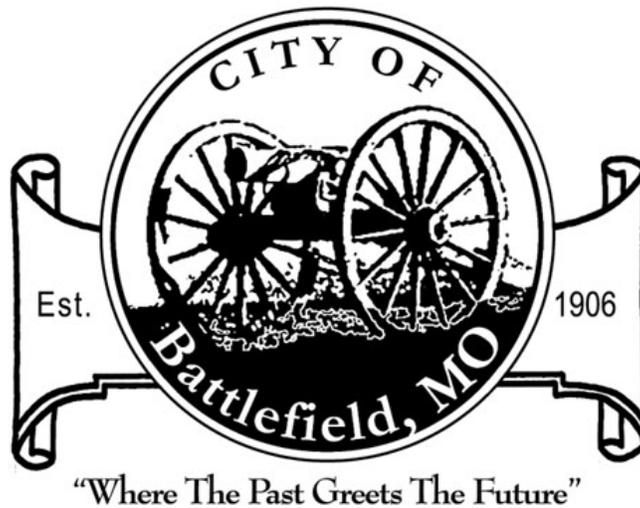


# City of Battlefield, Missouri



## Comprehensive Plan

Adopted September 23, 2002



City of Battlefield, Missouri

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# Comprehensive Plan

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Spring 2002

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**Southwest Missouri State**  
U N I V E R S I T Y



# City of Battlefield, Missouri

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# **INTRODUCTION**

## **Planning for the Future**

Since its incorporation in 1974, the City of Battlefield has experienced steady population growth. Continued new residential development in Battlefield during the 1990s has been fueled by the construction of the James River Freeway which provides improved access to employment centers in nearby Springfield and other outlying communities in the Springfield-Branson growth corridor along U.S. Highway 65 and the Springfield-Republic growth corridor along U.S. Highway 60. Throughout the region, rapid growth is creating demands for housing, water and sewer infrastructure services/improvements, transportation system improvements, parks and leisure recreation, economic development, preservation of the environment, and enhancement of quality of life.

Although Battlefield's population is still relatively small in comparison to other cities in the Springfield metropolitan region, such as Republic and Nixa, Battlefield is facing similar needs and challenges resulting from growth. As new development is continuing unabated in these first years of the 2000 decade, Battlefield has made the choice to take a proactive role in addressing the needs and challenges of growth as well as the opportunities that are arising from the growth underway.

In late 2001, Battlefield initiated the process of developing its first comprehensive plan to serve as a guide for the future physical growth and development of the community. Under the direction of the Battlefield Planning and Zoning Commission, the City has engaged in a year-long planning process to evaluate community conditions and characteristics, identify issues and goals for the future, and develop recommendations on the future direction and intensity of growth of the community.

Involvement of the residents of Battlefield has played an important part in this planning process. Citizens participated in the early stages of the development of the Comprehensive Plan through community visioning meetings held to discuss what the residents of Battlefield want the city to be like in the future.

The preparation of the Comprehensive Plan also involved planning students from Southwest Missouri State University and the University's Center for Resource Planning and Management. Students in SMSU's Community Planning Practicum course conducted field studies on community characteristics and conditions and presented their findings and preliminary recommendations at a public meeting held at the Wilson's Creek National Battlefield in May 2002. The student's work has been incorporated by the Center for Resource Planning and Management into this Comprehensive Plan for Battlefield.

The Battlefield Comprehensive Plan is intended to serve as a policy guide for elected officials and advisory bodies for decision-making on issues affecting the City's future development. The Plan is also intended to serve as a guide and reference tool for citizens and others in the private sector working to improve the community and to make decisions on investment in the community.

## **Plan Elements**

The Comprehensive Plan focuses on those sectors of the community over which the public has traditional responsibility, including the location and intensity of land development, transportation, public facilities and services, and environmental quality. The Plan is organized in chapters that provide an overview of the physical, social, environmental, and economic characteristics and conditions of Battlefield. The goals, objectives and recommended actions and policies presented in several of the chapters provide direction for decision-making on the future development and character of the community.

## **City of Battlefield Location**

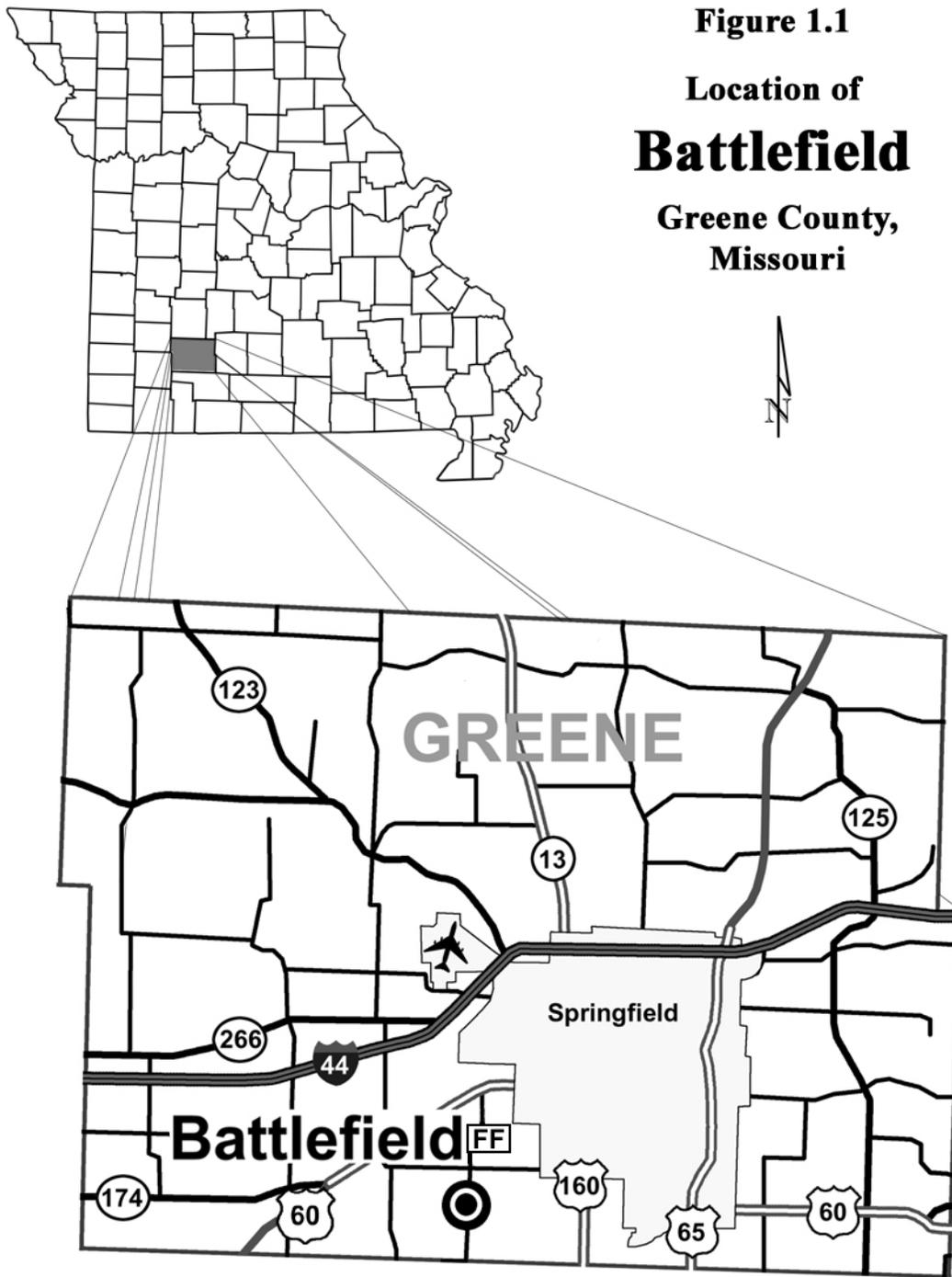
The City of Battlefield is located in southern Greene County, approximately 1½ miles southwest of the City of Springfield. Primary access into Battlefield is provided by State Highway FF, which runs north-south through the center of the City, while State Highway M provides east-west access to Battlefield, intersecting with Highway FF at the northern edge of the community. The James River Freeway (U.S. Highway 60) provides the primary linkage between Battlefield and the City of Springfield to the east and other outlying metro area communities, such as Republic, to the west. Figure 1.1 displays Battlefield’s location in Greene County.

Battlefield is sited within a rapidly growing area, with substantial development occurring in the unincorporated area of Greene County between the City of Springfield and Battlefield’s northern and eastern perimeters. The western portion of the City of Battlefield is located within less than one mile of the Wilson’s Creek National Battlefield, a Civil War battlefield national park facility and a major cultural/historical resource in Southwest Missouri.

## **Planning Area**

The Battlefield planning area encompasses the territory within the current city limits as well as the area within the City’s Urban Services Area boundary. The Urban Services Area is defined under agreement with the City of Springfield for wastewater treatment services as the area outside of the current municipal boundaries that Battlefield may extend sanitary sewer services in the future. This is Battlefield’s future growth area and it is anticipated that annexation will occur as sewer services are extended. To ensure that Battlefield can effectively respond to infrastructure and services needs and to encourage compatible land use development on the City’s perimeter, the Comprehensive Plan includes recommendations for future land use within the Urban Services Area currently outside of the City.





## COMMUNITY HISTORY

Battlefield, Missouri is presently the largest municipality in Wilson Township, the area where some of Greene County's earliest and most prominent settlers staked their claims. Most of these settlements were in the vicinity of the James River, and on the fertile Kickapoo Prairie east of Battlefield.

For most of the 19<sup>th</sup> Century there were no towns to speak of in this part of the County. As R.I. Holcombe wrote in the *History of Greene County, Missouri* in 1883:

*“There are no towns or villages in Wilson township, and no churches reported. The farthest point in the township from Springfield is not more than ten miles, and the people are so convenient to that city that they do not care to be bothered with a town of their own. They are also so moral and upright that they can dispense with churches. “*

The community was originally to be called Stewart, named for the father of Verna Stewart McDaniel. As this name was already taken, Battlefield instead took its name from the Battle of Wilson's Creek, fought to the west of town on August 10, 1861.

Before Battlefield could even be called a village, however, settlers homesteaded along what was at first an Indian trail, then a road, then a telegraph wire corridor from St. Louis to Fort Smith, Arkansas—now known as the Old Wire Road. Stewart platted Battlefield proper along the Missouri-Pacific Railroad line, which came through town in 1905. Battlefield turned out to be a proper name for the little town, as veterans of Wilson's Creek traveled to their reunions by train, disembarking at Battlefield to make their way to the Civil War battle site by various means.

For most of its history, Battlefield has maintained a small population, and a rural character and quality of life. Battlefield officially incorporated in 1974. Over the past decade unincorporated areas of southern Greene County have experienced a high growth rate and the area around Battlefield is no exception. Transportation improvements such as the construction and opening of the James River Freeway have increased accessibility and shortened commuting time between Springfield and the smaller communities in

southern Greene County and northern Christian County. Transportation system improvements and the continued high growth in the Springfield-Branson corridor and the growth corridor between Springfield and Republic to the west are contributing to increasing population settlement in Battlefield as well. While Battlefield has historically been a bedroom community of Springfield, new commercial development is occurring in the community to serve the rapidly growing population.

Although the City of Battlefield does not have a long history as an incorporated community, its sense of place and cultural history are rooted in its close proximity to the Wilson’s Creek National Battlefield. As new growth occurs over the coming decade, the City of Battlefield looks to a future that is founded on the preservation of this cultural history.

## **VISIONING THE FUTURE**

What will the City of Battlefield be like in the future? What is important to the citizens of Battlefield? These questions were asked of citizens invited to attend community meetings to discuss visions for Battlefield's future. The process of developing the Battlefield Comprehensive Plan was initiated with a community wide meeting held in June 2001, with a follow up meeting held in March 2002. At each meeting, attendants were asked to identify their priority visions for Battlefield. The visions identified by the citizens of Battlefield and discussed at these meetings are presented in the following pages. These visions for the future have been incorporated into the goals, objectives, recommendations and policies contained in the various chapters of the Comprehensive Plan.

To begin the visioning process, citizens attending the meeting were asked what are the assets of the Battlefield community. The following were identified as community assets:

- Lower housing costs
- Quiet environment
- Families with young children
- Safe community
- Small town close to urban area
- Rural atmosphere
- Churches
- Friendly neighbors
- Small, close-knit community organizations

Numerous visions or desires for Battlefield's future were identified at the meetings. These visions are grouped into the following three : Community Facilities and Services, Business Development, and Transportation.

## **Community Facilities and Services**

Battlefield’s residents desire the development of public facilities and other amenities that improve quality of life and allow for interaction and socialization among members of the community. The development of parks, trails and other recreation facilities to provide leisure opportunity for the various segments of the population are a high priority. Residents also desire facilities such as a community building, new city hall, post office, and improved law enforcement facilities and services to better meet community needs.

## **Business Development**

Battlefield’s citizens recognize that commerce and business are necessary to the economic well-being of the community and look to the City to attract new business development that will serve local needs. Residents do however desire that business development be compatible with existing development in the community and that such development be well-designed. Many support the vision of themed commercial development drawn from the community’s historical development in close proximity to the Wilson’s Creek National Battlefield.

## **Transportation Improvements**

Visions for the future of Battlefield include improvements to the City’s main transportation artery—Highway FF. The movement of traffic along this artery, along with safety concerns for pedestrian and bicycle circulation were frequently mentioned at the community visioning meetings.

## **Vision Summary**

Battlefield’s residents recognize that rapid growth is bringing change to the community. Residents attending the community meetings desired that the City guide and direct growth to:

- Ensure quality development that is compatible with the existing character of the community

- Ensure protection and preservation of the natural environment and the cultural and historic resource at Wilson’s Creek National Battlefield
- Ensure that Battlefield’s resources are used efficiently to create a high quality of life.

The following table summarizes the visioning statements from the community meetings. Many of these priority visions are addressed throughout the remaining chapters of the Comprehensive Plan.

<b>Table 3.1 Community Visioning Priorities</b>
Community Center, with planned activities for children and seniors
Building/Construction Controls Regulations governing clean-up of construction activities Enforce ordinances
Park and Recreation Improvements Overall park improvements, including park board and swimming pool Construct restrooms in park
Locate Post Office in Battlefield
Construct City Hall w/sufficient space for public meetings
Hold Regular Community Meetings
Community Theme in Planned Commercial Development—tie theme into heritage of Wilson’s Creek National Battlefield
Designated Commercial District Zoning
Sidewalks on Hwy. FF
Business Development Restaurants, grocery & hardware store, convenience oriented commercial Encourage home-grown, small business development
Historic Preservation and Rehabilitation of Buildings Along Main Street. Possible Tourism Tied into Wilson’s Creek National Battlefield Theme
Police Department Facilities w/Answering Machine for Phone Calls
Improvements to Hwy. FF
Establish Chamber of Commerce or Other Welcome Organization
Housing Options for Seniors
Community Backed Program to Preserve Wilson’s Creek National Battlefield
Road Improvements—Charge Builders Fee for Road Construction
Establish Community Identity—perhaps change community name to Wilson’s Creek
Enforce Speed Limits—especially construction vehicles
Establish Own Preschool & Elementary School System
Themed and Landscaped Welcome Sign on Hwy FF (not just a metal sign)
Develop Organized Community Events, such as fairs & fun days

<b>Table 3.1 Community Visioning Priorities</b>
Address Nuisances Problems
Improve Communications—get the word out about community meetings & affairs
Acquire a Police Dog—Drug Sniffer
Preserve Green Space in the Community
Protect Community Visual Aesthetics—minimize effects of big structures such as towers
Public Library
Widen East/West Roads
Limit the Number of Traffic Lights
More Public Participation in Community Activities
Locate Medical Clinic in Battlefield
Shoulders on Hwy FF
Locate Fire Hydrants in Older Sections of the Community

## DEMOGRAPHIC PROFILE

The characteristics of the people in a community have always been an important factor in comprehensive planning and community development. Over time people will immigrate into the city, emigrate out of the city, establish commercial trade within the city's boundaries, and use local community resources. A community's population is a primary determinant of future growth and development and the types of public services and facilities that will be needed to serve the population. This chapter examines the characteristics of the people that form the community of Battlefield, Missouri.

### Past Growth Trends

Battlefield's population has nearly doubled since its first census in 1980. Battlefield's population increased from 1,227 in 1980 to 2,385 by the year 2000, a 94 percent increase over the course of twenty years. Tables 4.1, 4.2, and 4.3 compare Battlefield's population with the population base of other local places. Table 4.1 displays population changes from the 1980 to 2000 Census scaled from city to state boundaries (city, county, metro-region, state). Table 4.2 re-examines the same data in the form of percentage of change between Census periods. Table 4.3 combines this information in a comparative examination of Battlefield's population growth with other communities in the immediate region.

**Table 4.1 Population Growth and Change, 1980-2000**

Area	1980	1990	2000
<b>Battlefield</b>	1,227	1,526	2,385
<b>Greene County</b>	185,302	207,949	240,391
<b>Springfield MSA<sup>1</sup></b>	228,118	264,346	325,721
<b>Missouri</b>	4,916,686	5,117,073	5,595,211

Source: U.S. Bureau of the Census. *Census of Population, 1980-1990; Census 2000 Summary File 1.*

<sup>1</sup> As of 2000 Census, the Springfield MSA included Greene, Christian and Webster Counties. In order to make a more accurate comparison, the MSA population numbers for 1980 and 1990 have been adjusted to include the population of Webster County.

**Table 4.2 Population Percent Change, 1980-2000**

Area	1980-1990	1990-2000
<b>Battlefield</b>	24.4	56.3
<b>Greene County</b>	12.2	15.6
<b>Springfield MSA</b>	15.9	23.2
<b>Missouri</b>	4.1	9.3

Source: U.S. Bureau of the Census. *Census of Population, 1980-1990; Census 2000 Summary File 1.*

Table 4.2 demonstrates that Battlefield has grown faster over the last two decades than Greene County, the Springfield Metropolitan Statistical Area, and the State of Missouri. Furthermore, the rate of increase from 1990-2000 has more than doubled from that of 1980-1990. Of course, this increase corresponds with the increases observed in the county, the metro-region, and the state; however, Battlefield's rate of increase shows more rapid growth than the others.

Battlefield's population change corresponds with the population changes of other cities and towns in the region. Table 4.3 shows that from 1990-2000 Battlefield was the third fastest growing city, with only Nixa and Clever growing at a faster rate (Nixa and Clever are both in Christian County, the fastest growing county in the state). Battlefield is located in close proximity to the Springfield-Branson and Springfield-Republic growth corridors. The opening of the James River Freeway in the past decade has increased accessibility throughout these corridors and contributed to Battlefield's rapid growth.

**Table 4.3 Area Population Change, 1980-2000**

Area	2000	1990	1980	% Change 1990-2000	% Change 1980-1990
<b>Battlefield</b>	2,385	1,526	1,227	56.3	24.4
<b>Brookline</b>	326	283	212	15.2	33.5
<b>Clever</b>	1,010	580	543	74.1	6.8
<b>Nixa</b>	12,124	4,707	2,662	157.6	76.8
<b>Republic</b>	8,438	6,292	4,484	34.1	40.3

Source: U.S. Bureau of the Census. *Census of Population, 1980-1990; Census 2000 Summary File 1.*

## Age Characteristics

The age composition of a population plays an important role in determining the potential growth of a community and its need for public services. For instance, the number of youth and elderly in a community will affect the demands placed on educational institutions, social services, and health services. The age structure of a population also affects population growth as younger families begin having children, or as retirees become more prevalent in the community.

The age structure of Battlefield is shown in Table 4.4. The percentages for each age group are shown for 1980, 1990, and 2000. Overall, the changing age composition of the community results in a lower percentage of the population that is under the age of 24. For instance, the age cohort 18-24 declined in its percentage of community presence by approximately two percent from 1990-2000. Unnoticeable declines during this same period occurred in the age cohorts of 0-4 and 5-17. However, from 1980-2000 this change in composition is much more noticeable in all age cohorts under age 24. Since 1990, the most significant changes in the age structure of Battlefield's population occurred in the 25-44 and 45-64 age cohorts. The age cohort 45-64 increased by 322 persons, reflecting the greatest numerical and percentage increase in the community's age groups during the 1990s.

**Table 4.4 Battlefield Age Composition, 1980-2000**

Age Group	1980		1990		2000	
	Number	Percent	Number	Percent	Number	Percent
<b>0-4</b>	147	12.0	147	9.6	228	9.6
<b>5-17</b>	265	21.6	314	20.6	478	20.0
<b>18-24</b>	190	15.5	154	10.1	192	8.1
<b>25-44</b>	472	38.4	672	44.0	852	35.7
<b>45-64</b>	115	9.4	186	12.2	508	21.3
<b>65 and Over</b>	38	3.1	53	3.5	127	5.3
<b>Total</b>	1,227	100.0	1,526	100.0	2,385	100.0

Source: U.S. Bureau of the Census. *Census of Population, 1980-1990; Census 2000 Summary File 1.*

The change in the percentages among the population's various age cohorts is dependent on three factors: (1) between censuses, people age and move into different age brackets, (2) birth and death rates in each age group, and (3) migration in and out of the

community. The changing composition of Battlefield’s population is primarily dependent on the factors of aging and in-migration, particularly the in-migration of population aged 25 and older. Battlefield is attracting younger families and middle-aged adults, a pattern common to the smaller communities in close proximity to the Springfield metropolitan area.

**Table 4.5 Comparative Age Characteristics, Battlefield and Area Communities, 2000**

Age Group	Median Age	Median Age		Percent Under 18	Percent 65 and Over
		Male	Female		
<b>Battlefield</b>	32.0	32.0	31.6	29.6	5.3
<b>Nixa</b>	31.9	30.9	32.8	28.4	11.4
<b>Republic</b>	33.3	31.3	35.2	28.6	12.3
<b>Brookline</b>	41.0	40.9	41.2	21.5	14.1
<b>Clever</b>	31.0	31.3	30.8	31.4	11.2
<b>Springfield MSA</b>	34.9	33.5	36.2	23.8	12.9

Source: U.S. Bureau of the Census. *Census 2000 Summary File 1*.

Comparative indicators of Battlefield’s age characteristics are shown in Table 4.5. The same indicators are provided for Battlefield’s peer communities. Battlefield’s 2000 median age of 32 is similar to Nixa’s 31.9. Republic and Brookline both have higher median ages (33.3 and 41 respectively), while Clever has the lowest median age (31). In comparison to the Springfield MSA (Greene, Christian and Webster Counties), Battlefield has a more youthful age structure than the MSA as a whole. At the same, it should be noted that all of the peer communities, with the exception of Brookline, have a lower median age than that of the Springfield MSA.

### **Age Dependency Ratio**

The age dependency ratio represents a proportion of the non-working to working age population. It serves as an estimate of the dependent population that the working residents must support. Age dependency ratios are shown in Table 4.6. The youth age group, less than 15 years of age, and the elderly group, persons aged 65 and over, are presumed to be the non-working or dependent population.

**Table 4.6 Age Dependency Ratios, 2000**

	<b>Battlefield</b>	<b>Springfield MSA</b>	<b>Missouri</b>	<b>USA</b>
<b>Youth Population (0-14)</b>	606	64,521	1,180,876	60,253,375
<b>Elderly Population (65+)</b>	127	41,972	755,379	34,991,753
<b>Working-Age Population (15-64)</b>	1,652	219,228	3,658,956	186,176,778
<b>Dependency Ratio</b>	44.4	48.6	52.9	51.2
<b>Youth Dependency Ratio</b>	36.7	29.4	32.2	32.4
<b>Elderly Dependency Ratio</b>	7.7	19.1	20.6	18.8

Source: U.S. Bureau of the Census. *Census 2000 Summary File 1*.

Battlefield’s dependency ratio of 44.4 means that for every 100 working residents in the community there are 44 non-working residents that must be supported. While the City’s total age dependency ratio is only slightly lower than that of the entire Springfield MSA, it is moderately lower than that of Missouri and the rest of the country. Once again, this reflects that the largest percentage of the population is between the ages of 25 and 64. However, Battlefield does have a greater percentage of youth population (25.7%) than the Springfield MSA (19.8%), Missouri (21.1%) and the United States (21.8%) as a whole. Of course, this is reflected in the City’s higher youth dependency ratio of 36.7.

On the other hand, Battlefield’s elderly dependency ratio (7.7) is significantly less than that of the Springfield MSA, state or nation. Therefore, Battlefield needs to balance meeting the needs of a youthful age population, while generating incentives for the retirement-aged population to remain citizens of Battlefield. Although Battlefield’s current retirement-aged population is small, the aging of the baby boom generation over the coming decade will increase the need and demand for housing and services for this age group. As the City grows, the following types of developments, services and infrastructure should be encouraged to serve the retirement-aged population:

- Housing options for seniors, including a variety of housing types such as individual homes designed for smaller family units and planned senior housing developments that incorporate a range of independent living to assisted living housing options.
- Commercial development to serve the daily needs of the local population.

- Passive recreational opportunities, such as walking trails, for the aging population.
- Pedestrian friendly roadways and easily visible traffic and directional signs and location signs

## Sex Composition

The sex composition of a community is defined as the number of males per 100 females within a population. The sex ratio is a common statistical measure of sex composition. As sex ratio greater than 100 indicates an excess of males, whereas a ratio less than 100 represents an excess of females. Sex ratios generally range between 95 and 102 except for special circumstances, such as wartime casualties or substantial migration.

Table 4.7 shows the relationship between Battlefield’s sex ratio and those of the state since 1990. The state has experienced an increase in sex ratios since 1990, indicating an increase in the number of males in the population. Similarly, Battlefield experienced practically the same increase in sex ratios from 96.6 in 1990 to 98.1 in 2000.

**Table 4.7 Sex Ratios, 1990-2000**

	Battlefield		Springfield MSA		Missouri	
	1990	2000	1990	2000	1990	2000
<b>Male</b>	750	1,181	115,529	158,735	2,365,487	2,720,177
<b>Female</b>	776	1,204	125,064	166,986	2,551,199	2,875,034
<b>Sex Ratio</b>	96.6	98.1	92.4	95.1	92.7	94.6

Source: U.S. Bureau of the Census. *Census of Population, 1990; Census 2000 Summary File 1.*

Analysis of Battlefield’s sex composition by age group also supports the observation that most of the population is within the younger age cohorts, while fewer persons are in the 65+ age cohort. Table 4.8 shows the sex ratio change within each age cohort from 1990 to 2000. As it would be expected with Battlefield’s growth rate, each cohort increased significantly in population. One interesting observation is the higher sex ratios for the aging population, indicating an excess of male in these age groups. Typically the sex ratios for these age groups are lower (excess females) due to the greater life span of the female population.

**Table 4.8 Battlefield Sex Ratios by Age Cohort, 1990-2000**

Age Cohort	Total Males		Total Females		Sex Ratio	
	1990	2000	1990	2000	1990	2000
0-4	73	120	74	108	98.6	111.1
5-9	71	94	73	95	97.3	99.0
10-14	56	87	53	102	105.7	85.3
15-19	53	88	55	74	96.4	118.9
20-24	47	61	60	69	78.3	88.4
25-29	100	100	110	101	90.9	99.0
30-34	84	112	99	109	84.8	102.8
35-44	142	200	137	230	103.6	87.0
45-54	73	171	60	177	121.7	96.6
55-64	26	132	27	128	96.1	103.1
65-74	19	44	16	41	118.8	107.3
75+	6	22	12	20	50.0	110.0

Source: U.S. Bureau of the Census. *Census of Population, 1990; Census 2000 Summary File 2.*

## Ethnicity Characteristics

Another demographic variable that is usually examined in the planning process is ethnic composition of the population. Table 4.9 shows Battlefield's population is largely white. At the same time, Battlefield has the highest proportion of non-whites (2.3%) when compared to the other peer communities, not including the Springfield MSA. On the other hand, the ethnic characteristics of the community indicate that there are less-than proportional numbers of Hispanics in the community (1.2%). While this number is not extremely low when compared to the peer communities, it is lower than the Springfield MSA (1.7%) and Clever (1.9%). Low numbers among minority populations is common in southwest Missouri. However, there has been a substantial influx of Hispanic immigration in the region since 1990 that may change this trend.

**Table 4.9 Ethnic Composition of the Population, 2000**

	White		Non-White		Hispanic (Any Race)	
	Number	Percent	Number	Percent	Number	Percent
<b>Battlefield</b>	2,301	96.5	55	2.3	29	1.2
<b>Nixa</b>	11,697	96.5	274	2.3	153	1.3
<b>Republic</b>	8,157	96.7	193	2.3	88	1.0
<b>Brookline</b>	323	99.1	3	0.9	0	0.00
<b>Clever</b>	991	98.1	17	1.7	19	1.9
<b>Springfield MSA</b>	304,463	93.5	15,710	4.8	5,548	1.7

Source: U.S. Bureau of the Census. *Census 2000 Summary File 1.*

## Household Characteristics

The characteristics of individual households and families are important for determining the nature of a community. The number and characteristics of households in Battlefield and the peer communities are shown in Table 4.10. Overall, the number of households in Battlefield increased from 549 in 1990 to 857 in 2000. This increase was common over the same time period between all of the comparison communities. The exact gain in households in Battlefield from 1990 to 2000 was 308, which represents a growth of 56.1 percent.

**Table 4.10 Household Characteristics, 1990-2000**

Area	1990	2000					
	Households	Households					
	Number	Number	Family	Non-Family	Married with Children	Female Head with Child	Average Persons per Household
<b>Battlefield</b>	549	857	719	138	308	54	2.78
<b>Nixa</b>	1,801	4,654	3,450	1,204	1,879	423	2.56
<b>Republic</b>	2,331	3,148	2,380	768	932	277	2.63
<b>Brookline</b>	111	139	98	41	26	5	2.35
<b>Clever</b>	237	388	282	106	129	28	2.60
<b>Springfield MSA</b>	93,400	129,357	85,926	43,431	29,250	7,887	2.41

Source: U.S. Bureau of the Census. *Census of Population, 1990; Census 2000 Summary File 1.*

Of the city’s 857 households in 2000, 83.8 percent were family households. This is above average, for all the peer communities fall in the seventy-percentile range. At the same time, it is well above average for the entire Springfield MSA, which has only 66.4 percent of total households classified as family households. Therefore, Battlefield has an above average household characteristic that represents a tightly knit family community. Clearly, Battlefield’s current description as a “bedroom community” in the Springfield-Metro area serves a major role in attracting and retaining a significant share of the area’s families.

Furthermore, Battlefield also has a lower non-family household population. For example, in 2000 it was lower (16.1%) than all of the peer communities, which ranked in the mid-to-upper twenty-percentile range, and approximately half the proportion of the

non-family households in the Springfield MSA (33.6%). Of course, this supports the idea that Battlefield has served as a “bedroom community” with a strong sense of family structure. However, it cannot be forgotten when comparing the proportion of Battlefield’s non-family households with the proportion in the Springfield MSA that the metro-area has many more institutions, dorm rooms and apartments for non-family households.

While Battlefield has a larger proportion of family households, Census data indicate that the percentage of households with married couples who have children are actually lower than some of the surrounding communities. For example, 43 percent of Battlefield’s family households are married couples with children. In comparison, Nixa has a lower percentage of family households; however, 54 percent of Nixa’s family households are married couples with children. Battlefield does have a larger proportion of family households that consist of married couples with children than the entire Springfield MSA.

Another aspect of the family housing characteristics is the proportion of households in a community classified as “Female Head with Children,” or the “single-mother” family. For the most part, Battlefield’s proportion of households within this classification is below average (7.5%) when compared to Republic’s and Clever’s (9.9%) and Nixa’s (12.3%). The only peer community with a lower percentage of “single-mother” family household is Brookline (5.1%), and this anomaly is most likely due to Brookline’s elderly family structure. At the same time, Battlefield’s proportion is much lower than Springfield MSA’s (9.2%). The lower rate of “Female Head with Children” households in Battlefield could be the result of insufficient affordable housing in the community.

Finally, the number of persons per household in Battlefield is fairly average in comparison to peer communities. However, Battlefield does have the highest number of persons per household (2.78) which reflects the City’s larger proportion of family households. While the rest of the communities do rank below this, there is not a

significant difference. For example, the average number of persons per household in the Springfield MSA and the City of Nixa are 2.41 and 2.56, respectively.

## **Population Estimates and Future Forecasts**

The current estimate for the population of Battlefield is slightly higher than what was recorded in the 2000 Census. In view of the fact that two years have passed since Census data were collected, an exact current figure is not available. However, given the projected growth scenario outlined in the population forecasts of the following sections, Battlefield's current population is estimated at approximately 2,553<sup>1</sup>. It is also estimated that 61 additional households<sup>2</sup> have been added in the community since the 2000 Census data were collected.

Forecasting future population for a community is not easy in an area of potentially rapid growth such as Battlefield. Several mathematical models are used to project Battlefield's future population, which is based on past growth trends from 1980 to 2000. It should be noted that accurate population projections are heavily reliant on past growth trends over a longer time period. As a result, the population forecasts for Battlefield may not be as reliable or as accurate because the City did not incorporate until 1974. Therefore, the oldest recorded population data for the community are from the 1980 Census. The lack of data is reflected in the output of the mathematical models used to generate the projections. Since the models generally require four to five decades of known population data, the existing data for Battlefield were divided into five different periods:

1. 1980 Census population data
2. An interpolated estimate of the population in 1985

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<sup>1</sup> This estimate is based on the population of Battlefield most likely growing to 3500 by the 2010. Under this scenario, a population growth of approximately 112 people per year is expected between the Census years of 2000 and 2010.

<sup>2</sup> This estimate is based on a growth of 112 people per year and the current Census' average of 2.78 people per household. Therefore, if the population has grown by 168 people between the 2000 data and the writing of this plan, then the average number of people per household of 2.78 divided by the estimated number of new residents in Battlefield allows for a general estimate of the number of new houses.

3. 1990 Census population data
4. An interpolated estimate of the population in 1995
5. 2000 Census population data

The following projections are subject to increased possibility of error because of interpolating the known population data. However, they are still valuable in planning a course of growth for the city. The forecasts represent three possible growth scenarios for the City of Battlefield. The first is a continued growth scenario, which represents steady growth based on Battlefield's growth trends from 1980-2000. Under this scenario, Battlefield's population would range from 2,800 to 2,900 in 2010, and between 3400 and 3600 in 2020. This forecast is summarized in Table 4.11.

**Table 4.11 Battlefield Population Projections, Continued Growth Scenario**

<b>Projection Technique</b>	<b>2010</b>	<b>2020</b>
<b>Linear Direct</b>	2,964	3,543
<b>Linear Regression</b>	2,852	3,431
<b>Projected Low</b>	2,800	3,400
<b>Projected High</b>	2,900	3,600
<b>Likely</b>	2,850	3,500

The second growth scenario displays a pattern of rapid growth. This is the type of growth that Nixa, Republic and Clever have experienced. This scenario best exemplifies Battlefield's growth in recent years. Under the rapid growth scenario, Battlefield's population could reach between 3,300 and 5000 in 2010, and between 4,500 and 12,300 by 2020. The actual projections for this scenario are in Table 4.12.

**Table 4.12 Battlefield Population Projections, Rapid Growth Scenario**

<b>Projection Technique</b>	<b>2010</b>	<b>2020</b>
<b>Exponential</b>	3,325	4,636
<b>Exponential Regression</b>	3,220	4,506
<b>Parabolic Regression</b>	3,693	5,473
<b>Modified Exponential</b>	4,916	12,307
<b>Projected Low</b>	3,300	4,500
<b>Projected High</b>	5,000	12,300
<b>Likely</b>	4,150	8,400

The last population growth scenario considered is the increasing growth scenario. This scenario considers the various political, jurisdictional and geographic boundaries that limit Battlefield’s future growth area. The increasing growth scenario, representing a combined balance of the continued and rapid growth scenarios, is outlined in Table 4.13. The increasing growth scenario for Battlefield results in a population that will range from 3,050 to 3,950 in 2010 and between 3,950 and 7,950 in 2020. However, the projected numbers will most likely result in a population of 3,500 in 2010, and a population of 5,950 in 2020.

**Table 4.13 Battlefield Population Projections, Increasing Growth Scenario**

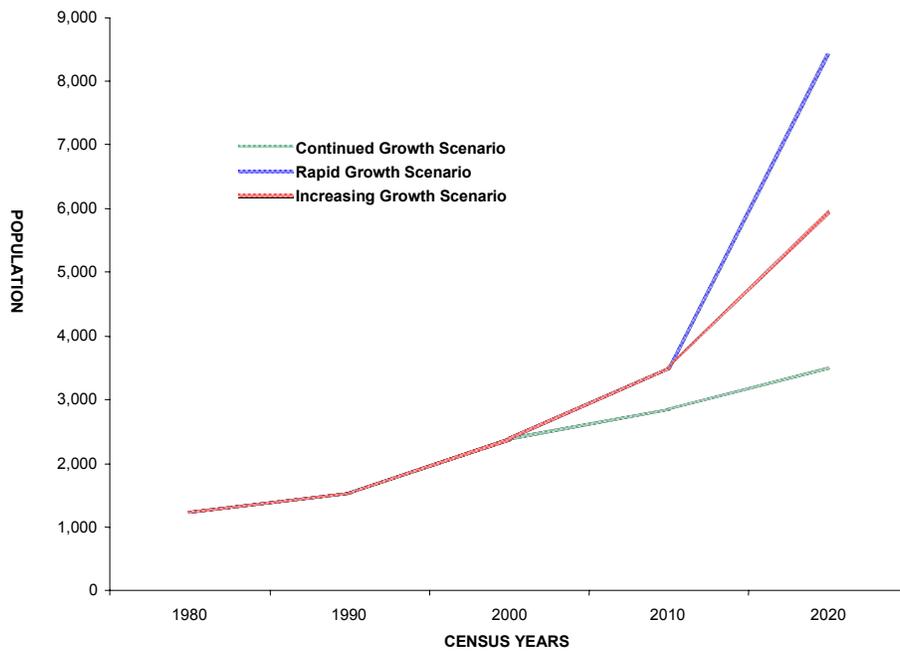
<b>Projection</b>	<b>2010</b>	<b>2020</b>
<b>Projected Low</b>	3,050	3,950
<b>Projected High</b>	3,950	7,950
<b>Likely</b>	3,500	5,950

Of these population projections, the continued growth scenario is considered the most applicable. The development of the Battlefield area could yield population figures close to those of the rapid growth scenario for 2010. However, Battlefield’s population growth will be tempered by its ability to annex within its defined urban service area and extend sanitary sewer infrastructure. Battlefield needs to be able to expand its physical infrastructure and corporate boundaries to allow for new residential and commercial development.

Battlefield should plan for continued growth. However, the increasing growth and rapid growth projections should not be ignored. As past growth trends dictate, the City does need to prepare itself for the possibility of an increasing growth scenario between now and 2020. Battlefield should monitor growth and development trends in the unincorporated portion of its urban service area to determine impact on the City’s future annexation and population growth potential. Likewise, any significant level of annexation of property developing in new subdivisions within this urban service area may necessitate preparation of revised population projections.

Figure 4.1 shows all three projected growth scenarios. Battlefield should plan for a continued growth scenario because this is what will most likely occur due to the limits imposed on the community’s physical growth boundaries (urban service area). However, the increasing growth scenario should be considered in infrastructure planning.

**Figure 4.1 - Growth Scenarios for Battlefield, MO 2010 - 2020**



## SOCIO-ECONOMIC PROFILE

The economic vitality of a community is determined in part by the socio-economic characteristics of its population. Socio-economic factors such as household income, poverty rates, labor force characteristics, employment rates, and educational attainment provide insight to determining need for housing, various community services, business attraction and job creation. Battlefield's economy is tied to the larger regional economy and the socio-economic characteristics of its population contribute to the overall health of the regional economy. In order to provide a reference point for evaluating the relative health of Battlefield compared to the region, the following analysis also includes socio-economic trend data for the cities of Brookline, Clever, Nixa, Republic and Springfield, Greene County and the State of Missouri. Overall, Battlefield ranks favorably in this regional analysis.

### Income

Census data indicate the City of Battlefield has the highest median household income (\$33,380) of all the peer communities in 1990 and in 2000 (\$47,788). Using 1999 income information derived from the 2000 Census, Nixa ranked second with a median household income of \$37,655 (see Table 5.1). Battlefield also has a higher household median income than Greene County and Missouri for the same two census periods.

**Table 5.1 Median Household Income in 1989 and 1999**

Jurisdiction	Income (dollars)	
	1989	1999
Battlefield	33,380	47,788
Brookline	32,045	29,750
Clever	18,393	32,798
Nixa	24,798	37,655
Republic	22,417	34,611
Springfield	21,577	29,563
Greene County	24,285	34,157
Missouri	26,362	29,563

Source: U.S. Bureau of the Census. *Social and Economic Characteristics, 1990;*  
*Demographic Profile 3, 2000.*

Between the years of 1989 and 1999, the residents of the City of Battlefield have seen a great change in their incomes. As seen in Table 5.2, over 56.5 percent of households had incomes below \$35,000 in 1989. In 1999, 72.1 percent of Battlefield’s households had incomes above \$35,000 and nearly 50 percent of households had incomes of \$50,000 or more. Referencing Table 5.3, the percentage of Battlefield’s households with incomes of \$50,000 and greater in 1999 was substantially greater than that of the peer communities, Greene County or the State. Also of note in Table 5.3 is Battlefield’s very small percentage of households with incomes less than \$14,999 (4.1 percent) when compared to the peer communities.

**Table 5.2 Household Income in Battlefield, 1989 and 1999**

Income (dollars)	Percent of Total Households	
	1989	1999
Less than \$14,999	12.6	4.1
\$15,000 to 24,999	19.9	10.2
\$25,000 to 34,999	24.0	13.6
\$35,000 to 49,999	29.0	24.7
\$50,000 or More	14.5	47.4

Source: U.S. Bureau of the Census. *Summary Tape File3, 1990; Demographic Profile 3, 2000.*

**Table 5.3 Household Income in 1999**

Jurisdiction	Household Income by Percent of Total Households				
	Less than \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More
Battlefield	4.1	10.2	13.6	24.7	47.4
Brookline	19.6	20.3	15.2	13.8	31.2
Clever	16.9	18.7	19.3	17.9	27.2
Nixa	14.7	13.9	16.6	19.7	35.1
Republic	15.7	17.7	17.5	16.9	32.2
Springfield	22.3	19.8	16.6	17.7	23.6
Greene County	18.3	17.1	15.8	18.3	30.6
Missouri	17.1	14.6	14.3	17.5	36.5

Source: U.S. Bureau of the Census. *Demographic Profile 3, 2000.*

## Poverty

Battlefield’s relatively lower percentage of households in the lower income categories is reflected in the City’s low poverty rate (see Tables 5.4 and 5.5). In 1989, Battlefield had the lowest poverty rate (3.9%) of all peer communities and again in 1999 (2.5%). Of the peer communities, the second lowest poverty rate reported in the 2000 Census was for the City of Clever at 5.9 percent, while both Greene County and Missouri had poverty rates above 11 percent.

As is also shown in Tables 5.4 and 5.5, the percentage of persons living in poverty in Battlefield decreased for all age groups between 1989 and 1999. For persons for whom poverty could be determined in the 2000 Census, Battlefield reported no persons over the age of 65 living below the poverty level. In 1999, Battlefield also had a far smaller percentage of persons under the age of 18 below the poverty level than did the peer communities, Greene County and Missouri.

**Table 5.4 Poverty in 1989 as a Percent of Total Population**

Jurisdiction	Percent			
	Individuals aged under 18 in poverty	Individuals age 18 and over in poverty	Individuals 65 and over in poverty	Total Poverty
Battlefield	1.8	1.8	0.3	3.9
Brookline	0.0	4.1	0.0	4.1
Clever	3.5	6.4	7.4	17.3
Nixa	5.9	5.0	2.7	13.6
Republic	4.2	3.8	2.4	10.4
Springfield	4.3	10.3	1.9	16.5
Greene County	3.7	8.5	1.7	13.9
Missouri	4.5	6.7	2.0	13.2

Source: U.S. Bureau of the Census. *Social and Economic Characteristics, 1990.*

**Table 5.5 Poverty in 1999 as a Percent of Total Population**

Jurisdiction	Percent			
	Individuals aged under 18 in poverty	Individuals age 18 and over in poverty	Individuals 65 and over in poverty	Total Poverty
Battlefield	1.1	1.3	0.0	2.5
Brookline	5.5	7.1	1.5	12.6
Clever	2.6	3.4	0.9	5.9
Nixa	4.2	5.4	0.7	9.6
Republic	2.3	4.3	1.1	6.5
Springfield	3.8	11.0	1.1	14.8
Greene County	3.1	8.4	1.0	11.5
Missouri	3.9	7.5	1.3	11.4

Source: U.S. Bureau of the Census. *Demographic Profile 3, 2000*.

## Employment

The increases in the incomes of the Battlefield population are likely due to the changes in the occupations of Battlefield residents resulting from the in-migration of new population over the 1990s decade. The percentage of Battlefield's employed civilian population over the age of 16 working in management, professional, or related occupations rose from 22.2 percent in 1990 to 31.7 percent in 2000 (Table 5.6). Only the Village of Brookline has a larger percentage of its employed civilian labor force working within this occupational classification.

**Table 5.6 Battlefield Work Force by Occupation, 1990 and 2000**

Occupation	1990		2000	
	Number	% of Total	Number	% of Total
Employed Civilian Labor Force Aged 16 and Over	880	100.0	1,452	100.0
Managerial and Professional Specialty	195	22.2	461	31.7
Technical, Sales & Administrative Support	289	32.8	383	26.4
Service	141	16.0	194	13.4
Construction, Extraction & Maintenance	251	28.5	156	10.7
Production, Transportation & Materials Moving			258	17.8
Farming, Fishing & Forestry	4	0.5	0	0.0

Source: U.S. Bureau of the Census. *Summary Tape File 3, 1990; Demographic Profile 3, 2000*.

Also changing were the Sales and Service occupation sectors. These occupation categories decreased in representation in the Battlefield work force from 32.8 percent and 16.0 percent in 1990 to 26.4 and 13.4 percents, respectively in 2000.

The occupations of Battlefield’s residents in the year 2000 closely relate to the Village of Brookline in most categories. The two categories with the largest differences are Construction, Extraction, and Maintenance and Production, Transportation, and Material Moving (Table 5.7). Battlefield shows a larger percentage of residents employed in the Construction Sector, whereas Brookline shows a higher percentage in the Production Sector. Overall, Battlefield is on a similar trend with Greene County and the State of Missouri.

**Table 5.7 Area Work Force by Occupation, 2000**

Jurisdiction	Employed Civilian Population aged 16 years and over (Percent of Total Population)	Occupation by Percent of Employed Civilian Labor Force aged 16 and Over					
		Management, Professional, and Related Occupations	Service	Sales and Office	Farming, Fishing, and Forestry	Construction, Extraction, and Maintenance	Production, Transportation, and Material Moving
Battlefield	60.9	31.7	13.4	26.4	0.0	10.7	17.8
Brookline	42.0	32.1	13.9	26.3	0.0	8.8	19.0
Clever	49.3	18.7	16.3	29.5	0.4	8.8	26.3
Nixa	49.9	28.7	13.6	33.4	0.5	11.8	11.9
Republic	49.0	22.6	16.5	29.5	0.2	9.0	22.2
Springfield	49.6	27.7	18.6	30.3	0.2	7.8	15.5
Greene County	50.4	29.8	16.2	30.1	0.3	8.2	15.4
Missouri	47.5	31.5	15.0	26.9	0.6	9.8	16.3

Source: U.S. Bureau of the Census. *Demographic Profile 3, 2000*.

Table 5.8 shows Battlefield’s 2000 work force by industrial sector classification. As noted, the largest percentage of the employed civilian labor force aged 16 and over work in the Education, Health Care and Social Assistance industry (17.8 percent). In second and third position are the Manufacturing and Retail Trade sectors, accounting for 14.6 percent and 14.5 percent of the employed civilian labor force, respectively.

**Table 5.8 Battlefield Work Force by Industry, 2000**

Industry	Civilian Labor Force aged 16 and Over	
	Number	Percent
Employed Persons	1,452	97.9
Manufacturing	212	14.6
Retail Trade	211	14.5
Education, Health Care & Social Assistance	259	17.8
Construction	104	7.2
Wholesale Trade	80	5.5
Transportation, Warehousing & Utilities	111	7.6
Finance, Insurance, Real Estate, & Rental and Leasing	111	7.6
Professional, Scientific, Management, Administrative & Waste Management	58	4.0
Arts, Entertainment, Recreation, Accommodation & Food Service	106	7.3
Other Industries	200	13.9

Source: U.S. Bureau of the Census. *Summary File 3, Census 2000.*

## Unemployment Rates

Unemployment information is not available for the City of Battlefield. However, because of the close relationship between the Springfield MSA and the City of Battlefield, a general interpolation of the unemployment characteristics of Battlefield's labor force can be made. The unemployment rate of the Springfield MSA was lower than the State of Missouri from 1992 to 2001 (Table 5.9). When comparing the Springfield MSA to Greene County, the County had a lower unemployment rate for the same time. The Springfield MSA's unemployment rate declined from 4.6% in 1992 to 2.4% in 2000. However, the unemployment rate increased to 3.5% in 2001, likely due to the recessionary conditions of the nation's overall economy, thus affecting employment in the area.

**Table 5.9 Unemployment Rates, 1992 – 2001**

Jurisdiction	Percentage of Labor Force by Year									
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Springfield MSA	4.6	5.6	3.3	3.4	3.4	3.4	3.1	2.4	2.4	3.5
Greene County	4.5	5.5	3.2	3.2	3.3	3.2	3.0	2.3	2.3	3.3
Missouri	5.7	6.5	4.9	4.8	4.6	4.2	4.2	3.4	3.5	4.7

Source: Missouri Works, Missouri Department of Economic Development.

## Education

The City of Battlefield is a highly educated community with over 90% of its population over the age of twenty-five graduating high school and/or having some form of advanced degree in both 1990 and 2000. In 1990, at least 26 percent of the Battlefield population over the age of 25 had either an associate's or bachelor's degree, though most of those had a bachelor's degree (Table 5.10). In the year 2000, just over 28 percent fell into this same category, with an increased number holding bachelor's and graduate degrees.

**Table 5.10 Educational Attainment in Battlefield, 1990 and 2000**

<b>Educational Attainment</b>	<b>1990</b>	<b>2000</b>
Population Aged over 25 Years	911	1,515
Less than 9th Grade	1.8	0.6
9th to 12th Grade, no diploma	7.7	9.2
High School Graduate (includes Equivalency)	35.5	30.2
Some College, no degree	28.5	31.7
Associate Degree	10.4	9.1
Bachelor's Degree	13.3	14.9
Graduate or Professional Degree	2.9	4.1
High School Graduate or Higher	90.5	90.0

Source: U.S. Bureau of the Census. *Summary Tape File 3, 1990; Demographic Profile 3, 2000.*

In comparison to its peer communities, Greene County and the State of Missouri, the City of Battlefield has a larger percentage of high school graduates (Table 5.11). In 2000, only 9.8 percent of Battlefield residents age 25 and older did not graduate from high school, in comparison to 15.3 percent for Greene County and 18.6 percent for the State. Ninety percent of Battlefield's population have a high school degree or higher education level, whereas the percentage of populations in most other peer communities with a high school degree or higher is within the low to mid 80<sup>th</sup> percentile. Conversely, however, Battlefield ranks fifth behind Greene County, Springfield, Nixa and Missouri in the percentage of persons over the age of 25 with a bachelor's degree or higher.

**Table 5.11 Educational Attainment Persons Aged 25 and Over, 2000**

Jurisdiction	Percent of Persons Aged 25 and Over							
	Battlefield	Brookline	Clever	Nixa	Republic	Springfield	Greene County	Missouri
Less than 9 <sup>th</sup> Grade	0.6	6.0	6.5	2.3	5.6	4.9	4.3	6.5
9 <sup>th</sup> to 12 <sup>th</sup> Grade, no diploma	9.2	16.4	11.8	9.2	12.2	12.3	11.0	12.1
High School Graduate (includes Equivalency)	30.2	40.9	41.2	31.8	36.5	30.4	30.9	32.7
Some College, no degree	31.7	17.2	23.8	29.8	27.1	24.7	25.1	21.9
Associate Degree	9.1	0.9	3.4	4.9	3.47	4.6	4.6	5.1
Bachelor's Degree	14.9	12.9	9.1	16.3	10.8	15.2	15.9	14.0
Graduate or Professional Degree	4.1	5.6	4.2	5.7	4.5	7.8	8.3	7.6
High School Graduate or Higher	90.0	77.6	81.7	88.5	82.2	82.8	84.7	81.3
Bachelor's Degree or Higher	19.0	18.5	13.3	21.9	15.2	23.0	24.2	21.6

Source: U.S. Bureau of the Census. *Demographic Profile 2, 2000*.

In summary, the City of Battlefield has a strong community base in income, occupation, and educational attainment. These factors will influence housing demands as well as private sector decisions to locate businesses and services in the community.

# **ENVIRONMENTAL RESOURCES**

## **Topology and Geology**

The City of Battlefield sits atop the Springfield Plateau in the Ozarks Uplands Physiographic Region. Elevation ranges from about 1,310 feet on a series of gentle hilltops bisecting the Wilson's Creek and James River watersheds, to 1,200 feet or less at the headwaters of a creek leading to the James River southeast of town (north of Meadowlark Lane). The majority of the City lay on a slope oriented towards the James, and in most cases, this gradation poses no problems. However, slope may be problematic in the extreme southeast portions of town close to hollows feeding into the river.

The highest elevation points mentioned above are on a mild ridge top running through the City in a northeast-southwest direction. This ridge line runs roughly parallel to the Missouri-Pacific rail line, the course of which may be seen as skirting its southern edge. This topographic feature is flanked on either side by the two watersheds that drain the City--the James River to the south and east and Wilson's Creek to the north and west.

A uniform layer of Mississippian aged Keokuk Limestone underlies the City. Keokuk Limestone is blue-gray, with a fine to medium texture. Light gray chert nodules are prevalent in this rock type, as are crinoid fossils.

## **Hydrology**

Battlefield's close proximity to the Wilson's Creek and James River watercourses is significant in that drainage from the City makes its way into its ultimate watershed destination, the James River, in short order. Even the entry point of Wilson's Creek into the James is fairly close to the City. This means that agricultural and urban runoff enter the James River quickly and without much time for filtration into the underground karst topography of the Ozarks.

Karst topography refers to the underground system of caves, springs, sinkholes, and underground streams, created when natural carbonic acid in groundwater interacts with limestone bedrock. In addition, in the southwest portion of the City there is a complex of large, relatively shallow sinkholes that transmit water south and into the James. In short, Battlefield occupies a location that has the potential to affect the water quality for a significant portion of the James River watershed.

## **Climate**

The Battlefield region features a continental climate, with hot summers and mild winters. The average annual temperature is between 46 and 68 degrees Fahrenheit. Precipitation is somewhat evenly distributed throughout the year; the average annual rate is approximately 43 inches. The growing season in Battlefield usually extends from early April to late October, approximately 200 days.

## **Soils**

The soils in the Battlefield area are all part of the Wilderness-Variton Association. In general, these soils are deep and moderately well drained, with gentle to moderate slopes. Soils in the Battlefield area are generally suitable for most development. See Appendix A for detailed characteristics of the soils found in the Battlefield area.

## **Environmental Issues**

### ***Erosion***

Battlefield has, as part of an agreement with the City of Springfield for wastewater treatment services, an Urban Service Boundary abutting Wilson's Creek to the Northwest and Wilson's Creek National Battlefield to the West. Within this area, the City may provide sanitary sewer services for future development. The prospect of tying into the larger community sewer system will provide incentive for new development to annex into Battlefield.

It is important to note that during the land development process, most erosion occurs in the initial, groundbreaking phase. As the development boom is already underway on the west side of the City, erosion may soon become a significant problem in the area. Several branches of Wilson’s Creek are in the vicinity, one of which empties into the Creek not far from the Historical Marker at the Wilson’s Creek National Battlefield, the City’s namesake. It is recommended that the City of Battlefield adopt effective erosion control regulations to minimize the loss of topsoil as future development occurs in the area.

### ***Sinkholes***

There are many identified sinkholes in Battlefield’s current corporate boundary (See Figure 6.1). In the southwest portion of the City, there is a group of large sinkholes, in an area defined by County Roads 115 and 182 on the north and west sides, and by State Highway FF on the south and east sides. The most current USGS topographic maps of the area show that these sinks subside as much as 20 to 30 feet below the immediate vicinity. The largest of these, which lies at the southwestern edge of the Greene County Water District No. 1 boundary, occupies an area greater than one square mile. Undoubtedly, more sinkholes will be discovered over time in the City and the surrounding areas; new developments may unearth some, while others can seem to suddenly “appear,” leaving telltale signs of ground subsidence or fractured foundations. Much of the land occupied by this sinkhole plain is relatively undeveloped, which is likely to change as development pressures in the area continue.

Sinkholes pose a serious engineering challenge to development. Construction of buildings in sinkhole floodplains is obviously more expensive than in other areas. When development occurs in sinkhole areas, problems such as basement flooding, land subsidence and foundation settling can result. Sinkholes also have an impact on storm water runoff and overall water quality. Pollutants found in urban and agricultural runoff can make their way into the underground water system very quickly through sinkholes, as they are a principal source for the water found in surrounding springs and streams.

Over time, soil erosion can severely limit the natural drainage function of sinkholes, clogging them with sediment that reduces their capacity to absorb runoff. This results in sinkhole flooding, which can affect the surrounding areas during peak runoff periods. Appendix B provides a more detailed examination of sinkholes and the problems associated with development in sinkhole areas.

### ***Urban Runoff***

Development of any kind inevitably means more impermeable surfaces and therefore less area for water to infiltrate the ground. Thus, the overall volume and rate of runoff increases, leading to more intense erosion and the silting of streams, spring recharge areas and sinkholes.

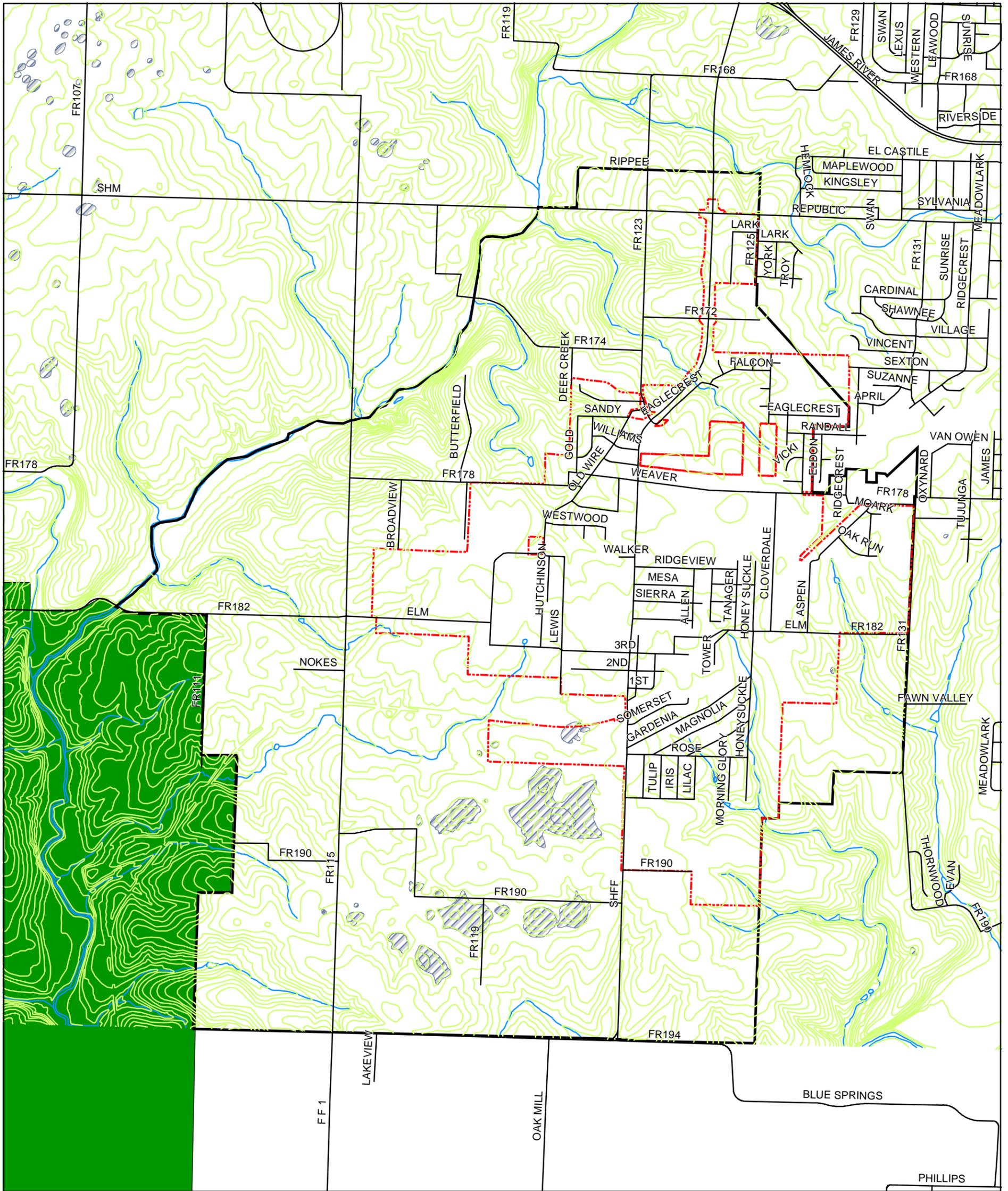
Another, more subtle result of urban runoff is found in the chemicals washed from paved surfaces during runoff periods. These substances often require oxygen to complete their breakdown. A longer time between rainfalls results in a greater accumulation of these chemicals. After a long dry spell, a heavy rainfall will create a “pulse” of poor quality water, laden with pollutants, which upon entry into streams will consume large amounts of oxygen. This process has been associated with multiple fish kills along Wilson’s Creek and the James River.

### ***Lineaments***

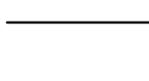
A lineament is a surface expression of vertical fractures in the bedrock. These geologic features are like expressways through which groundwater quickly travels and into which water quickly infiltrates. Groundwater hazards associated with lineaments are similar to those occurring in sinkhole areas.

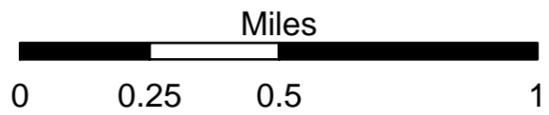
There are two lineaments within Battlefield, both oriented northwest to southeast, in the southeast part of town. Both run nearly parallel and are found at the forked headwaters of the stream near Indian Spring (see Figure 6.1). The eastern lineament begins near the intersection of the Missouri-Pacific Railroad and Weaver Road.

**Figure 6.1 Environmental Features**



**Legend**

-  Battlefield City Limits
-  Battlefield USB
-  Streams
-  Sinkholes
-  Roads
-  Contours



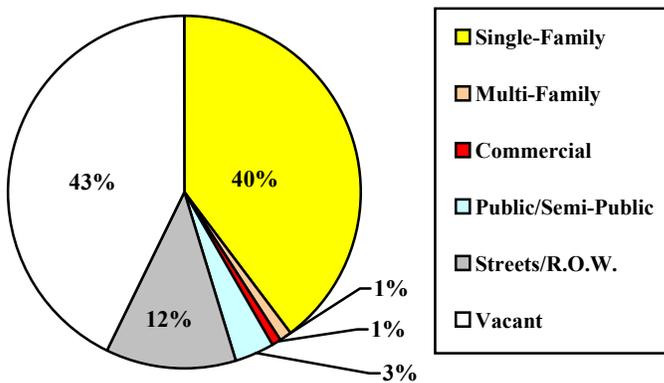
# LAND USE PLAN

An analysis of current land use patterns in Battlefield is essential in providing a benchmark to monitor and provide guidance to the community's future growth. This chapter of the Comprehensive Plan discusses the existing land uses and recommended patterns of future land uses in the City.

## Existing Land Uses

The City of Battlefield comprises 1,320 acres. Forty-three percent of this land is currently vacant and 40 percent is developed as single-family residential. Twelve percent of the land is streets and rights-of-way. Other public and semi-public uses comprise only 3 percent of Battlefield's acreage, while both commercial and multi-family residential uses only account for one percent each. Figure 7.1 shows the percentage distribution of existing land uses in Battlefield.

**Figure 7.1 Current Land Use, 2002**



There are several established subdivisions in the community with housing ages ranging from new to fifty years old, though most of the housing is ten to twenty years old. The majority of the housing is in good condition, but some is in need of minor repairs as addressed in Chapter Ten. Single-family dwellings are dominant

throughout the City. Only two multi-family developments exist, accounting for two percent of developed land in the community. One of these multi-family areas is comprised of fifteen, four-family apartment complexes. The other area has only two duplexes.

Currently, the vacant land in Battlefield includes many parcels that are not cultivated and are mostly used for grazing. These parcels are exceptionally large (ten acres or more) and are occupied by a single-family residential structure. The vacant land is located mostly around the perimeter of the City, but four very large properties are located near the center city and are surrounded by residential development. Combined, residential and vacant land accounts for more than 80 percent, or almost 1,102 acres of the total 1,320 acres within the current city limits. Table 7.1 shows the distribution of land use acreage throughout the City and Figure 7.2 displays the distribution of existing land uses.

**Table 7.1 Battlefield Existing Land Use, 2002**

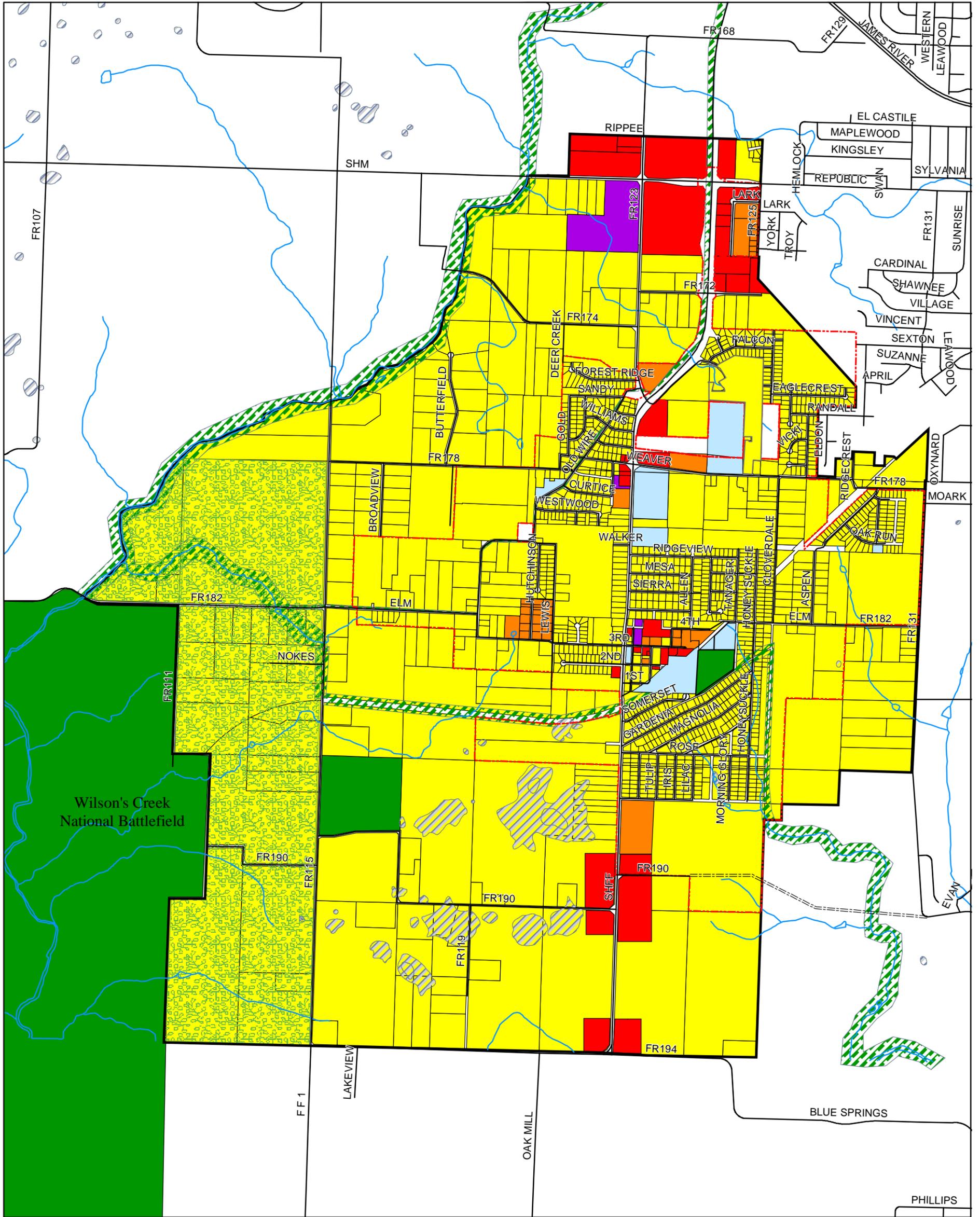
<b>Land Use</b>	<b>Total Acres</b>	<b>Percent of Developed Land</b>	<b>Percent of Total Land</b>
Total Residential	538	90	41
Single-Family	527	88	40
Multi-Family	11	2	1
Commercial	9	1	1
Public/Semi-Public	56	9	3
Vacant/Undeveloped	564	N/A	43
Streets/Rights-of-Way	153	N/A	12
Total Developed land	756	100	58
Total Acres	1,320	100	100

Source: Field Surveys, Center for Resource Planning and Management, Summer 2001; Field Survey Update, Community Planning Practicum Class, Southwest Missouri State University, Spring 2002.

Though only covering nine acres in Battlefield, commercial uses are still an important part of Battlefield’s current land use. Highway FF is the most significantly developed area. These commercial businesses include two gas stations, a bank, a massage therapy office, a storage unit company and two light industrial uses. Relatively new, these businesses appear to be in good condition. A small concentration of business is also located in the older, central area of Battlefield on and near Main Street. These businesses are mostly auto-related; the buildings range in condition from needing minor repairs to major deterioration.



**Figure 7.3 Battlefield Future Land Use**



**Legend**

Battlefield City Limits	Agricultural/Undeveloped
Streams	Single Family
Sinkholes	Multi-family
Roads	Commercial
Battlefield USB	Industrial
	Parks
	Public/Semi-public
	Greenway Trails
	Conservation

September 23, 2002

Miles

Public and semi-public facilities comprise four and five percent of the total developed land area in Battlefield, respectively. Churches in Battlefield are dispersed along Highway FF and occupy significant amounts of acreage. City facilities, including the City Hall, Police Station, and Fire Department, are located within the older, central area of the City. Battlefield's only park, a 12-acre site, lies next to these facilities. City Hall and the Police Station both occupy small, older structures that will not be able to adequately meet the community's needs as growth occurs in the future.

### **Current Land Development Patterns**

A prominent pattern in the City of Battlefield is residential development. At the time of this Plan, seven new single-family subdivisions have either begun construction or approached completion: Brittany Ridge, Eagleridge Heights, Fieldstone, Oak Park, Prairie View Heights, Steeple Chase Estates, and Walker Ridge. Though six of these have developed on or around the north, east, or west boundaries of the City, one is being developed as an infill project. The City of Battlefield has ample space towards its center by Highway FF, so such infill projects are resourceful uses of the land.

Previous residential growth is evident through the decennial census. In 1990, the City of Battlefield contained 549 housing units. By 2000, this number had increased to 885 units. Development currently underway is adding more housing units to the City. Several proposed developments have also been recently submitted for review. Two of these are located in the City's boundaries--one along Weaver Road and the other at the intersection of Highways FF and Highway M. Battlefield is experiencing much growth in this area in the form of single-family developments, such as the Prairie View Heights extension, and some multi-family development, though no known commercial development has been planned.

### **Future Land Development Patterns**

Battlefield's population increased 56 percent between the years of 1990 and 2000. The needs of this expanding population must be soon addressed, mainly through the housing and commercial base. It is expected that future residential development will

stretch towards the Wilson’s Creek National Battlefield to the west. The City of Battlefield will also experience further urban encroachment along its northern, northeastern, eastern and southern boundaries. The amount of land left for development in this perimeter area is quickly becoming exhausted, leading to a blurred definition between the Cities of Springfield and Battlefield.

Battlefield’s own future growth raises concerns for urban encroachment upon nearby Wilson’s Creek National Battlefield. The western boundary of Battlefield’s Urban Service Area runs along the eastern edge of the National Battlefield. Single family residential uses developed on large lots are scattered throughout this area between the City and the National Battlefield. A consistent desire expressed by citizens participating in the community visioning meetings has been the desire to preserve and protect the Wilson’s Creek National Battlefield from encroachment of urban development that may negatively impact on the intent of the Battlefield to preserve the history and setting of the Battle of Wilson’s Creek.

One option to achieve protection of the National Battlefield is the use of conservation subdivision development for properties that propose to develop in close proximity to the Battlefield’s eastern boundaries. This flexible zoning technique permits housing units to cluster on smaller lots on a portion of the tract in exchange for preservation of the balance of the tract in permanent open space or some form of recreation facility such as walking trails. The area in concern is currently within the jurisdiction of Greene County development regulations. Therefore, the City should strongly encourage Greene County to limit future development in this area to conservation subdivisions in order to establish a greenway boundary between the Battlefield and urbanization. Conservation subdivision provisions are also recommended to be incorporated in zoning regulations for the City of Battlefield itself.

Also impacting future land use in Battlefield is the potential realignment of Highway 60. The Missouri Department of Transportation has not yet designated an alignment route, but such an action would attract even more of a population to

Battlefield, further stressing the need for a strong housing and commercial base. The realignment of Highway 60 and its possible impacts on Battlefield should be monitored and the Plan updated accordingly as the new highway plans are made.

Increasingly important are the multi-family housing needs by current and future residents of the City, especially due to the growth of the younger population. The percent of those aged 25 years to 44 years jumped from 38.7 percent in 1980 to 65.7 percent in the year 2000. Interests in housing options other than single family housing will likely increase over the next decade as more baby boomers enter retirement. It will be important to diversify the housing stock for the needs of younger adults and retired adults. Multi-family development would be appropriate in the central city area to replace vacant land and existing dilapidated uses. Other appropriate locations would be in the north along Highway FF and to the south in clustered locations along Highway FF.

The City of Battlefield already has a strong residential base, but its commercial base is limited. As more people migrate to the City, commercial needs must be addressed. There are few prime locations for new commercial development within the current city limits. Substantial stretches of Highway FF are already developed in single family residential uses and the integrity of these residential uses should be maintained. It is recommended that commercial uses be clustered near the intersection of Highway FF and Weaver Road on the northern side of the City and around the intersection of Highway FF and Farm Road 190 to the south. Efforts should be undertaken at these locations to implement access management techniques to maintain traffic flow on Highway FF. New commercial development in these locations should be designed to share access points and perhaps shared off-street parking facilities.

A third potential area for future commercial development within the current city limits would be a planned redevelopment of blighted and deteriorating housing in the general vicinity between Highway FF and the City Hall location. However, this is viewed as a longer term option suitable only if smaller parcels of land can be assembled into a larger tract for redevelopment purposes, the road network can be redesigned, and

the redevelopment plan includes appropriate buffering to minimize any negative impact on surrounding residential uses.

Another potential reuse of this central city area is redevelopment as a government plaza. This area currently houses the fire department, police station, city hall, and the offices for the Public Water Supply District. The development of a new city hall, police facility and community center in this location along with the potential development of a trailway system linking in with the city park would improve the viability of this area and serve as a catalyst for private reinvestment.

The community has expressed the desire to link future commercial development to the heritage of Wilson’s Creek National Battlefield. One way to achieve this is through design standards. The following elements should be considered when addressing such themed development:

- Signage – street signs, store signs, and entrance signs to the community
- Infrastructure – lamp posts and sidewalks
- Building materials – common colors, textures, and siding choices

Locating themed development in the city center and at points of access to the proposed greenway trails would also help to increase pedestrian traffic throughout the town. Generating a commercial base for the City through themed development will aid Battlefield in preserving that small-town feel. Retail uses such as coffee shops, antique and craft stores, and other specialty businesses would further enhance the community’s character.

### **Future Development in the Urban Service Area**

Figure 7.3 shows the recommended pattern of future land use within the City of Battlefield and its Urban Service Area. It is expected that annexation would occur within the Urban Service Area boundary. As shown, future commercial development is proposed for the area located around the intersection of Highway FF and Highway M currently outside of the City. Additionally, commercial development is recommended to

cluster near the intersection of Highway FF and Farm Road 194 as growth occurs on the community's southern side.

Infill of single family residential uses compatible with adjacent residential uses is generally proposed in the area located between the western city limits and the Wilson's Creek National Battlefield. Figure 7.3 identifies the general location of low density single family as conservation subdivision development to serve as a buffer between higher density single family uses and the National Battlefield.

Future industrial development is proposed to locate on the northwest side of the current city limits, generally near the intersection of Highway M and Farm Road 123. This area would also be suitable for commercial uses.

The future land use plan also proposes several greenway trails located throughout and around the City. One will be the completion of the South/Wilson's Creek Greenway. Another proposed greenway trail would branch off the South/Wilson's Creek Greenway greenway just north of Farm Road 182 at Wilson's Creek National Battlefield and follow a railroad right-of-way to connect in with the city park located adjacent to City Hall. It is further proposed that this greenway extend east to Elm and then run southward to eventually connect with a proposed greenway through the Rivercut development.

Until these greenway trails can be constructed it is recommended that the City properly mark bike paths along the following route: South on Highway FF to Old Wire Road and then west on Elm (Farm Road 182) to Wilson's Creek National Battlefield. A variation on this might bring cyclists down Old Wire Road to Lewis and over to 3<sup>rd</sup> Street, bringing users to the city park.

## Land Use Goals and Objectives

### *Commercial Development*

**Goal 1:** Provide for convenient locations for commercial uses that are compatible with surrounding development, are well designed, and are accessible to the population.

**Objective 1:** The functional design of the roadway system should be compatible with the location and intensity of commercial development. Commercial activities that are high traffic generators should locate on major arterials.

**Strategy 1:** Commercial uses should be encouraged to locate in clusters along arterials or near arterial road intersections.

**Strategy 2:** Commercial areas should provide access at locations that limit congestion at major street intersections.

**Strategy 3:** Limit the number of access points to the major road system.

**Strategy 4:** Commercial areas should be designed to encourage shared vehicular access to major streets and internal pedestrian and vehicular circulation.

**Objective 2:** Minimize negative impacts of commercial development on adjoining lower intensity residential developments.

**Strategy 1:** Commercial areas should be designed to limit the flow of commercial traffic through adjoining neighborhoods.

**Strategy 2:** Use buffering techniques to minimize negative impacts of commercial development on adjacent residential areas. Buffering may be accomplished through natural or green buffers, or by using a less intensive land use, such as multi-family residential, to buffer between commercial and lower density single family uses.

### *Residential Development*

**Goal 1:** Provide suitable areas for residential development that offers a choice of housing and that meets the needs of the various segments of the population.

**Objective 1:** Residential development should be compatible with the existing and planned street system.

**Strategy 1:** Residential uses of differing intensities should be located and designed to take access from streets that have adequate capacity to handle the traffic that will be generated by the development.

- Multi-family residential uses should take access from collector or arterial streets.

**Strategy 2:** Design neighborhoods to include linkages for pedestrian and bicycle traffic through the neighborhood and to surrounding neighborhoods and major activity nodes. The City should encourage the planned development of interconnected greenways or other pathways.

**Strategy 3:** Design neighborhoods to provide convenient access to the major street system while limiting the flow of commercial traffic or other through traffic through the neighborhood.

**Objective 2:** Provide sufficient areas zoned for duplex and multi-family housing that are compatible with surrounding development and that increase opportunities for housing choice.

**Strategy 1:** Encourage residential infill development in existing neighborhoods. The type of housing permitted should be compatible with existing residential uses.

**Strategy 2:** Use higher density duplex and multi-family housing as a transitional land use buffer between single family residential areas and higher intensity commercial and industrial uses.

**Strategy 3:** Use natural buffers (landscaping, berms, etc.) to minimize the impact of higher density housing on adjoining lower density residential uses. Natural buffers also have the added benefits of:

- Reducing noise intensity
- Reducing of air pollution and dust
- Reducing long term maintenance and replacement costs of structural screening
- Creating an aesthetically pleasing environment

**Strategy 4:** Encourage planned residential development that incorporate housing of differing densities and types to create alternative housing choices for different segments of the population.

### ***Industrial Development***

**Goal 1:** **Provide appropriate locations for environmentally clean industrial uses that will create employment opportunities for local residents.**

**Objective 1:** Locate industrial development in areas with adequate transportation access and utilities service.

**Objective 1:** Minimize potential negative impacts of industry locations on nearby lower intensity land uses.

**Strategy 1:** Industrial uses are generally not compatible with residential uses and should not locate adjacent to residential areas.

**Strategy 2:** Use lower intensity commercial or office development as transitional land use buffers between industrial and residential uses.

**Strategy 3:** Require industrial activities that generate excessive noise, glare, odors or visual clutter to provide adequate buffering and screening to minimize negative impacts on adjoining properties.

**Strategy 4:** Industrial uses that may pose a hazard to the environment should not be permitted to locate in the City.

# **TRANSPORTATION PLAN**

The location and intensity of future land development in Battlefield will be closely linked to the existing and planned transportation network. For example, investment in a transportation improvement can promote growth in a localized area. Conversely, significant development without planned transportation improvements to accommodate growth can place financial strains on the community to make the needed transportation improvements. This chapter of the Comprehensive Plan examines transportation system conditions, needs and issues in Battlefield and provides goals, objectives, policies and recommended improvements to promote a safe and efficient transportation system with sufficient capacity to serve future growth.

## **Road Conditions**

Road conditions in Battlefield were determined through field studies conducted during January and February 2002. The study consisted of evaluating and classifying all the roads that traverse the City of Battlefield.

The classification used in appraising the condition of the road system consisted of "good," "fair," and "poor" ratings. The "good" rating indicates no noticeable surface blemishes, uprooting, potholes, or ruts on the street surface. The classification rating "fair" indicated slight problems, such as a few patches or some potholes for the length of the street. A "poor" rating was assigned to streets exhibiting a myriad of problems or defects. Such problems included numerous potholes, crumbling asphalt, and difficulty in driving over blemishes. Narrow and gravel or dirt roads also received a "poor" classification.

Battlefield's streets were classified as being in "good" condition with the exception of those on the following lists:

**Streets in “fair” condition**

- 1<sup>st</sup> Street
- Apollo
- Coach Drive
- Daniel Street
- Main Street
- Ridgeview Street
- Tanager Avenue
- 2<sup>nd</sup> Street
- Azalea Terrace
- Curtice
- Elm Street
- Magnolia
- Rose Terrace
- Tulip Lane
- Allen Street
- Clarborne
- Dahlia Drive
- Gold
- Monterrey Street
- Sandy Street

**Streets in “poor” condition**

- Buttercup Lane
- Lewis Street
- Old Wire Road
- William Street
- Enyart Street
- Lilac Lane
- Ridgewood Street
- Iris Lane
- Morning Glory Lane
- Weaver Road

Several reasons may account for those roads rated in poor condition. Among these is insufficient drainage. Shallow drainage ditches or culverts that are crushed or blocked with debris can inhibit the flow of surface water from the road surface. Standing water at a road’s edge can seep under the pavement, eroding the road base and causing the road surface to deteriorate and crumble.

**Pedestrian and Bicycle Circulation**

Pedestrian mobility is as important to a city as is vehicular mobility. Sidewalks are being constructed in new subdivisions, but most of Battlefield's older neighborhoods are lacking such pedestrian facilities. Increasing vehicular traffic levels on the City's arterial roads, including Highway FF and Weaver Road, have raised concerns for pedestrian safety. For example, the lack of sidewalks along Highway FF is of particular concern for the lengthy stretch of road developed with single family housing. Weaver Road is in poor condition and is of substandard design (too narrow) for its functional use as a minor arterial. The construction of the new school facility off Weaver Road and

other anticipated future residential and commercial development along this section of Weaver Road will increase the need for sidewalks to address the issues of pedestrian safety.

Bicycle circulation through Battlefield is also impeded by the lack of sidewalks or other separate trailways. Walking and bicycling are increasingly popular forms of recreation for different age groups. Providing adequate facilities for pedestrian and bicycle circulation will increase opportunities for recreation as well as offer a transportation alternative for short length trips to activity nodes in the City such as schools and parks.

### **Street Functional Classification**

Roads are classified by function or the intended use for providing access to abutting property or movement of traffic through the community. Achieving a well functioning and safe circulation system as growth occurs involves an understanding of the functional classification of the street system. Battlefield's roads are classified in the following functional categories:

***Principal Arterial.*** Primary arterials provide for uninterrupted movement of relatively high volume and high speed traffic through the community to major activity nodes. Provision of access to abutting property is a secondary function to traffic movement. Direct access to primary arterials should be restricted to major traffic generators.

- Highway FF
- Highway M

***Minor Arterial.*** These streets serve for the movement of moderate volume, moderate speed traffic through the community to major activity nodes. Secondary arterials augment the primary arterial system. Access to abutting property is a secondary function and access should be partially controlled to maintain the traffic carrying capacity of the road.

- Farm Road 115
- Weaver Road

**Collector.** Collector roads move moderate volume, low speed, shorter length traffic from local access streets to the arterial system while also providing access to adjoining property. In order to maintain the function of traffic movement, the location of major traffic generators on collectors should be limited.

- Elm Street
- Old Wire Road

**Local.** Local streets provide access to adjacent properties. These streets are designed for low volume, low speed and short length trips. Battlefield's streets not designated above as arterials or collectors are classified as local streets. Examples of local streets include Azalea, Honeysuckle, Enyart and Tanager Streets.

## **Transportation Issues**

Battlefield's transportation network revolves around Highway FF, the City's principle arterial. With numerous existing curb cuts and no median or turn lanes, further development along FF will likely diminish the carrying capacity and efficient flow of traffic through the community. The patterns of existing land development and the existing road network offer little opportunity for developing an alternative north-south route to provide relief to traffic on Highway FF. Similarly, widening Highway FF is not on the Missouri Department of Transportation's planning horizon. Given the reality of the lack of funding at the state or local level to effect improvements to Highway FF, it will be essential for Battlefield to maintain the effective capacity and function of this roadway through alternative means of access management.

Examples of potential access management techniques to be considered include reducing stop and go situations by limiting the location and frequency of access cuts and encouraging or requiring shared access points. The clustering of future commercial development rather than strip commercial development along Highway FF would provide opportunity for shared access. Also, development along Highway FF should be designed where possible to take access from an intersecting street. Other access management techniques may include requiring developers to install turning lanes or other traffic control measures if the development generates traffic that necessitate the improvement.

The road condition field survey indicated that many of the City's roads are too narrow for their current functional classification and traffic level. An example of such a narrow road is Weaver as its east end turns into Lewis Road. In addition, there are several instances of roads that dead-end in subdivisions with no apparent provision in the layout of these roads for future extension to adjoining properties. It will be important for the City to promote connectivity of the transportation system through the development review and approval process.

Another noted issue is intersection alignments. Field surveys indicated alignment problems at locations such as Weaver and Old Wire Road. Y-intersections also inhibit sight distance in some locations, creating the potential for accidents. Again, application of road design guidelines during the development review and approval process should be considered.

A final transportation issue is road signs. Of the transportation issues identified, this is perhaps the easiest to correct. Several stop signs throughout the community are faded illegibly while others are covered by vegetation. Installation of new signs where needed and trimming of overgrown vegetation will improve safety in these locations.

## **Transportation Goals and Objectives**

The following goals, objectives and strategies summarize the recommendations of the Transportation Plan. These recommendations encourage the development of a transportation system that promotes connectivity between the local and major street system, that relates future land use development patterns to road system capacity, and that supports vehicular and pedestrian access to major activity points within Battlefield.

### **Goal 1: Promote an efficient transportation system**

**Objective 1:** Provide the means for alternative modes of transportation to reduce the number of vehicles on the roadway.

**Strategy 1:** Require sidewalks in all new development and encourage the development of such sidewalks in existing areas to aid pedestrian circulation.

**Strategy 2:** The City of Battlefield should consult with Springfield City Utilities to determine the feasibility of providing public transportation between Battlefield and Springfield. Public transportation is a tool which can move large numbers of people from Battlefield to Springfield, reducing dependency on motor vehicles.

**Strategy 3:** Consider the location of commuter lots and carpooling to major employment centers in Springfield.

**Objective 2:** Utilize the street classification system in decision-making on road system improvements and land use development.

**Strategy 1:** There should be a reasonable relationship between the intensity of development and the street classification and capacity level.

The capacity of the street system should be a primary determinant in zoning and subdivision decisions for proposed development. If the proposed development will generate traffic levels that will exceed the capacity of the street system, the development should either be prohibited, delayed until the appropriate transportation system improvements can be made, or the developer should be required to make the improvement necessitated by the development.

**Strategy 2:** During the development approval process, require all new development projects to dedicate appropriate right-of-way to meet street classification design standards. Continue to require all new streets to meet the City's minimum construction standards and to conform to the Major Street Plan.

**Strategy 3:** Development should be responsible for a proportional share of the cost of transportation system improvements.

- If the development exceeds the existing and planned street capacity, the development should not be approved unless the developer provides either the necessary on-site and/or off-site improvements to handle the projected increase in traffic.
- If the development exceeds the existing street capacity, but is within the future planned capacity of the street, development should be delayed until such time that the street can be upgraded. Approval of the development should occur only if the planned improvements can be installed within a reasonable time period.

- If an improvement is needed to an existing street regardless of any additional development, the improvement should be included in the City's capital improvements program.
- The developer should be required to dedicate appropriate right-of-way in all cases. In newly developing areas, the developer should be responsible for new street construction to local and collector standards. Road improvements to arterial standards should be the responsibility of the community.

**Objective 3:** Utilize access management techniques to reduce traffic congestion and maximize the carrying capacity of the existing road network.

**Strategy 1:** Incorporating access management into Battlefield's design standards will ensure these practices are implemented.

**Strategy 2:** Control the location and frequency of access cuts to arterial and collector streets in order to maintain traffic flow and minimize traffic conflicts.

Use the land development review process to encourage subdivision design that minimizes the number of drive-way cuts along collector and arterial streets. Commercial development should also be encouraged to utilize common access points.

**Strategy 3:** Require sufficient driveway access setbacks from intersections of major roads.

**Strategy 4:** Discourage strip development along FF in order to minimize the frequency of curb cuts. Encourage clustered development that can share common access points.

**Objective 4:** Promote connectivity of the street system.

**Strategy 1:** Subdivision design should provide for extension or connection of roads to future development on adjoining parcels of land. Major subdivisions should also be designed to include more than one street which provides access to the collector or arterial street system. In newly developing areas, give attention to the planned location for extension of collector and arterial roads outside of the subdivision during the development review process.

**Strategy 2:** Prohibit the construction of dead end streets or irregular shaped neighborhood linkages which create maneuvering problems for emergency vehicles.

**Objective 5:** Preserve rights-of-way for future major roads.

Planning, designing, funding and constructing improvements to the existing road system or constructing new primary roads is a lengthy process. Encroachment of development in rights-of-way necessary for future road improvements can impede the City's ability to provide for a safe and efficient road network. Techniques used to protect rights-of-way include:

**Subdivision Regulations:** Preserving necessary right-of-way is accomplished through right-of-way dedication during the land subdivision process. This technique is useful to acquire right-of-way in partially developed areas where existing roads must be expanded as well as to acquire right-of-way for new road construction in newly developing areas. This technique is most useful in cases where the proposed road is necessary for the owner of raw land to subdivide a parcel into smaller parcels or lots.

**Official Mapping:** State statute enables cities to adopt an official map of a proposed major street and prohibit the issuance of building permits within the mapped right-of-way for the street. The official map must be based on the City's adopted major street plan. The official map should be based on a survey conducted to establish the exact location of the road and there should be a definite commitment to construct the road within a reasonable time period. Official mapping can be used to preserve right-of-way necessary to expand existing streets as well as construct new streets. This technique is typically used to preserve the rights-of-way for major facilities such as expressways and arterials, but it can also be used for collector streets. Official mapping is most appropriate where there are numerous smaller parcels of land under multiple ownerships and there is a good possibility that development could occur without actual land subdivision.

**Fee Simple Purchase:** Purchase of total interest in real property is the most effective but most expensive way to protect future road rights-of-way from development. Fee simple purchase in advance of major road construction is normally only done in cases where the right-of-way cannot be obtained through subdivision dedication and the property will likely develop unless purchased. Fee simple purchase is also used in situations where official mapping of a planned street would take most of a property and effectively leave the property owner without any reasonable use of the remaining property (hardship).

**Less Than Fee Simple Purchase:** Less than fee simple purchase involves purchasing the development rights to a piece of property rather than full title. This rights-of-way preservation technique is most effective

in fringe areas where growth pressure is minimal. In areas already developed or subject to development pressure, this technique may be as expensive as fee simple purchase.

**Objective 6:** Give priority to upgrading substandard arterial and collector streets.

**Strategy 1:** Consider the following criteria in establishing priorities for major road improvements:

- Traffic volume on the existing roadway or the projected traffic flow relief that will result from new road construction.
- Incidences of accidents and other safety issues.
- Economic development impact of the project.
- Availability of non-local funding sources to assist with the improvement.
- Relationship of the improvement to other planned road improvements.
- Cost/benefits of the project

**Goal 2: Create a safe transportation network**

**Objective 1:** Improve sight distances at road intersections to reduce the possibility for accidents.

**Strategy 1:** Require street design that incorporates appropriate engineering sight distance, street spacing and alignment standards.

**Strategy 2:** Routinely trim vegetation on public property that blocks traffic signs or that interferes with sight clearance.

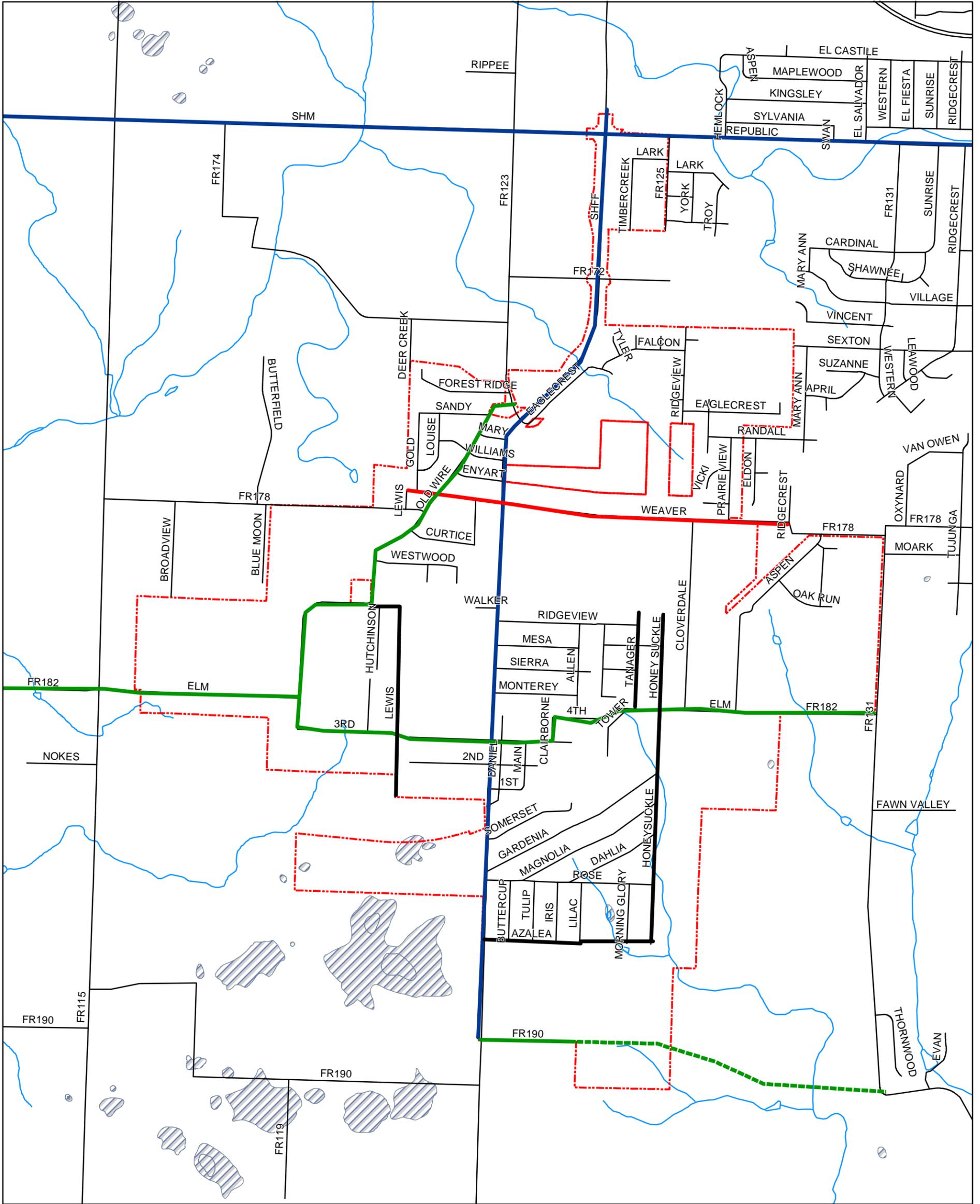
**Strategy 3:** Require curbs in all new developments to reduce the interaction of those off the road and those using the road.

**Strategy 4:** Mark crosswalks on primary roads at major activity centers to improve pedestrian safety.

## **Major Street Plan**

Figure 8.1 displays the Major Street Plan for Battlefield. This map denotes the functional classification of the existing major street system as well as proposed improvements to the major street system. The existing county road network outside of the current city limits should serve as the foundation for designation and extension of the City's major street system in future development areas within the Urban Service Area. Battlefield should maintain effective communications with Greene County to ensure that development occurring along these primary roads outside of the city limits provides sufficient right-of-way dedication for future road improvements as made necessary by the development or as may be necessary in the future.

# Figure 8.1 Major Street Plan



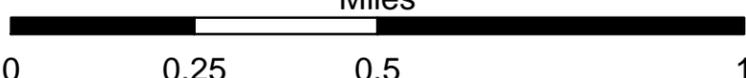
**Legend**

- Principle Arterial
- Minor Arterial
- Collector
- - - Proposed Collector
- Local
- Battlefield City Limits
- Streams
- Sinkholes

September 23, 2002



Miles



## **PUBLIC FACILITIES AND SERVICES**

Public facilities and services are a large monetary investment for a community. The availability of infrastructure services such as sanitary sewer and other quality of life amenities, such as parks and recreation and schools, are important factors considered by families and businesses in making decisions on where to locate. Chapter Nine examines the facilities and services that are available in the City of Battlefield. These facilities and services include public water and sewer, natural gas, electric, fire and police, public schools, and parks within the community. Through proper planning and utilization of these facilities and services, Battlefield can guide its future growth in a direction that will benefit the community and its residents.

### **Sanitary Sewer Services**

The City of Battlefield provides sanitary sewer service, but does not provide its own wastewater treatment. All sewage is treated at the City of Springfield's Southwest Treatment Plant. The sewage is pumped from a regional pump station to the Springfield Treatment Facility through a ten (10) inch diameter force main. The sanitary sewer system within the City of Battlefield has approximately thirty (30) miles of sewer line, of which approximately ten (10) miles are force mains. Currently the regional pump station sends approximately 231,000 gallons of sewage per day to the facility and is being upgraded to handle a peak capacity of 1,764,000 per day.

Battlefield also has ten local pump stations serving individual developments throughout the community. Most of these local lift stations are operating at or near full capacity because, at the time of their construction, they were designed to only service the new proposed development. The majority of the sewer lines and the pump stations were constructed over the last ten years. There has been a consistent flow recorded during wet and dry seasons at the Springfield Sewer Treatment Facility, and this suggests that there has not been any problem with inflow or infiltration into the City of Battlefield sanitary sewer system.

The availability of sanitary sewer is a primary determinant of growth potential and the location of growth. Under terms of agreement with the City of Springfield for wastewater treatment services, Battlefield has a defined Urban Service Area in which it may extend sanitary sewer services. The future growth area for Battlefield is primarily located between the city's western perimeter and the Wilson's Creek National Battlefield.

### ***Proposed Improvements***

Battlefield recently conducted a preliminary engineering report on the sanitary sewer collection system. This report, prepared by Anderson Engineering, Inc. and following guidelines established by the Missouri Department of Natural Resources (DNR), includes the following recommendations which have a main focus of reducing the maintenance and operating costs of lift stations.

- Install new gravity sewer lines that would connect to the City of Springfield's Western Avenue Trunk Main. This connection would utilize three eight-inch sewer lines and would redirect sewage flow from approximately 150 acres of developed land within the city limits of Battlefield. This recommendation would reduce the burden on the regional pump station and promote the removal of three lift stations. The elimination of these pumping facilities will reduce the operating cost of the sewer system.
- The second and third recommendations utilize eight-inch diameter pipe to redirect sewage flow around existing pump stations thus eliminating the need to operate and maintain these stations.

The report also proposes the establishment of emergency power at the lift stations in the case of a power outage. Currently, there are no emergency power generators located at the lift stations. There is also the need to update the retention facilities. The retention facility should be adequate to hold sewage overflow for an extended time as established by the engineering report.

## Public Water Services

The City of Battlefield and surrounding area are serviced by Greene County Public Water Supply District #1. The water supply for the city comes from three wells. All three wells are outlined in Table 9.1.

**Table 9.1 Details of Battlefield Wells**

	Well #1	Well #2	Well #3
Pumping Capacity	285 gpm	360 gpm	670 gpm
Depth of Well	1,250 feet	1,250 feet	1,250 feet

Source: *Engineering Report for Greene County Public Water Supply District No. 1*

Well #1 is located at the physical building for the offices of Public Water Supply District #1. Well #2 is located near Weaver Road and Western Avenue. Well #3, the newest of all the wells, is located at Southwest Street and Farm Road 190. All three wells are at a depth of approximately 1,250 feet. Each well has different pumping capacities. Well #1 pumps approximately 285 gallons per minute (gpm) or 410,400 gallons per day (gpd). Well #2 pumps approximately 360 gpm, or 518,400 gpd; and Well #3 pumps approximately 670gpm, or 964,800gpd. The combined pumping capacity of all three wells is approximately 1,315 gpm, or 1,893,600 gpd. The quality of Battlefield’s water is within the primary standards established by the U.S. Safe Drinking Water Act and therefore needs no treatment. At the current time, there are approximately 1,000 residents within Battlefield’s city limits who use this water supply.

Water storage is provided through two elevated single pedestal waterspheroids and one ground storage unit. All three towers are outlined in Table 9.2. The physical location of each tower is at the same site as the corresponding wells. Tower #1 has a storage capacity of 50,000 gallons, Tower #2 has a storage capacity of 300,000 gallons, and Storage Tank #3 (ground unit) has a storage capacity of 300,000 gallons. At the current time, after the creation of the new well (#3) and storage tank (#3) at Southwest Street and Farm Road, these facilities store 532 gallons in excess of what is used within a 24-hour period.

**Table 9.2 Details of Battlefield’s Water Storage Towers**

	<b>Tower #1</b>	<b>Tower #2</b>	<b>Tower #3</b>
Storage Capacity	50,000 gallons	300,000 gallons	300,000 gallons
Type	Single Pedestal Waterspheroid	Single Pedestal Waterspheroid	Ground Unit
Height to Overflow	121.6 feet	102.5 feet	27 feet
Inflow/Outflow Piping	6” Ductile Iron Pipe	12” Ductile Iron Pipe	8” Ductile Iron Pipe

Source: *Engineering Report for Greene County Public Water Supply District No. 1.*

The water distribution system consists of pipeline ranging in diameter from  $\frac{3}{4}$  inch to 10 inches. The 1995 engineering study of the public water supply indicated that the distribution system was inadequate to meet flow and pressure needs, and that upgrades were needed to improve fire flow and pressure. The construction of Well #3 and Tower #3, as well as the recent installation of new 10 inch PVC piping solved these initial concerns.

Although recent improvements for the water supply system have included well #3, tower #3 and approximately 20,000 feet of distribution pipe, there are more improvements that are needed over the next ten years. For example, one of the major needs of the system is to replace all the dead-ending lines with looped lines. Furthermore, as the city continues to grow, additional well and storage facilities will be needed. A fourth tower and well are expected to be added on the city’s west side within the next five years. In addition, approximately 17,000 more feet of 10 inch piping is expected to be in place within the next ten years. All of the improvements are outlined in detail in accordance with the twenty-year plan for Public Water Supply District #1. At the current time, this twenty-year plan is five years ahead of schedule.

## **Fire Protection**

Fire protection for the City of Battlefield is provided by the Battlefield Fire District. The department serves a 32 square mile area around the city. Forty to 45 workers staff the department at any one time, which include a full time chief and volunteer force. Four stations serve the district; the newest station, Station No.4, opened

in June 2002. Additionally, the District’s headquarters facility, located near the Battlefield City Hall, has facilities for training sessions and public meetings. An 8.5 acre parcel of land owned by the District is used in outdoor training not only for the Battlefield Fire Department but for departments all around the region. The Department has fourteen major fire-fighting apparatuses which serve the area and mutual aid agreements with surrounding communities. The Battlefield Fire Department has a class 5 ISO rating.

The Department is supported through a property tax levy of \$0.2611. In addition to fire protection services, the Department also provides educational training sessions to the public on fire prevention.

### **Law Enforcement**

The Battlefield Police Department provides law enforcement services for the community. The Police Department provides coverage for an eight to ten square mile area around the community as well. Funding for the Department is through local taxes. Four full time and three reserve officers staff the department, which includes a chief of police. The Department is housed in an older, small structure in the central city area.

The Department serves the community 20 hours a day, seven days a week; The Greene County Sheriff’s Department provides coverage during the remaining hours. The Department also provides child fingerprinting for families in the community.

### **Parks and Recreation**

Battlefield currently has one park, which is adjacent to the City Hall building. The park is a 12 acre parcel, which has a pavilion located within its boundary. Besides the pavilion, the rest of the park is undeveloped. The City has also examined another piece of land at Farm Roads 115 and 190 for a future park. This site encompasses approximately 45 acres.

Starting in July 2002, the City of Battlefield will receive a  $\frac{1}{4}$  of 1% sales tax for use in acquiring park land. Money from this county-wide tax will be distributed to the local communities based on 2000 Census population figures. The City of Battlefield had a population of 2,385 and will therefore receive \$524,838 over five years. After five years, the tax rate will decrease from  $\frac{1}{4}$  of 1 percent to  $\frac{1}{8}$  of 1 percent. After this time the money is to be used for upkeep of the parks and other miscellaneous park needs.

The City recently established a Park Board to address how the incoming tax dollars should be spent. As a part of this process, the Board has contracted for services to develop a Park Master Plan. A community meeting was recently held to provide opportunity for Battlefield residents to comment on park and recreation facility needs, interests and priorities. Residents decided that in the next two years they would like to see an exercise trail, rest rooms, new playground equipment, a swimming pool, and the planting of trees and shrubs. In the two to five year range, residents want to add parking, a baseball field, sand volleyball, and a skate park. In the long-term, residents indicated a need for tennis courts and the acquisition of land for neighborhood parks.

The City has several advantages with its current park land. One, all power lines are located at the perimeter, leaving the open space unobstructed. All utilities are present. There is enough land where a walking trail could be built at a one-half mile distance. Other recommendations to the Park Board were to plant trees early and to create multi-purpose facilities such as a soccer practice field in the detention basin, a combination baseball/soccer field, and an enclosed sport court for basketball, volleyball, badminton and the like.

## **Natural Gas**

Battlefield is in an excellent position in terms of its natural gas infrastructure. All the gas used in and around Battlefield is supplied to City Utilities by Williams Energy Company, in Tulsa, Oklahoma. Service is extended to new areas according to customer demand, and developers of new subdivisions pay for gas mains as needed. Accordingly, new gas mains are also sized piecemeal, in line with estimated demand.

Historically, southwestern Greene County's natural gas demand has been served by a pipeline running through Marionville. Recently, City Utilities of Springfield has extended a new line into the Battlefield area, through the Rivercut subdivision, to meet the challenges of the surge in development sweeping the area.

### **Electrical Service**

The local distribution system serving the electricity needs of Battlefield is operated by the Ozark Electric Cooperative. The co-op runs two-year computer models to evaluate current and future electricity demands. The backbone of this system has recently been rebuilt, and more upgrades of poles and above ground wires, as well as underground transmission lines, are planned for the near future. These upgrades will increase the carrying capacity of the local distribution system in order to meet the demands of Battlefield and unincorporated subdivisions in the area. Within Battlefield proper, most of the local distribution network has been recently rebuilt.

There are three substations in the area, owned and operated by the Kansas-Arkansas-Missouri-Oklahoma Cooperative (KAMO). These, too, are scheduled for an increase in carrying capacity. The station east of Battlefield has a carrying capacity of 161,000 Kilovolts; once KAMO replaces the transformers in its other two substations, their capacity will also rise to 161,000 KV, up from their present capacity of 69,000 KV.

At present, the transmission lines supplying Battlefield are at capacity; however, Ozark Electric's transformer upgrades, scheduled for the summer of 2002, will coincide with the KAMO substation upgrades. New developments, then, as well as Battlefield itself, will be served by an adequate electricity supply and infrastructure for the near future.

## **Public Facilities and Services Goals and Objectives**

**Goal 1: Provide effective police protection for the community.**

**Objective 1:** Improve of the street system to aid the movement of emergency vehicles.

*Strategy 1:* Provide better flow through the community by eliminating dead end streets which make accessibility a problem.

**Objective 2: Upgrade law enforcement equipment.**

*Strategy 1:* Acquire an additional patrol vehicle.

**Objective 3: Provide improved facilities for law enforcement services.**

*Strategy 1:* The City should include the development of a new facility for the Police Department in its capital improvements program. The current facility has inadequate space, is in deteriorated condition, and is not designed to meet the needs of modern law enforcement.

**Goal 2: Provide parks and a variety of recreation facilities that meet the needs of different age groups in the community.**

**Objective 1:** Acquire park land of sufficient acreage for a community park.

*Strategy 1:* Utilize the dedicated sales tax to acquire sufficient land area for a community park.

*Strategy 2:* Encourage the private donation of land for new park development.

*Strategy 3:* Provide flexible development incentives through zoning regulations that would encourage developers to design developments that include neighborhoods parks or other recreation facilities or lands within the developments.

**Objective 2: Develop a greenway/trailway system through the community.**

Greenways and trailways are being developed throughout the Ozarks. Battlefield has the opportunity to develop a trailways system that links with other established and developing trails systems in the region. Such a trailways system can meet recreational needs of varying age groups and can serve as a catalyst for other private investment in the community.

**Strategy 1:** The City should coordinate planning for greenways/trailways development with Ozark Greenways and should seek to link city trails in with the trail system being developed towards the Wilson’s Creek National Battlefield.

**Strategy 2:** Seek state or federal funding to assist in trails development.

**Strategy 3:** Encourage developers to incorporate trails and greenways in their developments. The City should work to communicate with owners of neighboring properties that are subject to potential development to encourage cooperative planning for linked trails development.

**Goal 3: Provide for high quality sanitary sewer services on a timely basis as development occurs.**

**Objective 1:** Secure appropriate locations for future expansion of facilities.

**Strategy 1:** The City should consider acquiring land adjacent to existing pump stations for expansions of the stations in the future.

**Objective 2:** New Development should contribute to the costs of system expansion.

**Strategy 1:** The City should consider the use of impact fees on new development to help subsidize the costs of system expansion and improvements.

**Strategy 2:** If a new development requires the installation of a pump station, the city should work with the developer to finance and construct a station that will meet future needs of the larger community as well as the specific development.

# HOUSING

Over the years, many people in and around the community of Battlefield have referred to the City as a “bedroom community” of Springfield. In theory, a “bedroom community” exists as a suburban residential center that houses people who commute into a nearby city for their daily jobs. A significant number of new housing units has been added to the housing stock since 1990 and new housing construction has continued at a rapid pace since 2000. This chapter presents information on the occupancy, tenure and valuation characteristics of Battlefield’s housing stock. The results of a target area housing condition survey are also discussed.

## Housing Occupancy

A definition that aids in the understanding of the housing data presented in this chapter is one for the term “housing unit.” A “housing unit” is defined as a household of one or more persons, not the physical structure as a whole in which a household resides. Therefore, an apartment complex is not counted as one structure, but as multiple housing units.

According to the 2000 Census, there were 885 housing units within the City of Battlefield. This is a 61.2 percent increase from the 1990 census, which indicated only 549 housing units. Furthermore, 865 of the total housing units were classified as occupied; thus, leaving only 28 vacant. This equates to a 96.8 occupancy rate and a 3.2 percent vacancy rate.

**Table 10.1 Housing Occupancy, 1990 and 2000**

Year	Total Housing Units		Occupied Housing Units		Vacant Housing Units	
	Number	Percentage	Number	Percentage	Number	Percentage
1990	549	100	535	97.4	14	2.6
2000	885	100	857	96.8	28	3.2

Source: U.S. Bureau of the Census. *Census of Population, 1990; Demographic Profile 3, 2000.*

Although Battlefield’s housing vacancy rate increased slightly between 1990 and 2000, a vacancy rate of 3.2 percent is equal to a community’s need to meet minimum demand for short-term growth (3.2). However, a further examination of vacancy statistics, suggests that the actual supply of vacant units on the market for sale or rent in 2000 was not sufficient for short-term growth or choice in the Battlefield housing market.

Of the 28 vacant housing units reported in the 2000 Census, 32.1 percent were for sale only, 3.6 percent for rent, and 17.9 percent for seasonal, recreational, or occasional use only. If the vacant housing assigned as seasonal housing is discounted, the actual supply of available vacant housing for sale or rent at the time of the 2000 Census was far less, particularly vacant rental housing.

### Housing Tenure

Table 10.2 displays housing tenure between 1990 and 2000. As noted, the percentage of owner-occupied housing increased from 81.7 percent in 1990 to 85.1 percent in 2000, with a corresponding decrease in the percentage of renter-occupied housing.

**Table 10.2 Battlefield Housing Tenure, 1990 – 2000**

Occupancy	1990		2000	
	Number	Percent of Total Occupied	Number	Percent of Total Occupied
Owner Occupied	437	81.7	729	85.1
Renter Occupied	98	18.3	128	14.9
Total Occupied	535	100.0	857	100.0

Source: U.S. Bureau of the Census. Summary File 1, 1990; *Demographic Profile 1, 2000*.

### Housing Type

Battlefield’s housing supply has increased substantially since 1990 and particularly since 1995. The 2000 Census reported that nearly 50 percent of households moved into their present housing since 1995. Table 10.3 supports field observations that most new housing construction is single family housing. Nearly 94 percent of all housing

units in 2000 were single family units. The vast majority of units added to the housing stock through new construction since 2000 are single family units.

**Table 10.3 Units in Structure, Battlefield, 2000**

Housing Unit Type	Occupied Housing Units	
	Number	Percent of Total
Single Family Units	837	93.3
2 to 4 Units	51	5.7
5 to 19 Units	5	0.6
Mobile Homes	4	0.4
Total Units	897	100.0

Source: U.S. Bureau of the Census. *Demographic Profile 3, 2000*.

## Housing Valuation and Rent

The value of owner-occupied housing in Battlefield and other area communities is shown in Table 10.4. The largest percentage of Battlefield's owner-occupied units was valued in the \$50,000-\$99,999 range, with the median value of such housing reported at \$99,893. The most striking statistic is Battlefield's substantially smaller percentage of owner-occupied housing valued under \$50,000 (1.9 percent) than that of the other cities, Greene County or the Springfield MSA.

**Table 10.4 Housing Value – Owner Occupied Housing, 2000**

Jurisdiction	Percent of Total Specified Owner Occupied Housing						
	Under \$50,000	\$50,000-\$99,999	\$100,000-\$149,999	\$150,000-\$199,999	\$200,000-\$299,999	\$300,000 & Over	Median Value
Battlefield	1.9	64.7	24.4	5.7	2.7	0.6	\$99,893
Clever	25.6	65.9	8.4	0.0	0.0	0.0	\$68,883
Nixa	3.2	59.1	26.3	7.9	3.2	0.5	\$102,616
Republic	5.9	68.1	19.1	5.8	1.0	0.0	\$88,039
Springfield	16.1	54.5	17.5	6.1	4.0	2.7	\$96,553
Springfield MSA	10.6	50.1	22.4	9.4	5.3	3.0	\$89,300
Greene Co.	11.2	50.6	21.4	8.6	5.6	3.4	\$109,718

Source: U.S. Bureau of the Census. *Demographic Profile 3, 2000*.

In 2000, the vast majority of renter-occupied units rented between \$300 and \$599, with the median gross rent reported at \$533. Interestingly, no units rented for under \$300 while over five percent of units rented for \$1,000 or more.

**Table 10.5 Gross Rent, Specified Renter-Occupied Units, 2000**

Jurisdiction	Percent of Total Specified Units Paying Cash Rent				
	Under \$300	\$300 - \$599	\$600 - \$999	\$1000 or More	Median Gross Rent
Battlefield	0.0	73.8	20.6	5.6	\$533
Clever	21.2	48.2	30.6	0.0	\$534
Nixa	6.7	43.0	49.1	1.2	\$601
Republic	13.0	53.6	31.4	2.0	\$524
Springfield	12.9	64.0	20.8	2.3	\$452
Springfield MSA	12.8	61.7	23.3	2.2	\$467
Greene Co.	12.5	62.5	22.5	2.5	\$462

Source: U.S. Bureau of the Census. *Demographic Profile 3, 2000*.

## Housing Condition Survey

A housing condition survey was conducted in target neighborhood areas during the spring of 2002 to assess the integrity of older housing in the community and the potential need for any housing rehabilitation programs.

The housing condition survey was conducted by visual inspection of each dwelling unit's exterior condition. It should be noted that this limits the surveyor from evaluating the interior condition of a home's structural elements or plumbing and electrical components. It is assumed that exterior conditions will generally mirror interior conditions. However, due to the limitations of the survey, the condition of some residences included in the survey may actually be worse than indicated here..

The survey involved evaluation of major structural components such as exterior walls, foundation, roof, window and doors. Also evaluated were elements such as painting, driveways, landscaping and presence of trash on the site. While these elements are not structural components, they do contribute to the overall quality of a structure and the perceived vitality and quality of a neighborhood area.

Each component was rated on the basis of deficiencies, with a rating of zero meaning no critical deficiencies and three indicating the presence of critical deficiencies. These components were weighted to indicate the importance they provide to the structural integrity of a home. Once each component was assessed, the ratings and weights were summed together to determine each dwelling unit's condition. Based on the point total, units were classified as Standard, Substandard Minor, Substandard Major, or Dilapidated (see Appendix C for housing condition survey form).

The survey was conducted in the following target areas:

- *Target Area One* – East of Highway FF, Ridgeview Street, Mesa Street and Sierra Street.
- *Target Area Two* – East of Highway FF, bordered on the north by Gardenia Drive, on the east by Honeysuckle Lane and Azalea Terrace on the south.
- *Target Area Three* - West of Highway FF, bordered by Mary Street on the north, Weaver Road on the south, and Old Wire Road on the west with William Street extending to Louise Drive.
- *Target Area Four* - Highway FF and Curtice Drive.
- *Target area Five* - The center city area, bordered by 1<sup>st</sup> Street, 4<sup>th</sup> Street and Highway FF.

The final analysis indicated that an overwhelming majority of residential units within these target areas is in Standard condition. Table 10-6 summarizes the results of the survey.

**Table 10.6 Target Area Housing Conditions, 2002**

Target Area	Housing Condition (Percentage of Target Area)				Total
	Standard	Substandard Minor	Substandard Major	Dilapidated	
Target Area 1	62.9	23.4	8.6	4.9	100.0
Target Area 2	98.8	1.1	0.0	0.0	100.0
Target Area 3	100.0	0.0	0.0	0.0	100.0
Target Area 4	98.0	2.0	0.0	0.0	100.0
Target Area 5	16.6	25.0	50.0	8.3	100.0
<b>Percent of Total</b>	88.5	6.3	3.7	1.3	100.0

Source: Field Surveys, March 2002

As indicated in Table 10.6, 88.5 percent of Battlefield’s housing within the target areas is Standard. For example, Target Areas One, Two and Three have no to few housing units in Substandard Minor condition. Most of the housing in these areas are in standard condition. On the other hand, 23.4 percent of the housing surveyed in Target Area One was Substandard Minor while 8.6 percent was rated as Dilapidated. Target Area Five has the overall poorest housing conditions, with only 16.6 percent of the housing units surveyed classified as Standard condition. Housing units rated as Substandard Minor are considered to need repair in excess of routine maintenance while Substandard Major condition would require major rehabilitation. Dilapidated units are considered unfeasible to rehabilitate.

Although the vast majority of Battlefield’s housing is relatively new and in standard condition, there is a concentration of substandard housing located east of Highway FF. The most prevalent area is in the City’s center, which corresponds with Target Areas One and Five.

## **Housing Goals and Objectives**

Currently, substantial single-family housing construction is occurring within the City of Battlefield. In considering that very few tracts of multi-family housing exist, future development efforts should also encourage a range of multi-family housing construction to offer more choice in the housing market.

**Goal 1:**        **Diversify Battlefield’s housing stock to better meet the needs and interests of different age segments of the population and to increase choice in the housing market.**

**Objective 1:** Provide opportunity for additional multi-family housing development at different densities.

**Strategy 1:** Through zoning, provide suitable areas to accommodate moderate and higher density housing developments.

The construction of duplexes, apartments, townhouses or retirement villages in Battlefield would accomplish several aims, including meeting increased short-term housing needs as well as the changing housing needs of the growing retirement-aged population.

**Strategy 2:** Allow for planned residential developments that incorporate a range of housing types and densities.

**Goal 2: Maintain the quality of the housing stock and the viability of existing neighborhoods.**

**Objective 1:** Encourage rehabilitation of deteriorating housing in identified target areas.

**Strategy 1:** The City should investigate the availability of any state or federally funded programs that may provide financial assistance to rehabilitate housing for lower income families.

**Strategy 2:** As conditions may warrant, use nuisance abatement codes to address problems of trash, junk, inoperable vehicles and other litter in residential areas.

**Objective 2:** Preserve and protect the integrity of existing residential areas.

**Strategy 1:** Discourage encroachment of incompatible, non-residential uses into existing neighborhoods.

**Strategy 2:** Maintain high quality public services and infrastructure in existing neighborhoods.

**Strategy 3:** Encourage infill residential development on vacant lots in existing neighborhoods. Such infill development should be similar to surrounding residential uses.

**Strategy 4:** Discourage the flow of commercial traffic through residential areas. New commercial development should be located and designed to minimize the direct flow of traffic to and from the commercial development onto local residential streets.

## Appendix A

**Table A.1 Battlefield Soil Typology**

Soil Type	Location	Slope	Drainage	Permeability	Runoff	Available Water Capacity	Shrink-Swell Potential	Response to Soil Amendments
<b>Pembroke Silt Loam (2B)</b>	Top, sides, and "slight depressions of ridges" on uplands and stream terraces	1-5%	Good	Moderate	Medium	High	Moderate at 30 to 40 inches	Very Good
Note: Suitable for most development. Development should consider shrink-swell potential. Community sewer recommended.								
<b>Wilderness Cherty Silt Loam (5C)</b>	Convex sides and tops of upland areas	2-9%	Moderate	Moderate above, slow beneath fragipan	Medium	Low	Moderate below 19 to 38 inches	Fair
Note: Suitable for development. Sinkholes in some areas. Septic tank absorption fields should be fortified with a properly constructed mound of surface soil or other material to offset shallow fragipan. Perched water table at 1.5 - 2.0 feet, December through March.								
<b>Needleye Silt Loam(9B)</b>	Tops, peaks, side slopes near crest of broad upland ridges	1-3%	Moderate	Slow (18-36 inch fragipan)	Medium	Moderate		Good
Note: Suitable for most development. Septic tank absorption fields same as Wilderness (5C), above. Drainage tiles in foundations and basement walls offset seasonal wetness. Base material needed for roadbeds due to weakness of this soil type.								
<b>Goss Cherty Silt Loam (43D)</b>	Convex side slopes and ridge tops	5-14%	Good	Moderate	Rapid	Low	Moderate	Good
Note: Suitable for most development. Slope, shrink-swell, surface stones, moderate permeability and low strength are considerations. Suitable base material needed for roadbeds. Septic tank fields should be enlarged to account for soil permeability.								

Soil Type	Location	Slope	Drainage	Permeability	Runoff	Available Water Capacity	Shrink-Swell Potential	Response to Soil Amendments
<b>Wilderness and Goss Cherty Silt Loams</b>	Convex tops and sides of upland ridges	2-3% (Wild); 4-5% (Goss)	Moderate; Good	(See 5C, above); Moderate	Medium; Medium	Medium; Low	(See 5C, above); Moderate	Fair; Good
Note: These areas are a mixture of soil types. The Soil Survey indicates that on average, areas are 40% Wilderness and 25% Goss soils. Notes and recommendations same as above.								
<b>Hepler Silt Loam (76)</b>	Broad, low stream terraces, upland drainageways, and sinkholes	0-2%	Poor	Moderately slow	Slow	High		Good if surface drainage is adequate
Note: This soil type is found primarily in floodplains and is generally unsuitable for building site development.								
<b>Viraton Silt Loam (81B)</b>	Tops, sides and foot slopes ridges on uplands and terraces	2-5%	Moderate	Moderate above, low beneath fragipan	Medium	Low to moderate		Good
Note: Suitable for most development. Low permeability due to fragipan and perched water table at 1.5 to 3 feet most years make wetness a factor in development plans, same as Needleye (9B), above. Septic tank fields same as Wilderness (5C), above. Suitable base material needed for roadbeds; Good drainage using side ditches and culverts lowers water table and reduce wetness.								

## **Appendix B - Sinkholes**

In 1981, Thomas Aley and Kenneth Thomson published a study through the Ozark Underground Laboratory called *Hydrogeologic Mapping of Unincorporated Greene County, Missouri, to Identify Areas Where Sinkhole Flooding and Serious Groundwater Contamination Could Result From Land Development*. A summary of the study, accompanied by five maps, can be found in the Duane G. Meyer Library at Southwest Missouri State University. Since publication, many more sinkholes have been identified in the Battlefield area, as well as in greater Greene County. The findings published in the project are a valuable contribution to the study and practice of water quality management in the Ozarks.

### **Anatomy of a Sinkhole**

According to Aley and Thomson, a sinkhole consists of two components. The sinkhole itself (referred to as a sinkhole drainage point) under which lay the vertical shaft transporting water underground during runoff periods (sinkhole drainage conduit) constitute the visible portion of the sink; the underground portion, referred to in the study as the “lateral transport conduit,” carries the infiltrated water from the sink to area springs and streams.

### **Sinkhole Flooding**

There are two principal culprits in sinkhole flooding. Flooding most often occurs when the runoff rate exceeds the capacity of the drainage conduits. This is analogous to a faucet in a home sink, which easily drains a trickle of water, but temporarily fills when the faucet is completely open. The other cause of sinkhole flooding results from runoff exceeding the capacity of the lateral transport conduits, causing them to “back up” the sinks, much like home plumbing problems that manifest as standing water in a kitchen sink or bath.

Urbanization increases the amount of paved or otherwise impervious surfaces. This leads to an increase both in the volume of runoff after a rainfall and the speed with which it occurs. These, along with the development related filling-in and sedimentary clogging of drainage points and conduits, are the three principal causes of sinkhole flooding as given in the study.

The development boom currently underway in Greene County will unavoidably cause an increase in soil erosion and the proliferation of paved surfaces. Impervious surfaces increase the sediment load found in urban runoff because the greater speed raises the sediment carrying capacity of the water. When that runoff loses speed, as when it enters a sinkhole floodplain, some heavier particles drop out of the water's sediment load, similar to the way sandbars are formed in area streams in places where stream flow slows. Over time, this sediment builds up in the sinkhole drainage point, as well as the lateral and vertical conduits. When a sinkhole is even partially filled, whether with trash or other refuse as sometimes happens, or according to an engineering plan designed to make the land suitable for construction, the rate at which runoff drops its sediment load increases dramatically. This not only hastens the clogging process linked above to sinkhole flooding problems, but also puts greater pressure on adjacent sinkholes' carrying capacity.

Aley and Thomson provide a series of suggestions for minimizing problems associated with sinkholes, as well as complications from urban runoff. These are detailed in the project summary, and consist of specific actions as well as a table of suggested development constraints scaled according to the hazard posed by sinkholes and runoff.

## Appendix C Housing Condition Survey

Surveyor's initials: \_\_\_\_\_ Address: \_\_\_\_\_  
 Block: \_\_\_\_\_ Other on-site use: \_\_\_\_\_

### Housing Classification

Type:           Single Family           Duplex           Triplex           Apartment           Mobile  
 Age:            Pre 1920s           1920-WWII       Post WWII       Mid 1970s +

### Rating of Exterior/Structural Deficiencies

	0=None	1=Slight	2=Moderate	3=Critical		<u>Value</u>	<u>Total</u>
Paint	0	1	2	3	1	1	_____
Exterior Walls	0	1	2	3	X	X	_____
Foundation	0	1	2	3	3	3	_____
Porch	0	1	2	3	2	2	_____
Steps	0	1	2	3	1	1	_____
Windows/Doors	0	1	2	3	2	2	_____
Guttering	0	1	2	3	1	1	_____
Roofing	0	1	2	3	2	2	_____
Chimney	0	1	2	3	1	1	_____
Garage/Carport	0	1	2	3	2	2	_____
Landscaping	0	1	2	3	1	1	_____
Litter	0	1	2	3	1	1	_____
Driveway	0	1	2	3	1	1	_____
Driveway Material:	Dirt	Gravel	Concrete	Asphalt			
Wall material	Wood	Brick	Vinyl Siding	Other Siding			
Comments:						<b>Total =</b>	_____
Overall Rank:	Standard	Substandard Minor	Substandard Major	Dilapidated			

## Housing Condition and Site Survey Rating Scale

- Paint: 1 = Slight cracking or peeling  
2 = Moderate to severe cracking and peeling  
3 = Missing completely or siding needs replaced
- Porch: 1 = Slight damage to rails  
2 = Moderate damage, slight sagging of structure, some rotting  
3 = Missing railings, damaged columns, serious sagging of structure
- Steps: 1 = Slightly cracked boards or concrete  
2 = Sagging  
3 = Serious settling, missing boards, large cracks or holes
- Windows: 1 = Cracked or broken panes  
2 = Moderate damage  
3 = Missing panes, covered by boards, rotted or badly damaged frames and sashes
- Foundation: 1 = Some cracks  
2 = Moderate cracks & crumbling (1/4 inch or less)  
3 = Sagging, holes, cracks, crumbling, bulging (more than 1/4 inch)
- Roof: 1 = Standing shingles  
2 = Missing shingles  
3 = Large sections of missing shingles, holes, structural sagging
- Chimney: 1 = Slight sagging  
2 = Missing materials, bulging  
3 = Serious sagging, falling off, fire damage, missing materials
- Exterior walls: 1 = Wooden: cracked or small amount of rotten boards, brick: cracked, slightly worn masonry or mortar  
2 = Moderate damage  
3 = Brick: crumbling or missing; siding falling off, wood: obvious rotting serious deterioration
- Garage/Carport: 1 = Door damage, cosmetic damage  
2 = Moderate damage, slight sagging of structure, some rotting  
3 = Damaged columns, serious sagging of structure

### Housing Condition:

- 0-10 points      \_\_\_\_\_ Standard  
11-25 points    \_\_\_\_\_ Minor Rehabilitation  
26-40 points    \_\_\_\_\_ Major Rehabilitation  
41-60 points    \_\_\_\_\_ Dilapidated