

A MASTER PLAN FOR
LAKE
HOUSTON
PARK

SWA GROUP 

CONSERVATION CAPITAL, LLC



BUSINESS PLAN

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BUSINESS PLAN

For

LAKE HOUSTON PARK

Prepared by



CONSERVATION CAPITAL, LLC

November 20, 2008

GENERAL & LIMITING CONDITIONS

Every reasonable effort has been made to ensure that the data contained in this report are accurate as of the date of this study; however, factors exist that are outside the control of Conservation Capital, LLC (CCL) and that may affect the estimates and/or projections noted herein. Our evaluation is based on estimates, assumptions and other information developed by Conservation Capital from its independent research effort, general knowledge, and information provided by and consultations with the client and the client's representatives. No responsibility is assumed for inaccuracies in reporting by the client, the client's agents and representatives, or any other data source used in preparing or presenting this study.

This report is based on information that was current as of November 3, 2008 and Conservation Capital has not undertaken any update of its research effort since such date.

Because future events and circumstances, many of which are not known as of the date of this evaluation, may affect the estimates contained therein, no warranty or representation is made by Conservation Capital that any of the projected values or results contained in this evaluation will actually be achieved.

Possession of this Report does not carry with it the right of publication thereof or to use the name of "Conservation Capital " in any manner without first obtaining the prior written consent of Conservation Capital. No abstracting, excerpting or summarization of this study may be made without first obtaining the prior written consent of Conservation Capital. This Report is not to be used in conjunction with any public or private offering of securities, debt, equity, or other similar purpose where it may be relied upon to any degree by any person other than the client, nor is any third party entitled to rely upon this report, without first obtaining the prior written consent of Conservation Capital. This study may not be used for purposes other than that for which it is prepared or for which prior written consent has first been obtained from Conservation Capital.

This study is qualified in its entirety by, and should be considered in light of, these limitations, conditions and considerations.

1.0 OVERVIEW

Conservation Capital, LLC (“CCL”) has been engaged by the City of Houston to identify opportunities that could enable the City to generate revenue through commitments to enhance the ecological, recreational or environmental functions of Lake Houston Park. Efforts to capture these revenues, which we refer to as “enviro-economic” opportunities, fall into four broad categories:

- i. Mitigation Opportunities
- ii. Ecological Service Opportunities Including Water Quality
- iii. Biological Carbon Sequestration and Forest Products Opportunities
- iv. Conservation Funding Opportunities

Another CCL-recommended revenue-generating opportunity would entail the City’s acquisition of land adjacent to the Park for resale.

CCL’s Report of August 12, 2008 summarizes the opportunities. This Business Plan describes strategies for capturing these opportunities.

To take full advantage of the enviro-economic opportunities described by CCL, it is recommended that the City continue to refine the Park Master Plan developed by SWA so as to identify specific Park enhancements that could be implemented if outside funding could be secured. The Master Plan should also include budgetary estimates for implementing and maintaining these enhancements. If a project is included as a formally budgeted or planned enhancement that is anticipated to be implemented with public funds, such a project would likely be unable to access the kind opportunities described by CCL. This is because most projects are fundable only to the extent they provide an environmental outcome that would not have otherwise occurred. Most features of the SWA Master Plan could generate funding from the revenue sources identified in this Business Plan and CCL’s August 12, 2008 Report.

It is also recommended that the City develop a focused strategy to identify the Park as a conservation and mitigation priority among key resource and regulatory agencies. In this vein, it is recommended that the City engage appropriate officials from the following agencies as part of a task force to elevate the ecological and public attributes of the Park: the U.S. Environmental Protection Agency (“EPA”), the Texas Commission on Environmental Quality (“TCEQ”), the Texas Department of Transportation (“TxDOT”), the U.S. Fish and Wildlife Service (“USFWS”), the National Park Service (“NPS”), the Texas Railroad Commission (“TRRC”), the Texas Water Development Board (“TWDB”), the U.S. Army Corps of Engineers (“USACE”), and the Texas Parks and Wildlife Department (“TPWD”).

It is recommended that the City pursue a combination of revenue sources for the Park, consistent with CCL’s August 12, 2008 Report. Certain types of Park enhancements are

better suited to particular types of funding opportunities. For example, the potential acquisition of adjacent riparian acreage might best be accomplished with either wetland mitigation funding or federal migratory bird funding, or a combination of the two. Biodiversity enhancements within the Park's uplands might best be funded with Endangered Species Act (§7) funding or conservation bank funding. Attachment 1 presents a task list for pursuing these funding opportunities, projects approximate costs and timelines for each task and sub-task, and presents revenue projections for the various enviro-economic opportunities addressed. These costs and revenue projections are very preliminary in nature and will have to be refined through further analysis.

2.0 MITIGATION OPPORTUNITIES

2.1 Establish an In-Lieu Fee Program at the Park

Permitted compensatory mitigation generally takes one of two main forms: (1) permittee-responsible mitigation where the party responsible for the impact directly sponsors a mitigation project, typically at or near the impact site; and (2) off-site mitigation, typically sponsored by a third-party. Off-site mitigation is implemented in one of three ways:

- (a) An In-Lieu-Fee ("ILF") program, wherein 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, even though no particular parcel is specified up front;
- (b) An agreement by the paying party to acquire in fee, or place a conservation easement on, a particular parcel of developable land; or
- (c) The creation of a "mitigation bank", i.e. a specific site where a third party (the "banker") agrees to carry out clearly defined ecological enhancement activities over time in order to be authorized to sell "credits" to parties that need mitigation within that bank's "service area".

In practice, third-party mitigation efforts tend to provide more comprehensive planning than permittee-sponsored projects. For this reason, third party off-site mitigation is increasingly preferred by permitting agencies such as USACE.

In our opinion, 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. Because the Park is already protected from traditional development, the off-site mitigation strategy (Option "b" above) is inapplicable. For the same reason, and also because of the cost and complexity involved, a mitigation bank is not recommended for the Park.

At a minimum, an ILF strategy could enable the City to pursue wetland mitigation funding for creation or enhancement of wetlands within the current Park boundary, as well as targeted acquisitions of riparian land adjacent to, but not now part of, the Park.

As noted in CCL's August 12, 2008 Report, a similar ILF program has been approved for the nearby Spring Creek Greenway. The Spring Creek Greenway ILF Program has an announced goal of creating a 12,000 acre riparian corridor along Spring Creek, through the use of mitigation and other sources of funding. The sites available for mitigation credit in the Spring Creek corridor range from 1 to 200 acre tracts, with the cost of a credit depending on the current market price of the land and any improvement costs for restoration, enhancement, or creation measures, and management costs for preservation. In the USACE's Fort Worth District, stream corridor credits range in price from \$75/linear foot to \$475/linear foot, depending on the quality of the functional uplift achieved by the restoration effort. These prices are based upon a \$25,000/acre wetland credit price. This is consistent with prices received for wetland mitigation in the Houston area, where credit prices range from \$19,000 to \$25,000 per acre. In the case of the Lake Houston Park ILF Program, the City would market project funding opportunities that had been defined in advance as part of the Park Master Plan.

Funds for ILF programs are deposited by permitted developers into a restricted mitigation account held by the In-Lieu Fee program sponsor. These funds are used by the ILF sponsor to undertake restoration and enhancement, such as removal of invasive vegetation, loosening compacted soils, and planting native species. After a five-year mitigation oversight period, the ILF sponsor continues more typical site monitoring and oversight tasks. If the land is publicly owned, a public body (e.g., the City) may assume management responsibility for natural resources. CCL's August 12, 2008 Report includes as an attachment the Memorandum of Agreement between the USACE and Legacy Land Trust that established the In Lieu Fee Program for Spring Creek Greenway.

The Spring Creek Program is a model that might be best suited for the Park. By identifying specific Park enhancement or expansion projects that could be implemented with mitigation funds, an ILF program could facilitate the mitigation needs of area developers. Specific Park projects could be reviewed in advance, reducing the time required to negotiate case-by-case mitigation obligations.

2.2 Establish the Park as Transportation Mitigation Priority

As noted in CCL's August 12 Report, the governing regional transportation planning agency, the Houston-Galveston Area Council (H-GAC), in its 2035 Regional Transportation Plan, specifically identifies the Lake Houston area as being a high priority for focusing mitigation revenues to offset the impact of future transportation projects. Because Lake Houston Park is 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—not only in northern

Harris and southern Montgomery counties, but across the entire 8-county H-GAC planning area.

An example of such TPWD/TxDOT collaboration is the Plum Creek Wetland Mitigation Site near Lockhart, Texas. In 2007, TxDOT funded the acquisition of 265 acres along Plum Creek, just north of Lockhart, in connection with its State Highway 130 project. The Plum Creek Mitigation Site will preserve wildlife habitat, finance stream bank stabilization efforts, enhance biodiversity, provide water quality improvements, and improve storm water retention for flood control purposes. It is strongly recommended that the City, working with the TPWD and TxDOT, develop a series of specific transportation-related mitigation banking opportunities for the Park.

2.3 Develop a Wetland Mitigation Market Analysis for the Park that Goes Beyond Highway Mitigation

Montgomery County is one of the most rapidly growing counties in Texas, and indeed the nation. Projected population in Montgomery County is expected to grow 132% between 2005 to 2035, increasing the County's resident population from 373,000 to 865,000. Without extensive public conservation funding, the availability of which is questionable, this explosive growth will result in extensive forest and habitat fragmentation in northern Harris County and southern and central Montgomery County. Lake Houston Park and the lands bordering the Park to the east, west and north, provide a logical mitigation opportunity that could counter-balance some of the habitat fragmentation that will inevitably occur as a result of the residential and commercial construction needed to accommodate the area's dramatic population growth. The negotiations suggested above, that will be needed to designate the Park as a recipient of highway-related mitigation funding, could serve to enable the Park to be a logical recipient of mitigation funding by the various developers that will build the residential and commercial structures needed to accommodate an additional 500,000 residents.

The wetland mitigation "service area" within which the Park lies is shown in the two maps enclosed as an attachment to CCL's August 12, 2008 Report. At a minimum, Park-related wetland restoration/creation projects could be purchased by parties sponsoring wetland-impacting projects within this "primary" service area or in any of the "secondary" service areas shown in CCL's August 12, 2008 Report. Higher credit ratios can be achieved if the buyer's project is located within the same primary service area. Because of its unique location and size, it may also be possible to expand the Park's service area (under an ILF agreement) to the entire eight-county planning area that corresponds to the boundaries of the Houston-Galveston Area Council. This is a subject that can be negotiated among relevant regulatory and resource agencies. In order to assess the magnitude of this opportunity, it will be necessary to include specific wetland restoration and/or creation opportunities within the Park Master Plan and identify a few "anchor" buyers who would commit to satisfying their near-term mitigation needs at the Park.

A potential short-term opportunity in this regard is a large construction project located upstream from the Park on Caney Creek. The EarthQuest Adventure Zone, which will be breaking ground in 2009, is to include a theme park, a museum, outlet malls, hotels and housing. There is also an area for future retail expansion and office space. The EarthQuest footprint is expected to cover over 500 acres. Associated residential development is predicted to occur in the Roman Forest community to the north of Lake Houston Park. Commercial expansion is anticipated along portions of U.S. Highway 59 near the Park. The significant developments planned for this and other associated projects will require compensatory mitigation.

In addition to the many commercial and residential projects that are coming on line in this part of the Greater Houston region, there are a number of non-transportation public infrastructure projects that are likely to be implemented within northern Harris and southern Montgomery Counties over the next several years. It can be expected that most of these projects will require mitigation, either to offset authorized impacts to jurisdictional wetlands or to offset the overall footprint of the project in terms of green space and habitat.

A major infrastructure project that could create mitigation opportunities for the Park is the Luce Bayou Interbasin Transfer Project. Phase 1 of this project is planned to annually convey 540,000 acre-feet (400 MGD) of surface water from the Trinity River Basin to Lake Houston by 2020, with a capital cost of \$126 MM. Ultimate capacity by 2050 will be 1,232,000 acre-feet per year, entailing an additional \$113 MM capital cost. This additional surface water is needed to meet the growing demand for water in unincorporated portions of north and west Harris County, the City of Houston, and Montgomery County. The Luce Bayou Project is a major element of the region's effort to facilitate the required conversion from groundwater to surface water for drinking water supplies. The project will require 3.6 miles of pipeline and 16 miles of new canal. A 2001 TPWD review of the proposed project resulted in a preliminary mitigation assessment, identifying habitats and wildlife species likely to be impacted, and which would require mitigation.

Another planned infrastructure project that could generate mitigation or other types of funding opportunities for the Park is a water filtration plan being planned by Montgomery County. This plan will likely require mitigation, and may be able to utilize a constructed wetland at the Park as part of the filtration process.

2.4 Evaluate the Park's Threatened and Endangered Species Conservation Banking Potential

A potential mitigation opportunity for the Park lies in the possible creation of Conservation Bank for threatened and endangered species at the Park. Conservation Banks are permanently protected privately or publicly owned lands managed for endangered, threatened, and other at-risk species. Such banks can be supplemental to and coordinated with wetland mitigation banks, i.e., both types of banks can be located on a single parcel, either adjacent to each other or on the same acreage.

To pursue conservation banking opportunities at the Park (and, potentially on adjacent parcels), the City would need to initiate consultations with TPWD and the USFWS to determine whether particular species and their habitat will qualify. Habitat restoration in the Park, which could include the establishment of prairie grassland openings and vegetating the Park's existing pipeline corridor with native grasses, may qualify for mitigation funding based upon the presence of Henslow's Sparrow, a species of concern known to be present in the Park. Another potential opportunity would entail restoring longleaf pine habitat in the Park to establish preferred habitat for the endangered Red-Cockaded Woodpecker ("RCW"). Although there are no currently known nesting sites for the RCW within the Park, there have been recent documented sightings of this endangered species south of the Park. Because the Park lies within the historical range of the Houston Toad (federally listed endangered species), the City may be able to generate marketable credits by introducing this reptile to the park.

Apart from the ability of certain habitat enhancements to generate marketable credits, we suggest that the City evaluate the Park for creation of habitat for bird species that could enhance the Park's ecotourism potential, including habitat modifications that could attract Bald Eagles, Osprey and Wood Ducks.

2.5 Seek to Have the Park Designated as Part of the Sam Houston Trail and Wilderness Preserve

The logic of prioritizing the construction of trails as a mitigation funding activity is strengthened by the fact that the Park lies directly within a 650-mile regional greenbelt/trail that has been identified by Houston Wilderness, an organization launched in 2003 as a collaboration of conservation-minded leaders from the Houston area's non-profit, governmental and the business communities. Recently named the Sam Houston Trail and Wilderness Preserve, this greenbelt could have a positive impact on the entire region's quality of life. Indeed, the 2035 Plan expressly incorporates the Houston Wilderness trail as one of its mitigation priorities.

The first formally recognized segment of the Sam Houston Wilderness Trail is the nearby Spring Creek Greenway. The U.S. Army Corps of Engineers has recently approved the Spring Creek Greenway as an In-Lieu-Fee mitigation area, meaning that area developers

(public and private) can channel their mitigation dollars into land acquisition and ecological enhancement projects within this 31-mile long Spring Creek corridor. There is good reason to believe that Houston Wilderness would strongly consider designating Lake Houston Park as a near-term priority for one of the next formal segments of the Sam Houston Trail and Wilderness Preserve. Such a designation could facilitate the generation of funding from a variety of sources (not just mitigation funding) to design, construct and maintain such trail system within the Park. (Houston Wilderness is committed to such fundraising.) Also, while the Park does not appear to contain extensive areas of jurisdictional wetlands, it is certainly possible that USACE could be persuaded to approve the Park as an In-Lieu-Fee mitigation site to receive funding for certain Park enhancement and expansion projects, particularly for projects that enhance and/or expand the riparian corridors on the east and west sides of the Park.

2.6 Pursue TCEQ Pre-Approved SEP Status for the Park

The US EPA, the Texas CEQ, and the Harris County Attorney's Office have adopted policies that allow them to settle environmental enforcement cases through what are called Supplemental Environmental Projects ("SEPs"). Under the SEP policies of these agencies, regulated entities are given the option, when attempting to resolve enforcement matters that have been initiated against them, to fund environmentally beneficial projects in lieu of a portion of monetary penalty payments they would otherwise owe. Though SEP funds cannot be used to pay for projects that have already been budgeted by a public body (or that are the basic legal responsibility of a public body) they can be used to achieve positive environmental outcomes that would not otherwise occur. Specific projects eligible for SEP designation must show that they prevent pollution, reduce the amount of pollution reaching the environment, enhance the quality of the environment, or contribute to public awareness of environmental matters. Park enhancement and expansion projects can clearly qualify.

To facilitate the SEP process, the TCEQ and the US EPA have developed a list of "pre-approved" SEP projects. Pre-approved SEPs are often attractive to enforcement respondents because the time, effort and expense associated with identifying and executing a SEP from scratch can otherwise dissuade respondents from pursuing the SEP option altogether, even if they find the approach conceptually appealing from a public relations perspective.

It is recommended that the City seek to enroll the Park (and its adjacent riparian corridors) with the TCEQ as a pre-approved SEP project site. Similar discussions should occur with the US EPA's Region 6 office in Dallas. Ideally, the SEP would identify specific Park enhancement and expansion opportunities that could be carried out as part of the pre-approved SEP. The unique opportunity afforded by the Park and its geographical position in the Lake Houston watershed, including its importance to the City's water supply, would appear to make it an attractive SEP opportunity for respondents whose

alleged violations have a nexus to the air shed and the watersheds in this rapidly growing part of Texas.

3.0 PURSUE WATER QUALITY OPPORTUNITIES AT THE PARK

Over the past few years, markets have begun to evolve in ways that can allow landowners to monetize certain of the 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 the 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. Without yet focusing on specific funding mechanisms, it is recommended that three opportunities be pursued.

3.1 Evaluate Potential Regional Wastewater Plant Site Adjacent to the Park

First, 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’s Fahrnsworth Park) might provide a reasonably priced location for such a facility.

3.2 Evaluate Creation of an On-Site Constructed Water-Polishing Wetland within the Park

A second potential Park-related water quality opportunity whose feasibility we recommend evaluating 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 west) ultimately discharging into Lake Houston. Such a treatment wetland could potentially function in tandem with a regional wastewater treatment facility, a factor that could potentially complement the siting such a facility at or near the Park.

3.3 Potential Purchase of Riparian Acreage Adjacent to the Park

A third water quality-related opportunity that should be explored for the Park would entail the acquisition of land adjacent to the Park along the west banks of Caney and Peach Creeks and along the east bank of the San Jacinto-East Fork. By putting itself in a

position to maintain riparian buffer zones on both sides of these river systems, the City could carry out a stream corridor protection plan that resembles other watershed corridor initiatives in the region, e.g., Spring Creek Greenway, Buffalo Bayou Preservation, and the Houston Park and Recreation Department's ("HPRD") linear park/"greenway" initiative. A prime goal of such an initiative would be to help ensure that water quality challenges in Lake Houston are not exacerbated by virtue of point-source and non-point source pollution impacts from the East Fork and Caney/Peach Creeks as these watersheds become more heavily developed in the future. While many of the Lake's current water quality challenges stem from discharge and runoff problems along Spring Creek and the West Fork of the San Jacinto, these difficulties could become more acute if steps are not taken now to prevent similar future impacts from the tributaries that flow adjacent to the Park.

3.4 Pursue Collaboration with Area Municipal Utility Districts (MUDs)

There could be a variety of economically beneficial outcomes associated with utilization of Park land to enhance or protect the quality of water entering Lake Houston. For example, if a feasibility assessment confirmed the viability of a regional wastewater treatment facility adjacent to the Park, along with an on-site polishing wetland system, this infrastructure could potentially replace or supplement the wastewater treatment capacity now being provided, often in a less than efficient fashion, by the numerous wastewater treatment plants that currently serve various utility districts across northern Harris and southern Montgomery Counties. The majority of rivers and streams across this area are bacteria-impaired. Undersized, poorly functioning, and improperly operated wastewater treatment plants, along with general urban storm water runoff, are suspected as principal contributors to this problem. Though a regional initiative of this type (if feasible) would obviously have to be executed in a way that considers the interests of the various utility districts and communities that own and operate the region's existing wastewater treatment capacity, MUD funding for such a concept should be explored.

3.5 Develop a Green Infrastructure Plan for the Park

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. Using natural landscapes in this way is sometimes called "green infrastructure". On April 19, 2007, EPA and four national groups signed an agreement to promote green infrastructure as an environmentally preferable approach to storm water management. Green infrastructure is an approach to wet weather management that is often cost-effective, sustainable, and environmentally friendly. Green infrastructure management approaches and employs land to infiltrate, evapotranspire, capture and reuse storm water to maintain or restore natural hydrologies. At the largest scale, the preservation and restoration of natural landscape features (such as forests, floodplains and wetlands) are critical components of green storm water infrastructure.

By protecting these ecologically sensitive areas, communities can improve water quality while providing wildlife habitat and opportunities for outdoor recreation. It is recommended that the City initiate a dialogue with the US EPA, the TCEQ, and the Texas Water Development Board (TWDB) in an effort to formulate a green infrastructure plan for the Park that could be funded by the Clean Water Revolving Fund. One potential forum for pursuing this opportunity would be the Lake Houston Watershed Source Water Protection Stakeholders Group.

4.0 DEVELOP A CARBON SEQUESTRATION AND TIMBER REVENUE PLAN

4.1 Forest Product Revenue

Advanced Ecology, Ltd. (AEL) has provided a report which forecasts an annualized after-expense cash flow of approximately \$125,000 (\$7.5 million over a sixty-year period) by utilizing the Park's resources in a fashion designed to capture forest product value and enhance the ecological quality of the Park. AEL concludes that the forest remaining at the end of a sixty-year management program will be more robust in diversity and forest health, and have a greater forest products value, than the present-day forest. At the same time, AEL forecasts the use and enjoyment of the Park by the public will have been enhanced, with access for numerous forest-based recreational opportunities, bird and wildlife viewing and solitude in the midst of a large urban environment.

The estimated costs for harvest administration, vegetation management, and forest road and firebreak maintenance are estimates based on AEL's forest management experience. AEL's estimates are designed for long-term planning. Specific activity prescriptions by AEL will further clarify these estimates. AEL recommends that, as the habitat work commences, additional work such as expansion of baldcypress ponds, construction of trails and footbridges, feral hog control or wood duck box building will be incorporated into an overall master planning process. CCL proposes that AEL's recommendations be pursued in tandem with the other recommendations in this Business Plan.

4.2 Carbon Revenue

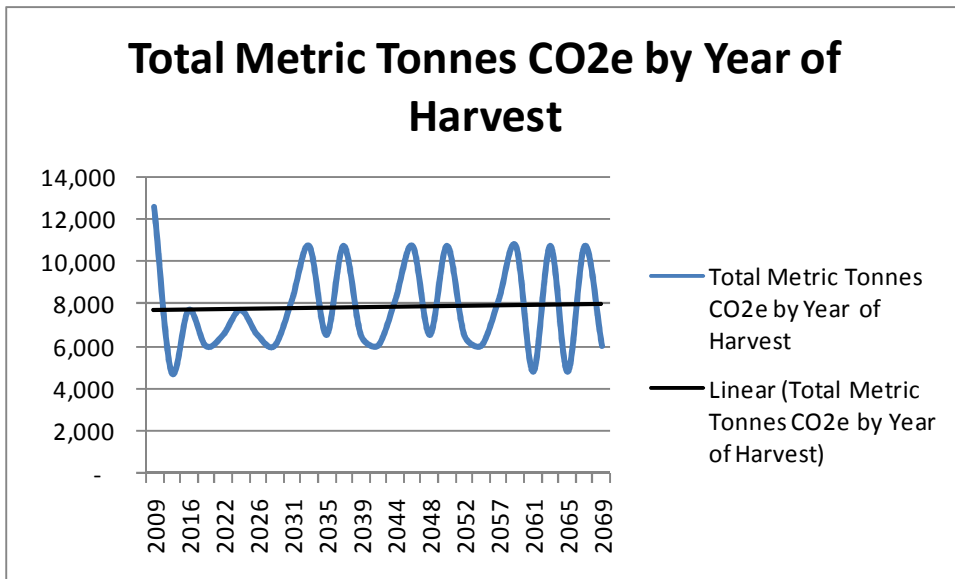
Land-based projects can help to reduce atmospheric greenhouse gas (GHG) concentrations in several ways. To the extent that such projects lead to higher CO₂ sequestration rates (i.e., more CO₂ being held in the vegetation and soil that comprise the vegetation/soil matrix than would have otherwise been so sequestered), GHG credit can be realized. Such credit can be claimed even if the sequestered carbon (e.g. the carbon content of wood, which is typically 50% of the wood's weight) is harvested, provided that the harvested wood is converted into solid wood products that have a long useful life such as lumber.

The Park’s forests were originally managed and designed for even-aged short-term pulpwood rotations of about 25 years. AEL is recommending an uneven-aged management system for the Park, resulting in an average rotation of 110 years, i.e., the average mature tree age will be 110 years old. The shifting of the management system is in effect concentrating the forest growth into larger, older trees that provide a variety of habitat enhancements.

CCL, based on input from AEL, concludes that the planned selective harvesting will generate a gross load of 46.5 mt CO₂ e per acre of sawlog product over a 60-year planning horizon, or a total of 212,592 mt CO₂ e on the total forested acreage in the Park. This is assuming a 60% utilization of the tree bole wood into the final solid wood product.

This solid wood product generated through management harvesting represents a capture of carbon that, without thinnings, would otherwise be lost through oxidation when trees die. In an unmanaged scenario, tree losses from insects, disease and old age will take out the annual growth of the forest over the long term. Sustainable uneven-aged management and selective harvesting will capture this inevitable mortality in the form of usable solid wood products.

The selectively-harvested solid wood products are projected to sequester 46.5 mt CO₂ e per acre. Applied to 4,500 of the Park’s 5,000 acres, and assuming a future carbon price of \$30.00 per mt CO₂e, this additionally-sequestered carbon could yield approximately \$6.3 million over a sixty year period.



YEAR OF HARVEST	mt CO2 equivalent	INCOME @ \$30 / mt co2e
2009	12,605	\$ 378,146
2013	4,850	\$ 145,497
2016	7,755	\$ 232,648
2017	6,062	\$ 181,872
2022	6,582	\$ 197,474
2024	7,755	\$ 232,648
2026	6,582	\$ 197,474
2028	6,076	\$ 182,284
2031	8,228	\$ 246,842
2032	10,771	\$ 323,123
2035	6,582	\$ 197,474
2038	10,771	\$ 323,123
2039	6,582	\$ 197,474
2041	6,076	\$ 182,284
2044	8,228	\$ 246,842
2045	10,771	\$ 323,123
2048	6,582	\$ 197,474
2051	10,771	\$ 323,123
2052	6,582	\$ 197,474
2054	6,076	\$ 182,284
2057	8,228	\$ 246,842
2058	10,771	\$ 323,123
2061	4,850	\$ 145,497
2063	10,771	\$ 323,123
2065	4,850	\$ 145,497
2068	10,771	\$ 323,123
2069	6,062	\$ 181,872
TOTAL	212,592	\$ 6,377,758

LAKE HOUSTON AVERAGED PINE AND HARDWOOD SOLID WOOD PRODUCT CARBON

Age	Avg P+H Dry Wt lbs/cuft	SWP Total cubic ft	Total SWP Pounds	Metric tonnes	Biomass mt	mt Carbon	mt CO2 equivalent
2009	47.14	335278	15803307	7,170	7,170	3,435	12,605
2013	47.14	129003	6080569	2,759	2,759	1,322	4,850
2016	47.14	206274	9722738	4,411	4,411	2,113	7,755
2017	47.14	161254	7600711	3,449	3,449	1,652	6,062
2022	47.14	175087	8252736	3,744	3,744	1,794	6,582
2024	47.14	206274	9722738	4,411	4,411	2,113	7,755
2026	47.14	175087	8252736	3,744	3,744	1,794	6,582
2028	47.14	161620	7617950	3,456	3,456	1,656	6,076
2031	47.14	218859	10315920	4,681	4,681	2,242	8,228
2032	47.14	286492	13503802	6,127	6,127	2,935	10,771
2035	47.14	175087	8252736	3,744	3,744	1,794	6,582
2038	47.14	286492	13503802	6,127	6,127	2,935	10,771
2039	47.14	175087	8252736	3,744	3,744	1,794	6,582
2041	47.14	161620	7617950	3,456	3,456	1,656	6,076
2044	47.14	218859	10315920	4,681	4,681	2,242	8,228
2045	47.14	286492	13503802	6,127	6,127	2,935	10,771
2048	47.14	175087	8252736	3,744	3,744	1,794	6,582
2051	47.14	286492	13503802	6,127	6,127	2,935	10,771
2052	47.14	175087	8252736	3,744	3,744	1,794	6,582
2054	47.14	161620	7617950	3,456	3,456	1,656	6,076
2057	47.14	218859	10315920	4,681	4,681	2,242	8,228
2058	47.14	286492	13503802	6,127	6,127	2,935	10,771
2061	47.14	129003	6080569	2,759	2,759	1,322	4,850
2063	47.14	286492	13503802	6,127	6,127	2,935	10,771
2065	47.14	129003	6080569	2,759	2,759	1,322	4,850
2068	47.14	286492	13503802	6,127	6,127	2,935	10,771
2069	47.14	161254	7600711	3,449	3,449	1,652	6,062
TOTAL	-	5654748	266536552	120,933	120,933	57,927	212,592

based on growth and yield modeling
 actual projected 60-year mt CO2 equiv
 0.479 % carbon factor
 1 biomass multiplier 4576 total forested acres
 2204 pounds per metric tonne
 3.67 CO2 equivalent factor

TOTAL CO2e per acre 46.5
TOTAL CO2e /ac/yr 0.77

One way to capture a portion of this carbon would be through development of a small sawmill operation on-site at the Park. Such a sawmill could produce small-diameter wood products, as well as provide the ability to cut custom-sized lumber for on-site building needs. The sawmill could also process wood waste for biomass utilization, which could include the sales of wood chips and shavings for equestrian uses and livestock bedding and potentially produce material for use by the biomass energy facility currently under construction in East Texas. Funding for reforestation of lands adjacent to the Park (e.g., the sand mining pit on the west bank of Caney Creek) could come from the development of a forest carbon offset project, as long as these land parcels have been deforested for at least 10 years. In addition to potential brownfield restoration funding from EPA grants, as well as potential habitat and water quality grants, the

acquisition of degraded areas in the Park's riparian corridor could be a potential source of carbon offset funding. In particular, the sand mining pit may hold significant potential for restoration, since it could function both as a storm water retention basin to offset upstream development impacts (e.g. the Grand Parkway and EarthQuest), as well as a forest carbon offset project with baldcypress tree plantings.

To the extent that a land-based GHG project allows property to be managed with fewer GHG emissions than would otherwise have been released (e.g. by reducing the amount of fossil fuel-based mowing emissions or by eliminating sources of land-based methane emissions), GHG credit can be realized. Third, to the extent that a land-based project can generate vegetation-based fuel (e.g. a bio-fuel such as wood chips), GHG credit can be realized. This is because, unlike fossil fuels which do not come from renewable sources, bio fuels are considered to release low or no net quantities of CO₂.

A related carbon opportunity can be found on the electric transmission and gas pipeline corridors that traverse the Park. There are five major pipeline/power line right-of-way corridors traversing the Park. These total approximately 76 acres of land or about 1.5% of the total Park acreage. These corridors, while not aesthetically appealing, do provide an important edge effect between the forest and these open areas. 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. As described more fully below, it is recommended that all of these opportunities be explored for Lake Houston Park.

Underground natural gas pipelines require corridors that are free from deep-rooted trees and vegetative cover that obscures airplane oversight of pipeline integrity; thus, the pipeline corridor presents an opportunity to restore native prairie grasses to the Park. Switchgrass and eastern gamma grass once grew in the wetter soils of east Texas and in the coastal prairie. Pipeline corridors could potentially be used to restore these and other prairie species. Switchgrass is also known for its potential as a biofuel because of its high cellulose content. Grasses can grow over five feet tall, which provide cover and habitat for birds and small mammals.

In corridors with electrical transmission lines (underground pipeline areas are excluded due to maintenance requirements), shrubs and small trees can be used to create habitat and store carbon in the corridors. Dr. Bonnie Appleton, a Virginia Tech researcher, has created a "Utility Line Arboretum" to test and demonstrate suitable trees for planting under transmission lines. She has produced a list of shrubs and trees suitable for planting under and near these lines. Such vegetation would help keep out some of the taller forest species, which is required for utility line maintenance, as well as store carbon and reduce maintenance costs. A forester for American Electric Power refers to this as, "The right tree in the right place." If done properly, such vegetation can avoid the outage dangers and improve aesthetics. Utility adapted tree research is also a current area of study funded by the USDA.

The planting of appropriate trees and shrubs in the electrical line corridor traversing the Park could potentially produce carbon sequestration offset credits for the electric transmission company and the Park since revegetation using woody species (afforestation/reforestation) is a recognized credit-generating under greenhouse gas forest offset protocols. A comprehensive carbon sequestration plan for the Park that includes these corridor areas would need to also incorporate a habitat management plan to address concerns for migratory birds and the presence of Henslow's Sparrow, a federal species of concern (U.S. Fish and Wildlife Service).

It is recommended that the City develop a carbon reduction plan for the Park.

5.0 PURSUE POTENTIAL REAL ESTATE OPPORTUNITIES ADJACENT TO THE PARK

As noted previously, 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. Such properties could elevate in value, generating an attractive return if later resold to development interests. The conservation-oriented acquisitions discussed in section 2.0 of CCL's August 12, 2008 Report would not be designed to generate profit in this fashion because the funding agencies will insist that the land whose acquisition they fund be protected in perpetuity for conservation purposes. However, some of the properties in these riparian corridors could have significant value as real estate. Residential and commercial development projects located adjacent to large public parks can be far more valuable because of the protected green space to which they abut. It is recommended that the City identify, with the intention of purchasing for investment, parcels within the abovementioned riparian corridors that contain significant developable acreage outside the Floodway. The City could later resell these parcels to developers, subject to whatever deed restrictions the City might deem appropriate for protecting the Park from undesirable adjacent encroachment

6.0 PURSUE TRADITIONAL CONSERVATION FUNDING

Another financial resource for the Park to draw from is the wide array of grants, loans, campaigns, and other funding initiatives available through local, state and federal conservation and recreational organizations and agencies. A Conservation Funding Matrix that identifies key grant and program opportunities relevant to the Park has been included as an attachment to CCL's August 12, 2008 Report.

7.0 PURSUE TRADITIONAL PARK REVENUE GENERATION OPPORTUNITIES

Economic Research Associates (ERA) was retained as part of the SWA-led consultant team to identify more traditional Park development activities to enable the Park to achieve financial sustainability. ERA concludes that the most viable strategy, in terms of project potential, market supply-demand compatibility, and overall compatibility with

the Park, is one that emphasizes new RV camp grounds and cabins, along with one or more water-based destination attractions such as a splash park. ERA believes that its plan could materially improve the financial performance of the Park, ultimately enabling the City to transform its annual operating deficit into a surplus. CCL has reviewed ERA's Report along with SWA's incorporation of ERA's recommendations into its Master Plan. The strategies recommended are fully compatible with the enviro-economic strategies recommended by Conservation Capital.

The ERA recommendations reflect a first tier of development. Collectively, the development envisioned by ERA has the potential to achieve a self-sufficient destination park. Development beyond the recommended program is certainly a possibility; however, ERA believes that additional development should be considered in future iterations of the plan, after the success of the initial program has been achieved.

From ERA's recommendations, SWA has prepared a first phase program for the Park that fits with funding resources that are currently available for Park development. The Phase 1 program calls for improvements to the entry and roads, construction of additional trails, parking and picnic areas, and development of 120 RV campsites and four cabins. Some of the Phase 1 improvements will be funded by Montgomery County. The Houston Parks and Recreation contribution is expected to provide \$4.2 million.

ERA has prepared an illustrative economic analysis to demonstrate the positive impact on the financial performance of the Park that should result from implementation of the Phase I improvements. The analysis is based on certain assumptions that are documented in ERA's Report. ERA has also assumed that the improvements will be attractive enough to increase day visitation and to create a stronger overnight destination. To this end, it is assumed that the management structure of the Park will enable the Park to be operated under an enterprise philosophy; i.e. management will have decision-making flexibility and that the Park will be able to retain income from revenue facilities.

As a first step in considering the financial impact of the Phase I improvements, ERA prepared its own estimate of the Park's current revenues and expenses. This estimate was based on available financial statements from previous fiscal years, updated to reflect current staffing and operations. Based on best available information, ERA estimated the current financial performance of the Park to be a deficit of \$235,000. The next step was to anticipate increased revenues and increased operating costs associated with the Phase I improvements. ERA estimated that revenues from core operations would increase from \$65,000 to \$110,000 and that the Park's operating budget would increase from \$300,000 to \$450,000. The financial bottom line for the Park operations is an increase in the 2009 deficit from \$235,000 to \$340,000. ERA points out that trail maintenance and similar operating costs are included under core operations, when in fact the trails and other features of the Park are important in generating demand for the cabins and campground.

As shown in Table 1, the core operations, by themselves, are expected to operate at a deficit of \$340,000. This number represents an increase from the current deficit, which is estimated to be roughly \$235,000. However, the deficit operations of the traditional Park elements included under core operations are expected to be largely offset by new income.

Table 1: Lake Houston Park, Core Operations, Phase I

Revenues	Current	Increase w/ Phase I	Phase I
Entry Fees	\$ 15,000	300%	\$ 45,000
Facility Rentals	35,000	100%	35,000
Other	15,000	200%	30,000
Surplus/(Deficit)	\$ 65,000		\$ 110,000
Salary	200,000	150%	300,000
O&M	100,000	150%	150,000
	\$ 300,000		450,000
Surplus/(Deficit)	\$ (235,000)		\$ (340,000)

Source: Economics Research Associates

Overall, as shown in Table 2 (on the following page), the total Park's financial performance is estimated to achieve a substantially smaller deficit of \$32,000 after 2009, when the Phase 1 improvements, listed below, are put in place.

Park Infrastructure

- Entrance Drive/Main Gate
- Main vehicular loop drive
- Tertiary trails
- Vehicular bridge
- Visitor Center
- VC parking
- RV Park
- Central Pavilion

Table 2: Summary Illustrative Economics

Core Operations	
Current Revenues	\$ 65,000
Incr. with Phase I	45,000
Phase I Revenues	\$ 110,000
Current Budget	\$ 300,000
Incr. with Phase I	150,000
Phase I Budget	\$ 450,000
Phase I Surplus/(Deficit)	\$ (340,000)

New Revenue Elements	
Surplus from RV Camping	\$ 283,824
Surplus from Cabins	24,090
Phase I Surplus	\$ 307,914

Park Surplus/(Deficit) - Phase I	\$ (32,086)
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Source: Economics Research Associates

LAKE HOUSTON WILDERNESS PARK SUMMARY ACTION PLAN

	TASK	COST	TIMEFRAME	REVENUE
1.0	ESTABLISH AN IN-LIEU FEE (ILF) PROGRAM	\$40,000-60,000 in 2009		
1.1	Exploratory meetings with COH and USACE		January-June 2009	
1.2	Develop Report summarizing potential ILF-funded enhancements		January-June 2009	
1.3	Prepare Report on near-term ILF funding opportunities		January-June 2009	
1.4	Negotiate terms and conditions of ILF Agreements		June, 2009-June,2010	
1.5	Actively market the Park as an ILF Funding Recipient		September, 2009--Ongoing	
2.0	ESTABLISH A PRE-APPROVED SEP PROGRAM	\$40,000-60,000 in 2009		
2.1	Prepare Report on near-term SEP funding opportunities		January-June 2009	
2.2	Meetings with COH and TCEQ		January-June 2009	
2.3	Secure commitment for specific TCEQ-approved SEP project		January-June 2009	Tasks 1.0 - 3.0 could yield as much as \$21 million over 25-year Timeframe
2.4	Negotiate terms and conditions of Pre-Approved SEP Agreements		June, 2009-June,2010	
2.5	Actively market the Park to capture SEP funds		September, 2009--Ongoing	
3.0	ESTABLISH PARK AS A TRANSPORTATION MITIGATION PRIORITY	\$40,000-60,000 in 2009		
3.1	Meetings with COH, TxDOT, the FHA, HGAC, and TPWD		January-June 2009	
3.2	Complete an MOU with TxDOT and TPWD on Designation of Park projects as providing compensatory highway mitigation		July, 2009	
3.3	Negotiate mitigation agreement with the Grand Parkway Association relative to Segment H of the Grand Parkway		January-June 2009	
3.4	Meetings with the Houston Airport System relative to mitigation needs for Bush Airport		June, 2009-June 2010	
4.0	EVALUATE AND PURSUE WATER QUALITY PROJECTS	\$35,000-55,000 in 2009		
4.1	Exploratory meetings with key stakeholders	Same in 2010	January-September 2009	Uncertain at this time
4.2	Develop Report summarizing potential Park-related water quality projects		October/November 2009	
4.3	Select project for pilot initiation in 2010		December of 2009	
5.0	PURSUE CARBON OFFSET OPPORTUNITIES AT THE PARK	\$45,000-55,000 in 2009		
5.1	Develop Protocols for Park projects		January-June 2009	Could reach \$6.5 million over 60-year timeframe
5.2	Seek validation of Protocols from recognized project validators		July-September 2009	
5.3	Pursue buyers of carbon offset for initial demonstration projects		September 2009-Ongoing	
6.0	PURSUE TRADITIONAL CONSERVATION FUNDING	\$40,000-60,000 in 2009		
6.1	Exploratory meetings with key funding entities	\$20,000-25,000 in 2010	January-June 2009	Project \$3-6 million over 7-year timeframe
6.2	Develop Report recommending at least three near-term funding opportunities		July/August 2009	
6.3	Submit top-ranked funding application		September of 2009	
6.4	Submit two additional funding applications		June of 2010	
7.0	PURSUE REAL ESTATE OPPORTUNITIES ADJACENT TO THE PARK	\$35,000-45,000 in 2009		
7.1	Prepare summary preliminary value analysis of property surrounding the Park		January-June 2009	Project \$4-6 million over 5-year timeframe
7.2	Coordinate acquisition analysis with opportunities under prior tasks		January-June 2009	
7.3	Identify desirable properties		January-June 2009	
7.4	Pursue potential acquisitions and/or easement negotiations		June 2009-Ongoing	

LAKE HOUSTON WILDERNESS PARK SUMMARY ACTION PLAN

TASK	COST	TIMEFRAME	REVENUE
8.0 IMPLEMENT PHASE 1 IMPROVEMENTS Refer to Draft Master Plan for details	\$4.2 million	January 2009 thru November 2010	\$352,914 in 2009 5-10% increase per year after
9.0 PURSUE ADDITIONAL RECREATIONAL IMPROVEMENTS Assess market penetration of Phase 1 improvements, including gate receipts, cabin revenues, RV park revenues, etc.	To Be Determined		
9.1		First Quarter of 2011	
9.2		First Quarter of 2011	
9.3		First Quarter of 2011	To Be Determined
9.4		Second Quarter of 2011	
9.5		Second Quarter of 2011	
9.6		Second Quarter of 2012	
9.7			
10.0 PURSUE SPECIAL DISTRICTING OPTIONS FOR THE PARK	\$60,000 - \$80,000		
10.1		January-August 2009	
10.2		May-June 2009	To Be Determined
10.3		July 2009-Ongoing	
11.0 PURSUE FOREST MANAGEMENT-RELATED REVENUE			
11.1	\$56,223 in 2009	January thru April 2009	
11.2	Same in 2010, 2011	September thru October 2009	
11.3	\$108,856 in 2012	May 2009 thru December 2010	\$830,690
11.4		January 2011 -- ongoing	

PROFORMA 2009-2012

Lake Houston Park	2009	2010	2011	2012
Beginning Working Account 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 ²
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	50,000	50,000	50,000 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 Implementation	80,000			
Total Expenses	766,223	576,223	546,223	613,856
Ending Fund 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