

LITTLE MULBERRY PARK MASTER PLAN



Gwinnett County, Department of Community Services, Parks Division

Prepared by: CERULEA Inc.

January, 2001

Little Mulberry Park Master Plan

The Little Mulberry Park Master Plan was prepared with the participation and guidance of the Master Plan Steering Committee members. For their efforts we are most appreciative.

<i>Wayne Hill, Chairman, Bd. of Commissioners</i>	<i>Charlotte Nash, County Administrator</i>
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<i>Darden Shadrach, Park Neighbor</i>	

The support and vision of the Gwinnett County Board of Commissioners has assured preparation and faithful implementation of the Master Plan:

<i>Chairman:</i>	<i>Wayne Hill</i>
<i>District 1:</i>	<i>Marcia L Neaton-Griggs</i>
<i>District 2:</i>	<i>Patti Muise</i>
<i>District 3:</i>	<i>John P. Dunn</i>
<i>District 4:</i>	<i>Kevin Kenerly</i>
<i>County Administrator</i>	<i>Charlotte J. Nash</i>

Little Mulberry Park Master Plan

Table of Contents

<i>Chapters</i>	<u>Page</u>
1.0 Project Goals and Objectives.....	3
2.0 Site Context.....	3
3.0 Methodology	3
4.0 Site Inventory and Analysis.....	5
5.0 Development Program	15
6.0 Development Budget	32
7.0 Alternative Development Concepts and Master Plan	33

Appendices

A. Master Plan Design Estimate

List of Figures

• Topographic & Circulation Diagram	6
• Watershed Diagram	8
• Vegetation Diagram	10
• Soils Diagram	13
• Soils Table.....	14
• Concept A	36
• Concept B.....	37
• Concept C.....	38
• Preliminary Master Plan	39
• Draft Master Plan.....	40
• Final Master Plan (Color Graphic)	41

Little Mulberry Park Master Plan

1.0 Project Goals and Objectives

At Little Mulberry Park, Gwinnett County is seeking to address countywide recreational open space needs in a manner compatible with the sustainable preservation and interpretation of unique cultural and natural resources. This Master Plan was performed as a two stage process. Initially a programming study resulted in the development of a program narrative to guide the second step, a site master plan reflective of the program. The principal goals of the project were:

- Preserve the natural resources associated with the park.
- Preserve potential archeological resources from disturbance as a part of this project.
- Provide for potential interpretation of the extensive natural and cultural resources.
- Provide access suitable for a broad range of passive and active trail and open space activities.
- Encourage sufficient levels of use to ensure regular public presence to reinforce public safety objectives.

2.0 Site Context

The 485-acre park was acquired in various parcels through 1999. The Park is in the Pool Mountain area and is located near the rapidly developing Hamilton Mill area. Access to the site is via Fence Road. The park is surrounded by large parcels used for low-density residences, farms, and forested land. Some adjacent parcels have recently been rezoned for subdivision development. One adjacent parcel is presently being developed as a subdivision.

3.0 Methodology

Using a traditional approach to the park planning process, the project progressed through a series of interim tasks to arrive at a consensus Master Plan. The sequence of tasks performed to develop the Master Plan included:

- Program Confirmation was based on input of staff as well as the Steering Committee.
- Field reconnaissance to identify natural and optimal trail alignments, all recorded by field survey.
- Inventory and Analysis of the site including topography, vegetation, hydrology, and soils.
- Alternative Development Concepts were prepared to test a variety of design concepts.
- A Preliminary Master Plan was developed as a Hybrid Concept.
- A Draft Master Plan was developed as a refined preliminary plan with Cost Estimate.
- A final Master Plan was developed with refined, phased Cost Estimate.
- Presentation of the final products to the Board of Commissioners.

The following provides additional brief description of the methodology and timeline:

Little Mulberry Park Master Plan

Program Confirmation (through December 6, 1999)

Working closely with the steering committee to develop a program, the process began with a meeting with the Committee and Commission Chairman Wayne Hill. General objectives were outlined by all present. Consensus as to the prime natural and cultural resource preservation objective emerged from this meeting.

The Steering Committee then performed a tour of the site, including a lunch on the adjacent Parks property, a beautiful private tract at the west end of the park.

A series of meetings followed, culminating in a written program memorandum on December 2, 1999.

Base Plan Development and limited Survey (through September 7, 2000)

Using digital DXF files derived from the County GIS system, CERULEA prepared a composite AutoCAD base plan for the site. The County furnished digital property surveys to the project surveyors, Hannon, Meeks, and Bagwell to prepare a consolidated boundary survey. The boundary survey and GIS physical data were composited by the surveyors.

County staff and CERULEA performed field reconnaissance to flag existing and potential trail alignment through the western valley of the un-named tributary. Trail flag locations (horizontal and vertical) were then located by the surveyors. The surveyors also located key specimen trees in the valley and set two new GIS monuments on the property.

Inventory and Analysis (through September 18, 2000)

A series of four graphics were then prepared to record the findings organized under the headings of Topography & Circulation, Watershed, Vegetation, and Soils. The most instructive analysis was the topographic analysis of the existing and probable trail alignment. The slopes and relative grade changes of the various segments of the trail were discussed in depth to reach consensus in the following conceptual design phase.

Conceptual Development (September 1 - 20, 2000)

Three alternative concept plans were quickly developed to consider the program requirements. The plans were varied and were presented to the Steering Committee on September 20, 2000. All the alternatives satisfied the project goals and objectives, but differed principally on the basis of the paved and woodland trail alignments. From this process, Scheme C was selected for refinement.

Preliminary Master Plan Development (September 21 – October 4, 2000)

The Preliminary Master Plan was presented to the Steering Committee on October 4. Minutes of this meeting, prepared by CERULEA staff are located in Appendix A. Issues that evolved as a

Little Mulberry Park Master Plan

result of this review were perimeter security fencing, overflow parking, interpretive signage, meadow mazes, and other small rustic themed hardscape elements.

Draft Master Plan (October 5 – 18, 2000)

Following the presentation of the draft master plan on October 18, there were minor plan revisions requested by the steering committee and staff to include: a smaller overflow parking lot in later phases; reduction in the picnic pavilion size to limit utility for large gatherings (linked to amount of overflow parking); and designation that maintenance facility is a Phase I priority. Phasing costs and priorities were refined.

Final Master Plan (October 19 – 31, 2000)

The final color master plan was prepared and presented to the Board of Commissioners on October 31, 2000, and many of the Steering Committee members were in attendance. The plan was well received. The Chairman inquired after inclusion of horseback riding and received the explanation that as presently configured, the trail alignment was too steep through key areas to be maintainable for horses. A suggestion was offered that additional land acquisition adjacent to the park would allow a more sustainable horse trail alignment that would not impact sensitive areas.

On November 2, an article about the park appeared in the Gwinnett Daily Post with a full color copy of the Master Plan.

4.0 Site Inventory and Analysis

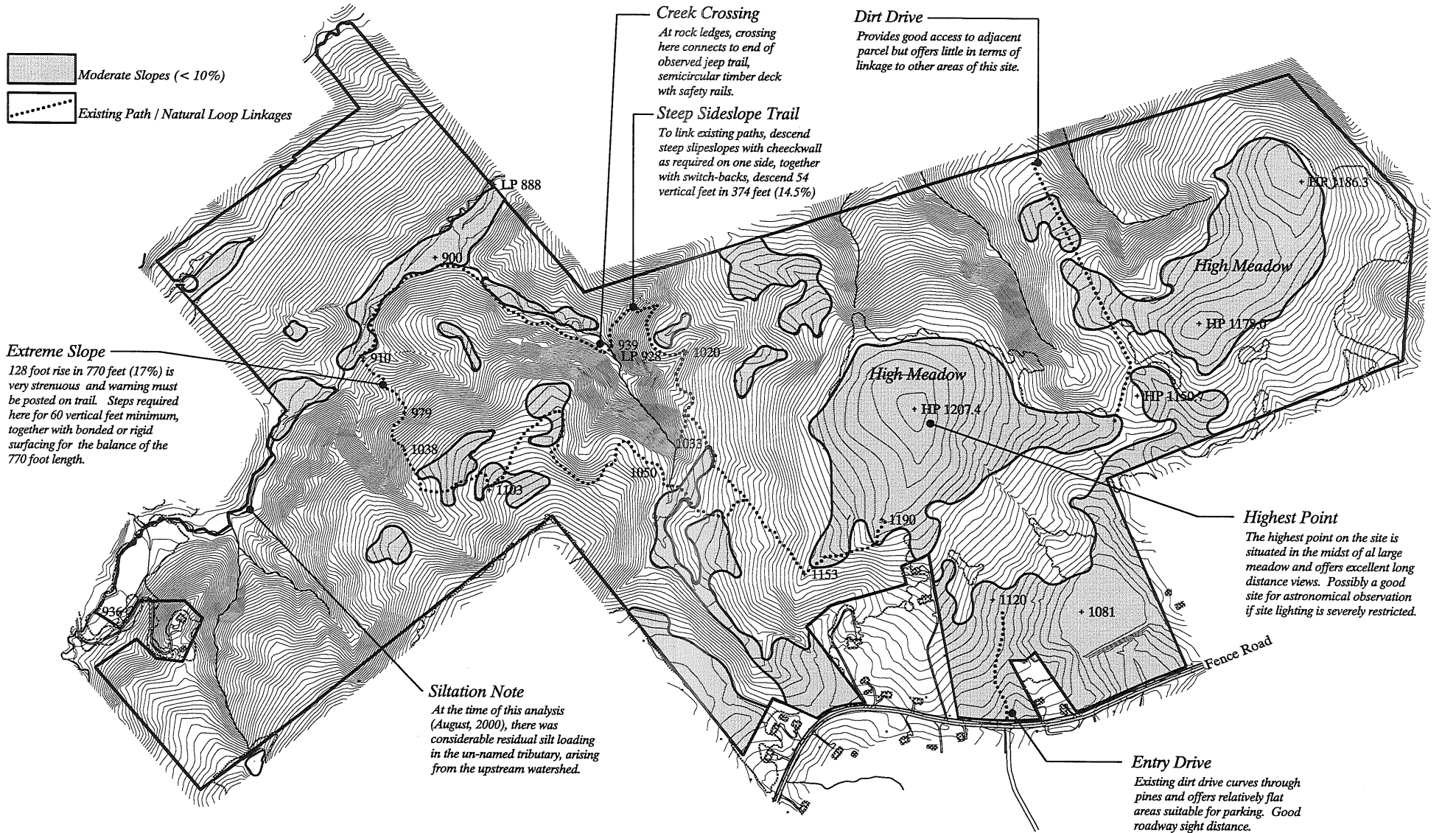
The following constitutes a summary of the inventory and analysis process. Each major category of discussion is supplemented by a diagrammatic graphic.

Topography and Circulation

The Park is a complex landform, generally comprised of a southwest to northeast ridge and a stream valley system north of and parallel to the ridge (**see Diagram**). Near the entry at Fence Road, at the foot of the ridge, is a manmade pond. The terrain rises 126 feet from the pond to the highest knoll on the ridge to the north. A series of two extensive pastures crowns the ridge landform.

Very long views are afforded from the high ridges, a condition that is both an asset and a liability. At present the viewshed is a seemingly limitless, pleasant pastoral. The benefit of the long views includes excellent opportunity to observe migratory raptors and other large flying birds at various times of year. Also, the high position and clear view to the low horizon from the open pasture encourages astronomical observation. The high viewpoint affords interpretation of local history as distant ridges and mountains can be used to define the distances traversed by early travelers in this area and the stories associated with those distant points and the immediate locale.

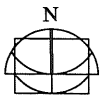
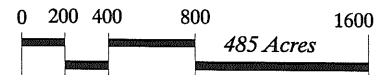
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Topographic & Circulation Diagram

Prepared for
Gwinnett County, Department of Community Services

Prepared by
CERULEA, Inc.
September 18, 2000



Little Mulberry Park Master Plan

Unfortunately, the serenity of the current viewshed will likely diminish in the immediate and near future. Consideration must be accorded to the development pressure in the area. As more subdivisions are developed in the adjacent area, the pastoral landscapes will give way to tract housing. Larger commercial buildings, hotels, and other structures associated with development along the Interstate 85 corridor will encroach on the viewshed.

On average, the site is very steep, with less than 20% of the acreage sloping less than 10 percent. This implies hardship in terms of accessibility compliance. Fortunately, a large open pasture near the entrance and pond can be made accessible by careful siting of a path loop, parking, restroom, picnic facilities, play area and open meadow, such that a range of activities representative of those throughout the site can be enjoyed by those with a broad range of ambulatory ability and endurance.

The balance of the site is naturally suited to those seeking a more challenging outdoor experience. During the inventory process, County and consultant flagged the existing network of trails in the woodland valley to take advantage of the alignments developed by previous generations of users. Also, optimal linkages were flagged in the field to study potential connections where existing trail segments are discontinuous. The resulting trail loop was then analyzed.

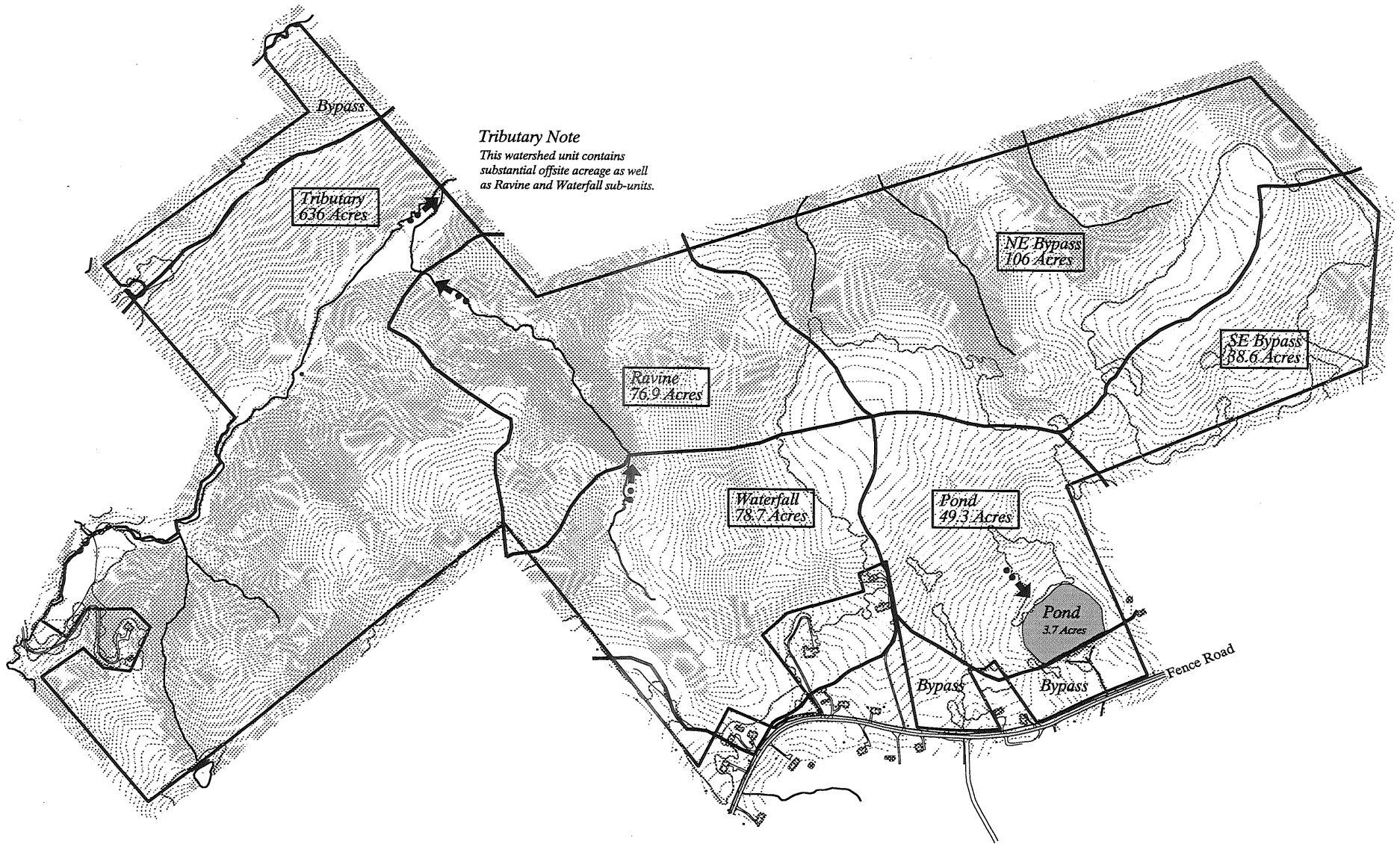
The most gentle loop configuration was selected in the field, one that traversed a full range of natural and cultural features in the woodland valley. The loop will have to include path alignments at maximum slopes of 14.5 and up to 17 percent (with steps). The net grade change on the complete woodland trail loop will be approximately 290 feet. Based on these terrain factors, warning signage will be necessary to inform the public of the potential physical challenge of the woodland trails.

Watershed

As the project acreage does not occupy the full extent of the upstream watershed boundaries, there remain certain considerations related to on-site water quality (the stream). Also, given the predominate ridge landform, there will be numerous occasions where sheet flow runoff or concentrated flows exit this property onto adjacent lands. The acreage of the watershed subunits was charted to assist in the visualization of these parameters (see **Diagram**).

A great concern is the hydrological impact on the unnamed tributary in the northwest woodland valley "tributary" watershed. Less than 20 percent of the subunit's 636-acre watershed is within the park. In the timeframe of this study, the water quality of the stream degraded due to upstream, off-site development. At the close of the study, the former gravel and sand bed of the stream and banks were coated in places with fresh red silt. Obviously additional compliance with current regulations is required together with ongoing monitoring as mandated by state and local ordinance.

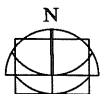
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Watershed Diagram

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Little Mulberry Park Master Plan

This study was conducted during one of the most severe droughts in recent history. Consequently, many local groundwater springs and streams were not in evidence or otherwise dried up. One such example is the “waterfall” watershed sub-unit, at 78.7 acres, which supported a trickling stream and very modest waterfall over a sheer rock ledge. As the stream disappeared during the course of this study, less focus was accorded to the importance of the “waterfall” as a focal point for the woodland trail user.

Groundwater levels were sufficient throughout the drought such that water remained (though somewhat stagnant) in the bed of the stream in the “ravine” watershed subunit below the “waterfall”. The stagnant condition gives rise to mosquitoes during low flow periods. Taken together, the “waterfall” and “ravine” sub-units contain over 150 acres of land. Considerable water flows are anticipated along the stream and over the waterfall during periods of high rainfall.

Accordingly, the trail crossing of the stream must be kept well clear of water levels and must not destabilize the banks of the stream. The trail alignment proposed would cross the stream where one end of an elevated, curving boardwalk would rest on a rock ledge and the balance would be supported by piers placed outside of the streambed.

Where proposed pavements and roofs are concentrated near the project entry, compliance with the new County stormwater regulations will be required. The principal “Best Management Practice” (BMP) proposed is a pervious pavement system for the entry drive, maintenance court and parking area pavement. This is not intended to be a grass pavement system, but rather an open celled pervious asphalt cross-section with open graded aggregate base. A modest forebay system may still be required to filter runoff prior to entry into the existing pond.

Vegetation

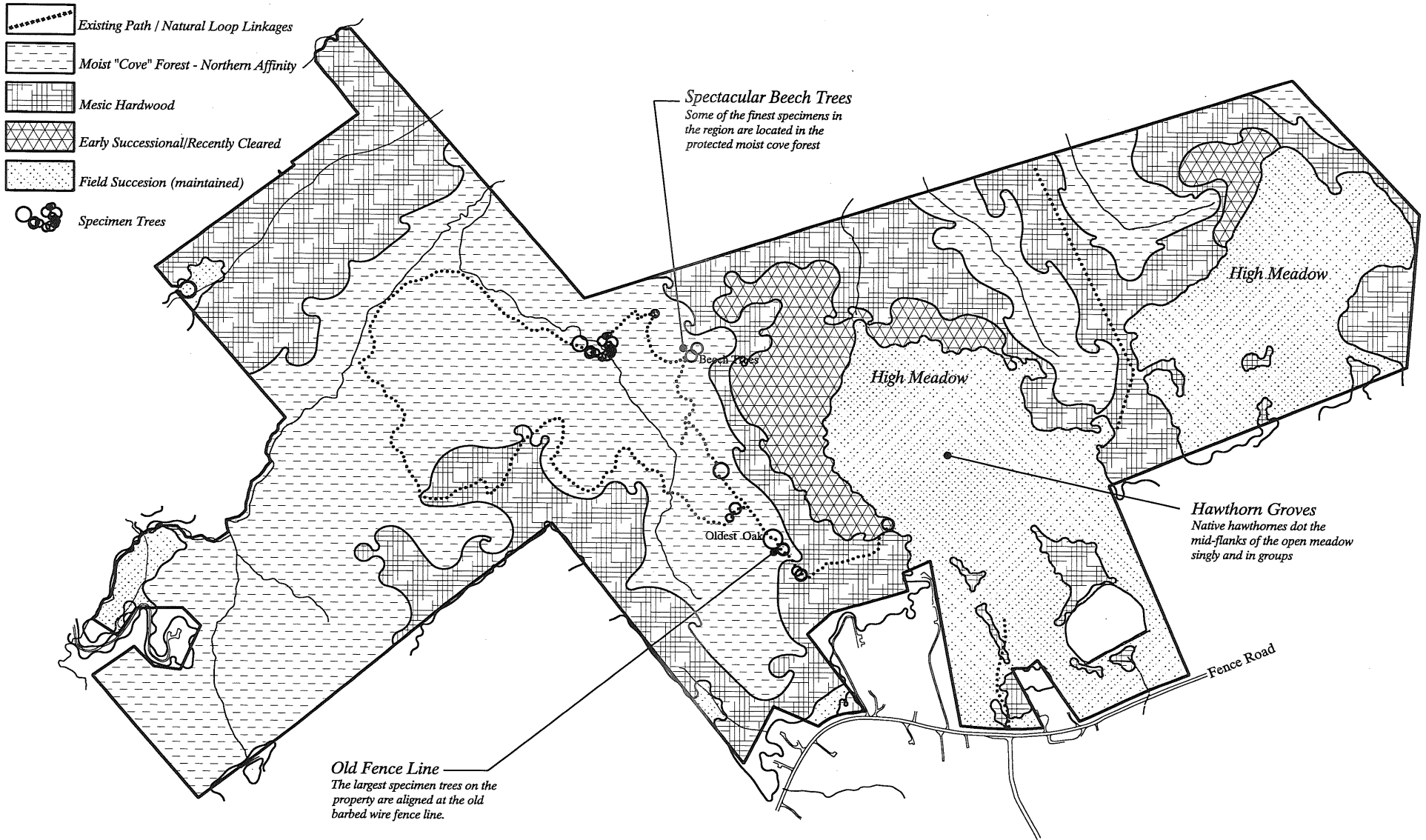
The vegetation units on the site, both high meadow (manmade) and the natural forest cover are the primary determinants of the site program. Vegetation units were mapped and analyzed (**see Diagram**).

High Meadows

While the initial impression upon arrival at the park is the expanse of open meadow, about than 22% of the park (106.5 acres) is presently maintained as such. The pasture areas require regular mowing or bush hogging to maintain that character. If a cooperative agreement is reached with a private entity to maintain the meadow for hay, then the frequency and timing of mowing would be established to enhance the hay production aspects.

The pasture areas are blanketed with various meadow grasses, both native and exotic in origin. It is suggested that these grass species be catalogued and mapped. Such information could guide

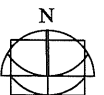
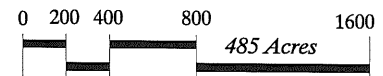
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Vegetation Diagram

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Little Mulberry Park Master Plan

management strategies for the pasture to develop proper maintenance in terms of cutting time-of-year, frequency and height. The objective would be to optimally manage in terms of cost of management, and desired aesthetic quality. Some grass species are seasonally attractive in terms of spring color and texture, seedhead color and texture, and winter appearance.

Likewise, the distribution of herbaceous and woody plant species in the pastures is suggested. Some species can be encouraged or sustained through proper mowing regimes. Already, the central high meadow's west flank is thoroughly dotted with native yellow hawthorn groves that will mature into an attractive low canopy if allowed to establish. Maypop and Jimsonweed are in evidence with their unique ornamental attributes. Jimsonweed (*Datura stramonium*) is potentially lethal if ingested and is regarded by some as a recreational hallucinogen. Perhaps directed management regimes will address the eradication of this species.

There is no available evidence to indicate that fire has been used to manage the pasture area, although such practices were common in prior decades. In South Georgia's longleaf pine-wiregrass forest community, fire is increasingly being utilized to sustain those species such as wiregrass that benefit from natural fire. There may be native species in the pasture, whether grasses or wildflowers that would benefit from fire management.

The County is free to consider fire management in the future, however there is no current plan to utilize fire as a management tool. Substantial coordination efforts would be required between the parks and fire departments to assure safe utilization of fire management. Also, a public education campaign would be required to assure the public of the benefits of fire management and to maximize the opportunity for interpretive outreach.

Woodlands

An extensive, diverse woodland cover provides the leading theme for park interpretation, pedestrian circulation and management. The approximately 375 acres of forest cover is a substantial contiguous unit within the Gwinnett County Parks System. While a limited acreage has recently been select harvested north of the high meadows, this area will rapidly recover to complement the remaining woodlands. Very little is in mature pine, with most of that acreage concentrated in small patches near the Fence Road entry.

The typical woodland is a hardwood predominate forest with mesic affinities. In the steep valley of the unnamed tributary, where extensive steep north-facing embankments have reduced the drying solar influence, there are moist cove type forests of more northern affinity. Spectacular specimen beech trees are evident together with white oak and tulip poplar. This moist cove area is relatively unique in Gwinnett County and the valley floor has not been impacted by sanitary sewer construction.

The steeper banks of the moist cove forest feature areas with intact ephemeral ground cover that should be preserved wherever in evidence. Additional study, including cataloguing and mapping these species distribution is suggested. The existing path and natural loop linkage avoids impacting these areas. A wooden barricade is suggested to prevent trampling of sensitive ground

Little Mulberry Park Master Plan

covers in the overlook area of the ravine.

In much of the narrow, flat terrace area surrounding the top of the ravine, a dense young thicket of southern sugar maple (*Acer barbatum*) is evident. In the transitional area between the moist cove forest and the mesic hardwoods there is a partially extant property line fence accompanied by large open field hardwoods. These trees, now in a heavily wooded area, formerly grew when the area had been cleared, exhibiting the full head associated with open field growth.

The trail following the natural loop linkage will cross the lower ravine creek in an area punctuated with spectacular specimen beech and white oak trees, affording park users a rare glimpse of how a pre-Columbian forest may have appeared. If the adjacent understory vegetation can be maintained and encouraged to regenerate, then the proper impression may be more complete.

Given the sensitivity to the understory vegetation, equestrian access to the moist cove forest should be severely limited, as the horse feces would introduce invasive and competitive non-native grasses and other ephemeral species. As of this writing, such access is only contemplated as a linkage to additional lands potentially to be acquired in the vicinity.

Soils

There is a wide range of soil cover on the 485-acre park site that has been mapped (**see Diagram**). A table has been prepared (**see Table**) to summarize the physical attributes of the respective soils series. Given the limited ground disturbance proposed, comments in the following are limited to those areas where soil profile may play a part in design.

In the vicinity of the parking lot there are proposed restroom facilities that will require septic field support. The "Gwinnett" soil series in this area (GgC2, GeE2) exhibit loam to clay loam properties and depending on natural slope and depth to recharge line would be expected to exhibit permeability in the range of 0.8 to 2.5 inches per hour. These values should be found suitable for utilization of traditional septic field systems.

Elsewhere on the site, where soil disturbance is limited to that associated with trail development, the concern in the area of soils is towards probability of excessive shrinkage or swelling. In all such areas, the values are in the moderate to low potential range.

There are other areas of the site where the woodland trail development may encounter shallow depth to bedrock. The Musella soil series (MCF) that is associated with most of the steep, north-facing slopes of the un-named tributary valley may have a cobbly topsoil and bedrock at depths of 15 to 60 inches. This should not greatly impact the woodland trail as construction of same does not call for deep cuts. Any stone encountered during construction here is needed for water bars, steps or other trail-related elements.

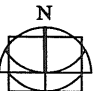
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Soils Diagram

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Estimated Physical Properties of Site Soils from Soil Survey for Gwinnett County, Georgia, July, 1967 USDA SCS

Soil name	Depth to hard rock Feet	Depth to seasonally high water table Inches	Depth from surface Inches	Classification			Percentage passing sieve--			Permeability Inches per hour	Available water capacity Inches per inch of depth	Reaction pH	Shrink-swell potential
				USDA texture	Unified	AASD	No. 4	No. 10	No. 200				
Appling (AmB2, AmC2, AmD2) ---	>8	>50	0-10	Sandy loam-----	SM-----	A-2-----	95-100	95-100	20-35	2.0-6.3	.12	4.5-5.0	Low.
			10-24	Sandy clay loam--	ML-CL-----	A-6-----	90-100	98-100	50-60	0.8-2.5	.14	4.5-5.0	Moderate.
			24-42	Sandy clay-----	NH-CH, CL-----	A-7-----	95-100	95-100	60-75	0.2-0.8	.13	4.5-5.0	Moderate.
			42-52	Sandy clay loam--	SM, SC-----	A-2, A-4, A-6.	95-100	95-100	27-50	0.6-2.0	.11	4.0-4.5	Low to moderate.
Chevaclia (Cfs) -----	>10	0-24	0-6	Silt loam-----	ML, SM-----	A-4-----	100	95-100	45-55	0.6-2.0	.17	4.5-5.0	Low.
			6-28	Silty clay loam--	ML, CL-----	A-4, A-6	100	95-100	50-65	0.6-2.0	.14	4.5-5.0	Moderate.
			28-42	Silt loam-----	ML-----	A-4-----	100	95-100	50-70	0.6-2.5	.14	4.5-5.0	Low.
Congaree (Cag, Cos, Cus) -----	>10	36-40	0-6	Silt loam-----	ML-----	A-4-----	95-100	95-100	50-60	0.63-2.0	.16	5.1-5.5	Low.
			6-10	Fine sandy loam--	ML, SN-----	A-4, A-2	95-100	98-100	30-55	0.63-2.0	.15	5.1-5.5	Low.
			10-52	Sandy clay loam--	CL-----	A-6-----	95-100	95-100	50-60	0.63-2.0	.13	5.1-5.5	Moderate.
Davidson (DgB2, DgC2, DhB2, DhC2, DhD2).	>10	>60	0-6	Loam-----	ML, CL-----	A-4-----	95-100	95-100	50-65	2.5-5.0	.10	4.5-5.0	Low to moderate.
			6-52	Clay loam or clay.	ML, CL, CL-----	A-7-----	100	95-100	65-85	0.8-2.5	.10	4.5-5.0	Moderate.
Gwinnett (GcB2, GcC2, GcR2, GgB2, GgC2, GgR2).	>6	>60	0-7	Loam-----	SM-----	A-2, A-4	95-100	85-100	20-40	2.5-5.0	.13	5.1-5.5	Low.
			7-55	Clay-----	ML, CL-----	A-7-----	95-100	95-100	83-90	0.8-2.5	.13	5.1-5.5	Moderate.
			35-13	Clay loam-----	CL-----	A-6, A-4	95-100	95-100	55-75	0.8-2.5	.13	5.1-5.5	Moderate to low.
			13	Fractured rock.									
Louisburg (LbB, LbF, LbC, LbE).	1 1/2-4	>60	0-6	Loamy sand-----	SK, SM-----	A-2-----	50-100	35-95	10-30	5.0-10.0	.08	5.1-5.5	Low.
			6-15	Sandy loam-----	SC, SM-----	A-4-----	95-100	95-100	40-50	2.0-6.3	.075	5.1-5.5	Low.
			15-29	Weathered rock.									
Musella (MeB, MeF) -----	>8	>60	0-6	Cobbly loam-----	SM-----	A-2, A-4	80-85	60-70	30-40	0.8-2.5	.15	5.1-5.5	Low.
			6-15	Clay-----	CH, ML, CL-----	A-7, A-6	70-85	70-85	60-70	0.8-2.5	.13	5.1-5.5	Moderate. rate.
			15-60	Broken rock.									
Pacolet (PcB2, PcC2, PgB2, PgL2, PgL2, PgL2, PgL2).	>6	>60	0-8	Sandy loam-----	SM-----	A-4-----	90-100	80-95	35-50	2.5-5.0	.13	5.1-5.5	Low.
			8-26	Clay-----	ML, CL-----	A-7, A-6	95-100	90-100	55-75	0.8-2.5	.13	5.1-5.5	Moderate.
			26-34	Sandy clay loam.	CL, ML-----	A-6, A-4	95-100	90-100	50-70	0.8-2.5	.13	5.1-5.5	Moderate. low.
			34-48	Sandy loam-----	SM-----	A-4-----	95-100	90-100	40-50	2.0-6.0	.10	5.1-5.5	Low.

Soils Table

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Little Mulberry Park Master Plan

Cultural Resources

Cultural resources (man-made objects and other evidence of historical habitation) will play an important, though perhaps obscure aspect in the park. The existing cultural resources include the existing 3.7 acre man-made pond, the perimeter hog-wire fence system, various dirt paths in meadow and woodland areas, remnant terracing of the meadows, and dozens of stacked stone mounds. These mounds are about a maximum of three feet high or ten feet in diameter.

Per prior archeological investigations, the stacked stone mounds have been variously attributed to pre-Columbian habitation by Native Americans and to post-settlement agriculture (these areas were previously logged and open pastures or farmlands). It is beyond the scope of this master plan study to resolve the attribution question.

This study did not map the stone mound locations, however, when various trail alternatives were tested in the field, there was never a case where the trail development would disturb a mound. In general, the trail does not often come in close proximity to the major concentration of stone mounds. In the instances where the trail comes in close proximity to stone mounds, it is intended that appropriate interpretive signage will be placed to present the various theories about the mounds. During construction, protective fencing would be necessary to protect adjacent stone mounds.

5.0 Development Program

Working with the Steering Committee and DCS staff, a finalized program for park development was prepared. There was much discussion of this program with the Steering Committee in order to carefully consider the theming of the program elements. **Photos used herein to illustrate the character of various elements are not explicit guidance as to design, but indications of the intent and vision of the staff and steering committee through this process.**

Passive Intent and Identification of Thematic Zones

The fundamental goal of the committee is to assure that the integrity of the park natural resource will not be compromised in any way by the proposed improvements. In effect, actions that may sustain the natural resource are encouraged, including specific types of vegetation management as necessary to prevent invasive vegetation development such as Kudzu and various exotic (some toxic) herbaceous and woody plants. As over 100 acres of the site is in pasture, and as such is desired to be maintained, various appropriate management practices are called for to sustain that landscape type.

Little Mulberry Park Master Plan

The thematic zones of the park, derived largely from terrain, watershed, and vegetation types include:

- A. High Meadow Complex; and
- B. Woodland Ridges and Valleys;

Given the irregular outline of the park, there are a number of adjacent land parcels that contribute to the perception of landscape composition. These contributing factors are discussed below together with a more thorough discussion of the major thematic zones.

High Meadow Complex

Approximately 106.5 acres is presently included in this category together with additional acreage of surrounding woodland. For programmatic purposes, this complex includes 3 principal sub-elements: East Pasture; Central Pasture; and Pond Basin. In addition, given the proximity to Fence Road, the High Meadow complex would include trailhead and parking access. Access would be via a gated, paved driveway from Fence Road together with a parking lot and any reasonably incidental support elements.

The slopes will be major factors in trail alignment through the pasture areas, such that trails in certain areas are placed to avoid direct ascents or descents of the prevailing grade.

Woodland Ridge and Valley Complex

The balance of the park comprises this category. For programmatic purposes, this complex includes 4 sub-elements: a Scenic Ravine; the Stream (an unnamed tributary); the Strickland Complex on the south-west ridge overlooking the stream; and the inaccessible North Ridge, extending to the Little Mulberry River.

As previously stated, the wooded landscape features the most dramatic elevation changes. Consequently, it is not intended that this area be made accessible per Georgia accessibility guidelines. In addition to the relatively diverse vegetation canopy, understory, and herbaceous ephemeral plants, the water resources impart much of the attraction for this area. Numerous groundwater springs and seeps, intermittent streams, and the perennially flowing unnamed tributary are in excellent condition in terms of watershed degradation. An exceptional element includes the mysterious arrangement of native stone piles, variously attributed to pre-columbian habitation and to historical agricultural practices. These assemblages are to be vigorously protected to assure their preservation.

Program Elements

The Park will be supported by a variety of improvements that facilitate access, visitor comfort and use of the property. Wholesale clearing or grading is not indicated, and vehicular access, parking and support facilities are to be confined near the proposed entrance at Fence Road. Consequently, the extent of support infrastructure will be limited. These elements would include:

Little Mulberry Park Master Plan

Vehicular Circulation

In general, circulation alignments are curvilinear in style, avoiding straight alignments. Gradients are to respect the terrain, seeking more gentle transitions between high and low points. Provide vehicular access at one paved, gated driveway off of Fence Road. This driveway is to be uncurbed, asphalt paved with a pervious profile as developed on previous projects in Alpharetta (1997) and Roswell (1996) in the Georgia piedmont. A 6000 square foot pervious concrete paved court is required at the maintenance area (**see photo below**).



Pervious Concrete Driveway, Joseph W. Jones Ecological Research Center

Desired Parking Allotment for Proposed Park Facilities

<u>Facility</u>	<u>Parking Spaces</u>
Meadow Paved Multi-purpose Trail	40
Pond Day Use (Picnic/Wildflower Meadow)	10
Woodland Walking Trail	15
<u>Community Playground and Picnic Pavilion</u>	<u>35</u>
TOTAL PARKING DEMAND	100

In addition, space for up to 3 busses is to be provided. Large, naturally landscaped islands will break up the mass of the parking lot.

In the event that attendance at the park regularly maximizes the paved parking capacity, then overflow parking constructed of reinforced turf may be added, not to exceed 40-50 additional spaces. Costs for this element are not included in the project cost estimate.

Little Mulberry Park Master Plan

Paved Multi-purpose Trail

An asphalt-paved, 12' wide, 2.03 mile loop will circulate largely on the periphery of the pasture complex. This includes a 0.57 mile handicapped accessible sub-loop would link the pond area to the parking lot. The paved trail will not have a center linestripe.

Woodland Foot Trail

A stabilized aggregate trail, 6-8' wide, provides access through the woodland ridge and valley complex. Allow for an approximately 2.45 mile looped system, including switchbacks in the first phase, expandable in later phases by 2 additional miles. In places, stone steps would be required to traverse steep transitions (**see photo below**).



Rustic Stone Steps, Bronx River Parkway. These steps are cross-pitched to remove surface water flow off of trail.

The emphasis will be construction methods and materials that assure the provision of an all weather surface that does not require costly replacement of surfacing, and that resists rutting of the natural soil profile. Construction methods would include handwork and bobcat type power equipment.

Little Mulberry Park Master Plan

Hand root pruning, topsoil removal, geotextile fabric, stone aggregate beds, stone cheekwalls (see photo), are among required elements. In the case of the limited, low cheekwalls, hand stacked stone must be notched into existing grade, with a broad base to assure stable footing. Special, gap-graded crushed aggregate surfacing and wall backfill blends are required for all weather performance. Bulldozers and dump truck access will not be provided into the woodland environment. Special tree protection and erosion control measures are required during development. An access easement from an adjacent southwestern parcel is suggested to facilitate construction



Stone Cheek Wall, Taughannock Falls, State Park, New York

Mown Paths

The pasture areas are well adapted to the development of a system of mown pathways linking various hilltops, and themed pasture areas. These can be relocated periodically, thereby allowing the underlying soils to recover in the event of compaction or wear. As an option, artists, perhaps in a competitive format involving professionals and or school age participants, can craft the layout of this element. A free-form pattern is reflected on the plan for illustrative purposes only. In any event, the design must be confirmed by layout in the field, perhaps marked with balloons or flags before close mowing of the pattern.

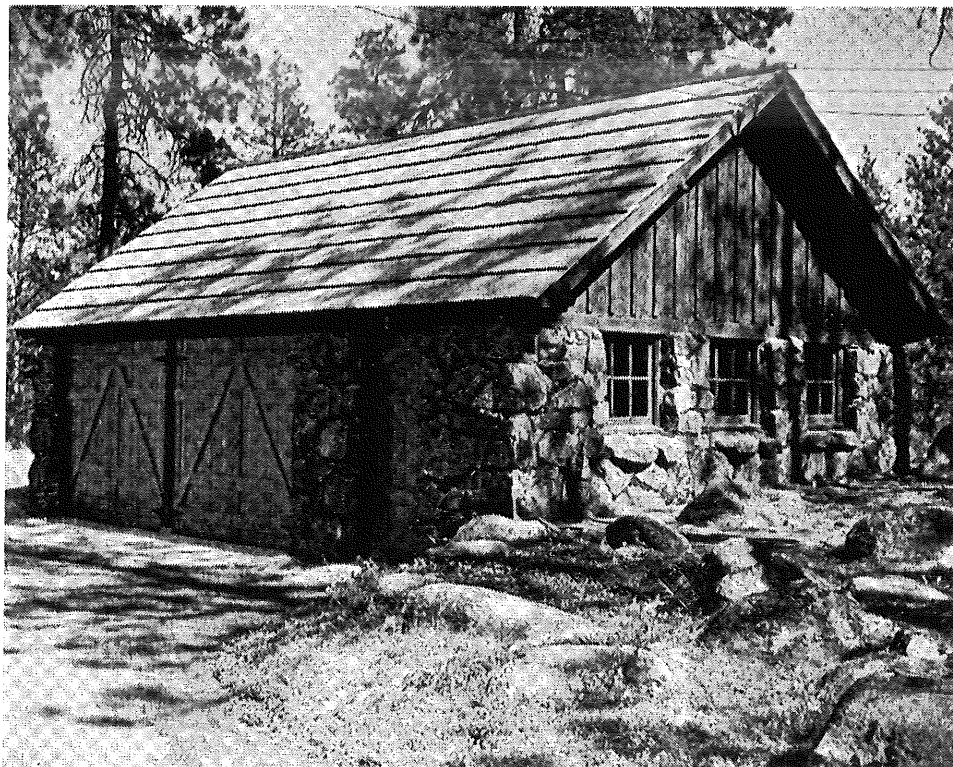
Little Mulberry Park Master Plan

Maintenance Area

A modest, 1200 square foot park maintenance facility is proposed to provide covered storage only. This structure would be rustic in theme, being a custom designed feature with native logs, timbers (possibly glu-lam), stone columns or veneer accents, and wood shingle or slate/simulated-slate roofing (see character photos below).



Rustic Covered Storage, Riverside State Park, WA



Rustic Covered Storage, fully enclosed, Riverside State Park, WA

Little Mulberry Park Master Plan

Restroom with Staff Office

A small 600 square foot park restroom will be provided, with three commodes/urinals per sex, for a total of 6 fixture units, required sinks and diaper changing stations. An alternative restroom configuration, where an outside door is provided to a single occupancy toilet room with sink could be provided such that 4 separate toilets are provided. This alternative layout will required handicapped accessible units and diaper changing stations. The building will include approximately 200 square feet for a staff office, including space for a desk, phone, and storage of maintenance related small tools, etc. This structure would be rustic in theme, being a custom designed feature with large timbers (possibly glu-lam), stone columns or veneer accents, exposed tongue-and-groove roof decking, and wood shingle or slate/simulated-slate roofing.



Modern Prefab Rustic Pit Toilet by Romtec, Roseburg, OR

Composting Toilet

Located in the western end of the woodland valley floor trail, a self-composting toilet, compliant with County standards, would be provided as a convenience for trail users. Clivus Multrum is a recommended manufacturer of this type of system. Water and electricity are not provided at such facilities. The facility would be periodically maintained (reactivate compost) using “Cushman” access through the trail system. A solar powered ventilator is suggested.

Little Mulberry Park Master Plan

Mid-Size Rustic Picnic Pavilion

Located within short walking distance of the parking lot would be a picnic pavilion. This structure would be rustic in theme, being a custom designed feature with large timbers (possibly glu-lam), stone columns or veneer accents, exposed tongue-and-groove roof decking, and wood shingle or slate/simulated-slate roofing. Space for 4 to 6 picnic tables would be provided with an octagonal roofed area of approximately 1500 square feet. The structure would have security lighting (timer operated) incorporated under the roof area.

Small Rustic Picnic Pavilions

Located overlooking the pond and at an overlook along the paved multi-use trail. This structure would be rustic in theme, being a custom designed feature with native logs, timbers (possibly glu-lam), stone columns or veneer accents, exposed tongue-and-groove roof decking, and wood shingle or slate/simulated-slate roofing (**see photo below**).



Rustic Small Shelter, Central Park, NY

Space for up to 2 picnic tables would be provided with a rectangular covered area of approximately 300 square feet. The structure would not have security lighting.

Pasture Observation Terrace/Outdoor Classroom

Located at the high point of the central pasture (est. elevation 1200 feet), a stone terrace (or concrete surface imprinted with compass rose, sundial, and/or interpretive celestial references) will be provided to allow for evening astronomical observation. There would not be a paved path or lighting provided to this point. A circular shape would be employed and a semi-circular

Little Mulberry Park Master Plan

perimeter bench, made of rustic stone and timber would be provided.

Scenic Ravine Overlook/Outdoor Classroom

A spur trail will provide a single, controlled point of access to view the scenic ravine and intermittent waterfall. A decorative rustic railing is required to prevent trampling of vegetation near the ravine. Stone, and wood are to be used to craft such a barrier. Coated wire mesh may be integrated into the design to contain children, given the fall hazard in the area. If the length of barrier is reduced, based on field measure, than funds may be available for a rustic covered bench (see **photo below**).



Rustic Overlook w/ Barricade, Central Park, NY

Off-Site Residence

As an alternative option (not budgeted in this master plan), consider the future acquisition of an adjacent outparcel with existing residence. This could be made available as housing for a resident manager.

Pond Observation Deck/Outdoor Classroom

Built on wooden pilings at the edge of the water, and including a wooden deck, this structure would afford good footing for those engaged in nature study at the pond. The deck would be less than 30" above the normal water level of the pond. This is not intended to be a fishing pier (see **character photo below for rustic treatment of this structure and natural treatment of pond shore**).

Little Mulberry Park Master Plan



Rustic Pier with safety Railing, Long Island, NY

Playground

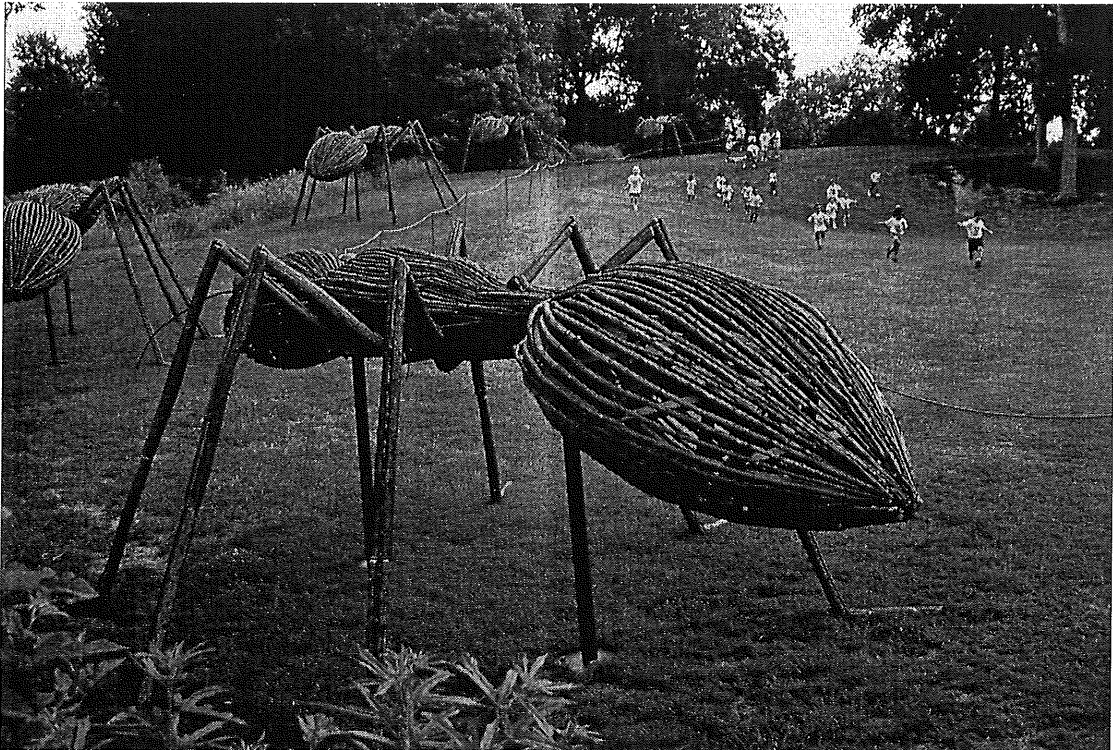
A large play area is sited in the park to help assure a constant flow of responsible adults during daylight hours who are able to observe the activity within the parking lot. The play area would be located within 300 feet of the parking area. The playground could be themed in a manner attuned to the natural sciences theme of this park. The initial phase of development would be a modest community playground with rustic style elements. Commercially available play equipment more compatible with rustic themes includes the Kompan/Bigtoys product line.

Ultimately the playground may be expanded in a second phase to be a destination grade facility. Such a playground may include water stream elements and/or large scale insect sculptures built by commissioned artists (**see character photo**).

The site would also include butterfly garden, sundial, secret garden, and pasture maze features. A local destination playground example includes the “Webb Zone” at Alpharetta's Webb Bridge Park (**see character photo**).

Also, a small, adult sized traditional swing set will be provided at the rest area on the meadows multi-purpose trail in the later phase.

Little Mulberry Park Master Plan



Traveling Exhibition of Rustic Twig Insects, Artist: David H. G. Rogers, NY



Sand Play, Play Lawn, and Butterfly Garden at Webb Zone, Alpharetta, GA

Little Mulberry Park Master Plan



Well-fed Wading Creek at Webb Zone, Alpharetta, GA

Furnishings

In general, furnishings will be spare and modest, and rustic themed (large timber and stone elements) as appropriate.

Signage will be custom designed and will not be the County's current park standard. A site identification sign and gate will be provided at the fence road access drive. A specially crafted park rules sign is required to identify hours of operation, and those uses or prohibitions specific to this park (**see character photo**). These rules would be in addition to standard park regulation postings.

Interpretive signage will be provided throughout the site as appropriate. This would include signage at the relic stacked rocks, scenic overlook, stream valley, and pasture/wildflower management zones. An introductory kiosk with trail map would be placed at a trailhead near the parking lot (**see character photo**).

Little Mulberry Park Master Plan



Large Rustic Kiosk, Yellowstone National Park, WY



Small Trailhead Kiosk, Saltwater State Park, WA

Benches will be provided at approximately 23 special viewpoints where rest may be desired, with additional units in the second phase.

Little Mulberry Park Master Plan

Picnic Tables will be provided, including 4 to 6 at the mid-size pavilion, and an additional 2 stations associated with each of the small pavilions. Grills would also be provided at some of the picnic stations near the parking area.

Waste Cans will only be provided where there is ready vehicular access to pick up the trash (pick-up truck or Cushman type vehicle). The picnic facilities and playground would be the only areas served with waste pick-up. Other areas would be signed to indicate a carry-in/carry-out trash policy.

Bike Racks are to be provided near the main park entrance.

Perimeter Security

Based on preliminary survey data, up to 25,000 of the site perimeter may require new hog-wire fencing to limit access to the main gated entry point. There is evidence of unauthorized four-wheeler and other access from various points. Only 5000 feet will be provided in the most needed areas with the balance in later phases. A vehicular gate will be provided at the site entrance on Fence Road.

Maintained Meadows

With over 100 acres of open pasture extant on the site, a key decision is relative distribution of mown turf relative to the more infrequently mowed or non-maintained areas. It is not desired to frequently mow the entire pasture acreage, nor is it desired to allow large areas to revert back to forest canopy or bramble patches. Also provided are areas where alternative management practices are employed to demonstrate how invasive or successional vegetation transition can be controlled through the use of timed mowing (**see character photo**).

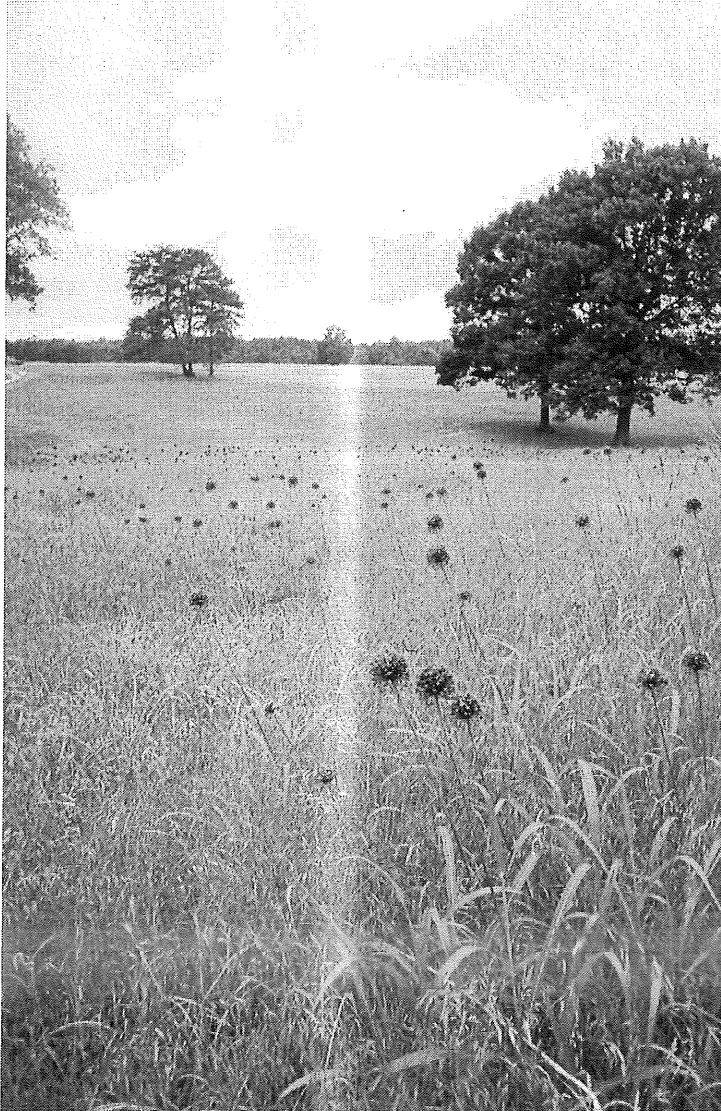
The open meadow would be managed to allow use for passive pursuits, including nature study, picnics, kite flying or other activities that do not result in soil compaction or loss of vegetative cover.

Wildflower Garden

Alternative maintenance regimes are required to take up certain themed pasture areas. These areas include seeded wildflower “garden” areas in the watershed of the pond, managed for concentration of native species (and very limited non-invasive exotic species) for concentrated floral color.

The open meadow would be used for passive pursuits, including nature study, picnics, kite flying or other activities that do not result in soil compaction or loss of vegetative cover.

Little Mulberry Park Master Plan



Meadow managed for Wildflowers, Yorktown Battlefield, VA

Forest Management

The logged acreage near the meadows will be managed (with appropriate signage) to encourage interpretation of the natural processes of forest regeneration. Kudzu management may be necessary in this area.

Border Planting

Plantings near the property lines are encouraged to create a transition between the park use areas and adjacent property. This will ensure a pleasant park user experience and also assure privacy. This is not meant to be a continuous effect, but rather to be concentrated only where absolutely needed.

Little Mulberry Park Master Plan

Native evergreen species such as Red Cedar and American Holly should be used rather than introduced species. The master plan graphic reflects this screen planting, particularly in terms of securing the pond viewshed, screening the maintenance facility, and screening the parking area from adjacent neighbors.

The Owner will purchase landscape plants in bulk and arrange for installation by a Contractor as part of the first phase of development.

Utilities

Stormwater System: The construction plans must be designed to allow for recapture of water arising from land disturbance through infiltration. This would include discretely placed, depressed, planted infiltration bays downstream of the proposed buildings and parking facilities (**see photo**). Pavements are to be uncurbed to allow sheetflow off of the surface. In addition, the paved and loose surface trails are to be carefully situated to include provision for surface water run-off controls such as trail cross bars and culverts to move concentrated water under the prepared surface. If for any reason, trail construction results in the concentration of water flow where previously sheet flow had prevailed, then special measures are required to redistribute the artificially concentrated water safely into the natural landscape.



Native plants in mowed forebay in Cherokee Park, Louisville, KY

Potable Water Distribution: Provide new water service originating at Fence Road together with fire protection water distribution as required to protect proposed structures.

Sanitary System: Provide a septic field near the restroom at the parking area, sized as appropriate

Little Mulberry Park Master Plan

for the anticipated user population.

Telephone/Communications: Arrange for the extension of these services to the appropriate building locations on site. Also, provide for a remote "911 Only" phone line for trail users at the woodland trailhead.

Lighting and Electricity: Arrange for the extension of these services to the appropriate building locations on site. Security light poles are to be placed at the proposed parking lot. Lights will be set on timers, and will not burn from dusk to dawn as is typical of power company installations.

Park Expansion Opportunities

There are several adjoining tracts for which outright acquisition or negotiated conservation/access easements are encouraged. Such expansion could enable more suitable trail alignments, equestrian trail opportunities, better viewshed control, or additional trailhead development opportunities. As a result of the property boundary configuration, access to the north ridge and slope abutting the Little Mulberry River is inaccessible to the balance of the park.

This parcel can be rendered useable to the park composition if adjacent acreage, either in the Parks or Miller tracts is obtained. Possibly, this acreage or part thereof can be exchanged for property in either the Parks or Miller tracts to afford better viewshed control, trail alignment or trailhead opportunities. In any event, any opportunity to extend the park boundaries, at least as far as the bounding roadways, is encouraged to assure a more successful park configuration. In the interim, fences may be necessary to control egress from adjacent properties in specific areas to be determined in the future.

Little Mulberry Park Master Plan

6.0 Development Budget

The first priority level (and Phase I) program list is based on an October, 2000 estimate of approximately \$2,750,000 construction cost and includes:

First Phase

Insurance, Bonds, other Req'ts.	\$90,000
Site Preparation	\$211,000
Maintenance Compound	\$85,800
Perimeter Security	\$30,000
Vehicular Paving	\$159,925
Sewer Waste System	\$36,000
Water System	\$43,500
Woodland Trails (upper and lower ravine)	\$796,124
High Meadows and Common Area Trails	\$271,600
Common Area Furnishings	\$229,080
Buildings	\$288,000
Site Lighting and Communications	\$29,680
Softscape	\$70,000
Signage	\$22,800
Contingency	\$100,000
Design Fees	\$175,000
Equipment Allowance	\$80,000
Supplemental Survey	\$28,000
Sub-Total	\$2,749,008

The Second Phase list contained the balance of park program features the Committee believed should be in the next construction phase or phases as additional funds become available

Second Phase

Insurance, Bonds, other Req'ts.	\$46,400
Site Preparation	\$22,000
Perimeter Security	\$120,000
Water System	\$19,200
Woodland Trails (2 mile extension)	\$968,400
High Meadows and Common Area Trails	\$130,853
Destination Playground Expansion	\$181,000
Composting Toilet	\$25,000
Site Lighting and Communications	\$29,680
Softscape	\$5,000

Little Mulberry Park Master Plan

Contingency	\$60,000
Design Fees	\$95,000
Botanical/Archeology Report	\$16,000
<u>Supplemental Survey for Trail Expansion</u>	<u>\$16,000</u>
Sub-Total	\$1,711,853

A more detailed estimate is included in the **Appendix**.

7.0 Alternative Development Concepts and Master Plan

A total of three alternative development concepts were prepared and presented to the Steering Committee. Following this, a hybrid plan, called the Preliminary Master Plan, was developed to reflect a consensus approach to the Park's development. With further revision, the Draft Final Master plan was developed. The draft was slightly refined to prepare the Master Plan.

Concept Plans A, B, and C

All three concept plans (see diagrams **Concept A**, **Concept B**, **Concept C**) represent identical development programs, but vary in terms of spatial layout, and adjacency. The differences in each concept all relate to layout of the meadows multi-purpose paved trail, the alternative routing options for the woodland foot trail, and the paved parking layout relative to existing trees.

Both DCS staff and Steering Committee members suggested that the preliminary master plan should:

- Provide a paved Multi-purpose Trail layout similar to Concept B with a refinement to provide a short cross-connection at the midpoint of the trail.
- Provide a Woodland Trail layout most similar to Concept B, but with Upper Ravine Spur made a basic loop. This allows users to enjoy a looped trail layout with access to the Ravine Overlook without having to traverse the entire depth of the Woodland Trail system down to the un-named tributary. Also at the Woodland Trail, add the future South Loop Spur from Concept A.
- Provide the distributed parking layout similar to Concept B & C, but with better location on either side of a grouping of mature pines. This infringes less on the meadow as shown in Concept A. This location is not as far from the meadow as shown in Concept B and C, thereby providing better ADA access to the meadow area.
- Show a large kiosk near the main trailhead and restroom/office.

Preliminary Master Plan

The following refinements were incorporated into the Preliminary Master Plan (see **graphic**) based on comments by the Steering Committee and Staff:

Little Mulberry Park Master Plan

- Add space for future development of about 100 overflow parking spaces. Such development would only occur if ongoing parking shortages occur.
- The Wildflower Meadow was separately labeled on the plan.
- A rest area was added at the paved multi-purpose trail intersection above the north valley woodlands. This area would include small picnic shelter, picnic table, adult swings, and drinking fountain.
- The children's play area was indicated with a contrasting color from other meadow elements.
- Provide a water fountain at woodland foot trail at the trailhead closest to the parking lot.
- Provide in a couple of places along the multi-purpose trail a 2 or 3 seat adult sized swing set.
- Be sure all drinking fountains have a dog drinking bowl near the ground level.
- Confirm septic field suitability in the area near the proposed restroom (**see Soils Analysis**)
- There was much discussion about the extent of perimeter security fence and trespass issues. As much as 25,000 feet may be required. Perimeter security must be addressed in order to control motorized vehicle and other unauthorized access. There are known gaps in the fence along Fence Road that must be closed. Consider controls to counter the attraction of the woodland trail from the west, trespassing over the Key and Parks parcels from adjacent subdivisions.
- Add a defined point of access to the pond shore and reinforce this embankment area with a stone cheek wall at the water line and with suitable turf reinforcing fabric. Provide a subsurface aerator for water quality. Prevent access for foot traffic all the way around the pond perimeter through dense planting or other barriers.
- The observation terrace on the hilltop to be rustic with natural materials. The group discussed celestial orientation themes as exemplified by project photos from Seattle and New Jersey. Be sure budget provides for treatment desired.
- The signage budget should allow for Botanical/Archeological researchers to prepare graphical and narrative content for interpretive graphics at kiosks and other locations along trails.
- Consider where and how overflow parking could be accommodated. Cerulea noted that grass parking does not work well if used one day a week or more. Therefore, if parking shortage is a weekly event, additional paved parking will be necessary. Cerulea to show dashed line for expansion area should one be required. Likely expansion area to be west of the proposed lot.
- Consider an artistic competition or other stipend to provide for mown meadow designs and mazes in support of the natural and cultural theme of the park. The pattern could change periodically. The edge of the pattern to be identified with pasture edge markers.
- Provide rest benches periodically along all trails.

At this point, a cost estimate was prepared for all elements (see **Appendix** for final version).

Little Mulberry Park Master Plan

Draft Final Master Plan

Upon presentation of the final draft (see **graphic**), staff and the Committee requested several further narrative refinements:

- The description of the label “wildflower meadow” was changed to “wildflower garden” together with clarification that non-invasive exotics may be used in the wildflower display.
- The maintenance facility was changed to be a 1200 square foot storage building to be included in the first phase.
- The large group picnic pavilion (2,750 SF) was reduced to a mid-size pavilion (1500 SF) so that the size of large groups would not overwhelm the parking capacity, necessitating parking expansion.
- The future parking expansion area indication on the plan was reduced by half.

Final Master Plan

The final color rendered Master Plan (see **graphic**) was presented to the Board of Commissioners on October 31, 2000. There have been no further revisions to the plan

LITTLE MULBERRY PARK MASTER PLAN

Woodland Foot Trail

2.3 mile, 6-7' wide aggregate trail, carefully sited to follow old access roads. Where terrain is too steep, structural trail solutions are employed to include switch-backs, rock walls, elevated boardwalk, concrete or stabilized aggregate, and stone steps as appropriate. Technology employed to construct trail is to facilitate minimal land disturbance through hand work and skid-steer support.

12' Multi-Purpose Trail

Asphalt trail with 2.81 total length (.52 mile accessible portion around pond). Benches, mile posts, and drinking fountains will be provided.

Mown Paths

To provide rustic walking paths, mowing will occur more frequently on designated paths throughout open pasture area. Paths to be shifted before nuts or excessive compaction develops. Not open to any form of cycling.

Observation Terrace

At highest point on central pasture, a stone or imprinted concrete terrace will serve as an outdoor classroom. A semi-circular rustic stone and timber bench will surround the terrace. Evening astronomical observations would be encouraged.

Composting Toilet

Located at extreme west end of trail system, this self composting, naturally ventilated unit would not have electricity or plumbing. Service vehicles would require access easement from adjacent property owner.

Ravine Overlook

Short spur trail off of the main trail to offer close views of ravine ledge and seasonal water flow. Protective rustic style barricade will discourage foot traffic near edge.

Restroom/Staff Office

3 commodes per sex or 4 unisex toilet rooms, each with changing table, ADA compliant, together with an optional staff office/small tool storage.

Maintenance Facility (Future)

Fenced and paved 10,000 SF yard with 2,000 SF covered storage. Future program to be determined based on distribution of maintenance equipment at this site.

Construction Access

Pending access easement, good location for temporary trail construction access.

Connector Spur (optional trail)

North Ridge Spur (optional trail)

Un-Named Tributary

Connector Spur (optional trail)

Rock Ford

Rock Shelf Boardwalk

Beech Trees

Picnic Table

Open Meadow

Old Oak

Open Meadow

Large Picnic Pavilion

Rustic theme materials such as stone veneer on massive columns, glu-lam beams, tongue and groove roof deck, slate "look" or wood shingle roof. Locate close to parking (300' max.). Space for up to 12 picnic tables, 2,750 SF. Security lighting under roof.

Pond Observation Deck

File supported deck at water's edge, allows close observation of water as an outdoor classroom. Not a Fishing Pier.

Pond

3.7 acre pond to be the focus of nature appreciation and passive day use area.

Small Rustic Pavilion

300 SF, of rustic materials (logs/beams/stone/etc) to provide space for 2 picnic tables.

Children's Play Area

Near parking & restroom. Explore natural sciences themes. Consider artist's sculptures of insects, "mazz" patterns mown into pasture or wildflower plantings.

Parking Lot - Pervious

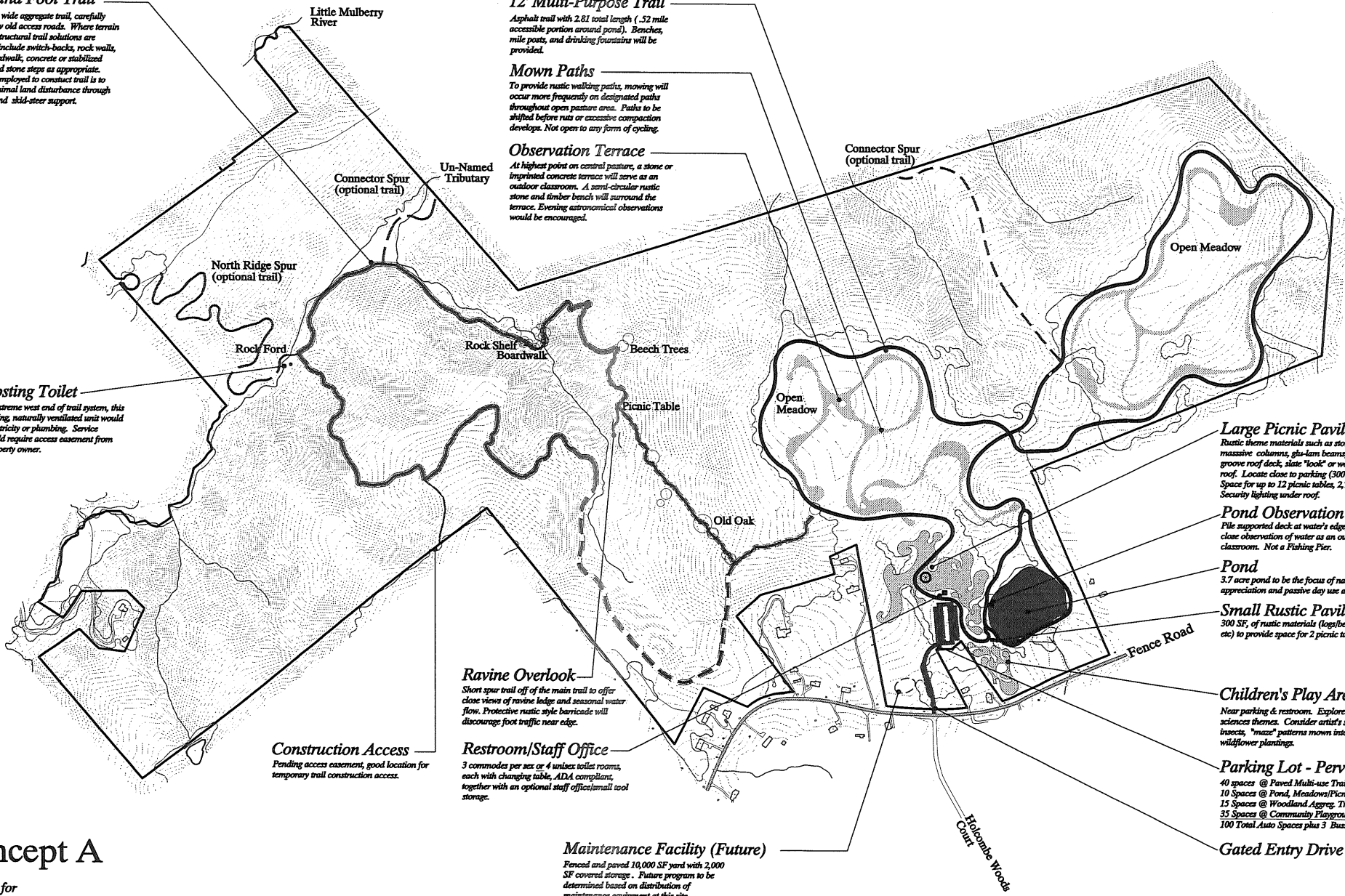
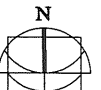
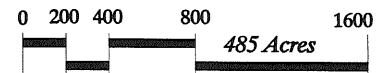
40 spaces @ Paved Multi-use Trail
10 Spaces @ Pond, Meadow/Picnic
15 Spaces @ Woodland Access Trail
35 Spaces @ Community Playground
100 Total Auto Spaces plus 3 Buses

Gated Entry Drive

Concept A

Prepared for
Gwinnett County, Department of Community Services

Prepared by
CERULEA, Inc.
September 18, 2000



LITTLE MULBERRY PARK MASTER PLAN

Woodland Foot Trail

2.3 mile, 6-7' wide aggregate trail, carefully sited to follow old access roads. Where terrain is too steep, structural trail solutions are employed to include switch-backs, rock walls, elevated boardwalk, concrete or stabilized aggregate, and stone steps as appropriate. Technology employed to construct trail is to facilitate minimal land disturbance through hand work and skid-steer support.

Composting Toilet

Located at extreme west end of trail system, this self composting, naturally ventilated unit would not have electricity or plumbing. Service vehicles would require access easement from adjacent property owner.

Little Mulberry River

12' Multi-Purpose Trail

Asphalt trail with 2.77 total length (.63 mile accessible portion around pond). Benches, mile posts, and drinking fountains will be provided.

Mown Paths

To provide rustic walking paths, mowing will occur more frequently on designated paths throughout open pasture areas. Paths to be shifted before rain or excessive compaction develops. Not open to any form of cycling.

Observation Terrace

At highest point on central pasture, a stone or imprinted concrete terrace will serve as an outdoor classroom. A semi-circular rustic stone and timber bench will surround the terrace. Evening astronomical observations would be encouraged.

Connector Spur (optional trail)

Un-Named Tributary

Connector Spur (optional trail)

Rock Ford

Rock Shelf Boardwalk

Beech Trees

Picnic Table

Open Meadow

Open Meadow

Large Picnic Pavilion

Rustic theme materials such as stone veneer on massive columns, glulam beams, tongue and groove roof deck, slate "look" or wood shingle roof. Locate close to parking (300' max.). Space for up to 12 picnic tables, 2,750 SF. Security lighting under roof.

Pond Observation Deck

Pile supported deck at water's edge, allows close observation of water as an outdoor classroom. Not a Fishing Pier.

Pond

3.7 acre pond to be the focus of nature appreciation and passive day use area

Small Rustic Pavilion

300 SF, of rustic materials (logs/beams/stone etc) to provide space for 2 picnic tables

Fence Road

Ravine Overlook

Short spur trail off of the main trail to offer close views of ravine ledge and seasonal water flow. Protective rustic style barricade will discourage foot traffic near edge.

Construction Access

Pending access easement, good location for temporary trail construction access.

Restroom/Staff Office

3 commodes per sex or 4 unisex toilet rooms, each with changing table, ADA compliant, together with an optional staff office/small tool storage.

Maintenance Facility (Future)

Fenced and paved 10,000 SF yard with 2,000 SF covered storage. Future program to be determined based on distribution of maintenance equipment at this site.

Children's Play Area

Near parking & restroom. Explore natural sciences themes. Consider artist's sculptures of insects, "maze" patterns mown into pasture or wildflower plantings.

Parking Lot - Pervious

40 spaces @ Paved Multi-use Trail
10 Spaces @ Pond, Meadows/Picnic
15 Spaces @ Woodland Aggreg. Trail
33 Spaces @ Community Playground
100 Total Auto Spaces plus 3 Buses

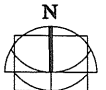
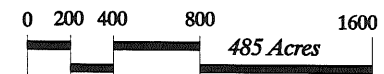
Gated Entry Drive

Holcombe Woods Court

Concept C

Prepared for
Gwinnett County, Department of Community Services

Prepared by
CERULEA, Inc.
September 18, 2000



LITTLE MULBERRY PARK MASTER PLAN

Woodland Foot Trail

6-7 wide aggregate trail, carefully sited to follow old access roads. Allow minimal land disturbance through hand work and skid-steer support. The upper ravine segment is 1.01 trail miles and the lower valley segment is 1.44 miles. The lower valley segment has severe grades up to 17% and warnings are required. Where terrain is too steep, structural trail solutions are employed to include switch-backs, rock walls, elevated boardwalk, soil cement, stabilized aggregate, and stone steps as appropriate.

12' Multi-Purpose Trail

Asphalt trails, main loop 2.03 miles, and accessible loop around pond (.57 miles). Benches, mile posts, and drinking fountains will be provided.

Mown Paths

To provide rustic walking paths, mowing will occur more frequently on designated paths throughout open pasture area. Paths to be shifted before ruts or excessive compaction develop. Not open to any form of cycling.

Observation Terrace

At highest point on central pasture, a stone or imprinted concrete terrace will serve as an outdoor classroom. A semi-circular rustic stone and timber bench will surround the terrace. Evening astronomical observations would be encouraged.

Composting Toilet

Located at extreme west end of trail system, this self composting, naturally ventilated unit would not have electricity or plumbing. Service vehicles would require access easement from adjacent property owner.

Perimeter Fence (provide as necessary)

Construction Access

Pending access easement, good location for temporary trail construction access.

Ravine Overlook

Short spur trail off of the main trail to offer close views of ravine ledge and seasonal water flow. Protective rustic style barricade will discourage foot traffic near edge.

Kiosk/Restroom/Office

3 commodes per sex or 4 unisex toilet rooms, each with changing table, ADA compliant, together with an optional staff office/small tool storage. Adjacent to trailhead provide map and rules kiosk for visitor orientation and safety.

Maintenance Facility (Future)

Fenced and paved 10,000 SF yard with 2,000 SF covered storage. Future program to be determined based on distribution of maintenance equipment at this site. Provide dense screen planting all around and provide attractive architectural and fence treatments for all exposed facades.

Little Mulberry River

Un-Named Tributary

Rock Shelf Boardwalk

Beech Trees

Picnic Table

Open Meadow

Open Meadow

West Loop Spur (1.55 mile option)

Old Oak

South Loop Spur (0.5 mile option)

Children's Play Area

Near parking & restroom. Explore natural sciences themes. Consider artist's sculptures of insects, "moss" patterns mown into pasture or wildflower plantings.

Large Picnic Pavilion

Rustic theme materials such as stone veneer on massive columns, glulam beams, tongue and groove roof deck, slate "look" or wood shingle roof. Locate close to parking (150'). Space for up to 12 picnic tables, 2,750 SF. Security lighting under roof.

Pond

3.7 acre pond to be the focus of nature appreciation and passive day use area

Pond Observation Deck

File supported deck at water's edge, allows close observation of water as an outdoor classroom. Not a Fishing Pier.

Small Rustic Pavilion

300 SF of rustic materials (log/beam/stone/etc) to provide space for 2 picnic tables

Parking Lot - Pervious

40 Spaces @ Paved Multi-use Trail
10 Spaces @ Pond, Meadows/Picnic
15 Spaces @ Woodland Aggreg. Trail
35 Spaces @ Community Playground
100 Total Auto Spaces plus 3 Buses

Gated Entry Drive

Holcombe Woods Court

Preliminary Master Plan

Prepared for
Gwinnett County, Department of Community Services

Prepared by
CERULEA, Inc.
October 3, 2000



LITTLE MULBERRY PARK MASTER PLAN

Woodland Foot Trail

6-7 wide aggregate trail, carefully sited to follow old access roads. Allow minimal land disturbance through hand work and skid-steer support. The upper ravine segment is 1.01 miles and the lower valley segment is 1.44 miles. The lower valley segment has severe grades up to 17% and warnings are required. Where terrain is too steep, structural trail solutions are employed to include switch-backs, rock walls, elevated boardwalk, soil cement, stabilized aggregate, and stone steps as appropriate. Provide benches for resting.

Composting Toilet

Located at extreme west end of trail system, this self composting, solar ventilated unit would not have electricity or plumbing.

Little Mulberry River

12' Multi-Purpose Trail

Asphalt trails, main loop 2.03 miles, and accessible loop around pond (.57 miles). Benches, mile posts, adult swings, and drinking fountains will be provided.

Mown Paths

To provide rustic walking paths, mowing will occur more frequently on designated paths throughout open pasture areas. Paths to be shifted before rut or excessive compaction develops. Not open to any form of cycling.

Observation Terrace

At highest point on central feature, a stone or imprinted concrete terrace will serve as an outdoor classroom, with compost rose, sundial or celestial theme. A semi-circular rustic stone and timber bench will surround the terrace. Evening astronomical observations would be encouraged.

Rest Area

Overlooking north valley woodlands, provide near trail intersection a small rustic pavilion (similar to that at pond), picnic tables, adult swing set and drinking fountain.

Un-Named Tributary

Perimeter Fence (provide as necessary)

Rock Shelf Boardwalk

Beech Trees

Picnic Table

Old Oak

West Loop Spur (1.55 mile option)

South Loop Spur (1.5 mile option)

Perimeter Fence (provide as necessary)

Children's Play Area

Provide basic play area for community park needs. Expandable to include destination elements such as pasture maze, water play stream, insect sculpture, etc.

Large Picnic Pavilion

Rustic theme materials such as stone veneer on massive columns, glu-lam beams, tongue and groove roof deck, slate 'look' or wood shingle roof. Locate close to parking (150'). Space for up to 12 picnic tables, 2,750 SF. Security lighting under roof.

Wildflower Meadow

Surrounding core mown turf meadow, a variety of maintained thematic seeded wildflower beds.

Pond

3.7 acre pond to be the focus of nature appreciation and passive day use area. Reinforce about 100 feet of pond bank with stone checkwall. Exclude pedestrians from balance of pond shore.

Pond Observation Deck

Pile supported deck at water's edge, allows close observation of water as an outdoor classroom. Not a Fishing Pier.

Small Rustic Pavilion

300 SF, of rustic materials (logs/barn/silestone/etc) to provide space for 2 picnic tables

Parking Lot - Pervious

40 spaces @ Paved Multi-use Trail
10 Spaces @ Pond, Meadows/Picnic
15 Spaces @ Woodland Aggreg. Trail
35 Spaces @ Community Playground
100 Total Auto Spaces plus 3 Buses

Ravine Overlook

Short spur trail off of the main trail to offer close views of ravine ledge and seasonal water flow. Protective rustic style barricade will discourage foot traffic near edge.

Kiosk/Restroom/Office

3 commodes per sex or 4 unisex toilet rooms, each with changing table, ADA compliant, together with an optional staff office/small tool storage. Adjacent to trailhead provide map and rules kiosk for visitor orientation and safety.

Parking Expansion (Future)

As required based on use of the park, provide overflow parking. Intended as reinforced turf paving assuming the lot is used less frequently than once per week. If used more frequently, limit square footage to only what is required and use pervious pavement. Provide screening.

Maintenance Facility (Future)

Fenced and paved yard with 2,000 SF covered storage. Future program to be determined based on distribution of maintenance equipment at this site. Provide dense screen planting all around and provide attractive architectural and fence treatments for all exposed facades.

Construction Access

Pending access easement, good location for temporary trail construction access.

Fence Road

Holcombe Woods Court

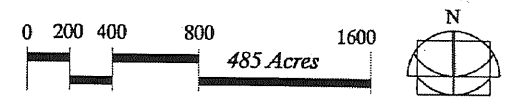
East Meadow

West Meadow

Draft Master Plan

Prepared for
Gwinnett County, Department of Community Services

Prepared by
CERULEA, Inc.
October 18, 2000



LITTLE MULBERRY PARK MASTER PLAN

Woodland Foot Trail

6-7' wide aggregate trail, carefully sited to follow old access roads. Allow minimal land disturbance through hand work and skid-steer support. The upper ravine segment is 1.01 trail miles and the lower valley segment is 1.44 miles. The lower valley segment has severe grades up to 17% and warnings are required. Where terrain is too steep, structural trail solutions are employed to include switch-backs, rock walls, elevated boardwalk, soil cement, stabilized aggregate, and stone steps as appropriate. Provide benches for resting.

12' Multi-Purpose Trail

Asphalt trails, main loop 2.03 miles, and accessible loop around pond (.57 miles). Benches, mile posts, adult swings, and drinking fountains will be provided.

Mown Paths

To provide rustic walking paths, mowing will occur more frequently on designated paths throughout open pasture area. Paths to be shifted before ruts or excessive compaction develops. Not open to any form of cycling.

Observation Terrace

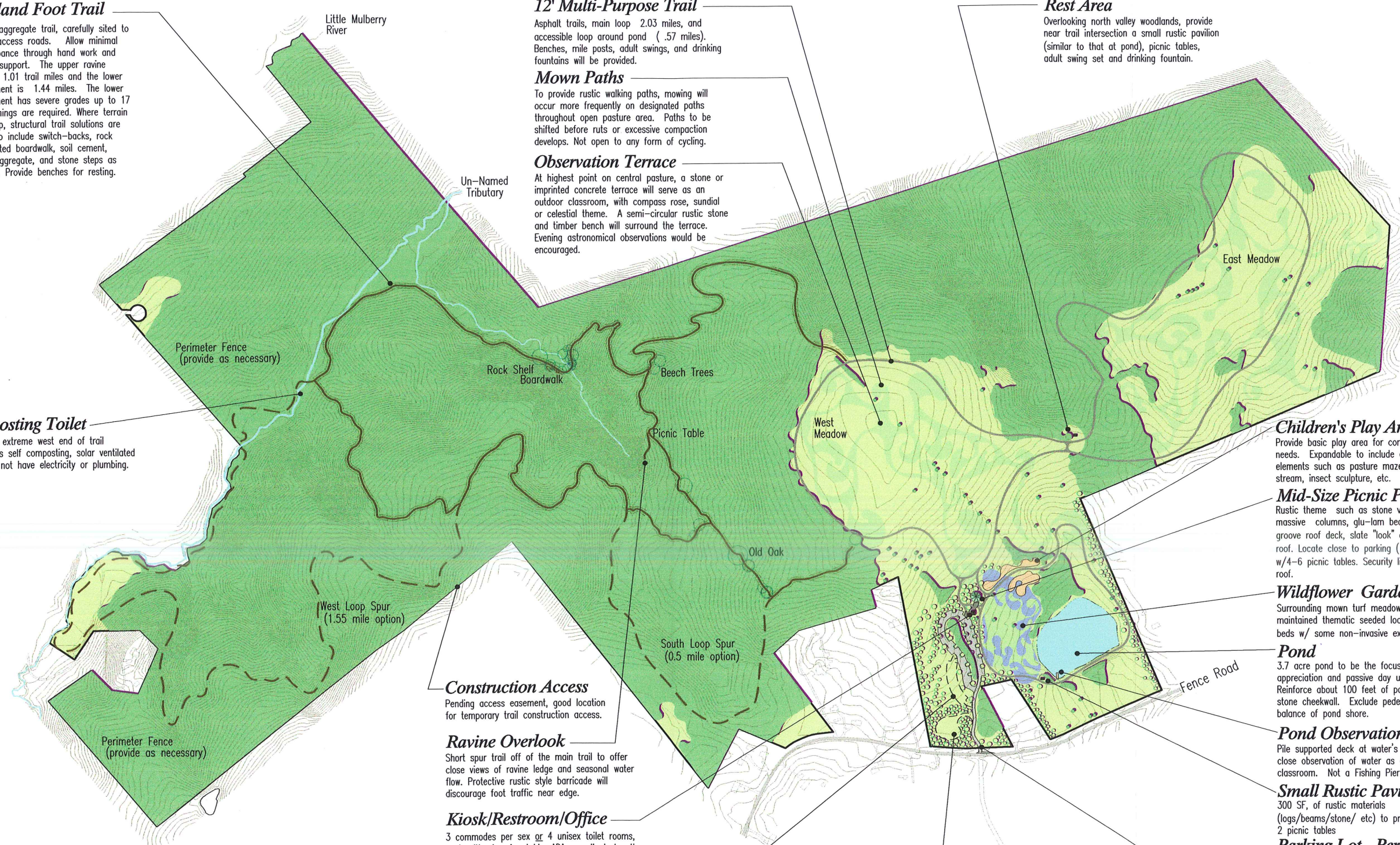
At highest point on central pasture, a stone or imprinted concrete terrace will serve as an outdoor classroom, with compass rose, sundial or celestial theme. A semi-circular rustic stone and timber bench will surround the terrace. Evening astronomical observations would be encouraged.

Rest Area

Overlooking north valley woodlands, provide near trail intersection a small rustic pavilion (similar to that at pond), picnic tables, adult swing set and drinking fountain.

Composting Toilet

Located at extreme west end of trail system, this self composting, solar ventilated unit would not have electricity or plumbing.



Children's Play Area

Provide basic play area for community park needs. Expandable to include destination elements such as pasture maze, water play stream, insect sculpture, etc.

Mid-Size Picnic Pavilion

Rustic theme such as stone veneer on massive columns, glu-lam beams, tongue & groove roof deck, slate "look" or wood shingle roof. Locate close to parking (150'). 1500sf w/4-6 picnic tables. Security lighting under roof.

Wildflower Garden

Surrounding mown turf meadow, a variety of maintained thematic seeded local wildflower beds w/ some non-invasive exotics.

Pond

3.7 acre pond to be the focus of nature appreciation and passive day use area. Reinforce about 100 feet of pond bank with stone cheekwall. Exclude pedestrians from balance of pond shore.

Pond Observation Deck

Pile supported deck at water's edge, allows close observation of water as an outdoor classroom. Not a Fishing Pier.

Small Rustic Pavilion

300 SF, of rustic materials (logs/beams/stone/ etc) to provide space for 2 picnic tables

Parking Lot - Pervious

40 spaces @ Paved Multi-use Trail
10 Spaces @ Pond, Meadows/Picnic
15 Spaces @ Woodland Aggreg. Trail
35 Spaces @ Community Playground
100 Total Auto Spaces plus 3 Busses

Construction Access

Pending access easement, good location for temporary trail construction access.

Ravine Overlook

Short spur trail off of the main trail to offer close views of ravine ledge and seasonal water flow. Protective rustic style barricade will discourage foot traffic near edge.

Kiosk/Restroom/Office

3 commodes per sex or 4 unisex toilet rooms, each with changing table, ADA compliant, together with an optional staff office/small tool storage. Adjacent to trailhead provide map and rules kiosk for visitor orientation and safety.

Parking Expansion (Future)

As required based on use of the park, provide overflow parking. Intended as reinforced turf paving assuming the lot is used less frequently than once per week. If used more frequently, limit square footage to only what is required and use pervious pavement. Provide screening.

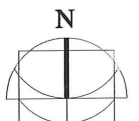
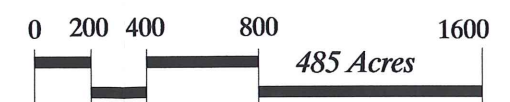
Maintenance Facility

Fenced and paved yard with 1,200 SF covered storage. Future program to be determined based on distribution of maintenance equipment at this site. Provide dense screen planting all around and provide attractive architectural and fence treatments for all exposed facades.

Master Plan

Prepared for
Gwinnett County
Department of Community Services

Prepared by
CERULEA, Inc.
October 31, 2000



Appendix A: Little Mulberry Park Master Plan
Gwinnett County Dept. of Community Services
Phase 1 - Master Plan Cost Estimate
Prepared by: CERULEA Incorporated
October 31, 2000

	Description	Quantity	Unit Price	Phase I
01.2	Insurance Cost/Bond Cost = 3%			\$75,000.00
	Owners Special Requirements (trailers, as-builts, etc.)			\$15,000.00
02.2	Site Preparation	\$211,000		
	Misc. Demolition/Fence Removal	1.00	\$8,000.00 LS	\$8,000.00
	Clearing: Chipping/Spreading - very selective	1.00	\$20,000.00 LS	\$20,000.00
	Earthwork - Balanced Cut and Fill w/ topsoil vols.	30000.00	\$3.00 CY	\$90,000.00
	Tree Protection - fencing save critical areas	3200.00	\$1.25 LF	\$4,000.00
	Disturbed Area Grassing (allow 1 acres for woodchips)	8.00	\$3,500.00 AC	\$28,000.00
	Stormwater Regulations Compliance	1.00	\$28,000.00 LS	\$28,000.00
	Erosion Control - all measures	11.00	\$3,000.00 AC	\$33,000.00
02.3	Maintenance Compound	\$85,800		
	Maintenance Building 20x30 - upgrade facades	600.00	\$85.00 SF	\$51,000.00
	Maintenance Drive/Court - Pervious Concrete	6000.00	\$5.00 SF	\$30,000.00
	Perimeter Fence- 10' Galv. w/ Privacy Slats	300.00	\$16.00 LF	\$4,800.00
02.4	Perimeter Security	\$30,000		
	Perimeter Hog Wire Fence (phase 1)	5000.00	\$6.00 LF	\$30,000.00
	Entry Drive Gate	1.00	\$2,500.00 LS	\$2,500.00
02.5	Vehicular Paving	\$159,925		
	Pervious Asphalt Drive and Parking - 100 car/3 busses	5400.00	\$19.00 SY	\$102,600.00
	Decel Lane Heavy Duty Asphalt	600.00	\$25.00 SY	\$15,000.00
	Pavement Marking/Striping @ Parking	1.00	\$700.00 LS	\$700.00
	Wheelstops @ Parking	110.00	\$30.00 EA	\$3,300.00
	Concrete Curb and Gutter (limit to tight curves)	1500.00	\$9.00 LF	\$13,500.00
	Concrete Curb and Gutter @ Decel	310.00	\$7.50 LF	\$2,325.00
	Culverts w/ flared ends	300.00	\$50.00 LF	\$15,000.00
	Knock-down Pro-sec Bollards @ Trail Heads	3.00	\$2,500.00 EA	\$7,500.00
02.6	Sewer Waste System	\$36,000		
	Septic Field	1.00	\$36,000.00 LS	\$36,000.00

Little Mulberry Park Master Plan - Phase 1				
02.9	Water System	\$43,500		
	Potable Water Piping 2"	1000.00	\$12.00 LS	\$12,000.00
	Potable Water Meter/Tap Fee 1.5" - no waste impact fee	1.00	\$4,000.00 LS	\$4,000.00
	Hydrant	1.00	\$2,500.00 EA	\$2,500.00
	8" DIP Fire Main	1000.00	\$25.00 LF	\$25,000.00
02.13	Upper Ravine Trail - 5,333 LF	\$273,190		
	Clearing and Grading (Hand Work/Bobcat)	5333.00	\$17.50 LF	\$93,327.50
	Aggregate Stabilized Trail - 5-7' wide	5333.00	\$14.00 LF	\$74,662.00
	Overlook Barriers - Rustic w/ coated Wire Mesh	400.00	\$35.00 LF	\$14,000.00
	Rock Culverts & Special Pads/Bars	50.00	\$1,200.00 EA	\$60,000.00
	Picnic Tables on conc. pad	4.00	\$650.00 EA	\$2,600.00
	Benches, on stone pad	8.00	\$1,200.00 EA	\$9,600.00
	Non-freeze drinking fountain @ trailhead w/ dog bowl	1.00	\$3,500.00 LS	\$3,500.00
	Trail Markers	1.00	\$4,000.00 LS	\$4,000.00
	Interpretive Signage	1.00	\$4,000.00 LS	\$4,000.00
	Small Trailhead Kiosk (2 @ entries, 1 @ overlook)	3.00	\$2,500.00 EA	\$7,500.00
02.14	Lower Valley Trail - 7,583 LF	\$522,934		
	Clearing and Grading (Hand Work/Bobcat)	7499.00	\$17.50 LF	\$131,232.50
	Aggregate Stabilized Trail - 5-7' wide	7499.00	\$14.00 LF	\$104,986.00
	Curved Boardwalk Crossing x 10' wide	85.00	\$1,000.00 LF	\$85,000.00
	Rock Culverts & Special Pads/Bars	350.00	\$180.00 LF	\$63,000.00
	Check Walls on Side Slopes	331.00	\$240.00 LF	\$79,440.00
	Stone Steps	153.00	\$75.00 LF	\$11,475.00
	Soil Cement/Polymer Stabilized Base	630.00	\$40.00 LF	\$25,200.00
	Benches, on stone pad	8.00	\$1,200.00 EA	\$9,600.00
	Trail Markers	1.00	\$6,000.00 LS	\$6,000.00
	Interpretive Signage	1.00	\$2,000.00 LS	\$2,000.00
	Small Trailhead Kiosk (1 @ valley bridge, 1 @ mounds)	2.00	\$2,500.00 EA	\$5,000.00
02.15	High Meadow & Common Area Trails - 8,320 LF	\$271,600		
	Asphalt Trails - High Meadow & Pond Meadow Loops	12500.00	\$13.50 SY	\$168,750.00
	Benches, on stone pad	5.00	\$1,200.00 EA	\$6,000.00
	Picnic Tables on conc. pad	4.00	\$650.00 EA	\$2,600.00
	Small Shelter @ overlook rest area	300.00	\$65.00 SF	\$19,500.00
	Adult Swings 2 seat "adult" units w/ mulch - no edge	2.00	\$5,000.00 EA	\$10,000.00
	Trail Distance Markers	17.00	\$350.00 EA	\$5,950.00
	High Meadow Observation Terrace	1.00	\$50,000.00 LS	\$50,000.00
	Stormwater Culverts - HDPE, flared ends	11.00	\$800.00 EA	\$8,800.00

Little Mulberry Park Master Plan - Phase 1			
02.17	Common Area Site Furnishings and Objects	\$229,080	
	Picnic Tables (2 ADA) moveable	10.00	\$400.00 EA \$4,000.00
	Picnic Tables (conc. pad)	4.00	\$650.00 EA \$2,600.00
	Benches, on conc. pad	4.00	\$1,200.00 EA \$4,800.00
	Trash Receptacles on conc. pad	10.00	\$350.00 EA \$3,500.00
	Picnic Grills, on conc. pads	4.00	\$300.00 EA \$1,200.00
	Bike Racks	2.00	\$490.00 EA \$980.00
	Pervious Concrete Paving	8000.00	\$5.00 SF \$40,000.00
	Small Shelter @ Pond	300.00	\$65.00 SF \$19,500.00
	Stone Cheekwall @ Pondshore	100.00	\$150.00 LF \$15,000.00
	Pond Subsurface Aerator	1.00	\$3,500.00 LS \$3,500.00
	Basic Community Park Playground - all elements	10000.00	\$12.00 SF \$120,000.00
	Deck and Ramp at Pond Bank	400.00	\$35.00 SF \$14,000.00
02.19	Buildings	\$288,000	
	Restroom/Office	600.00	\$180.00 SF \$108,000.00
	Medium Group Shelter - Rustic Style 4-6 tables	1500.00	\$120.00 SF \$180,000.00
02.20	Site Lighting & Communications	\$29,680	
	Buried Electric Cable	1200.00	\$4.00 LF \$4,800.00
	Phone Cable in Conduit	1200.00	\$8.00 LF \$9,600.00
	Pay Phone @ Concession - Activation Fee	1.00	\$360.00 LS \$360.00
	Roadway/Parking Lights -Owner Furnished on Timers	5.00	\$1,400.00 EA \$7,000.00
	Roadway/Parking Lights -Cable & Trenching	1200.00	\$6.60 LF \$7,920.00
02.20	Softscape - no Irrigation	\$70,000	
	Landscape & Border planting, (Owner buys plant mat'l.)	1.00	\$15,000.00 LS \$15,000.00
	Landscape & Border planting, (Contractor Labor.)	1.00	\$25,000.00 LS \$25,000.00
	Select Wildflower Seeding - limited areas	1.00	\$25,000.00 LS \$25,000.00
	Meadow Mow Pattern Markers	250.00	\$20.00 EA \$5,000.00
02.21	Signage	\$22,800	
	Park Entry Sign Pylon	1.00	\$7,800.00 EA \$7,800.00
	Large Orientation Kiosk w/ Map/Rules Signage etc.	1.00	\$15,000.00 LS \$15,000.00
02.22	Contingency		\$100,000.00
02.23	Arhitectural/Engineering/Landscape Architectural Fees		\$175,000.00
02.24	Equipment Allowance		\$80,000.00
02.26	Supplemental Topo Survey - Trail, Lake/Meadow Area		\$28,000.00
	Sub-total All Construction		\$2,749,008.00

Appendix A: Little Mulberry Park Master Plan
Gwinnett County Dept. of Community Services
Phase 2 - Master Plan Cost Estimate
Prepared by: CERULEA Incorporated
October 31, 2000

	Description	Quantity	Unit Price	Phase I
01.2	Insurance Cost/Bond Cost = 3%			\$38,400.00
	Owners Special Requirements (trailers, as-builts, etc.)			\$8,000.00
02.2	Site Preparation	\$22,000		
	Clearing: Chipping/Spreading - very selective	1.00	\$2,000.00 LS	\$2,000.00
	Earthwork - Balanced Cut and Fill w/ topsoil vols.	3000.00	\$3.00 CY	\$9,000.00
	Tree Protection - fencing save critical areas	800.00	\$1.25 LF	\$1,000.00
	Disturbed Area Grassing (allow 1 acres for woodchips)	2.00	\$3,500.00 AC	\$7,000.00
	Erosion Control - all measures	1.00	\$3,000.00 AC	\$3,000.00
02.4	Perimeter Security	\$120,000		
	Perimeter Hog Wire Fence (phase 2)	20000.00	\$6.00 LF	\$120,000.00
02.9	Water System	\$19,200		
	Potable Water Piping 1" to trail drinking fountains	2400.00	\$8.00 LS	\$19,200.00
	Non-freeze drinking fountain @ trailheads w/ dog bowl	2.00	\$3,500.00 LS	\$7,000.00
02.16	High Meadow Eastern Trail Loop (5,940 LF)	\$130,853		
	Asphalt Trails - High Meadow & Pond Meadow Loops	7915.00	\$13.50 SY	\$106,852.50
	Benches, on stone pad	3.00	\$1,200.00 EA	\$3,600.00
	Adult Swings 2 seat "adult" units w/ mulch - no edge	1.00	\$5,000.00 EA	\$5,000.00
	Trail Distance Markers	12.00	\$350.00 EA	\$4,200.00
	Stormwater Culverts - HDPE, flared ends	14.00	\$800.00 EA	\$11,200.00
02.17	Woodland Trail Extensions (2 miles total of 2)			
	System Price - Average of Trail Cost on Rugged Terrain	10760.00	\$90.00 LF	\$968,400.00
02.18	Destination Playground Expansion	\$181,000		
	Play Equipment, Mulch, Walks, Fences, Artist's Work	10000.00	\$12.00 SF	\$120,000.00
	Well Service for Stream Water - Small System	1.00	\$15,000.00 EA	\$15,000.00
	Stone Water Play Element - Stream	1.00	\$46,000.00 EA	\$46,000.00
02.19	Buildings	\$25,000		
	Composting Toilet - single unit @ lower valley trail	1.00	\$25,000.00 LS	\$25,000.00
02.20	Softscape - no Irrigation			
	Meadow Mow Pattern Markers	250.00	\$20.00 EA	\$5,000.00
02.22	Contingency			\$60,000.00
02.23	Architectural/Engineering/Landscape Architectural Fees			\$95,000.00
02.24	Additional Trail Alignment Field Survey/Topo			\$16,000.00
02.25	Botany/Archeology Report (Basic Guidelines)			\$16,000.00
	Sub-total All Construction			\$1,711,852.50