

West City Sector Plan

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Introduction

The West City Sector plan is a guide for future land use and the development of the transportation system and community facilities. The plan, which supersedes the 1996 document, is one of 12 sector plans for Knoxville/Knox County. Since the adoption of the last version, several projects, plans and initiatives have been completed that have impacted this sector:

- Bearden Village Plan
- I-40 Widening Project and Kingston Pike improvements
- Renovation of Western Plaza
- Deane Hill Recreation Center renovation
- Third Creek Greenway
- Bearden Hill projects

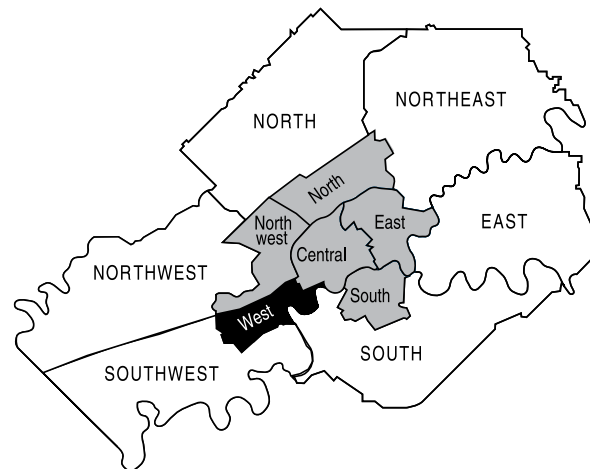


This greenway is an outgrowth of the Bearden Village Plan.

Location and Boundaries

The West City Sector covers an area of approximately 11.2 square miles and is the smallest of MPC's 12 planning sectors. The sector includes census tracts 25, 36, 37, 44.01, and 44.02, and its perimeter is based on these tract boundaries. There are approximately two square miles of the sector that lie in the unincorporated area of Knox County.

Map 1: MPC Planning Sectors



The west city sector is shown in black; other city sectors are gray; county sectors are white.

Public Participation

During the planning process, MPC staff prepared background analyses, obtained input, shared ideas at workshops and conducted public meetings. Two meetings were held in the past year at two different locations within the sector to collect information on issues key to the community. At these meetings staff presented the background study and discussed future transportation needs, land use proposals and community facilities. Additionally, MPC staff met with Bearden Village, Sequoyah Hills and Westmoreland interests on neighborhood conservation issues, which are relevant to this plan.

Map 2: West City Sector Census Tracts



Background Report

Population Growth and Characteristics

In 2000 the sector had 20,354 residents. Between 1990 and 2000, the total population of the sector increased by 5%, after a 2.6% decrease in the previous decade. In the last decade the sector's population increase mirrored that of the city (5.1%). The two most western census tracts (44.01, 44.02) grew in population, while the most eastern census tracts (25, 37) decreased or remained the same.

Census Tract Population

Census Tract	2000 Population	Percent Change 1990-2000
25	3,640	0%
36	463	-48.9%
37	3,833	-4.8%
44.01	4,665	+3.4%
44.02	7,980	+10.2%
West City	20,354	+5.0%
City	173,890	+5.1%

Age Distribution

The median age of this sector is slightly higher (estimated 37.9 years) than the City of Knoxville's median age of 33.4 years. Census tract 25 retained the greatest proportion of older residents from 1980 to 2000.

The fact that the median age increased rapidly over the past 20 years indicates that a large proportion of the population has likely "aged in place." In other

words, many of the same people are still living in the same area, and they have all grown 20 years older. This observation is supported by the fact that a high percentage of homeowners remained in the same house for the five-year period prior to 1990.

Excluding the population of Lakeshore Mental Health Institute, the number of persons age 65 and over increased by almost 1,600 during the 1970s and 1980s. By 1990 the sector had the highest median age of any sector, 37.1 years. Today, more than 17% of the sector residents are over the age of 65. The aging of the sector is particularly dramatic in tract 25, the Sequoyah Hills area, where 20% of men and more than 30% of women are over the age of 65.

While tract 44.01 has seen a small amount of growth in the total number of children, all tracts

have shown a considerable drop in the proportion of children in the population. The total number of children in the sector has dropped steadily since 1970, with 4,049 fewer children as of 2000.

Economy

The largest employment center within the sector is West Town Mall (1,400 employees), which is located along Knoxville's busiest commercial corridor, Kingston Pike. The Mall and surrounding commercial development on or adjacent to Kingston Pike play a key role in making Knoxville a regional destination for shoppers. One of the main reasons Kingston Pike is experiencing reinvestment in vacant properties is due to the volume of traffic that passes along I-40, which closely parallels Kingston Pike from Walker Springs Road to Papermill Drive.



With its long established neighborhoods, the median age of West City residents is higher than most areas in Knoxville-Knox County.

Transportation

Within the sector, traffic primarily travels east/west. The most intense traffic is on I-40/I-75 where traffic volumes range from 145,782 vehicles per day (vpd) between Gallaher View Road and West Hills, to 150,024 vpd east of the Papermill Drive interchange. Kingston Pike and Northshore Drive, the only major arterials within the sector, carry heavy traffic through the sector. The purpose of an arterial is to move high volumes of traffic across the city. Kingston Pike traverses the entire length of the sector in an east/west direction where traffic ranges from 22,443 vpd in the Sequoyah Hills area to 34,445 vpd near Morrell Road. Traffic on Northshore Drive, which originates at Papermill Drive, ranges from 22,443 vpd at Morrell Road to 29,645 vpd between Kingston Pike and Papermill



Recent improvements to I-40/75 have greatly relieved congestion.

Drive. The minor arterials are Sutherland Avenue and Gleason Drive, which run east/west, and Morrell Road, Montvue Road, and Gallaher View Road north of Gleason, which run north/south.

The purpose of a collector is to provide access to and circulation within residential and employment areas, and to carry traffic from these areas to the arterial system. The major collectors in this sector are Lyons View Pike, Westland Drive, Deane Hill Drive, and Papermill Drive, which run east/west, and Hollywood Road, Downtown West Boulevard, and Gallaher View Road south of Gleason, which run north/south. Cherokee Boulevard, Scenic Drive, Tobler Lane, Lockett Road, Cheshire Drive, Nubbin Ridge Road, and Wallace Road are all minor collectors.

Commuting Pattern

The most utilized mode of commuting is a single-occupant vehicle, with 8,788 or 84.8% of the work force (workers over 16) driving to work alone. About 6.4% of the sector's workforce carpool and less than 1% work at home. Despite having four bus routes that service the sector, only .09% of the workforce uses public transportation.

Railroads and Trucking

The Norfolk Southern rail line travels east/west across the width of the sector. There are six at-grade crossings in this stretch of track. This line carries approximately 16 trains per day and leads to Chattanooga. Commercial truck traffic on I-40/75 makes up between 16-18% of the total traffic.

Sidewalks

There are few sidewalks in this sector. Sidewalks are particularly needed in Parental Responsibility Zones (PRZs, areas near schools in which parents are responsible for their child's transportation). Within these zones, safe pedestrian access can help reduce traffic congestion at the start and end of the school day. For elementary schools, the zones are one mile in diameter; for middle and high schools, the zone is 1.5 miles in diameter. Almost all the schools lack an extensive sidewalk system in the various PRZs.

In 2000, MPC developed "The Sidewalk Study" for Knox County Engineering and Public Works. The plan assessed the sidewalk systems within the PRZs. MPC's assessment of the sidewalk systems within the zones follows:

West High School:

Sidewalk coverage in the West High School PRZ is fair. Future sidewalk improvements should include upgrading the existing sidewalk and adding new sidewalks to missing sections of Sutherland Avenue. Also, a sidewalk should be constructed along Hollywood Road under the I-40 overpass. The missing section of sidewalk on Tobler Lane and Forest Glen Drive should be built. Although this section will be difficult to build because of the topography, it will provide a needed pedestrian link from Kingston Pike to West High School and the Third Creek Greenway.

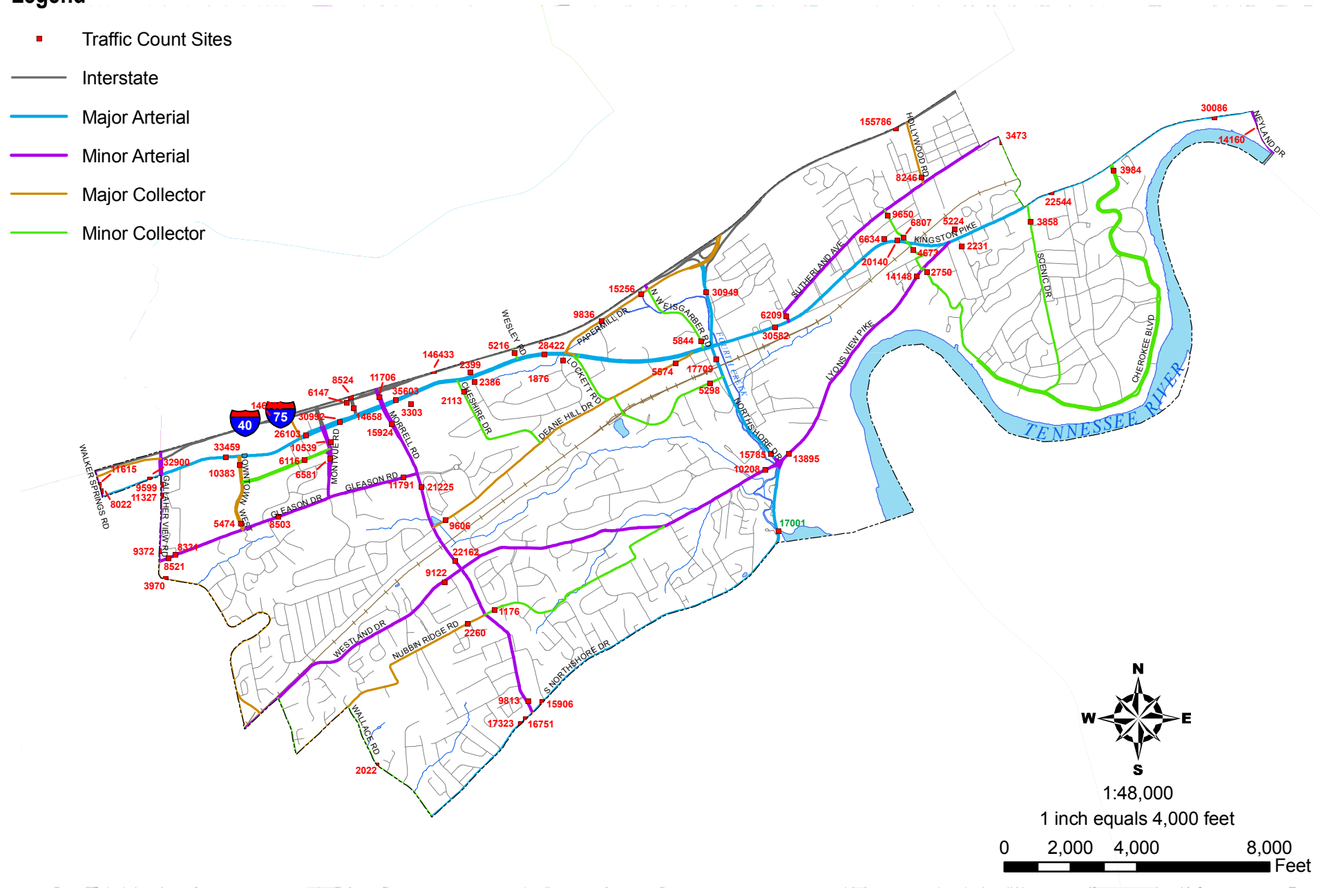
Sequoyah Elementary:

There are few sidewalks in the Sequoyah Elementary School PRZ. A sidewalk should link the existing

Map 3: Existing Transportation System

Legend

- Traffic Count Sites
- Interstate
- Major Arterial
- Minor Arterial
- Major Collector
- Minor Collector



sidewalk on Southgate Road from Keowee Avenue to Cherokee Boulevard.

Rocky Hill Elementary:

Very few sidewalks are found in the Rocky Hill Elementary School PRZ. Future sidewalk improvements should include linking existing sidewalks on Morrell Road and adding a sidewalk to a portion of Rocky Hill Road where children are picked up and dropped off. Another consideration should be adding sidewalks or a greenway to Northshore Drive. This improvement would safely link many neighborhoods and a growing commercial area.

Pond Gap Elementary:

Currently, a sidewalk exists along portions of Hollywood Road, Papermill Drive, and Sutherland Avenue. Future consideration should include an identifiable pathway on Hollywood Road under the I-40 bridge, Papermill Drive from Liberty Street to Coleman Road, and any missing sections on Sutherland Avenue.

Bearden Elementary:

Some sidewalks exist along Kingston Pike and Northshore Drive south of Kingston Pike. Bearden Elementary sits off a major arterial with a daily traffic count of over 30,000 vehicles. Sidewalks, at a minimum, should be considered on Kingston Pike, Northshore Drive and Sutherland Avenue. These key links in major commercial and heavily congested areas would benefit more than school children. The City of Knoxville is currently

completing a greenway along Sutherland and Kingston Pike.

Bearden High School:

Currently there are very few sidewalks in the Bearden High School PRZ. Future sidewalk improvements should include adding sidewalks to Kingston Pike, Gallaher View Road, Gleason Drive, and the Walker Springs Connector.

Bike Route

The 2002 Knoxville Regional Bicycle Plan recommends including bicycle facilities when designated roads are widened, reconstructed, or paved.

Public Transportation

Knoxville Area Transit (KAT) operates the city's bus services, which represent the largest element of public transportation service in the area. The system operates Monday through Saturday and provides mass transportation services throughout the city on 22 fixed routes and two express routes. There are four routes that operate within this sector: they are Route 10—Cherokee Boulevard, Route 11—Kingston Pike, Route 15—West Town, and Route 90—Crosstown Loop.

KAT Action Plan 2010

MPC, working with KAT, conducted a year long study known as KAT Action Plan 2010. The plan recommends a series of organizational and service improvements. Highlighted below are

three recommendations that could affect this sector:

1. Increase frequency of the Kingston Pike route from 30 minutes to 15 minutes.
2. New Bearden Village and West Town Mall Super-stops. Super-stops are locations where several routes converge and transfers can occur. Super-stops could include enclosed waiting areas with a variety of passenger amenities, such as vending machines, restrooms, phones, and bike racks. It is a goal of KAT that Super-stops include new technology so passengers will know when the next bus will arrive in "real time."
3. Establish several new neighborhood routes that run every 30 minutes and use smaller vehicles. Most of the sector's routes would start at the West Town Mall Super-stop and serve further west on Kingston Pike, the Wal-Mart Area, the Bearden Village area, and the Weisgarber area. This is a new concept that allows routes to stay out west and not go downtown. Passengers wanting to go downtown would connect with the very frequent Kingston Pike Route at the Super-stops.

Historical Development and Historic Resources

Settlement Patterns

The first European settlers came to the western part of Knox County in the early 1790s. Traders from Virginia had visited the East Tennessee area since the 1740s to trade with local Cherokees. The "Yellow Mountain Trace" (Emory Road) and the

North Carolina Road brought increasing numbers of people into the county. Soon after it was formed in 1792, the Knox County Court requested that a 30 foot wide public highway be surveyed to extend the North Carolina Road west from Knoxville to the blockhouse at Campbell's Station. This route, now known as Kingston Pike, was the first improved road in Knox County.

The area known as Bearden generally stretches west along the corridor of Kingston Pike and the Norfolk Southern railway from Lyons View Pike to Sutherland Avenue, east of Northshore Drive. The area's first white European resident was probably James Miller, who operated a trading post during the late 1700s. John Gamble opened a tavern at the same location in 1817 when the area was called Erin. The name Bearden was adopted in 1883 after Marcus De Lafayette Bearden, who owned a farm on Weisgarber Road. Bearden had been a captain in the Union Army during the Civil War and was Mayor of Knoxville 1868-69. Bearden also served in the Tennessee legislature and was instrumental in getting Eastern State Hospital (now Lakeshore Mental Health Institute) located on Lyons View Pike. By 1900, Bearden had a rail depot, post office, blacksmith, grist mill and a few stores. Bearden was never incorporated. Its area was annexed by the City in 1917 and 1962.

The area where Homberg Drive runs parallel to the railroad once was an African-American community. Its residents worked in brickyards, located adjacent

to the tracks. This community built the Wallace Chapel African Methodist Episcopal Church (5103 Homberg Drive) in 1930.

Historic Resources

There were many large houses built along Kingston Pike for the city's affluent residents during the middle of the 19th century. Today several of these houses are on the National Register of Historic Places or the Knoxville-Knox County Landmark Register.

Drury Armstrong, who owned several hundred acres on both sides of Kingston Pike, built Crescent Bend overlooking the bend of the Tennessee River in 1832. The building is now a museum. A second residence, Bleak House, was built on the same property for Armstrong's son in 1856. This building served as headquarters for Confederate General Longstreet during the siege



Bleak House

of Knoxville in the Civil War, and from its tower sharpshooters killed Union General William Sanders. The building is now a museum operated by the United Daughters of the Confederacy. Prior to the siege, Longstreet had been headquartered at Knollwood, a Georgian-style mansion overlooking Bearden on the north side of Kingston Pike, west of Northshore Drive.

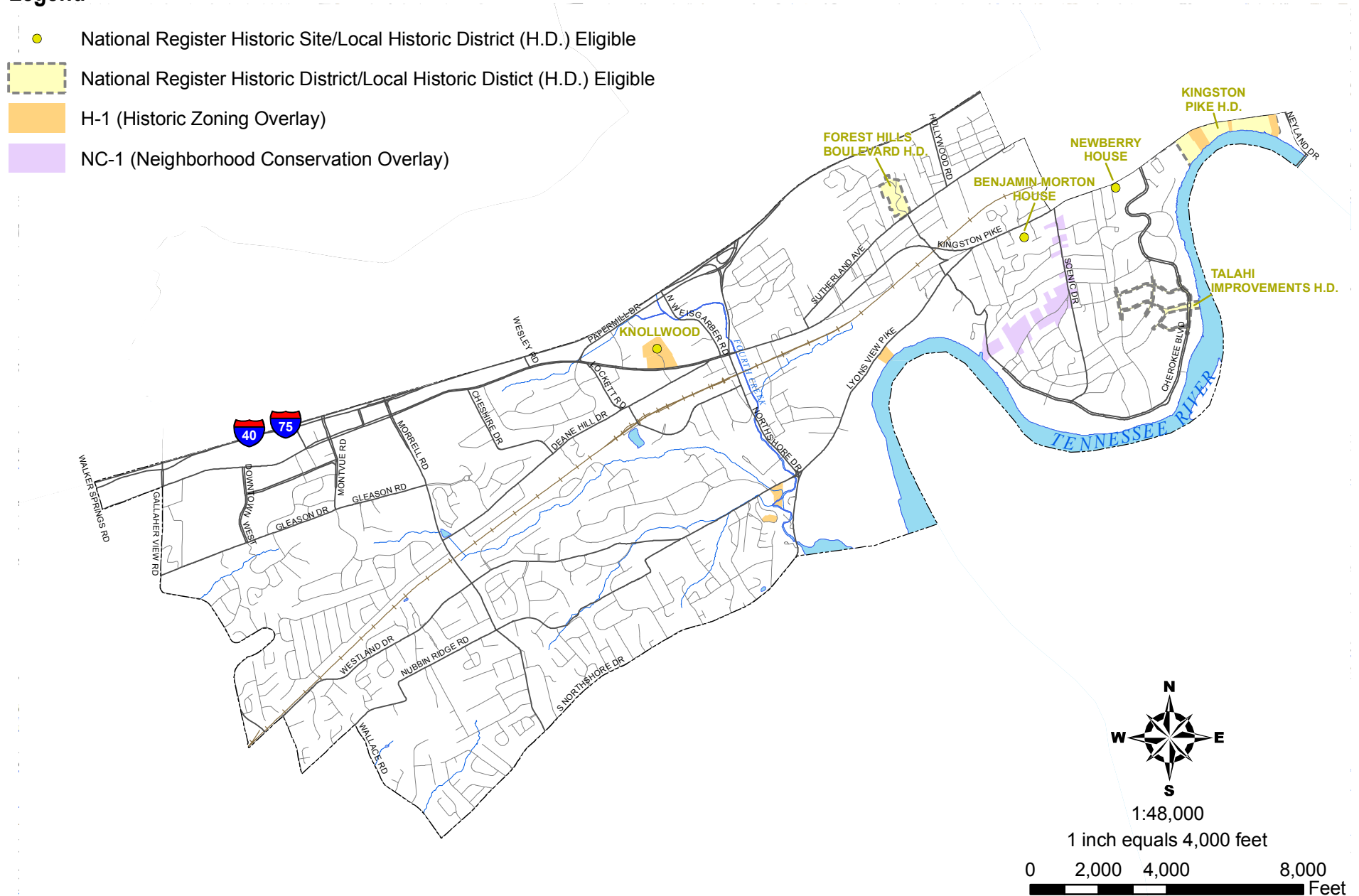
The Neoclassical H.L. Dulin House was designed by Henry Russell Pope. The building served as Knoxville's art gallery from the 1960s until the early 1980s, and is now leased by Calvary Baptist Church.

During the 1920s, Knoxville experienced rapid suburban expansion. The city's rail connection to the Appalachian region fueled strong growth in wholesale and manufacturing. The growing popularity of the automobile allowed many new industrialists and some new workers to buy homes further out from the city. Around 1810, Captain William Lyon had purchased a large tract overlooking a bend in the Tennessee River with a view of the distant Smoky Mountains. The area, subsequently known as Lyons View, was annexed by the city in 1917. Cherokee Country Club, Knox County's first 18-hole golf course, was built on Lyons View in 1907. The present buildings date from 1928. Large homes were built for the city's wealthy families in Lyons View and on vacant lots along Kingston Pike during the late 1910s, 1920s and 1930s. These include numerous fine examples

Map 4: Historic Resources

Legend

- National Register Historic Site/Local Historic District (H.D.) Eligible
- National Register Historic District/Local Historic District (H.D.) Eligible
- H-1 (Historic Zoning Overlay)
- NC-1 (Neighborhood Conservation Overlay)



of the work of the Beaux-Arts trained architects Barber and McMurry. Barber and McMurry were also responsible for the gatehouse and residence of Westcliff (1928), which is now an apartment and condominium complex.

The city's streetcar system was extended along Kingston Pike to Lyon's View Pike in 1913. Although the area was accessible by streetcar, most of those wealthy enough to live in these neighborhoods had little use for streetcars, and low-income and multi-family development in the early years of the century were limited.

Sequoyah Hills was Knoxville's first subdivision to be completed with curvilinear streets. Begun in 1925, the community attracted Knoxville's wealthier citizens. In many ways, Sequoyah Hills still serves as a model for sensitively-planned residential development: All utilities were placed underground, roads follow the contours of the land, and trees were preserved wherever possible. The mature size of these trees continues to distinguish the original subdivision from later development in the western half of Sequoyah Hills. Entry gates, street lights and street furniture were also provided. Because vehicular traffic at the time was lighter than today, there are few sidewalks, although there is a gravel path along the planted median of Cherokee Boulevard.

There is a prehistoric Indian burial mound still visible in the boulevard's median. This mound probably dates from the Late Woodland period

(c.900-1100 A.D.). As early as the late 19th century, there was evidence this site had been opened and looted. Another mound preserved on the University of Tennessee Agriculture Campus is of a similar period and purpose, and gives an indication of what the mound on Cherokee Boulevard must have looked like prior to its desecration.

The 100-acre Talahi addition to Sequoyah Hills contains many decorative lampposts and gateway markers. Streets in Talahi were paved in concrete, and Papoose Park was built as an enclosed play area for children. The street improvements in Talahi are a historic district on the National Register. The small commercial center of Sequoyah Hills, called Council Point, was part of the original plan for the subdivision. Barber and McMurry designed many

of the large residences in Sequoyah Hills, as well as the neighborhood's school and branch library. Knoxville's first Dogwood trail was opened in Sequoyah Hills in 1955.

In the 1920s Daniel Clary Webb and his wife purchased 60 acres in what is now Westmoreland Heights and moved into a house already on the site. They obtained water from a nearby spring. Ed Manning, part owner in a mining company, bought a lot from Webb, and the two installed a waterwheel to pump water from a larger spring to the west. Manning engineered the project, and Charles Barber of Barber and McMurry designed the stone wheelhouse which still stands today. In 1923, Webb, Manning and others formed a corporation to build the Westmoreland Heights subdivision, which



Sequoyah Hills, circa 1930.

was served by the waterwheel. Most of the homes date from the 1930s. With the advent of electricity, an electrical pump replaced the waterwheel's functional role. In 1940, the subdivision was connected to the city water system.

Westwood was another subdivision planned to begin in 1925. A few homes were built during the 1920s, but the Depression put the development corporation out of business, and construction of housing did not resume until the late 1930s.

The Forest Heights area is made up of four subdivisions which were progressively developed

during the 1930s and 1940s. The Forest Hills subdivision is on the National Register of Historic Places. Forest Hills is a prime example of a pre-World War II automobile suburb, featuring Tudor Revival and Colonial houses on large lots, with curvilinear streets winding up the side of the ridge, overshadowed by 200-year-old pine and oak trees.

Western Plaza was the first shopping center built outside of Knoxville's downtown. It was substantially remodeled, first in the late 1980s and again in 2004. Because Kingston Pike has historically served as Knoxville's main through-road commercial corridor, there are several noteworthy

commercial developments in the West City Sector. There has been a gas station on the site wedged between Kingston Pike and Lyons View Pike since 1930. The Cherokee Porcelain Enamel Corporation at 5300 Homberg Drive produces porcelain products. Their building has a porcelain façade and is a good example of 1940s roadside commercial architecture. A prefabricated steel-frame house clad with a similar porcelain enamel material used to stand at 1106 Bearden Drive. The house dated from c.1946, and was one of five examples in Knox County of the national prefabricated housing industry which flourished briefly after World War II. The house was demolished in the early 1990s.



Forest Hills

Land Use and Development

Community Form

The overall development pattern of the West City Sector reflects strong topographic constraints, social distinctions, and advances in transportation over time. The major organizing features of urban development in the sector are:

- The commercial corridors that include Kingston Pike and Sutherland Avenue
- A few small, dense residential areas adjacent to this commercial development (for example, Gleason Road)
- A loosely knit commercial/industrial park on the flat land near the railway line and Baum Drive
- Residential areas in hilly terrain based on curvilinear street networks with long irregular blocks and cul-de-sacs linked to major collector roads. These areas were mostly developed after 1920
- Steep ridges with significant tree cover and miscellaneous large open spaces, including golf course and cemeteries



Rolling, heavily wooded terrain, like this part of Sequoyah Hills, is found in many parts of the sector.

Existing Land Use

Land use	Acreage	Percentage (%)
Agriculture/Forestry/Vacant Land	640.208	9.40
Commercial	537.389	7.90
Industrial (Manufacturing)	30.612	0.45
Multifamily Residential	357.919	5.26
Office	241.692	3.55
Private Recreation	124.439	1.83
Public Parks	320.742	4.71
Public/Quasi Public Land	469.966	6.90
Right of Way/Open Space	930.045	13.66
Rural Residential	305.519	4.49
Single Family Residential	2497.983	36.68
Transportation/Communications/Utilities	31.897	0.47
Under Construction/Other Uses	48.426	0.71
Water	253.279	3.72
Wholesale	19.482	0.29
TOTALS	6,810.098	100.00

Residential Uses

Much of the housing in the eastern part of the sector is at least 50 years old. Almost a third of the units around Sutherland Avenue and half the units in Sequoyah Hills were built prior to 1950. Newer houses exist in the lower elevations near Fort Loudoun Lake. Westmoreland Heights is the oldest subdivision in the western portion of the sector, and the only one predating 1950. Many subdivisions were developed during the 1950s and 1960s adjoining the area's major roads, including Deane Hill, Westland, and Northshore Drives. Later subdivisions were developed on an infill basis during the 1970s and 1980s.
















Almost 46% of the land in the sector is currently used for residential purposes. The condition of the housing is generally good. Over 90% of the housing stock within this sector is rated as having an average or above average building condition, according to the county tax assessor's data.

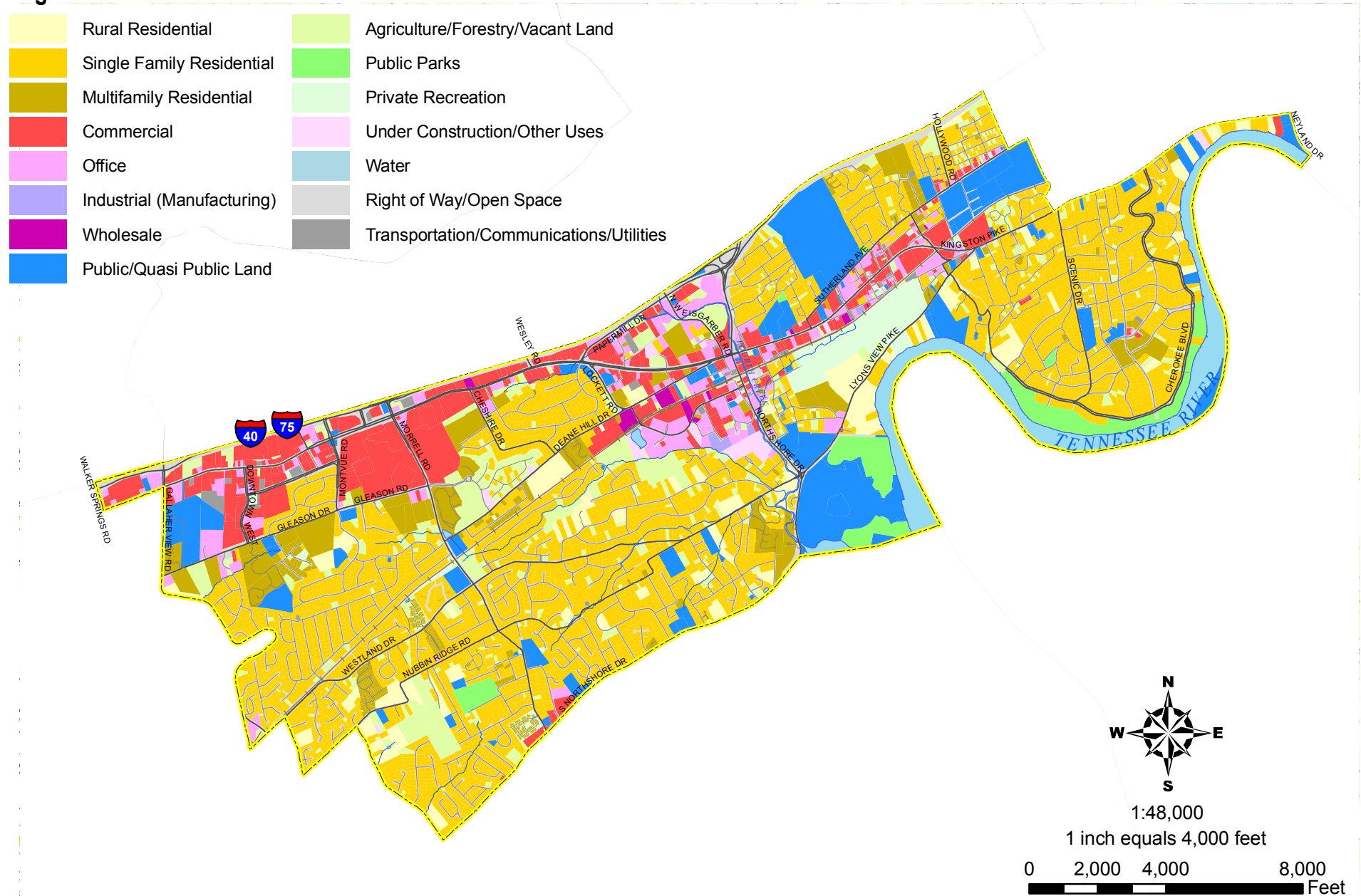


Knoxville's earliest "garden suburbs" with their curvilinear streets and forested yards were created in this sector.

Map 5: Existing Land Use

Legend

	Rural Residential		Agriculture/Forestry/Vacant Land
	Single Family Residential		Public Parks
	Multifamily Residential		Private Recreation
	Commercial		Under Construction/Other Uses
	Office		Water
	Industrial (Manufacturing)		Right of Way/Open Space
	Wholesale		Transportation/Communications/Utilities
	Public/Quasi Public Land		



According to the 2000 census, the number of rental-occupied housing units in the sector increased by 289 (approximately 6%). Forty-eight percent of the occupied housing is rental occupied units. The number of owner-occupied units in the sector increased by 460 (approximately 9%).

Housing Characteristics

(Source: US Census Bureau, 2000)

Occupancy Status

Census	Total	Occupied	Vacant	Percent Occupied	Percent Vacant
Tract	Housing Units	Housing Units	Housing Units	Housing Units	Housing Units
25	1,990	1,844	146	92.7%	7.3%
37	2,456	2,207	249	89.9%	10.1%
44.01	2,082	1,990	92	95.6%	4.4%
44.02	4,430	4,077	323	92.5%	7.5%
Sector	10,863	10,051	812	92.6%	7.4%
City	84,981	76,650	8,831	81.2%	9.8%

Tenure

Census	Occupied	Percent	Percent
Tract	Housing Units	Owner Occupied	Renter Occupied
25	1,844	74.3%	25.7%
37	2,207	24.9%	75.1%
44.01	1,990	86.5%	13.5%
44.02	4,077	38.5%	61.5%
Sector	10,051	51.6%	48.4%
City	76,650	51.5%	48.5%

Commercial Uses

Approximately 7.9% (537,892 acres) of the land within this sector is used for commercial purposes. This sector continues to serve as Knoxville's regional retail hub.

There are 31 shopping centers (or plazas) in the sector; approximately 16 of these plazas were built prior to 1980. In 2002, these plazas had a total of 3,424,381

square feet of available commercial space, and 406,205 square feet (12%) of this space was vacant. The 16 plazas constructed prior to 1980 accounted for 73% of all the vacant space found in 31 plazas.

Shopping Centers / Plazas – 2002

Name	Total Gross Floor Area (Sq. Ft)	Year Built	Vacant (Sq. Ft.)
5803 Kingston Pk.	8559	1970	
Bearden Square	8649	1977	
Village Square	16676	1974	1250
West Towne Pointe	18026	1998	
Village On Bearden Hill, The	19692	1987	
Melrose Place	20000	1987	
Colony Square	21724	1982	
Gables West	20373	1972	3571
Mercedes Place	22750	1998	
Fifty Seven Ten Center	24352	1965	
West Hills Center	27238	1964	
7301 Kingston Pike	27740	1966	
Kingston Four Center	32400	1978	
Kingston Pike Shopping Center	31651	1957	7290
Forest Hills Shopping Center	36000	1989	29000
Plaza, The	42982	1980	4060
Montvue Shopping Center	48400	1972	
Homburg Place I & II	79918	1973	12800
Bearden Center	79104	1958	7000
Gallery, The	100403	1987	4440
Papermill Plaza	100992	1978	18025
Knox Plaza	104296	1973	2800
Kmart Plaza, West Hills	111000	1968	40000
Suburban Shopping Center	128691	1964	4000
Olde Kingston Towne I	68747	1983	5250
Walker Springs Plaza	159173	1972	30071
Western Plaza	207000	1957	63578
Centre at Deane Hill, the	429000	1997	7500
West Town Mall	1346917	1972	107500
Brickyard Shops, The	4500	2000	
Olde Kingston Towne II	77428	1985	58070
Rocky Hill Shopping Center	64464	1969	
TOTAL	3,488,845	Avg. Age 1976	361,034

Office Uses

In addition to its leading role on the retail market, West City contains 68 office buildings, totaling 1,357,262 gross square feet with 1,509,268 square feet of rentable space. There is an estimated 125,420 square feet of vacant office space (8.31% vacancy rate). There is a varied supply of office space; rents range from \$7.50 to \$23.20 per square foot.

Industrial Uses

There is less industrial land within the sector in comparison to other sectors. There are 29 industrial buildings with 843,485 gross square feet of industrial space; these buildings have 35,724 square feet of vacant space (4.2% vacancy rate).



Kingston Pike, with its proximity to I-40/75, is the setting for Knoxville's most intensively developed retail properties.

Environmental Constraints

Topography

The topography of the West City Sector is a result of its geologic composition and the effects of later weathering. Major roads and landmarks demonstrate how the area's topography has had a strong influence on the pattern of development. Two low ridges extend east to west through the sector. The northernmost of these is the broad shelf of shale and sandstone described previously; the other is relatively steep and narrow and runs from Lyons View Pike through Westmoreland Estates to Nubbin Ridge. Fourth Creek flows south, cutting across both of these ridges and empties into Fort Loudoun Lake. The terrain generally rises to the west end of the sector, where the ridges widen out into rolling hills. Elevations in the sector range

from 813 feet along the shoreline of Fort Loudoun Lake to 1120 feet in the Kingston Hills area.

Approximately 40% of the sector has a slope of less than 6%, and almost all this land is intensively developed. The large-scale commercial and industrial sites, parking lots and sports fields in the sector are almost exclusively on land with little or no slope. Most multi-family housing complexes are also on flat land. Development is concentrated along Kingston Pike, running along the two valleys through Bearden and then parallel to I-40/75. This intense development extends a great depth from Kingston Pike as topography will allow.

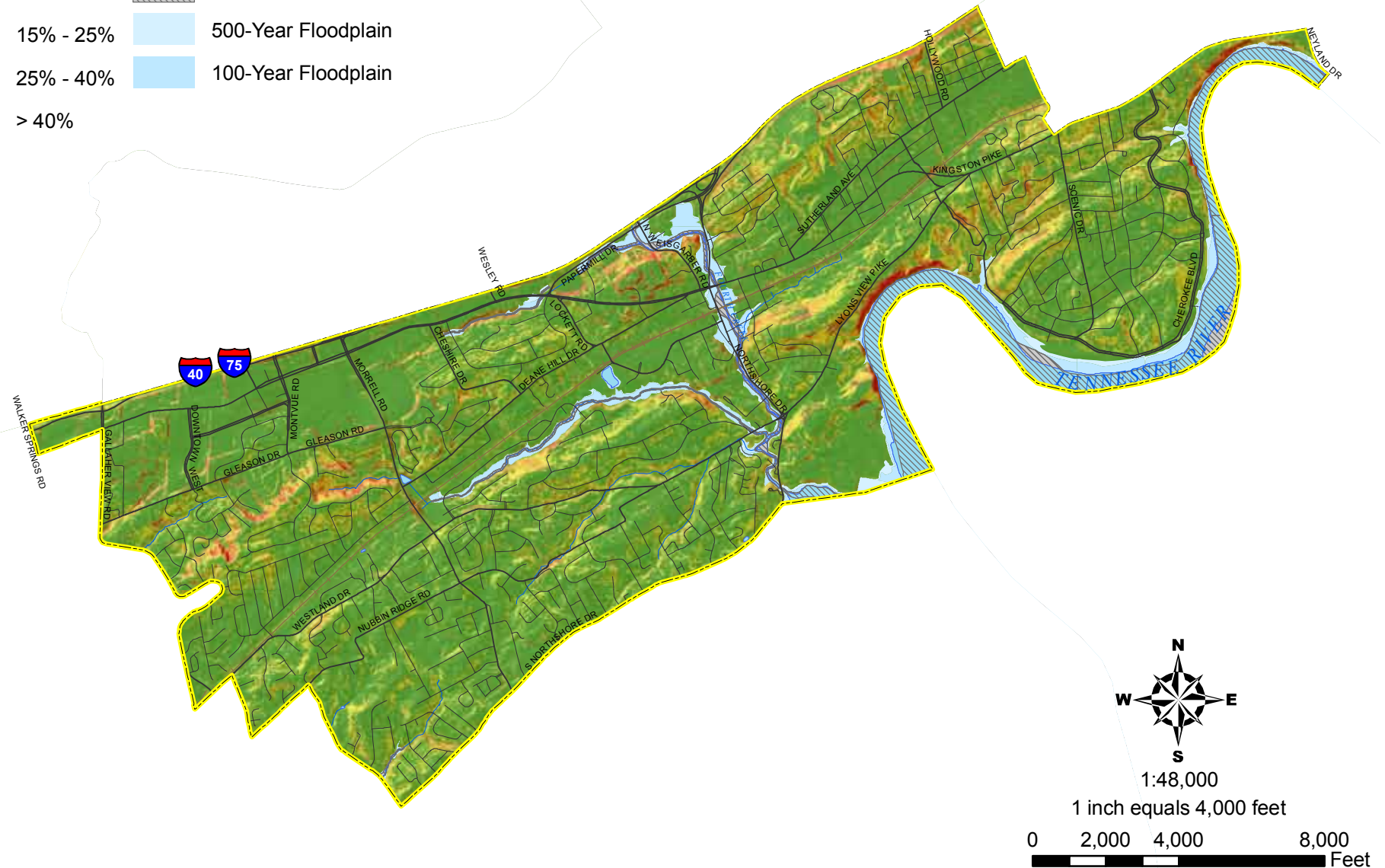
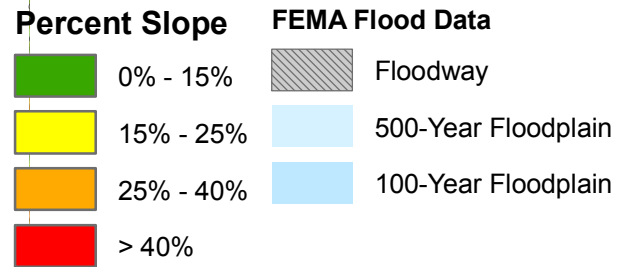
Another 55% of the sector consists of gentle slopes between 6% and 15%. These areas are largely single-family lots along the flatter sections of the two ridges and further west and south. Some intensive development continues up the Bearden Hill section of Kingston Pike. Several clusters of multi-family housing are also situated on mildly sloping or rolling land.



Most of the gently rolling landscape is characterized by older, attractive subdivisions.

Map 6: Environmental Constraints

Legend



Moderate slopes between 16% and 25% exist along various portions of the length of the sector's two ridges, and are connected in four areas: Forest Heights, Bearden Hill, Kingston Hills and the northern portion of Sequoyah Hills. Slopes steeper than 25% exist only in the bluffs on the outside bends of Fort Loudoun Lake (at Lyons View and below the Armstrong-Lockett House).

Hydrology

The West City is drained toward the west by Ten Mile Creek and Sinking Creek, toward the east by Third Creek, and to the south by Fourth Creek. All these creeks and their tributaries eventually empty into the Tennessee River (now Fort Loudoun Lake). Sinking Creek and Ten Mile Creek flow into sinkholes beyond the sector boundary, and follow underground passages to the lake.

The Environmental Constraints Map shows the areas prone to flooding, which are defined by the elevation of a 500-year flood. The east and west ends of the sector are at the upper elevations of their respective drainage basins, and are undisrupted by rising creek levels. Nonetheless, continued development in these areas can lead to increased runoff. Increased flows of stormwater and silt may block sinkholes, leading to serious flooding problems at lower elevations. Flooding is most likely along Fourth Creek and its tributaries, which drain a large portion of the center of the sector, along the inside bend of Fort Loudoun Lake near Cherokee Boulevard. Some of these areas lie within

the boundary of the 500-year floodplain, and have a 0.2% chance of being flooded in any given year. Most forms of development should be avoided within the floodplain. Under recently adopted ordinances, the city and county limit fill to 50% of the floodplain area.

The U.S. Fish and Wildlife Service Wetlands Inventory (1989) classifies two arms of Fourth Creek and approximately 15 acres along the shoreline near Lakeshore Mental Health Institute as semi-permanently flooded wetlands. The survey also classifies part of Third Creek as seasonally flooded wetlands.

Community Facilities

Parks & Recreation

Knoxville's Parks and Recreation Division maintains a wide range of park resources including neighborhood and community parks, athletic fields and greenways.

In addition to the parks listed below, there are several schools, most notably West High (32 acres) and Bearden High (40 acres), which have significant open space. However, these facilities have limited public utilization because the fields are largely programmed for school sports. There is a need to develop neighborhood parks west of Northshore Drive; the area is underserved in terms of smaller parks that are within walking distance of residents. However, since the area is largely developed, selecting a site becomes difficult.










Sequoyah Hills Park and the Cherokee Boulevard Trail are among Knoxville's most popular destinations.

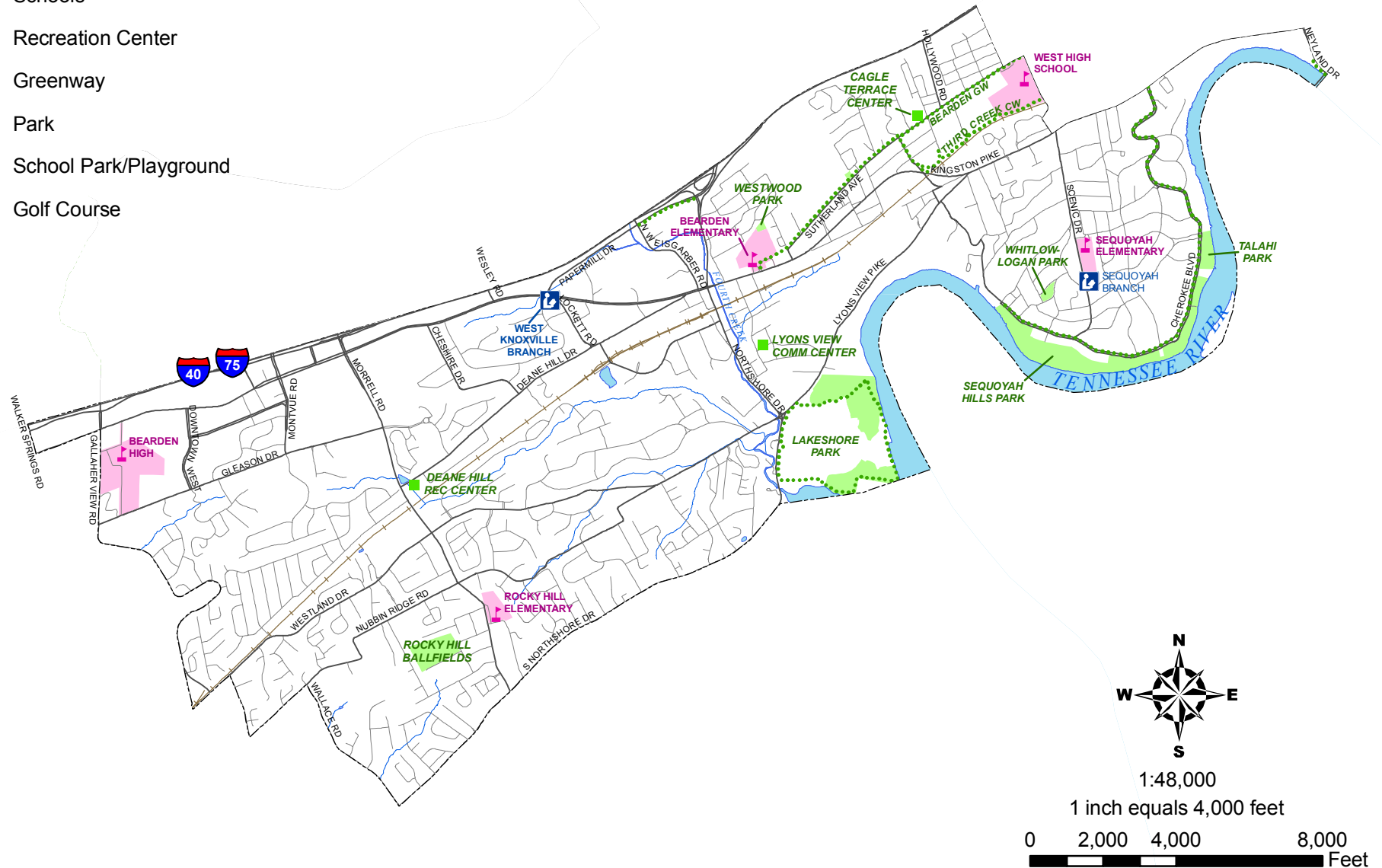


Lakeshore Park has a pleasant blend of natural areas and sports facilities.

Map 7: Existing Community Facilities

Legend

-  Libraries
-  Schools
-  Recreation Center
-  Greenway
-  Park
-  School Park/Playground
-  Golf Course



Existing Greenways, Schools, and Recreation Centers

Name	Size	Components	Improvements
Parks			
Bearden High School 8352 Kingston Pike	40 acres	2 basketball courts, 1 soccer field, 1 baseball field, 1 softball field, 3 football fields, and 1 track	
Forest Heights Neighborhood Park	< 1 acre	1 walking trail, 2 slides, 2 swings, 3 monkey bars, and 2 picnic units	Many of the park components are run down and in poor condition, but the park is owned by the subdivision
Lakeshore Park 5904 Lyons View Pike	167 acres	2 soccer fields, 6 baseball fields, 2 softball fields, 150 parking spaces, 2 concessions, 2 rental pavilions, and 4 swings	
Rocky Hill Ballfields 7633 Alki Lane	18 acres	8 baseball fields, 50 spaces, 4 concessions, 1 restroom, 2 slides, 2 monkey bars, and 16 benches	Parking needs to be remarked
Rocky Hill Elementary School Park 1200 Morrell Rd.	10 acres	1 baseball field, 1 exercise station, 2 slides, 4 swings, 3 monkey bars, 2 play structures, and 2 play courts	
Sequoyah Elementary School Park 942 Southgate Road	11 acres	1 baseball field, 1 waking trail, 1 slide, 1 swing, 1 monkey bar, 1 play structure, and 5 benches	
Sequoyah Hills Park Cherokee Boulevard	87 acres	1 exercise station, 2 parking areas, 1 walking trail, 1 boat launch, 2 picnic units, and 3 benches	
Talahi Park 1034 Cherokee Boulevard	7 acres	1 baseball field, 1 gravel parking lot, 2 concessions, 1 restroom, 1 slide, 1 monkey bar, and 4 picnic units	
West High School Park 3300 Sutherland Avenue	33 acres	1 basketball court, 1 football field, 1 concessions, 1 walking trail, 1 slide, 4 swings, and 1 play structure	
Westwood Park Greenbrier Drive	1 acre	4 parking spaces, 1 small loop walking trail, 1 rental pavilion, 1 slide, 1 swing, 2 picnic units, and 6 benches	
Whitlow-Logan Park	9 acres	1 basketball court, 1 tennis court, 2 slides, 1 swing, 1 play structure, and 4 benches	
Greenways			
Third Creek Greenway	4.5 miles	bathrooms and water fountains at Tyson Park	
Lakeshore Greenway	2.25 miles	4 trailhead sign 10 mile markers, 1 asphalt trail, 7 benches, 8 trash receptacles, 150 parking spaces, and 4 restrooms	
Sequoyah Greenway	2.6 miles	1 gravel trail and 50 parking spaces at park entrance.	
Recreation/Community Centers			
Deane Hill Recreation Center 7400 Deane Hill Drive	5 acres	Weight room, gymnasium, indoor basketball, playground, tennis court, soccer field, meeting room, bridge center, accessible parking entrance & restrooms	
Lyons View Community Center 314 Layden Drive	2 acres	Outdoor basketball, playground, meeting room	

Schools

Based on MPC's "Enrollment Projections for Knox County Schools 2006-2015," all the schools within the sector will grow less in comparison to similar schools within Knox County. As a result of the steady enrollment numbers that are projected, there are no significant capital expenditures that are programmed for West City schools.

School Enrollment, 2005 -2015 High Growth Scenario

School	Years		% Change 2005 - 2015
	2005/2006	2014/2015	
Bearden Elementary	381	410	7.5
Rocky Hill Elementary	676	728	7.6
Sequoyah Elementary	345	349	1.1
Bearden High	1958	1696	-13.4
West High	1349	1343	-0.5

Source: Enrollment Projections for Knox County Schools 2006-2015



Recreation facilities include the track at West High School

Issues and Opportunities

During the course of developing the background material and public meetings, the following were seen as significant concerns in developing the plan:

- Neighborhood Conservation: re-subdivision of lots in Sequoyah Hills and Old Westmoreland for small lot development, and opportunities for compatible infill housing in older grid street neighborhoods, like the Grand View Drive area and the neighborhood east of Hollywood Drive, are primary concerns.
- Mixed use development of aging commercial properties: Several areas including the
- Congestion management in Northshore/Kingston Pike area: Local and state transportation planning officials have recognized this concern. A transportation and land use plan will be created in 2007-2008.
- The recommendations contained in the Bearden Village Opportunities Plan (2001) are still valid and the neighborhood still uses this document today.



Solutions to Northshore Drive/Kingston Pike congestion are to be sought in the coming year.

Land Use, Community Facility, and Transportation Plans

Land Use Plan

The Land Use Plan will serve as a guide for growth and for making zoning and subdivision decisions. Several small changes to the former land use plan (1996) were made in preparing the Land Use Plan. In some cases, changes were made to reflect existing zoning conditions. In other cases, changes were made based on more accurate information on floodways and slope constraints. Market conditions, planned road improvements, traffic volumes and adjacent land uses are other reasons for changing the recommended land use. This plan will be incorporated into the Knoxville-Knox County General Plan, which is a 30-year comprehensive plan outlining the long-range vision and development policies. Development policies can be found in Appendix A of this document. The entire General Plan is available on the MPC web site.



Grand View: One of the few places in the west city that has a traditional neighborhood grid pattern with smaller lots.

In preparing the Land Use Plan, existing zoning was found to be inconsistent with the existing land uses. In order to complement the plan, the following general rezoning is needed.

- The Hollywood Road Area: Properties along Hollywood Road and Garnet Drive are zoned General Commercial (C-3) and Highway and Arterial Commercial (C-4). However, since there is no direct interstate access at these points and the areas are surrounded by low density residential uses, it is recommended that these areas be rezoned to low density residential.

Land Use Classifications

The following classifications are an abbreviated form of the sector land use classification system. The location principles and recommended zoning for

the following uses are outlined in greater depth in Appendix B.

Traditional Neighborhood Residential (TDR):

Primarily residential, forming neighborhoods generally characterized by a mix of detached and attached housing units, sidewalks, smaller lots and alley access.

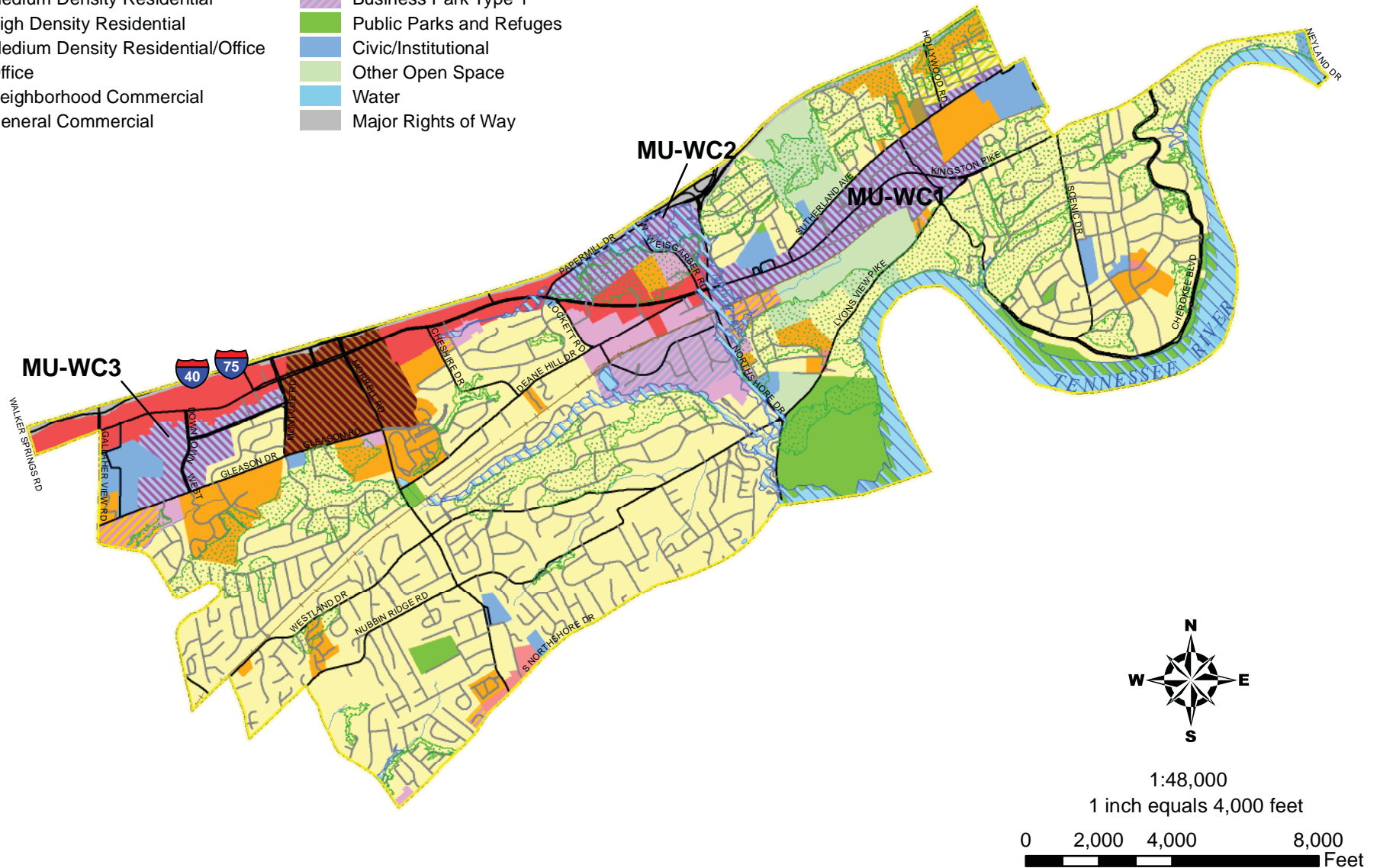
Low Density Residential (LDR): Primarily residential at densities of less than 6 dwelling units per acre (city); 5 dwelling units per acre (county).

Other considerations in established Low Density Residential areas: Some parts of Sequoyah Hills and Westmoreland are characterized by older or historic houses, which are situated on large lots. Conservation of those settings is important to many residents. The new R-1EN Established Neighborhood Zoning District may be a means of conserving those areas while allowing some additional residential development to occur.

Medium Density Residential (MDR): Primarily residential at densities from 6 to 24 dwelling units per acre (city) and 5 to 12 dwelling units per acre (county).

Map 8: Land Use Plan (Revised May 2018)

Legend



High Density Residential (HDR): Primarily residential at densities greater than 24 dwelling units per acre.

Medium Density Residential/Office (MDR/O): Areas designated to accommodate medium density or office uses, often as buffers along thoroughfares.

Office (O): Business and professional offices and office parks.

Neighborhood Commercial (NC): Day-to-day retail and service-oriented uses, located within a walking or short driving distance of neighborhoods (generally less than 5 acres).

Regional Mixed Use Centers (MU-RC):

Housing (upwards of 24 dwelling units per acre) created around/above a commercial core with sidewalks, transit and interstate/arterial access.

General Commercial (GC): Primarily existing strip commercial corridors, providing a wide range of retail and service-oriented uses.

Business Park: Type 2 (BP 2): Light manufacturing and offices.

Major rights-of-way (R-O-W): Generally, the rights-of-way of interstates and very wide parkways and arterial highways.

Public Parks and Refuges (P): Existing parks, wildlife refuges or similar public or quasi-public parks, open spaces and greenways.

Civic/Institutional (CI): Land used for major public and quasi-public institutions, including schools, colleges, the university, churches, correctional facilities, utilities and similar uses.

Other Open Space (OS): Cemeteries, private golf courses and similar uses.

Hillside/Ridge Top Protection Areas (HP): Ridge crests, and hillsides and ravines that have a slope of 15 percent or more. Residential: very low density housing. Other uses via use on review.

Stream Protection Areas (SP): Areas subject to flooding.

Water (W): Primarily the French Broad River, Holston River, Fort Loudoun Lake/Tennessee River, and Melton Hill Lake/Clinch River.

Mixed Use Special Districts: The following areas are designated to address urban design, pedestrian and transit-oriented development and vertical mixed use in specific circumstances. The various considerations, policies and recommendations pertain to the mixed use areas depicted in the land use plan.



Some areas, like the land southeast of Gleason Drive/Gallaher View Road, are candidates for either office or medium density residential development.

Bearden Village (MU-WC-1)

The recent past: The Bearden Village Opportunities Plan adopted in 2001 was created as a guide for public improvements and as a vision for creating a more pedestrian friendly, mixed use district.

Accomplishments include:

- The extension of the greenway trail (from Third Creek) along Sutherland Avenue to Bearden Elementary School.
- Sidewalk/greenway improvements along Sutherland to West High School (underway 2007)
- Transit shelter at Forest Heights Boulevard

Private sector development, rehabilitation and reuse has occurred in several parts of the corridor, although that development has largely been conventional (for example, strip shopping centers). Reuse of residential properties for office uses continues.

The Future: The “Village” actually can be characterized as having several different development forms:

- Strip commercial uses, typically a block in depth from Kingston Pike
- Shopping centers anchored by supermarkets with a variety of smaller stores
- Former residential areas that are typically being converted into professional offices
- Retail, restaurant and office mixes along the side and back streets of the district, which are a significant opportunity to be pedestrian-oriented and “village-like”

Mixed use, more pedestrian-oriented development is one solution to the reuse of older, often declining, commercial properties.

The visions of the original “Village Plan” will not be realized without:

1. a new zoning code that allows a mix of residential, office and commercial uses (including a vertical mix of such uses) and provides the dimensional forms that address new and rehabilitated architecture, and
2. a street system throughout the area that is pedestrian friendly (that is, sidewalks within and leading to the area).

The new zoning should include provisions for:

- The relationship of new buildings to the sidewalk/street system
- Parking locations that respect the pedestrian-orientation that has been envisioned (for example, a code that has off-street office parking behind or to the side of the older houses)
- Shared parking between adjacent developments and automobile and pedestrian connections between developments
- More flexibility in vertical mixed use throughout the area, such as residences or offices above shops

In order to reduce the heavy Kingston Pike traffic, better side street and sidewalk connections are also needed. To that end, the following are proposed:

- An extension of Sutherland Avenue to Bearden Elementary, designed to “read” as a school

access road (this will provide several alternative routes for parents to transport children without having to access Kingston Pike in front of the school)

- A connection from Whitaker Drive to the Knox Plaza

Implementation: The Transportation Planning Organization, in conjunction with MPC and the Tennessee Department of Transportation, will be examining transportation and urban design improvements in the area east and west of the Northshore Drive and Kingston Pike intersection, including the Bearden Village area. As part of that planning process, the street and sidewalk profiles, land uses and urban design objectives should be outlined. A form-based code or similar design oriented code for land use and street development should be created.



Reuse of former residential properties is one strategy derived from the existing Bearden Village Plan. The side-yard parking seen should be a standard codified approach for off-street parking to maintain the residential-office ambiance of the area.

Papermill Corridor (MU-WC-2)

This corridor has extremely high visibility from I-40/75 (with over 125,000 vehicles passing through each day). Redevelopment/reuse has begun to occur as former car dealerships and similar businesses have moved out of the area. Redevelopment for higher intensity purposes, including mid-rise apartment



Papermill Road at Kingston Pike: an opportunity for mixed use redevelopment.

and office towers, hotels and vertical mixed use buildings (for example, a restaurant or shops at ground level with office or residential above) are appropriate future land uses. The height regulations for future buildings should be determined so that buildings “step down” the slope. In other words, development should be undertaken to conserve the hillside and allow occupants of future buildings to see over new development that takes place between the crest of the ridge and Papermill.

The recommended design features for future development should be:

1. Multi-story buildings on the relatively flat areas near Papermill (the nearby “North Shore Towers” are an example of the recommended largest form of potential development with four to six stories being the typical height if intermediate development is to take place on a parcel on the slope; otherwise, eight stories would be appropriate with provisions for no development of the slope to the south). A consistent “build-to line” (that is, spacing new buildings in a line) that respects an adequate setback from the creek and road is recommended for design consistency and flood and water quality control. Parking should be located under, behind or to the side of buildings. A sidewalk and greenway trail system

should provide continuous pedestrian access to and throughout the area. (See page 26)

2. At the west end of Papermill, a similar opportunity exists for the redevelopment of the shopping center. The geology and hydrology needs to be investigated thoroughly in any redevelopment scenario on this site due to past flooding and sinkhole issues.
3. The slopes and tree canopy should be preserved to the south. Limitations on hillside development (no more than 30% clearing of a parcel, underground parking and height limits that maintain views of the ridgeline) are needed. Landscaping, sign and parking standards should be developed as part of the area’s development code. Shared parking and parking lot connections are recommended to decrease parking impacts and to limit the number of access points to Papermill Drive.

Implementation: The Transportation Planning Organization, in conjunction with MPC and the Tennessee Department of Transportation, will be examining transportation and urban design improvements in this area. As part of that planning process, the street and sidewalk profiles, land uses and urban design objectives should be outlined. A form-based or similar design oriented code for land use and street development should be created.



Figure 1:
MIXED-USE AND TOWN CENTER REDEVELOPMENT CONCEPT

EXISTING CONDITIONS

Auto-oriented regional arterial is inhospitable to pedestrians. Despite being located on a major transportation corridor, land uses are low-intensity and underutilized. Signage and lighting are oversized. Driveways invade what little pedestrian space exists. Unlandscaped parking lots and blank-walled buildings create unattractive space.



PHASE 1

Public improvements in the streetscape and pedestrian environment are coupled with changes in land use policy. Higher intensity, mixed-use developments are attracted to the corridor. New buildings are placed next to the street, on-street parking is provided and off-street parking is located in the rear. A landscaped median adds definition to the corridor, and the former parking lot entrance is converted to a street. Building placement and the mix of ground-floor commercial and upper-story office uses bring pedestrian activity to the sidewalk, which is made pleasant and interesting by building design details. Street trees and on-street parking buffer pedestrians from traffic. New off-street standards permit shared parking, fostering higher intensity development.



PHASE 2

A new housing development with apartments above office and retail on the ground floor frames the street and provides a smooth transition to the adjacent neighborhoods by transitioning to street-fronting townhouses. The increased land use activity has generated greater demand for transit services. A bulbout-style bus stop is added, along with other features to speed bus operations. Through incremental improvements, the street has become a place – it has evolved into a vibrant mixed-use corridor serving as a center of activity and commerce for surrounding neighborhoods.

Downtown West (MU-WC-3)

An urban mixed use district, allowing retail, office and various types of residential uses, is proposed as this area continues to redevelop. The provisions for the future development of this district should include:

- Future development/redevelopment can be composed of mixed uses, including vertical mixed use building (such as apartments above shops). New blocks are encouraged for more development and pedestrian-orientation. Under the scenario blocks should be lined with buildings and sidewalks: buildings should generally be constructed next to or near the sidewalks along the streets. Wider or separated

sidewalks are needed along Downtown West Boulevard and along the north side of Ray Mears Boulevard.

- On-street parking should be allowed, separating pedestrians from the travel lanes and providing immediate access to adjoining uses.
- Off-street parking should be primarily located to the side or behind buildings.
- Shared parking and parking space credits (regarding on-street parking and transit connections) should be encouraged. Shared parking is especially encouraged between office and entertainment uses (for instance, movie theatre and further office development could share parking spaces because their hours of operation are so different.

- Landscaping, lighting and signs should be compatible from one block to another. Street trees should be planted within medians and within sidewalk planting strips and wells.
- Public-private agreements should be initiated to realize the public improvements (such as sidewalks, landscaping and lighting) and foster reinvestment in the area.
- Interior streets should be relatively narrow, lined with on-street parking sidewalks and commercial, office, apartments or townhouse development.

Implementation: A small area plan accompanied by new zoning and site plan regulations will be needed. A form-based code could be a potential implementation tool, given the number of landowners in the area.



The antiquated uses at Downtown West have potential to be redeveloped as a mixed use center, allowing, for example, residential or residential above retail at some edges of the property.

Transportation and Community Facility Plans

The Transportation Plan and Community Facility Plan recommend projects and programs to be implemented for the first five and the next 10 years following the adoption. They should be reviewed annually when preparing capital improvement programs. Improvements and programs recommended in this section represent projects identified in adopted Long Range Transportation and Greenway plans as well as input from residents attending public meetings. When designing and creating transportation improvements, the following two principles should be considered.

Context Sensitive Design

This is a process that addresses the physical setting of a potential project and preserves scenic, aesthetic, historic, environmental and other resources, while maintaining mobility and safety. This facility planning should revolve around a collaborative, interdisciplinary approach that incorporates the desires and concerns of a community in order to achieve solutions.

Complete Streets

Any road projects, public or private, should adhere to the principle of creating Complete Streets. Complete Streets are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and transit riders of all ages and abilities are able to safely move along and across a Complete Street. The pedestrian and bicycle facilities that are depicted on the Transportation and Community Facility Plans are priorities in establishing a complete streets program. The Transportation and Community Facility Plan

depicts major projects; the table on pages 30-31 provides details regarding all projects.

Traffic calming

In recent years, neighborhood residents have expressed concern about speeding traffic along their streets.

Traffic calming involves a set of design strategies aimed at reducing motor vehicle speeds, improving safety and enhancing quality of life. The goal of traffic calming efforts is to balance vehicle traffic on local streets with other uses such as walking and bicycling. The City of Knoxville and Knox County have a traffic calming program whereby neighborhood interests can work with City and/or County staff to explore and develop traffic appropriate calming measures. Typical traffic calming measures and their benefits are depicted in Appendix C.

Other Programs

In addition to the long-range improvement programs, a number of changes in zoning and other codes and more detailed transportation plans are to be addressed, including:

Traditional Neighborhood Zoning Code: MPC will develop a new zoning code for traditional small lot neighborhoods, not only for the West City Sector but also for other sections of the city, like the neighborhoods near downtown. Such places typically have narrower lots and setbacks than the what is prescribed by the R-1 Low Density Residential zone. This code could pertain to some older West City neighborhoods, including the Grand View Drive

neighborhood and the neighborhood located north of Sutherland Avenue and east of Hollywood Road, including Apex Drive, Van Dyke Road, Lyle Avenue, Washburn Road, Sapphire Road, and Jade Road. Responsibility: MPC.

Northshore Drive/Kingston Pike Drive Corridor Study:

This study will examine multiple modes of travel within a 1-mile radius of the intersection of Kingston Pike and Northshore Drive. Elements to be included in the study will address intersection improvements, cross-sections of roads, land use, urban design, signage, access management, and streetscape design. Responsibility: Transportation Planning Organization.

Design-based code for older commercial areas:







This code will be drafted to offer alternatives for pedestrian-oriented, mixed use, higher intensity development in older commercial areas. The West City areas that are relevant for this type of program include Bearden Village, Downtown West, and the Papermill corridor.

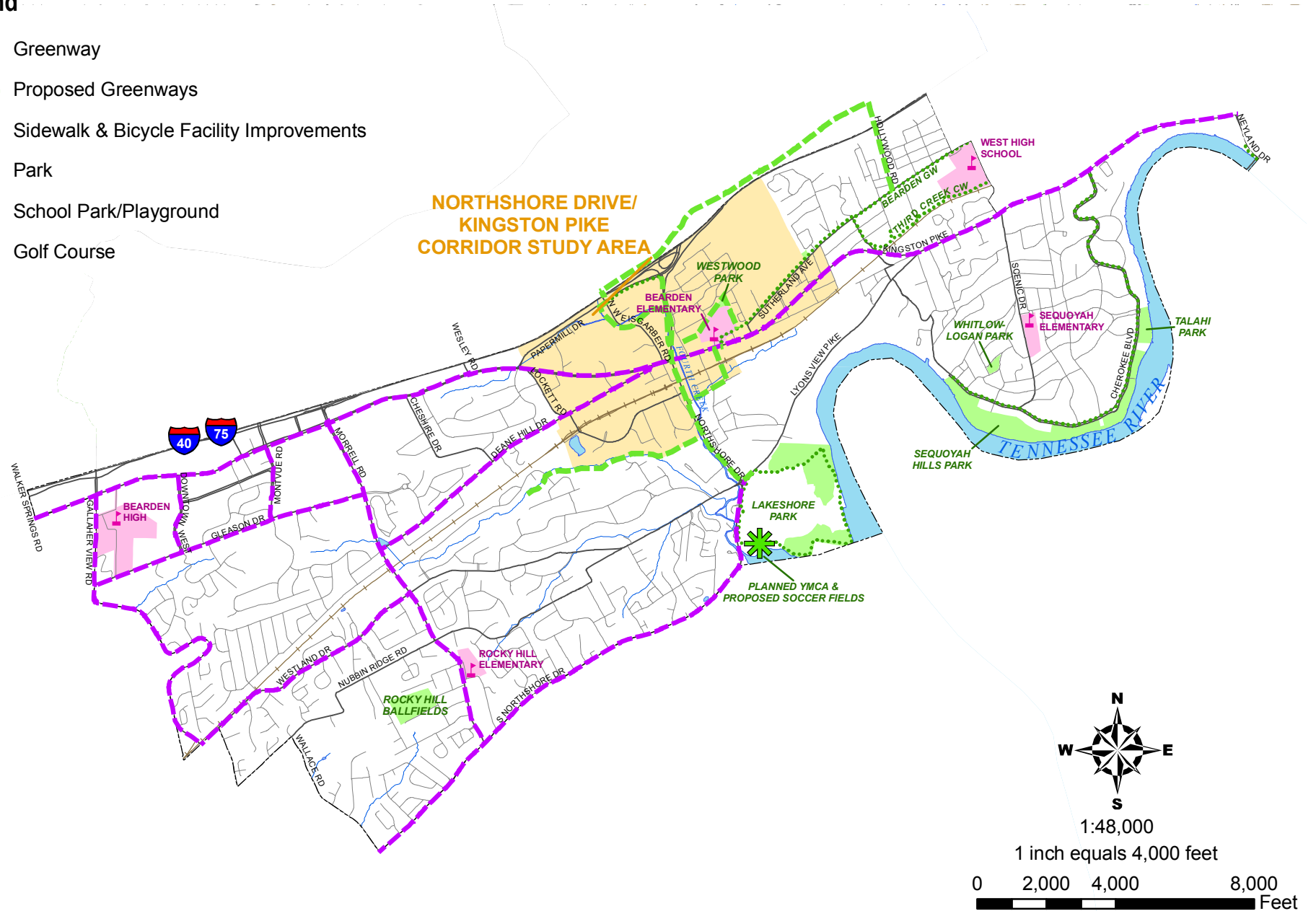


The heart of the Northshore Drive-Kingston Pike study area

Map 9: Transportation and Community Facilities Plan

Legend

-  Greenway
-  Proposed Greenways
-  Sidewalk & Bicycle Facility Improvements
-  Park
-  School Park/Playground
-  Golf Course



Project or Program	5 Year	15 Year	Responsible Agency
TRANSPORTATION			
Sidewalk and Bicycle Facility Improvements The following roads should accommodate vehicles, bikes, and pedestrians. Bike facilities are needed along the entire road lengths. Sidewalks are needed as indicated in parenthesis.			
Deane Hill Drive (Kingston Pike to Morrell Road)	X		City of Knoxville/TDOT
Gallaher View Road (Kingston Pike to Westland Drive)	X		City of Knoxville/TDOT
Gleason Drive (Morrell Road to Gallaher View Road)	X		City of Knoxville/TDOT
Hollywood Road (I-40 to Papermill Road)	X		City of Knoxville/TDOT
Kingston Pike (Northshore Drive to Gallaher View Road)	X		City of Knoxville/TDOT
Lockett Road (Kingston Pike to Deane Hill Drive)	X		City of Knoxville/TDOT
Montvue Road (Kingston Pike to Gleason Drive)	X		City of Knoxville/TDOT
Morrell Road (Gleason Drive to Northshore Drive)	X		City of Knoxville/TDOT
Northshore Drive (Papermill Drive to Wallace Road)	X		City of Knoxville/TDOT
Add crosswalks at the following intersections:			
Kingston Pike and Noelton Drive	X		City of Knoxville/TDOT
Kingston Pike and Newcome Avenue	X		City of Knoxville/TDOT
Kingston Pike and Mohican Street	X		City of Knoxville/TDOT
Kingston Pike and Morrell Road	X		City of Knoxville/TDOT
Morrell Road and Gleason Drive	X		City of Knoxville/TDOT
Morrell Road and Kmart at West Town	X		City of Knoxville/TDOT
Sutherland Avenue at West High School	X		City of Knoxville/TDOT
Bearden Village Sidewalk Improvements: Ben Atchley Street, Cemetery Road, Carr Street, Chambliss Avenue, Homberg Drive, Lebanon Street, Mann Street, Mohican Street, Newcome Avenue, McCoy Street, Northview Street, Ridgeway Lane, Westwood Road (vacant parcel that backs up to Bearden Elementary to Third Creek Greenway) and Whittaker Drive	X		City of Knoxville
Downtown West Boulevard and Ray Mears Boulevard (west end)	X		City of Knoxville
Luscombe Drive: examine bike routing, sidewalk, and traffic calming options	X		City of Knoxville

Project or Program	5 Year	15 Year	Responsible Agency
TRANSPORTATION			
Road Improvements			
Bearden Elementary Access Road – Develop an access drive for bus circulation from the school to Sutherland Avenue.	X		Knox County
New road connecting Homberg Drive to Knox Plaza, located at 4918 Kingston Pike		X	City of Knoxville
Northshore Drive - associated with the new YMCA	X		City of Knoxville/ YMCA
Westland Drive		X	City of Knoxville
Hollywood Drive/Sutherland Avenue: Traffic calming improvements (as per Bearden Village Plan) and truck routing program eastbound to Liberty Street or 21st Street.	X		City of Knoxville
Transit			
Increase KAT frequency on Kingston Pike route from 30 minutes to 15 minutes		X	KAT
KAT New Bearden Village and West Town Mall Super-stops ¹		X	KAT
COMMUNITY FACILITIES			
Develop new YMCA and soccer fields in Lakeshore Park	X		YMCA
Greenways²			

¹KAT New Bearden Village and West Town Mall Super-stops. Super-stops are locations where several routes converge and transfers can occur. Super-stops could include enclosed waiting areas with a variety of passenger amenities, such as vending machines, restrooms, phones, and bike racks. It is a goal of KAT that super-stops include new technology so passengers will know when the next bus will arrive in "real time."

Establishing several new KAT neighborhood routes that run every 30 minutes and use smaller vehicles. Most of the sector's routes would start at the West Town Mall Super-stop and serve further west on Kingston Pike, the Wal-Mart area, the Bearden Village area, and the Weisgarber area. This is a new concept that allows routes to stay out west and not go downtown. Passengers wanting to go downtown would connect with the very frequent Kingston Pike Route at the super-stops.

²Greenways are completely separated from vehicular traffic and contain a wide paved surface for bicycling, rollerblading, walking or other means of human powered recreation.

Appendix A: Development Policies From The General Plan

This section of the General Plan contains development policies that support each of the ten major ideas of the Agenda for Quality Growth. These written and graphic policies advocate actions that will help to fulfill the communities' vision for Knoxville and Knox County. They are intended to improve the appearance and function of public and private development, conserve scenic and heritage assets, preserve property values and build on Knox County's image as a great place to live and work.

1. Develop a Strong Economy.

- 1.1 Increase the competitive position of Knoxville for the retention and attraction of business activities.
- 1.2 Ensure that Knoxville and Knox County continues to offer the land, roads, utilities, work force, and business climate needed to support economic growth.
- 1.3 Provide incentives for new industrial development and for redevelopment or rehabilitation of older industrial facilities.
- 1.4 Provide government assistance in land consolidation, financing and industrial recruitment when rehabilitating the city's industrial areas.
- 1.5 Capitalize on Knoxville and Knox County's business assets, skilled work force, easily accessible transportation network, educational incentives and excellent quality of life as marketing assets.
- 1.6 Capitalize on tourism opportunities, including University of Tennessee sports teams and proximity to the Smoky Mountains.
- 1.7 Establish Knoxville and Knox County as a center for technological research and development, building upon the existing base of technological industries and personnel.
- 1.8 Coordinate utility service extensions to attract new jobs to Knoxville & Knox County.
- 1.9 Identify and recruit businesses and industries which can benefit from the Technology Corridor's access to freeways, the airport, Pellissippi State Technical Community College and the Oak Ridge National Laboratory.
- 1.10 Assist local firms that want to expand their business into international markets.
- 1.11 Reserve an adequate supply of large sites for industrial growth.
- 1.12 Use zoning and land acquisition to protect areas reserved for industry from encroachment by residential development.

2. Provide Transportation Choices for All Citizens.

- 2.1 Integrate pedestrian, bicycle, transit and automobile modes in developing a comprehensive transportation system.
- 2.2 Improve the continuity of the urban and regional thoroughfare system.
- 2.3 Acquire rights-of-way for future transportation projects well in advance of construction.
- 2.4 Allow narrower local roads to conserve open space and improve air quality.
- 2.5 Implement transportation improvements at frequent crash locations.
- 2.6 Discourage through-traffic in residential neighborhoods by routing arterial streets and highways outside neighborhoods.
- 2.7 Whenever possible, emphasize low-cost solutions to traffic problems, as opposed to new construction or capital acquisition.
- 2.8 Develop a transit system, including trolleys, buses and potential light rail.
- 2.9 Provide paratransit services to elderly and handicapped citizens that are comparable in quality to fixed-route bus services.
- 2.10 Provide facilities and programs to encourage ride sharing.
- 2.11 Develop a transportation center in downtown Knoxville.
- 2.12 Include separated sidewalks and landscaping as a part of new construction or widening of all thoroughfares.
- 2.13 Review development plans to ensure pedestrian needs are being met and that the sidewalk network's continuity is being achieved, especially in the school parental responsibility zones.
- 2.14 Create transportation corridors and centers that can efficiently handle the movement of goods, including truck, rail, water, and air transportation.

3. Build on Knoxville's Role as a Regional Capitol.

- 3.1 Work with other East Tennessee cities and counties to pursue common regional economic interests.
- 3.2 Ensure that proper information and communication infrastructures are in place for the region to compete in the 21st century business world.
- 3.3 Cooperate with other local governments to create a regional open space and greenway system between Knoxville and the Smoky Mountains.
- 3.4 Work with federal, state and local governments to improve air quality and other environmental issues on a regional basis.
- 3.5 Conserve the natural assets that make this region attractive and enhance the quality of life.

4. Understand the Building Blocks: Neighborhoods, Districts, Corridors and Communities in the Region.

- 4.1 Use schools and parks as foundations in planning neighborhoods and communities.
- 4.2 Require vehicular and pedestrian connections between subdivisions to encourage safe access to community facilities and to reduce reliance on the automobile.
- 4.3 Develop and use guidelines to foster good architectural design, landscaping, and aesthetically-pleasing streetscapes.
- 4.4 Use landscaping, signage, and architecture to identify significant entrances to communities, neighborhoods, and business districts.
- 4.5 Avoid creating small, isolated pockets of residential development; encourage neighborhoods large enough to support cost-effective provision of community facilities and services and to maintain a strong residential quality and stability.
- 4.6 Provide support for the development of neighborhood and community organizations.

- 4.7 Continue to develop new ways for citizens to receive information and to voice opinions regarding neighborhood and community issues.
- 4.8 Train local government staffs and appointed boards to be supportive of neighborhood revitalization and to be responsive to the neighborhood's opinions on development and revitalization plans for their areas.
- 4.9 Enhance the quality of special districts such as the university, the Old City, Emory Place and Bearden Village.
- 4.10 Support downtown Knoxville's growth as a regional center of entertainment, professional services, government, and finance.
- 4.11 Encourage housing and employment growth downtown to expand the market for retail, restaurants, and other services.
- 4.12 Provide incentives for residential reuse of vacant downtown buildings.
- 4.13 Enhance highway corridors by landscaping, creating attractive architecture, providing pedestrian-friendly atmosphere and eliminating visual clutter.

5. Make Strategic Community Investments.

- 5.1 Coordinate new utility services with development of roads, schools, employment centers, shopping areas and recreation sites to encourage efficient development patterns and limit sprawl.
- 5.2 Encourage development in areas with excess utility capacity, or in areas where utilities may be easily extended.
- 5.3 Plan far in advance for land acquisition, financing and design of neighborhood-serving community facilities: roads, schools, parks, utilities, and public buildings.
- 5.4 Use existing and future public land to create greenways and parks.
- 5.5 Use greenways to link parks, schools, and other public facilities.
- 5.6 Emphasize park acquisition along potential greenways.
- 5.7 Meet minimum national standards in providing neighborhood, community and district park space.
- 5.8 Meet the needs of individuals who are physically challenged.
- 5.9 Locate and design facilities for athletic competition in such a way that they do not detract from nearby neighborhoods.

- 5.10 Locate new schools on relatively flat land central to the areas being served. Elementary schools should be located on collector roads, middle and high schools should be located on arterial roads.
- 5.11 Establish school-park complexes and acquire park land adjacent to future school sites.
- 5.12 Expand the use of schools for other community purposes.
- 5.13 Continue school reuse, renovation, and maintenance programs. Abandoned schools should be used for neighborhood serving public purposes.
- 5.14 Locate new branch libraries in visually prominent sites that are centrally located to communities.
- 5.15 Continue to maintain the regional library in downtown Knoxville.
- 5.16 Provide and maintain an adequate system of fire hydrants, water lines and fire stations.

6. Respect and Nurture Our Heritage Areas.

- 6.1 Encourage flexible, planned development zones to protect hillsides, woodlands, wildlife habitats, and stream corridors.
- 6.2 Compliment natural land forms when grading, and minimize grading on steep slopes and within floodways.
- 6.3 Encourage development in areas with the fewest environmental constraints.
- 6.4 Allow clustered development in rural areas to preserve farms, open space and rural character.
- 6.5 Protect and enhance monumental buildings, public open spaces, bridges and similar physical features that contribute to Knoxville's identity.
- 6.6 Encourage the reuse of vacant and underutilized historic resources.
- 6.7 Use historic zoning and conservation districts to protect neighborhoods.
- 6.8 Protect the scenic vistas of ridges and valleys.
- 6.9 Set aside greenways along streams and ridges to protect floodplains, stream sides and steep slopes.
- 6.10 Develop a metropolitan forestry program to conserve and reestablish trees and woodlands.
- 6.11 Strengthen the Scenic Highways Program regulations and enforcement.
- 6.12 Create community facilities and commercial services that are in keeping with the scale and character of the surrounding rural area, using the rural commercial zone.

7. Reclaim Our Rights to Clean Air and Water.

- 7.1 Meet state and federal water quality standards.
- 7.2 Protect water resources by reducing pollution and retaining trees and ground cover on ridges and near streams, rivers, lakes and sinkholes.
- 7.3 Create wetlands and naturally landscaped retention basins to slow down rapid runoff and reduce pollutant discharges.
- 7.4 Strengthen stormwater and flood protection standards, particularly in flood-prone drainage basins.
- 7.5 Protect the natural drainage systems associated with floodways and floodplains.
- 7.6 Restrict development on slopes greater than 15% and along streams and rivers. Housing densities on 15-25% slopes: 2 dwelling units per acre. Housing density on slopes greater than 25%: 1 dwelling unit per 2 acres. Non-residential uses on slopes over 15%: via a planned development zone. Floodplains: Limit uses to 50% of flood fringe area.
- 7.7 Provide trees and minimize impervious surfaces when developing parking lots.
- 7.8 Encourage development in areas with adequate sanitary sewer lines, and improve existing systems to eliminate sanitary sewer overflow.
- 7.9 Meet state and federal standards regarding all air pollutants, particularly ozone and toxic air emissions.
- 7.10 Reduce greenhouse gas emissions.
- 7.11 Create programs that reduce air pollution by promoting alternatives to automobile travel.
- 7.12 Develop land use patterns and infrastructure that encourage trip reduction.

8. Encourage Growth in the Existing Urban Area.

- 8.1 Develop "infill" housing on vacant lots and redevelopment parcels. Infill housing should be compatible with neighboring residences in scale, design, and site layout.
- 8.2 Locate neighborhood commercial so that it will enhance, rather than hinder, the stability of residential areas.
- 8.3 Focus on design quality and neighborhood compatibility in reviewing development proposals.
- 8.4 Protect residential areas from encroaching commercial development and other incompatible uses.
- 8.5 Protect neighborhoods from intrusive uses, declining public facilities, and other blighting influences.

- 8.6 Promote crime prevention through design that emphasizes visibility and neighborhood protection.
- 8.7 Avoid the concentration of halfway houses, boarding houses, day care centers, and publicly assisted rental housing in any given neighborhood.
- 8.8 Support the efforts of government, neighborhoods and nonprofit organizations to address housing issues, particularly housing rehabilitation.
- 8.9 Promote the development of small scale planned business parks in the central city, making sure there is no significant adverse impacts on residential neighborhoods.
- 8.10 Encourage redevelopment of obsolete commercial strip space by providing incentives for “infill” rather than greenfield development.
- 8.11 Improve the appearance of existing commercial strips by encouraging better landscaping and fewer signs.
- 8.12 When commercial uses abut residential property, ordinance provisions or use-on-review conditions requiring fencing, landscaping screens, earthberms, height restrictions, and/or deeper than usual building setbacks can improve land use transitions. (Exhibit 5)

**EXHIBIT 5:
Commercial Uses Abutting Residential Property**



9. Build Sustainable New Neighborhoods.

- 9.1 Encourage creative use of the flexibility offered in planned residential zones to develop alternative neighborhood forms, such as traditional neighborhood developments, pedestrian-oriented neighborhoods, and neighborhoods designed to take advantage of mass transit.
- 9.2 Encourage development practices that respect and fit the natural landscape, minimizing the loss of trees, woodlands and wildlife habitat.
- 9.3 Ensure that the context of new development, including scale and compatibility, does not impact existing neighborhoods & communities.
- 9.4 Provide incentives for conservation subdivisions, to set aside large portions of open space and protect natural resources.
- 9.5 Avoid locating residences or other noise-sensitive land uses in locations that will be subject to excessive noise.
- 9.6 Improve standards for public and private development to reduce noise and to foster light abatement.
- 9.7 Reduce visual clutter by improving sign regulations and encouraging underground utility lines.
- 9.8 Encourage a mixture of housing sizes and prices within planned residential developments.
- 9.9 Encourage village centers as the preferred form of retail development, and use the neighborhood commercial zones to provide day-to-day services near residential areas.
- 9.10 Encourage commercial and office development that improves the form and function of traditional “strip” development patterns.
- 9.11 Locate community-serving commercial areas where they can be easily shared by several neighborhoods.
- 9.12 Locate day care centers and other neighborhood services at the edges of neighborhoods or in village centers. Locate freestanding day care facilities (those serving six or more children) on the perimeter of residential areas, on arterial or collector streets, in a manner which will not adversely affect surrounding properties.

10. Development Decisions Should be Predictable, Fair and Cost Effective.

- 10.1 Encourage creative site layouts by providing flexibility and incentives in zoning regulations.

- 10.2 Facilitate better communication and provide impartial technical assistance and arbitration between neighborhood organizations, government offices and developers where needed.
- 10.3 Involve school, police and fire officials in land use planning at the sector, neighborhood, and site plan levels.
- 10.4 Rigorously enforce zoning regulations and conditions of approval to maintain public confidence in the planned development process.
- 10.5 Use “as-built” plans and engineering inspections to insure that developments are built according to approved designs, requiring certification that projects are built as planned.
- 10.6 Provide site design flexibility to developers who provide amenities such as recreation areas, trails, sidewalks, streetlights, underground utilities or exceptional architectural or landscape design treatments.
- 10.7 Provide incentives for developers to include some affordable units in higher cost developments.
- 10.8 Base land development policies and regulations on an awareness of the ever changing character of the housing market.
- 10.9 Avoid creating zoning boundaries that result in unlike uses directly facing each other. (Exhibit 6)
- 10.10 Once transitional zoning patterns are in place, keep them intact; do not compromise buffer zones by rezoning them commercial.
- 10.11 Allow higher densities, smaller yards and narrower lots for portions of planned developments that do not abut or face conventional suburban developments. In exchange, deeper setbacks, wider lots or landscape buffers shall be provided where the new development abuts lower density housing.

11. Additional Development Policies

- 11.1 Environmental constraints and the availability of utilities, drainage, and transportation are factors in setting standards for the densities of residential developments.
- 11.2 The density for residential development will be based upon the amount of usable acreage, excluding areas which are under water, in floodways, have steep slopes, or are otherwise undevelopable. Rural, planned growth and urban growth boundaries also influence density. These areas are designated in the Knoxville-Knox

County-Farragut Growth Policy Plan. The following general standards will be applied in setting densities for residential development, providing these densities do not conflict with other policies in this plan:

- Up to one unit per acre in rural areas with environmental constraints or infrastructure inadequate for greater densities.
- Low-density 1 to 3 du/ac in rural areas with infrastructure.
- Low-density 1 to 5 du/ac in planned growth areas.
- Low-density 1 to 6 du/ac within the City of Knoxville.
- Medium-density 6 to 12 du/ac in planned growth and urban growth areas; appropriate along collector or arterial roads, waterfronts, and as buffer zones between lower density residential and more intense uses.
- Medium-density 6 to 24 du/ac in urban growth areas adjacent to neighborhood and community centers.
- High-density over 24 du/ac, appropriate in downtown and UT area, and in regional activity centers; should have good access to transit.

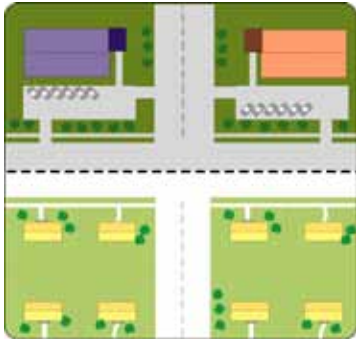
- 11.3 Discourage environmental nuisances in the vicinity of residential development, including rundown commercial development, noxious industrial uses, railroad tracks, noise and fumes from heavy traffic volumes, large storage tanks of gas, oil and other flammable materials, smoke, noise, offensive odors, vibrations, dust, or glare from nearby or distant uses.
- 11.4 Create gradual zoning transition patterns by placing medium intensity zones and uses such as offices, condominiums, and community buildings in between single-family residential areas and higher intensity uses. Require landscaping, screening, earth berms, walls and similar techniques to separate incompatible land uses when gradual zoning transition patterns are not possible. (Exhibit 7)
- 11.5 Avoid abrupt, incompatible changes in density, scale, and building appearance from one development to another.
- 11.6 Office developments meeting the following standards should be allowed in buffer zones between residential neighborhoods and more intense uses in conventional suburban developments:
 - residential architectural style
 - building height limited to 36 feet
 - site coverage no more than 35 percent

- parking areas well landscaped and screened from any abutting residences
- landscape screens or architectural quality walls or fencing along any property line abutting single-family residences
- low, monument style or wall mounted signs
- special attention to locations of parking lots, trash receptacles and outdoor lighting to avoid impacts on residential neighbors

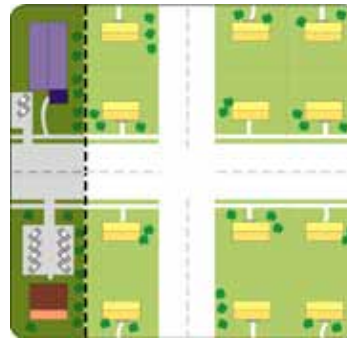
11.7 Mid-rise office buildings (four to eight stories) should be allowed next to commercial or light industrial areas, along freeway corridors, on or around the University of Tennessee campus, on or around major hospital sites, and in the Central Business District, subject to the following standards:

- Avoid blocking major scenic vistas.
- If the site abuts low-rise residential development, it should be large enough to provide large building setbacks along the residential property line.
- Buildings should not be close enough to residences to cast shadows or block sunlight.
- Stepped-back building facades should be considered.
- Consideration of mass, scale and style of surrounding development in building and site design.

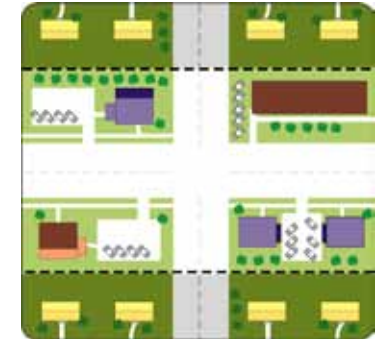
EXHIBIT 6: Zoning Boundaries



A bad situation: Zoning boundaries at front property lines cause unlike uses to face each other, often creating visual conflicts and affecting residential uses with intense noise and traffic.



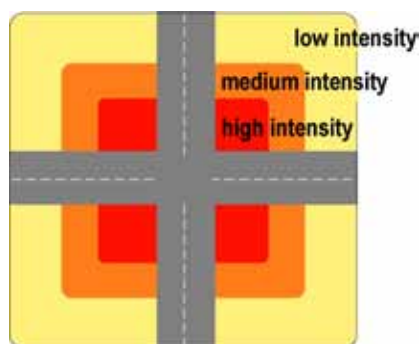
This situation, while better than the one at left, can cause visual and noise conflicts, which can be reduced by landscaping or other buffers.



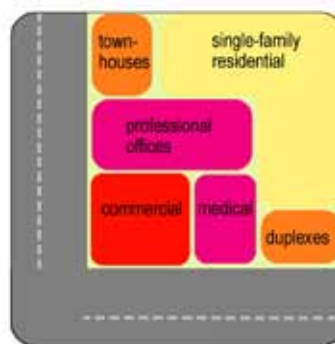
This arrangement, with zoning boundaries along rear lot lines, causes unlike uses to face away from each other, reducing intense noise, visual, and other conflicts.

- 11.8 High-rise office buildings (nine stories or more) should be limited to the Central Business District.
- 11.9 Locate new industrial development primarily in industrial parks, business parks or other suitably planned settings of ten acres or greater, with locations for technology-based industry less restricted than general or heavy industry.
- 11.10 Locate business parks on sites which are:
- relatively flat and require minimal physical alteration
 - regular in shape and sufficiently large for the proposed activity
 - have direct access to arterial roads and where appropriate, to rail lines
 - prohibit access via residential streets
 - developed in a manner compatible with adjacent existing or proposed land uses
 - served by power, water, gas, sanitary sewer and waste disposal facilities

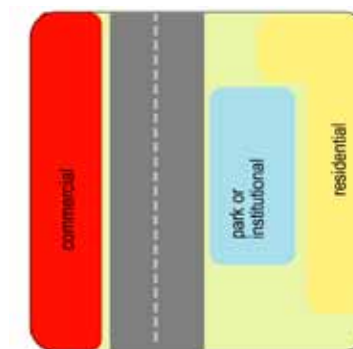
EXHIBIT 7: Gradual Zoning Transitions



Good transitions in zoning and land use are the best way to avoid having highly incompatible uses too close to each other.



Buffer districts, which allow uses that are compatible with residential property, can help achieve effective land use transitions.



Institutional or public uses with large open spaces (hospitals, parks, cemeteries) can make excellent buffers.

Appendix B: Proposed New Land Use Classifications

It is proposed that starting in 2007-08, each City sector plan will be made consistent with the One Year Plan. This process will take several years as the Sector Plans and One Year Plan are updated. This system will also be the basis for proposed land uses in the county sector plans.

The purposes of the following land use classifications are to:

1. Establish the location criteria for land uses in the city and county.
2. Create a consistent set of land use classes that are to be used in sector plans and the city's One Year Plan.
3. Provide a list of zoning districts that are to be considered in implementing the land use plans.

AGRICULTURAL and RURAL RESIDENTIAL LAND USE CLASSIFICATIONS		
Agricultural (AG) and Agricultural Conservation (AGC) This includes farmland in the county's Rural Area as designated in the Growth Policy Plan. Undeveloped tracts with the best soils for agriculture are considered as the primary areas for agricultural conservation (AGC). Agricultural land uses are not generally recommended in the City of Knoxville, nor in the County's Planned Growth Area.		
Location Criteria: <ul style="list-style-type: none"> • Farmland in the Rural Area as designated in the Growth Policy Plan • Land where soils are designated as prime or locally important by the U.S. Department of Agriculture are considered for agricultural conservation (AGC) 	Recommended Zoning and Programs: County's Rural Area: A new zone AC (Agricultural Conservation) is proposed for Agricultural Conservation (AGC) areas, allowing agriculture and one dwelling unit per 30 acres, minimum. (Note: This density will require a change to the zoning ordinance.) Additionally, conservation easement and related programs should be considered to preserve prime farmland.	Other Zoning to Consider: A or PR @ densities of one dwelling unit per acre where dwellings are clustered in one portion of a subdivision.
Rural Residential (RR) Very low density residential and conservation/cluster housing subdivisions are typical land uses.		
Location Criteria: <ul style="list-style-type: none"> • Rural areas characterized as forested (tree covered), especially on moderate and steep slopes • Sites adjacent to agricultural areas (AG or AGC) where conservation/cluster housing subdivisions may be appropriate 	Recommended Zoning and Programs: County's Rural Area: OS, E, RR (Rural Residential, a new zone with densities of one dwelling unit per acre or less), or PR @ densities of one dwelling unit per acre where dwellings may be clustered in one portion of a subdivision	Other Zoning to Consider: A in the Growth Plan's Rural Area
RESIDENTIAL LAND USE CLASSIFICATIONS		
Traditional Neighborhood Residential (TDR) This land use is primarily residential and is characterized by neighborhoods where a mix of detached and attached houses, sidewalks, smaller lots and alleys have typically been or are to be created. Densities in the range of 4 to 8 dwelling units per acre are typical.		
Location Criteria: <ul style="list-style-type: none"> • Neighborhoods like those in the 'Heart of Knoxville' where lots are typically less than 50 feet wide, and usually have sidewalks and alleys. This area is essentially the 19th and early 20th century grid street neighborhoods, mostly located within the I-640 beltway. • City's Urban Growth Area or county's Planned Growth Areas where neighborhood or community mixed use development is identified (see Mixed Use and Special Districts section) 	Recommended Zoning and Programs: City: R-1A or RP-1 [with an Infill Housing (IH-1), Neighborhood Conservation (NC-1) or Historic (H-1) Overlay]; TND-1; and new residential zone(s), based on lot sizes less than 7,500 square feet County's Planned Growth Area: PR and new TND zoning.	Other Zoning to Consider: City: R-1, R-1A and RP-1 (without overlays), R-2 County's Planned Growth Area: RA, RB and PR (with conditions for sidewalks, common open spaces and alleys)

RESIDENTIAL LAND USE CLASSIFICATIONS . . . continued**Low Density Residential (LDR)**

This type of land use is primarily residential in character at densities of less than 6 dwelling units per acre (dus/ac). Conventional post-1950 residential development (i.e. large-lot, low-density subdivisions) and attached condominiums are typical.

Location Criteria:

- Land served by water and sewer utilities and collector roads
- Slopes less than 25 percent

Recommended Zoning and Programs:

City: R-1, R-1E and RP-1 at less than 6 dus/ac and new residential zones based on lot sizes greater than 7,500 square feet and 75 feet or greater frontage.
County's Planned Growth Area: RA, RAE and PR at less than 6 dus/ac.

Other Zoning to Consider:

City: R-1A and A-1
County: A and RB

Medium Density Residential (MDR)

Such land uses are primarily residential at densities from 6 to 24 dwelling units per acre (city) and 6 to 12 (county). Attached houses, including townhouses and apartments are typical. Mobile home parks are another form of this land use.

Location Criteria:

- As transitional areas between commercial development and low density residential neighborhoods
- On land with less than 15 percent slopes
- Along corridors that are served by or proposed to be served by transit, with densities proposed to be above 12 dwelling units per acre and to be served by sidewalks

Recommended Zoning and Programs:

City: R-2, R-3 and R-4 (within the 'Heart of Knoxville' area such zoning should be accompanied by an IH-1, NC-1 or H-1 overlay); otherwise, R-1A, RP-1, RP-2 or RP-3. Densities above 12 dus/ac should be within ¼ mile of transit service with sidewalk connections to transit service.
County's Planned Growth Area: PR, densities above 12 dus/ac should be within ¼ mile of transit service with sidewalk connections to transit service; RB at 6 or more dus/ac may be considered with use on review. (Note: This proposed 6 dus/ac threshold for use on review will require a zoning ordinance change.)

Other Zoning to Consider:

City's Urban Growth Boundary: R-2, R-3 and R-4

High Density Residential (HDR)

This land use is primarily characterized by apartment development at densities greater than 24 dwelling units per acre.

Location Criteria:

- On major collector and arterial streets, adjacent to regional shopping and major office districts (office sites allowing four or more stories); these sites must be identified in sector or small area plans
- Within the CBD or its adjacent areas, such as portions of the Morningside community
- On relatively flat sites (slopes less than 10 percent)
- Along corridors with transit and sidewalks

Recommended Zoning and Programs:

City:
C-2, RP-2 and RP-3, and new form-based codes (e.g. South Waterfront). R-3 and R-4 (with an IH-1, NC-1 or H-1 overlay in the 'Heart of Knoxville' area)

Other Zoning to Consider:

TC-1 and TC (where higher density residential is part or a mixed-use project)

RESIDENTIAL LAND USE CLASSIFICATIONS . . . continued**Medium Density Residential/Office (MDR/O)**

Office and medium residential uses typically have similar development characteristics: scale of buildings, areas devoted to parking, yard spaces and location requirements (on thoroughfares). In areas designated MU-MDR/O, either use can be created. These uses provide a buffer to low density residential areas, particularly when located adjacent to a thoroughfare or as a transition between commercial uses and a neighborhood.

Location Criteria:	Recommended Zoning and Programs:	Other Zoning to Consider:
<ul style="list-style-type: none"> See Medium Density Residential (MDR) criteria 	City: RP-1, RP-2, RP-3 County: PR	City: O-1, O-2 County: OB

OFFICE and BUSINESS/TECHNOLOGY LAND USE CLASSIFICATIONS**Office (O)**

This land use includes business and professional offices and office parks.

Location Criteria:	Recommended Zoning and Programs:	Other Zoning to Consider:
<ul style="list-style-type: none"> Low intensity business and professional offices (less than three stories) may be transitional uses from commercial or industrial uses to neighborhoods Generally level sites (slopes less than 15 percent) Access to major collector or arterial streets, particularly within one-quarter mile of such thoroughfares Highest intensity office uses (development that is four or more stories), should be located in close proximity to arterial/freeway interchanges or be served by transit 	City: O-1, O-2, O-3, or a new office zone that requires site plan review County's Planned Growth Area: OA, OC, PC (with covenants) or a new office park zone that requires site plan review	In areas that are identified in sector plans exclusively as office land uses, OB.

Technology Park (TP)

This land use primarily includes offices and research and development facilities. The target area for such development has been the Pellissippi Technology Corridor. Additional districts could be created in other areas of the city or county. The development standards that are adopted by the Tennessee Technology Corridor Development Authority should be used for such districts.

Location Criteria:	Recommended Zoning and Programs:	Other Zoning to Consider:
<ul style="list-style-type: none"> Within the Technology Corridor or subsequent areas designated for Technology Park development Sites near freeway interchanges or along major arterials Water, sewer and natural gas utilities available 	City: BP-1 County's Planned Growth Area: BP and PC (with covenants limiting uses to research/development)	EC (with limitations to require office and research/development uses)

RETAIL and RELATED SERVICES LAND USE CLASSIFICATIONS**Rural Commercial (RC)**

This classification includes retail and service-oriented commercial uses intended to provide rural communities with goods and services that meet day-to-day and agricultural-related needs.

Location Criteria:	Recommended Zoning and Programs:	Other Zoning to Consider:
<ul style="list-style-type: none"> At the intersection of two thoroughfares (arterial or collector roads) Rural commercial nodes should generally not exceed more than 300 feet in depth and lots and not extend more than 300 feet away from the intersection 	County's Rural Area: CR PC as provided in Growth Policy Plan	CN

RETAIL and RELATED SERVICES LAND USE CLASSIFICATIONS . . . continued**Neighborhood Commercial (NC)**

This classification includes retail and service-oriented commercial uses intended to provide goods and services that serve the day-to-day needs of households, within a walking or short driving distance. Neighborhood commercial uses may also be accommodated within neighborhood centers (see Mixed Use and Special Districts).

Location Criteria: <ul style="list-style-type: none"> • Generally located at intersections of collectors or arterial streets at the edge of or central to a neighborhood • New NC should not be zoned for or developed within ½ mile of existing commercial that features sales of day-to-day goods and services • Automobile-oriented uses (e.g. gas stations or convenience stores) should be located on arterial street at the edge of neighborhood • Should not exceed the depth of the nearby residential lots and not extend more than a block (typically no more than 300 feet) away from the intersection 	Recommended Zoning and Programs: City: C-1 County's Planned Growth Area: CN	Other Zoning to Consider: SC-1
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Community Commercial (CC)

This land use includes retail and service-oriented development, including shops, restaurants, and what has come to be known as "big box" retail stores; typical service area includes 20,000 to 30,000 residents. Community commercial uses may also be considered within community centers (see Mixed Use and Special Districts).

Location Criteria: <ul style="list-style-type: none"> • Locate at intersection of arterial streets • Sites should be relatively flat (under 10 percent slope) and with enough depth to support shopping center and ancillary development. • Vehicular and pedestrian connections should be accommodated between different components of the district (e.g. between stores, parking areas and out-parcel development) • Infrastructure should include adequate water and sewer services, and major arterial highway access • Community commercial centers should be distributed across the city and county in accordance with recommended standards of the Urban Land Institute 	Recommended Zoning and Programs: Because of traffic and lighting impacts (potential glare) and buffering needs of surrounding interests, 'planned zones' should be used. City: SC-2, PC-1 and PC-2. County's Planned Growth Boundary: PC or SC	Other Zoning to Consider: As infill development within areas already zoned C-3, C-4, C-5 and C-6 (City), and CA, CB and T (County)
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RETAIL and RELATED SERVICES LAND USE CLASSIFICATIONS . . . continued**Regional Commercial (RS)**

This land use includes retail and service-oriented development that meets the needs of residents across Knox County and surrounding areas. Development typically exceeds 400,000 square feet; malls have been a typical form and 'life-style centers' (e.g. Turkey Creek) are examples of regional-oriented commercial uses. Regional commercial uses may also be considered in Regional Centers (see Mixed Use and Special Districts).

Location Criteria:

- Flat sites (under 10 percent slope)
- Locate near interstate interchanges with major arterial highway access
- Water, sewer, gas and stormwater systems should be capable of handling the development
- Vehicular and pedestrian connections should be accommodated between components of the development

Recommended Zoning and Programs:

Because of the magnitude of the traffic and environmental impacts, planned zones should be used.

City: SC-3, PC-1 and PC-2

County's Planned Growth Boundary: PC

Other Zoning to Consider:

As infill development within areas already zoned C-3, C-4, C-5 in the City
CA, CB and SC in the County

General Commercial (GC)

This category includes previously developed strip commercial corridors providing a wide range of retail and service-oriented uses. Such land use classification and related zoning should not be extended because of the adverse effects on traffic-carrying capacity, safety and environmental impacts. Redevelopment of commercial corridors, including mixed use development, should be accommodated under planned or design-oriented zones.

Location Criteria:

- Existing commercial areas

Recommended Zoning and Programs:

City: C-6 and PC-1

County's Planned Growth Area: PC

New corridor design overlays when designated as special districts (see Mixed Use and Special Districts)

C-3, C-4, C-5, SC-1, SC, CA and CB for infill commercial development in areas previously zoned for commercial uses

MIXED USE and SPECIAL DISTRICTS

There are several types of mixed-use areas: neighborhood, community and regionally-scaled districts and urban corridors. Mixed Use areas can be developed with higher intensity uses because of infrastructure and ability to sustain alternative modes of transportation. Development plan review is crucial. These areas should typically be created with sidewalks. Shared parking may be considered. Automobile and truck-dependent uses, such as heavy industrial, distribution and highway-oriented commercial uses should not be located in neighborhood, community and regional mixed-use centers. There are likely to be several distinctions between types of mixed use designations. Each Sector Plan and the One Year Plan will have a separate section which outlines the intent of each mixed use district and the development criteria for the district.

1. Neighborhood Mixed Use Center (MU-NC)

These are the least intense of the proposed mixed use districts. Residential densities of 5 to 12 du/ac are appropriate within the area. Locations at the intersection of a local street and thoroughfare are generally most appropriate. The surrounding land uses should primarily be planned for low or medium density residential. The buildings of these centers should be designed with a residential character and scale to serve as a complement to the surrounding neighborhoods.

Location Criteria:

- Flat terrain (slopes generally less than 10 percent)
- Currently served by or planned to be served by sidewalks
- The location does not include auto and truck-oriented uses such as industrial, strip commercial and warehouse/distribution uses unless the proposal calls for a redevelopment of such areas
- At the intersection of a local street and throughfare
- Next to low or medium density residential

Recommended Zoning and Programs:

TND-1

Other Zoning to Consider:

Other form- or design-based codes

MIXED USE and SPECIAL DISTRICTS . . . continued**2. Community Mixed Use Center (MU-CC)**

These centers are envisioned to be developed at a moderate intensity with a variety of housing types (8 to 24 dus/ac). The core of the district, with its predominant commercial and office uses, should be within ¼ mile of the higher intensity residential uses (such as townhouses and apartments). The district should be located within a ¼-mile radius of an intersection of the thoroughfare system (a collector/arterial or arterial/arterial intersection). In addition to sidewalks, the district should be served by transit. Redevelopment of vacant or largely vacant shopping centers are considerations for these centers.

Location Criteria: <ul style="list-style-type: none"> • Flat terrain (slopes generally less than 10 percent) • Areas currently served by or planned to be served by sidewalks • The location does not include auto and truck-oriented uses such as industrial, strip commercial and warehouse/distribution uses unless the proposal calls for a redevelopment of such areas • Within a ¼-mile radius of an intersection of the thoroughfare system (a collector/arterial or arterial/arterial intersection) • Commercial/office core should be within ¼ mile of the higher intensity residential uses (e.g. townhouses and apartments) • Areas currently served by or planned to be served by sidewalks and transit services 	Recommended Zoning and Programs: TC-1, TC	Other Zoning to Consider: Other form- or design-based codes
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3. Regional Mixed Use Center (MU-RC)

These are envisioned to be highest intensity mixed use centers. These districts should be served by sidewalk and transit systems and be located on a major arterial, adjacent to an Interstate highway or adjacent to downtown. Housing densities in the core of such districts can be 24 or more dus/ac. Downtown Knoxville's Central Business District is a regional mixed use center.

Location Criteria: <ul style="list-style-type: none"> • Flat terrain (slopes generally less than 10 percent) • Currently served by or planned to be served by sidewalks • The location does not include auto and truck-oriented uses such as industrial, strip commercial and warehouse/distribution uses unless the proposal calls for a redevelopment of such areas • On a major arterial, adjacent to an interstate highway or adjacent to downtown 	Recommended Zoning and Programs: C-2 in the Central Business District (Downtown); an adaptation of C-2 for the 'Downtown North' area (Central City Sector); TC-1, TC or new form-based codes (and regulating plans) for other community and regional centers	Other Zoning to Consider: Other form- or design-based codes
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4. Urban Corridor Mixed Use (MU-UC)

Several street corridors within the city have potential for redevelopment with a mix of retail, restaurants, office and residential uses. Commercial cores should be created at points (nodes) along these corridors, allowing a vertical mix of uses (for example, shops at ground level and apartments above); such nodes should not be more than four blocks long.

Location Criteria: <ul style="list-style-type: none"> • Corridors should have sidewalks, transit services, street trees and related beautification • Capable of sustaining on-street parking along corridor or along side streets 	Recommended Zoning and Programs: City: form-based or design-based codes (e.g. South Waterfront)
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MIXED USE and SPECIAL DISTRICTS . . . continued**5. Special Mixed Use District (MU with reference number)**

These can include designations to address urban design, pedestrian and transit-oriented development and vertical mixed use in designated areas. The areas may include older portions of the city or county where redevelopment and/or preservation programs are needed for revitalization purposes.

Location Criteria:

- Case-by-case analysis is recommended

Recommended Zoning and Programs:

TND-1, TC-1, TC, especially in greenfield areas, or form-based or designed-based codes as noted in the Sector Plan and One Year Plan for each of these districts.

6. Special Corridors (CD with reference number)

These can include designations to address urban design and environmental concerns along commercial or industrial corridors (where overlays for aesthetic reasons or sidewalks may be recommended, like the Chapman Highway corridor). Other potential corridor designation could include rural/farmland conservation areas.

Location Criteria:

- Case-by-case analysis is recommended

Recommended Zoning and Programs:

Should be noted in the Sector Plan and One Year Plan for each of these districts.

INDUSTRIAL AND WAREHOUSE/DISTRIBUTION LAND USE CLASSIFICATIONS**Light and Heavy Industrial (LI and HI) and Mining (HIM)**

These classifications are typically used to identify older industrial areas, which were intended for manufacturing, assembling, warehousing and distribution of goods. Light industrial uses include such manufacturing as assembly of electronic goods and packaging of beverage or food products. Heavy industrial uses include such processes used in the production of steel, automobiles, chemicals, cement, and animal by-products and are viewed as clearly not compatible with areas designated for residential, institutional, office and retail uses. Quarry operations and asphalt plants are a particular form of heavy industrial, generally located in rural areas.

Location Criteria:

- Existing industrial areas
- Within one mile of an interstate interchange with access via standard major collector or arterial streets

Recommended Zoning and Programs:

City: I-1, I-2, I-3 and I-4 (infill development, using those zones, may be appropriate); C-6, PC-2 and a new planned, industrial zone, that requires site plan review, may be warranted to address environmental and transportation issues and surrounding community concerns.

County's Planned Growth Boundary: LI; EC zone should be used in future development

Other Zoning to Consider:

County: I (Industrial) zoning should be used in cases involving rezonings to accommodate mining activities and should be accompanied by buffering and other conditions to protect adjacent property owner. PC, LI, I and CB may be considered for infill industrial development.

Business Park (BP) Type 1

Primary uses are light manufacturing, office and regionally-oriented warehouse/distribution services in which tractor-trailer transportation is to be a substantial portion of the operations. A zoning category which requires site plan review is expected in the development or redevelopment of such areas. Site plans shall address landscaping, lighting, signs, drainage, and other concerns that are raised in the rezoning process. Substantial landscaped buffers are expected between uses of lesser intensity, particularly residential, office and agricultural uses.

Location Criteria:

- Relatively flat sites (predominant slopes less than 6 percent) out of floodplains
- Relatively large sites (generally over 100 acres)
- Away from low and medium density areas or where truck traffic would have to go through such areas
- Areas with freeway and arterial highway access (generally within two miles of an interchange)
- Rail access is a consideration
- Can be served with sanitary sewer, water and natural gas

Recommended Zoning and Programs:

City: I-1, C-6, PC-2 or a new Planned Industrial Park zone

County's Planned Growth and Rural Areas: EC

Other Zoning to Consider:

PC

INDUSTRIAL AND WAREHOUSE/DISTRIBUTION LAND USE CLASSIFICATIONS . . . continued

Business Park (BP) Type 2:

Primary uses are light manufacturing, offices, and locally-oriented warehouse/distribution services. Retail and restaurant services, which are developed primarily to serve tenants and visitors to the business park can be considered. A zoning category which requires site plan review is expected in the development or redevelopment of such areas. Site plans must include provisions for landscaping, lighting and signs. Substantial landscaped buffers are necessary between uses of lesser intensity, particularly residential, office and agricultural uses.

Location Criteria: <ul style="list-style-type: none"> • Relatively flat sites (predominant slopes less than 6 percent) out of floodplains • Relatively large sites (generally over 100 acres) • Away from low and medium density areas or where truck traffic would have to go through such areas • Freeway and arterial highway access (generally within two miles of an interchange) • Rail access is a consideration • Sites that can be served with sanitary sewer, water and natural gas 	Recommended Zoning and Programs: City: I-1, C-6, PC-2 or a new Planned Industrial Park zone County's Planned Growth and Rural Areas: EC	Other Zoning to Consider: PC
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PARK, PUBLIC INSTITUTIONAL, OTHER OPEN SPACE & ENVIRONMENTAL PROTECTION LAND USE CLASSIFICATIONS

Public Parks and Refuges (PP)

This land use classification contains existing parks, wildlife refuges or similar public or quasi-public parks, open spaces and greenways. It also contains quasi-public spaces, which are owned by civic or related organizations. Location criteria is not needed relative to large components of the park system, like community, district and regional parks and refuges; these areas are generally established through capital expenditures or land transfers from state or federal governments.

Location Criteria: <ul style="list-style-type: none"> • Neighborhood parks, squares and commons should be within ¼ mile of residents in the traditional residential areas (particularly the 'Heart of Knoxville') and within ½ mile of residents within the balance of the city and county's Planned Growth area. • Greenways should be located along or within the flood plains of streams and rivers/reservoirs. Other potential locations include ridges and utility corridors. 	Recommended Zoning and Programs: City: OS-1 County's Planned Growth and Rural Area: OS, E and OC A new zone should be created to designate parks, schools and similar institutional lands for both city and county jurisdictions.	Other Zoning to Consider: Other zones that allow parks and open space as permitted uses.
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Civic/Institutional (CI)

Land used for major public and quasi-public institutions, including schools, colleges, the university, churches, correctional facilities, hospitals, utilities and similar uses.

Location Criteria: <ul style="list-style-type: none"> • Existing public uses, other than parks and greenways • Quasi-public uses of two acres or more 	Recommended Zoning and Programs: City and County: New zoning categories for such uses or continue to use conventional zones (e.g. O-1, O-2 and OB)	Other Zoning to Consider: Other zones that allow civic/institutional as permitted uses.
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Other Open Space (OS)

Land uses include cemeteries, private golf courses, and similar uses.

Location Criteria: <ul style="list-style-type: none"> • Existing cemeteries, private golf courses and private open spaces 	Recommended Zoning and Programs: City: OS-1 and a new zone created to designate parks, schools and similar institutional lands County's Planned Growth and Rural Area: OS, E and OC	Other Zoning to Consider: A-1, and A
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PARK, PUBLIC INSTITUTIONAL, OTHER OPEN SPACE & ENVIRONMENTAL PROTECTION LAND USE CLASSIFICATIONS . . . continued**Hillside/Ridge Top Protection Areas (HP)**

This classification is used to identify hillsides, ridges and similar features that have a slope of 15 percent or more. Open space, recreation land or very low density housing (one dwelling unit per two acres) is recommended for slopes exceeding 25 percent. For slopes of 15 to 25 percent, housing densities should not exceed 2 dus/ac). Office uses may also be considered. Building height should not exceed 35 feet.

Location Criteria: <ul style="list-style-type: none"> Hillsides greater than 15 percent slope 	Recommended Zoning and Programs: City: RP-1, OS-1 and a new hillside protection zoning overlay, that has standards for various residential and office land uses and the amount of land disturbance that can take place relative to the degree of slope. County's Planned Growth and Rural Areas: OS, E, A (on slopes less than 15 percent) and PR; a new hillside protection zoning overlay, that has standards for various residential and office land uses and the amount of land disturbance that can take place relative to the degree of slope.	Other Zoning to Consider: Other zones that require use-on-review
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Stream Protection Areas (SP)

Typically these are areas which are subject to flooding. Such areas include both the floodway, which carries the significant portion of stormwater, and the 500-year flood fringe, which the city and county govern with various stormwater regulations.

Location Criteria: <ul style="list-style-type: none"> Floodways and flood fringes 	Recommended Zoning and Programs: City: F-1 and 'planned zones' (such as RP-1 and PC-1), which entail site plan review. County's Planned Growth Area: F and 'planned zones' (such as PR and PC), that require site plan review to address flooding and stream protection issues
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Water (W)

Typically includes the French Broad River, Holston River, Fort Loudoun Lake/Tennessee River, and Melton Hill Lake/Clinch River.

Location Criteria: <ul style="list-style-type: none"> Rivers, TVA reservoirs 	Recommended Zoning and Programs: City: F-1 County: F
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Major Rights of Way (ROW)

Generally, the rights-of-way of interstates and very wide parkways and arterial highways are depicted on the future land use map.

Appendix C: Traffic Calming





Traffic Calming (also called Traffic Management) refers to design features and strategies that reduce vehicle speeds, improving safety and enhancing the quality of life within a particular neighborhood.



Traffic calming projects can range from minor modifications of an individual street to a comprehensive redesign of an entire road network.




The first part of this appendix provides a sample of different traffic calming strategies, and the second part examines some of the benefits communities have realized through traffic calming programs. Note that in the illustrative pictures that more than one type of design feature is often used to maximize the benefits.

Sample Traffic Calming Measures



Table 1: Traffic Calming Strategies and Features




Type, Description	Illustration	Type/ Description	Illustration
Curb extensions “pinch points” Curb extensions, planters, or centerline traffic islands that narrow traffic lanes to control traffic and reduce pedestrian crossing distances. Also known as “chokers.”		Traffic circles Small circles at intersections.	
Speed tables, raised crosswalks Ramped surface above roadway, 7-10 cm high, 3-6 m long.		Median island Raised island in the road center (median) narrows lanes and provides pedestrian with a safe place to stop.	



Type, Description	Illustration
Channelization islands A raised island that forces traffic in a particular direction, such as right-turn-only.	
Tighter corner radii The radius of street corners affects traffic turning speeds. A tighter radius forces drivers to reduce speed. It is particularly helpful for intersections with numerous pedestrians.	
Speed humps Curved 7-10 cm high, 3-4 m long hump.	

Type, Description	Illustration
Rumble Strips Low bumps across road make noise when driven over.	
Chicanes Curb bulges or planters (usually 3) on alternating sides, forcing motorists to slow down.	
Roundabouts Medium to large circles at intersections.	

Paul De Maio

Type, Description	Illustration
Pavement treatments Special pavement textures (cobblestones, bricks, etc.) and markings to designate special areas.	
Bike lanes Marking bike lanes narrows traffic lanes.	
“Road diets” Reducing the number and width of traffic lanes, particularly on arterials.	
Horizontal shifts Lane centerline that curves or shifts.	

Type, Description	Illustration
2-lanes narrow to 1-lane Curb bulge or center island narrows 2-lane road down to 1-lane, forcing traffic for each direction to take turns.	
Semi-diverters, partial closures Restrict entry/exit to/from neighborhood. Limit traffic flow at intersections.	
Street closures Closing off streets to through vehicle traffic at intersections or midblock.	

Type, Description	Illustration
"Neotraditional" street design Streets with narrower lanes, shorter blocks, T-intersections, and other design features to control traffic speed and volumes.	
Perceptual Design Features Patterns painted into road surfaces and other perceptual design features that encourage drivers to reduce their speeds.	
Street Trees Planting trees along a street to create a sense of enclosure and improve the pedestrian environment.	
Woonerf Streets with mixed vehicle and pedestrian traffic, where motorists are required to drive at very low speeds.	
Speed Reductions Traffic speed reduction programs. Increased enforcement of speeding violations.	

Source: www.pedbikeimages.org ; unless otherwise indicated

Benefits of Traffic Calming Programs

Traffic calming creates a set of checks and balances that compel those at the wheel to drive slowly and carefully, making streets safer for both drivers and pedestrians. Traffic calming tends to reduce total vehicle mileage in an area by reducing travel speeds and improving conditions for walking, cycling and transit use (see Table 2). Residents in neighborhoods with suitable street environments tend to walk and bicycle more, ride transit more, and drive less than comparable households in other areas. One study found that residents in a pedestrian friendly community walked, bicycled, or rode transit for 49 percent of work trips and 15 percent of their non-work trips, 18- and 11-percentage points more than residents of a comparable automobile-oriented community. Another study found that walking is three times more common in a community with pedestrian friendly streets than in otherwise comparable communities that are less conducive to foot travel.

Table 2: Speed Impacts of Traffic Calming Measures

(Ewing, 1999)

	Sample Size	Avg. Speed Afterward (mph)	Avg. Speed Change	Avg. % Change
12' Humps	179	27.4	-7.6	-22
14' Humps	15	25.6	-7.7	-23
22' Tables	58	30.1	-6.6	-18
Longer Tables	10	31.6	-3.2	-9
Raised Intersections	3	34.3	-0.3	-1
Circles	45	30.2	-3.9	-11
Narrowings	7	32.3	-2.6	-4
One-Lane Slow Points	5	28.6	-4.8	-14
Half Closures	16	26.3	-6.0	-19
Diagonal Diverters	7	27.9	-1.4	-0.5

Source: www.trafficcalming.org

In addition, Table 3 below highlights additional benefits that traffic calming measures can have on local streets.

Table 3: Additional Traffic Calming Benefits

Benefit	Description
Increased road safety	Reduced traffic accident frequency and severity, particularly for crashes involving pedestrians and cyclists.
Increased comfort and mobility for non-motorized travel	Increased comfort and mobility for pedestrians and cyclists.
Reduced automobile impacts.	Increased non-motorized travel substitutes for automobile trips, reducing congestion, expenses and pollution.
Increased Community Livability.....	Reduced noise and air pollution, and improved aesthetics.
Increased neighborhood..... interaction	More hospitable streets encourage street activities and community interaction.
Increased property values.	Reduced traffic speed and volumes increase residential property values.
Improved public health	More opportunities for walking and other physical activity.

Source: Victoria Transport Policy Institute, Online TDM Encyclopedia, <http://www.vtpi.org/tdm/tdm4.htm>