

Bells Bend Environmental Park Master Plan



August 2003

Bells Bend Environmental Park Master Plan

August 2003

**Prepared for:
City of Nashville
Metropolitan Parks and Recreation**



Prepared by:



**In association with
Jordan, Jones and Goulding**

Report Contents

Acknowledgements	i
Executive Summary	Ex - 1
Chapter 1: Introduction	1
Chapter 2: Project Site	3
Chapter 3: Master Plan	10
Chapter 4: Development Program	14
Chapter 5: Cost Estimates	25
Chapter 6: Implementation Strategy	33
Chapter 7: Park Maintenance and Operations	37
Appendices:	
Appendix A: Summary of Public Input	
Appendix B: Summary of APA Mayors Forum	
Appendix C: Glossary of Terms Used in Report	

Thank You!

The City of Nashville and the Metropolitan Parks and Recreation Department wishes to extend a sincere thank you to the following persons, organizations and agencies that have played a significant role in the preparation of this Master Plan for Bells Bend Environmental Park. We would like to particularly thank the Ray Bell Family and the Urban Land Institute for their generous financial contributions and support of this project.

Citizens of the Scottsboro Community
The Honorable Bill Purcell, Mayor
The Brenda Gilmore, Member, Metro Council District 1

Bells Bend Park Technical Advisory Committee

Daniel Boone, TSRA
Bill Coble, Nashville Greenways Commission
Troy Ettel, Tennessee Wildlife Resources Agency
Sue Ferguson, US Army Corps of Engineers
Margo Farnsworth, Cumberland River COMPACT
Chris Koster, Mayor's Office
Lisa Morris, US Army Corps of Engineers
Robert Parrish, Metro Parks
Ann Tidwell, Nashville Greenways Commission
Jean Nelson, Tennessee Land Trust
Jerry Strother, US Army Corps of Engineers

Metro Parks and Recreation Staff

Curt Garrigan, Interim Director
Tim Netsch, Park Planner
Ann Hammond, Metropolitan Planning Department
Shain Dennison, Greenways Coordinator
Bill Troup, Metropolitan Greenways Department
Bob Parrish, Warner Parks Nature Center
Sandy Bivens, Warner Parks Nature Center

Project Consultants:

Greenways Incorporated

Charles A. Flink, ASLA, Principal and Project Manager
Haley Blakeman, Project Designer
Matt Hayes, GIS Specialist
Dave Josephus, Project Designer

Jordan, Jones and Goulding

Karen Harrison, PE, Project Engineer

Master Plan Summary

The City of Nashville proposes to transform an 808-acre parcel of land situated along the northwest corridor of the Cumberland River, in the Bells Bend area, as an Environmental Park. Originally identified as a possible solid waste landfill in the early 1990's, Mayor Bill Purcell chose to preserve this undeveloped property along the Cumberland River in fall 2001 and permanently transfer it to the Metro Parks Department. Shortly after proposing the area as parkland, the Mayor explained the economic impact and benefit of the land in a case study to the American Planning Association City Parks Forum (CPF), which resulted in a \$35,000 grant award. Nashville was one of four cities in the nation last year to receive the CPF Catalyst Grant for research and planning the design and revitalization of urban parks and open spaces. This grant was then matched by a local resident, Ray Bell, by \$50,000.

When fully developed, the Bells Bend Environmental Park will become the fourth largest green space in Metro's park system. The park will become a scenic, natural landscape that supports habitat for plants, migratory birds and other wildlife. The master plan for the park, defined in this report, provides a blueprint for the preservation of natural open space, solves questions of access and programming, and contains guidelines and strategies for integrating this rural, isolated riverside property into the city's overall parks, greenways, and open space. In 2002, Mayor Purcell appropriated \$750,000 to begin immediate implementation of the plan once it is completed.

"A clear intent of the project is to educate the public about the value of green space within an increasingly urban and continually developing city," explained Interim Metro Park Director Curt Garrigan "The Mayor's Case Study on Bell's Bend, which he presented to the City Parks Forum, identified the major challenges the land presented which the Mayor felt could be addressed in a master plan."

The Bell's Bend Environmental Park Master Plan:

- Identifies a diverse program of Park uses that is compatible with the property, sensitive to the site's natural and cultural resources, and capitalizes on the unique characteristics of Bell Bend. Key elements of the master plan include an Environmental Education Center, 20 miles of hiking, bicycling and equestrian trails, interpretive programs that reveal the unique natural landscapes and cultural heritage of the site, a new 10-acre lake to support introductory boating and fishing and a primitive group camping facility.

Executive Summary

- Results in strategies and solutions for accessing the property, including pedestrian, vehicular, and marine access, as well as compliance with Americans with Disability Act guidelines;
- Develops design solutions that address the adjacent wastewater treatment facility, and effectively integrate aesthetics and the recommended program uses while preserving the rural character of the area;
- Defines the buffering and other design development actions necessary to assure preservation of the open space and compatible adjacent property uses;
- Serves to educate the community about the significance of preserving green space and encouraging the exploration of natural environments in a rapidly growing urban area.

The Bell's Bend initiative is part of Mayor Purcell's Parks and Greenways Master Plan to guide the city's park system into the second century. The master plan recommended improvements and investments totaling \$262 million over the next ten years. The first year's funding in 2002 of \$35 million to improve parks and greenways was the largest single appropriation in the history of Metro's Parks Department. The funding, allocated by Mayor Purcell and adopted by Metro Council, represents the first step in creating a world-class park system that will have a significant impact on the way we use our parks now and in the future.

The consultant for the project is Greenways Incorporated from Durham, North Carolina in association with Jordan, Jones and Goulding of Nashville, TN. Greenways Incorporated is a multidisciplinary environmental planning and landscape architecture firm that specializes in providing consulting services to government agencies, for-profit corporations and nonprofit organizations. The firm specializes in greenways, alternative transportation, rail-to-trails, open space and park planning, design, development and management. They have provided services to Canada, Japan and Venezuela and more than 100 communities in 27 states.

The City Parks Forum is a program of the American Planning Association, whose mission is to advance the art and science of urban, rural and regional land-use planning. For more information, visit APA's web site at www.planning.org. The City Parks Forum is made possible by the Wallace-Reader's Digest Funds and the Doris Duke Charitable Foundation.



Bells Bend Environmental Park Master Plan

Chapter One: Introduction

Project Overview

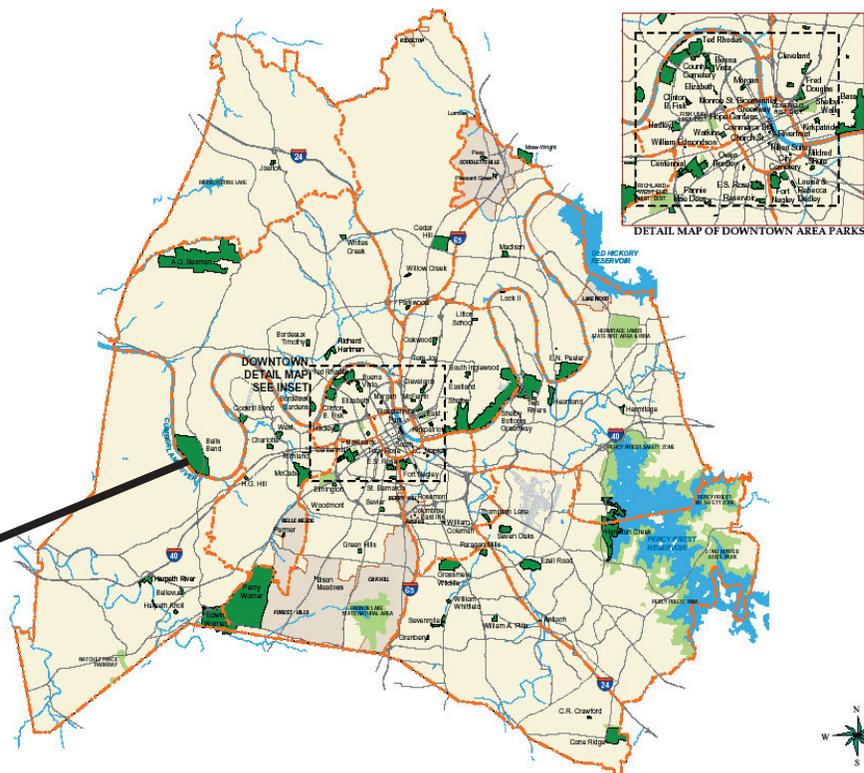
Bell's Bend Park is an 808-acre tract of land located along the northwest corridor of the Cumberland River. Identified as a possible landfill in the early 1990's, Mayor Bill Purcell chose instead to preserve the undeveloped property along the Cumberland River in fall 2001 as a future park.

The purpose of this Master Plan is to provide the City of Nashville with a framework and action plan necessary to develop the Bells Bend Environmental Park. Toward this end, the Master Plan defines a development program for the park that will serve the future recreation needs of the citizens of Nashville. The Master Plan offers a vision for completing the development program in phases, and an immediate action plan for constructing park facilities within the next two years.

This plan describes and illustrates how public services of the Park will be physically, fiscally and operationally accommodated within the project site. The short-term action plan provides the city with work tasks that require immediate action so that the Park can begin to serve public purposes. This short-term program involves the construction of trails, entry roads, public parking, and signature entryways into the Park.

This Master Plan was prepared by Greenways Incorporated of Durham, North Carolina, an environmental planning and landscape architecture firm that specializes in open space, greenway, multi-use trail and park facility planning, design and development. Greenways Inc.

Bells Bend Project Site



Chapter One - Introduction

teamed with Jordan, Jones and Goulding of Nashville, TN to prepare this Master Plan. The consultant's efforts were supplemented by the vision, goals and efforts of Mayor Purcell, Metro Parks staff, a technical advisory committee, and the public input of interested residents from Nashville and Davidson County.

In order to prepare a development program for the Park, the carrying capacity of the project site was assessed and matched with the future implications of design recommendations. The consultant made every effort to become knowledgeable with the physical, ecological historical and cultural parameters of the land. Building on this background information, the consultant met on several occasions with the Metro Parks staff, technical advisory committee and citizens in open public meetings to define the desired facilities for the Park. As a result of these meetings it was determined that the primary objectives of this Master Plan are to provide a realistic strategy and development program for an environmental park to balance ecological sustainability, promote land stewardship and offer access to a range of diverse outdoor activities to meet future community needs.

When fully developed, Bells Bend Environmental Park will become the fourth largest park facility within the metropolitan park system. It will offer residents access to a unique array of recreation and education activities.





Bells Bend Environmental Park Master Plan

Chapter Two: Project Site

Bells Bend Park Site Features

Natural Features

The property is a beautiful, biologically unique and scenic landscape along the Cumberland River. Characterized by gently rolling hills, patchy tree cover, and scenic views across open agricultural fields, it is a traditional southern American landscape which retains much of its historical character. The west side of the property abuts the Cumberland River and the east side borders Old Hickory Boulevard. Several farm ponds dot the property, and one natural surface road meanders through the property from Old Hickory Boulevard south to the Cumberland floodplain and returns to Hickory Blvd. near the property's western edge. The property can be described in greater detail by examining several component parts.



Land Morphology

Recent history indicates that the landform has largely been unchanged by humankind or human actions. The gently rolling hills were created by the erosion from the surrounding small mountains just east of the site and movement of the Cumberland River. Despite 150 years of agricultural practices and intensive management of upland areas, most of the landform continues to evolve at the will of nature, rather than at the hand of humans. The farmland has occurred on the hills, avoiding the steeper valleys.

The major landform feature is the Cumberland River, the valleys formed by the hydrology flowing into the river, and predominantly gentle sloping hills. The site is characterized by two major ravines with a few plateaus. These creek ravines make their way to the Cumberland River. Gently sloping lands give way to the floodplain and bottom lands along the river.

Elevations throughout the property range from a high point of 154m above sea level near the intersection of the property loop road and Old Hickory Blvd, to 117m above sea level at the Cumberland River, on the western edge of the property. The topography's direction is somewhat variable, with the majority of the slopes facing the West. Although mostly gentle, the steepest

Chapter Two - Project Site

slopes are found in the southeastern portion of the site above the floodplain and along the predominant southeastern stream channel.

The soils consist of a range of deep, well drained silty loams. Arrington series is found along the river formed from silty alluvium. These soils are flooded for brief periods, have moderate permeability, and medium to slow surface runoff. Lindell series is found in the floodplain area formed in loamy alluvium and has moderate permeability and slow runoff. Armour and mimosa soils dominate the higher elevations of the sites along gentle slopes and stream terraces. They have moderate permeability and medium runoff potential.

Most soil at this site is classified as slightly erodible. Thus, vegetative cover is important to ensure protection of the soil layer, and land use practices on side slopes could threaten the ecological stability of the property and must be taken into consideration.

Hydrology

As previously stated, the Cumberland River is the major river corridor at the western edge of the property. About 30% of the property is in the floodplain and floodway of the Cumberland.



The site is comprised of two perennial streams, three intermittent streams, and three wetland areas. The two perennials that flow across the northern end of the property are McCord Hollow Creek and Poplar Hollow Creek. McCord Hollow Creek flows into the northwest end of the property and is 15 feet wide, increasing to 25 feet wide before feeding into the Cumberland. Poplar Hollow Creek meanders across the entire property from Old Hickory Boulevard and also widens to 25 feet and deepens as it enters the Cumberland. These creeks are situated in narrow ravines that are surrounded by gentle slopes. There is another significant ravine running north to south on the southern end of the property, forming an unnamed, intermittent creek that is approximately 5 feet wide, increasing to 15 feet wide just before entering the Cumberland River. The elevation drop of this tributary stream is steep enough to encourage swiftly flowing water during rainstorms. In combination with slightly erodible soils, the nature and character of these streams represent fragile and vulnerable components of the hydrology, and

should be protected from degradation by a land use management plan.

The wetland areas encompass a total of approximately 2.8 acres. The large wetland found along the McCord Hollow Creek is 2.53 acres. Two smaller wetland areas along the Poplar Hollow Creek are approximately 0.11 acre and 0.16 acre respectively.

The floodplains of both perennial streams and the intermittent ravine are fairly narrow but do extend halfway across the site from the Cumberland River to Old Hickory Blvd. The lack of a wide floodplain reduces the ability of bordering riparian lands, to mitigate the impacts of frequent flooding, and absorb toxic chemicals and sediments that flow from upland areas.

Several small ponds that were built for agricultural purposes are scattered throughout the property. These ponds may serve several hydrologic functions by trapping upland sediment, surface runoff and debris. In addition, the ponds support other forms of aquatic wildlife not found in the creeks and streams. Some of the ponds were stocked with bass and bluegills.

It is critical to understand the topography and hydrology in the overall planning and design of the site. These determine the flow of nutrients and water and thus habitats across the site. Poor land use management could severely damage the ecological balance of the site, thus reducing environmental capabilities and destroying important habitat for aquatic and terrestrial wildlife.

Vegetation

The majority of the site is composed of agricultural fields with patchy tree cover. The majority of the site is a combination of cultivated, fallow, abandoned, and pastured agricultural fields. These fields are the byproducts of agricultural practices that have been in operation for years. Currently, soybeans are the main crop grown on the site, along with some corn. In addition to the planted pasture grasses, corn, and soybean, the upland farm fields contain buttercup, wild garlic, and cocklebur.

Small wooded areas are located along drainageways, streams, and on steeper slopes. The existing tree cover is primarily climax forest. A thin line of trees also runs along the Cumberland River. The scattered upland wooded areas are dominated by northern red oak, chinquapin



Chapter Two - Project Site

oak, Japanese honeysuckle, chervil, and sessile trillium. The wetland and creek species include the box elder, hackberry, and sedges.

Wildlife

Several types of animals inhabit the site. Among these are turkey, deer, coyote, beaver, bobcat, eagles, and fox. Yellow-bellied woodpecker, sapsucker, peregrine falcon, sandhill cranes, American pipits, woodpeckers, horned larks, red breasted nuthatch and wrens have also been observed on the project site. The habitat for these animals should be protected when designing the nature park.

Climate

Located in the temperate zone, this area has a generally mild climate year round, but still experiences four seasons. The average high temperature in winter is near 50 degrees Fahrenheit and average low is near 30 degrees Fahrenheit. The average annual snowfall is about a foot. Spring temperatures range from 55 to 75 degrees Fahrenheit. Summers bring warm weather and high humidity with average highs close to 90 degrees Fahrenheit with average lows near 70 degrees Fahrenheit. Rainfall is well distributed throughout the year with peaks in March and May and lower amounts in the fall.

Built Features

Some buildings are still standing on the site. The majority of buildings are found in two groups, one on the north end at the middle entry road and another at the south end entry road, within view of Old Hickory Blvd.



The John Bell Home, is the large yellow house on the south end. The house was built in several sections. The oldest section is the log house, which was built around the 1840's. A small building in the rear of the Bell Home housed prisoners during the Civil War. Two barns are associated with the Bell House. The one on the southern side of the house is the largest barn on

the site and it is in moderate condition. The other barn is in poor condition.

The smaller yellow house at the middle entry road is in moderate condition. The history of this house is unknown. A white house that can be found

along Poplar Hollow Creek is in poor condition, though the small barn adjacent to the house is in moderate condition. No history is known for either of these buildings.

Scattered abandoned barns and residential structures are also found throughout the site. Most are within viewing distance of Old Hickory Road. They are all in poor condition.

Significant Archeological Sites

There are approximately 30 recorded archaeological sites on the property, including a village and three cemeteries. Several of the cemetery sites are as recent as the 1900's. Others contain artifacts from Native Americans. These Native American open-habitation, village, and burial sites have been found to date from the Paleo-Archaic, Archaic, Woodland, and Mississippian periods (10,000B.C. - 1,700A.D.). During the Paleo-Archaic and Archaic Periods (10,000B.C. - 1,000B.C.), the first people were predominantly hunter-gatherers and began to build semi-permanent and permanent villages as the Ice Age came to an end. The Woodland Period (1,000B.C. - 900A.D.) saw the advance of agricultural practices and an increase in permanent villages. The Mississippian Period (900A.D. - 1700A.D.) represented the high point of Amerindian civilizations as cities, temples, buildings, canals, trade, and advanced agriculture and aquaculture were developed. The Cherokee Tribe inhabited this area during the Mississippian period before European colonization.



There are many aspects to the importance and consideration of archaeological remains in the planning and development of this site. Early discussion, understanding, and appropriate management of archaeological resources are therefore essential to ensure that informed, proper, and effective decisions are made. Sensible solutions to the treatment of this site reduce the areas of potential conflict between development and preservation. Archaeological remains are an irreplaceable, finite, and non-renewable resource, and irreplaceable evidence of the past development of civilizations.

Archaeological sites that contain burials are considered cemeteries under law and must be treated as such. It is also important to directly consult with Cherokee descendants of the area. For example, the Cherokee have recently supported the covering of archaeological sites, including burial grounds, with 3-4 feet minimum fill soil before allowing activities. The fill would have to be placed on the existing surface without removing the topsoil, as some of the graves are within 6 inches of the surface. No structures would be allowed on top of this fill, though limited recreational activities could be permitted.

Bells Bend European History

The people settling this region were mostly Scots-Irish, African American, German, and Italian. In general, the Germans took better care of their land and had smaller farms. The Scots-Irish were more restless and moved around clearing new land. The Italians started vineyards and had wine cellars. The African American families were employed on the large productive farms near the Cumberland River. All were excellent farmers, and until the late 1920's, the area was almost entirely agricultural, with small family farms throughout the region and larger farms adjacent to the Cumberland. Overall, the people of the area were conservative in their thinking and politics with emphasis on tradition, religious worship, character building, and family.

In December 1864, the Civil War Battle of Bells Mill was fought a short distance from Clees Ferry, located at the present day terminus of Old Hickory Boulevard. The fighting lasted for two weeks. Large confederate guns were stationed on the south side of the Cumberland River. Ground troops engaged each other on both sides of the river.



The prohibition period of the 1920's was an exciting and embarrassing time for the people of this area. The region had over 40% of the whiskey stills in the county. Racketeers and adventurers came to this natural environment to take a chance at becoming wealthy through the manufacturing of illegal moonshine. During

the prohibition period, law enforcement officials were surprised at the number of whiskey stills. In one spot check of one square mile of the Bells Bend area, ten stills were found.

Neighbors and friends helped each other in times of disaster or illness. The worse recorded flood of the Cumberland River occurred in 1926-1927. Robert G. Buchanan's 600 acre farm near Clees Ferry was completely under water. Families worked day and night helping neighbors move their belongings, including livestock to higher ground. Families shared staple groceries, helped each other feed marooned livestock, and divided medicines until the water receded. In 1929, the stock market crash led to the dramatic fall in farm product prices. Barely recovered from the flood, the farmers along the Cumberland River struggled and many had their farms mortgaged. Entire families worked side by side to keep from losing their farms. Many different forms of recreation occurred in the area. Raccoon hunting was very popular and profitable over the years, and rabbit, squirrel and quail hunters have been plentiful since the Civil War. A great deal of fox hunting occurred around World War I. Many boys in the area enjoyed fighting bumble bees for sport. Armed with a paddle in each hand, boys would attack the colony and often be forced to retreat. Another sport enjoyed at the time was riding the waves behind the Cumberland steam boats. Boys would maneuver their canoes behind the big wheel to cross the waves.



Bells Bend Environmental Park Master Plan

Chapter Three: Master Plan

Park Development Framework

The land that comprises the Bell's Bend Environmental Park is both beautiful and a unique part of the geography of the Nashville and Davidson County metro area. Future park development will respect these qualities of the landscape and will also serve to enhance these features through future construction and operational activities. This chapter of the master plan describes the philosophy that has been used to plan for park facilities and activities, and provide a framework for future park development. This framework will be used to guide decision making and shape the day-to-day access and management programs of the park.

Design with Nature

One of the most important principals of park design and development will be to respect the inherent beauty and functional characteristics of the native park landscape. "Design with Nature" was first introduced by the late Ian McHarg, a pioneer in environmental planning and landscape architecture. The design with nature process stresses the importance of understanding natural landscapes and their ecosystems, and working with this understanding to maximize ecological sustainability as well as human use and enjoyment.

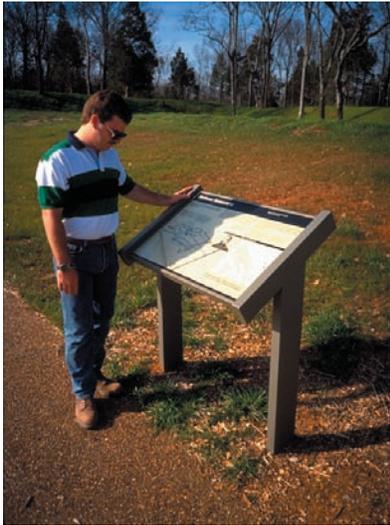
A principal feature of Bell's Bend Environmental Park is its location on the Cumberland River. The geomorphology of the Cumberland has been the most influential force on the land for thousands of years. Native Americans understood the bounty and severity of the river and used its fertile floodplain for agriculture and community life. Today, the land of Bell's Bend continues to be heavily influenced by the river. The Park site is an important component of the Metro Parks System and is also a key western landscape for the Metro Greenway System.



The present day landscape is the product of more than 100 years of agricultural activity. Without this activity, the landscape would return to its native habitat, which would consist of forest and meadow landscapes. The design program for the park will respect this river-influenced landscape and will seek to orient visitors to the wealth of natural resources that exist and can reemerge over time.

Interpreting Land and Culture

The landscape of Bell's Bend Environmental Park also tells a unique story of human occupation, settlement and activity. There are ancient Native



American burial grounds, the historic home site of John Bell, for whom Bell's Bend is named, and a series of agricultural buildings throughout the park landscape. The park design program will seek to preserve and protect this heritage.

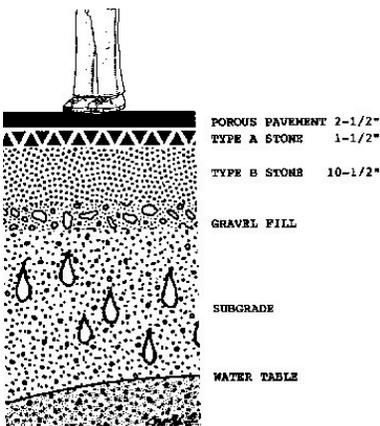
Future park development will offer interpretation programs and facilities so that visitors will have an opportunity to learn about the diversity of uses that have occurred on the landscape.

Bell's Bend Environmental Park will also become part of a larger environmental and cultural interpretation program sponsored by Metro Parks. Through this community-wide program, Nashville residents have an opportunity to visit a variety of Metro Parks and learn about the natural environment and cultural heritage of the region. Learning opportunities are available for all ages and serve to enrich the lives

of Nashville residents each and every day.

Low Impact Development Strategy

Future park development should also showcase low impact design and construction techniques. The park program should "tread lightly" on the land and seek to preserve the native landforms, vegetation, hydrologic systems and ecology of the site. It must be understood that 100 years of agricultural pursuits have altered these natural features. Major landform modification has not occurred and many of the natural features necessary to recreate native ecological landscapes are still present.



The design program for the park should stress minimum intrusion and low impact facilities. Buildings should have small footprints where possible. Roads, parking lots and paved trails should be constructed with porous materials to encourage drainage. Grey water discharge should be treated prior to being released onto the land. These and other similar low impact development pursuits will ensure that the park becomes a model of ecologically sustainable land development.

With a location that is 20 minutes driving time from downtown Nashville, the park offers a unique opportunity to serve

the interests of visitors by replicating, to the maximum degree possible, the native landscapes of the region. This will enable park visitors to “step back in time” and experience the landscapes of the Cumberland River as Native Americans might have known them thousands of years earlier.

Alternative Energy Sources

To the extent practical, the park should make use of alternative energy sources to power park programs and operations. The use of both solar and wind power should be considered where it is practical and functional to the operation of park facilities. Both of these alternative energy sources are ecologically sustainable and environmentally friendly. Solar power can provide electricity for bathrooms, emergency phones and interpretive displays. Windmills can power nighttime lighting for parking lots and buildings. Opportunities exist to utilize these energy sources to enhance the environmental theme of the park and create a model for other park development projects throughout the Metro Parks system.



A Park for Families

Bell's Bend Environmental Park will be designed as a park for families. The activities within the park will be developed to suit the needs of families with children and persons who might be experiencing a form of outdoor recreation for the very first time. This theme was emphasized through several meetings with residents of the community who expressed the need of having a park to visit that offers family oriented activities.

Something for Everyone

The proposed park will host a variety of passive and environmentally oriented recreation activities including hiking,



cycling, primitive camping, canoeing and boating, lake and river fishing, horse back riding, nature studies, picnicking, mountain bicycling, Native American interpretation, and birding.

A Day of Activities

Most activities within the park will offer introductory level opportunities for visitors. Trail hikes and rides will be short and occupy visitors for about a half day. Canoeing and boating facilities will offer introductory level training for novice water craft use. Primitive camping will provide an introduction to overnight outdoor use. Environmental education and interpretation will focus on short programs. The park will provide diverse activities and opportunities for families to visit for a day and leave with a better understanding and appreciation for the native environmental and cultural heritage of the region.

Education and Stewardship

One of the best features of the future park will be its ability to provide a diverse educational program to visitors. Environmental education is the most apparent opportunity, both through programming and interpretation. For some Nashville residents, a visit to the park may provide their first experience of camping overnight, or learning to fish and to canoe on a lake or river. Additionally, stewardship of natural resources can also be an emphasis of park use and enjoyment. Visitors can participate in environmental stewardship activities sponsored by Metro Parks, and can learn about stewardship by participating in normal programming and park activities. Instilling an environmental ethic of land and water stewardship should be a goal of the park and can be achieved through park design, development and programming.



ship activities sponsored by Metro Parks, and can learn about stewardship by participating in normal programming and park activities. Instilling an environmental ethic of land and water stewardship should be a goal of the park and can be achieved through park design, development and programming.



Bells Bend Environmental Park Master Plan

Chapter Four: Development Program

Park Development

The development program for Bells Bend Environmental Park meets the objectives outlined in Chapter 3 and provides for an integrated strategy for building a diverse range of facilities. At the heart of the park will be an Environmental Educational Center. The park will also host miles of hiking, equestrian, mountain biking and interpretive trails. A new lake at the northwest corner of the park will offer opportunity for boating and fishing. A primitive camping facility will be built near the lake. At the southeastern corner of the park, a equestrian facility will be installed. Adjacent to this facility the historic John Bell house will be restored to serve as the future home of a park ranger. These facilities are described in greater depth on the following pages.

Environmental Education Center

A key component of the Bells Bend Environmental Park will be an environmental education center located on one of the highest elevations within the park. Facilities within the environmental education center could include small classrooms, exhibit rooms, an informal multi-media theater, small meeting rooms, and scientific laboratories. These facilities would be supplemented with outdoor facilities including an outdoor classroom and an interpretive trails system. Field trips within the park can explore the unique biological diversity present within various ecological settings, as well as the unique cultural sites within the park including Native American burial sites.



The building that is constructed to house the center should be designed to reflect the heritage of Bells Bend. A “dairy barn” type structure would best symbolize the agricultural heritage of the regional landscape. Other architectural styles could be appropriate as well. One concept that could be considered would be to conduct a “barn raising” event as the Center is completed. A barn raising event could attract private sector support for the park and create an opportunity to involve a broad cross section of the metro community in building portions of the park environment.



Chapter Four - Development Plan

Education programs for children could be coordinated with the Nashville Metro school system to ensure that they complement and enrich existing curriculums.

Adult environmental education can be made available to area residents through activities held at the Center. These programs could include household recycling, household toxic waste handling and disposal, water use management techniques for the home, effective waterless landscaping (xeriscaping) for the home, and other innovative programs that communicate an environmentally low-impact lifestyle to community residents.

Signage systems for environmental education would be very important in order to address the full range of activities available within the park. Signage for environmental education would be in addition to recreational trail signage. It's primary function would be to illustrate an important scientific fact about a unique ecological condition or to inform a visitor about an experiment that is currently being conducted as part of the environmental education program.

Short hiking trips from the Center can lead visitors to historic sites within the park. A Metro Parks interpreter could conduct a brief program that describes the significance of a historic site or landscape feature.

Aerial View of Environmental Education Center



Camping, Boating and Fishing Center

Camping, boating and fishing are three activities proposed for the park. Camping in the park will be limited to a primitive style, for single tent users. Fishing will be offered at a newly constructed lake within the park, which will be appropriately stocked with game fish, and in streams within the park and along the Cumberland River. The new lake will also provide visitors with access to canoe, kayak and boat rentals.

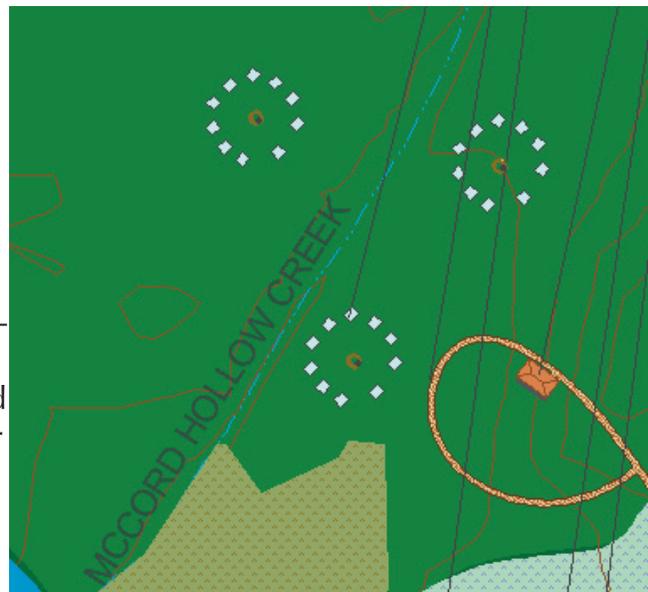
Renovation of Tenant House

The existing yellow tenant house will be moved from its current location on Old Hickory Boulevard and will be renovated to serve as the park Camping, Fishing and Boating Center. The renovated house will be where park visitors register for camping, fishing and boating activities and will be able to obtain information about the park. Renovations to the house should include reworking the front entryway, enlarging existing bathrooms, installing a central air conditioning system, and installing a new roof.



Primitive Group Camp Sites

A primitive, group camping area will be developed within the northwest corner of the park just north of the site for a new lake. Tent sites will be a minimum of 16 square feet, and level to slightly sloped for proper drainage. Each tent site will need to be grubbed of tree stumps, tree roots and rocks. Campers will need to make a reservation through the park on a first-come-first-serve basis. The reservation system is the best policy and provides greater control and safety of the camp sites. A small deposit for camp sites will also ensure proper use by appropriate campers.



Water and Bathroom Facilities

Chapter Four - Development Plan

The campground will provide both water and bathroom facilities for campers. Potable water will be provided through a spigot from a local well. Toilets can be as simple as Clivus Multrum (self composting toilets) or can be hooked to a septic drain field.

Fire Pits and Solid Waste Disposal

Campers will be provided with places where they can build fires. Firewood is a commodity and should be sold to campers. The sale of firewood also prevents campers from scavenging for their own and prevents unwanted destruction of living vegetation. The burning of fires should be limited to fire pits located at each camp site.

Solid waste disposal is always a problem in campgrounds. This can be managed better if Metro Parks encourages campers to “pack-out what you bring in.” Even with this formal rule of camping, strategically located solid waste trash bins should be provided for those campers who don’t follow the rules. Solid waste litter collection will also need to be incorporated into the campground management plan.

Signage and Lighting System

Camp sites should be numbered for ease of location. At the entrance to the campground, a directional board should display all camp sites and denote which are currently occupied. The directional system should be easy enough to follow during the day and after nightfall. Low level foot lights should be installed so that campers are able to find bathrooms and potable water stations after nightfall.

Lake Development



A new recreational lake is proposed for construction within the park which can serve as a future fishing and boating site. This 10 to 50-acre lake is proposed for construction in the northeast corner of the park. This lake will be open to the public for fishing, stocked with game fish, and will support boating as well. The lake needs to be carefully constructed to support a diversity of aquatic life, including plants and animals. Specific fish habitat should also be created in order to allow for the survival of game fish. The lake will be hydraulically connected to the Cumberland River utilizing an existing stream channel that flows into the river. This will allow boaters to come from the river into the lake to seek refuge and to visit the park. One possible route of river boating would be for park users to drive to the Clees Ferry access at the end of Old Hickory Boulevard and canoe and kayak the river to the lake within the park.



Boat and Fishing Rental Center

The renovated tenant house could serve as a rental facility for boats and fishing equipment. Visitors will be able to rent canoes, kayaks and flat bottom boats for fishing on the lake. Instructors in canoeing, kayaking and boating will also be housed at this facility and will be able to work with individuals and groups to teach boating and boat safety. It is also envisioned that the center will serve as a place where boaters can get instruction prior to canoeing or kayaking on the Cumberland River.

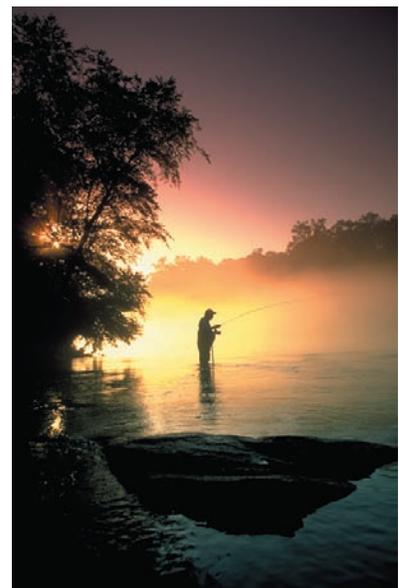
Boardwalk and Fishing Pier

A boardwalk and fishing pier will be installed along the northern edge of the 10-acre lake to allow visitors to walk along the lake edge and fish from the boardwalk and pier. This will be a 12-foot wide boardwalk, wide enough to facilitate two way travel and standing use.

Trails

Campground trails should be developed as bare earth footpaths. Care should be taken to remove roots, tree stumps and rocks from the tread surface. Trails should be provided that connect camp sites, and the main hiking and horseback riding trails. Fishing trails should be developed to provide access to the proposed lake, streams and Cumberland River. These also should be primitive footpaths that provide a limited number of access points to the waters edge.

Recreational Trails

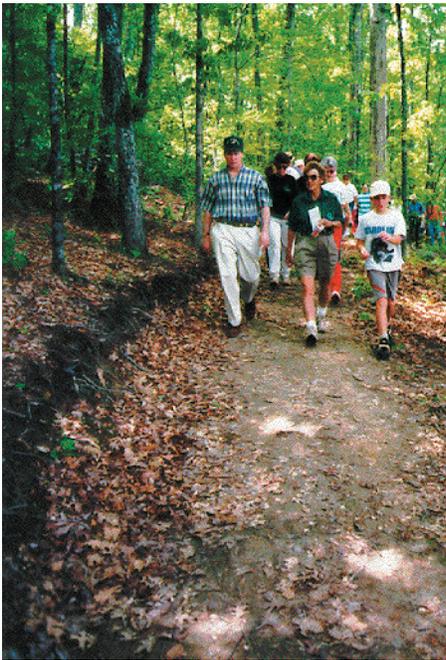


Chapter Four - Development Plan

The recreational trail system is the one element in the development program that serves to tie all others together. Because of this, the system must provide access for a wide variety of trail users and accommodate a range of uses. The trail system is divided into four primary subparts: hiking trails, multi-use trails, horseback riding trails, and mountain bicycling trails.

Hiking Trails

Hiking trails are to be constructed as a natural surface, supplemented in specific areas with appropriate drainage, trail tread stabilization and footbridges. Hiking trails should be a minimum of 4 to 6 feet wide for two-way use. The clearing height above forest floor should be 8 feet. An additional



2 foot clear zone on either side of the trail is optional for areas where poison ivy is encountered or rough terrain dictates.

Trail construction is fairly simple, involving the removal of vegetation from the path of travel and grubbing and disposal of stumps, tree roots and rocks to ensure a smooth and level walking surface. Maintenance also tends to be fairly simple. The worst problems encountered with hiking trails are usually poor drainage and soft soils, which are typically corrected on an as-needed basis.

Wooden footbridges are a necessity for most hiking trails, and within the park there are several locations where footbridges will be required. The easiest type of footbridge to install is the log footbridge, which consists of two or three straight log poles laid horizontally across the stream or river and secured at either end of the crossing with rope, wire or on a concrete footing. Wood planks are nailed perpendicular to the poles, and a wood handrail is installed on at least one side of the bridge.

Multi-use Trails

Multi-use trails are designed and built to accommodate a variety of users, including walkers, joggers, parents with baby strollers, cyclists and trail users with disabilities (confined to wheelchairs, visually impaired, hearing impaired, elderly persons). Multi-use trails should be constructed using hard surfaced materials so that they are solid, smooth and easily traveled by a variety of users. Normally, multi-use trails are built out of asphalt, crushed and compacted limestone screenings, concrete or soil cement. Trail width should be a minimum of 10 feet, however 12 feet is preferred so as to simul-

taneously accommodate the maximum number of user groups. Trail clearing should provide an adequate clear zone of 3 feet on either side. Clearing height from forest floor should be a minimum of 10 feet to accommodate all types of users, especially those on bicycles.

Multi-use trails are more difficult and expensive to construct than equestrian and hiking trails. The subgrade (natural earth surface) needs to be properly prepared so that it is smooth and level. A geotextile fabric is always recommended for installation between the subgrade and subbase, this doubles the life of the trail surface, strengthens the trail cross section to support heavier loads, and allows trail construction on soft unsuitable soils. Multi-use trail maintenance can

be minimal if the trail is properly constructed! If poorly constructed, trail maintenance can be very expensive and continuous. Routine trail maintenance includes removing trash, debris, leaves and accumulated forest floor litter. Remedial maintenance can include repairing damaged or failed sections of trail and replacing vandalized trail segments. Multi-use trails serve other purposes: as roadways for access of maintenance vehicles to forestry lands, lakes, ponds, streams, and other trails and facilities of the park.



Equestrian Trails

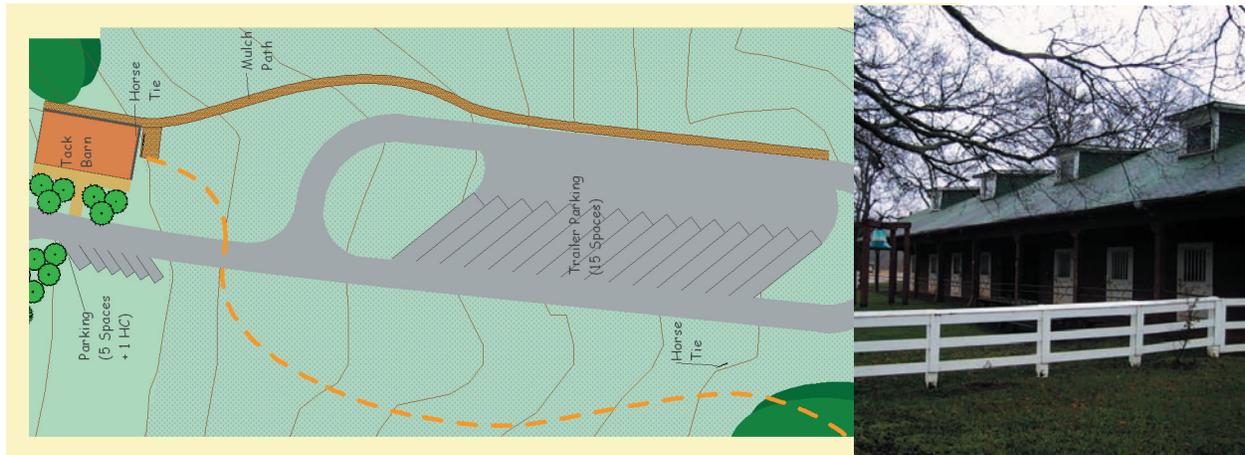
Equestrian trails are proposed for those persons who bring their own horses to the park, and unload them at the Equestrian Center in the Southeastern corner of the park.

Equestrian trails are a natural surface, which is supplemented in specific areas with appropriate drainage and trail tread stabilization. Metro Parks wants equestrian trails to be a multi-use trail supporting both equestrian and hiking uses. To accomplish this, these trails need to be cleared to a width of 10 feet, to allow two horses to safely pass and provide space for hikers. The clearing height from forest floor will need to be 12 feet, and all branches and limbs within this zone should be removed. An additional 6 feet of clearing can be conducted to rid the trail of poison ivy, aggressive understory vegetation, or debris and material that



Chapter Four - Development Plan

causes repeated disturbance to horses. Pedestrians need to be instructed with proper signage to yield to equestrians on all shared use trails. A lead trail from the equestrian trail to the main trail system should be provided so that horses transported by trailer have a chance to adjust physically and emotionally to the trail environment.



Mountain Bike Trails

Mountain bike trails are principally located in the northeast corner of the park and are intended for use by beginner and moderately advanced cyclists. A mountain cycling course has been laid out as a circuit for riding. These trails are natural surface treads and should contain obstacles such as downed trees, shallow water and muddy areas, rocky terrain and steep grades to ensure that the user experience is enjoyable. Trail treads should be 4 to 6 feet wide with 8 feet of overstory clearance.



Trail Signage System

A comprehensive signage system is needed for all trails within the park. The trail signage system should include directional, informational, regulatory and warning signs. Wood should be used as the structural element for all signs, and a simple design system is recommended so that it is easily recognizable by all trail users, easy to build and maintain, and satisfies the low-impact objectives of the park.

Entry Roads and Parking

Bells Bend Environmental Park will be served by three entry roads, all intersecting with Old Hickory Boulevard. The primary entry road will be located in the middle of the park and will serve the Environmental Education Center. Two secondary entry roads will be developed, one on the northern section and the other on the southern section of the park.

Roadway and parking lot development will be structured as low-impact, with great sensitivity toward preservation and protection of existing trees and vegetation. Overland drainage from the roadways and parking lots will be absorbed in roadside swales, using innovative stormwater management technology, to prevent toxic oils from reaching water bodies.

Gateway Signage and Landscaping

A comprehensive signage system will be designed and installed as a major component of the park. The signage should be lighted for nighttime visitors. All signs should be developed in harmony with other signage systems throughout the park. Routed wood signage format would be appropriate with the “low impact” and environmental themes of the park.

Trees, white board farm fencing, low stone walls and wildflowers should be the primary landscape elements for all three gateways to the park. The remainder of the landscape would be low-impact, low-maintenance, and retain the rural farm character that already exists.

Parking Lots

All parking lots within the park should be developed as environmentally sensitive as possible. Porous pavement should be used where parking lots are paved. Some parking areas may be surfaced with gravel, or with geoblock to encourage the flow of water.

Natural Resource Management

Bells Bend Environmental Park currently contains the building blocks for a diverse ecological system. More than 100 years of agricultural activity has largely subdued the natural resources of the site. As park development proceeds the opportunity exists for Metro Parks to carefully cultivate the resources of the site so that they are an integral part of the future park experience.



Wildlife Habitat

Currently, wildlife habitat in the Bells Bend Environmental Park is not as rich and diverse as it could become. As agricultural operations wind down and the park environment returns to a more forested condition, wildlife will begin to occupy the park in greater numbers. The Cumberland River valley is a wonderful place for a wide variety of birds, including nesting bald eagles. Wild turkey, deer, rabbit and fox have been spotted on the property. Aquatic life should begin to flourish in the two on-site stream systems.

Shorebird Ponds

A unique opportunity exists to install a system of shorebird ponds along the western boundary of the park, within the floodplain of the Cumberland River. Metro Parks should explore potential partnerships on the local, state and national level to plan, design and foster shorebird ponds within the park. These ponds should serve seasonal use in the fall and spring. Metro Parks should actively solicit the Wetland Mitigation Fund for monies for the lake and associated wetland creation.

Forest Restoration

The park site contains a significant amount of immature forests that have been harvested frequently during the past 100 years. The master plan map blocks out areas of the park that should be allowed to return to a fully forested condition. This will improve habitat for wildlife and reduce environmental degradation.

Meadow Restoration

Large expanses of agricultural land can be restored as meadow lands. Metro Parks will need to work with professionals skilled in meadow restoration to determine the most cost effective method for restoring these lands and the types of meadows to create.

Water Resource Management

The park contains two primary stream corridors and several small farm ponds. As park development proceeds, managing stormwater and water quality within the existing surface water bodies should remain a priority of Metro Parks. Buffers should be established along stream beds to intercept overland flow and reduce sedimentation of streams. Farm ponds will also need buffers to absorb overland flow and improve water quality.

Restoration of John Bell Homestead

The historic John Bell homestead will serve as the Administrative Headquarters for park personnel. This will be the “nerve center” for the park. All administrative files, management information and other vital employment information should be maintained here. Renovations to the homestead should be accomplished in compliance with local and state historic preservation laws. Some the existing rooms will be needed as future offices, an employee lounge and a small conference/meeting room. It is recommended that central air conditioning and heating, a fire control system, and security alarm system be installed.

Native American Burial Sites

The archaeological sites within the park that contain burials are considered cemeteries by law and must be treated as such. The Native American sites are tremendous assets of the park, and they need to be protected and properly managed by Metro Parks in accordance with state and federal laws. The most important step for Metro Parks to take is to provide proper interpretation and the management of access to these sites.

Fencing Park Property

The entire park boundary needs to be fenced and managed by Metro Parks. Adjacent landowners voiced concern about park visitors wandering onto private property. Fencing the property will serve to control proper use of the park land. Wooden fencing that is appropriate to the surrounding farm culture is suggested.



Bells Bend Environmental Park Master Plan

Chapter Five: Cost Estimates

Chapter Five - Cost Estimates

Bell's Bend Environmental Park				
Estimate of Possible Costs				
Area/Description	Quantity	Unit	Unit Price	Total
Trails				
Hiking and Interp. (natural)	26,004	LF	\$12.00	\$312,048.00
Equestrian/Hiking (natural)	27,535	LF	\$12.00	\$330,420.00
Hike and Bike (10' asphalt)	28,913	LF	\$50.00	\$1,445,650.00
Mountain Bike (earth)	17,830	LF	\$12.00	\$213,960.00
Subtotal Trails				\$2,302,078.00
Environmental Center				
Education Center Building	5,000	SF	\$100.00	\$500,000.00
Observation Tower	1,000	SF	\$100.00	\$100,000.00
Utilities				\$25,000.00
Paved Parking Lot (Porous)	31,287	SF	\$3.50	\$109,504.50
Unpaved Parking Lot	22,151	SF	\$2.50	\$55,377.50
Entry Walkway	1,386	SF	\$2.75	\$3,811.50
Parking Lot Walkway	2,034	SF	\$2.75	\$5,593.50
Bioretention				\$31,000.00
Planting				\$4,000.00
Drop Off Area	1,886	SF	\$3.50	\$6,601.00
Bus Pulloff Parking	2,119	SF	\$3.50	\$7,416.50
Outdoor Classroom with 2-3 Sails				\$35,000.00
Front Patio (poured concrete)	1,027	SF	\$2.75	\$2,824.25
Back Patio (poured concrete)	2,150	SF	\$2.75	\$5,912.50
Subtotal Environ Center				\$892,041.25
Campground				
Access roadway	16,676	SF	\$3.50	\$58,366.00
Group Campsites (gravel pad)	6,720	SF	\$2.00	\$13,440.00
Council ring	3	EA	\$500.00	\$1,500.00
Primitive Campsites (gravel pad)	1,792	SF	\$2.00	\$3,584.00
Subtotal Campground				\$73,306.00
Fishing and Boating Center				
Lake	10	AC	\$40,000.00	\$400,000.00
Paved Parking	11,048	SF	\$3.50	\$38,668.00
Entry Walkways	6,558	SF	\$2.75	\$18,034.50
Utilities				\$25,000.00
Building 1	1,400	SF	\$100.00	\$140,000.00

Chapter Five - Cost Estimates

Building 2 (relocated house)	2,300	SF	\$50.00	\$115,000.00
Building 3	1,400	SF	\$100.00	\$140,000.00
Boardwalk on Lake	48,000	SF	\$10.00	\$480,000.00
Access roadway (gravel)	5,000	SF	\$2.50	\$12,500.00
Boat Dock on River	12,000	SF	\$10.00	\$120,000.00
Subtotal Fish/Boat Center				\$1,489,202.50
Equestrian Center				
Paved Parking	64,135	SF	\$3.50	\$224,472.50
Entry Walkways	1,180	SF	\$2.75	\$3,245.00
Tack Barn	3,800	SF	\$100.00	\$380,000.00
Gravel/Mulch Walkway	6,000	SF	\$2.50	\$15,000.00
Horse Tie Up	2	EA	\$100.00	\$200.00
Subtotal Equest. Center				\$622,917.50
Park Maintenance HQ				
Building 1 Restoration	3,000	SF	\$50.00	\$150,000.00
Building 2	1,428	SF	\$100.00	\$142,800.00
Utilities				\$15,000.00
Paved Parking	10,115	SF	\$3.50	\$35,402.50
Building 3	1,428	SF	\$100.00	\$142,800.00
Plant Screen				\$4,000.00
Subtotal Park Maint HQ				\$486,002.50
Main Entrance				
Entry roadway	86,035	SF	\$3.50	\$301,122.50
Entry signage	1	EA	\$5,000.00	\$5,000.00
Entry trees (50 trees, 250 shrubs)				\$15,000.00
Entry fencing	5,967	LF	\$7.50	\$44,752.50
Entry lighting	2	EA	\$500.00	\$1,000.00
Entry trees	74	ea	\$250	\$18,500.00
Subtotal Main Entrance				\$385,375.00
Camping Entrance				
Entry Roadway	90,516	SF	\$3.50	\$316,806.00
Entry Signage	2	EA	\$5,000.00	\$10,000.00
Entry Planting (30 trees, 200 shrubs)				\$15,000.00
Entry Fencing	1,040	LF	\$7.50	\$7,800.00
Entry Lighting	2	EA	\$500.00	\$1,000.00
Subtotal Boat/Camp Entry				\$350,606.00
Equestrian/Maint Entrance				
Entry Roadway	25,205	SF	\$3.50	\$88,217.50
Entry Signage	2	EA	\$5,000.00	\$10,000.00

Chapter Five - Cost Estimates

Entry Planting (30 trees, 200 shrubs)				\$15,000.00
Entry Fencing	1,040	LF	\$7.50	\$7,800.00
Entry Lighting	2	EA	\$500.00	\$1,000.00
Subtotal Equest Entry				\$122,017.50
Meadows and Fields				
Grassland Meadow	200	AC	\$1,500.00	\$300,000.00
Wildflower Meadow	185	AC	\$1,500.00	\$277,500.00
Created Wetland	15	AC	\$2,000.00	\$29,200.00
Reforestation	252	AC	\$2,500.00	\$630,000.00
Turfgrass	75	AC	\$2,000.00	\$150,000.00
Subtotal Meadows and Fields				\$1,386,700.00
Parking on Main Entry Road				
Asphalt paving	7,528	SF	\$3.50	\$26,348.00
Grasspave parking spaces	7,662	SF	\$2.50	\$19,155.00
Gravel parking lot	15,025	SF	\$2.50	\$37,562.50
				\$83,065.50
Total for Park				\$8,193,311.75
Design and Engineering Fees				\$819,331.18
Contingency				\$1,351,896.44
Grand Total				\$10,364,539.36
Phase One Development				
	Quantity	Unit	Unit Price	Total
Trails				
Hiking and Interp. (natural)	26,004	LF	\$12.00	\$312,048.00
Environmental Center				
Paved Parking Lot (Porous)	31,287	SF	\$3.50	\$109,504.50
Fishing and Boating Center				
Paved Parking	11,048	SF	\$3.50	\$38,668.00
Main Entrance				
Entry roadway	86,035	SF	\$3.50	\$301,122.50
Entry signage	1	EA	\$5,000.00	\$5,000.00
Entry trees (50 trees, 250 shrubs)				\$15,000.00
Entry fencing	5,967	LF	\$7.50	\$44,752.50

Chapter Five - Cost Estimates

Entry lighting	2	EA	\$500.00	\$1,000.00
Entry trees	74	ea	\$250	\$18,500.00
Camping Entrance				
Entry Roadway	90,516	SF	\$3.50	\$316,806.00
Entry Signage	2	EA	\$5,000.00	\$10,000.00
Entry Planting (30 trees, 200 shrubs)				\$15,000.00
Entry Fencing	1,040	LF	\$7.50	\$7,800.00
Entry Lighting	2	EA	\$500.00	\$1,000.00
Design and Construction Administration Fees (9%)				\$135,000.00
Contingency (10%)				\$150,000.00
Total Estimate Phase One				\$1,481,201.50
Phase Two Development				
	Quantity	Unit	Unit Price	Total
Trails				
Hike and Bike (10' asphalt)	28,913	LF	\$50.00	\$1,445,650.00
Environmental Center				
Education Center Building	5,000	SF	\$100.00	\$500,000.00
Utilities				\$25,000.00
Unpaved Parking Lot	22,151	SF	\$2.50	\$55,377.50
Entry Walkway	1,386	SF	\$2.75	\$3,811.50
Parking Lot Walkway	2,034	SF	\$2.75	\$5,593.50
Drop Off Area	1,886	SF	\$3.50	\$6,601.00
Bus Pulloff Parking	2,119	SF	\$3.50	\$7,416.50
Front Patio (poured concrete)	1,027	SF	\$2.75	\$2,824.25
Back Patio (poured concrete)	2,150	SF	\$2.75	\$5,912.50
Campground				
Access roadway	16,676	SF	\$3.50	\$58,366.00
Group Campsites (gravel pad)	6,720	SF	\$2.00	\$13,440.00
Council ring	3	EA	\$500.00	\$1,500.00
Primitive Campsites (gravel pad)	1,792	SF	\$2.00	\$3,584.00
Fishing and Boating Center				
Entry Walkways	6,558	SF	\$2.75	\$18,034.50
Utilities				\$25,000.00

Chapter Five - Cost Estimates

Building 2 (relocated house)	2,300	SF	\$50.00	\$115,000.00
Equestrian Center				
Paved Parking	64,135	SF	\$3.50	\$224,472.50
Park Maintenance HQ				
Building 1 Restoration	3,000	SF	\$50.00	\$150,000.00
Utilities				\$15,000.00
Equestrian/Maint Entrance				
Entry Roadway	25,205	SF	\$3.50	\$88,217.50
Design and Construction Administration Fees (9%)				\$249,372.11
Contingency (10%)				\$277,080.13
Total Estimate Phase Two				\$3,297,253.49
Phase Three Development				
	Quantity	Unit	Unit Price	Total
Environmental Center				
Planting				\$4,000.00
Fishing and Boating Center				
Lake	10	AC	\$40,000.00	\$400,000.00
Boardwalk on Lake	48,000	SF	\$10.00	\$480,000.00
Access roadway (gravel)	5,000	SF	\$2.50	\$12,500.00
Boat Dock on River	12,000	SF	\$10.00	\$120,000.00
Park Maintenance HQ				
Paved Parking	10,115	SF	\$3.50	\$35,402.50
Equestrian/Maint Entrance				
Entry Signage	2	EA	\$5,000.00	\$10,000.00
Entry Planting (30 trees, 200 shrubs)				\$15,000.00
Entry Fencing	1,040	LF	\$7.50	\$7,800.00
Entry Lighting	2	EA	\$500.00	\$1,000.00
Meadows and Fields				
Created Wetland	15	AC	\$2,000.00	\$29,200.00
Reforestation	252	AC	\$2,500.00	\$630,000.00

Chapter Five - Cost Estimates

Design and Construction Administration Fees (9%)				\$157,041.23
Contingency (10%)				\$174,490.25
Total Estimate Phase Three				\$2,076,433.98
Phase Four Development				
	Quantity	Unit	Unit Price	Total
Trails				
Equestrian/Hiking (natural)	27,535	LF	\$12.00	\$330,420.00
Mountain Bike (earth)	17,830	LF	\$12.00	\$213,960.00
Environmental Center				
Observation Tower	1,000	SF	\$100.00	\$100,000.00
Bioretention				\$31,000.00
Outdoor Classroom with 2-3 Sails				\$35,000.00
Fishing and Boating Center				
Building 1	1,400	SF	\$100.00	\$140,000.00
Building 3	1,400	SF	\$100.00	\$140,000.00
Equestrian Center				
Entry Walkways	1,180	SF	\$2.75	\$3,245.00
Tack Barn	3,800	SF	\$100.00	\$380,000.00
Gravel/Mulch Walkway	6,000	SF	\$2.50	\$15,000.00
Horse Tie Up	2	EA	\$100.00	\$200.00
Park Maintenance HQ				
Building 2	1,428	SF	\$100.00	\$142,800.00
Building 3	1,428	SF	\$100.00	\$142,800.00
Plant Screen				\$4,000.00
Meadows and Fields				
Grassland Meadow	200	AC	\$1,500.00	\$300,000.00
Wildflower Meadow	185	AC	\$1,500.00	\$277,500.00
Turfgrass	75	AC	\$2,000.00	\$150,000.00
Parking on Main Entry Road				
Asphalt paving	7,528	SF	\$3.50	\$26,348.00
Grasspave parking spaces	7,662	SF	\$2.50	\$19,155.00
Gravel parking lot	15,025	SF	\$2.50	\$37,562.50

Chapter Five - Cost Estimates

Design and Construction Administration Fees (9%)				\$224,009.15
Contingency (10%)				\$248,899.05
Total Estimate Phase Four				\$2,961,898.70



Bells Bend Environmental Park Master Plan

Chapter Six: Implementation

Action Plan

The following text describes a strategy for developing the Bells Bend Environmental Park. Three phases of development are recommended to take place and span a 4-year construction program. This program could be accelerated, or delayed, by the availability of funds. Currently, the City has budgeted \$4 million to build the facilities within the park. This budget was preliminary and was not based on the development program defined within this Master Plan.

Phase One Strategy

This first phase of work involves developing the entry roads into the park, establishing public parking areas and constructing hiking trails. Two entry roads would be scheduled for construction, the main entry road that leads to the proposed Environmental Education Center and the entry road that leads to the Camping Center, and the future site of the Boating and Fishing Center. The entry features that surround these two roadways would also be constructed and would include signage, signature fencing, new trees and landscaping, and entry lighting. Two major parking areas will also be developed, one along the main entry road and the other at the terminal point of the camping, boating and fishing center roadway. Finally, more than 5 miles of natural surface hiking trails would be laid out and opened for public use. This work could be completed and the park opened for public use by the Fall 2004.

Phase Two Strategy

The second phase of work would involve constructing the Environmental Education Center building and its associated parking, relocating and renovating the Tenant House to serve as the Camping, Boating and Fishing Center building, construction of the 10-acre lake and boardwalk, campgrounds and renovating the historic John Bell home to serve as the home for the park Ranger and administrative headquarters for the park. Additionally, the entry road and parking lots for the equestrian center and administrative headquarters would also be constructed within this phase of work.

The Environmental Education Center is envisioned as building the would reflect the agricultural heritage of the Bells Bend area. It may be possible to construct this facility using a community involvement process referred to as a "barn raising." The City may be able to find a financial partner for the Center that could help to underwrite the costs for constructing the center, and utilize other key corporate and civic support to develop this facility.

Chapter Six - Implementation

Relocating and renovating the Tenant House would be a second major construction element of this phase of work. This will involve relocating the house from its current position on Old Hickory Boulevard to its new location where an older home once stood. Constructing the 10-acre lake will require obtaining a permit from the US Army Corps of Engineers. The lake should be designed to support the boating activities listed in the development program and fishing from the boardwalk and pier. The primitive group camping grounds would also be constructed in this phase of work.

Renovating the historic John Bell homestead will be a third major undertaking in this phase and will require working with restoration architects and construction specialists. The final configuration of this home will need to be determined by the architect as several additions have been made to the home which may not be regarded as historic. The new entry road to the home and parking for the equestrian center and administrative staff will need to be included at this time. As with the other entry roads, signage, signature fencing, landscaping and lighting will be installed along this roadway.

This phase contains a number of complicated construction elements and will most likely take an estimated two years of construction work to complete. It is envisioned that these elements of the park would be opened for public use by 2006.

Phase Three Strategy

The final phase of construction activity would involve completing the remaining outstanding elements of the park, including the equestrian center buildings, equestrian trails, mountain bike trails, multi-use trails and picnic grounds.

The equestrian center will contain a small tack barn that is capable of supporting simultaneous use by 10 to 12 horses at one time. Equestrian trails will be laid out during this phase of construction activity and are intended to be used by both equestrians and hikers.

The mountain bike trails system and parking facility would be constructed during this phase and would provide support for cyclists and their equipment. Potable water and restrooms can be provided at this location.

The multi-use trail system would be patterned after the successful Shelby Bottoms Greenway. The trail should be a 10-foot wide asphalt paved surface with sufficient width on either side for safety and maintenance. The trail will wind through the floodplain of the Cumberland River and extend through uplands section of the park.

Picnic grounds are located throughout the park and typically situated on the higher knolls and elevations. Picnic facilities can range from a simple collection of picnic tables beneath a stand of trees to more elaborate picnic pavilions. Metro Parks will need to make a determination as to the type of facility that is appropriate in specific locations throughout the park.

This phase of construction is expected to take approximately 1 year to complete, with an anticipated opening of these park elements occurring in 2007.

All elements of the park should be opened and fully functional by the close of fiscal year 2007.



Bells Bend Environmental Park Master Plan

Chapter Seven: Maintenance & Operations

Operating Bells Bend Park

Bells Bend Park will eventually become one of the flagship park properties within the Metro Nashville Parks and Recreation System. Metro Parks will be responsible for maintenance, management and operations of all park facilities. The following text defines some of the key operating strategies that will be implemented throughout the park.

Facilities Maintenance Program

Park Facilities

All facilities within Bells Bend Environmental Park will be managed and cared for by the Nashville Metro Parks and Recreation Department. These facilities will be managed to standards that are consistent with other Metro Park facilities. Some lands within Bells Bend Environmental Park are intended to be natural and wild. Park visitors that use these lands should do so with caution and respect the natural or native plants, animals and conditions that are encountered.

Hours of Operation

Bells Bend Environmental Park shall be operated like all other Metro Parks and be open for public use from sunrise to sunset, 365 days a year, except as specifically designated by Metro Parks. Individuals who are found to be using unlighted facilities after dusk and before dawn will be deemed in violation of these hours of operation and treated as trespassers.

Metro Parks will not allow the general public to use any facility within the park that is under construction. Park facilities will not be considered officially opened for public use until such time as the Metro Parks department determines the facility is completed and designates it open to the public. Individuals who use park facilities that are under construction, without written permission from Metro Parks will be deemed in violation of this access and use policy and treated as a trespasser.

Safety and Security Program

Metro Parks will operate Bells Bend in a manner that is consistent with the operation of other parks within the system. Metro Parks will employ a full time Park Ranger to live in residence at the Park. The ranger will be responsible for opening and closing the park to public use, responding to calls for assistance and enforcing park rules and regulations. All park users are

advised to use all park facilities, including trails, with a friend. The buddy system is advisable throughout the park. Additionally, all use of park facilities shall adhere to Metro Parks code of conduct and trail ordinance which will be posted at all public parking facilities, entry to buildings and other park facilities. Emergency telephones will be strategically placed throughout the park and will be linked to the Park Ranger. Hunting is not permitted at any time within Park boundaries. Fishing, boating and camping will be permitted through a reservation system. Trails can be used at any time during park hours of operation.

Trail Ordinance

The following Rules and Regulations will be in force along all trails within the Bells Bend Environmental Park. These rules will be displayed both on brochures and information signs throughout the park trail system.

- 1) **Be Courteous:** All trail users, including bicyclists, joggers, walkers, wheelchairs, skateboarders and skaters, should be respectful of other users regardless of their mode of travel, speed, or level of skill. Never spook animals; this can be dangerous for you and other users.
- 2) **Keep Right:** Always stay to the right as you use the Trail, or stay in the lane that has been designated for your user group. The exception to this rule occurs when you need to pass another user.
- 3) **Pass on the Left:** Pass others going in your direction on their left. Look ahead and behind to make sure that your lane is clear before you pull out and around the other user. Pass with ample separation. Do not move back to the right until you have safely gained distance and speed on the other user. Faster traffic should always yield to slower on-coming traffic.
- 4) **Give Audible Signal When Passing:** All users should give a clear warning signal before passing. This signal may be produced by voice, bell or soft horn. Voice signals might include "Passing on your left!" or "Cyclist on your left!" Always be courteous when providing the audible signal - profanity is unwarranted and unappreciated.
- 5) **Be Predictable:** Travel in a consistent and predictable manner. Always look behind before changing position on the Trail, regardless of your mode of travel.
- 6) **Control Your Bicycle:** Lack of attention, even for a second, can cause disaster - always stay alert! Maintain a safe and legal speed at all times.
- 7) **Do not Block the Trail:** When in a group, including your pets, use no more than half the trail, so as not to block the flow of other users. If your group is approached by users from both directions, form a single

line or stop and move to the far right edge of the Trail to allow safe passage by these users.

- 8) **Yield when Entering or Crossing Trails:** When entering or crossing the Trail at an uncontrolled intersection, yield to traffic already using the other trail.
- 9) **Do not Use this Trail Under the Influence of Alcohol or Drugs:** It is illegal to use this Trail if you have consumed alcohol in excess of the statutory limits, or if you have consumed illegal drugs. Persons who use a prescribed medication should check with their doctor or pharmacist to ensure that it will not impair their ability to safely operate a bicycle or other wheeled vehicle.
- 10) **Clean-up Your Litter:** Please keep this Trail clean and neat for other users to enjoy. Do not leave glass, paper, cans or any other debris on or near the Trail. Please clean up after your pets. Pack out what you bring in - and remember to always recycle your trash.
- 11) **Keep Pets on Leashes:** All pets must be kept on secure and tethered leashes except in areas designated as a "Leash Free Zone." Keep pets off of adjacent private property. Failure to do so will result in a fine.



Bells Bend Environmental Park Master Plan

Appendices

- A - Summary Public Input**
- B - Summary APA Mayors Forum**
- C - Glossary of Master Plan Terms**

Summary of Public Meetings

Three public meetings were held to inform the public about the Bell's Bend Environmental Park and to gather public input and ideas on its design. The first meeting was held on March 24th from 7:00 to 9:00 in the evening at the Scottsboro Community Center on Bell's Bend. There were approximately 100 citizens that attended, including many residents that live in the bend. The second meeting was held at the Warner Parks Education Center from 7:00 to 9:00 in the evening on the 25th of March. 10 citizens attended this meeting. At both of these meetings, a Power Point presentation composed by consultants that showed characteristic pictures of the site was available. Geographic Information Systems (GIS) maps were on display that depicted the existing conditions on the site. Three design options of varying densities were placed on tables. The attendees were asked to write comments on the three different scenario maps. Comment sheets were also available to collect public input. When asked what the overall purpose of Bell's Bend should be, the top three recommendations were environmental education, open space preservation and habitat restoration. The most popular activities that were suggested for the site were walking/running, hiking and wildlife viewing. Over fifty percent of the attendees that filled out a comment form said that they would visit the site once or twice a week. See the attached survey result summation to see the breakdown of the comments received.

The final public meeting was at the Scottsboro Community Center from 7:00 to 9:00 in the evening on May 12th, 2003. Approximately 50 citizens were at this meeting. A Power Point presentation was shown that depicted the proposed activities for the site. A concept board was also displayed that showed lists and pictures of intended activities. Chuck Flink, of Greenways Inc., presented the draft master plan. Attendees were asked to write down their comments on index cards, which were gathered after the meeting. The additional comments from citizens are listed below. These comments were collected from the surveys and index cards dispersed at



Appendix A - Public Input

the public meetings.

First Public Meeting

March 24 and 25, 2003

Public Questionnaire Comment Summary

What do you think should be the overall purpose(s) of Bell's Bend Park?

- Working farm
- Site for Native American remains
- Plaque for those who fought against the landfill
- Attract migratory birds and waterfowl
- Establish a "model" wetlands ecosystem (shorebird habitat) priority please
- Non-motorized river access
- No equestrian activities
- Demonstrate earth-friendly sustainable development (solar heating, etc)
- Trail along river, yes!
- No hunting
- Protect riparian corridor
- Open fields for recreation, not organized sports
- Nature park
- Bring back the ferry
- Native American interpretation, wetlands/birding, low impact, agriculture interpretation, dog park
- No group sports
- Native American museum, keep farming on site as a living museum of Nashville past
- German ancestors settled here is 1860 - Alice Rogers
- Native American interpretation
- Organic farm site for educational purposes - use of heirloom varieties of vegetables and fruit
- Supervised at all times
- Small working farm

What activities would you like to participate in at Bell's Bend Park?

- Astronomy
- Primitive camping only
- Rock climbing, rappelling
- Shorebird habitat/wetland
- Hawk/migration watching tower
- No motor boats should be allowed
- Restore the ferry

- Birding
- Primitive group camping only
- Create an environmental escape from the city within the city
- Mountain biking will create an erosion problem
- Look at the AG Center in Memphis for horse rental models
- Wildlife restoration, water quality
- Bird watching
- Hunting
- Keep it simple, minimize the infrastructure, things suggested are nice but the acreage is not that big
- Mountain biking trail needs to be 5-10 miles

Additional Comments, Issues and Special Concerns

- Less is more
- Bring back the ferry
- Inventory all plants and animals
- Encourage bird watching
- Need ranger to live on site
- Primitive camping only, no car camping
- No lighting/light pollution
- No hunting
- Don't have too many uses
- Something similar to Shelby Bottoms
- This park should be fenced
- Mountain bike can really tear up a terrain - please limit to on area
- Patrol often
- Wildlife preservation
- Something similar to Warner Parks
- Prevention of drug dealing
- Fee for camping
- Keep wildlife a high priority
- Revise ferry access to Old Hickory Blvd., would like to see this as a wildlife preservation and an Native American artifact preservation
- No hunting
- As long as the integrity of the land and wildlife is best preserved, a park in this area is a great idea. A nature center w/ exhibits of the area's plants and animals along with a museum of Native Americans who inhabited the bend. Preserve the heritage of the area.
- Charge for camping

Appendix A - Public Input

- No car camping, minimal lighting, day use, backpack camping is ok, organized periodic hunting is ok

Second Public Meeting May 12, 2003

Comment Card Summary

- TWRA has many beginning boating and fishing lakes in the area. Perhaps the area for the fishing lake at Bell's bend could be utilized more as a natural area. Let's not over do. This is a gem of nature's beauty.
- Provide a chain link fence to keep animals in the park. There are horses and cows on the farm beside the park.
- Connect the park with the Rail to Trails system so that the park can be accessed by non-motorized means.
- Locate all Native American graves and preserve them.
- Want to see a golf course, even if it is a miniature one.
- Chain link fence around the property.
- Permit dogs in the park and on trails. Add off leash area for dogs. It needs to be enclosed to protect people, horses, birds, etc.
- Do not disturb existing animals during construction.
- Keep existing specimen trees and plants.
- Protect all artifacts found during construction.
- 12 cards for birding and the inclusion of 3 shorebird ponds on the master plan.
- It is more important to have the three lakes than the size (20 acres each). They can be as small as 10 acres each, if needed.
- Add a motorized boat dock on the river and connect it to the trail system.
- 200 bird festivals are held across the country. In 1996, \$30.6 billion was spent on birding nationally.
- There needs to be a boat dock on site. The one at Clee's Ferry is not safe. There needs to be a ranger patrol.
- Use composting toilets.
- There are 3 eagle nests on the site, along with turkey, coyote, deer, beaver, lynx and foxes. Please be considerate of them during construction and preserve habitat for them.

Technical Advisory Committee Meetings

Metro Parks invited representatives from local agencies to discuss ideas for the Bell's Bend Environmental Park design. The two meetings were held at the McCabe Golf Clubhouse from 11:00 am until 1:00 pm. The attendees were shown the same maps displayed at the public meetings, including the three design scenarios and the draft master plan. They were asked to give their reactions to the designs and their suggestions for working with Metro Parks and each other on the Bell's Bend Environmental Park. They were also encouraged to provide their particular expertise in the areas of water quality, historical archeology, native wildlife, and environmental aspects of the site. A list of the participants and their respective agencies is below. Their comments are also listed below.



Meeting Comments February 25, 2003

Attendees: Lisa Morris (USACE), Sue Ferguson (COE), Bob Parrish (Warner Parks), Chris Koster (Mayor's Office), Ann Tidwell (Greenway Commission), Margo Farnsworth (Cumberland River), Daniel Boone (TSRA), Jean Nelson (TN Land Trust), Jerry Strother (USACE Resource Management), Troy Ettl (TWRA), Bill Coble (Greenways Commission), Tim Netsch (Metro Parks), Curt Garrigan (Metro Parks), Shain Dennison (Metro Parks)

- Lisa Morris will send the wetland delineation. It was done in 1995 by Law Environmental. We will need to ask the USCOE to reverify. The consultant needs to revisit the site and tell the Corp that the conditions have not changed in our opinion or that it has increased, decreased, etc.
- The Land Trust is also looking at view corridors from the park across the river.
- There is currently no canoe access on the Cumberland River.
- There is a potential at Bell's Bend for wetland development. TWRA will help fund. Also approximately 75 acres of grassland/wildflower meadow would be great. Quail unlimited is helping at Shelby Bottoms and would be interested here, also.
- As soon as the farming is removed, invasives, like honeysuckle, will take over.

Appendix A - Public Input

- John Bell built the main yellow house in the early 1800's.
- A bike lane all the way down Old Hickory to the ferry and across the river is suggested.
- Some trails may need to be closed during certain times of the year for mountain bikes and horses.
- Limit camping to primitive camping only.
- Trails through different ecosystems with the native trees identified would be educational.
- It would be good to have some sort of working farm such as: cattle, corn, soybeans or pumpkins.
- Please call it an Education Center, not a Community Center.
- Have an outdoor education/wilderness education theme.
- Access ramp and parking for canoes. There should be 5-7 miles between access points. Shelby Bottoms is more like 20 miles. Use the lake for paddling instruction.
- Include ADA early in the design process.
- Ask the local mountain biking club when the trails should be closed.
- There should be a preserved buffer zone along the river with a boardwalk to allow access to the river. A series of low to tall grass could be used to enhance the vistas.
- Contact Leanne Welsh to determine what grasses best protect archeological sites. Nick Fielder has a copy of the report.
- Try to use green building, solar technology, and wetland sewer treatment/grey water treatment system.
- Shorebird ponds – contact Troy Ettl for specifics.
- USCOE can match 75-25 for bottomland hardwood wetland development because of Cheatum Lock and dam.
- Constructed wetlands will need long-term maintenance because of Cumberland River siltation.
- Take out the loop road. Two roads with a turn around would be sufficient. There are many scenic drives nearby.
- High desire for primitive camping. If there is overnight use, there will have to be attendants there. There should be limited vehicular access and a low volume of people. Just group and introductory camping. Firewood will need to be supplied so people won't cut down trees.
- Warner Parks has an urban city camping program. Bell's bend could be used as an alternative site.
- Involve TWRA in the design of the boat ramp. It can be low impact without concrete.
- The Cumberland River is not a safe place for beginners to learn how to canoe.
- This park should be the family introduction to the environmental experience (horse back riding, camping, fishing, canoeing, hiking, etc.)

- Bob Parrish at Warner Parks can help determine what facilities are needed for organized events such as races, weddings, etc.
- There should be markers every .25 miles on the trails.
- Horses are too unpredictable to put kids on them with no training.
- Like the silo with the climbing wall.
- Bring the ferry back for bikes.

Meeting Comments May 12, 2003

- All classrooms should be in the main environmental building, instead of spread out among the buildings.
- The entire site should be permitted at one time. The application should be started now, because it will take a long time. If the wet-land disturbance is less than a 1/2-acre, it only needs a general permit.
- The stream will have to be permitted, also. That will take approximately 3 months.
- The lake needs to be at least 40-50 acres to provide good fishing and canoeing. The state will stock the lake with game fish. Flooding is a concern because it can fill the lake with trash fish, such as carp.
- There is frequent and heavy traffic on the Cumberland River. Canoe access is a safety liability. It should be addressed with signage, literature and lessons. It may be necessary for a gate to be installed to keep people out of the river during flood events. There should be a rule that boats can come in from the river but no boats can access the river from the park in order to keep less experienced people from getting on the river.
- It is very labor intensive to create forests from fallow farms. Active, not passive, reforestation is needed. Troy Ettel said that they grow trees. Some years there are many extras that can be purchased for a reduced price. Invasives, such as honeysuckle and fescue are a problem. Troy can help with the equipment and seed, but it needs to be done now before it grows up.
- Maybe horses should not be included. There are 10 miles of trail at Warner Park. The need for more trails was included in the Metro Parks Master Plan.
- Natural parks are labor intensive.
- 2-3 Shorebird ponds are needed (one for spring and 2 for fall) because of the migratory habits of shorebirds. Two are needed for the fall because the adults make the flight before the juveniles. TWRA can offer some funding and they can write grants to get the rest of the funding. Ducks Unlimited will design it for free. TWRA will help

APA City Parks Forum Summary

Fall 2001 Symposium

Chicago

In the fall of 2001, the American Planning Association held a forum to discuss challenges that three different cities were having with their parks. Mayor Purcell was one of four mayors invited to present respective park projects to a panel of greenway and park experts. Mayor Purcell presented the Bell's Bend site for review. Chuck Flink, ASLA, President of Greenways Incorporated served as a faculty member and panelist.

Nashville Mayor Bill Purcell, Curt Garrigan from Nashville Metro Parks, Ray Bell and Bill Coble (both adjacent landowners) discussed the conversion of an 808-acre site along the Cumberland River from a potential city landfill to a park. Panel members were asked to give their advice on how to accomplish this and to point out any issues of concern. Mayor Purcell and Curt Garrigan gave some background on the history of the bend and the park system as a whole, the attitudes of Nashvillians towards their park system, and the uniqueness of the site itself.

In 1989, the city purchased the 808-acre site for a city owned landfill. Mayor Purcell and the Public Works Department have since concluded that there is no need for a city owned landfill. Private businesses can provide this service to Nashville. The city was left with the large piece of property. On the day of his inauguration in 1999, Mayor Purcell declared that the site would be preserved as a green space.

Until the last five years, there was nothing but forest and farms on the banks of the river at Bell's Bend. Now there is a wastewater treatment pumping plant. As Mayor Purcell pointed out, if this park is developed traditionally, it would end up as baseball fields or a golf course. Instead he would like to protect and enhance its natural beauty.

There is an existing parking lot on the same side of the river where a passenger ferry used to dock. It was disconnected when Briley Parkway was built to connect this area with downtown Nashville. The ferry could be revived to give people access to the park in the future, Mayor Purcell offered.

The landscape architecture and design firm of Wallace Roberts and Todd worked on a city-wide master plan to identify what facilities need to be added to existing parks and what new parks need to be built to satisfy the demand for certain activities. The Cumberland River Greenway Master Plan

Appendix B - APA Mayors Forum

calls for a series of greenway connections along the river corridor. It is proposed that each bend will have a major green space anchor, such as Shelby Bottoms Nature Preserve. Bell's Bend Environmental Park will also be one of these anchors.

Ray Bell and Bill Coble talked about the scenic qualities of the park site and the entire river bend. Mr. Coble pointed out that high schools in the area have started teaching environmental courses. The Land Trust for Tennessee is involved in a Cumberland River Gorge plan that is trying to convince property owners from Bell's Bend and down river to preserve property just like this. While this particular site will become a park, it is important to protect land all along the Cumberland River to preserve views from the park, for water quality and wildlife habitat, and as scenic areas.

Mayor Purcell expressed the need to educate Nashvillians on the importance of green spaces and why they have significant impact on large-scale environmental issues. Openspace does not mean that it is a vacant lot. Nashville currently has more people than Atlanta and its urban sprawl is of great concern. The time to preserve land is fleeting. The mayor asks the panel to help him identify what the issues were with a development such as Bell's Bend Environmental Park.

Ray Bell discussed some of the history of the bend and of the future park site. This was the site of one of the greatest Mississippi Indian settlements from 10,000 years ago until about 4,000 years ago. Stone box graves can be found throughout the site. John Bell's house is on the corner of the property. The old Nashville College, David Lipscomb College, was just yards from the site. General Forest sank two battleships here in one afternoon in 1864.

The mayor outlined 5 key issues. The first is the issue of isolation. Up to this point, the isolation of the site has been positive by decreasing its potential for development. What needs to be done to decrease that isolation? How do you get people out there in a timely manner and keep the sense of peacefulness once they are out there? A limited ferry connection would increase access and give ownership to the site. Would this access jeopardize the pristine nature of the site?

The second issue is what should be done on the site. The next consideration is how the site helps educate the public. Fourth, how do you connect this park to the rest of the metro system? Last, what is the best means of protecting the park for the future while being sensitive to the surrounding properties?

The following concerns and suggestions are from the review panel in response to the mayor's issues.

- There is a park 20 minutes outside of Charlotte North Carolina, Anne Springs Close Greenway. It is not connected now, but it will be in the future. People are still able to find it and enjoy it.
- Environmental education, history and culture of the site and community tell an interesting story. These can be used to generate revenue to offset the maintenance of the park. The story of Nashville and its settlement, the grave sites found on the site, Native American heritage sites, natural environment, and the formation and history of the Cumberland River can all add to the story of the site.
- Programming the site so that people still want to go there is more important than the actual physical connection.
- What is special about the site? Threatened or endangered species habitat, other cultural heritage, the pre-settlement migration can all be interpreted.
- What are the opportunities for education?
- Provide access early in the process to give people interest and ownership in the site. This will help with support later.
- Incorporate green design and green engineering in the facilities.
- There is an archeology park in Louisville where kids and adults can come and dig, measure and catalog artifacts. That might work here.
- If there are already bald eagles, birding should be included.
- What was the site like when settlers came through?
- This could be a part of National System of Historic Rivers in the future, like the National Parks.
- There is a national park and historic battlefield down river.
- The Delta Queen currently passes the site and there is a large amount of barge traffic. It is a very active, successful river.
- Environmental teachers and various societies, such as the Audubon Society should be involved in the programming.
- It would be educational to create an exhibit with overlays (like Betsy Barlow Rogers did years ago for Central Park) that shows all of the different things proposed for the site over the years from Native American home sites to the park. It will help people understand that open space is not just vacant property.
- Connecting this very isolated piece of property to the city would show a very dramatic change from an urban setting to a quite, tranquil setting.
- Use wetland mitigation banking efforts to create habitat and improve the environmental setting. The wetland chain would be improved along the river with developer's dollars. The ferry could take people across the river and dock in the wetlands. Boardwalks could take people through the wetlands to the park.

Appendix B - APA Mayors Forum

- This park is a “time funnel”. It looks like it did 200 years ago. It is unique to have something that close to downtown that actually had inhabitants over 13,000 years ago. That history should be made to people in the city.
- Consider securing easements on the surrounding land and creating a greenbelt around the city.
- As a part of a partnership with environmental education classes at schools, wilderness camping for urban children should be included.
- Work with the wastewater treatment plant to demonstrate different approaches to water treatment. This could be an environmental education opportunity.
- Work with the River and Trail Program Office of the National Park Service in Chattanooga to get help with funding and technical assistance.
- Conservation easements would help protect the site and the surrounding agricultural land use.
- It would be nice to ride up the Cumberland River on the Delta Queen, have a picnic at Bell’s Bend nature Park, go for a hike and attend a traditional music concert that featured music from different cultures that inhabited the site.
- There are several options for access: the river ferry, the greenway system, etc. Make sure that disabled people have a way to get around on the site.
- Interpret environmental and human history together.
- The site is so disconnected from the city that it will cause a problem for you in the short term. The local Nashvillian most likely thinks this is in the middle of nowhere.
- Should the ferry be used now to give pedestrians and cyclists access to the site or should we make them drive 15 minutes to do it?
- The connection isn’t the problem. They will find it if there is something interesting for them to see. Everything doesn’t have to be put in at one time. It can be phased out over time.
- Too far for what? It would be too far to play basketball, but not too far to go hike in a beautiful area. People will go different distances to do different things. What can you do there that you can’t do any other place?
- Access to the site is important, but so is the access throughout the site once visitors get there.
- A natural surface hiking trail should be put on the site immediately with a piece of paper with a map on it.
- You can use a mowed 8-foot to 16-foot trail (like the one at Falls of the Ohio in Indiana). Then ferry people over on a limited basis, maybe just on Sunday afternoon.
- Partner with school systems. Get kids to help inventory the site. This

will make the site important to them in the future.

- Make an opportunity for kids to volunteer at the park in the future.
- Work with the land trusts to keep developers out of the entire bend. Treat the entire bend as openspace. The preservation of the park will increase the development value of surrounding land.
- Conservation easements can help preserve land when future generations own the property rights.
- Partner with state natural and cultural resources agencies.
- Involve state legislators and show them an example of something that they can implement statewide.
- Everything that you define as special about this property is going to drive everything else.
- Decide if access equals value. There are public benefits to the site that have nothing to do with access.

In closing, Mayor Purcell established the next three steps for making this park come to fruition. First, the land must be deeded from the Public Works Department to the Parks Department. Then the community needs to be asked what they want to do at this new park. Finally, the city needs to work on securing the surrounding development rights.

Glossary

Council Ring – a fire pit with seating arranged around it in a circle; can be used for meetings, classes or storytelling

Education Center – Building that can contain so or all of the following: classrooms for environmental education, offices for park staff, exhibits about the park, community meeting areas, restrooms, souvenir store, snack machines, etc.

Flood Fringe – difference (width) between floodplain and flood way

Floodplain – elevation and width of water in a hundred year storm

Flood way – width needed to contain 100-year floodwater in flood elevation is raised one foot; used to determine how high to build roads and structures

GIS – Geographical information Systems – spatial database mapping system that contains natural and cultural features of a site; used to determine the appropriate place for development

Grassland – an ecological community in which the characteristic plants are native grasses; grasslands make good habitat for various wildlife, including quail

Green Building – design and construction practices that significantly reduce or eliminate the negative impact of development on the environment

Group Camping – camping area reserved for civic groups, such as Girl/Boy Scouts, church youth groups, school science classes, etc.

Habitat Restoration – a bringing back to the former condition of an environment before it was altered

Intermittent Stream – channels that naturally carry water part of the year and are dry other parts of the year

Loop Trails – circular trails that give users the option of not traveling the same section more than once

Meadow – a tract of moist, usually level ecosystem that contains native wildflowers and grasses

Appendix C - Glossary of Terms

Mountain Bike Course – trail system designed for mountain bikers only; natural surface trail with a tread width of 2 feet; depending on the level of difficulty, logs and rocks can be used to make jumps; minimal removal of forest material is necessary

Multiuse Trails – corridors that can be accessed by multiple users

Natural Surface – soil, gravel or mulch

Natural Surface Equestrian and Hiking Trail – soil or mulch path that is used in environmentally sensitive areas

Natural Surface Hike and Interpretative Trail – soil, gravel or mulch path that is used in environmentally sensitive areas

Off-leash Dog Area/Trail – loop trail that owners can walk with their dogs off their leash; off-leash zone signs are necessary at the intersection of the off-leash trail and all other trails

Open Space – areas of publicly or privately owned natural area that is protected for natural and cultural resources

Passive Open Space – open space where activity is limited due to the sensitivity of the natural resources on the site; low impact trails are allowed; does not include typical park facilities such as sports fields, but restrooms, benches, water fountains, etc. are usually provided

Paved Hike and Bike Trail –

Perennial Streams – channels that carry water year round

Preservation – maintaining an area or structure intact or unchanged

Rain Garden – parking lot medians used to detain storm water runoff from parking area; various wetland plants can be used in the gardens to help remove hard metals and contaminants from the runoff, while beautifying the parking lot

Reforestation – the process of restoring a disturbed area into a forest

Riparian Buffer – large strips of forested land adjacent to a water body that filters sediments and pollution from runoff

Appendix C - Glossary of Terms

Runoff – water that is not absorbed by the soil and therefore runs over the soil surface

Shorebird Pond – shallow ponds built for various types of birds, such as a plover, egrets and herons that allow for the birds to feed during migration from the Arctic to South America; the water levels can be controlled to insure suitable food and habitat during migration season

Tack Barn – a small structure that contains materials for equestrians and their horses including bridles, saddles, harnesses, feed, stalls, fresh water and other related items.

Wetland Creation – the process of enhancing, restoring or building new wetland areas

