

An aerial photograph of a park featuring a large, irregularly shaped body of water in the upper half. The shoreline is sandy and dotted with small, dark rocks. In the lower half, two children are playing on a sandy beach. One child, wearing a green shirt and dark shorts, is kneeling and looking down at the sand. The other child, wearing a light blue shirt and dark shorts, is sitting on the sand, also looking down. The background shows a dense line of trees and vegetation along the water's edge.

A MASTER PLAN FOR
LAKE HOUSTON PARK

MASTERPLAN

CITY OF HOUSTON
PARKS & RECREATION
DEPARTMENT 04.24.09

SWA GROUP 

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MASTER PLAN

Lake Houston Wilderness Park is a spectacular ecological resource, a vast swath of undeveloped woodlands boasting lush canopy, gorgeous creeks and striking cypress swamps. Accessible to all of Houston, and in an area projected to experience explosive growth in the next 30 years, the Park offers the City of Houston and its surrounding region unprecedented access to ecological riches close to home.

The Park will be an urban preserve, a treasure trove of healthy ecosystems, well-cared for and largely undisturbed. With minimal, sensitive development for tourism, recreation and education, it will also be a place where future generations of city kids can experience the woods and grow up with an appreciation for the natural wealth they are heirs to and need to protect.

The Draft Master Plan details this vision for the Park, describing the variety of new elements the Park can sustain that will offer lodging, recreation, and education. It also describes the plan for putting these elements in place. This includes the details of the initial recreational improvements slated for completion by 2010 and information about the more extensive improvements envisioned by the Master Plan.

This document presents a toolbox of innovative financial strategies that support the goal to create a Park that is economically self-sustaining, ecologically robust and will continue to grow and prosper in the long term. This includes a number of funding mechanisms that will create revenue for the Park by leveraging its ecological assets, and the development of a special districting strategy that will offer a number of operational and financial advantages.

SWA Team was selected on the 28 November 2007 by the City of Houston / HPARD to assist in creating a master plan for the 4986-acre Park. The following milestones summarize progress and achievements to date.

- **December 6, 2007 – Scoping Meeting for the Lake Park Master Plan**

The Team received initial instructions and ideas from HPARD for approaching the work on the Park Master Plan. Scope, schedule and related logistics were also reviewed and discussed.

- **April 24, 2008 – Kick-off**

The Team assembled for the first time to discuss the project scope, schedule, related logistics and protocols. SWA gave all members sub-contract agreements and notices to proceed.

- **May 4, 2008 – Meeting with Stakeholder Group**

The purpose of this workshop was for the Team to receive the recommendations of the team that had been working for over a year under a National Park Service grant. The Team received the Stakeholder's report as input to the master plan.

- **May 21, 2008 – Meeting with Agency Group**

The purpose of this workshop was to introduce the Team to the Agency Group, nominally the "steering committee" for the master plan. The Team reviewed the scope of the master plan, initial ideas, current activities and planning issues as well as solicited thoughts and ideas from the Agency Group representatives.

- **April - August 2008 - Site Reconnaissance**

Fieldwork, surveying and detailed analysis was completed and all components of reconnaissance performed in this period. SWA prepared a summary document for the City/HPARD and submitted on 20 August 2008.

The components included:

1. Archeological: Archeological evidence exists in the Park associated with the riparian edges on two of the Park's three sides.
2. Environmental/Regulatory: Waters of the USA are associated with the Park's natural edges as well as inland stream beds.
3. Ecological (Forest/Wildlife): This work is associated with developing forest and wildlife management plans for the Park. Generally, the Park
4. Transportation Systems: Detailed work has and is being done to understand opportunities to

lack diversity in its forest and habitat, which are important characteristics to be addressed in the alternatives and in the master plan.

enhance regional and local Park access.

5. Boundary Survey: A consolidated, complete boundary survey has been prepared for Park property.

- **April - August 2008 - Market Analysis**

Demand forecasts, opportunities analysis and other recreational-based research have been conducted to determine alternative development scenarios for the alternatives and the master plan. Uses fall into the more traditional park improvements that have ample market support and potential for revenue generation. The results of this work are reflected in the conceptual alternatives, especially in the north half area of the Park.

- **April - August 2008 - Eco-Economic Analysis**

As a companion to the ecological reconnaissance, research and analysis has been performed to gauge the opportunities for a broad range of improvements on the property that yield revenue benefits while also improving Park habitat and achieving the goal of the Parks as a "preserve". The results of this work are reflected in the conceptual alternatives, especially in the south half area of the Park.

- **September 10, 2008 - Meeting with Agency Group**

The SWA Team met with the Agency Group on September 10, 2008 to present conceptual alternatives as a precursor to the draft master plan.

- **November 7, 2008 - Meeting With Agency Group and Stakeholders**

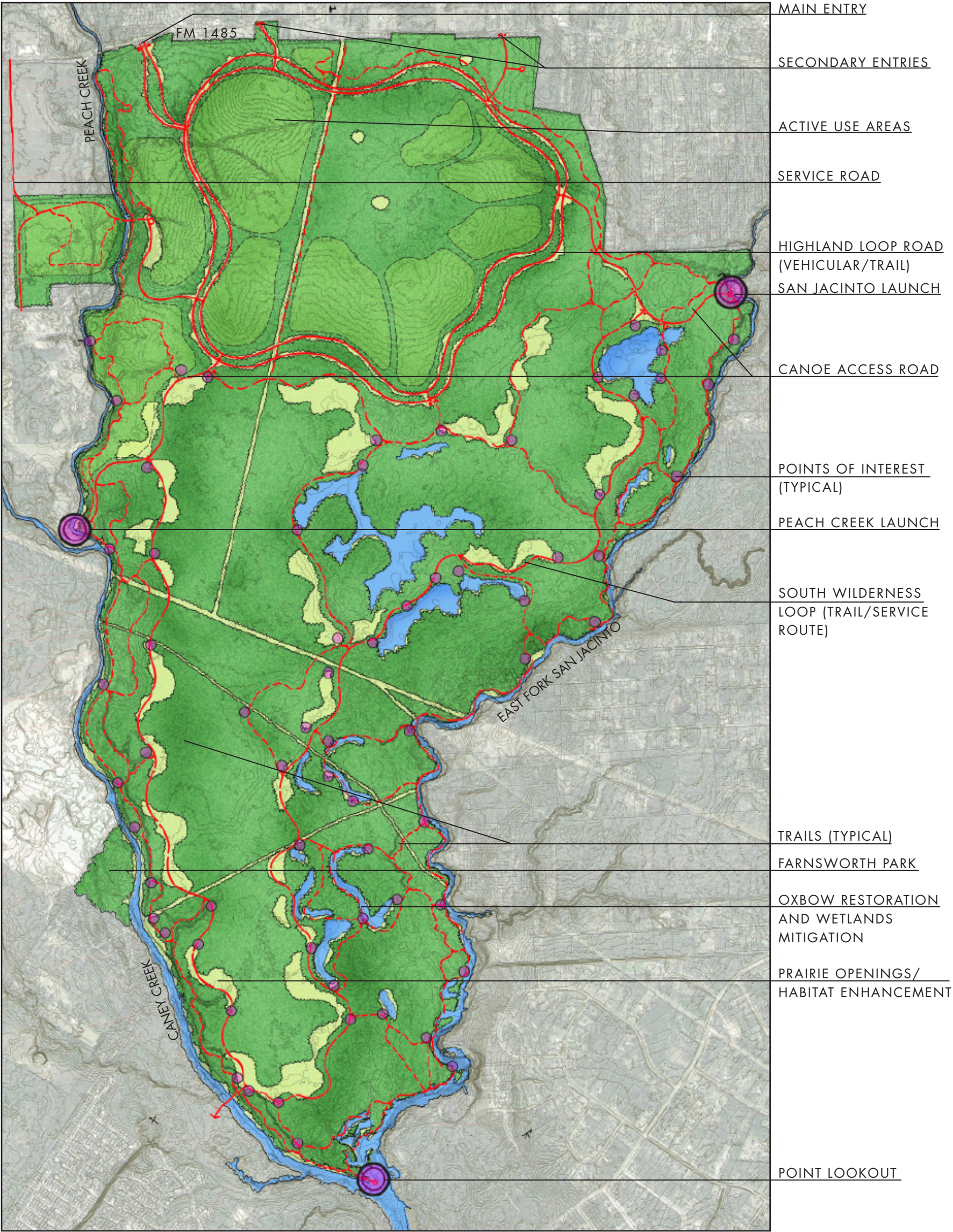
The SWA Team and HPARD presented the Master Plan conceptual alternatives and the project vision to the public.

- **November 25, 2008 - Draft Master Plan**

The SWA Team provided the Agency Group with a Draft Master Plan addressing overall layout and design for the park, Phase 1 improvements, and implementation of financial and governance strategies.

Up-coming Activities:

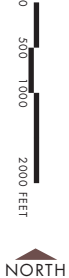
- The SWA Team will be presenting the Final Master Plan to the Agency Group in December, 2008 (date to be determined).
- Implementation of initial phase(s) of improvements will begin immediately.



OVERALL MASTER PLAN
OVERALL ILLUSTRATIVE

The Master Plan concentrates most structured activities and development in the Park's northern portion. The southern part of the park is laced with trails and shelters but is largely undisturbed, accessed for recreation and forest management.

OVERALL ILLUSTRATIVE
Source: SWA Group



OVERALL ILLUSTRATIVE



OVERALL MASTER PLAN
ACTIVE USE

Active uses and development are clustered in the northern portion of the site. The southern portion of the Park offers daily access to the Park's beauty but is largely undeveloped.

ACTIVE USE ZONES
Source: SWA Group



PARK ACREAGE:	4986.6 acres
ACTIVE USE:	762.1 acres 15.28%
WILDERNESS PRESERVE:	4224.5 acres 84.72%

OVERALL MASTER PLAN
CIRCULATION

A network of trails winds through the park leading users to interesting points while limiting access to ecologically sensitive areas. Trails are subdivided based upon their intended usage.

CIRCULATION

Source: SWA Group



HIGHLAND LOOP ROAD

Inner: 4.6 miles
Outer: 4.9 miles
Entries: 1.3 miles
Canoe Launch Branches: 2.0 miles
Users: vehicles, hikers, bikers

SOUTH WILDERNESS LOOP

7.7 miles
Users: Shuttle bus loop, hiking, biking, and maintenance vehicles

SECONDARY TRAILS

34 miles
Users: hikers

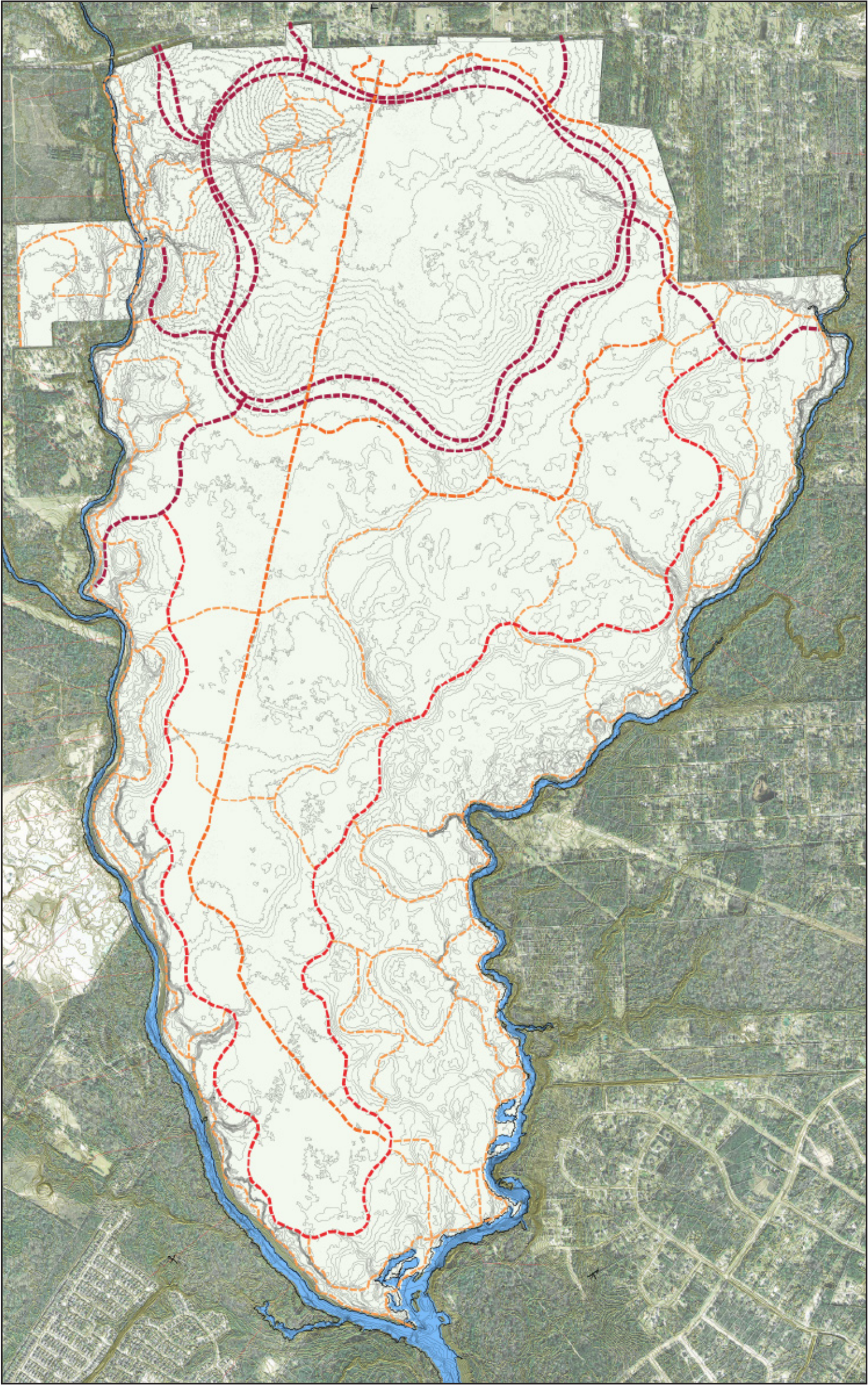
EQUESTRIAN TRAILS

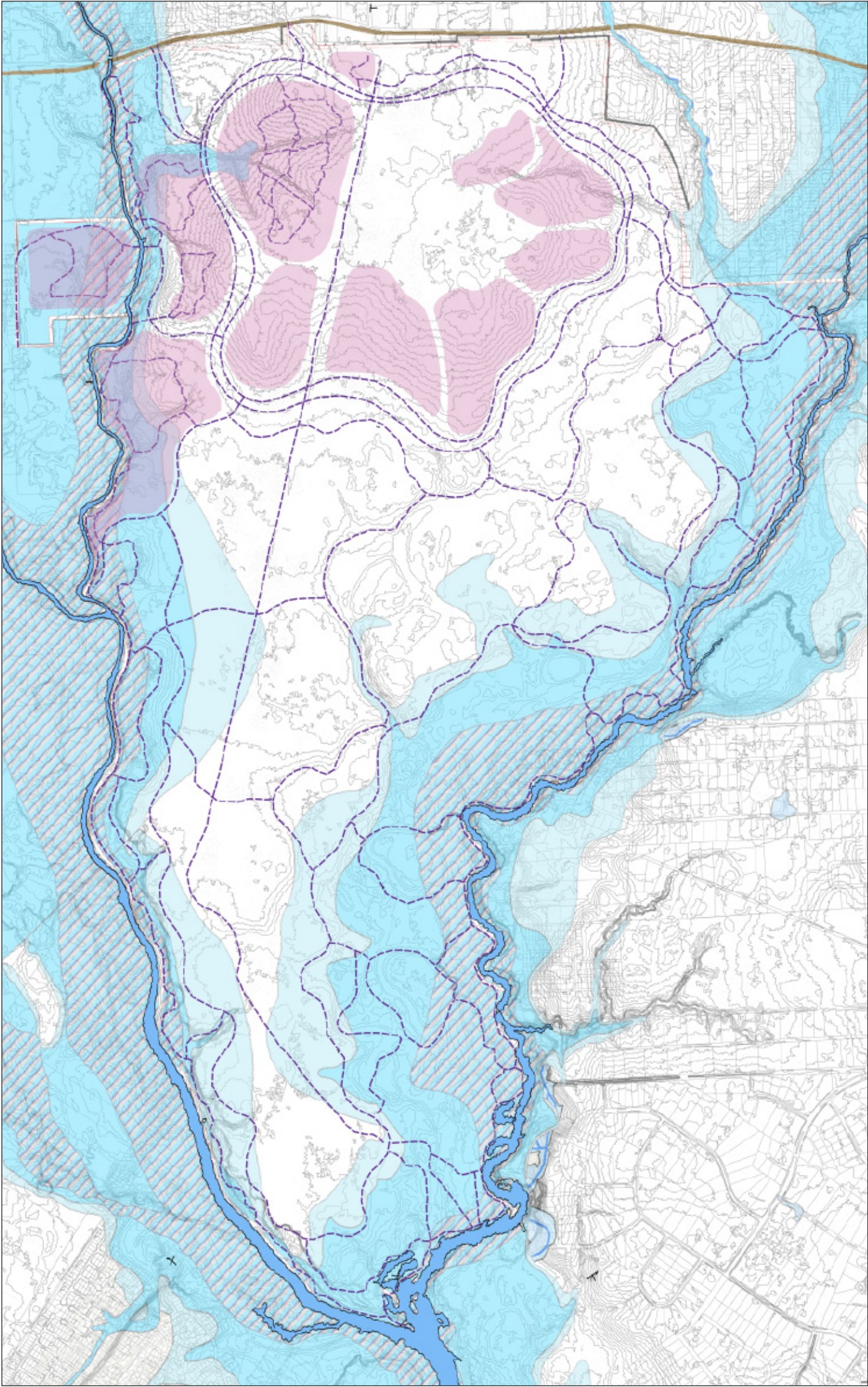
8.2 miles
Users: horse and riders, bikers, hikers

Additional Trails:

TERTIARY TRAILS

Estimated 150 miles
Narrow, minimally developed footpaths for hiking that offer access to more delicate areas.





OVERALL MASTER PLAN
HYDROLOGY

Human use of the Park is clustered in the northern areas at higher elevations. A third of the Park is in the 100 Year Floodplain; these areas have trail access but will be left almost entirely undeveloped otherwise.

HYDROLOGY

Source: SWA Group



PARK ACREAGE: 4986.6 acres





**FLOODPLAIN ACREAGE
WITHIN THE PARK:**

FLOODWAY: 634 acres

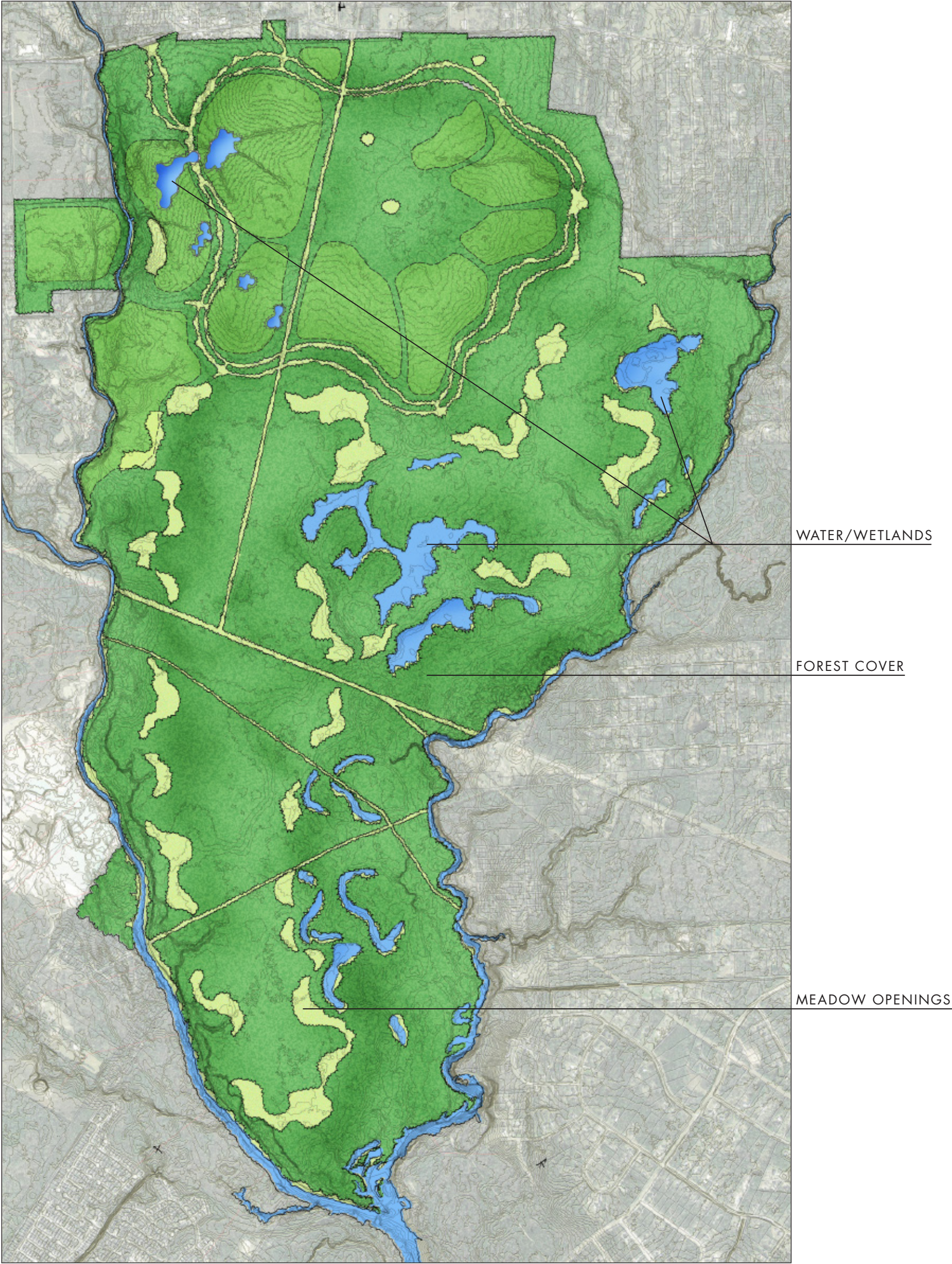
100 YEAR FLOODPLAIN: 1545 acres

500 YEAR FLOODPLAIN: 2278 acres

LEGEND

-  FLOODWAY
-  100 YEAR FLOODPLAIN
-  500 YEAR FLOODPLAIN
-  ACTIVE USE ZONES
-  TRAIL ACCESS
-  STREAMS

SUPPORTING COMPONENTS



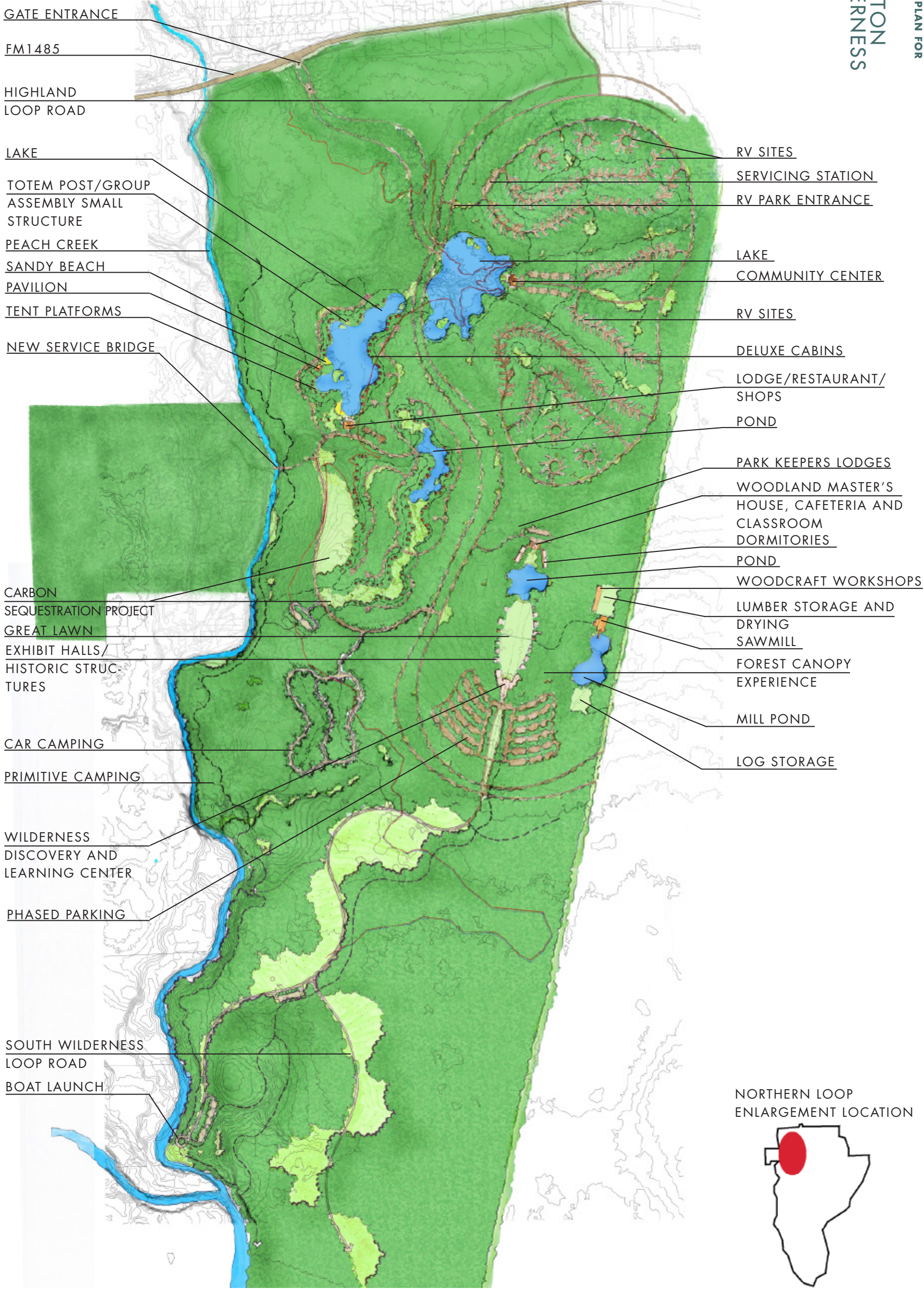
OVERALL MASTER PLAN
OPEN SPACE

The park contains both open meadow and forest cover spotted with areas of water and wetlands.

OPEN SPACE
Source: SWA Group



PARK ACREAGE:	4986.6 acres
FOREST COVER:	4,451.7 acres 89.3%
WATER/ WETLANDS:	183.2 acres 3.7%
MEADOWS:	287.0 acres 5.8%
PIPELINE/UTILITY	64.7 acres 1.3%



NORTHERN LOOP
ENLARGEMENT LOCATION

OVERALL MASTER PLAN
**NORTH-WESTERN LOOP
ENLARGEMENT**

The enlargement focuses on the initial development areas of the north-western portion of the site. A variety of public accommodations will be available such as cabins, deluxe lodges, tent platforms, RV camp sites, car camping, primitive camping, and dormitories. There will also be a number of new recreational and educational activities.

**NORTHEASTERN LOOP
ENLARGEMENT**

Source: SWA Group



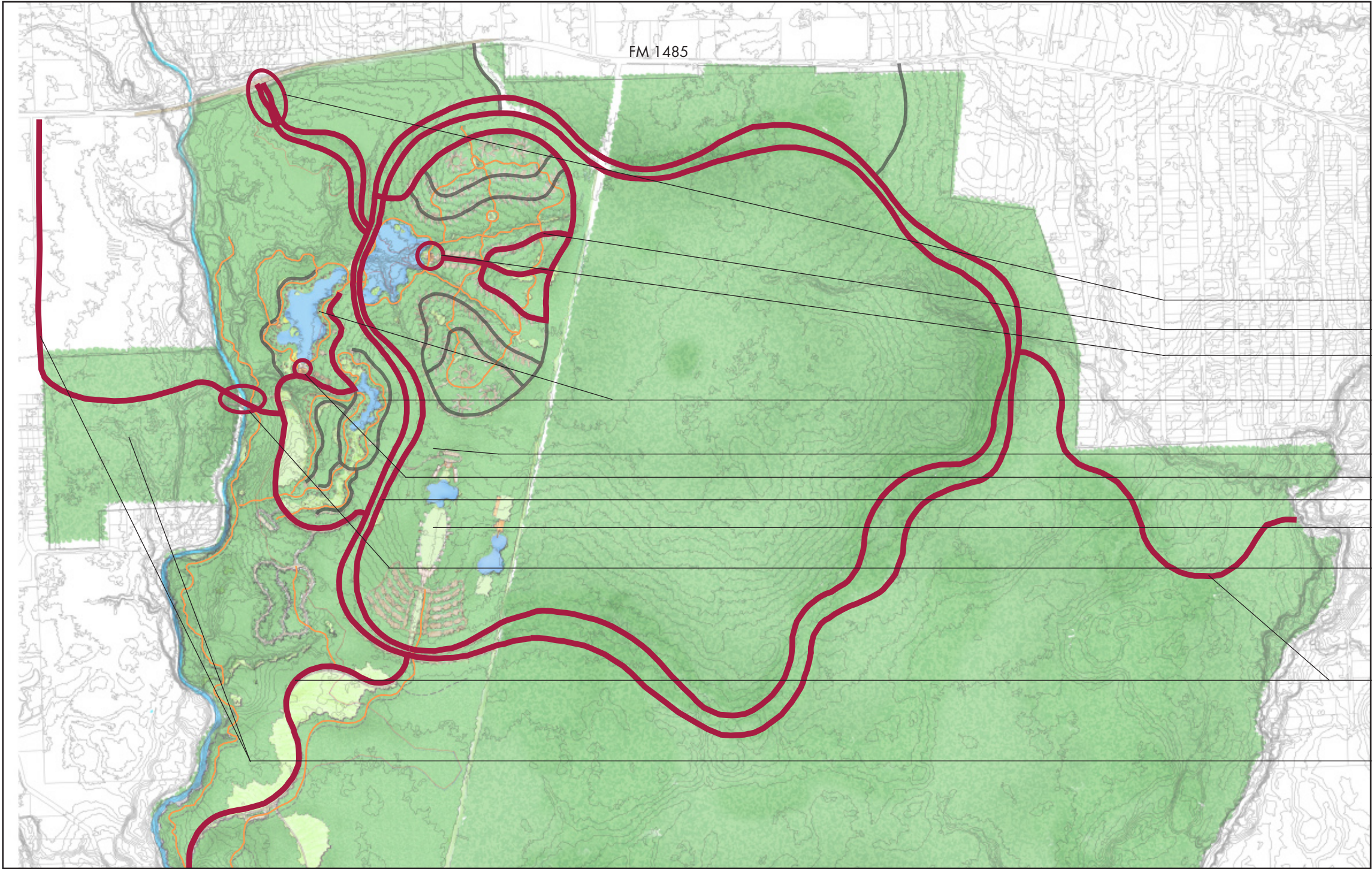
NORTHERN LOOP ENLARGEMENT



RECREATIONAL IMPROVEMENTS

The Master Plan for Lake Houston Wilderness Park offers a vision of a public park that offers recreation to a wide range of people interested in a wide variety of activities. The plan improves access to the recreational opportunities the park already provides and expands upon the park's current offerings with better facilities and accommodations and suggestions for a number of new and expanded recreational and educational programs.

This section examines these improvements in more detail, including the initial improvements that will be implemented in the near-term, and others in longer-term. Some improvements will undoubtedly be made before others, and the sequence and pace cannot be known at this time.



RECREATIONAL IMPROVEMENTS
IMPROVEMENTS
— Initial phases will see the construction of an entrance gate, central pavilion, loop road and visitor center before the end of 2009. There will also be the first phase of an RV park, 8 new cabins, a new bridge, renovated trails and Park Keepers Lodge (1 of 2)

NORTHERN LOOP ENLARGEMENT
Source: SWA Group



ENTRANCE DRIVE/MAIN GATE

INITIAL PHASE RV PARK

RV PARK PAVILION/
RESTROOMS/ASSEMBLY AREAS
CABINS, CABIN DONATION
AND ADOPTION PROGRAM

PARK KEEPERS LODGES

VISITOR CENTER

HIGHLAND LOOP ROAD

NATURE CENTER
COMPLEX

NEW PEDESTRIAN
AND SERVICE BRIDGE

CANOE LAUNCH ACCESS DRIVE

GROUP CAMPING AND
SERVICE ROAD

Initial Development Phase(s)

	unit price	number of units	total cost	comments
Entrance Drive	500 lf	300.00	150,000.00 ¹	
Entrance Gate	50,000 ea	1	50,000.00 ¹	
Main Vehicular Loop Access Roads ²	8,000 lf	60.00	480,000.00 ¹	partial loop road
Secondary Access Roads	4,000 lf	60.00	240,000.00 ¹	
Blazed Trails	41,818 lf	15.00	627,270.00 ¹	
Vehicular Bridge	500,000 ea	1	500,000.00 ¹	
Visitor Center	1,600,000 ea	1	1,600,000.00 ¹	
VC Parking	75 spaces	2,500.00	187,500.00 ¹	50% of final size
RV Park	120 stalls	7,500.00	900,000.00 ¹	40% of final size
Central Pavilion	1 ea	750,000.00	750,000.00 ¹	
Cabins	8 ea	50,000	400,000.00 ¹	
TOTAL COSTS			5,884,770	

Note:

- (1) These values are estimates based on concepts for the master plan and are subject to change.
- (2) This estimate does not include the outer loop road or the road leading to the San Jacinto Canoe Launch.
- (3) The proposed program is for preliminary phases of improvements only and is subject to change.

Park Infrastructure

	number of units	unit price	total cost	comments
Entrance Drive	500 lf	300.00	150,000.00 ¹	
Main Vehicular Loop Access Roads	8,000 lf	60.00	480,000.00 ¹	partial loop road
Secondary Access Roads	4,000 lf	60.00	240,000.00	
Blazed Trails	41,818 lf	15.00	627,270.00 ¹	
Visitor Center Parking	75 spaces	2,500.00	187,500.00 ¹	50% of final size
TOTAL COST			1,684,770.00 ¹	

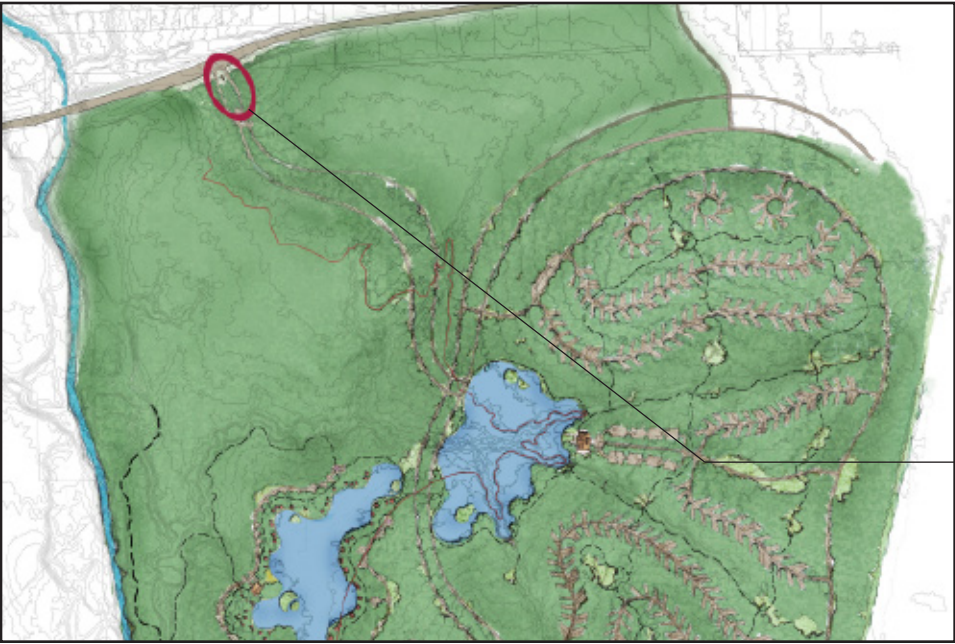
LOW IMPACT: GRAVEL ROADS AND MINIMAL TRAILS

The main vehicular loop drive will be a one-way gravel road (below, left). A small nature trail (below, right). Future phases of park development will include more robust trails.




Note:

(1) These values are estimates based on concepts for the master plan and are subject to change.



RECREATIONAL IMPROVEMENTS
ENTRANCE GATE
— The gate will control traffic and collect fees, as well as offering basic information for visitors.

NORTHERN LOOP ENLARGEMENT,
PICTURES, FIGURES
Source: SWA Group and ERA


ENTRANCE GATE

	number of units	unit price	total cost	comments
Entrance Gate	1	50,000.00	50,000.00 ¹	
TOTAL COST			50,000.00 ¹	

Note:
(1) These values are estimates based on concepts for the master plan and are subject to change.

NATIONAL PARK ENTRY GATES, US AND CANADA
Banff National Park, Canada, Volcano National Park, Hawaii, Yellowstone National Park, California (left to right).





EXISTING PEDESTRIAN BRIDGE

RECREATIONAL IMPROVEMENTS

VEHICULAR BRIDGE

— Single-lane vehicular bridge will be built adjacent to existing pedestrian bridge (photo) to accommodate park service vehicles. Use by park visitors will be limited to group campers using facilities west of Peach Creek.

NORTHERN LOOP ENLARGEMENT,
PICTURES, FIGURES

Source: SWA Group and ERA



NEW PEDESTRIAN AND
SERVICE BRIDGE

	number of units	unit price	total cost	comments
Vehicular Bridge	1	500,000.00	500,000.00 ¹	
TOTAL COST			500,000.00 ¹	


Note:
(1) These values are estimates based on concepts for the master plan and are subject to change.



EXAMPLE: MARY GIBBS MISSISSIPPI HEADWATERS CENTER,
ITASCA STATE PARK, MINNESOTA
*Visitor center providing general Park information as well as educational materials and
programs about the Mississippi Headwaters.*



RECREATIONAL IMPROVEMENTS
VISITOR CENTER
— A new visitor center will welcome Park users. It will include restrooms, educational information and programming, and a small shop.

NORTHERN LOOP ENLARGEMENT,
PICTURES, FIGURES
Source: SWA Group and ERA


VISITOR CENTER

	number of units	unit price	total cost	comments
Visitor Center	1	1,600,000.00	1,600,000.00 ¹	
VC Parking	75	2,500	187,500.00 ¹	50% of final size
TOTAL COST			1,787,500.00 ¹	

Note:
(1) These values are estimates based on concepts for the master plan and are subject to change.



RECREATIONAL IMPROVEMENTS
RV PARK PAVILION
— A pavilion will be constructed near the RV Park. It will include restrooms and eventually laundry, meeting spaces, kitchen and other amenities for RVers as well as venue rental space for park visitors.

NORTHERN LOOP ENLARGEMENT,
PICTURES, FIGURES
Source: SWA Group
0 200 400 600 800 1600 FEET NORTH

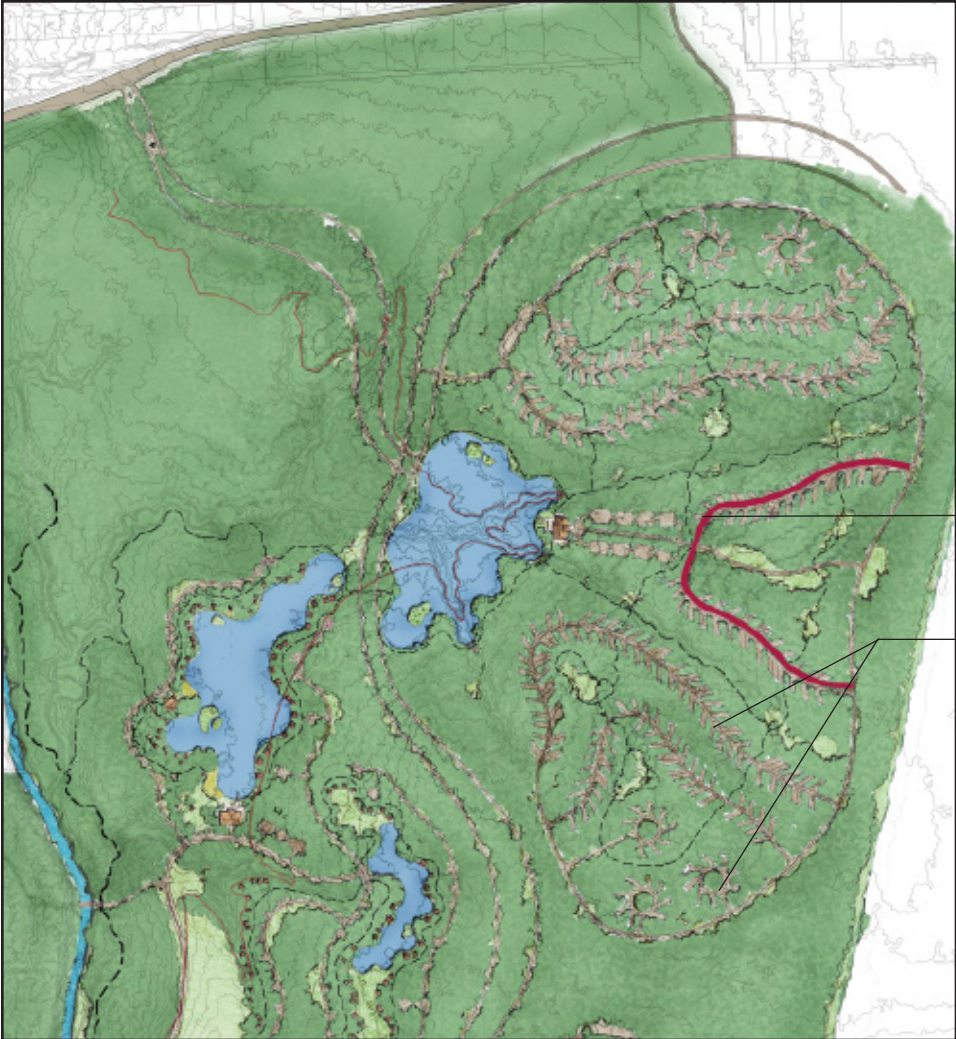
CENTRAL PAVILION



ARCHITECTURAL STYLE
The central pavilion will be airy, flexible and open, a simple, beautiful space providing shelter and basic amenities.

	number of units	unit price	total cost	comments
Central Pavilion	1	750,000.00	750,000.00 ¹	
TOTAL COST			750,000.00 ¹	50% of final size

Note:
(1) These values are estimates based on concepts for the master plan and are subject to change.



RECREATIONAL IMPROVEMENTS
RV PARK
— Camping accommodations for 120 recreational vehicles will be constructed.

NORTHERN LOOP ENLARGEMENT,
PICTURES, FIGURES
Source: SWA Group and ERA
0 200 400 600 800 1600 FEET NORTH

RV PADS

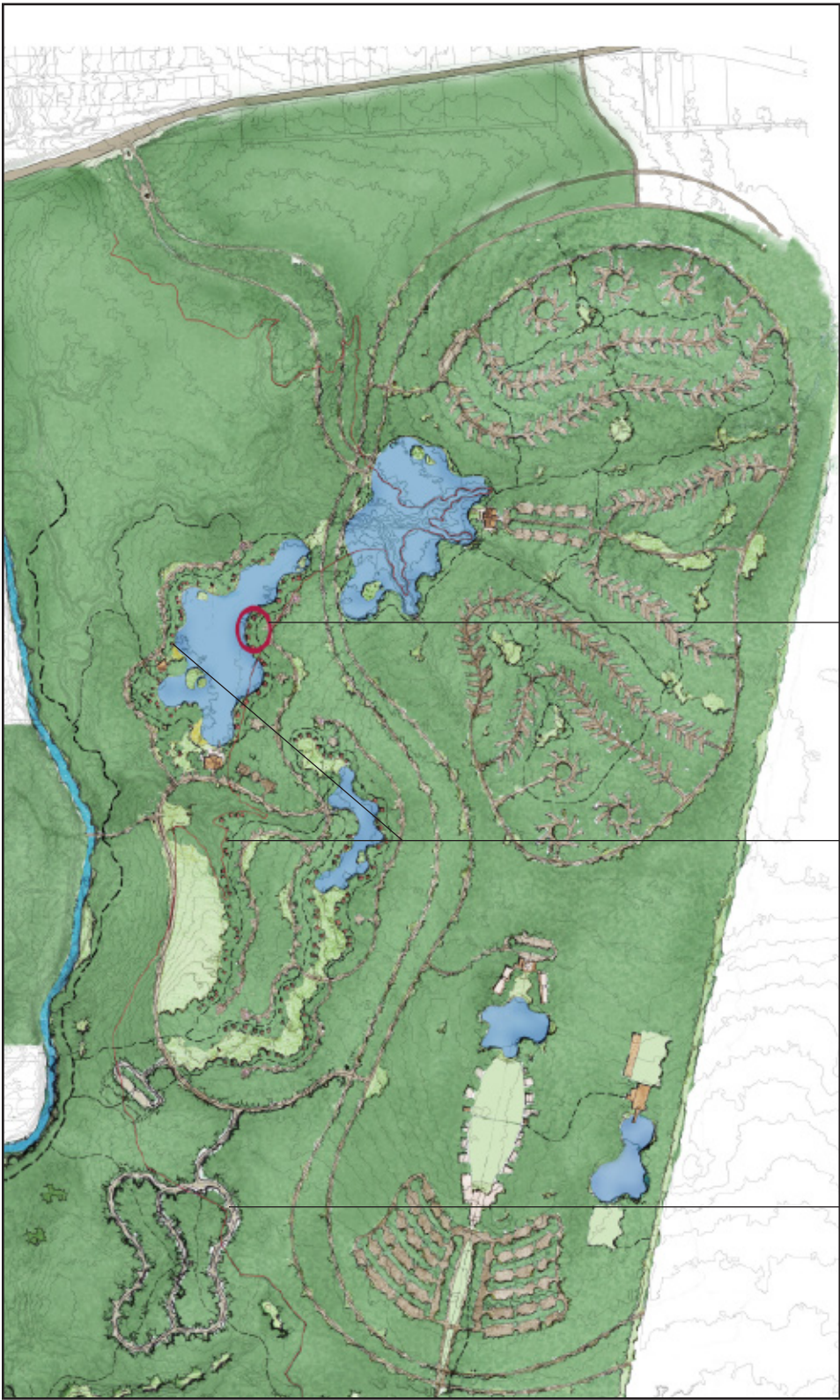
FUTURE PHASES

WINTER TEXANS: A POPULAR RV MARKET
Winter Texans, typically retirees from northern North America who come south for the winter, represent approximately 1.7 million annual visitors statewide. While in Texas, many live in an RV or motor home that they own and stay an average of 4.1 months. Despite gas prices, local RV parks report steady and strong business. This is potentially a strong market for Lake Houston Wilderness Park if facilities that catered to this crowd were developed.



	number of units	unit price	total cost	comments
RV Park	120 stalls	7,500.00	900,000.00 ¹	
TOTAL COST			900,000.00 ¹	40% of final size

Note:
(1) These values are estimates based on concepts for the master plan and are subject to change.



RECREATIONAL IMPROVEMENTS

CABINS

— Initial phases include cabins for public rental as comfortable overnight accommodations.

NORTHERN LOOP ENLARGEMENT

Source: SWA Group



CABINS: INITIAL PHASES

FUTURE PHASES: CABINS, YURTS
AND TENT PLATFORMS

FUTURE PRIMITIVE CAMPSITES

	number of units	unit price	total cost	comments
Cabins	8 ea	50,000.00	400,000.00 ¹	
TOTAL COST			400,000.00 ¹	

Note:
(1) These values are estimates based on concepts for the master plan and are subject to change.



CABIN AESTHETICS
The cabins will be constructed using wood harvested from the site, resulting in a 21st century update of traditional rustic cabin designs. The cabins will also employ green energy strategies to create a comfortable environment with a low carbon footprint.



ALTERNATIVE CAMPING POSSIBILITIES
New and different camping options are becoming increasingly popular in the United States. Yurts (left), a dwelling type originally from Mongolia, and different types of tent platforms (center and right) are some of the variations to consider.



EXAMPLE: POCONO ENVIRONMENTAL EDUCATION CENTER (PEEC)
PEEC is a private, non-profit organization operating a 38 acre campus in the Delaware Water Gap National Recreation Area. The facility serves approximately 25,000 visitors annually and grosses approximately \$1,000,000 annually in fees and program dues.



WOODLAND MASTER'S
HOUSE, CAFETERIA AND
CLASSROOM

DORMITORIES

POND

EXHIBIT HALLS/
HISTORIC STRUCTURES

WILDERNESS
DISCOVERY AND
LEARNING CENTER

PHASED PARKING

RECREATIONAL IMPROVEMENTS

NATURE CENTER COMPLEX

An educational center open to the public, offering educational programs relating to the park and its natural systems. The Center could partner with school systems and after-school programs to allow maximum access for local kids. It could also include a sleepover program for young adults in forest stewardship.

POTENTIAL FUNDING: Mitigation funding for public education and access to natural systems; Traditional environmental and educational grants;

POTENTIAL PARTNERS: Houston Museum of Natural Sciences; Houston Independent School District; AmeriCorps;

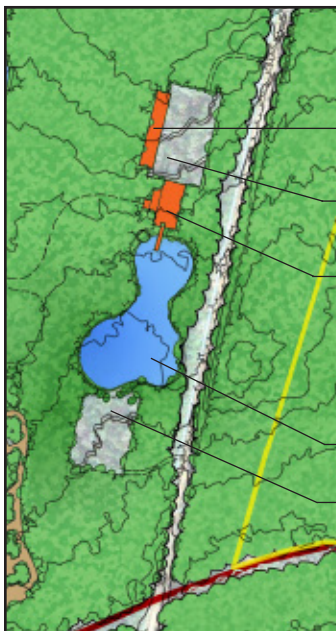
NORTHERN LOOP ILLUSTRATIVE,
PICTURES

Source: SWA Group, PEEC website





EXAMPLE: HISTORIC MILL CREEK, MACKINAC STATE PARK, MICHIGAN
Interpretive education center including demonstrations of historical milling techniques used on the creek in the past.



WOODCRAFT WORKSHOPS

LUMBER STORAGE AND
DRYING

SAWMILL

MILL POND

LOG STORAGE

RECREATIONAL IMPROVEMENTS

DEMONSTRATION SAWMILL

A facility that would mill the lumber culled from the Park's forests for on-site usage and sale. By milling on-site the mill would create a simple and transparent process of harvesting and utilizing wood. It would also create an educational opportunity for the community, offering insight into the timbering processes that give us lumber, and the environmental advantages of sequestering carbon in long-term wood products.

POTENTIAL FUNDING: Mitigation funding for education and access; Grant and foundation money for public environmental education programs; Carbon credits for harvesting and sequestering carbon.

POTENTIAL PARTNERS: Local environmental non-profits like the Council for Environmental Education; Texas Parks and Wildlife; The Texas Forestry Association's continuing education programs.

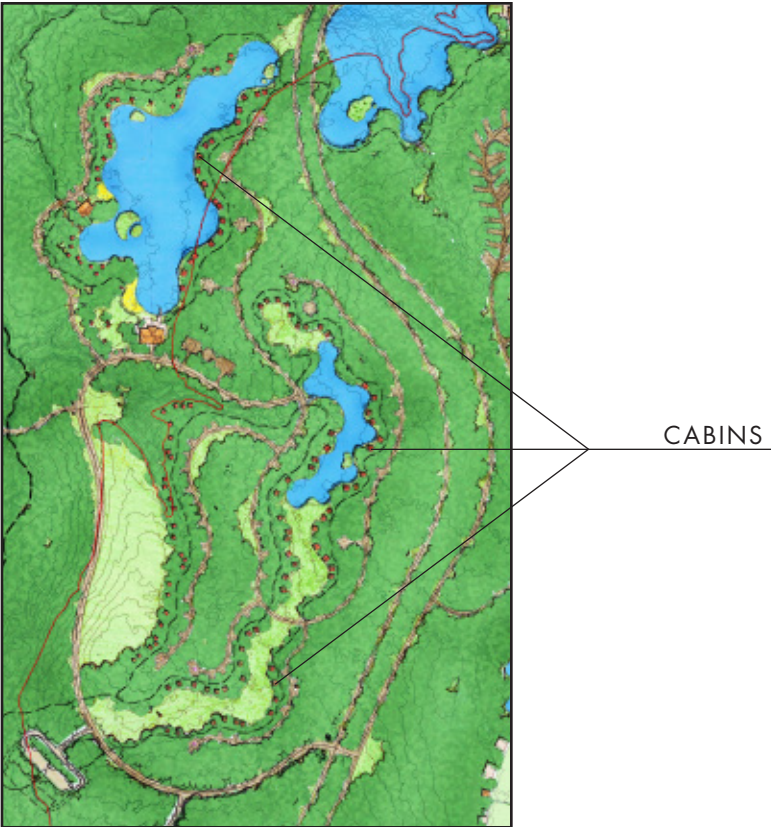
NORTHERN LOOP ILLUSTRATIVE,
PICTURES

Source: SWA Group, Mackinac Park website

0 300 600 1200 FEET 




EXAMPLE: YMCA OF THE ROCKIES
The YMCA of the Rockies offers families the chance to donate the cost of a new cabin or to adopt an existing cabin. The donation is tax deductible, and the family then receives reservation priority for 25 years.



RECREATIONAL IMPROVEMENTS
CABIN DONATION AND ADOPTION PROGRAM
A funding program to incentivize the construction of more cabins as the park grows.

POTENTIAL FUNDING: Private family donations.

POTENTIAL PARTNERS: N/A

NORTHERN LOOP ILLUSTRATIVE, PICTURES
Source: SWA Group, YMCA of the Rockies website




ECOLOGICAL UPLIFT

An essential element of the master plan strategy for Lake Houston Wilderness Park is to enhance the ecological functions of the Park and in doing so generate revenue. Efforts to capture these revenues, which can be referred to as “enviro-economic” opportunities, fall into four broad categories:

- Mitigation Opportunities
- Ecological Service Opportunities
- Biological Carbon Sequestration and Forest Products Opportunities
- Conservation Funding Opportunities

Two other revenue-generating strategies are also suggested for the park; they complement the enviro-economic strategy and enable the execution of certain of its aspects. These two additional strategies are:

- Land Acquisition
- Special Districting

To take advantage of these enviro-economic opportunities it is necessary to identify specific Park enhancements that could be implemented if outside funding could be secured. Most features of the Master Plan beyond Phase 1 could generate funding from the revenue sources identified here.

ECOLOGICAL UPLIFT

ECOLOGICAL MITIGATION FUNDING

— Mitigation is a broad term that refers to the restoration, enhancement, creation or preservation of valuable ecosystems. Mitigation funds can also be used for public education and access to environmental resources. These mitigation activities are performed for the purpose of compensating for environmentally damaging actions that impact similar protected resources. This “offsetting” of environmental harm may be required for impacts that occurred in the past, are happening now, or will happen in the future.

PICTURES

Source: SWA Group



HABITAT RESTORATION

Rehabilitating and replanting degraded habitats.



HABITAT CREATION

Creating new areas of habitat; for example, planting wetland plants in low-lying areas with poor drainage.



HABITAT PRESERVATION

Using mitigation funds to purchase areas of habitat that might otherwise be developed.



PUBLIC EDUCATION AND ACCESS

Funding facilities and programs that increase public environmental education and public access to the environment.

ECOLOGICAL UPLIFT

IN-LIEU FEE PROGRAM

- It is possible for permitted mitigation fees compensating for habitat destruction to fund off-site projects sponsored by a third party. An In-Lieu-Fee (ILF) Program operates such that fees are paid to a third party that will agree to use the funds to carry out specified types of projects within a specified area. Monies from a number of permitted paying parties go into a single pool that is then used to fund a variety of approved projects.
- An ILF arrangement would offer the best opportunity for the City to generate mitigation funding to implement and execute environmental restoration, enhancement, creation and preservation projects at or adjacent to the Park.



PICTURES

Source: Spring Creek Greenway website



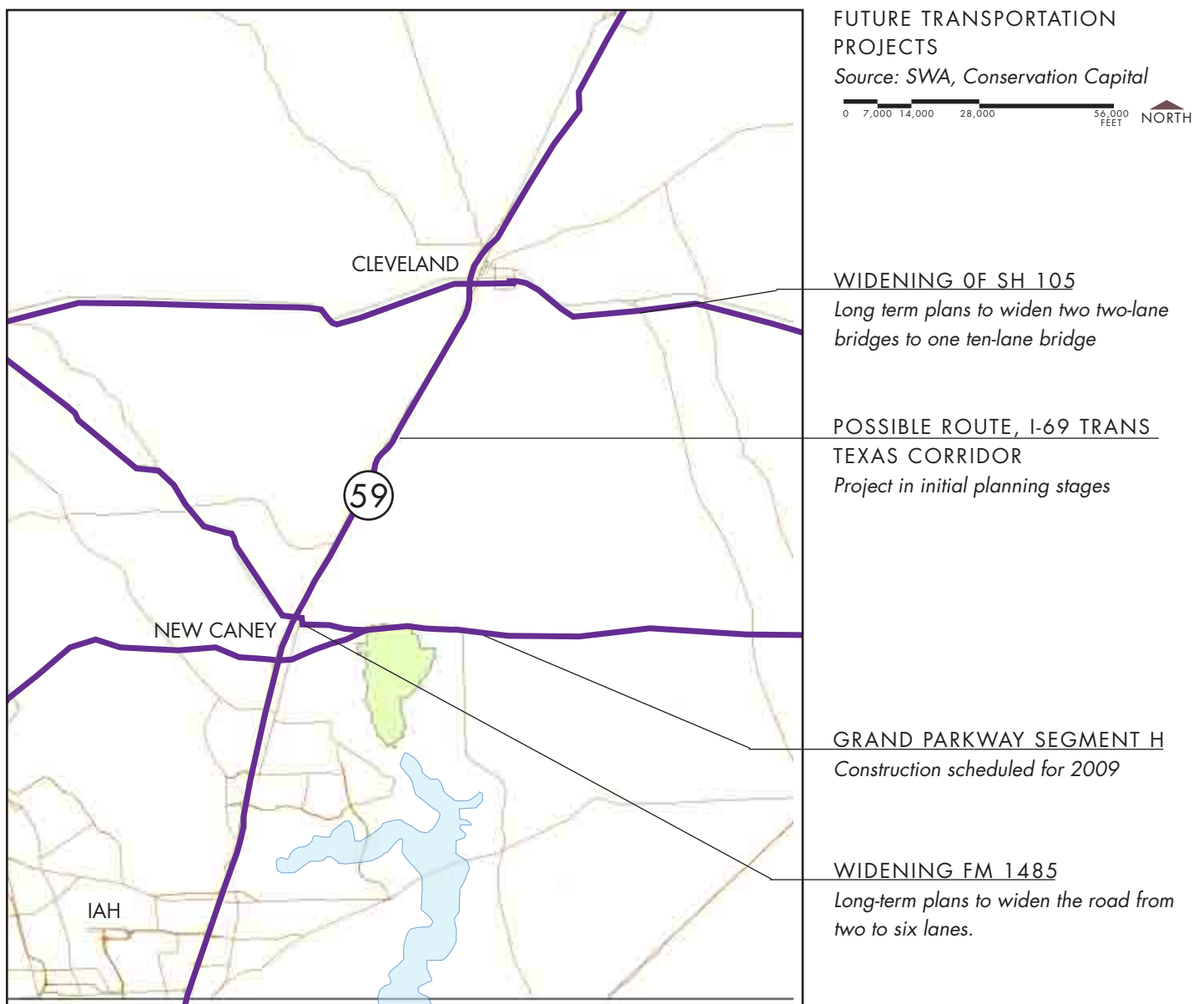
IN-LIEU FUNDING AT WORK: SPRING CREEK GREENWAY

The Spring Creek Greenway, a linear park in northern Harris County and southern Montgomery County, has an ILF Program with an announced goal of creating a 12,000 acre riparian corridor along Spring Creek through the use of mitigation and other sources of funding. Mitigation funds go into the ILF to purchase and therefore preserve 33 linear miles of forest along Spring Creek.

ECOLOGICAL UPLIFT

TRANSPORTATION MITIGATION FUNDING

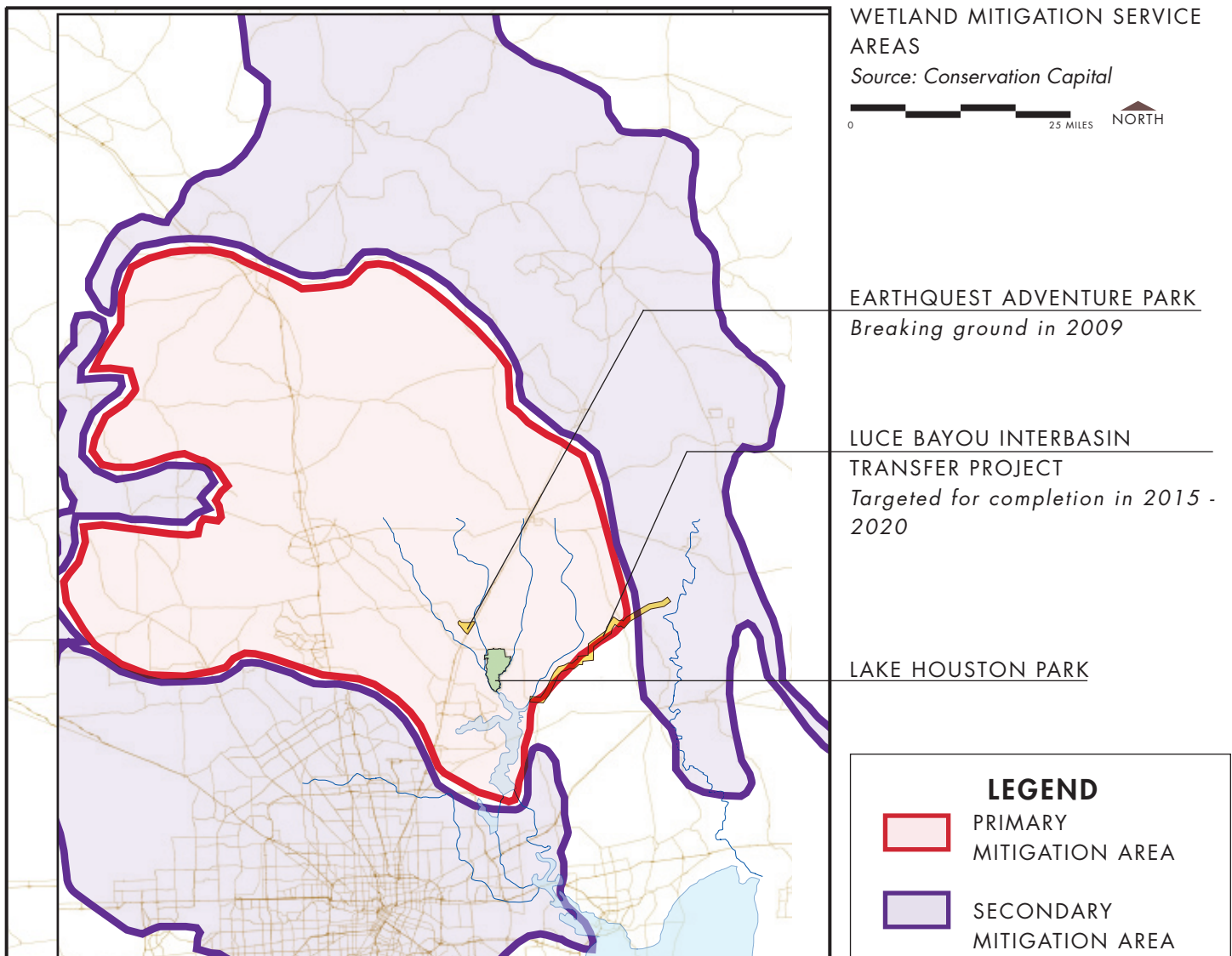
- In its 2035 Regional Transportation Plan the Houston-Galveston Area Council (H-GAC) specifically identifies the Lake Houston area as a high priority for focusing future mitigation revenues to offset the impact of future transportation projects.
- As one of the most significant components of the larger Lake Houston eco-region, a compelling case can be made for prioritizing the Park as a mitigation funding recipient for future transportation projects across the entire 8-county H-GAC planning area.



ECOLOGICAL UPLIFT

WETLAND MITIGATION

- The most lucrative mitigation funding comes from wetland mitigation, which is overseen by the US Army Corps of Engineers (USACE) as part of the Clean Water Act.
- Wetland mitigation activities regulated by the USACE must demonstrate a connection between the impact to be offset and the location where the mitigating project will take place. Thus mitigation projects must take place within a “service area” which encompasses both the impacting project and the mitigation site. Mitigation projects within the “primary” service area have higher credit ratios than projects in “secondary” service areas.
- Two potential projects within Lake Houston Wilderness Park’s primary service area that may need to purchase wetland mitigation credits are the EarthQuest Adventure Park and the Luce Bayou Interbasin Transfer Project.



ECOLOGICAL UPLIFT

CONSERVATION BANKING

- Another potential mitigation opportunity for the park is the possible creation of a Conservation Bank for threatened and endangered species. Conservation Banks are permanently protected privately or publicly owned lands managed for endangered, threatened, and other at-risk species.
- Potential funding could be secured for the establishment of prairie grassland openings along existing pipeline corridors to create habitat for Henslow's Sparrow, a species of concern known to be present in the Park.
- Another opportunity could entail restoring longleaf pine habitat in the Park to establish preferred habitat for the endangered Red-Cockaded Woodpecker, which has been sighted south of the Park.

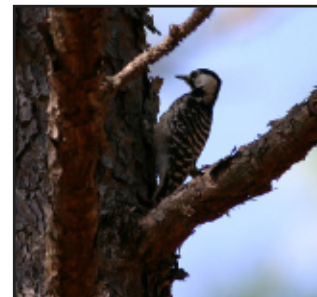
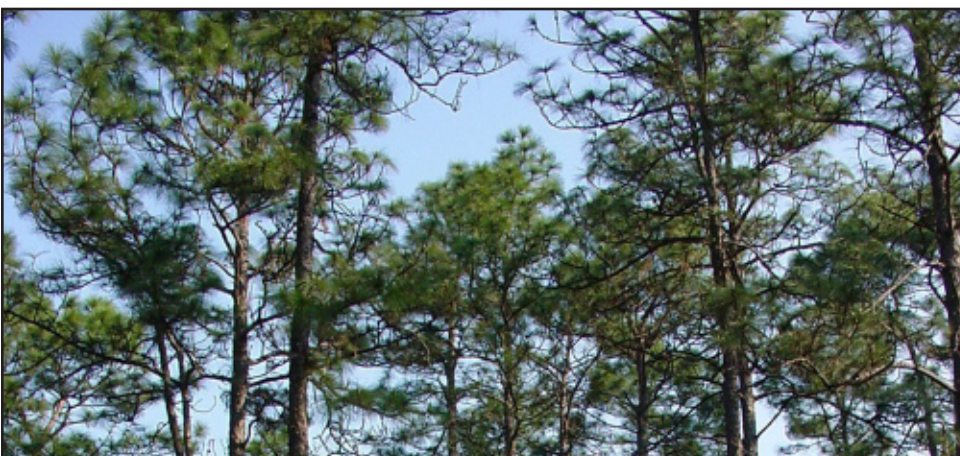


PICTURES

Source: SWA Group



HENSLOW'S SPARROW and the Park grassland that could potentially be rehabilitated to support the sparrow more fully.



RED-CKADED WOODPECKER and longleaf pine, a species that could be actively nurtured and increased in number to create improved habitat for the woodpecker.

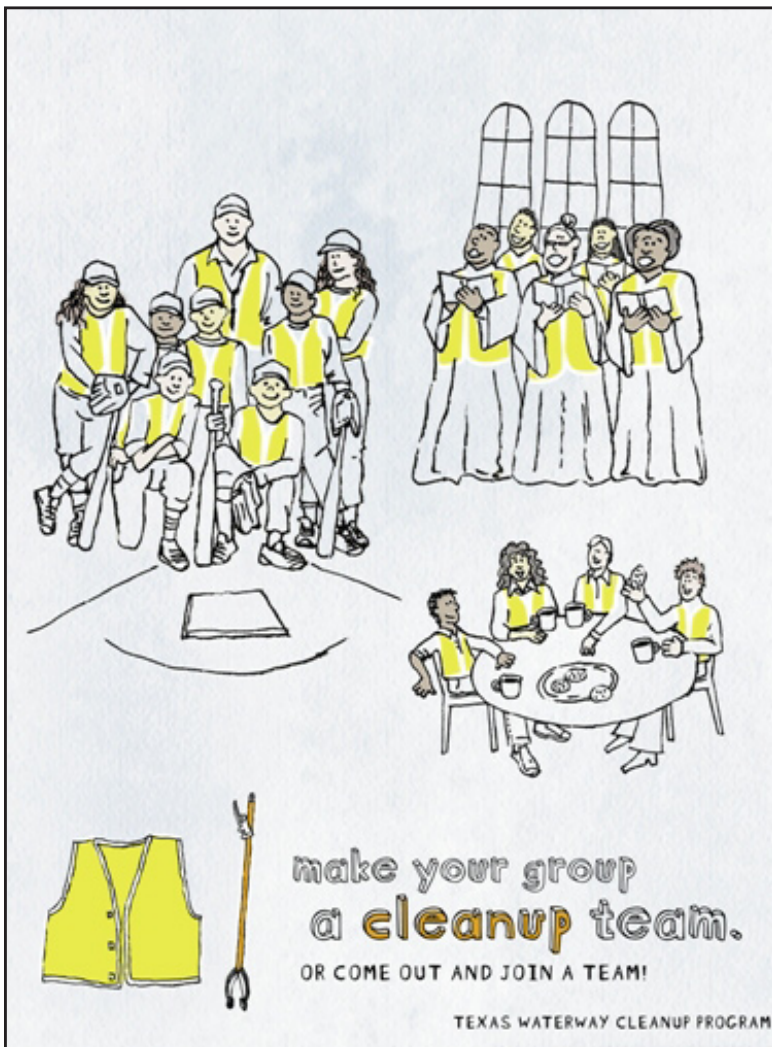
ECOLOGICAL UPLIFT

SUPPLEMENTAL ENVIRONMENTAL PROJECTS

- Another opportunity to capture mitigation funds is through the establishment of Supplemental Environmental Projects (SEPs). SEPs are specific mitigation projects whose funding is required of developers or land owners who violate environmental laws.
- SEPs are designated by the US Environmental Protection Agency, the Texas Commission on Environmental Quality, and the Harris County Attorney's Office.
- The SEP designation is given to projects that prevent pollution, reduce the amount of pollution reaching the environment, enhance the quality of the environment, or contribute to awareness of environmental matters.

PICTURES

Source: Texas Waterways Cleanup Program

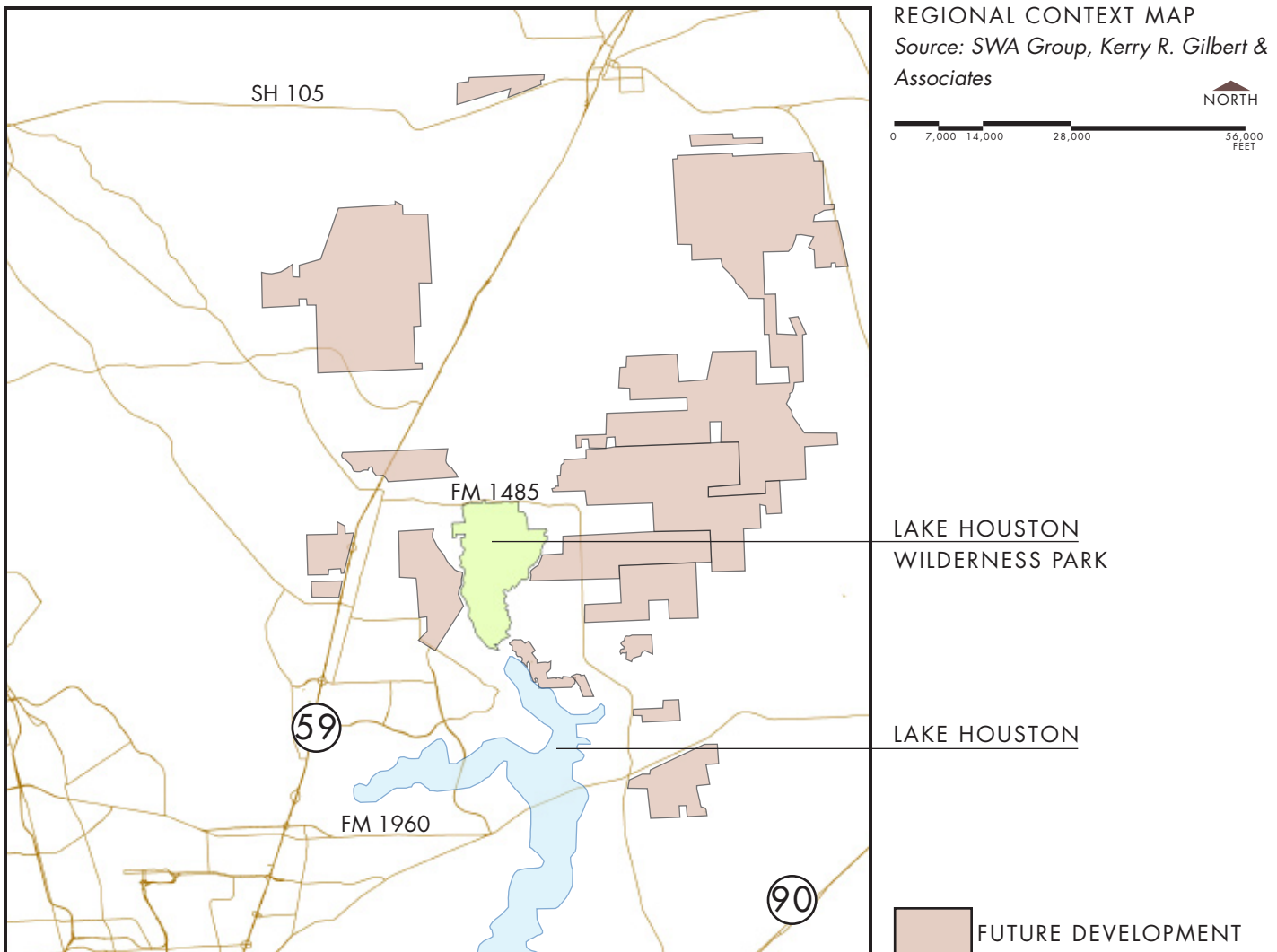


TEXAS WATERWAYS CLEANUP PROGRAM is a state-wide program that qualifies as an SEP. Part of "Keep Texas Beautiful", a larger umbrella program, the Texas Waterways Cleanup Program focuses on removing trash and litter from inland waters of Texas.

ECOLOGICAL UPLIFT

WATER QUALITY SERVICES

- Over the past few years, markets have begun to evolve in ways that can allow landowners to monetize certain ecological functions provided by their land. An ecological services transaction is different from a mitigation transaction in that the financially contributing party is not mitigating or offsetting the impact of its operations. It is paying for a “service”.
- Since the park is already “conserved” under the transfer agreement between the City and Texas Parks and Wildlife (TPWD), the ecological services the Park currently provides to the community have effectively been paid for. However, because of the Park’s location immediately upstream of the City’s most important source of drinking water (Lake Houston), it would seem logical to commit resources to investigate ways that the Park could function to better protect this critical regional resource.



ECOLOGICAL UPLIFT

ON-SITE CONSTRUCTED WETLANDS FOR WATER POLISHING

— A potential Park-related water quality opportunity whose feasibility should be evaluated is the development of a constructed wetland, within the Park proper, to remove bacteria, nutrients, suspended sediment and possibly other contaminants from waters that now flow adjacent to the Park, along Caney and Peach Creeks on the west and along the East Fork of the San Jacinto on the east, ultimately discharging into Lake Houston.

PICTURES

Source: Conservation Capital

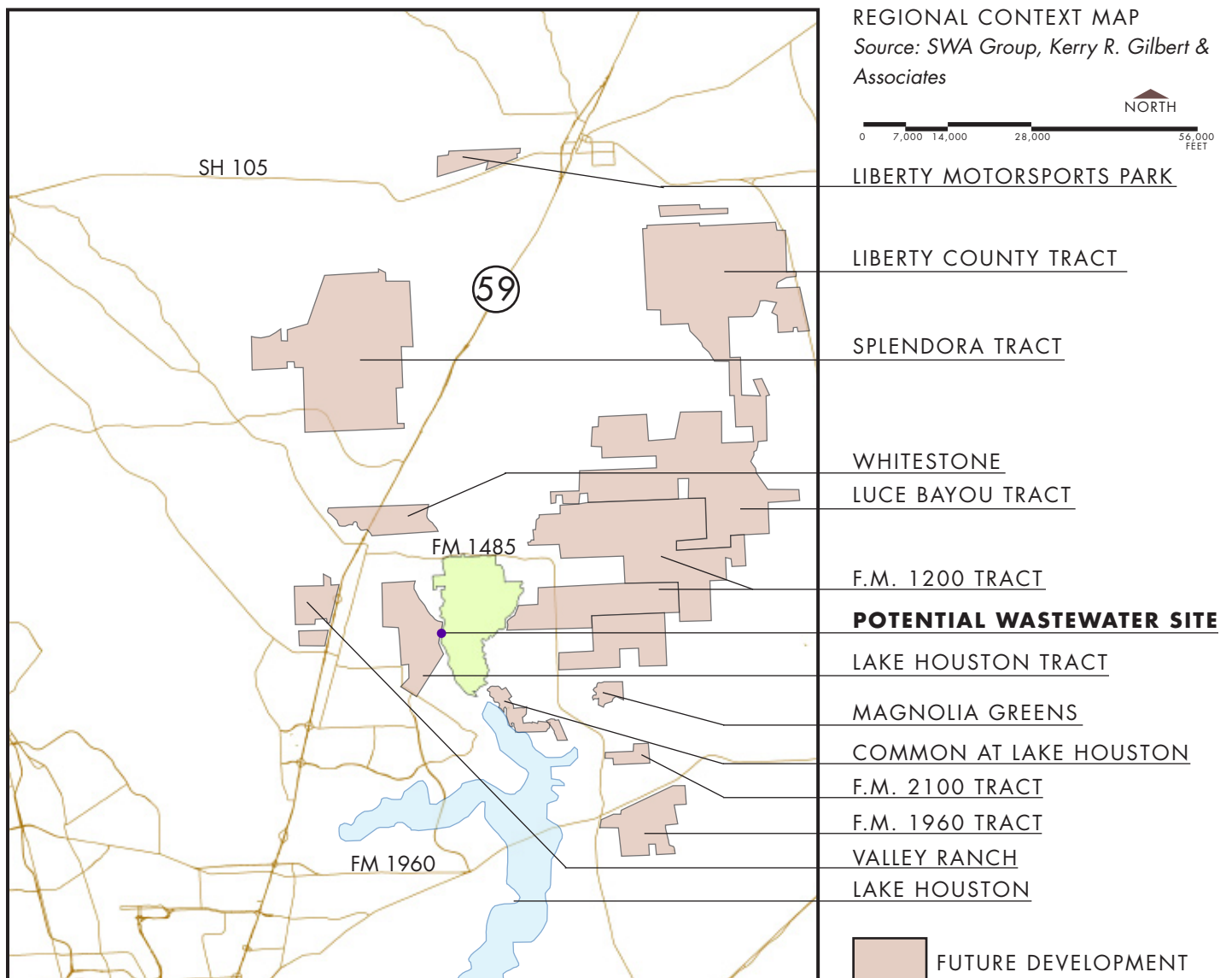


BELTWAY 8 WETLAND WATER QUALITY PROJECT *The project is built on a 220 acre site that is part of the Greens Bayou Wetland Mitigation Bank. The project includes a train of treatment and habitat units which include a Surge Basin for capturing and pumping stormwater inflows, two Polishing Ponds for flow equalization and initial water quality treatment, four Polishing Marshes for final treatment, and a large area of transitional and deepwater wetland habitat. The project is demonstrating a very high level of water quality enhancement: Operational monitoring indicated pollutant mass removals of 91 – 92%.*

ECOLOGICAL UPLIFT

REGIONAL WASTEWATER PLANT ADJACENT TO PARK

- Given the Park's location immediately upstream of the City's most important source of drinking water, and given the amount of future development on the boards for the area, it makes sense to investigate ways the Park can serve as a regional water quality resource for the coming density in the area.
- It is recommended that a preliminary evaluation be conducted to assess the feasibility of securing land adjacent to the Park as a site for a future regional wastewater treatment plant. The 225 acre sand mining site along the west bank of Caney Creek, just north of the City of Houston's Farnsworth Park, might provide a reasonably priced location for such a facility.



ECOLOGICAL UPLIFT

CARBON SEQUESTRATION

- Land-based projects can help to reduce atmospheric green-house gas concentrations in a number of ways. One is to plant a naked plot with carbon-sequestering vegetation. Since Lake Houston Wilderness Park is largely forested, this avenue is not possible for most of the Park, but can be pursued for the open areas in the utility easements.
- A second way to reduce green-house gases is to permanently capture the carbon sequestered in wood by harvesting fallen trees and other debris that would normally decay and send carbon into the atmosphere. These harvested wood materials can be used to create long-life products like buildings or furniture.

PICTURES

Source: SWA Group



LONG-LIFE WOOD PRODUCTS

The wood harvested on-site could be milled in the Park at a small sawmill that would combine park maintenance needs with an educational opportunity. Carbon credits could be obtained for the long-life products created from the milled wood, and the sawmill itself could receive mitigation funding as an educational initiative.



ECOLOGICAL UPLIFT

UTILITY EASEMENT PLANTINGS

— Another carbon opportunity can be found on the electric transmission and gas pipeline corridors that traverse the Park. Such corridors present a range of carbon opportunities, including grassland or prairie restoration, biofuel production using grasses, and carbon sequestration in shrubs or small trees.



BIOFUEL PRODUCTION

Switchgrass (above) is known for its potential as a biofuel because of its high cellulose content. These grasses can grow over five feet tall, which provides cover and habitat for birds and small mammals.



UTILITY LINE ARBORETUM

Dr. Bonnie Appleton, a Virginia Tech researcher, has created a Utility Line Arboretum to test and demonstrate suitable trees (above) and shrubs for planting under transmission lines. This list could be used to plant appropriate woody species for carbon sequestration.

PICTURES

Source: SWA Group

PRAIRIE RESTORATION

Underground natural gas pipelines like those running through the park require corridors free from dense vegetative cover that obscures airplane oversight of pipeline integrity; thus, the pipeline corridor presents an opportunity to restore native prairie grasses (below) like switchgrass and eastern gamma grass.



CARBON SEQUESTRATION

ECOLOGICAL UPLIFT

TRADITIONAL CONSERVATION FUNDING

- A financial resource for the Park to draw on is the wide array of grants, loans, campaigns and other funding initiatives available through local, state and federal conservation and recreational organizations and agencies. Conservation Capital has developed a specific Conservation Funding Matrix that identifies key grant and program opportunities particularly relevant for the Park¹
- It will also be crucial to build a regional corporate funding campaign to engage the resources of the Houston region's private business community in support of the Park.

HOUSTON ENDOWMENT



Armand Bayou Nature Center, Houston Funds from Houston Endowment, 2008

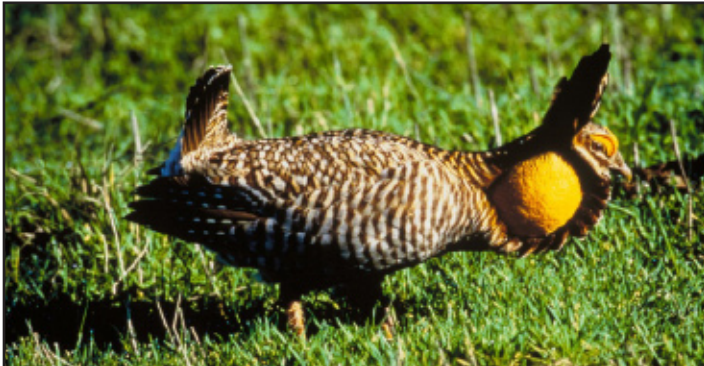
Grant towards enhancing the 2,500 acre nature preserve and upgrading the interpretive building.

BROWN FOUNDATION



Katy Prairie Conservancy, Houston Funds from Brown Foundation
Grant money towards the campaign for the Katy Prairie Land Acquisition.

SPIRIT OF CONSERVATION MIGRATORY BIRD PROGRAM



Restoring Atwater's Prairie Chicken Habitat Funds from Spirit of Conservation Migratory Bird Program

Grant towards restoring 20,000 acres of habitat for the endangered Atwater's Prairie Chicken in the grasslands of south-east Texas.

NATURE CONSERVANCY



Big Thicket National Preserve, Beaumont Funds from the Nature Conservancy

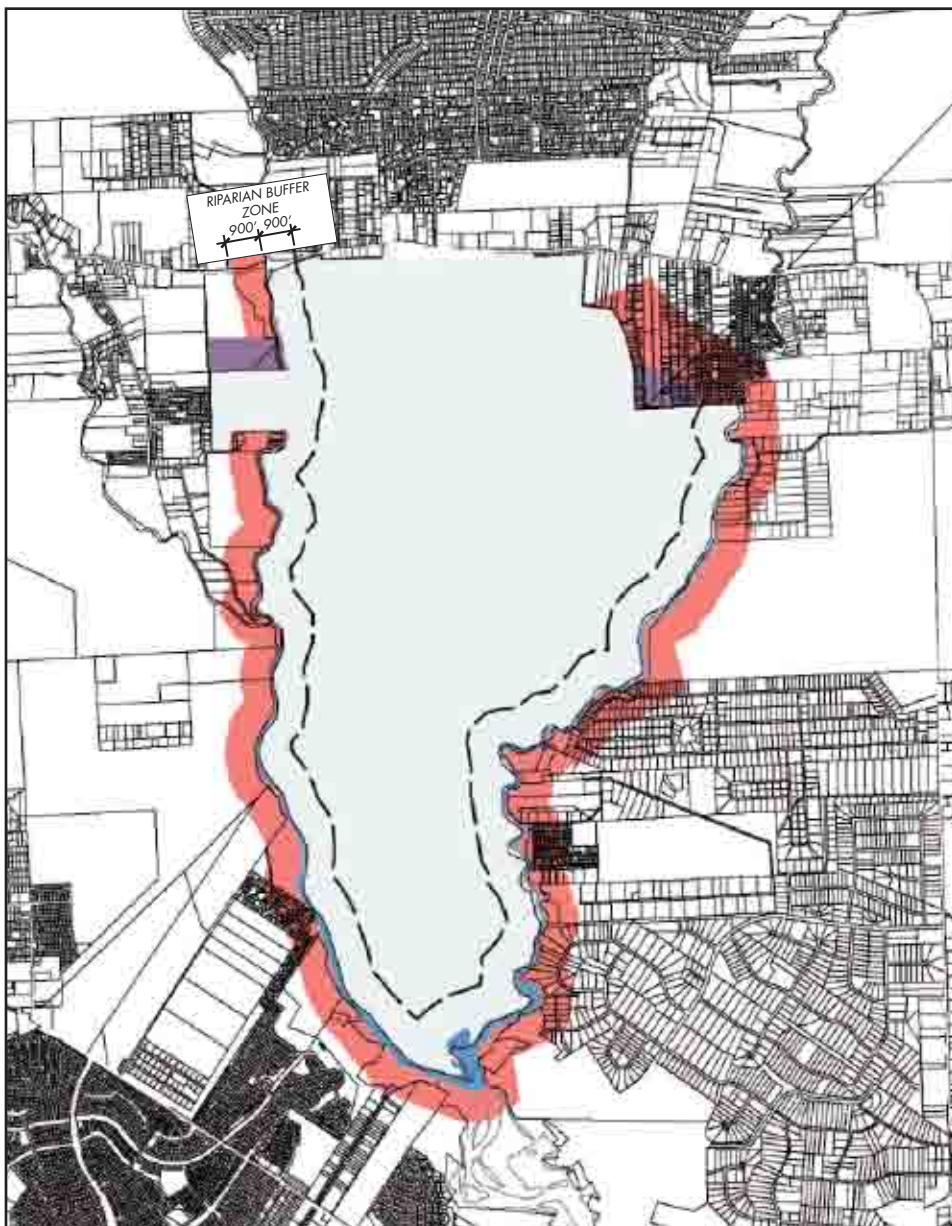
Grant towards sustaining, enhancing and restoring the longleaf ecosystem in the Big Thicket Sandyland conservation area.

1. See Enviro-Economic Opportunities for Lake Houston Park, Conservation Capital. August 12, 2008.

ECOLOGICAL UPLIFT

REAL ESTATE ACQUISITION

- Properties lying adjacent to the Park on the west banks of Caney and Peach Creeks and on the east bank of the East Fork of the San Jacinto River could be attractive acquisition targets for the City.
- The riparian zone has great ecological value, both as habitat and as a crucial element of natural water management systems. This value can only be preserved if both sides of a waterway are protected.



REAL ESTATE ACQUISITION

Source: SWA Group



FINANCIAL BENEFITS:

RISING LAND VALUES

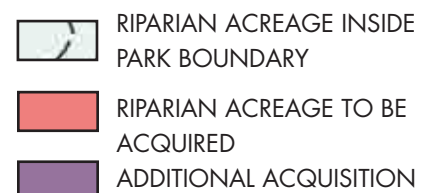
Such properties could elevate in value, generating an attractive return if later resold to development interests.

RIPARIAN ZONE MITIGATION FUNDING

Properties in the riparian corridors directly adjacent to the creeks would preserve the riparian corridor, an outcome that could generate riparian mitigation funding.

GREEN INFRASTRUCTURE

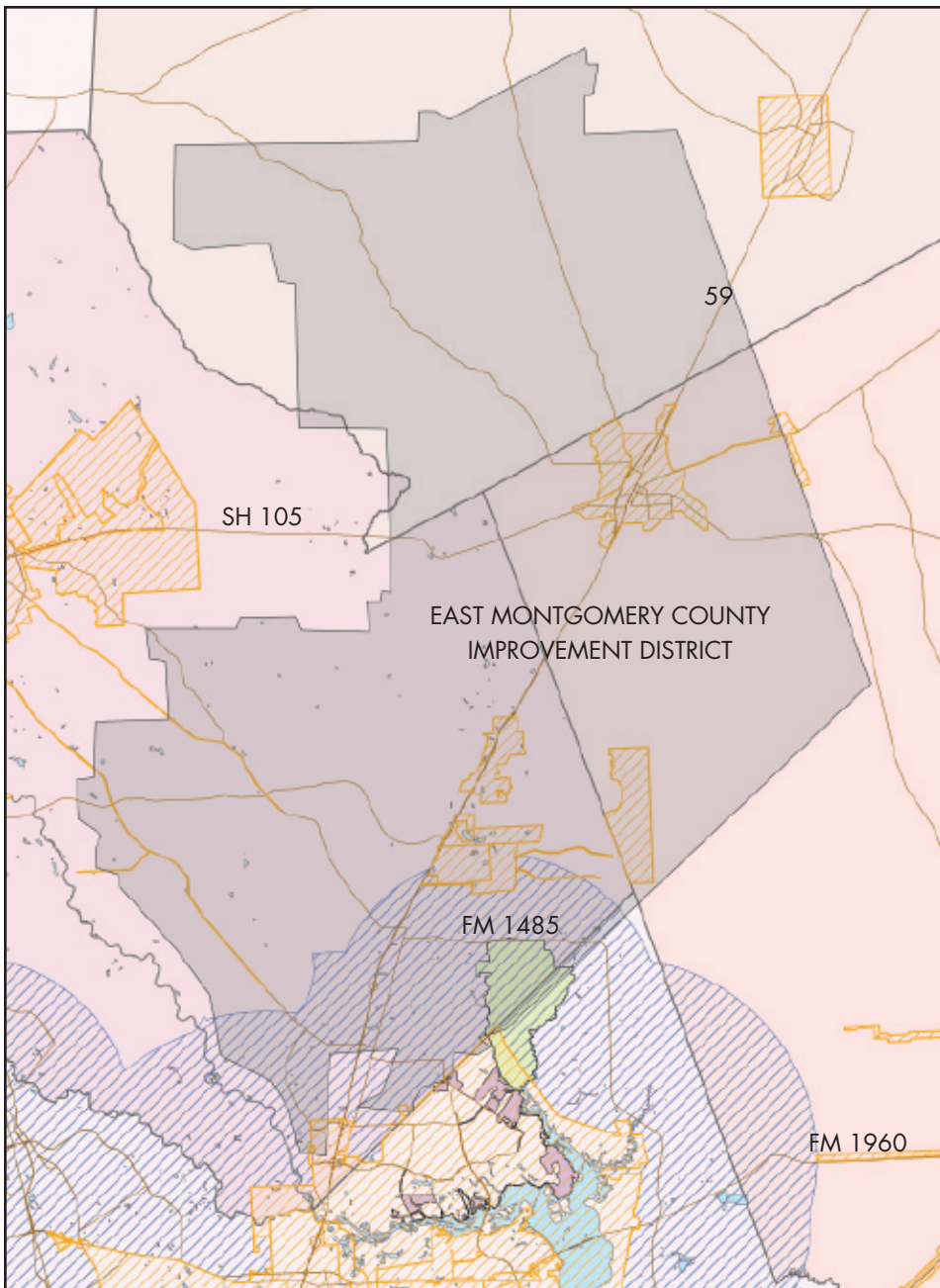
The US EPA and other federal agencies have, in recent years, expressed interest in funding the use of ecologically valuable lands for purposes such as flood control and water quality, uses sometimes called "green infrastructure."



ECOLOGICAL UPLIFT

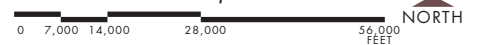
SPECIAL DISTRICTING

— To maximize the ability of the Park to capture and utilize both traditional and innovative revenue streams a unique or at least hybrid governance, management and operational structure may need to be considered.



PARK AND EXISTING DISTRICT

Source: SWA Group



POTENTIAL POWERS:

CONTRACT W/ PRIVATE REVENUE GENERATORS

ACQUIRE AND HOLD REAL ESTATE FOR PROFIT OUTSIDE BOUNDARY OF PARK

COLLECT AND PLEDGE SALES AND USE TAX

COLLECT HOTEL OCCUPANCY TAX

LEASE AND MANAGE FACILITIES

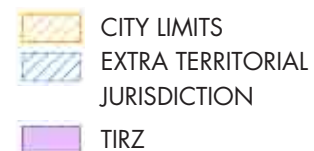
MANAGE NATURAL RESOURCES

EMPLOY PUBLIC SAFETY AND SECURITY SERVICES

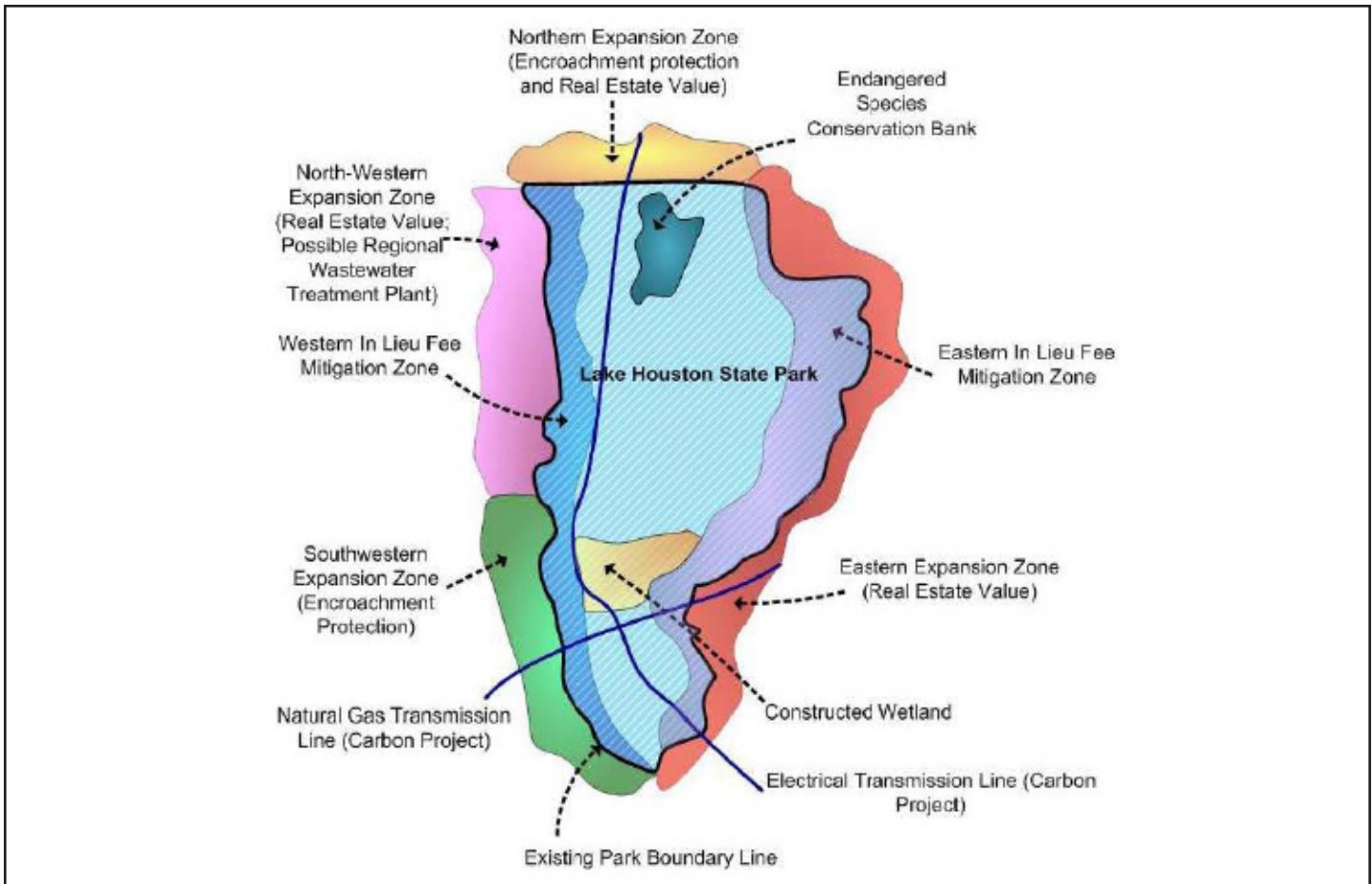
IMPOSE IMPACT FEES

CONSTRUCT INFRASTRUCTURE BOTH INSIDE AND OUTSIDE BOUNDARY OF PARK

ISSUE BONDS



SPECIAL DISTRICTING



NOTE: This image is a graphic illustration only; it does not represent actual funding strategies for Lake Houston Park.

Source: Conservation Capital

IMPLEMENTATION

- As detailed in the previous section, this Master Plan includes a strategy of enviro-economic fund-raising techniques that could leverage the nature of the Park land and its adjacencies to infrastructure and development to capture millions of dollars for the future development of the park. The Master Plan also includes more traditional revenue-generating elements like cabin rentals and entry and user fees.
- The enviro-economic techniques presented in the previous section have different time-frames and revenue potential. They also each require a different amount of initial investment in personnel and time to set up legal structures, establish political relationships, and market to potential investors. Compiling these techniques into a strategy for Lake Houston Park requires weighing the investment of time and money of each technique against its eventual return.
- What follows is a list of these chosen techniques and the steps necessary to begin the revenue-generating process. Also included is a delineation of the steps necessary to begin generating revenue from Park amenities, and a near-term cost/revenue estimate incorporating all revenue streams and cost outlays into a single tally.

IMPLEMENTATION

STEP BY STEP

HABITAT MITIGATION

TASK 1.0: ESTABLISH AN IN LIEU FEE (ILF) PROGRAM

- 1.1 Conduct exploratory meetings with representatives of the City of Houston and US Army Corps of Engineers regarding approval of an ILF Program for the Park;
- 1.2 Develop report that summarizes potential Park enhancements that could be funded through an ILF Program, including an analysis of potential wetland construction or enhancement on the site;
- 1.3 Prepare report on near-term ILF funding opportunities related to regional transportation, residential, commercial and public construction projects;
- 1.4 Negotiate terms and conditions of ILF Agreements;
- 1.5 Actively market the Park in order to capture ILF mitigation funds.

TASK 2.0: ESTABLISH A PRE-APPROVED SUPPLEMENTAL ENVIRONMENTAL PROJECTS (SEP) PROGRAM

- 2.1 Prepare Report on near-term SEP funding opportunities related to regional transportation, residential, commercial and public construction projects;
- 2.2 Meetings between representatives of the City of Houston and the TCEQ regarding designation of the Park as a "Pre-Approved SEP" site;
- 2.3 Secure commitment for a specific TCEQ-approved SEP project for the Park;
- 2.4 Negotiate terms and conditions of Pre-Approved SEP Agreements;
- 2.5 Actively market the Park in order to capture SEP funds.

TASK 3.0: ESTABLISH THE PARK AS A TRANSPORTATION MITIGATION PRIORITY

- 3.1 Conduct meetings with representatives of the City of Houston, Texas Department of Transportation, the Federal Highway Administration, Houston-Galveston Area Council (H-GAC), and Texas Parks and Wildlife (TPWD) regarding designation of the Park as a transportation mitigation priority for the region;
- 3.2 Complete an MOU with TxDOT and TPWD on designation of Park projects as providing compensatory highway mitigation;
- 3.3 Negotiate mitigation agreement with the Grand Parkway Association relative to Segment H of the Grand Parkway;
- 3.4 Hold meetings with Houston Airport Systems relative to mitigation needs for Bush Airport.

NECESSARY PERSONNEL	Consultant with relevant mitigation and ecological experience; Legal counsel; Government relations consultant
TIMEFRAME	January 2009 – September 2009; Capturing mitigation funds, ongoing
COSTS	\$115,000 – \$180,000; \$20,000 – 25,000/year ongoing
REVENUES	\$14,000/acre x 1,500 Park acres = \$21,000,000

WATER QUALITY SERVICES

TASK 4.0: EVALUATE AND, IF FEASIBLE, PURSUE REGIONAL WATER QUALITY PROJECTS AT THE PARK

- 4.1 Conduct exploratory meetings with key local, state, regional, federal and private water quality stakeholders;
- 4.2 Develop report summarizing potentially feasible Park-related water quality enhancement/ protection projects;
- 4.3 Select project for pilot initiation in 2009.

NECESSARY PERSONNEL	Water quality consultant; Engineering firm; Expertise in non-point wa- ter pollution control and wetland creation; Government relations consultant
TIMEFRAME	January 2009 – January 2010
COSTS	\$35,000 – \$55,000
REVENUES	TBD

CARBON OFFSETS

TASK 5.0: PURSUE CARBON OFFSET OPPORTUNITIES AT THE PARK

- 5.1 Develop protocols for Park projects to capture carbon in forest products and through vegetation management on Park pipeline/transmission line corridors;
- 5.2 Seek validation of protocols from recognized project validators;
- 5.3 Pursue buyers of carbon offsets for initial Park carbon demonstration projects.

NECESSARY PERSONNEL	Biological carbon offset expertise; Vegetation management consultant; Forest management expertise
TIMEFRAME	January 2009 –August 2009; Credit marketing ongoing
COSTS	\$45,000 – \$55,000; \$20,000/year ongoing
REVENUES	\$150,000 – \$300,000/year x 60 years = \$6,300,000

TRADITIONAL CONSERVATION FUNDING

TASK 6.0: PURSUE TRADITIONAL CONSERVATION FUNDING OPPORTUNITIES

- 6.1 Conduct exploratory meetings with key funding entities, both local, state and federal sources like endowments and foundations and private sources like private donations;
- 6.2 Develop report recommending at least three funding opportunities to be pursued in 2009-2010;
- 6.3 Submit top-ranked funding application;
- 6.4 Submit two additional funding applications.

NECESSARY PERSONNEL	Consultant with relevant mitigation and ecological experience; Legal counsel; Government relations consultant
TIMEFRAME	January 2009 –September 2010
COSTS	\$40,000 – \$60,000
REVENUES	\$3,000,000 – \$6,000,000

REAL ESTATE ACQUISITION

TASK 7.0: PURSUE REAL ESTATE OPPORTUNITIES ADJACENT TO THE PARK

- 7.1 Prepare summary report describing ownership and preliminary value analysis of property surrounding the Park;
- 7.2 Coordinate acquisition analysis with opportunities under prior tasks;
- 7.3 Identify properties offering desirable value-elevation and Park-protection potential and realistic acquisition potential at attractive prices;
- 7.4 Pursue potential acquisitions and/or easement negotiations.

NECESSARY PERSONNEL Real Estate firm; Legal counsel; Conservation consultant

TIMEFRAME January 2009 – September 2009; Acquisition will be ongoing

COSTS \$30,000 – \$45,000

REVENUES Transaction Dependent

RECREATIONAL IMPROVEMENTS

TASK 8.0: IMPLEMENTATION OF IMPROVEMENTS

Refer to Recreational Improvements section for details.

NECESSARY PERSONNEL Design and Forest Management Team

TIMEFRAME January 2009 – December 2012

COSTS \$5,884,770

REVENUES \$352,914 in 2009, 5 - 10% increase per year after

RECREATIONAL DEVELOPMENT

TASK 9.0: PURSUE ADDITIONAL RECREATIONAL IMPROVEMENTS

- 9.1 Assess market penetration of Phase 1 improvements, examining revenue from entry fees, cabins and RV park, and attendance statistics for educational programs.
- 9.2 Identify and evaluate post-Phase 1 improvement programs
- 9.3 Prepare financial analysis and related plans for new improvement programs
- 9.4 Identify concessionaire opportunities
- 9.5 Prepare supporting staffing plans for new programs
- 9.6 Evaluate partnerships and other funding strategies/sources
- 9.7 Launch Phase 2 CIP

NECESSARY PERSONNEL HPARD in-house; Economic consultant

TIMEFRAME First quarter of 2011 – Second quarter of 2012

COSTS TBD

REVENUES TBD

SPECIAL DISTRICTING

TASK 10.0: PURSUE SPECIAL DISTRICTING OPTIONS FOR THE PARK

- 10.1 Research special districting participation and related opportunities;
- 10.2 Meet with the East Montgomery County Improvement District (EMCID);
- 10.3 Develop follow-up actions, programs and plans.

NECESSARY PERSONNEL Special Districting consultant; Legal counsel;

TIMEFRAME January 2009 –June 2009; Further tasks ongoing

COSTS \$60,000 – \$80,000

REVENUES TBD

FOREST MANAGEMENT

TASK 11.0: PURSUE FOREST MANAGEMENT-RELATED REVENUE

- 11.1 Develop harvesting prescription, execute field work;
- 11.2 Supervise harvest operation;
- 11.3 Perform vegetation management, education activities, and road and firebreak maintenance;
- 11.4 Repeat steps each subsequent year.

NECESSARY PERSONNEL HPARD in-house process management; Forest Management consultant

TIMEFRAME January 2009 – December 2010; Yearly process ongoing

COSTS \$56,223 annually

REVENUES \$193,830 annually

TASK 1.0 ESTABLISH AN IN LIEU FEE (ILF) PROGRAM

- 1.1 Exploratory meetings w/ COH and US ACE
- 1.2 Develop Report summarizing potential ILF funded enhancements
- 1.3 Prepare Report on near-term ILF funding opportunities
- 1.4 Negotiate terms and conditions of ILF Agreements
- 1.5 Actively market the Park

Task 2.0 ESTABLISH A PRE-APPROVED SEP PROGRAM

- 2.1 Prepare Report on near-term SEP funding opportunities
- 2.2 Meetings w/ COH and TCEQ
- 2.3 Secure commitment for specific TCEQ-approved SEP project
- 2.4 Negotiate terms and conditions of Pre-Approved SEP Agreements
- 2.5 Actively market the Park to capture SEP funds.

TASK 3.0 ESTABLISH PARK AS A TRANSPORTATION MITIGATION PRIORITY

- 3.1 Meetings w/ COH, TXDOT, the FHA, HGAC, and TPWD

TASK 4.0 EVALUATE AND PURSUE WATER QUALITY PROJECTS

- 4.1 Exploratory meetings with key stakeholders
- 4.2 Develop Report summarizing potential Park-related water quality projects
- 4.3 Select project for pilot initiation in 2009

TASK 5.0 PURSUE CARBON OFFSET OPPORTUNITIES AT THE PARK

- 5.1 Develop Protocols for Park projects
- 5.2 Seek validation of Protocols from recognized project validators
- 5.3 Pursue buyers of carbon offset for initial demonstration projects

TASK 6.0 PURSUE TRADITIONAL CONSERVATION FUNDING

- 6.1 Exploratory meetings with key funding entities
- 6.2 Develop Report recommending at least three near-term funding opportunities
- 6.3 Submit top-ranked funding application
- 6.4 Submit two (2) additional funding applications

TASK 7.0 PURSUE REAL ESTATE OPPORTUNITIES ADJACENT TO THE PARK

- 7.1 Prepare summary preliminary value analysis of property surrounding the Park
- 7.2 Coordinate acquisition analysis with opportunities under prior tasks
- 7.3 Identify desirable properties
- 7.4 Pursue potential acquisitions and/or easement negotiations

TASK 8.0 IMPLEMENT PHASE 1 IMPROVEMENTS

Refer to Draft Master Plan for details

TASK 9.0 PURSUE ADDITIONAL RECREATIONAL IMPROVEMENTS

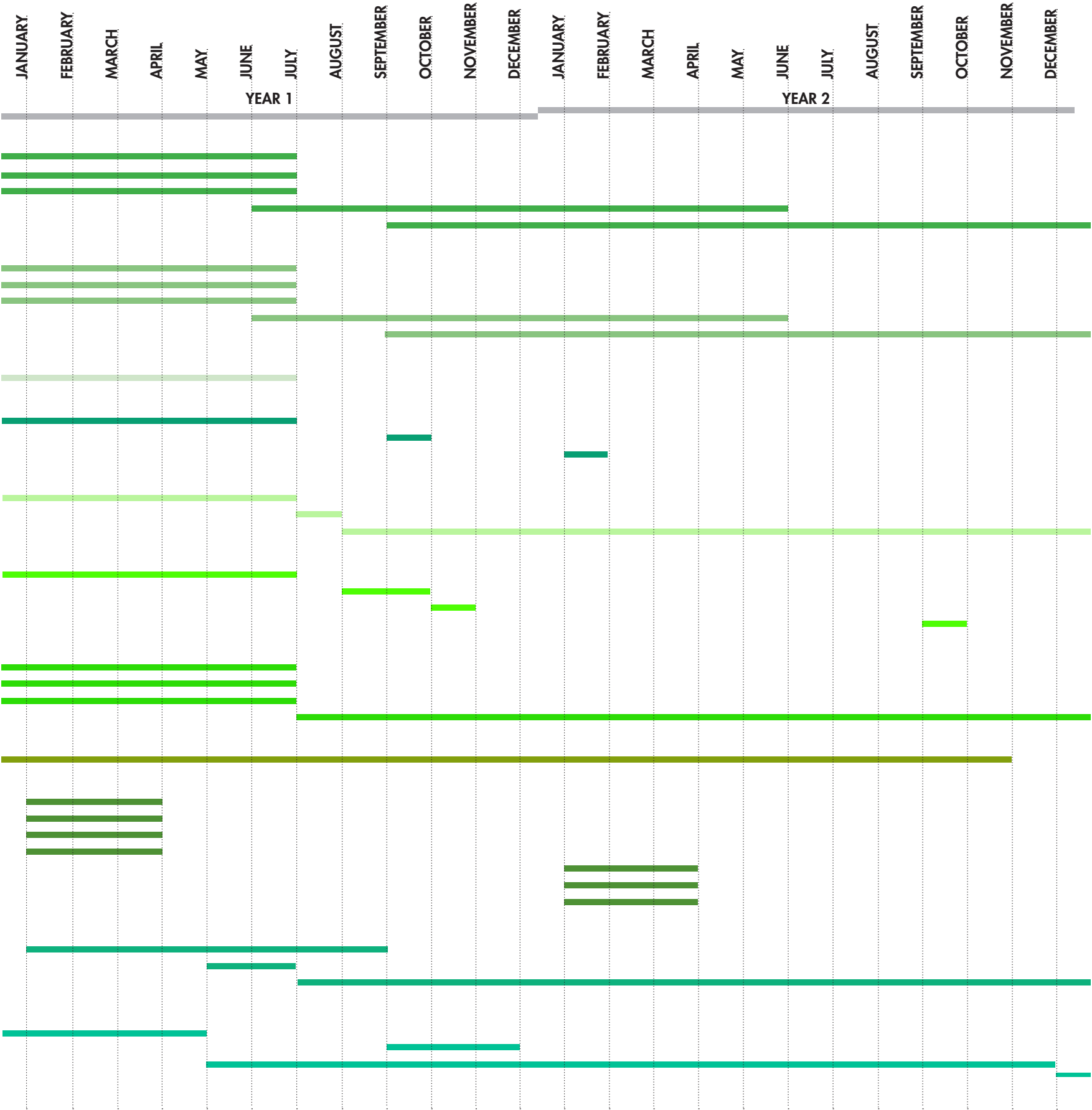
- 9.1 Assess market penetration of Phase 1 improvements
- 9.2 Identify and evaluate post-Phase 1 improvement programs
- 9.3 Prepare financial analysis and related plans for new improvement programs
- 9.4 Identify concessionaire opportunities
- 9.5 Prepare supporting staffing plans for new programs
- 9.6 Evaluate partnerships and other funding strategies/sources
- 9.7 Launch Phase 2 CIP

TASK 10.0 PURSUE SPECIAL DISTRICTING OPTIONS FOR THE PARK

- 10.1 Research special district participation and related opportunities
- 10.2 Meet with the East Montgomery Improvement District
- 10.3 Develop follow-up actions, programs and plans

TASK 11.0 PURSUE FOREST MANAGEMENT-RELATED REVENUE

- 11.1 Develop harvesting prescription; execute field work
- 11.2 Supervise harvest operation
- 11.3 Perform vegetation management, education activities and maintenance
- 11.4 Perform vegetation management, education activities and maintenance



Note: Actual calendar time to be determined.

IMPLEMENTATION
TIMELINE

— This timeline illustrates the coincident steps for moving forward on each potential revenue stream.

IMPLEMENTATION TIMELINE

Source: SWA Group, Conservation Capital, ERA, Marsh Darcy Partners

IMPLEMENTATION

NEAR-TERM COSTS/REVENUES

— This Master Plan includes a strategy for capturing large revenues down the line. To secure these funds it will be necessary to invest a certain amount of money to set up legal structures, establish political relationships, and market to potential investors. This expense will be minimally offset by initial revenues from traditional operations like charging entry fees and renting cabins and RV pads, as well as from the sale of timber from the site. The chart below details these elements, showing total costs and revenues for the Park over the near-term.

LAKE HOUSTON PARK	YEAR 1	YEAR 2	YEAR 3	YEAR 4
Beginning Working Balance/Carry Forward	0	(257,393)	568,214	1,748,821
Revenue Streams (Gross revenue)¹				
Entry Fees and Facility Rentals	65,000	110,000	115,000	120,000 ²
RV Park Revenue	0	284,000	290,000	300,000 ²
Cabin Rental Revenue	0	24,000	28,000	35,000 ²
Special Events Revenue	0	15,000	25,000	30,000 ²
Mitigation/SEP Revenue	100,000	200,000	300,000	400,000
Water Quality Revenue				
Traditional Conservation Revenue	150,000	350,000	450,000	500,000
Carbon Credit Revenue		75,000	75,000	150,000
Timber Revenue	193,830	193,830	193,830	249,200 ³
Real Estate Revenue		150,000	250,000	350,000
EMCID Park CIP				
TOTAL REVENUE	508,830	1,144,437	2,295,044	3,883,021
Expenses				
Operations	235,000	340,000	355,000	370,000 ²
Mitigation ILF Approval/Administration	180,000	25,000	25,000	25,000 ³
Water Quality Evaluation	55,000	45,000		
Traditional Conservation Revenue Efforts	60,000	25,000	25,000	25,000 ³
Carbon Credit Entitlement/Marketing	55,000	25,000	25,000	25,000 ³
Forest Management Activities	56,223	56,223	56,223	108,856 ³
Real Estate Transactions	45,000	35,000	35,000	35,000 ³
Special Districting Strategy Implementaton	80,000			
TOTAL EXPENSES	766,223	576,223	546,223	613,856
Ending Funding Balance	(257,393)	568,214	1,748,821	3,269,165

Note:

(1) All values are estimates unless noted otherwise by referenced sources

(2) Economic Research Associates, Lake Houston Park Master Plan Opportunities Analysis, October 2008

(3) Conservation Capital, Business Plan for Lake Houston Park, November 20, 2008

