expressed as a percentage based on the number of feet of vertical rise within a given horizontal distance. Slope percentages tell us where soils are the most stable and suitable for pathways or other improvements.

- <5% REQUIRES MINIMAL IMPACT TO CREATE ACCESSIBLE PATH
- 5-8.33% REQUIRES MODERATE IMPACT TO CREATE ACCESSIBLE PATH
- >8.33% REQUIRES HEAVY IMPACT TO CREATE ACCESSIBLE PATH

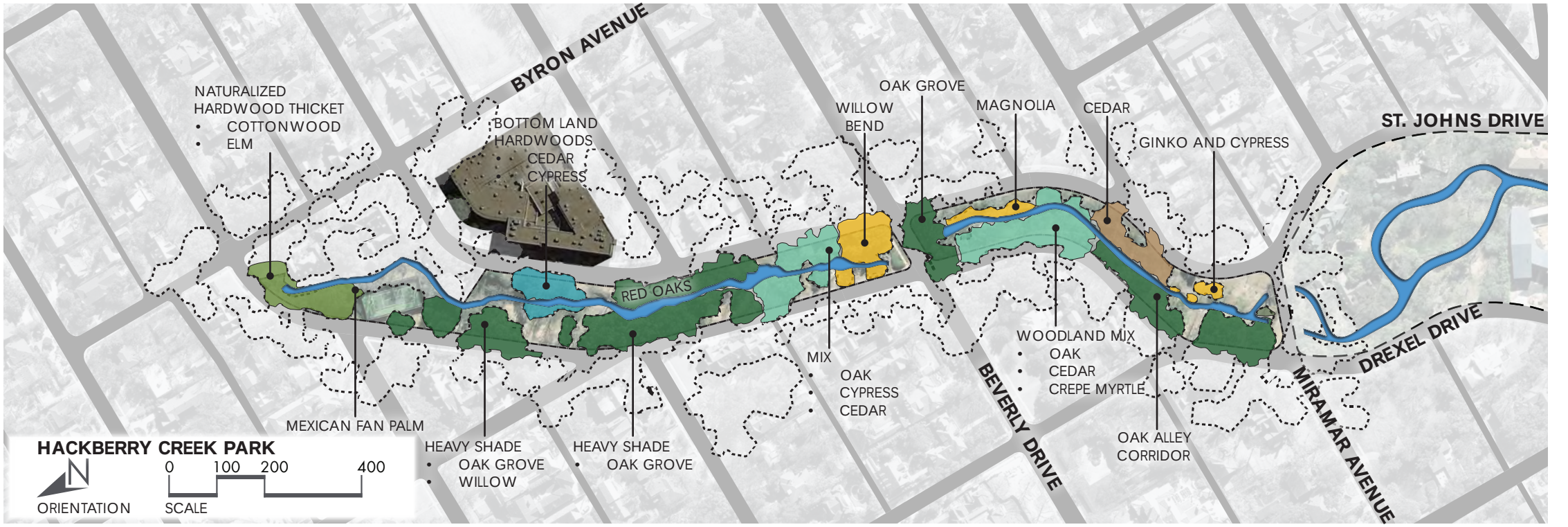


Exhibit 120: Hackberry Creek Park Tree Canopy Map

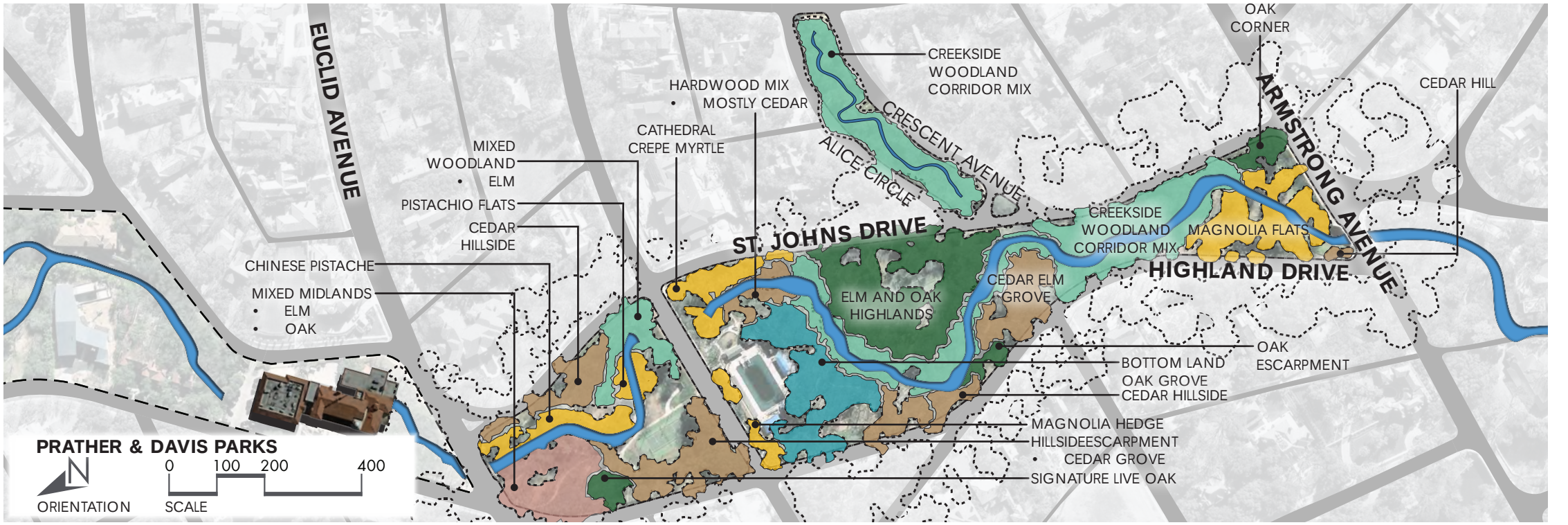


Exhibit 121: Prather and Davis Park Tree Canopy Map

TREE CANOPY

The overhead tree canopy is a visual asset and is critical to the aesthetic character of the corridor. The tree canopy affects what vegetation grows beneath, contributing to the stability of the soil and the creek bank. Cataloging the general types and locations of trees contributes to the landscape recommendations as described on pages 22-24.

CANOPY BEYOND SITE

WOODLAND MIX

NATURALIZED HARDWOOD THICKET

CEDAR MIX*

SIGNATURE SPECIES GROVE*

UPLAND MIX

HEAVY SHADE OAK GROVE*

LOWLAND HARDWOODS

*NAMED SPECIES INDICATES THE PREDOMINANT SPECIMEN IN EACH AREA. DIFFERING SPECIES OF MINIMAL QUANTITY WITHIN AREAS VARIES.

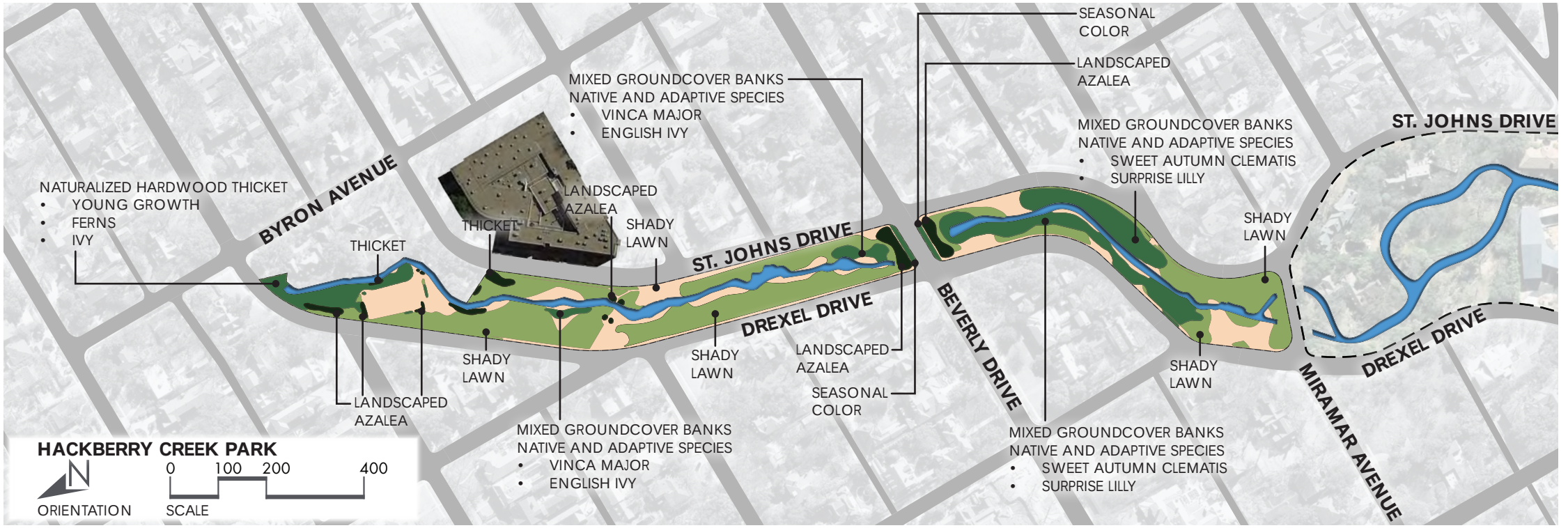


Exhibit 122: Hackberry Creek Park Understory Vegetation Map

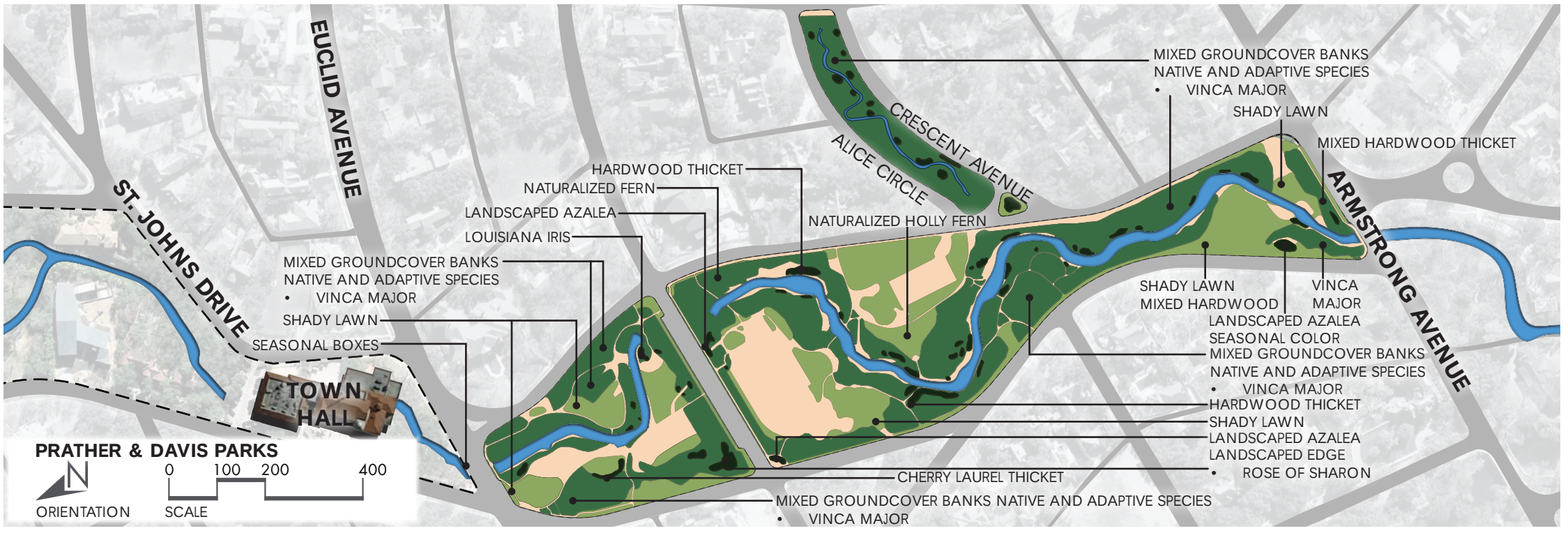


Exhibit 123: Prather and Davis Park Understory Vegetation Map

UNDERSTORY VEGETATION

The vegetation helps define outdoor spaces and stabilizes the soil with its root structure. This map delineates the general types of vegetation in the creek corridor and its corresponding height. In assessing vegetation height, it is important to understand the visual accessibility of the site, as well as which areas may need to be preserved or enhanced as buffers. Documenting the current types and locations of the vegetation provides an archival record for future reference, as well as influencing the landscape recommendations as described on pages 22-24.

UNVEGETATED

TURF

GROUNDCOVER <2'

VEGETATION 2' - 6'

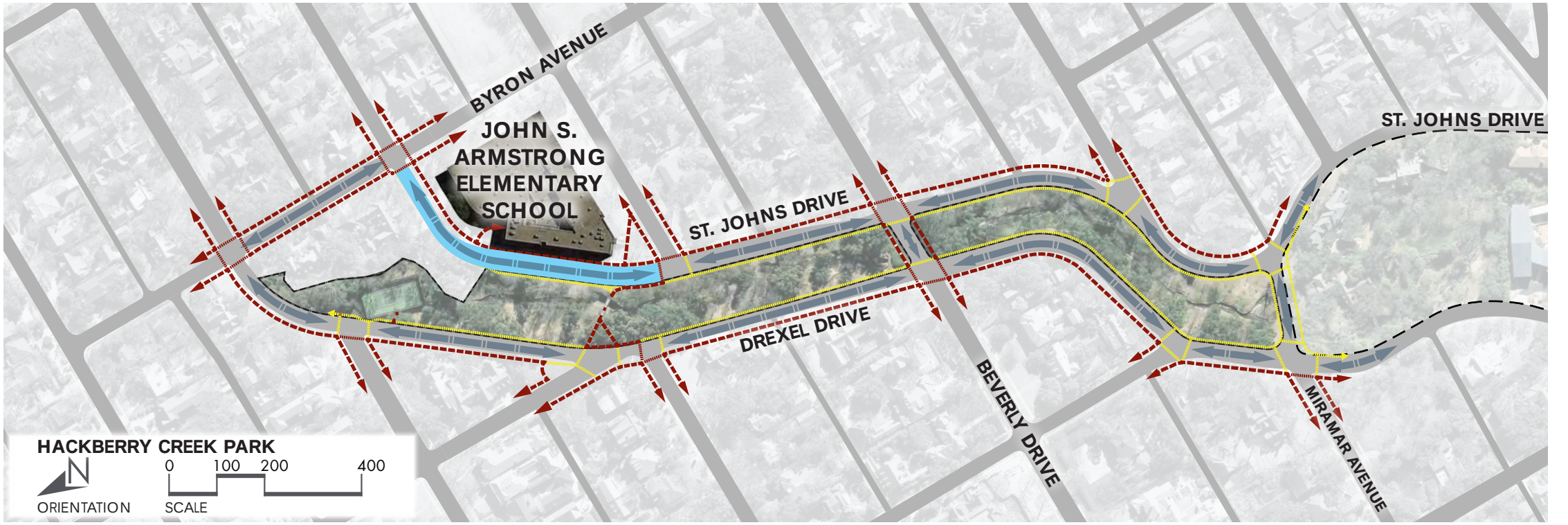


Exhibit 124: Hackberry Creek Park Circulation Map

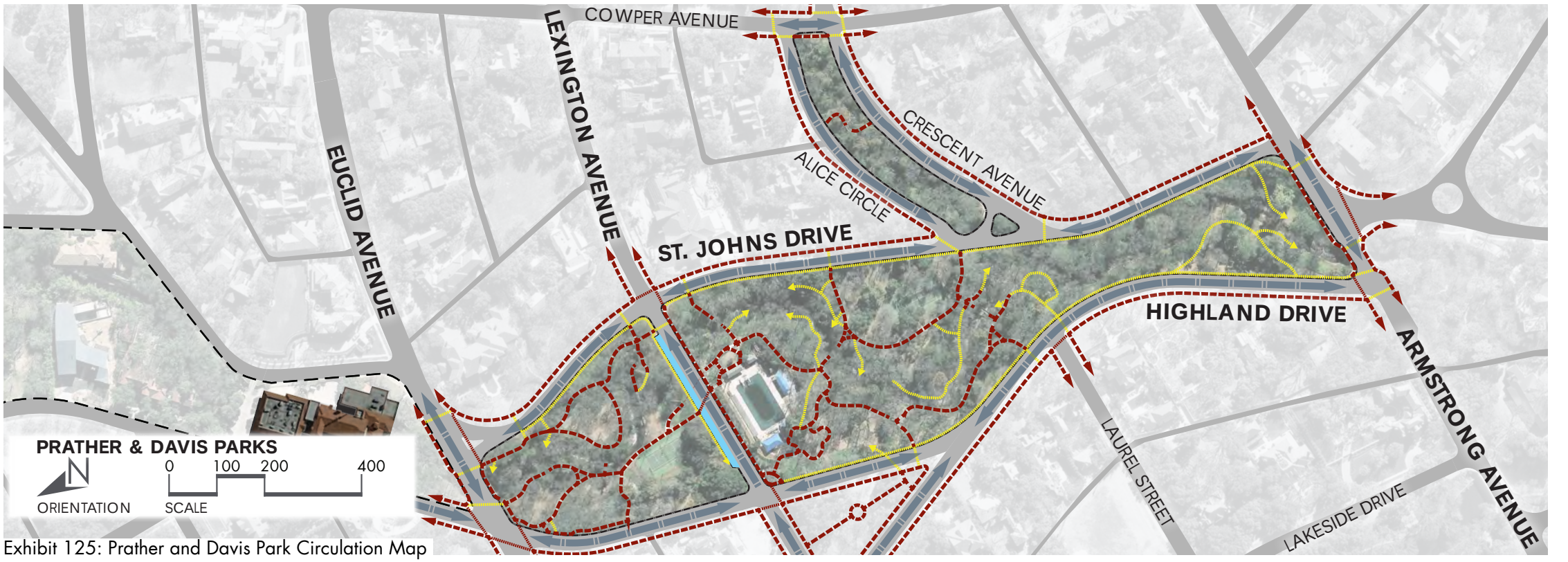


Exhibit 125: Prather and Davis Park Circulation Map

CIRCULATION

Circulation within the corridor is shared by pedestrians and vehicles. Sidewalks are present on the residential sides of Drexel Drive and St Johns Drive, while vehicles dominate the streets. Between these streets, the sidewalks meander and connect to soft paths. Though not code compliant, the soft paths evolve organically and are valuable in that they enhance the interaction with nature, providing an experience seemingly disconnected from the surrounding urban environment.

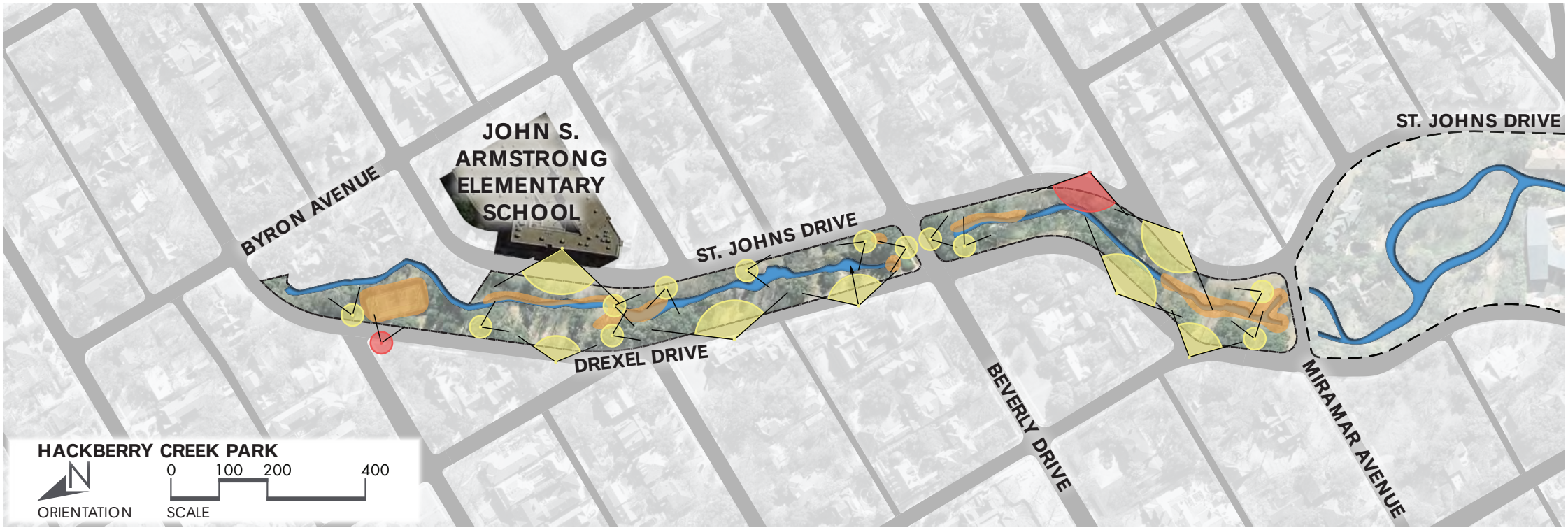


Exhibit 126: Hackberry Creek Park Views Map

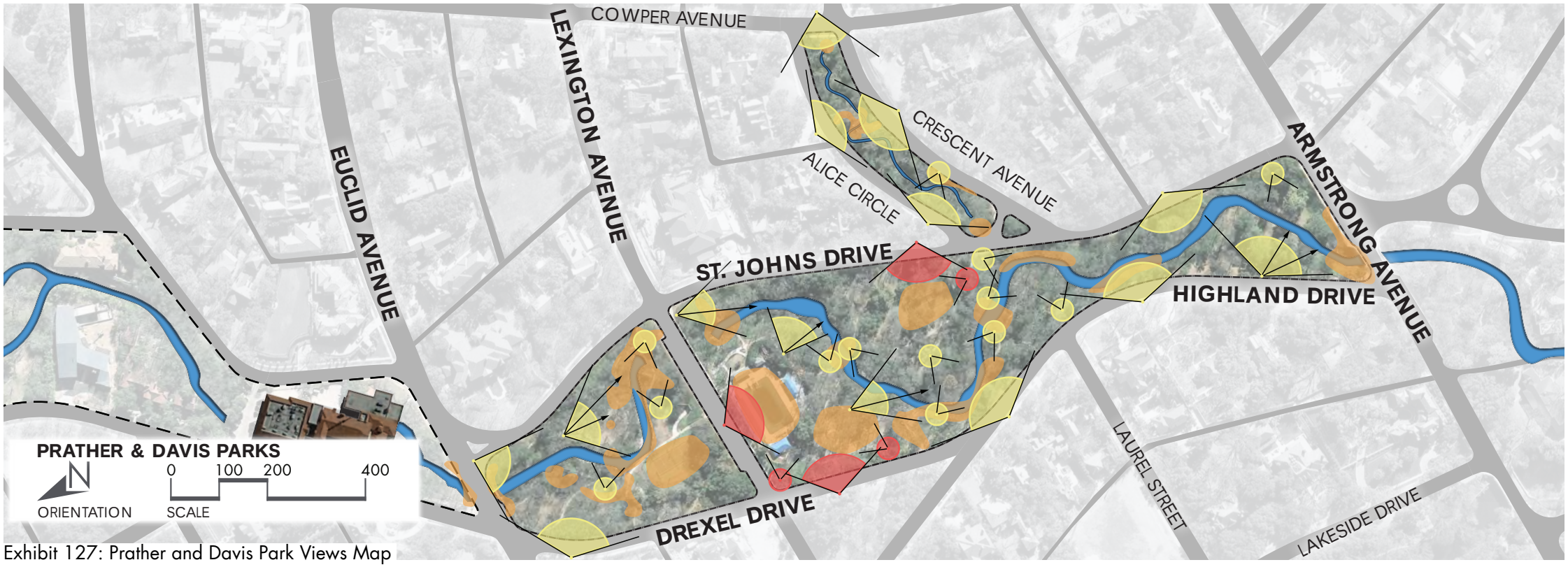
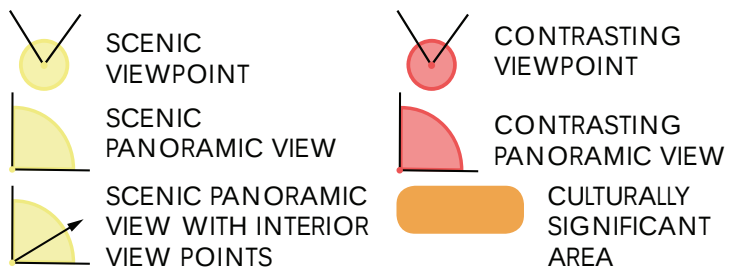


Exhibit 127: Prather and Davis Park Views Map

VIEWS OF PARK

Views have always been important into the corridor. Most of the surrounding residences are oriented toward the corridor, responding to the proximal scenic views, some from the upper floors only. Awareness of these views is imperative because insensitive planning and construction will negatively impact this experience. The ability to be fully immersed in nature is not possible with views of traffic, roadway signs, and other visual reminders of utilities and urbanization. As these elements are disparate from the natural character of the park, views which focus on them are classified as “contrasting.”



CREEK BED & BANKS

Concerns about erosion and appropriate corrective measures are some of the main drivers of the Plan; the condition of the creek bank and bottom is an important consideration in determining the most suitable methods for preservation and restoration. As there are a variety of creek bank and bottom conditions, the creek bank and bottom assessment is a generalized inventory of existing conditions. There are two general types of creek banks; man-made and natural. Within the man-made classification, poured in place concrete or shotcrete (Category A1) and various types of masonry are described (Categories A2-A5). The Natural bank group designates two types; exposed bedrock (Category B) and soft bank (Category C). The soft bank category is used to describe a condition where the bank is comprised mainly of soil, either exposed or covered in vegetation. There are six categories of creek bottom, numbered 1-6, with a corresponding typology name and their distinguishing characteristics.

The soft bank areas (green) represent the best opportunity to implement "soft" solutions for erosion control, such as vegetation or landscaped terraces. Exposed bedrock areas may be terraced, and these areas tend to be naturally picturesque. Some areas of existing walls (brown, red, orange, etc.) may be removed in favor of the "soft" areas described above as well. Refer to page 70 for a map of proposed solutions.

CREEK BANKS			
	CATEGORY	TYPOLOGY NAME	STRUCTURAL CHARACTERISTICS
MAN-MADE	A1	**Poured-in-Place Sheer Wall**	Concrete or Mixed Media
	A2	**Stacked Limestone Sheer Wall**	Pattern: Random Rectangular, Coursed, or Random Irregular
	A3	**Stacked Brownstone Sheer Wall**	Pattern: Random Rectangular, Coursed, or Random Irregular
	A4	**Stacked Repurposed Concrete Sheer Wall**	Pattern: Random Rectangular, Coursed, or Random Irregular
	A5	**Brick Veneer Sheer Wall**	None
NATURAL	B	**Rock Outcropping**	Native Austin Chalk Heights range from 1' to 25' + Stone strata with usually sheer vertical faces other than erosive areas.
	C	**Soft Band Edge**	Creek bank slopes vary from below 3:1 to over 1:1. Bedrock and outcroppings are occasionally visible. Vegetation ranges from minimal groundcover to fully vegetated banks with groundcover, trees, and vines.

Exhibit 128: Creek Banks

CREEK BOTTOM		
CATEGORY	TYPOLOGY NAME	STRUCTURAL CHARACTERISTICS
1	**Bed Rock**	Hard stone surface, little variation in elevation, little to no vegetation
2	**Fractured Rock**	Hard surface, some fracturing, structurally firm and solid.
3	**Conglomerate**	Hard surface, with some softer flexible areas characterized by small boulders, gravel, and course pebble/sand mixture
4	**Blended**	Characteristics of 1, 2, and 3 above, with remnants of fallen walls, or concrete patches in the bottom of the creek.
5	**Modified**	Areas of the creek bottom which have been stabilized with concrete or other man-made material.
6	**Gravel and Fines**	The bottom is composed (or layered) predominantly with sediment, sand, or gravel less than 1" in diameter.

Exhibit 129: Creek Bottom

Exhibit 130: Existing Creek Bank Category A2

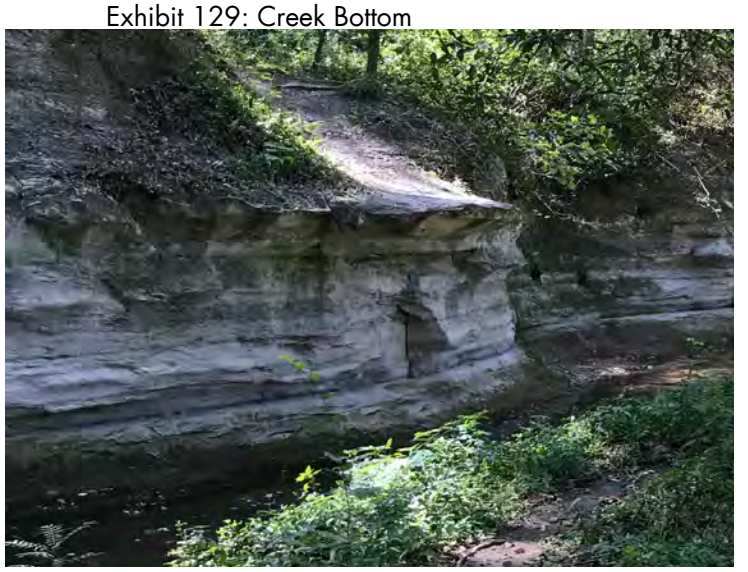


Exhibit 131: Existing Creek Bank Category B

Exhibit 132: Existing Creek Bank Category C

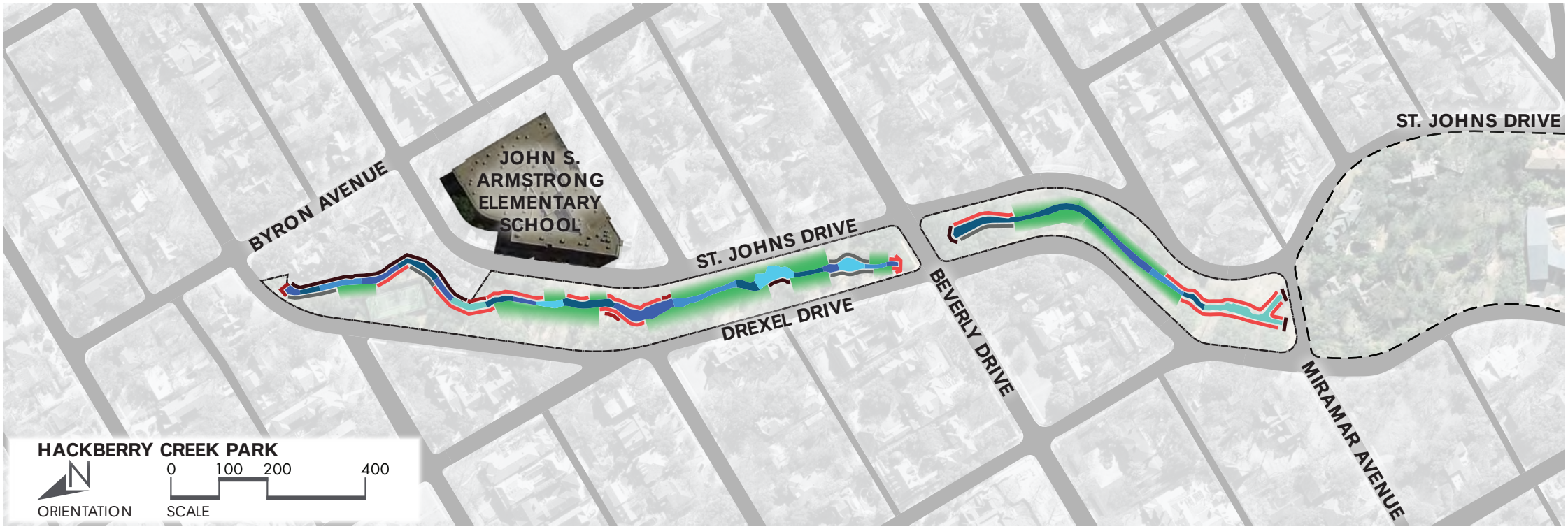


Exhibit 133: Hackberry Creek Park Creek Bed & Bank Map

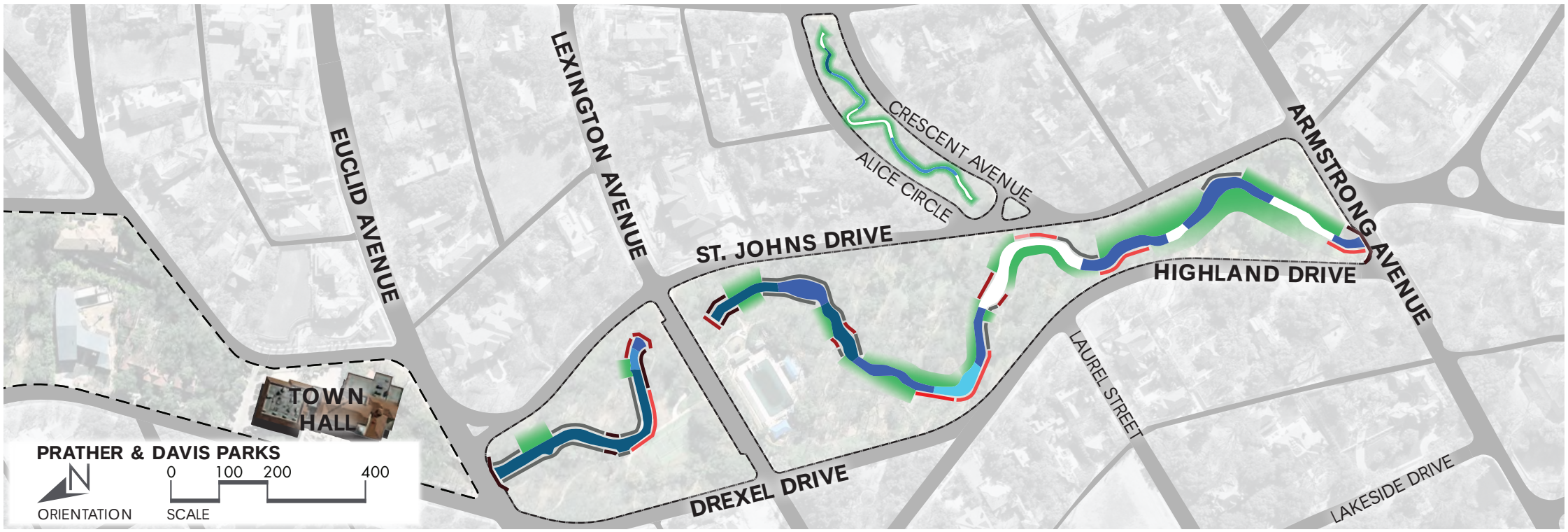


Exhibit 134: Prather and Davis Park Creek Bed & Bank Map

CREEK BED

- BED ROCK
- FRACTURED ROCK
- CONGLOMERATE
- BLENDED
- MODIFIED
- GRAVEL & FINES

CREEK BANK

- POURED IN PLACE
- STACKED LIMESTONE
- STACKED BROWNSTONE
- REPURPOSED CONCRETE
- BRICK VENEER
- ROCK OUTCROPPING
- SOFT BANK EDGE

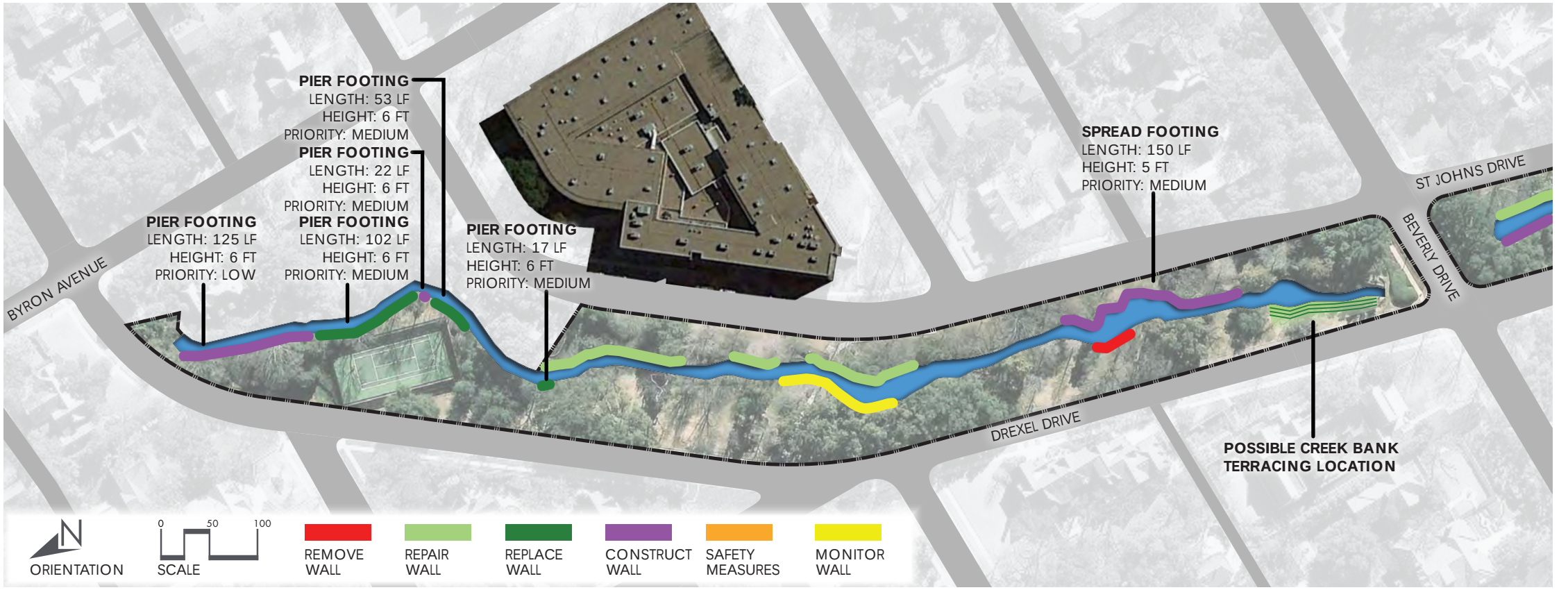


Exhibit 135: Hackberry Creek Park North Channel Walls

CHANNEL WALL RECOMMENDATIONS

The proposed wall sections were developed as conceptual details for the various likely wall scenarios along Hackberry Creek. These concepts are based on typical soil and rock parameters in the area and available Light Detection and Ranging topographic data. Actual design will require site specific survey, geotechnical, and other engineering considerations. These wall types were chosen because they are commonly the most cost-effective designs for the given height and clearances at each location; in particular, the clearance behind the wall to the nearest infrastructure (road, utilities, etc.), the nearest significant tree, or other environmental feature. Short clearances would eliminate a wall type requiring significant excavation behind the wall. Depth to rock, which is generally fairly shallow in this area, can also impact the feasibility of piers or tie-backs.

All of the wall concepts were designed to have a footing below the existing grade to account for future channel down cutting that has exposed the footings of most of the existing walls along Hackberry Creek. An undermined toe can cause wall failure. These wall concepts were also chosen to allow for many decorative facing options.

WALL PRIORITY

A. High Priority
Walls are expected to fail in a short time and would impact infrastructure and public safety. Failure could range from movement to collapse. These walls need to be considered for significant repairs or replacement.

B. Medium Priority
There are two conditions in this category:
1. Wall is expected to fail in a short time period, but not impact infrastructure and public safety.
2. Wall still has some life expectancy, but failure would impact infrastructure and public safety.

C. Low Priority
Walls have considerable life expectancy remaining and failure is not likely to result in damage to infrastructure and public safety. They do require maintenance and repairs to extend their life, but do not require replacement, unless it makes sense to do so in coordination with other efforts.

RECOMMENDED WALL TYPES

Wall Type A. Spread Footing
Spread footing walls use the soil weight on a horizontal footing as the main resistance to over turning forces. A vertical key into the rock or other substrate helps resist sliding. These wall types typically require significant excavation behind the walls, which limits their use in areas where there is little clearance to infrastructure or trees. The size of the footing increases as the wall height increases, which limits their cost-effective height to about 8'. Spread footing walls were chosen for the shorter walls in more open areas that were not near roads, other infrastructure, or heavily treed areas that are to be preserved.

Wall Type B. Concrete Wall with Tie-Backs
Tie-backs are used in this wall type to anchor the wall to the bedrock to resist both overturning and sliding forces. These wall types require minimal excavation behind the wall and can be built very tall. This allows their use where the wall has minimal clearance to nearby infrastructure or trees that are to be preserved. Due to the cost of the

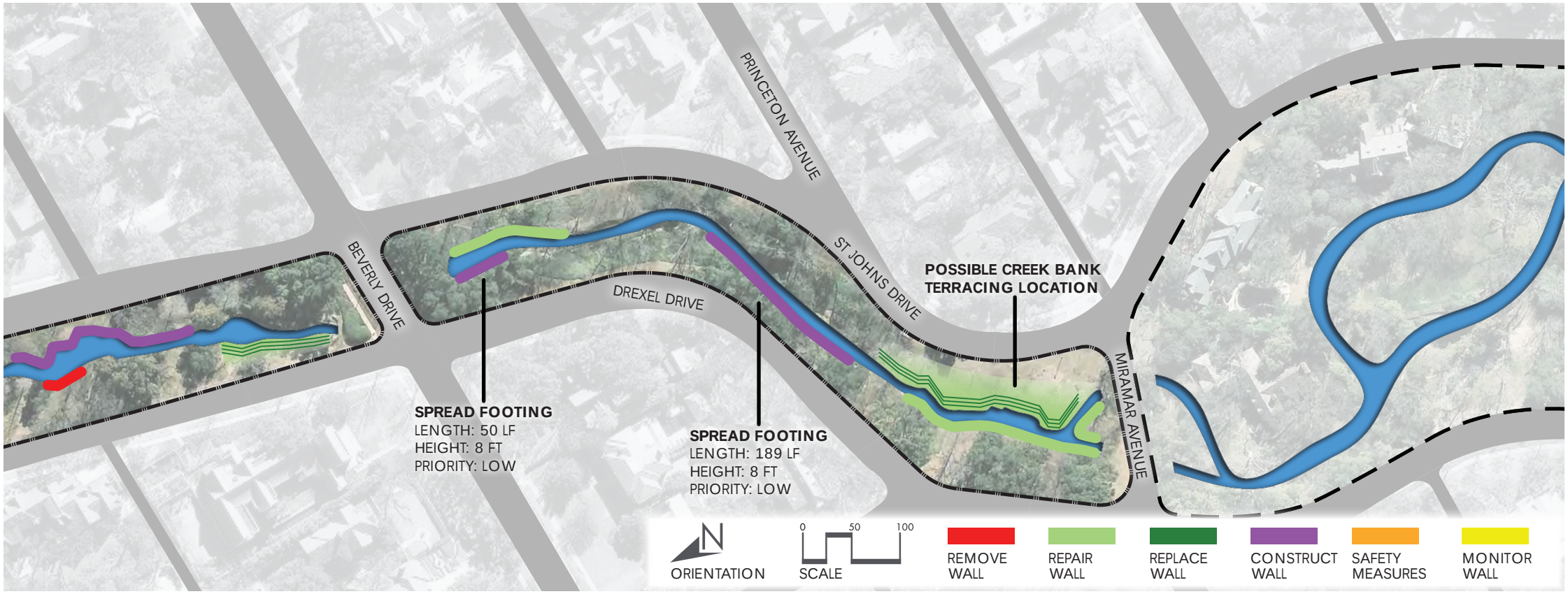


Exhibit 136: Hackberry Creek Park South Channel Walls

tie-backs, the walls are typically only cost-effective for areas with shallow rock, which is true for most of Hackberry Creek. Care has to be taken to ensure that the tie-backs do not impact utilities or nearby building foundations. Tie-backs typically require a specialty contractor/subcontractor, a number of which are available in the Dallas-Fort Worth area. Tie-back walls were generally chosen for taller walls near infrastructure.

Wall Type C. Drilled Pier Wall

Drilled pier walls use piers into the rock subgrade to resist overturning and sliding forces. These wall types require minimal excavation behind the wall, allowing their use when minimal clearance is available to nearby infrastructure or trees that are to be preserved. The pier size and depth increases as the wall height increases; therefore, the wall height is typically limited to about 12 feet in this area to remain cost effective. Piered walls were chosen for locations mid-level heights and areas with minimal clearance behind the wall.

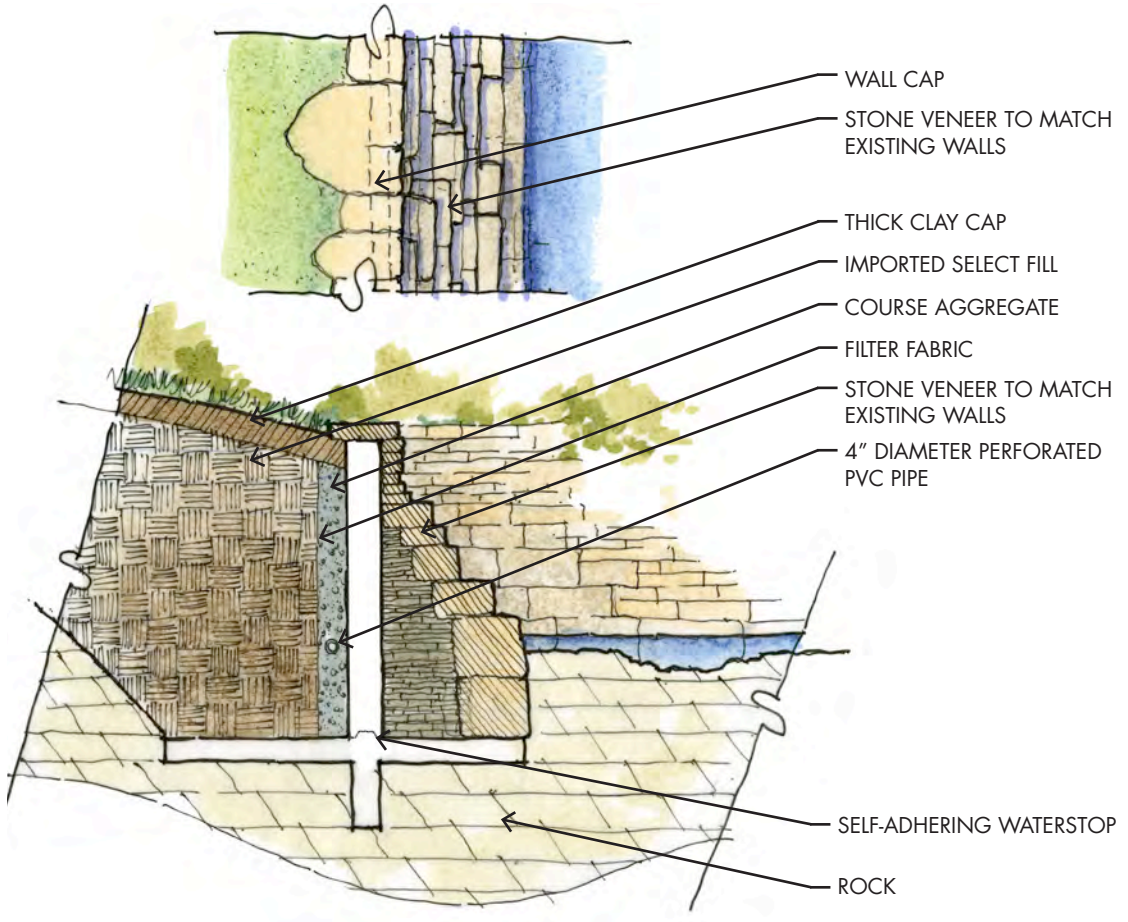


Exhibit 137: Wall Type A. Spread Footing

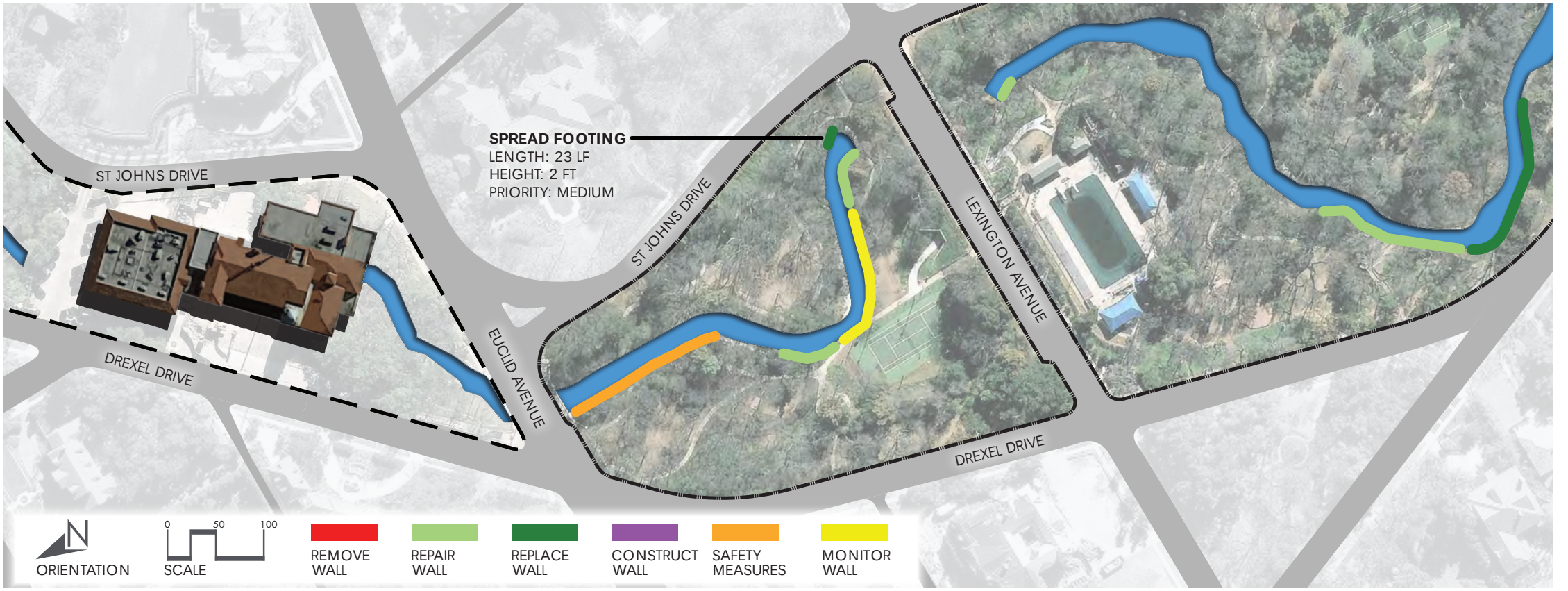


Exhibit 138: Prather Park Channel Walls

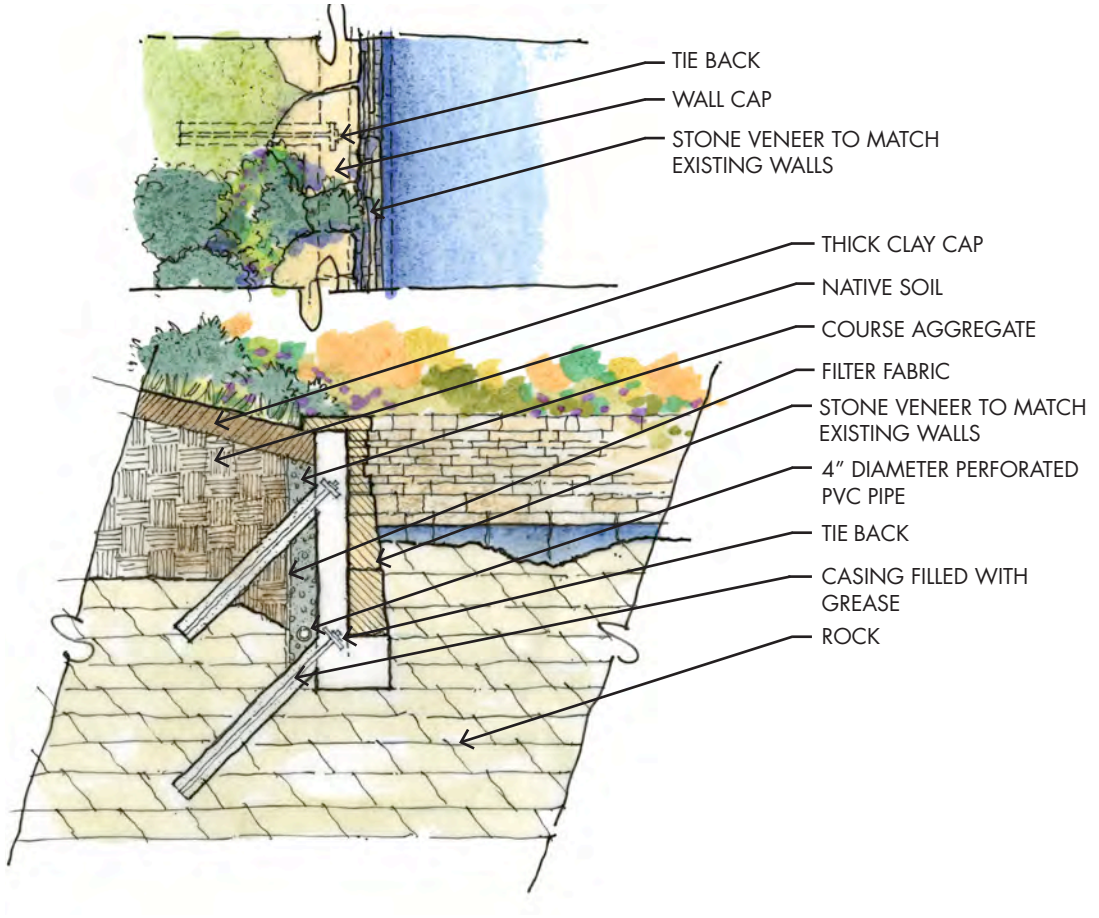


Exhibit 139: Wall Type B. Concrete Wall with Tie-Backs

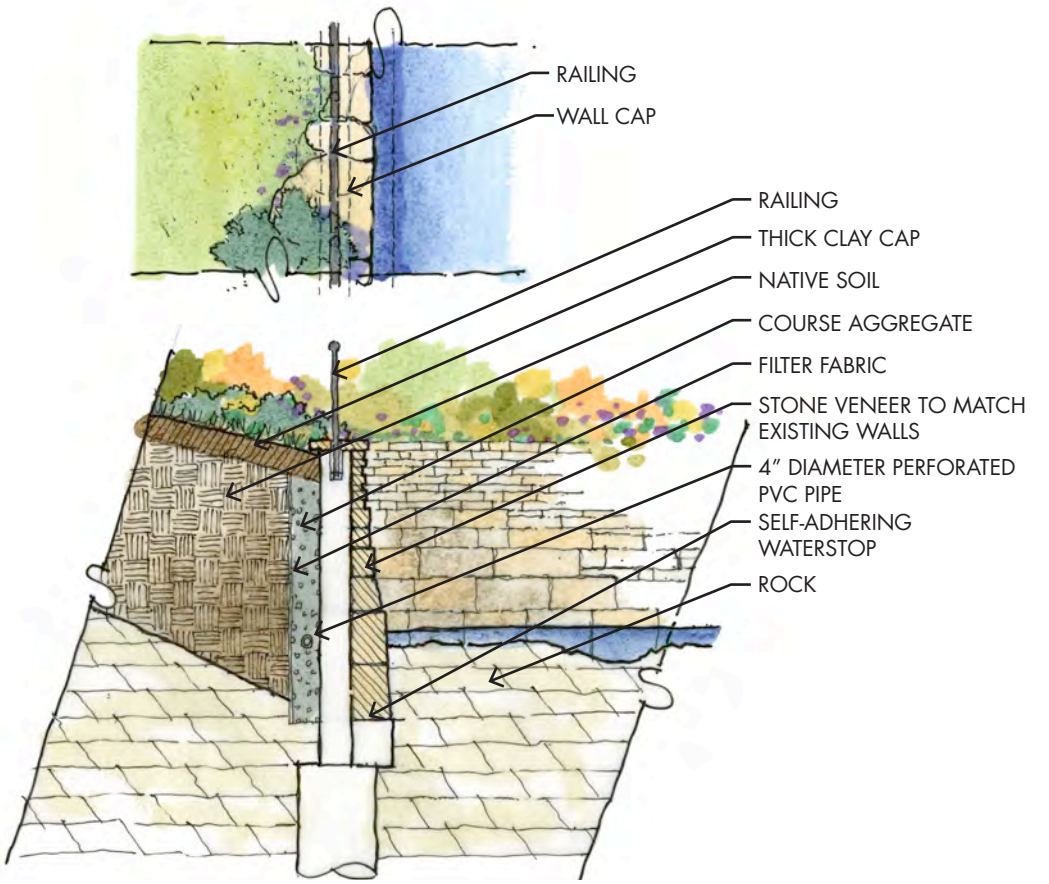


Exhibit 140: Wall Type C. Drilled Pier Wall

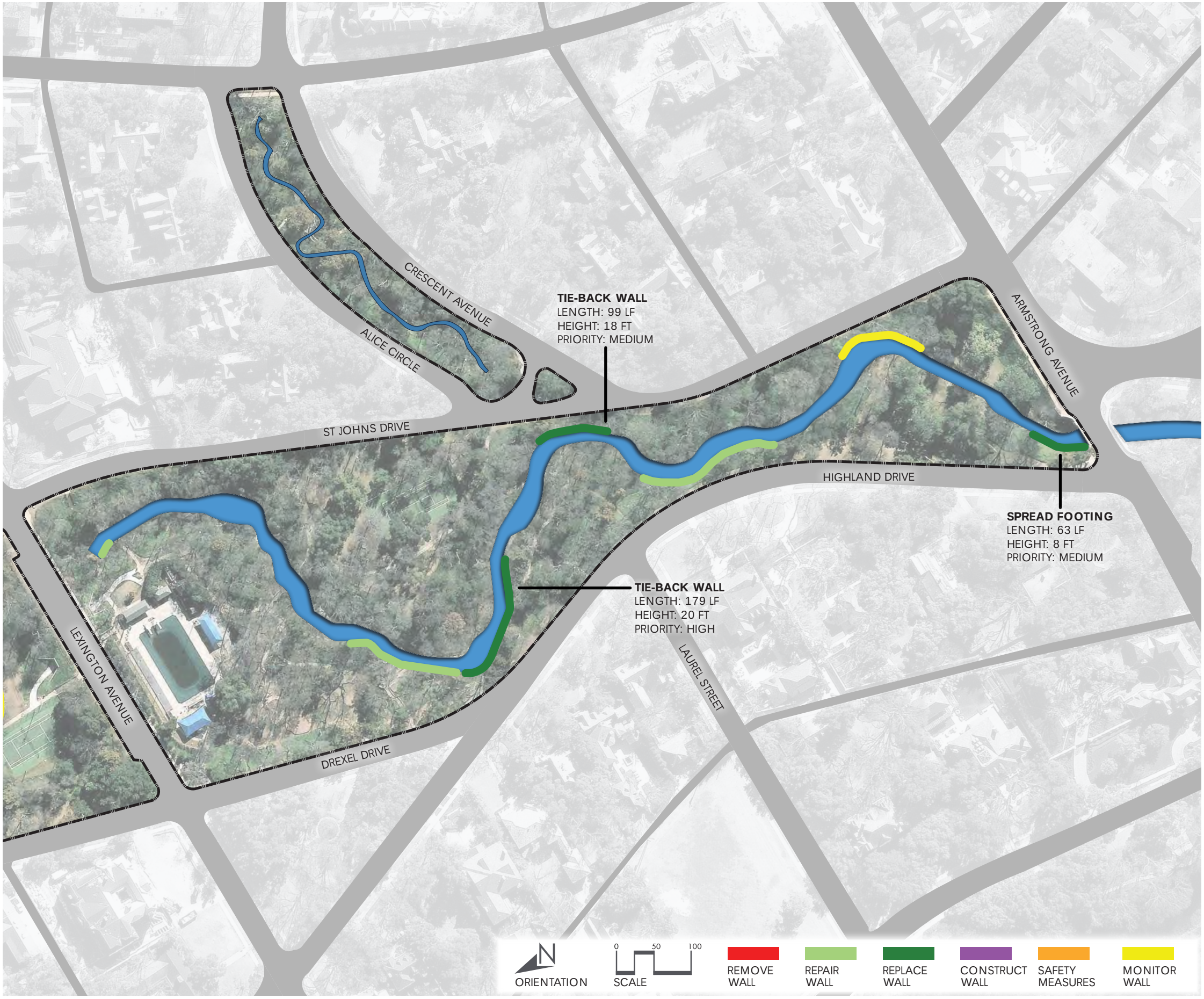


Exhibit 141: Davis Park Channel Walls

TEXAS DEPARTMENT OF TRANSPORATION CODING

The pedestrian bridges and vehicular crossings in the Hackberry Creek study area were rated using the guidelines described in the Texas Department of Transportation's Coding Guide. The Coding Guide is derived from the Federal Highway Administration (FHWA) Guide prepared for use by States, Federal, and other agencies to record elements that comprise the National Bridge Inventory database. Though the majority of the bridges inspected for this Study are not included in the National Bridge Inventory, the Guide was used as a tool to provide objective ratings, and to allow for uniformity with future bridge inspections. Among many things, the Guide provides codes that describe the bridge dimensions, structure type, structure material, and most importantly, the physical condition.

For bridges, the deck, superstructure, and substructure (Items 58, 59, and 60, respectively) are individually coded on general condition ratings described in the Coding Guide. They range from a scale of 0 ("Failed condition"), to 9 ("Excellent condition"). Roadway approach (Item 65) is also coded based on the same descriptors. As an example, the Guide describes Fair Condition (5 rating) as "all primary structural elements are sound but may have minor section loss, cracking, spalling or scour," and Satisfactory Condition (6 rating) as "structural elements show some minor deterioration." These ratings are intended to describe the overall condition of the component (deck, superstructure, substructure, roadway approach). Localized deficiencies not representative of the overall condition do not lower the entire rating.

Channel and channel protection (Item 61) describe physical conditions associated with the flow of water through the bridge. This includes stream stability and channel condition. The codes range from 0 to 9. A zero indicates that the bridge is closed due to channel failure, necessitating bridge replacement. A nine indicates that there are no noticeable or noteworthy deficiencies affectingthe channel condition. An intermediate rating, like 6 for example, is described as "Bank is beginning to slump. River control devices and embankment protection have widespread minor damage. There is minor stream bed movement evident. Debris is restricting the waterway slightly."Culverts (Item 62) are evaluated and coded based on their own set of descriptions, ranging from 0 ("Bridge closed. Replacement necessary.") to 9 ("No deficiencies."). The Guide provides descriptions of deficiencies for each rating. For example, a concrete culvert would be rated 7 due to "shrinkage cracks, light scaling, and insignificant spalling which does not expose reinforcing steel," or 6 due to "Deterioration or initial disintegration, minor chloride contamination, cracking with some leaching, or spalls on concrete or masonry walls and slabs."

Waterway adequacy (Item 71) appraises the waterway opening with respect to passage of flow through the bridge. The rating is based on a combination of overtopping frequency, impact to traffic, and roadway classification. For example, occasional overtopping of roadway approaches with insignificant travel delays would result in a 6 rating for a local road, but would garner a 4 rating for an interstate highway. Site conditions can warrant a higher or lower rating than described in the Coding Guide.

Scour Critical Bridges (Item 113) describes the current status of the bridge regarding its vulnerability to scour. Scour critical means that the abutment or pier foundation is rated as unstable due to observed scour, or due to scour potential as determined from a scour evaluation study. A coding of 3 or below indicates that the bridge is scour critical, with worsening degrees of severity, with a coding of 0 indicating that the bridge has failed and is closed to traffic. The bridges observed in the Hackberry Creek study were determined to not be scour critical.

ARCHITECTURAL ELEMENTS KEY MAP

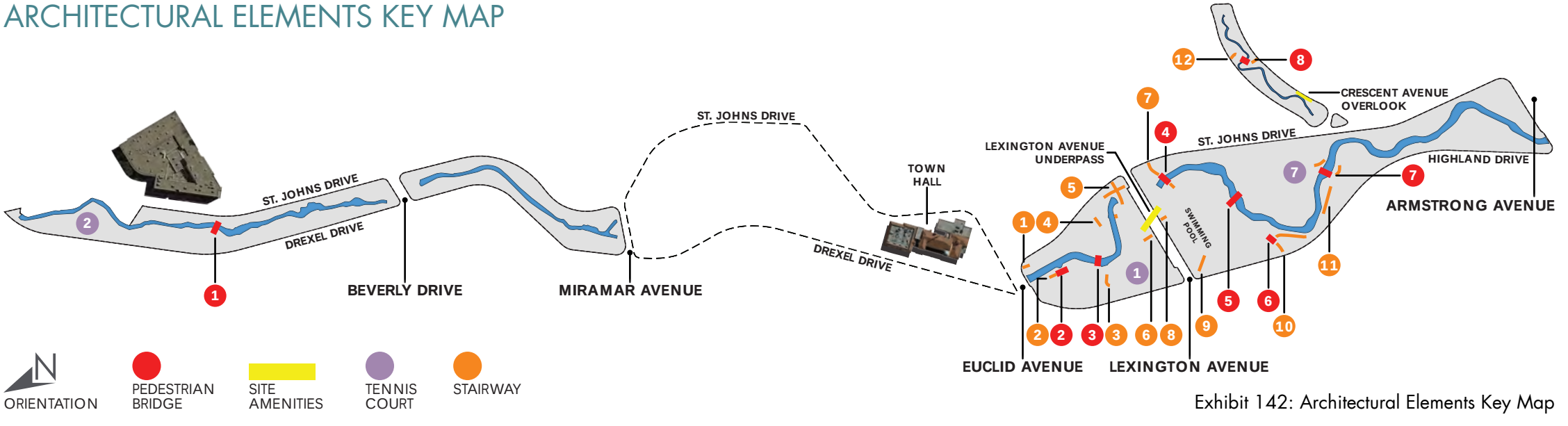


Exhibit 142: Architectural Elements Key Map

PEDESTRIAN BRIDGE #01			
TXDOT CODING			
	ITEM	**CODE**	**DESCRIPTION**
31	Design Load	7	Pedestrian
42	Type of Service	35	3 - Pedestrian exclusively; 5 - Waterway
43.1	Main Span	5153	5 - Arch; 1 - Deck; 53 - Masonry Arch
47	Inventory Route, Total Horizontal Clearance	0055	5.5 feet
48	Length of Maximum Span	0014	13.8 feet
52	Deck Width, Out-to-Out	0068	6'-10" (6.83')
58	Deck	7	GOOD CONDITION - some minor problems
59	Superstructure	7	GOOD CONDITION - some minor problems
60	Substructure	6	SATISFACTORY CONDITION - structural elements show some minor deterioration
61	Channel and Channel Protection	7	Bank protection is in need of minor repairs. River control devices and embankment protection have a little minor damage. Banks and/or channel have minor amounts of drift.
113	Scour Critical Bridges	8	Bridge foundations determined to be stable for the assessed or calculated scour condition.
128	Over Height Load Damage	N	No damage to beam(s) or beam members

Exhibit 143: Pedestrian Bridge #1 Coding

Exhibit 144: Pedestrian Bridge #1

PEDESTRIAN BRIDGE #03			
TXDOT CODING			
	ITEM	**CODE**	**DESCRIPTION**
31	Design Load	7	Pedestrian
42	Type of Service	35	3 - Pedestrian exclusively; 5 - Waterway
43.1	Main Span	5153	5 - Arch; 1 - Deck; 53 - Masonry Arch
47	Inventory Route, Total Horizontal Clearance	0040	4 feet
48	Length of Maximum Span	0025	25 feet
52	Deck Width, Out-to-Out	0055	5.5 feet
58	Deck	7	GOOD CONDITION - some minor problems
59	Superstructure	5	FAIR CONDITION — all primary structural elements are sound but may have minor section loss, cracking, spalling or scour.
60	Substructure	5	FAIR CONDITION — all primary structural elements are sound but may have minor section loss, cracking, spalling or scour.
61	Channel and Channel Protection	8	Banks are protected or well vegetated. River control devices such as spur dikes and embankment protection are not required or are in a stable condition.
113	Scour Critical Bridges	8	Bridge foundations determined to be stable for the assessed or calculated scour condition.
128	Over Height Load Damage	N	No damage to beam(s) or beam members

Exhibit 145: Pedestrian Bridge #2 Coding

Exhibit 146: Pedestrian Bridge #2

PEDESTRIAN BRIDGE #04			
TXDOT CODING			
	ITEM	**CODE**	**DESCRIPTION**
31	Design Load	7	Pedestrian
42	Type of Service	35	3 - Pedestrian exclusively; 5 - Waterway
43.1	Main Span	5153	5 - Arch; 1 - Deck; 53 - Masonry Arch
47	Inventory Route, Total Horizontal Clearance	0039	3.875-foot sidewalk
48	Length of Maximum Span	0025	24.5 feet
52	Deck Width, Out-to-Out	0057	5.66 feet
58	Deck	7	GOOD CONDITION - some minor problems
59	Superstructure	6	SATISFACTORY CONDITION — structural elements show some minor deterioration.
60	Substructure	7	GOOD CONDITION — some minor problems.
61	Channel and Channel Protection	8	Banks are protected or well vegetated. River control devices such as spur dikes and embankment protection are not required or are in a stable condition.
113	Scour Critical Bridges	8	Bridge foundations determined to be stable for the assessed or calculated scour condition.
128	Over Height Load Damage	N	No damage to beam(s) or beam members

Exhibit 147: Pedestrian Bridge #4 Coding

Exhibit 148: Pedestrian Bridge #4

PEDESTRIAN BRIDGE #05			
TXDOT CODING			
	ITEM	**CODE**	**DESCRIPTION**
31	Design Load	7	Pedestrian
42	Type of Service	35	3 - Pedestrian exclusively; 5 - Waterway
43.1	Main Span	1126	1 - Simple Span; 1 - Deck; 26 - Concrete Flat Slab
47	Inventory Route, Total Horizontal Clearance	0040	4 foot sidwalk
48	Length of Maximum Span	0035	34'-8"
52	Deck Width, Out-to-Out	0061	6.125'
58	Deck	7	GOOD CONDITION - some minor problems
59	Superstructure	6	SATISFACTORY CONDITION — structural elements show some minor deterioration.
60	Substructure	6	SATISFACTORY CONDITION - structural elements show some minor deterioration
61	Channel and Channel Protection	7	Bank protection is in need of minor repairs. River control devices and embankment protection have a little minor damage. Banks and/or channel have minor amounts of drift.
113	Scour Critical Bridges	8	Bridge foundations determined to be stable for the assessed or calculated scour condition.
128	Over Height Load Damage	N	No damage to beam(s) or beam members

Exhibit 149: Pedestrian Bridge #5 Coding

Exhibit 151: Pedestrian Bridge #5

VEHICULAR BRIDGE #01 - BEVERLY DRIVE			
TXDOT CODING			
	ITEM	**CODE**	**DESCRIPTION**
28	Lanes On and Under the Structure	0200	2 lanes on; 0 lanes under
32	Approach Roadway Width (XXX feet)	033	33 feet
42	Type of Service	15	Highway over waterway
43.4	Structure Type, Culvert	93	9 - other (arch) 3 - concrete
47	Inventory Route, Total Horizontal Clearance (XXX.X feet)	0330	33 feet
48	Length of Maximum Span	0006	6 feet (max span carrying roadway)
49	Structure Length	000006	6 feet
50	Sidewalk Widths (XX.X feet, XX.X feet)	050050	5' left, 5' right
51	Bridge Roadway Width, Curb-to-Curb (XXX.X feet)	0370	37'
61	Channel and Channel Protection	6	Bank is beginning to slump. River control devices and embankment protection have widespread minor damage. There is minor stream bed movement evident. Debris is restricting the waterway slightly.
62	Culverts	6	Deterioration or initial disintegration, minor chloride contamination, cracking with some leaching, or spalls on concrete or masonry walls and slabs. Local minor scouring at curtain walls, wingwalls, or pipes. Metal culverts have a smooth curvature, asymmetrical shape, significant corrosion or moderate pitting.
65	Roadway Approach	7	GOOD CONDITION — some minor problems.
71	Waterway Adequacy	6	Occasional overtopping of roadway approaches with insignificant traffic delays.
102	Direction of Traffic	2	2-way traffic
108.1	Wearing Surface/Protective System, Main Span	6	Bituminous
113	Scour Critical Bridges	8	Bridge foundations determined to be stable for the assessed or calculated scour condition.
128	Over Height Load Damage	N	No damage to beam(s) or beam members

Exhibit 153: Beverly Drive Coding

PEDESTRIAN BRIDGE #07			
TXDOT CODING			
	ITEM	**CODE**	**DESCRIPTION**
31	Design Load	7	Pedestrian
42	Type of Service	35	3 - Pedestrian exclusively; 5 - Waterway
43.1	Main Span	5153	5 - Arch; 1 - Deck; 53 - Masonry Arch
47	Inventory Route, Total Horizontal Clearance	0040	4 foot sidewalk
48	Length of Maximum Span	0024	23.8 feet
52	Deck Width, Out-to-Out	0080	8 feet
58	Deck	7	GOOD CONDITION - some minor problems
59	Superstructure	6	SATISFACTORY CONDITION — structural elements show some minor deterioration.
60	Substructure	5	FAIR CONDITION — all primary structural elements are sound but may have minor section loss, cracking, spalling or scour.
61	Channel and Channel Protection	6	Bank is beginning to slump. River control devices and embankment protection have widespread minor damage. There is minor stream bed movement evident. Debris is restricting the waterway slightly.
113	Scour Critical Bridges	8	Bridge foundations determined to be stable for the assessed or calculated scour condition.
128	Over Height Load Damage	N	No damage to beam(s) or beam members

Exhibit 150: Pedestrian Bridge #7 Coding

Exhibit 152: Pedestrian Bridge #7

Exhibit 154: Beverly Drive

VEHICULAR BRIDGE #02 - MIRAMAR AVENUE			
TXDOT CODING			
	ITEM	**CODE**	**DESCRIPTION**
28	Lanes On and Under the Structure	0200	2 lanes on; 0 lanes under
32	Approach Roadway Width (XXX feet)	0250	25 feet
42	Type of Service	19	1 - Highway over 9 - Relief for waterway
43.4	Structure Type, Culvert	13	1 - Single Box 3 - Concrete
47	Inventory Route, Total Horizontal Clearance (XXX.X feet)	0250	25 feet
48	Length of Maximum Span	0006	6 feet (max span carrying roadway)
49	Structure Length	000006	6 feet
50	Sidewalk Widths (XX.X feet, XX.X feet)		no sidewalk
51	Bridge Roadway Width, Curb-to-Curb (XXX.X feet)	0250	25 feet
61	Channel and Channel Protection	6	Bank is beginning to slump. River control devices and embankment protection have widespread minor damage. There is minor stream bed movement evident. Debris is restricting the waterway slightly.
62	Culverts	7	Shrinkage cracks, light scaling, and insignificant spalling which does not expose reinforcing steel. Insignificant damage caused by drift with no misalignment and not requiring corrective action. Some minor scouring has occurred near curtain walls, wingwalls, or pipes. Metal culverts have a smooth symmetrical curvature with superficial corrosion and no pitting.
65	Roadway Approach	7	GOOD CONDITION — some minor problems.
71	Waterway Adequacy	6	Occasional overtopping of roadway approaches with insignificant traffic delays.
102	Direction of Traffic	2	2-way traffic
108.1	Wearing Surface/Protective System, Main Span	6	Bituminous
113	Scour Critical Bridges	8	Bridge foundations determined to be stable for the assessed or calculated scour condition.
128	Over Height Load Damage	N	No damage to beam(s) or beam members

Exhibit 155: Miramar Avenue Coding

Exhibit 156: Miramar Avenue

VEHICULAR BRIDGE #04 - LEXINGTON AVENUE			
TXDOT CODING			
	ITEM	**CODE**	**DESCRIPTION**
28	Lanes On and Under the Structure	0100	1 lane on; 0 lanes under
32	Approach Roadway Width (XXX feet)	026	26'
42	Type of Service	15	Highway over waterway
43.4	Structure Type, Culvert	93	9 - Other (arch); 3 - Concrete; Repaired with metal arch liner
47	Inventory Route, Total Horizontal Clearance (XXX.X feet)		45 feet
48	Length of Maximum Span		10 feet
49	Structure Length		10 feet
50	Sidewalk Widths (XX.X feet, XX.X feet)		5-feet on one side only
51	Bridge Roadway Width, Curb-to-Curb (XXX.X feet)		40 feet
61	Channel and Channel Protection	8	Banks are protected or well vegetated. River control devices such as spur dikes and embankment protection are not required or are in a stable condition.
62	Culverts	6	Deterioration or initial disintegration, minor chloride contamination, cracking with some leaching, or spalls on concrete or masonry walls and slabs. Local minor scouring at curtain walls, wingwalls, or pipes. Metal culverts have a smooth curvature, asymmetrical shape, significant corrosion or moderate pitting.
65	Roadway Approach	7	GOOD CONDITION — some minor problems.
71	Waterway Adequacy	9	Bridge deck and roadway approaches above flood water elevations (high water). Chance of overtopping is remote.
102	Direction of Traffic	1	1-way traffic
108.1	Wearing Surface/Protective System, Main Span	6	Bituminous
113	Scour Critical Bridges	8	Bridge foundations determined to be stable for the assessed or calculated scour condition.
128	Over Height Load Damage	N	No damage to beam(s) or beam members

Exhibit 157: Lexington Avenue Coding

Exhibit 158: Lexington Avenue

LIST OF EXHIBITS

THE TOWN OF

Highland Park

TEXAS

An American Community Making a Difference

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