

CHAPTER 4: INVENTORY & LEVEL OF SERVICE ANALYSIS

A. Introduction

This section provides an overview and analysis of the parks, recreation, trails, and open space system in Cary, North Carolina. First, the inventory collection process and Level of Service methodology is described. Next, an overview of the inventory is provided, including municipal facilities and key alternative providers. Finally, the service provided by the parks, recreation, trails, and open space system is analyzed.

B. Inventory

Inventory Overview and Methodology

One essential part of this *Parks, Recreation & Cultural Resources Master Plan* (PRCR) is to establish a complete and accurate inventory of the parks, recreation, open space, and trails system offered by the Town of Cary. A comprehensive inventory was conducted by visiting each park property and recreation facility and talking with appropriate staff. The quantity and functionality of each component (e.g., playground, shelter, multi-purpose field, basketball court, etc.) was assessed and scored for other uses in this Plan (refer to Level of Service Analysis section).

The inventory was conducted in June, 2011. The inventory for this project included all of the properties and facilities managed and owned by the Town as well as alternative providers. Alternative providers include elementary, middle, and high schools, as well as the State, County, and surrounding municipalities.

The inventory process consisted of field visits to each of the outdoor sites and indoor facilities. A complete list of all facilities and components is located in **Appendix D**, which has been provided as part of a separate document. This inventory information has been entered into a geo-database for analytical uses and ongoing management tasks. Alternative provider inventory data was collected by several methods, including site visits, using GIS data attributes, aerial photography, and consulting directories, or was provided by Town staff.

Inventory Description

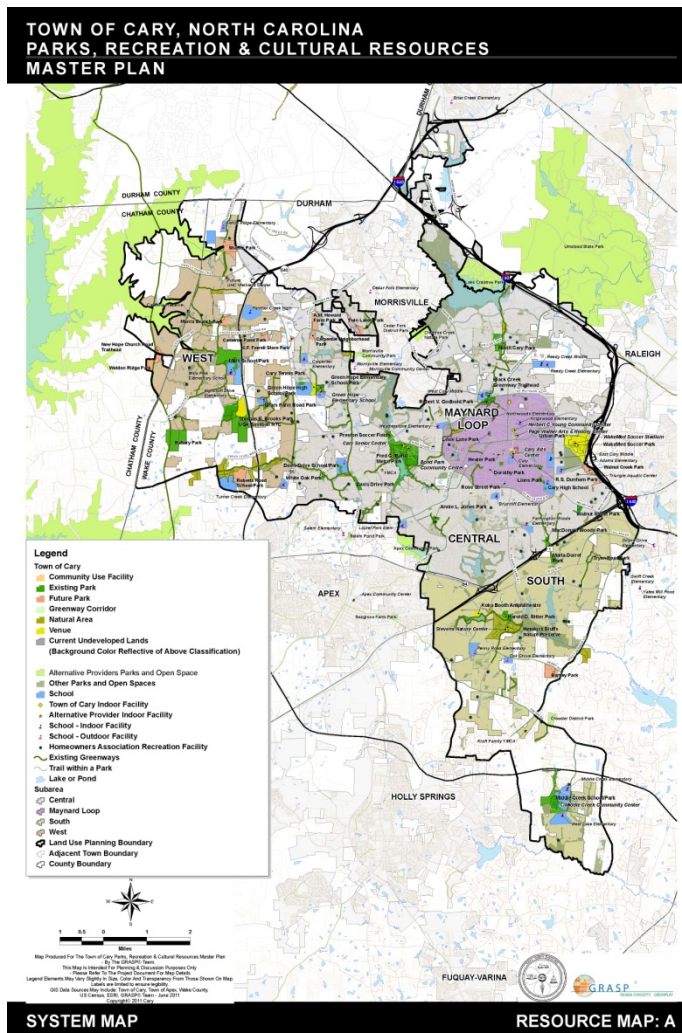
The Town of Cary provides several attractive and well-maintained parks. Among them are a variety of property types including neighborhood parks, a community park, and large areas of undeveloped open space. Recreational opportunities include both passive and active, and parks are geared for neighborhood, community, and regional use. The following is an overview of the inventory.

- Three (3) Community Centers and the Cary Senior Center
- Two (2) Indoor Cultural Arts Facilities (Cary Arts Center and the Page Walker Arts & History Center)
- Four (4) Major Venues (three sports venues and one outdoor entertainment venue)
- Twenty-two (22) Developed Parks
- One (1) Nature Preserve that includes a Nature Center
- Over 60 miles of Greenways (maintained by Town)

A summary of the current Town inventory and a series of maps identifying the location of the facilities are shown in **Appendix D**, which is included a separate document of appendices. Additional detailed inventory information can be found in a separate document provided to the Town that includes a full inventory of components in the system and includes aerial photos of each park site.

This comprehensive inventory is a valuable tool for planning and managing, and should be updated annually. For example, the inventory can be used to develop a replacement program for park components such as playgrounds and picnic pavilions as they age over time. It can also be used to benchmark progress as additional parks, recreation, open space, and greenway and trail amenities are added to the system.

Resource Map A – System Map shows the boundaries of the study area, and the locations and extents of primary trails and parcels that were included in the inventory of data. A larger version of the System Map is located in **Appendix G**, which has been provided as part of a separate document.



Larger maps are located in Appendix G.

C. Level of Service Analysis

As part of this Master Plan, a Level of Service (LOS) analysis of the parks, recreation, open space, and trail system was conducted. This tool allows for analysis of the inventory, quantity, location, distribution, and access to recreation components. LOS is typically defined in parks and recreation plans as the capacity of the system's components to meet the needs of residents. In this study, LOS will be more specifically defined as follows:

Composite-Values Level of Service (LOS): *The computed value that is provided under a stated set of conditions and criteria. LOS may be computed for the system as a whole, or for individual parts of the system. Therefore, LOS is not a single value, but rather it is a series of values that, taken together, form a model of the service that is provided.*

It may be helpful to think of the LOS analysis as being like the dashboard of an automobile. The dashboard is made up of a set of gauges and indicators that inform the driver about decisions that must be made to steer the car on the course the driver intends to take. The dashboard does not tell the driver where to go or how fast to drive. These are decisions that the driver makes by using the information that the dashboard provides.

The LOS information contained here is *descriptive* of the conditions that are present, rather than *prescriptive* of what course should be taken. Deciding the course to take should be done by using the information from the LOS analysis in conjunction with information from other sources, such as surveys, focus groups, staff expertise, etc.

Two methods were used in this analysis. One method used a traditional capacities approach that compared quantity to population. The other analysis used a Composite-Values LOS approach.

Composite-Values Level of Service Analysis

A methodology known as Composite-Values Level of Service Analysis was used to assess the LOS provided by the current park system. A trademarked proprietary version of composite-values methodology developed by the consultants for this project, GreenPlay and Design Concepts, was utilized. It is called **Geo-referenced Amenities Standards Process (GRASP®)**. A detailed explanation of this methodology can be found in **Appendix E**, which has been provided as part of a separate document.

The GRASP® methodology is a unique way of looking at LOS, because it considers not only the quantity and distribution of parks and facilities, but also the functionality, comfort and convenience, and overall design of the components. For the purposes of this study, *components* are generally defined as features provided for the purpose of a recreational experience for visitors. This includes fields, courts, and other spaces used for organized activities, as well as open turf, natural areas, and features that offer passive or non-programmed recreational experiences.

A GRASP® score is assigned to each component in the inventory as follows:

- **Below Expectations (BE)** – The component does not meet the expectations of its intended primary function. Factors leading to this may include size, age, accessibility, or others. Each such component was given a score of **1** in the inventory.
- **Meeting Expectations (ME)** – The component meets expectations for its intended function. Such components were given scores of **2**.

- **Exceeding Expectations (EE)** – The component exceeds expectations, due to size, configuration, or unique qualities. Such components were given scores of **3**.
- If the feature exists but is not useable because it is unsafe, obsolete, or dysfunctional, it may be listed in the feature description, and assigned a **score of zero (0)**.

It is important to note that these scores are based on local expectations and norms, and not on comparisons to some national average or standard. It is the opinion of the consultants that if Cary’s facilities were evaluated in comparison to “typical” facilities found in their work across the country, the scores would be higher. However, the intent of this analysis is to evaluate Cary’s facilities against its own expectations and standards. Therefore, if a component scores a “2” in this analysis, that indicates that it is meeting expectations for Cary, and not for the typical American community.

Components were evaluated according to this scale from two viewpoints – the value of the component in serving the immediate neighborhood and the component’s value to the entire community. The findings are recorded in a database and ultimately displayed in a series of analytical maps or Perspectives.

The section below reviews the GRASP® Perspectives and highlights where higher and lower levels of service are being provided from a given set of components in the inventory.

Within the GRASP® Perspectives, the buffers and associated scores are presented in two ways – with infinite tone ranges (orange) and in two tones based on **target values** (purple and yellow).

The **larger scale map** in each of the Perspectives shows the GRASP® buffers or service areas with an infinite tone range that portrays the varying levels of service being provided to the community. **The darker orange color indicates a higher Level of Service based on access to parks, recreation, open space, or trail components in the overall inventory.** At this scale, it is easier to see the differences in services provided by parks and individual components. The complete Perspective series is set to the same tone scale so that the different Perspectives can be compared side-by-side.

The **inset map** shows the GRASP® scores where service is either *Below Target Minimum Score* or *At or Above Target Minimum Score*. **Areas in yellow have service available, but that service is Below the Target Minimum Score. Areas in purple have service that is At or Above the Target Minimum Score.** Areas with neither yellow nor purple shading do not have service within the parameters of that Perspective. In the inset, areas that fall into each of the categories can clearly be seen for a summarized look at the service provided. Each Perspective uses a different target minimum score based on the values the Perspective is evaluating.

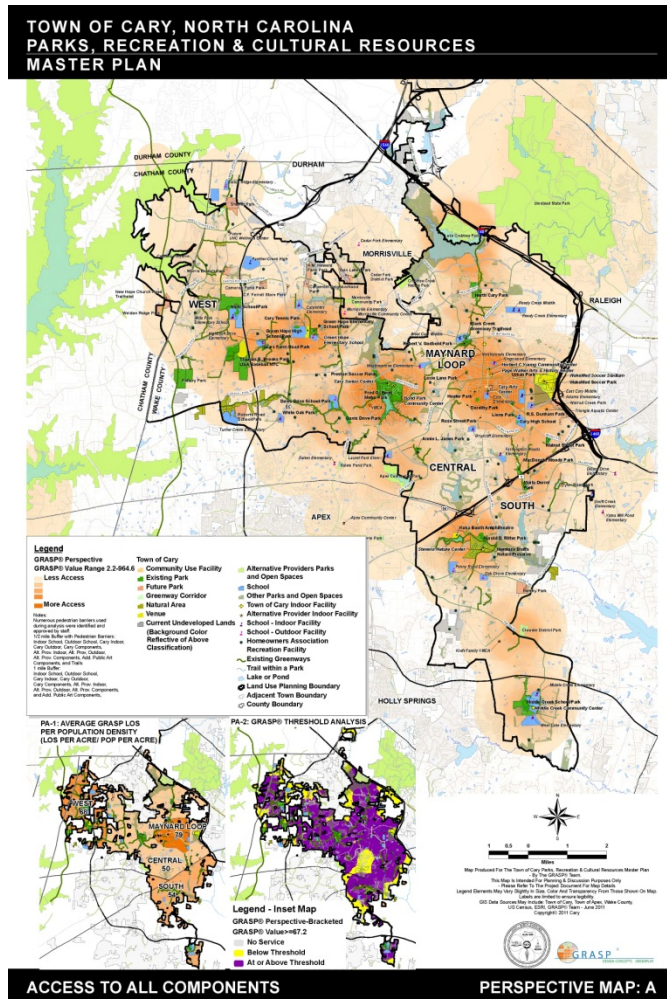
Perspectives for Levels of Service

The following Levels of Service analytical maps referred to as Perspectives were conducted to understand the current service provided by the parks and recreation system in Cary. More detailed analysis of each of these maps are found in **Appendix G**, which has been provided as part of a separate document.

The following Perspectives are analyzed below:

- Perspective A: Access to All Components
- Perspective B: Walkable Access to All Components
- Perspective C: Access to Indoor Recreation Centers
- Perspective D: Composition Analysis
- Perspective E: Trail Access Analysis

Thumbnails of the Perspectives, including inset maps and excerpts from some of the maps and Perspectives are shown here for reference and are not intended to be legible at this scale. The reader should refer to the larger maps in **Appendix G** (provided as part of a separate document) for legibility and clarity.



Perspective A: Access to All Components

This Perspective shows the service available from all components in the dataset. This includes all outdoor, indoor, active, passive, and other components, including trails and open space. Service is measured within 1-mile catchment areas, with a premium placed on proximity to components that are available within walking distance, or ½-mile.

The Perspective shows concentrations of service distributed throughout the Town. These occur mainly around larger parks, such as Lake Crabtree, Fred G. Bond, and Harold D. Ritter. Interestingly, a concentration of service is also observed inside the Maynard loop, where there are no large parks. However, this area has several smaller parks and a number of indoor facilities that boost service.

For the most part, all parts of Cary have at least some service, as indicated by the presence of shading over them. Overall, 97 percent of Cary’s land area has access to some service within one mile (purple and yellow on the inset map A2).

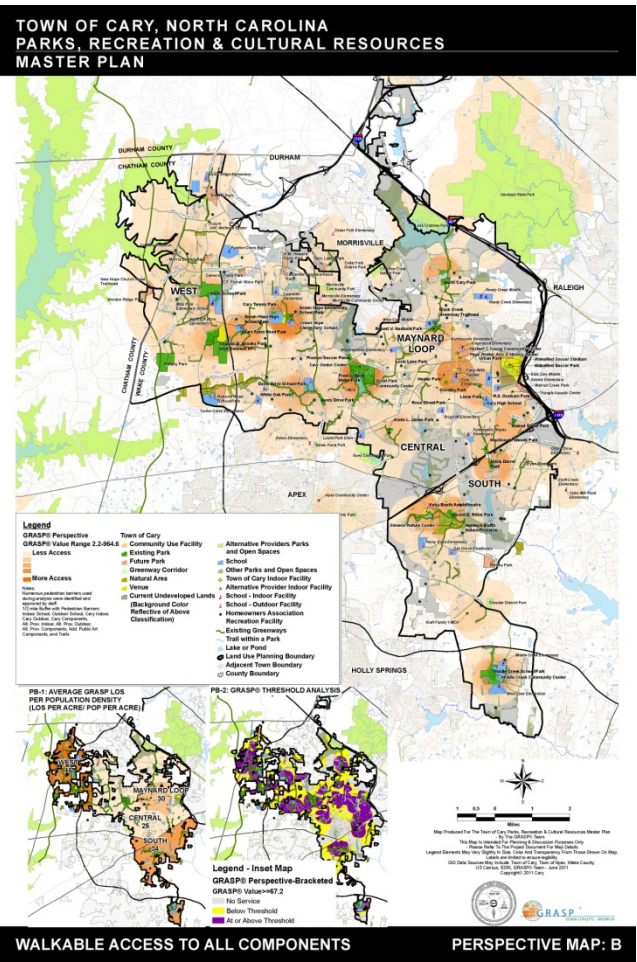
When **LOS per Acre** is considered, the subareas rank as follows:

- Maynard Loop has the highest composite LOS
- Central has the second highest composite LOS
- South has the third highest composite LOS
- West has the lowest

However, when **Density** by subarea is considered the viewpoint is different:

- Maynard Loop still has the highest composite LOS
- West has the second highest LOS
- South has the third highest LOS
- Central has the lowest LOS

Comparing density of service to density of population may be one of the most useful indicators in the LOS analysis, because it is a measure of how the value of service offered by the system is distributed in relation to the people it serves.



Larger maps are located in Appendix G.

Perspective B: Walkable Access to All Components

Perspective B shows the relative access to all components from a walkability point of view. It uses the same set of components as Perspective A (i.e., all components in the inventory), but only the ½-mile catchment areas were plotted. The purpose of this Perspective is to portray the service provided by the system within a walkable proximity across the study area. Pedestrian barriers were also factored into this analysis.

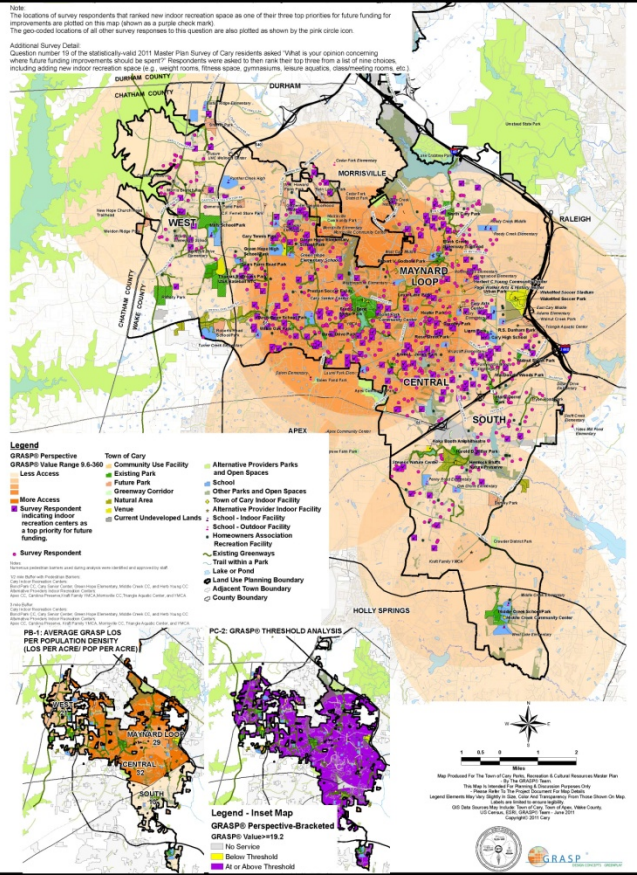
As in the previous Perspective, darker shades are scattered throughout the Town and primarily clustered around larger parks and facilities. However, the sizes of these areas of concentration are smaller and more scattered due to the smaller catchment areas used to generate the Perspective.

Overall, 76 percent of Cary’s land area has access to some service within ½-mile (purple and yellow on the inset map A2).

The numbers show a decrease in percentage of coverage as well as a decrease in the LOS scores. This is because without the 1-mile catchment areas, there is less overlap of service

from components, and components that are more than ½ mile away from a given location do not contribute to the LOS for that location. Note that, as in Perspective A, the relative ranking of service changes when population density is factored in. The average LOS Per Acre Served is lowest in the West subarea, but it is highest when density is factored in.

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Perspective C: Access to Indoor Recreation Centers

Perspective C shows the relative access to all indoor recreation components. Two catchment areas were used. The first is a ½-mile radius that is the walkable distance to the facility. Pedestrian barriers were taken into account in for the ½-mile catchments. The second catchment is a 3-mile radius that reflects a reasonable driving distance. Pedestrian barriers were not considered for the 3-mile catchments.

As in the previous Perspectives, darker shades show higher levels of service. In this case, the higher LOS is concentrated in the central part of Cary, with lighter shades surrounding it and covering most of the community.

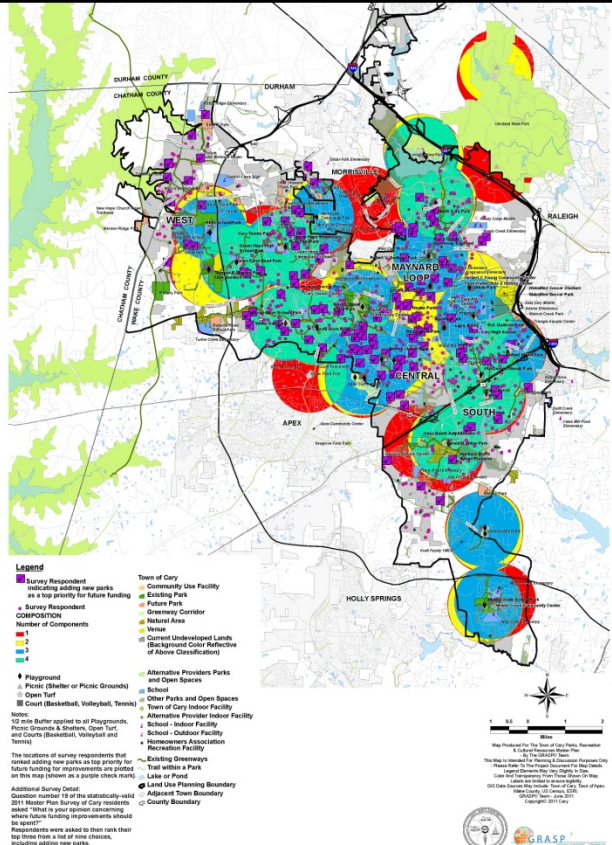
There is good coverage for service throughout Cary. All areas have more than 90 percent coverage for service. For total GRASP® value, Central subarea has the highest score, meaning it has the most components within it. West Cary has the lowest, reflecting the presence of less components for indoor use located there.

Larger maps are located in Appendix G.

When LOS scores are examined, it is seen that Average LOS per Acre Served is highest in the Maynard Loop subarea and lowest in the West. When population density is factored in, Central has the highest LOS, and South has the lowest.

The locations of survey respondents that ranked new indoor recreation space as one of their three top priorities for future funding for improvements are plotted on this map (shown as a purple check mark). Overall distribution of responses indicating a high priority for indoor recreation is fairly uniform. This indicates that the desire for indoor recreation is not higher or lower in any particular part of Cary. It should be noted that no responses came from the far south part of Cary, where LOS was found to be lower than the other subareas in Perspective C.

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COMPOSITION ANALYSIS PERSPECTIVE MAP: D

Larger maps are located in Appendix G.

Stated differently, the color on the map that overlays a particular location tells how many of the categories are available within one mile of that location. It is a useful tool for measuring the *diversity* of components typical of neighborhood parks throughout Cary. However, it does not reveal *which* of the four components are represented, only *how many* of them are. It also does not convey how many components (i.e., how many courts and whether they consist of different kinds of courts or one kind) are available, or the capacity of those.

The parts of Cary with access to a full range of amenities are shown in the green color. These occur mainly in the west, north, and central-southeast parts of Town.

Areas with only one category of amenity are shown in red. These tend to occur at the fringes of the community, where lower levels of service are normal. Overall, the main gap in service shown by this analysis happens in the central part of Cary, where there is a gap with no access to any components, and some area of red and yellow (meaning only one category is available).

The locations of survey respondents that ranked adding new parks as top priority for future funding for improvements are plotted on this map (shown as a purple check mark). A concentration of these responses is seen in the central parts of Town.

Perspective D: Composition Analysis

Perspective D provides a different way of looking at service. Previous Perspectives looked at the cumulative value of service provided by components. This one analyzes the “mix” or composition of components available within a 1-mile radius of any given point in Cary. Trails are shown for reference only, and are not included in the analytical information.

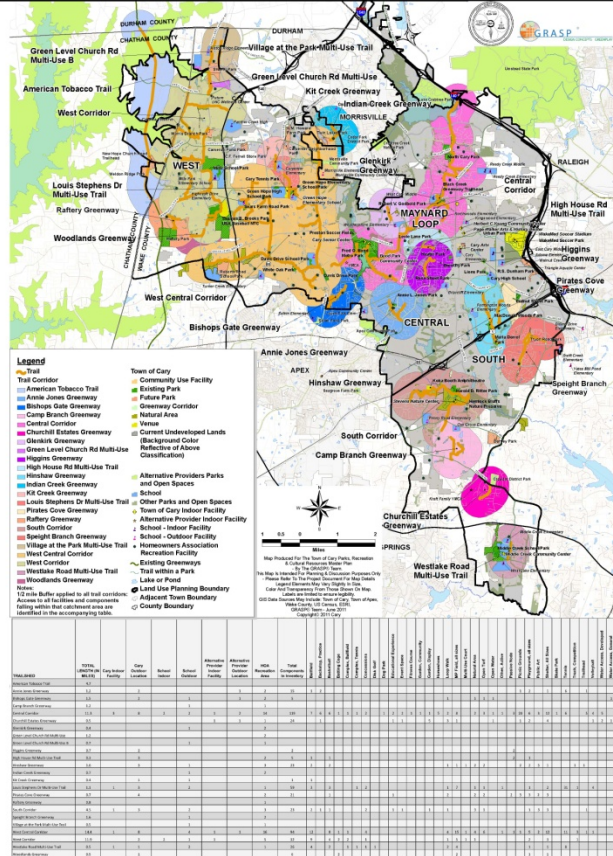
Geo-coded locations of Master Plan survey respondents who ranked adding new neighborhood parks as a top financial priority are also shown to allow a comparison between the availability of services and where the responses related to the importance of those services came from.

Components from the inventory were grouped into four categories:

- Playgrounds
- Open Turf
- Picnic Shelters
- Courts

Colors on the map indicate how many categories are represented by at least one component within a mile of any given location.

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TRAILS ACCESS ANALYSIS PERSPECTIVE MAP: E

Larger maps are located in Appendix G.

network. An expanded version of this table Perspective E with more information on the specific components that fall within each trailshed is found in Perspective E in **Appendix G**, which has been provided as part of a separate document.

Whenever two trailsheds are connected together, a new trailshed emerges that is equal to the sum of the two, meaning that it has access to all of the components found in both trailsheds. This can be used for planning purposes to identify places where linking existing trails together will yield the greatest benefit in terms of connectivity.

Perspective E: Trail Access Analysis

Perspective E provides a way of looking at the service provided by trails. In this map, the trails within the dataset are identified as individual networks or “**trailsheds.**” Each individual network is a set of continuously connected trails. This means that within an individual network, **all segments of trail are connected and any segment can be reached from another without leaving the network.** Twenty-four (24) discreet trailsheds were identified in Cary. These were labeled as shown on this map.

In Perspective E, a ½-mile catchment area has been applied to all segments of each network. The resulting area within this catchment is the *trailshed* for that network. The GIS data was queried to determine the number and types of facilities and components that fall within each trailshed. This provides an assessment of what facilities and components are accessible within a ½-mile distance of the trail, and therefore can be reached by way of the trails within the network without having to leave the trail, other than at the beginning and end of the journey.

Table 6 shows some of the data associated with each trailshed and allows for comparison of the connectivity and service provided by each trail

Table 6: Trail Access Statistics

TRAILSHEd	TOTAL LENGTH (IN MILES)	Cary Indoor Facility	Cary Outdoor Location	School Indoor	School Outdoor	Alternative Provider Indoor Facility	Alternative Provider Outdoor Location	HOA Recreation Area	Total Components In Inventory
American Tobacco Trail	4.7								
Annie Jones Greenway	1.2		2				1	2	15
Bishops Gate Greenway	1.5		2		1		1	2	5
Camp Branch Greenway	1.2				1			1	
Central Corridor	11.3	3	8	2	2	1	2	14	119
Churchill Estates Greenway	0.5					1	1	1	24
Glenkirk Greenway	0.4				1			2	
Green Level Church Rd Multi-Use	1.2							2	
Green Level Church Rd Multi-Use B	0.7				1			1	
Higgins Greenway	0.7		2						2
High House Rd Multi-Use Trail	0.3		3					2	5
Hinshaw Greenway	1.6		3		1			3	23
Indian Creek Greenway	0.7				1			2	
Kit Creek Greenway	0.4		1		1				1
Louis Stephens Dr Multi-Use Trail	1.1	1	3		2			1	59
Pirates Cove Greenway	0.7		4					2	21
Raftery Greenway	0.8							1	
South Corridor	4.5	1	3		2			3	23
Speight Branch Greenway	1.6				1			2	
Village at the Park Multi-Use Trail	0.5				1			1	
West Central Corridor	14.4	1	8		4	1	1	16	94
West Corridor	11.9		2	2	1	1		5	32
Westlake Road Multi-Use Trail	0.5	1	1		2			1	26
Woodlands Greenway	0.5		1						6

Capacities Level of Service

For some components, the quantity needed is proportional to the population that will be served by that component. This is a fairly easy calculation when components are programmed for use. The programming determines how many people will be using the facilities over a period of time. Sports fields and courts fall into this category. For other components, the ratio of components to the population may vary, depending upon the size or capacity of the component and the participation levels within the community for the activity served by the component. Skate parks and group picnic facilities fall into this category.

Table 7 reflects the projected needs for community components for specific parks through 2020. An analysis was completed for the need for specific athletic facilities, which was based on current and estimate programming demands and use of Cary’s facilities by its citizens. These estimates and their recommended locations are intended to allow the Town to achieve an equitable distribution of recreational opportunities across the community and to provide a basis for estimation of potential future facility development costs.

These recommendations represent guidelines for park planning and development and do not serve as a minimum level of development. These may differ from national standards which sometimes are limiting to communities since each community has specific use patterns of its parks, multi-purpose fields, ball fields, and court facilities. It is important to note that capacities tables are simply one tool that can be used to make final recommendations and establish budgets. **The table assumes that the current ratios and demands are satisfying today's needs and that the same ratios will satisfy needs in the future. In reality, needs and desires change over time due to changes in demographics, recreational trends, and other factors.** The numbers of facilities shown on this table may differ from the final recommendations due to availability of land, ability to upgrade existing facilities, and other factors.

Lastly, each potential park site will need to be considered individually for its site characteristics, opportunities and constraints, and recreational facilities in nearby park units considered as facilities are chosen.



Table 7: Capacities Level of Service for Inventory Components

Proposed Level of Service for Inventory Components	Inventory Components																
	Balfields - All Sizes	MP Field - All Sizes	Tennis	Multi-purpose Courts	Basketball	Volleyball	Loop Walk	Open Turf	Picnic Area	Picnic Shelter (Rentable)	Playgrounds	Public Art	Trailhead	Restrooms	Disc Golf	Dog Park	Splash Pad
Projected Population - 2020 - 175,598																	
Number that should be added by 2020 based on current ratios and projected needs	16	14	36	8	15	11	13	11	9	18	16	12	12	16	2	3	2
Future Neighborhood Park																	
Cameron Pond Park	2		6	2	1		1	1	1	1	1	1	1	1		1	
Carpenter Park				2			1	1	1	1	1	1	1	1			
Lexie Lane Park																	
Morris Branch Park				1			1	1	1	1	1	1	1	1			
New Hope Church Road Trailhead Park										1	1	1	1	1			
Tryon Road Park				2	1		1			1	1	1	1	1			
Twin Lakes Park				6	1		1	1	1	1	1	1	1	1			
Walnut Creek Park							1				1	1	1	1	1	1	
Weldon Ridge Park	2	1		1		8	1	1	1	1	1	1	1	1			
Future Community Parks																	1
Bartley Park		2		2			1	1	1	1	1	1	1	1		1	
Cary Tennis Park (Existing 33 courts)			8							1							
Kitt Creek Park (Shaffer)									1	1	1	1	1	1			
Mills Park, Ph II	1		8			2	1	1	1	1	1	1	1	1			1
Raftery Park	3			2				1	1	1	1	1	1	1	1		
Proposed School/ Park																	
Alston Ridge School/ Park	2	2												1			
Briarcliff Elementary	1	1					1			1	1						
Cary Elementary (not on Master Plan Map)	1						E			1	E	E					
East Cary Middle	1	2						1		1	1						
Farmington Woods Elementary (Homeowners Recreation Site only)		1		2			1	1		1	1		1	1			
Oak Grove Elementary	1																
Panther Creek High School			6											1			
Penny Road Elementary	1	1					1			1	1	E		E			
Reedy Creek Elementary/Middle	1	1					1			1	1						
Roberts Road School/ Park		1	8		2		1	1		1	1		1	1			
Weatherstone Elementary		1					1										
Total Proposed	16	13	36	12	13	11	13	10	9	18	16	12	12	16	2	3	2
Difference between proposed and number that should be added by 2020	0	1	0	-4	2	0	0	1	0	0	0	0	0	0	0	0	0

E= Existing

Level of Service Summary of Findings

Findings from the GRASP® analysis show what the current levels of service are for a variety of parks and recreation needs. While the GRASP® methodology allows quantitative measurements to be made for levels of service, there are no established standards for what the resultant numbers should be. This is because every community is different. In this sense, the GRASP® analyses are *descriptive* and not *prescriptive*. The numerical analyses presented here provide a measurement for what the level of service is for a given location, but not what it should be.

A key finding from the analysis is that Cary is well-served for parks and recreation in the traditional sense. This is commendable, given the challenge of serving a community that varies from quite rural to moderately urban in some areas. This does not mean that there are not people or places in Cary that lack service in some specific way. The GRASP® analyses are intended to measure what the current Levels of Service (LOS) are and the relative differences in LOS from one location to another, but do not in themselves prescribe what the LOS should be. Used in conjunction with other tools, recommendations for target LOS can be developed.

An interesting finding from the analyses is that the computed LOS in various parts of the Town may not line up with the perceptions that people have, especially when LOS is normalized for population density. Some areas that may be perceived to have lower LOS actually score higher than areas where service is perceived to be adequate. It does not mean that the perceptions are necessarily wrong, just that they may be due to the composition and location of facilities, rather than the pure quantity or quality of what is available.

Another finding is that because Cary has a high LOS for conventional access to services (i.e. ,driving), the focus can now shift towards improving walkability instead of having to address gaps in service or poor quality of service.

Also, trail connectivity is important to people, and connectivity improvements can improve walkability. The Trail Access Analysis can be used to determine how linking existing trails to one another can yield the greatest results, and where key areas that lack access to trails are located.

While the analyses indicate that Cary enjoys an overall excellent LOS, the challenge will be to sustain that as the system ages and matures. In the past, parks and recreation master planning was often focused on meeting the challenges of growth. Growth and new development bring land and dollars into the system and offer opportunities to provide facilities that are new, exciting, and in line with the latest needs and desires. When land and money from growth are no longer driving the system, other resources must be found to not only maintain the system as it ages, but also to update facilities and provide new ones that address evolving changes in demographics, lifestyles, and other trends. The LOS identified in this analysis are benchmarks against which Cary can measure its success in sustaining the quality of its system of parks, trails, and open space over time.

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