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Relative costs of infill vs. suburban residential developments: a case study of the Greater Baton Rouge area

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**RELATIVE COSTS OF INFILL VS. SUBURBAN RESIDENTIAL
DEVELOPMENTS: A CASE STUDY OF THE GREATER BATON ROUGE
AREA**

A Thesis

**Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Master of Landscape Architecture**

in

The School of Landscape Architecture

**by
John Lawrence Brian
B.A., Louisiana State University, 2000
August, 2003**

When you cannot tell where the country ends and a community begins,
that is sprawl. Small towns sprawl, suburbs sprawl, big cities sprawl,
and metropolitan areas stretch into giant megalopolises-
formless webs of urban development like Swiss
cheeses with more holes than cheese.

U.S. House, 1980.

People are looking at other ways to tame
the monster called suburban sprawl.

Unknown

ACKNOWLEDGEMENTS

I would like to thank my family, friends, and classmates for their constant support and encouragement as I have embarked through this process. To my parents, Randy and Debby, and my grandparents, Larry and Vicki, I say thank you for allowing me to continue my college experience without debt. Without your constant funding and prodding, I would have never completed this process. To my committee members, Bruce Sharky, Van Cox, Sadik Artunc, and Dana Brown, your helpful insight and swift returns have made my education and this process in particular a surprisingly pleasant one.

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ABSTRACT

Driven by the accumulation of vacated buildings along with the need to reconstruct vacant urban areas and neighborhoods, the need to establish infill as the primary means of development in the Baton Rouge Metropolitan area is apparent. As suburban tendencies have increased, the core of our city has diminished. The principles of smart growth and infill development have been created in response these very problems. The methods have proven successful nationwide, but is the process feasible in Baton Rouge area? The answer to this very question goes well beyond yes or no. Many variables must be evaluated; the positives and negatives associated with infill and suburban development, the growth trends of Baton Rouge, and a relative cost comparison.

This research paper plans to establish an up to date comparison of development costs in the Baton Rouge area through a comparative cost study of suburban and infill development sites. It is the belief of this author that the economic as well social positives associated with the use of vacant or underutilized land with existing infrastructure will outweigh the positives associated with suburban development. This comparison can be utilized as an effective tool for developers when analyzing future development sites in Baton Rouge. If proven more beneficial, infill development could become a valuable tool in the establishment of smart growth principles as a basis and standard of development. Through channeling the actions of developers and our communities, not only will economic sense be made, but also community neighborhoods will once again be established as the backbone of our growing society.

CHAPTER ONE

INTRODUCTION

The Question

How does infill and suburban development differ when examined in the greater Baton Rouge area? What is the financial feasibility of infill development compared to that of fringe development? How does the cost of building on land with full services already in place compare to building on the fringe where services, roads, and utilities must be provided? Is infill development a feasible investment if federal and state incentives are used?

Current research indicates that, for at least the past 20 years, recent population growth and formation of expanded households, combined with increases in income and wealth, have been the forces driving urban growth. In most cases, the population growth is redistributed from the central metropolitan core to outlying areas due to availability of new housing, followed by additions and improvements to existing schools, roads, and public facilities, including sewers and water supplies. This development, known as and further referred to as “sprawl” or “suburban development”, is characterized according to economist John F. McDonald (Heimlich 10) as:

- Low-density development that is dispersed and uses a lot of land
- Geographic separation of essential places such as work, homes, schools, and shopping; and
- Almost complete dependence on automobiles for transportation

The development of new homes, even at very low densities (two or fewer houses per acre), roads, and commercial buildings at the fringe of existing urban areas can cause greater traffic congestion, loss of open space, loss of agricultural land, and adverse impacts to the natural environment (Heimlich, 12). In response to these adverse effects

of suburban development, both private and public markets have increasingly focused attention on the development of vacant and underdeveloped land in existing urban areas. These areas generally consist of vacant or under-used properties that have been previously unsuccessful, but may contain existing infrastructure and site amenities. These developments, known as “infill”, can range from new construction on single vacant lots to adaptive reused surface parking lots to out of date warehouse districts and empty shopping malls. According to the Northeast – Midwest Institute Congress for the New Urbanism (*Strategies for Successful Infill Development*) successful infill can offer these rewards for communities considering infill development:

- Provide housing (both affordable and market rate) near job centers and public transit;
- Increase the property-tax base;
- Preserve open space at the edge of regions;
- Provide new residents to support shopping districts and services;
- Capitalize on community assets such as parks, infrastructure, and transit; and;
- Create new community assets such as child care centers, arts districts, and shopping areas

Purpose

The City of Baton Rouge and the downtown area in particular has, since the inception of the oil industry and the Northern suburban migration that followed, been experiencing a lack of economic vigor that has led to the recognition of problems including aging and deteriorating infrastructure, traffic congestion, and distressed mass transit, along with other issues. According to the Executive Summary of the Baton Rouge Consolidated Plan, the unified plan for community development, East Baton Rouge Parish, along with the City of Baton Rouge, needs “infrastructure repair, increased affordable housing, economic development, job training, and education” in order to revitalize and further community development. Smart growth, the development strategy

that strives to add services, create opportunity, and enhance access to amenities, has proven itself nationwide as a strategy that has the potential to revitalize communities that are seemingly locked into cycles of decay. By reducing suburban sprawl in the Baton Rouge area, renewal for the downtown area may be possible.

In 1998, Baton Rouge adopted the “Horizon Plan”, a plan that was intended to guide the future growth and development of the City of Baton Rouge. The initiative of this comprehensive land use and transportation plan for East Baton Rouge Parish was directed towards principles associated with infill development. The implementation of comprehensive plans for capital improvements, conservation areas, and citizen entailed planning districts created a “blueprint for the future”, aimed at making the city of Baton Rouge an enjoyable place to live, work and enjoy the future growth of the city.

Identifying and comparing suburban and infill residential developments within the greater Baton Rouge area could influence the future development of the area. If infill development is proven to be more competitive, cost efficient, and beneficial than suburban development, the tendency to build on the fringe without examining other options can be drastically reduced. This in turn could affect the citizens and the economy of Baton Rouge and surrounding area, in a manner possibly allowing for a more vigorous downtown core that boasts a strong resilient economy and healthier social benefits.

Methodology

The first objective involves a comparative analysis of suburban and infill development. Literature evaluating the positives and negatives associated with infill and suburban development will be evaluated. Conflicting views of the impacts of each method on land use, farmland, the idea of community, housing, transportation, and the

environment will be studied to establish local development costs as a viable means of directing the future development of Baton Rouge.

The next objective is to identify and understand the development trends that have affected Baton Rouge since its inception. This will lead us to understanding what aspects qualify the city for potential redevelopment. The thorough analysis of historical documents, maps, photographs and other bibliographic sources determining current trends of growth taking place in Baton Rouge will be evaluated.

In focusing on residential developments, examples of suburban and infill sites will be selected to establish a comparative cost analysis. Identification of an existing development site that is determined to be residential is the next intent. This site will be evaluated using the actual costs of all phases of completed development inclusive to the time of sale. Development costs will be evaluated in terms of monetary value of land upon purchase, development fees, and cost of construction (utilities, sewer, and electricity installation). Applicable government-based incentive programs will also be evaluated. Total development costs per square foot will be determined. Site plans, construction documents, utility plans and maps, and site photographs will be used in obtaining pertinent development costs and site context information.

Selecting a site, located within the city limits, that is a feasible infill opportunity is the next objective. The site will be carefully selected utilizing the Urban Land Institutes' (ULI) infill potential factors including growth potential, building conditions, land prices, and employment centers. Once located, this site will be studied and evaluated based upon monetary value of land upon purchase, development fees, and cost of construction or upgrades (utilities, sewer, and electricity installation). Applicable government-based

incentive programs will again be evaluated. Site plans, construction documents, utility plans and maps, and site photographs will be used in obtaining pertinent development costs and site context information.

The last objective is to establish a comparative cost analysis of the infill and suburban sites on a per square foot basis. Collected data will be compared and evaluated in matrix form regarding acquisition costs, development fees, and construction costs. All comparisons will be made based upon all evaluated aspects of both sites in regard to developers and local governments.

It is the goal of the author to establish the comparative economic feasibility of infill and suburban development in the Baton Rouge area. If infill development is proven more feasible and cost effective than previously thought, development strategies that are currently dominating the area, with possible negative effects, might be altered. Greater utilization of infill development strategies could possibly lead to the establishment of revitalized communities, a strengthened economy, and a greater quality of life for the planned growth of Baton Rouge.

CHAPTER TWO

LITERATURE REVIEW

Introduction

Development practices and trends and how they affect rural and urban communities is an enormous topic, one that cannot possibly be adequately addressed within the scope of one thesis. The purpose of this thesis study is to determine if development of infill sites is a viable, economic alternative to suburban development in the Baton Rouge area. The literature reviewed suggests this possibility. There is much information regarding the issues of development practices and how they effect surrounding environments, but there is little information comparing the cost of infill vs. suburban land development, especially in the Baton Rouge area. The intent of this thesis, then, is to establish comparative development costs between infill and suburban locations. In result, the future development of may be guided to offset the loss of valuable agricultural and open space lands to suburban development. By evaluating development costs per square foot, the existing infrastructure and potential profitability of infill will prove cost competitive relative to the costs of suburban development. A foundation for this argument must first be informed by existing literature. In preparation for this literature review, the author gathered information regarding several topic areas: land use, farmland deterioration, the idea of what makes a successful community, housing and transportation, the environment, capital costs, and the historical and present development trends of Baton Rouge. This literature review is organized by topic area.

Process of Development: Idea of Smart Growth vs. Idea of Sprawl

The logic behind the process of urban development is fairly simple; market demand is an expression of consumer need. Property owners sell their land to developers who for reasons believe this property is of value for future uses such as housing, offices, or retail. Property is obtained, zoning restrictions and permits are identified and obtained, followed by the developer improving the property or selling an individual portion to an interested party wishing to develop a portion themselves. This rational process is based upon a desire to connect the preferences of the public/consumer with the developer/producer.

This market demand is often influenced by national studies conducted by smart growth and suburban proponents focusing on how their method of development is superior to the opposing method. The ideas and principles associated with smart growth were seemingly created to limit the physical and social impacts of sprawl, however sprawl proponents argue that these impacts are greatly exaggerated. The ideas of smart growth and suburban proponents conflict when examining the impacts of each method on land use, farmland loss, housing and transportation expansion, environmental impacts, and community erosion. In reviewing the conflicting reports on suburban and infill developments nationwide, this thesis will attempt to establish a convincing comparison of local suburban and infill development costs. The goal is to affect change, shifting development toward infill strategies while slowing suburban development.

Land Use

At the forefront of the conflict between infill and suburban proponents is the idea of land use and how it is affecting quantities of “open space”. According to the Smart

Growth Network, a nationwide coalition of planners and businesses looking for ways to promote growth and development without causing sprawl, the term “open space” is used broadly to mean undeveloped areas both in and surrounding localities that provide important community space, habitat for plants and animals, recreational opportunities, farm and ranch land (working lands), places of natural beauty and critical environmental areas (e.g. wetlands) (*Principles of Smart Growth*). Everyday observations are leading to growing concerns about the rate of development and apparent deterioration of open space. Smart growth proponents argue that as the quantity of open space diminishes the environmental quality and health benefits that are directly associated will also. The Smart Growth Network states that:

“Open space protects animal and plant habitat, places of natural beauty, and working lands by removing the development pressure and redirecting new growth to existing communities. Additionally, preservation of open space benefits the environment by combating air pollution, attenuating noise, controlling wind, providing erosion control, and moderating temperatures. Open space also protects surface and ground water resources by filtering trash, debris, and chemical pollutants before they enter a water system.”

The detriments to the environment that results from the loss of open space are not simply a result of suburban development. According to Ralph Heimlich and William Anderson, co-authors of *Development at the Urban Fringe and Beyond: Impacts on Agricultural and Rural Land*, changes in land use are the end result of many forces that drive millions of separate choices made by homeowners, farmers, businesses, and government. This reflection of market and consumer demand results in most cases, the conversion of open space to urban land uses including residential and commercial structures. Since 1950, the number of urbanized areas in the United States (excluding towns of 2,500 or more) has increased from 106 to 369 and expanded to five times their

size (Heimlich 2). According to a National Resources Inventory analysis of comparative census data, this in turn has led to urbanized areas accounting for the largest percentage of population growth between 1992 and 2000 (Heimlich 11). See Figure 2.11.

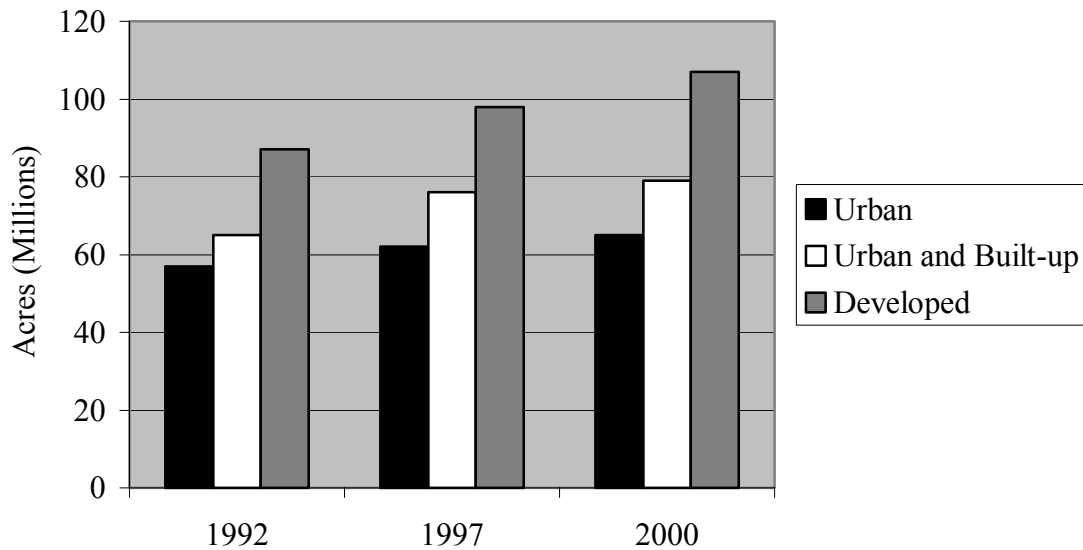


Figure 2.1
Trends in U.S. Urban Development: 1992-
2000

The suburban trend has not only affected the number of urbanized areas, but also the densities of the established areas. Environmental Media Services, a nonprofit organization dedicated to providing journalists with the most current information on environmental issues, points to recent Census Bureau figures showing the average density of urbanized areas (which includes cities, suburbs, and towns) decreasing from 6,160 persons per square mile in 1920 to 2,589 in 1990. This decrease in density has not resulted in a more concentrated development area, but just the opposite. Between 1960 and 1990, while the populations in metropolitan areas have grown by less than one half, the amount of developed land in metro areas has more than doubled (Environmental Media Services). As populations disperse over distances, it appears that developers are

seemingly doing the same. Independent research by Professor Rolf Pendall of Cornell University concluded, that of 282 metropolitan areas studied, population growth explained only 31 percent of urban sprawl; poor planning and government subsidies were other contributing factors (Environmental Media Services).

Suburban proponents have no real argument against the loss of open space in general. Smart growth advocates indicate the loss of open space and adjacent natural areas are a direct result of suburban development, however suburban advocates' aim their arguments towards the loss of specific land, such as the apparent loss of farmland, and how these losses effect the environment.

Farmland Loss

The loss of land viewed by smart growth proponents as open space is evident. Not only has growth decreased the amount of open space, but it has also led to detrimental effects on the amount of farmland developed each year in the United States. Samuel Staley, Ph.D. claims in *The Sprawling of America: In Defense of the Dynamic City*, the total amount of land accounted for by farms has decreased by 12 percent nationwide and 31 percent in Louisiana since 1970. Nationwide and statewide losses are illustrated in Figure 2.2- 2.3. Figure 2.4 shows that as the decades have gone by the rate of decline in total farmland has accelerated. To put these losses in perspective, between 1982 and 1992, the United States lost an average of 400,000 acres of farmland to urban development every year, an astonishing 45.7 acres per hour lost every day (Environmental Media Services). This increasing decline on a national and state level is clear, however the cause and effects are not as evident as smart growth proponents lead us to believe.

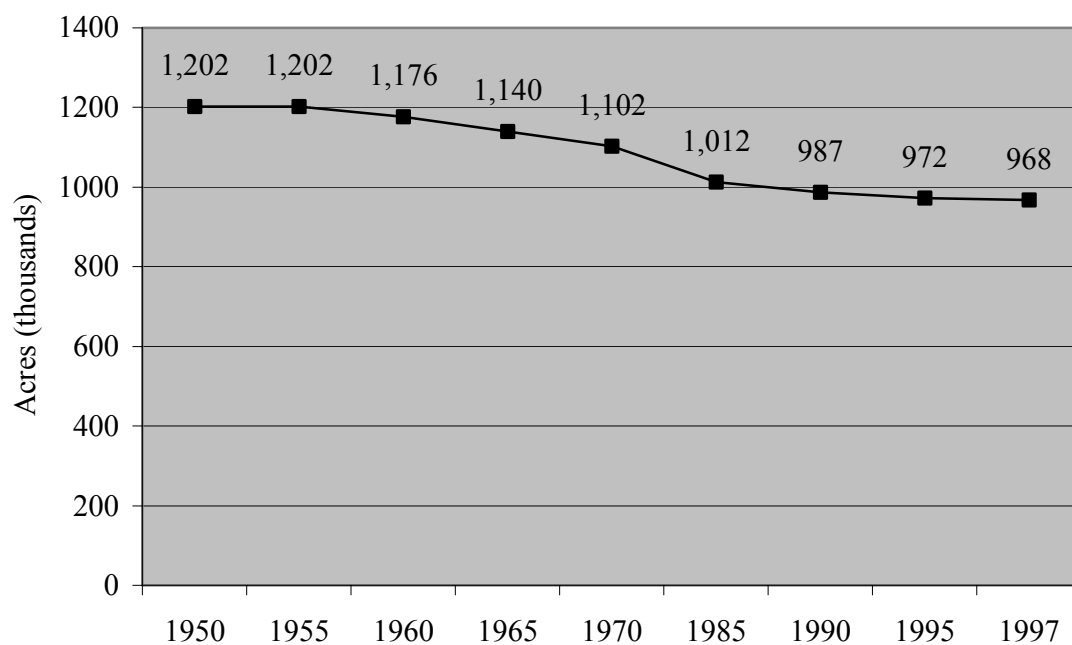


Figure 2.2
Acres in Farmland - United States

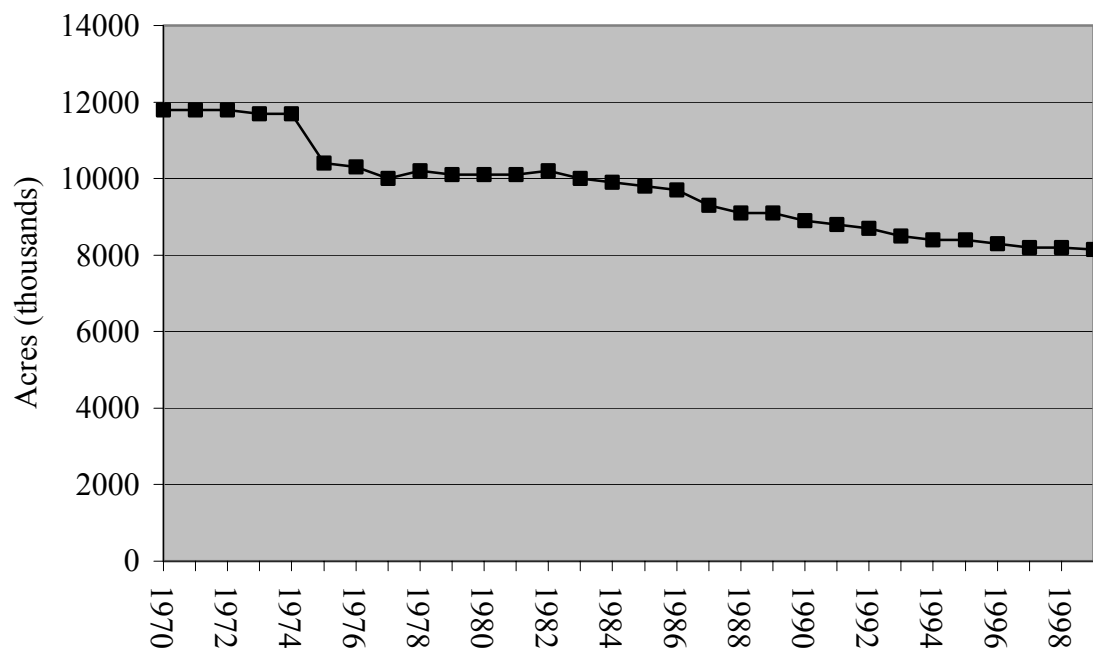


Figure 2.3
Acres in Farmland - Louisiana

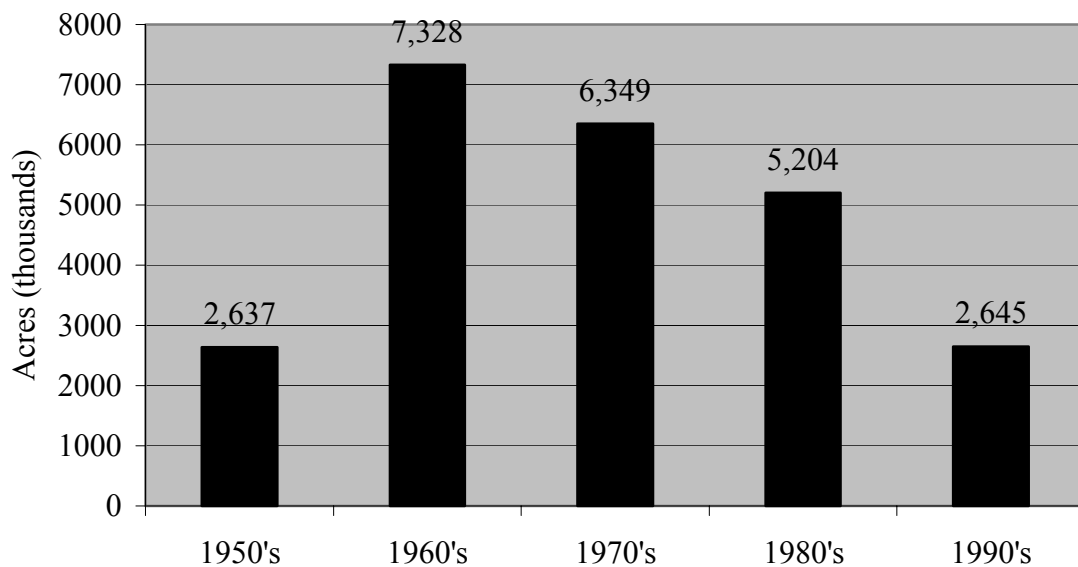


Figure 2.4
Reductions in Farmland By Decade

The evidence of a national loss of farmland does not exist. Smart growth proponents claim urbanization as the primary culprit of farmland loss, but data evaluating current land-use trends suggest otherwise. According to Samuel Staley, Ph.D., an analysis of cropland trends from 1949 to 1992 by Ohio State University economist Luther Tweeden found that 26 percent of the decline in cropland could be explained by urbanization. Changes in the economic fortunes of the agricultural industry accounted for 74 percent of the decline (Staley 18). The remaining farmland and open space losses can be contributed to non-urban causes such as conversion to open-space, parks, wildlife reserves, or other recreational uses (Staley 18). It is the claim of smart growth proponents that the decline of open space is a direct result of sub-urbanization, however the issues they claim to be protecting could actually be the cause of farmland deterioration.

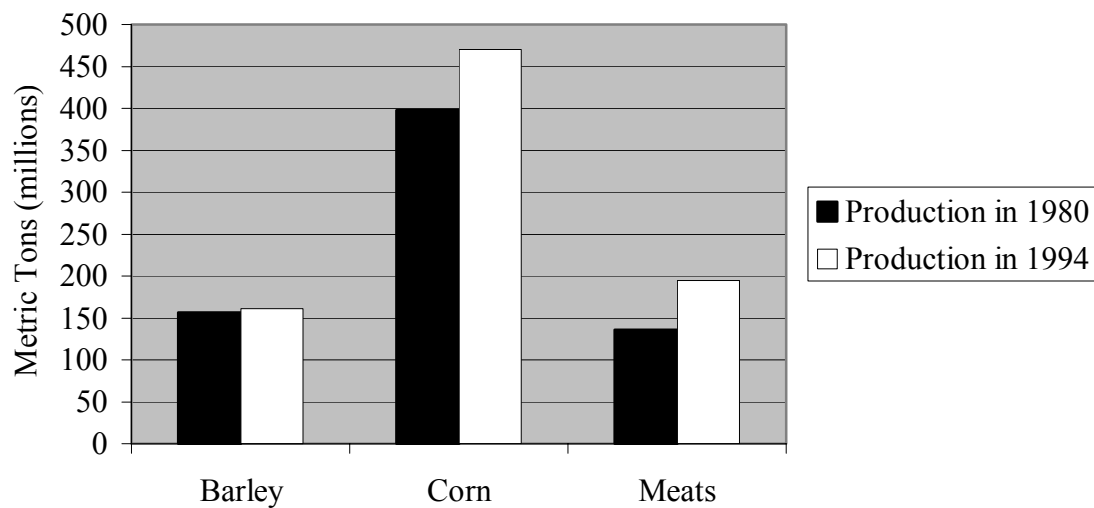


Figure 2.5
World Food Production 1980-1994

Concern about the loss of farmland is directly tied to the concern about the production of food. The U.S. Department of Agriculture's index of national farm output concluded that quantities of food produced are increasing despite the loss of farmland. Figure 2.5 illustrates that food production rose from 73 million metric tons in 1970 to 108 in 1993, a 47.9 percent increase since 1970 (Staley 20). This result could be due to the maintenance of prime farmland, farmland with the highest productivity potential based on soil type and irrigation, throughout the country. From 1982 to 1992, only about 1 percent was converted to urban uses (Staley, *The Vanishing Farmland Myth* 5).

With increasing food production worldwide an argument can be made to the diminishing importance of farmland in the future. Advancements in alternate technologies such as biomass and hydroponics will only help to aid increases in food production. By growing more food on less land, more land could become available for open space, recreation, commercial and residential development; desires that are seemingly evident based upon current development trends.

Housing and Transportation Expansion

Quite possibly, housing as opposed to other land uses, may be at the forefront in the current conflicts between smart growth advocates and other interests. These conflicts are simply due to the belief that the majority of land being converted from open space or farmland is to residential development. According to the Smart Growth Network, advocates of smart growth tend to direct development towards existing communities already served by infrastructure, seeking to utilize the resources that existing neighborhoods offer, and conserve open space and irreplaceable natural resources on the urban fringe. Development in existing neighborhoods is believed by smart growth proponents to be a method that represents an approach to growth that can be more cost-effective, and also an apparent improved quality of life for its residents.

Smart growth evidence supports the demographic trend towards smaller households. According to *Accommodating Growth Through Infill Development*, a publication of the Washington Research Council, the "traditional" household, two parents with school age children, represents a declining share of today's housing market. Many single, elderly and empty nest households prefer the lower cost and lower maintenance of an apartment, condominium or smaller house on a smaller lot. This supports the infill practice to incorporate compact building design as an alternative to conventional, land consumptive development. Communities based upon smart growth strategies tend to preserve open space and construct buildings with a more efficient use of land and resources in mind. Using taller buildings rather than spread out horizontal structures, allow densities to be increased without increasing land area. With the creation of

communities through the design of compact building layouts, it is easier for communities to encourage the use of transportation choices other than the automobile.

The ideas and principles of infill development are also aimed at combating the growing number of personal vehicles that have become a problem in our country. According to Environmental Media Services, since 1969, the vehicle population has grown six times faster than the human population in the U.S. creating a current car/ driver ratio of one to one in a population of 176 million. Increases in miles traveled have accompanied the increase in number of automobiles. The Federal Highway Administration reports that, between 1970 and 1990, vehicle miles traveled increased 98 percent while the population grew only 23 percent. This has resulted in economic and social changes within the infrastructure of our country. Today, according to the Bureau of Labor Statistics, the average family spends one-sixth of its budget on transportation – more than food, clothing, or healthcare. This considerable market dominance created by automobile use is surely affecting the economic diversity that is necessary for the future survival of our way of life.

Low-density development, typical of that in suburbs, creates longer distances traveled resulting in less efficient use of public resources. Proximity to services offered and utilized by the community, such as police, fire, ambulance, parks, libraries, churches, and schools is often increased. Expansion of commuter distance and traffic volumes further taxes rural roads and eventually leads to further highway expansion (Heimlich 28).

Suburban proponents have an argument to the smart growth theory. The basis for the suburban argument on both accounts is based upon market demand. Within all the

facts and figures, one cannot seemingly overlook the way of life that numerous individuals have chosen. In the case of housing, according to *Accommodating Growth Through Infill Development*, a publication of the Washington Research Council, Americans have shown a strong cultural preference for single-family homes. Public opinion surveys conducted in our nations' capital concluded that only 23 percent of the subjects said it was important to live in an urban area with many people living close together, while 83 percent said they wanted to live in an area where they could have large front and back yards. These same people, representing a declining share of today's housing market, exhibit strong tendencies to oppose infill development that will seemingly alter the character of their neighborhood. Of these subjects, 77 percent disapprove of development that allows taller apartment and condominium buildings or single-family houses on smaller lots to increase density of their neighborhoods, all characteristics of infill development.

Having a personal automobile remains a choice most people are seemingly taking advantage of in our democratic society. In *Development at the Urban Fringe and Beyond: Impacts on Agricultural and Rural Land*, Ralph Heimlich and William Anderson note that while 55 percent of Americans living in medium to large cities preferred that location, 45 percent wanted to live in a rural or small town setting 30 or more miles from the city (Heimlich 3). The personal automobile is a result of the apparent housing choice of these individuals. The private and social costs imposed by the automobile are often overlooked for aspects including increased comfort, flexibility, low door-to-door travel time, freight carrying capacity (for shopping trips), cheap long

distance travel, and aesthetic benefits of extensive auto-dependant development (Heimlich 3).

As growth has occurred, an apparent job growth in the suburbs has followed. A HUD study conducted in 1997 concluded that 57 percent of metropolitan area jobs, a majority being high technology jobs or those associated with telecommunications, science, and research, were located in the suburbs, a 17.8 percent increase since 1992 (Heimlich 23). The ability for corporations to move into areas with more skilled, college educated residents has allowed suburban employers to fill positions faster and at lower wages. These markets have yet to establish population densities that are capable of supporting viable public transportation systems; with time personal automobiles could give way to public transit. As densities increase the services such as police, fire, ambulance, parks, libraries, churches and schools will make their way into the suburbs just as the job market has.

Environmental Effects

According to smart growth proponents, the apparent consequences of suburbanization, decreases in open space accompanied by increases in suburban population and automobiles, have detrimental effects on wildlife habitats and wetlands and increase the contamination of waterways and air. Ralph Heimlich and William Anderson describe the effects in *Development at the Urban Fringe and Beyond: Impacts on Agricultural and Rural Land* as the principle threat to the preservation of biodiversity through the fragmentation of various wildlife habitats (Heimlich 33). The negative effects of this fragmentation can be grouped into four major categories:

- Reduction in total habitat area. Habitat remnants support fewer species and smaller populations of the same species than larger swaths;

- Loss of wide ranging, low-density, and habitat-specialist species. Mountain lions, which have ranges that can exceed 1,000 square kilometers, are now extinct in a recently isolated habitat fragment in Orange County, California. Habitat interior dwellers, such as some forest birds, may be locally extinct from fragments of 1 square kilometer as studies in eastern North American deciduous forests have shown;
- Increased “edge effects” or the microclimate changes that occur along power line corridors, roads and urban development which favor exotic species often at the expense of native and interior species;
- Increased extinction risk from demographic, environmental, and genetic variances

In addition to the devastation of wildlife habitats through fragmentation, smart growth proponents label suburban development as one of the principle causes of wetland deterioration in the United States (Heimlich 34). The National Resources Inventory reported that between 1982 and 1992, 89,000 acres of wetlands were lost to urban uses per year, accounting for 57 percent of wetland loss (Heimlich 34). The majority of the coastal wetland erosion can be attributed to the amount of pollutants introduced to our local streams and rivers non-point sources via groundwater runoff. The extensive use of impervious surfaces (parking lots and roads), used to keep up with the increases in automobile numbers, often lead to more pollution and more runoff. Reports have indicated that suburban areas contribute to increased sediment deposits, biological and chemical oxygen demand, nitrogen and phosphorus runoff, and suspended solids and fecal coliform bacteria (Heimlich 34).

The suburban argument regarding pollution is in regards to air, not water. Increases in the amount of impervious surfaces lead to increased runoff, however the increased distances that accompany suburban development have positive effects on the quantities of air pollution emitted. Samuel Staley in *The Sprawling of America: In Defense of the Dynamic City* claims it is no consequence that since the 1970’s,

approximately when the suburban movement began to hit its stride, nitrogen oxides, hydrocarbons, carbon monoxide, and lead pollutants often associated with automobile use have fallen consistently (Staley 38). International and U.S. evidence has concluded that population densities correlate directly to traffic intensities and amounts of air pollutants discharged into the atmosphere (Staley 39). Evidence indicates that the amount of emitted air pollution is more strongly related to the number of trips than to the length of each trip, with a major portion deriving from cold starts.

Idea of Community

Both suburban and infill development have negative aspects associated with how they affect the land and the environment. How these development practices affect the social structure, including values and cultures, on which development is infringing upon is quite different. The process of infill is based upon protecting and enhancing with a main emphasis on revitalization of our inner cities. Smart growth seeks to create interesting, unique communities, which reflect the ideals and culture of the people who reside there, and foster the types of physical environments, which will support a more cohesive community fabric (*Principles of Smart Growth*). Local governments offer infill incentives for a number of reasons according to Policy Link's *Infill Incentives*:

- Infill development reuses properties that may have been underutilized or blighted, helping to catalyze revitalization
- Infill has the potential to boost jobs, purchasing power, and public amenities in urban core neighborhoods and generate tax dollars for local government
- Infill housing is dense in comparison with housing in suburban areas and represents an effective way to meet a jurisdiction's affordable housing or population growth needs
- Located in proximity to existing transit routes or within walking distance of services and entertainment, infill development can reduce auto use and accompanying congestion and pollution.

The majority of the ideas expressed by these incentives respond to the impact urban growth has had on the sense of community. The argument is centered on the abandonment of older urban centers for suburbs resulting in the decentralization of people and jobs caused by sub urbanization. The relocation of key retail businesses and services to the suburbs on the periphery has consumed the vitality of many town centers creating center-less communities. When the boundaries are obscured, the sense of community, which is important in generating civic pride, volunteerism, and support for local public services and community activities, may be diminished (Heimlich 31).

Combating these problems without addressing the cause is the suburban argument. The idea that the inner city has deteriorated due to the abandonment of people and jobs is greatly disputed. In *The Sprawling of America: In Defense of the Dynamic City*, Staley claims suburban homebuyers are influenced mainly by things that have affected their family; larger houses, more open space, efficient government, safety, and quality schools. Forces such as education and safety drive families from the inner cities, not just a preference for the suburban lifestyle. Families that believe the education is sub-par, crime is rampant, and safety diminished tend to move to the suburbs.

Studies have proven that the number of serious crimes increase as one approaches the core of the inner city (Staley 35). Crime rates, although decreasing nationwide, are doubled in metropolitan areas compared to rural areas (Staley 35). As Figure 2.6 illustrates, crime rates in Baton Rouge are a strong example of this trend. When compared to other cities based upon the relocation crime lab index, a city's crime rate relative to the average of nearly 500 total cities nationwide, Baton Rouge's more than doubled the U.S. and metropolitan averages in 1994. This alone could account for the

deterioration of our inner city. It could be that all of the market demands influencing suburban development are a result of other problems plaguing our downtown rather than causing them.

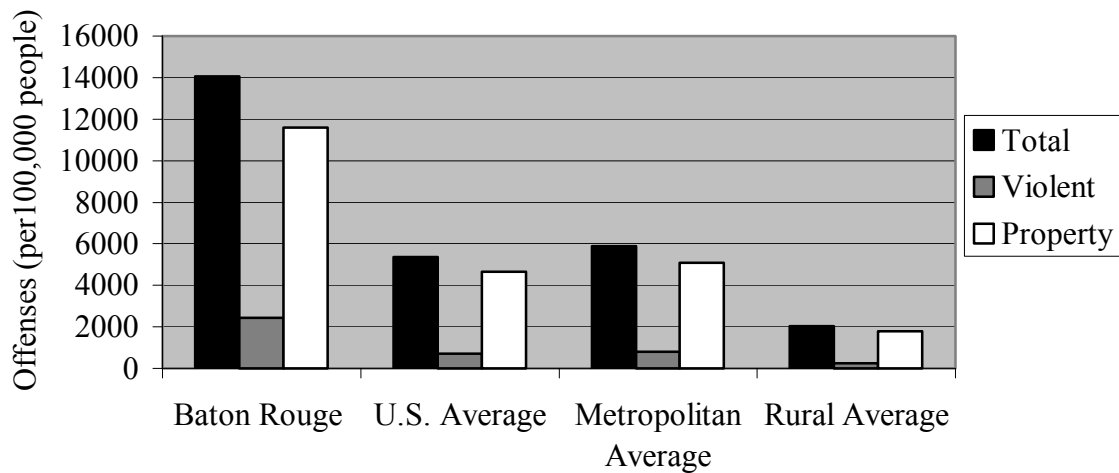


Figure 2.6
Crime Rates – 1994

Baton Rouge

It has been established that with regard to land use, farmland, housing and transportation expansion, and the idea of community that there are no clear advantages to either method of development. According to the Baton Rouge Consolidated Plan, a unified plan for community development, the city needs infrastructure repair, increased affordable housing, economic development, job training, and increased education. Realizing this, in April 1997, Duany Plater-Zyberk & Company (DPZ), a Florida based planning firm specializing in Neotraditional Town Planning, also known as New Urbanism, was hired to formulate a plan to promote the reestablishment of the downtown area and combat the current suburban trends. *Plan Baton Rouge*, a plan to renew the

downtown, is intended to also renew the social and economic advantages that Baton Rouge has lost over time. The idea behind the plan is one based upon responding to the wants and apparent needs of the public. The backers of the plan hope in turn to create a growing market in the downtown area (*Plan Baton Rouge*). According to Plan Baton Rouge the following principles of the New Urbanism/Smart Growth Movement are incorporated in the strategy to stimulate revitalization of downtown Baton Rouge:

- Neighborhoods should be diverse in use and population;
- Communities should be designed for pedestrian and transit use as well as the car;
- Cities and towns should be shaped by physically defined and universally accessible public spaces and community institutions;
- Urban places should be framed by architecture and landscape design that celebrate local history, climate, ecology and building practice.

Along with general goals of Plan Baton Rouge, specifics of the Baton Rouge Consolidated Plan, the parish-wide plan for community development, involve aspects that seemingly encourage infill development. In the Executive Summary listed goals associated with housing include:

- Through rehabilitation grant assistance activities and volunteer program, improve 145 substandard, owner-occupied homes;
- Through the housing loan program create 100 new lower income, first-time homebuyers and rehabilitate 100 substandard rental and homeownership housing units.

The obvious initiative of Plan Baton Rouge is aimed towards combating the suburban sprawl that has plagued the history of the development of Baton Rouge. Smart growth has proven itself nationwide as a strategy that has the potential to revitalize communities that are seemingly locked into cycles of decay. It accomplishes this by adding services, creating opportunities for residents, and enhancing access to existing and future amenities.

In determining if infill development is the solution to the growth problems that Baton Rouge has experienced, an evaluation of the past, present, and apparent future trends in development must be conducted. This evaluation will lead us to a more thorough understanding of the what has influenced the growth Baton Rouge and what problems we might encounter in the future.

Military Beginnings

The earliest accounts of a settlement along the Mississippi River Delta and the current site of Baton Rouge are evident as early as 1718. Due to its position of strategic military importance, Baton Rouge began its life as a series of British Military Installations, Fort Bute and Fort New Richmond. These forts became the center of an expanding farm based community that, at this time, showed no real evolution towards the characteristics of a town. The forts and surrounding plantation lands served as the center of a fast paced, technically illegal trade with neighboring Spanish colonies (Carleton 18).

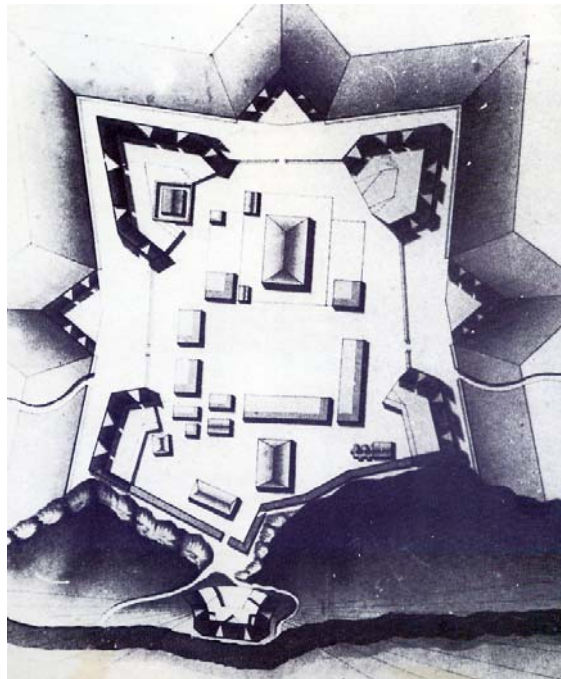


Figure 2.7
Fort San Carlos c.1798

A River Town

River commerce began to drive the escalation of the value of the city as well as its river front property. Farms and plantations surrounding the settlement thrived on the fertile delta soil and furnished the initial basis of economic security and growth. The river borne commerce sustained the economy of Baton Rouge at this time (Carleton 39). Residents and commercial businesses began to crowd the affluent riverfront, leaving behind previous sites along the fringe of the fort. Baton Rouge, at this time, enjoyed the prosperity that accompanied a healthy American frontier community and Mississippi River port.

According to Mark Carleton, author of River Capitol: An Illustrated History of Baton Rouge, the city, due to rapid growth and lack of knowledgeable planners, became a series of small villages each with its own identity (Figure 2.9).

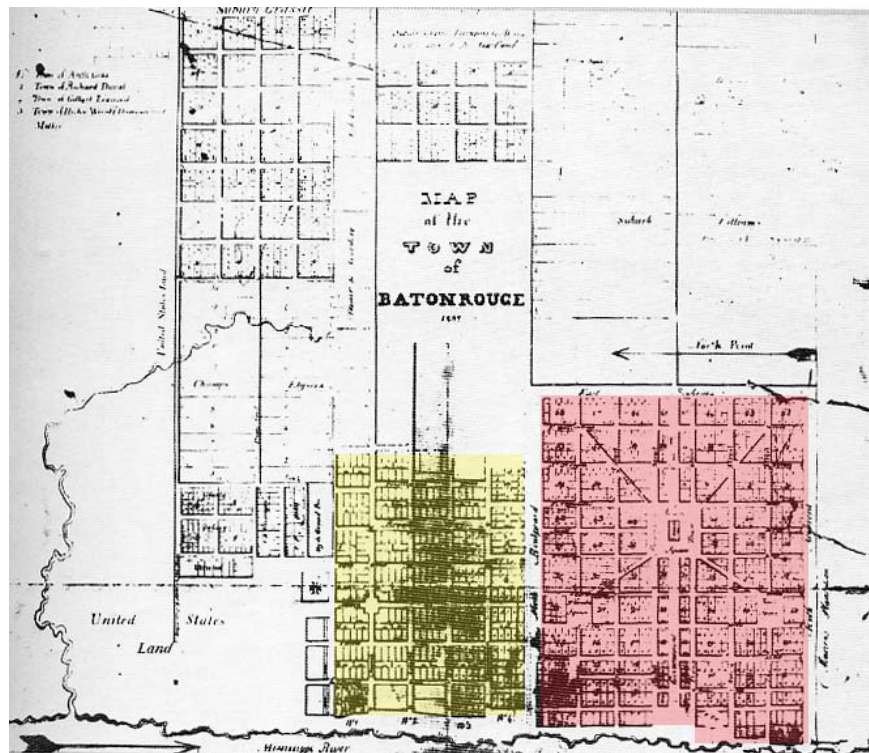


Figure 2.9
Map of the Town of Baton Rouge c.1837

The city limits extended eastward from the river to what is now 22nd Street. However, actual settlement did not extend beyond much beyond 5th Street due to the importance of the river commerce. Spanish Town and Beauregard Town were the two districts created to accommodate for the new growth. Beauregard Town, the principal subdivision at the time (shown in red), was a rectangular area circumscribed by the river and North, East, and South boulevards. The planners of Beauregard intended the development to resemble fashionable Jackson Square. It was to have a central square, accessible by a series of intersecting streets and avenues. The other district was Spanish Town (shown in yellow), which was located along the northern rim of the community along what is now Spanish Town Road.

The City

It was during the last three decades of the antebellum era that Baton Rouge took steps towards becoming a city. The political and institutional development of the city within its current boundaries took precedent over further expansion of the boundaries. The affluent times, prompted by the activities of the port, brought with it growth problems including severe shortages of public amenities. What the city offered in economy and commerce, it lacked public amenities. Baton Rouge had no public auditorium, theater, or meeting facilities and the public schools received reluctant support from the community. The explosive growth of the downtown area was described as ill planned, hurriedly erected, makeshift as to use, and rapidly deteriorated. Baton Rouge, with an economy based upon the plantation and agricultural trade, had unwillingly become the center of a slave state.

In 1861, the Civil War began and the city was once again reverted to the days of its strategic past. Multiple attacks and bombings from Union ships left the city in economic ruin. The city became a river based staging and supply area for federal operations upstream. By the end of the war in 1865, many significant buildings were lost and property values plunged. The value of property, parish –wide, had plummeted from \$10,259,000 in 1861 to \$3,458,000 in 1865 (Carleton 97). The volume of trade had become sluggish and crime and violence were common in the downtown area.

In 1882, with the end of the Civil War also came a mass movement of blacks into the South. Baton Rouge, along with other cities, was ill equipped both physically and psychologically to cope with the increased black population. The overall population of the city had remained fairly constant throughout the war, 7,197 in 1880, however the population of blacks in the Baton Rouge area rose from 32 percent in 1860 to 59% in 1880 (Carleton 111). The blacks filled in available space within the city boundaries established sixty years before, usually in the lowest, most poorly drained and unhealthy sections of town.

Downtown Renewal

It was not until the inception of the railroad in 1883, along with rising cotton prices, the core of Baton Rouge began to recover and growth outside of the business core became more common. Steamboats, barges, and eventually ocean going vessels continued to serve Baton Rouge, enhancing the diminished economy. However, the railroads made trade possible with the entire nation, not just areas located on or near accessible waterways. The opportunity to establish viable areas that were not totally dependent on the river led to a general increase in growth rates at the time.

Baton Rouge, not yet responding to the changes, continued its tranquil pace of growth throughout the end of the 19th century. Brought upon by the influx of new residents, the downtown area was in dismal condition at this time (Figure 2.10). Elected officials along with “a small band of progressive citizens” persuaded local property owners to issue a series of bonds intended to improve the downtown (Carleton 132). Improvements of note included a new city hall, the Convention Street School, and the paving of Third and Main streets as well as North Boulevard. Additional funds were used to pave additional streets in the downtown, construct Florida Street High School, improve sewerage and drainage, and construct a public school for blacks (Carleton 132).



Figure 2.10
Third Street c.1890

The focus on the majority of improvement and development at the turn of the century remained in the downtown area. Rising cotton and sugar prices lead to community and civic growth as a result of the strong economy.

Northern Expansion

The introduction of Standard Oil in 1909 to the north of the Central Business District, gave Baton Rouge the prestige of being the site of one of the most modern and significant installations of industry at the time. The money allotted for the construction wages strongly reinforced the growing economy. The prosperous conditions led to the further expansion of the city boundaries and the first real signs of what we view today as suburban development (Figure 2.11). Rampant northern growth, shown in red, occurred

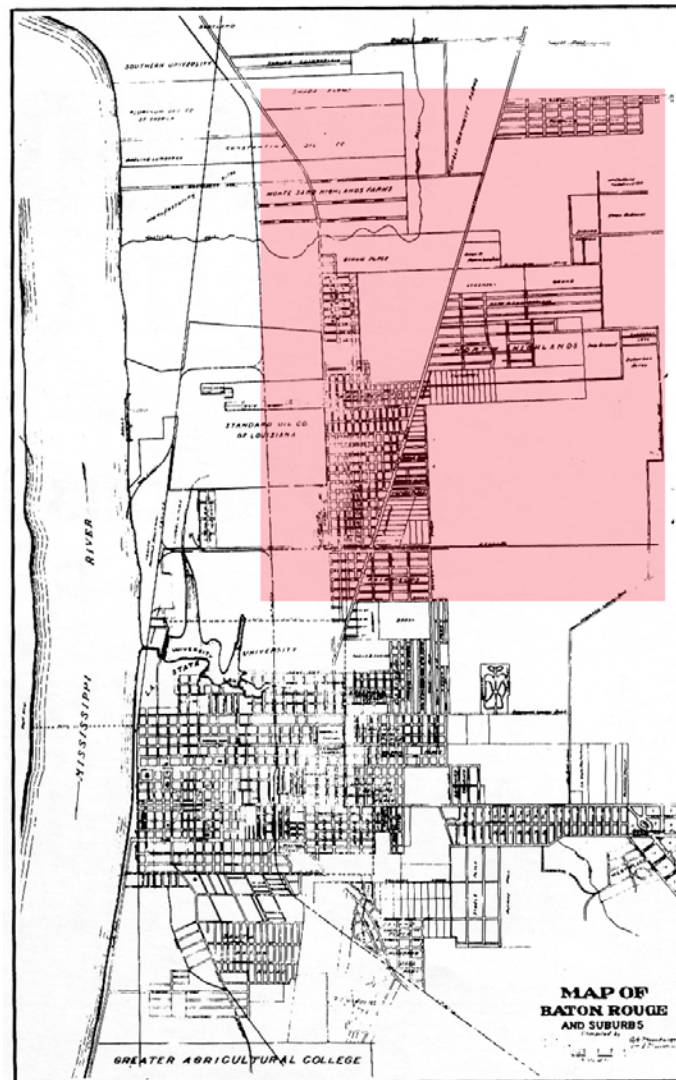


Figure 2.11
Baton Rouge's Northern Suburban Growth c.1923

in response to the physical location of Standard Oil and the newly founded oil-based economy gave people comfort in the fact that national economic hardships would not plague what many viewed as a “recession-proof” economy. According to Mark Carleton, author of River Capitol: An Illustrated History of Baton Rouge: in 1915, the areas north of downtown Baton Rouge began subdividing into Fairfields and Istrouma. This would later become the home for a vast majority of the refinery workers and their families.

The state labor force provided much of the stability in population for the downtown area. New construction in the downtown along Main, Laurel, Florida, Convention, and Government Streets, allowed for the survival of the area, included mainly improvements in roadways, facilities, sewers and drainage (Figure 2.12).



Figure 2.12
Third Street c.1930

While the Great Depression of 1929 left its mark on the majority of the country, the newly found economy based on oil allowed the city to survive. By the late 1930's three more large corporations had arrived: Solvay Process, Consolidated Chemicals, and Ethyl Corporation (Carleton 174). Eventually more industries would follow. This industrial center, one of the largest in the world, fully supported at least one-third of the local population of 34,700 in 1940, which had significantly grown from 8,000 in 1882 (Carleton 174).

This boom in population left the city in dire need of more residential housing, the majority of which was being built in suburbs. Groceries and drug stores followed the development to the suburbs leading to an influx of specialty stores in the core of downtown Baton Rouge. Throughout the 1950's Third Street was the place to shop and socialize, evidenced in Figure 2.13.

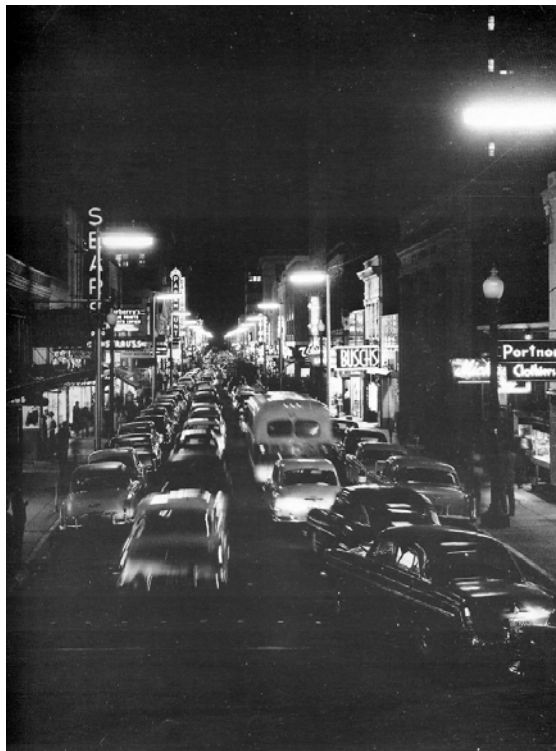


Figure 2.13
Third Street c.1950

The area was complete with department stores such as: Rosenfield's, J.C. Penny's, Montgomery Ward, Woolworth's, Sears, D.H. Holmes and Walgreen's.

The 1940's and 1950's provided a great economy for the citizens of Baton Rouge. Additional employees earning even higher salaries stimulated retail, construction, service, and leisure industries. More importantly the increases in prosperity led to the increased purchasing of automobiles. The automobile led to the development of more rural areas, proving even more detrimental to the downtown area. Citizens headed for the new suburbs that landowners, homebuilders, and real-estate developers were only too happy to provide (Carleton 190). The Cold war crisis and increased automobile purchases throughout the 1950's led to the construction of the Interstate Highway. The opportunity for local residents to live farther away from the city with the same commute time severely hindered growth in the downtown area while encouraging development in the suburbs. Property values in the downtown area plummeted and violent crime began to escalate causing the area to be forgotten by the average citizen (Frey 30).



Figure 2.14
I-10 and I-110 c.1970

By the late 1960's, early 1970's, the majority of the remaining downtown retail had followed the population to the suburbs. The establishment of large suburban shopping centers, Bon Marche (1964) and later Cortana (1976) Malls, and greenspaces, Independence Park, bisected the city on an east-west axis driving the population center of the city from the downtown east towards Airline Highway, the limit of growth at the time. The establishment of independent suburban communities, along with increasing sales and property taxes downtown, further hindered the growth of the area. The residential areas became more dispersed and the downtown area refused to adapt to the residential and commercial changes that were taking place. Subsequent repressed housing and enormous population growth followed this boom in suburban growth in the 1980's and 1990's.



Figure 2.15
Cortana Mall c.1976

Current Trends

The downtown area, due to the delayed coordination of growth by various downtown interests groups and state and local governments, has become a series of self-contained communities that are independent of each other. A new initiative and resolve has provided early successes in the goal to revitalize the downtown area. Millions of dollars have gone into the development of social amenities such as the Riverside

Centroplex, “Catfish Town”, and Riverside Mall (originally 3rd street). These projects, although they are of possible economic benefit, failed to offer the social and community benefits that are needed to spur growth in the area.

Recent population trends in the Baton Rouge area have not improved. Growth in the downtown area has been stagnant while suburban growth North, South and East of Baton Rouge has continued to explode. As Figure 2.10 shows, a study conducted by research division of the College of Administration and Business at Louisiana Tech University, the average growth for the suburbs adjacent to the Baton Rouge Metropolitan area was on average three times greater than that of the city between 1990 and 1996.

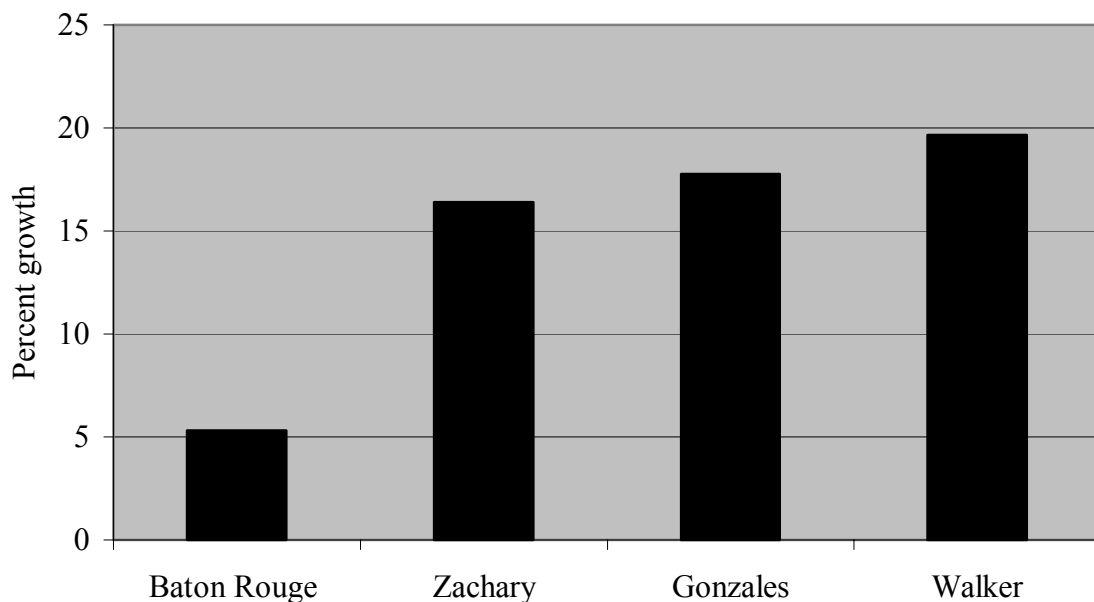


Figure 2.16
Percent Population Growth: 1990-1996

According to Louisiana Census data, the suburban communities of Zachary and Walker, to the north and west respectively, continue to be the prime locations for additional suburban development. Due to a relatively strong economy and cheap farmland both of these communities have grown by an average of at least two percent per

year since 1970. Although these trends are expected to slow in the near future, Zachary's 2010 projected growth rate is the only one that has a population growth rate over ten percent in the Baton Rouge Metropolitan area.

Capital Costs

Conflicts between infill and suburban interests and the growth patterns of the Baton Rouge area have been evaluated in this literature review. There is no clear advantage to either infill or suburban development; however, growth trends in the Baton Rouge area indicate a strong preference towards suburban communities. An evaluation of capital costs and potential profitability of infill and suburban developments could lead us to a determination of which method should take place in the future.

Development is a process that includes the careful evaluation of many different factors. According to Ralph Heimlich (28-29) of the Economic Research Service:

New Development is a “shock”, whose effects ripple through the economic, fiscal, environmental, and social fabric of a community, influencing employment, income, government tax revenue, quantity and quality of public services, and nonmarketed “public goods related to the quality of life and the environment.

Development apprehension includes relationships to taxes and costs of providing services. Due to this apprehension infill development is not always a developer's first choice. The apparent costs usually result in the creation of high to medium density housing, highest on an expenditure/revenue ratio when compared to farmland and industrial property. See Figure 2.17. Without profit, the desire to create infill residential developments is almost nonexistent.

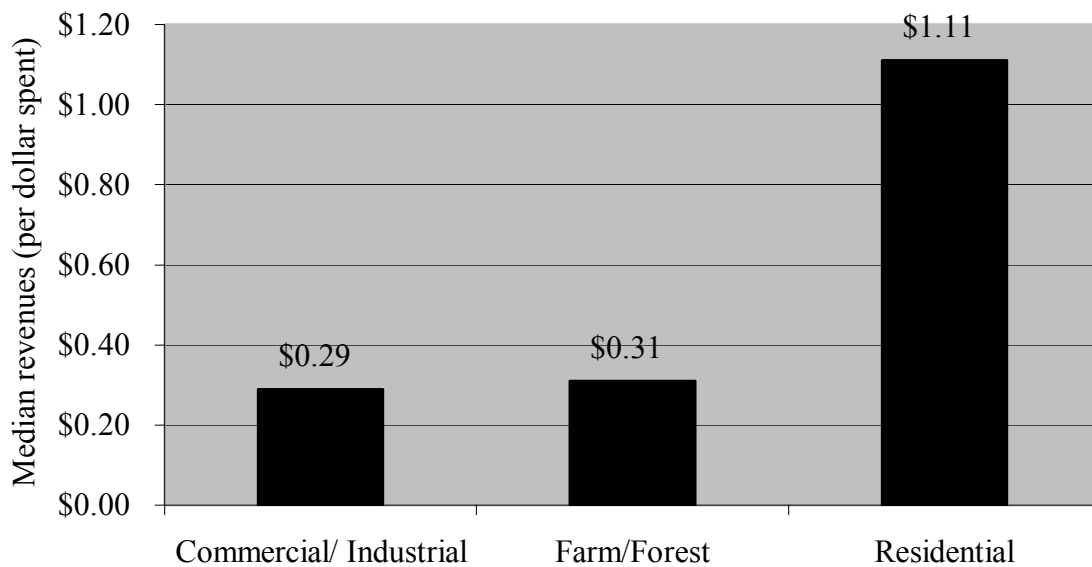


Figure 2.17
Cost of Community Services

Aimed to combat the problems associated with costs of infill development, incentives associated with costs and profitability have been created. According to Policy Link, incentives make urban core parcels more attractive to developers by addressing the common barriers to infill development; inadequate infrastructure, lengthy permit processes, obsolete zoning provisions, and difficult parcel assembly. Local redevelopment authorities have spearheaded activities involving the upgrading of infrastructure and amenities, while localities grant incentives based upon projects meeting certain criteria. Fast track permitting allows developers of infill parcels to complete their application ahead of non-infill applicants thus eliminating the long delays that can jeopardize the financial validity of a project.

Along with fast track permitting, cities will usually lower the impact fees to offset the costs of public facilities and services necessary to serve that new development. When impact fees are lowered, it is a more accurate reflection of the costs to provide services

through existing infrastructure. Priorities set forth by city councils and redevelopment agencies can also reduce the costs to improve antiquated infrastructure and add amenities such as parks, libraries, and streetscapes (*Infill Incentives*).

Many localities are more likely to update their zoning codes to address the challenges associate with the development of small parcels of land (*Infill Incentives*). The modification of regulations associated with residential lot sizes, setback requirements, street and parking standards, and allowable densities has further increased the practicality of infill (*Infill Incentives*). As a result, efficient land use and the inclusion of affordable housing are promoted by localities. Abatement of property taxes and reduction of loan interest are also offered when housing is provided for low-income residents.

While the costs and incentives associated with infill development are clearly established, the dynamics associated with market responses to suburban development are not as clear. Suburban advocates will be the first to admit that residential development fails to generate sufficient tax revenues to cover the costs of providing services to those areas (Staley, *The Sprawling of America* 26). By implication, commercial, industrial, and agricultural development, financially support the cost acquired through the addition of housing (Staley, *The Sprawling of America* 26). These studies do not provide a full picture of the costs and benefits of urban growth in the context of the entire metropolitan area as opposed to individual sites.

Further, growth increases individual wealth through increases in property value. Given that the supply of land is fixed, increased demand for land due to growth increases land values, and thus the total property tax revenue (Heimlich 29). Increases in property

value are evident in the rising value per acre of undeveloped farmland. Figure 2.18 illustrates a 17 percent increase in the value of an undeveloped acre between 1994 and 1998 (Agricultural Land Values).

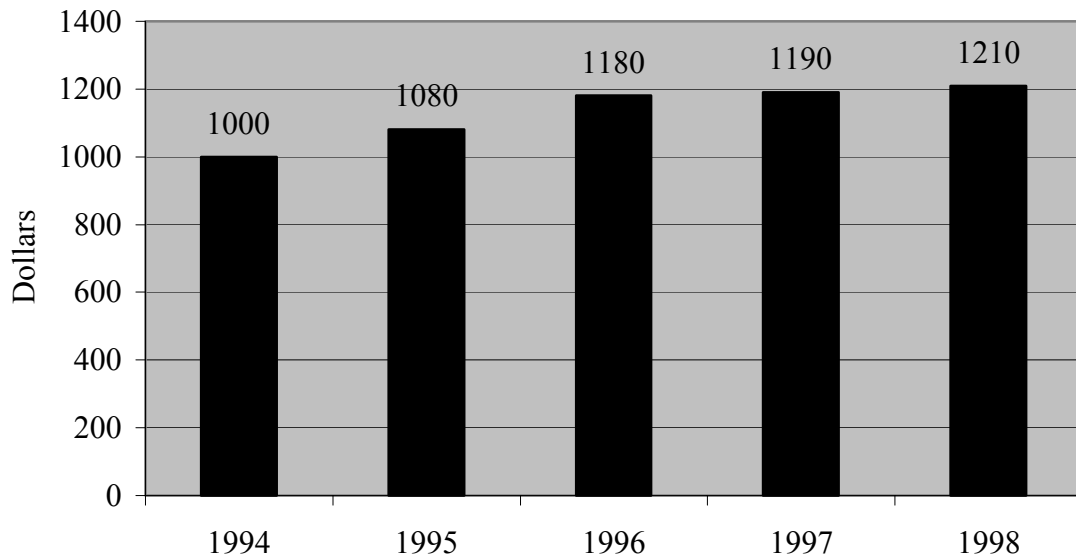


Figure 2.8
Average Value Per Acre : Farm real estate

The residents associated with new development do not simply demand services and pay taxes; they contribute to the economic foundation and well being of the community. Significant revenues in the form of additional sales and services are generated via population increases in the local labor force, in turn effecting employment, income, income taxes, business activity, property tax, and sales tax (Heimlich 29). The increased public expenditures, that increase services and the quality of life, will be capitalized on in land values, which are a direct result of growth.

Conclusion

The ideas of smart growth and suburban development have been addressed and evaluated in this literature review. Conflicts associated with development regarding to

land use, farmland, communities, housing, transportation, and environmental effects have been evaluated with no clear advantages to either method. An analysis of the growth trends that have affected Baton Rouge indicate that suburban development is the current and predicted future method of development. In the formulation of *Plan Baton Rouge*, principles associated with infill strategies are being encouraged, ultimately, to revitalize the downtown area. The idea behind capital costs is a matter that will be evaluated more thoroughly in the case study portion of this thesis. A capital costs comparison related to infill and suburban development, could lead to an innovative development strategy for Baton Rouge.

The next chapter will compare the development costs of infill in Baton Rouge to suburban development in Zachary. Sites will be studied and evaluated based upon monetary value of land upon purchase, development fees, and cost of construction (utilities, sewer, and electricity installation); and applicable government-based incentive programs will be evaluated. Total development costs per square foot will be determined and compared.

CHAPTER THREE

CASE STUDY

Introduction

It has been established in the literature review that comparative evaluations of development costs could reveal the advantages of infill over suburban development. The literature suggests a compelling argument for infill development to offset the loss of valuable agricultural and open space lands. It is the objective of this chapter to directly analyze and compare development costs of actual infill and suburban residential housing developments located in the Baton Rouge metropolitan area.

Suburban Site Selection

In analyzing current census data and growth predictions along with development trends in the Baton Rouge area, northern growth towards the Zachary has dominated suburban growth since 1970 and is predicted to do so through 2010. The predicted population explosion is due to the newly established independent school district in the Zachary area. The opportunity for parents to send their children to nearby public schools (noted throughout the parish for their high quality education and clean facilities) is something that many families consider desirable when considering housing in Zachary. Understanding that the future of suburban growth in Baton Rouge is towards this area, it seemed logical to choose a site from this area to compare to a urban infill site. Also, personal interest drove my curiosity north. Being from Zachary and having a future interest in the development of the city, obtaining costs of suburban development in the area is something that could prove extremely beneficial to me in the future.

Understanding how land use ideas in this area are made successful realities creates a model of how one should approach the development process.

In choosing a suburban development, the importance of selecting based upon typical suburban tendencies was important. Characteristics of suburban development that were important when selecting a site included:

- Previous farmland;
- Geographic separation of essential places such as work, homes, schools, and shopping;
- Dependence on private transportation.

These characteristics were important in comparing the apparent differences between urban and rural land. The above characteristics exemplify typical identifiable characteristics of rural land and are addressed as issues that conflict between infill and suburban proponents.

Site selection is also extremely dependant upon availability of information. Developers are typically not willing to disclose development information in fear of competition obtaining it. Being a family friend, the owner of Hunt and Hunt Development graciously supplied me with development information regarding Plains Crossing, a new subdivision located northwest of Zachary. These hard to obtain costs of property attainment and development were available to me due to the developer's interest in the subject matter.

Infill Site Selection

The importance of establishing infill development in an area of need is vital in determining whether or not it succeeds or fails. Through my studies in urban design along with the encouragement of my committee, an interest was gained in the Mid-city area. Noting the high potential that the area possessed for infill development opportunity,

it was evaluated based upon seven factors deemed vital by Urban Land Institute. See Figure 3.1.

Factors	Highest potential	Lowest potential
Growth	Rapidly growing population; extensive demand for new housing	No population growth; limited new household formation
Employment Centers	Strong CBD and local employment nodes; long commuting distances from the urban fringe	Weak CBD; dispersed employment centers; short commutes from fringe to jobs
Building Conditions	Extensive investment (public and private) in neighborhood preservation and upgrading	Little investment in existing building stock or public facilities
Resident Incomes	Infill land located in a variety of neighborhoods servicing many income groups	Infill land concentrated in low income neighborhoods
Land Prices	Shallow land price gradient from urban fringe to inner city or significant density differences to balance steep gradient	Steep land price gradient from urban fringe to inner city and little variation in land use density
Growth Controls	Limits on outer spread of development operating region-wide	No growth guidance or coordination among jurisdictions
Availability and Costs of Services	Developers at the fringe pay costs of service extensions and assist with school and park requirements; limiting preservicing	Extensive preservicing; little in the way of impact fees charge

Figure 3.1
Factors Affecting Infill Potential

With the Mid-City area incorporating the majority of the factors associated with the highest potential, specific site selection could then occur. The specific site chosen should also exemplify the typical characteristics associated with infill development. This is normally associated with the existence of infrastructure that is capable of supporting a significant population increase. Utilities, water, and sewer lines should exist and a public transportation network should be accessible.

Currently, very little has been done, especially by private developers, within downtown and the surrounding Mid-City area concerning the development of residential housing. Plagued by adjudicated property, that which has been placed in state or local government hands because property taxes have not been paid, and old housing stock

constructed prior to 1940, the mid-city area has the existing water, sewer, and electrical capability to support a substantial population increase. The only available information regarding new development in the Mid-City area involves the Baton Rouge Habitat for Humanity. Being a public organization, Habitat supplied me with the land acquisition and development costs of their most recent project, the construction of five new homes at the corner of North 17th and Gayosa. The costs were used to establish a comparison with the suburban development information obtained in Zachary.

Physical Site Context

In order to establish adequate comparisons of costs, physical site context and geographic relationships must be understood. Both the infill and suburban sites are located within the Baton Rouge Metropolitan area. See Figure 3.2.

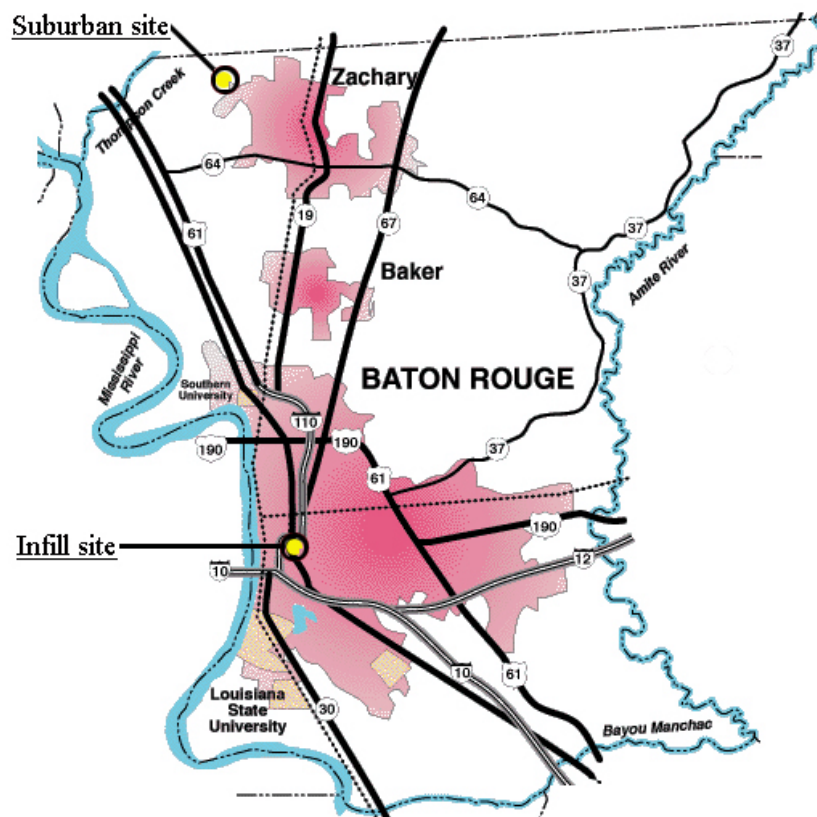


Figure 3.2
Suburban and Infill Development Sites

The .93-acre infill site is located directly east of the Central Business District. The development, at the corner of North 17th and Gayosa, included the acquisition of four lots and labor to construct 5 new homes. The adjudicated land for these specific homes was obtained by Habitat for Humanity. The Plains Crossing development is located approximately twenty-five miles North of downtown Baton Rouge at the intersection of LA 964 and Plains Port Hudson Road. The development is formerly of the East and Young Plantations, both previously successful dairy and cattle farms. The 43.75-acre parcel has since been developed and divided into the Young tract and Plains Crossing, twenty-nine lots ranging in size from .72 to 1.72 acres. The 26.05-acre western portion of the site is my case study site. Accessible by I10 and U.S. 61, the suburban location is well within driving distance for commuters.

Development Costs

The remainder of this chapter will present development costs for the suburban and infill development sites. Costs have been obtained through personal interviews with Hunt and Hunt Development and Habitat for Humanity. They will be analyzed based upon individual items involved in the construction process including land acquisition, development fees, and itemized construction costs. A total cost of construction based upon dollars per square foot will be established and evaluated. Finally, if discrepancies in costs are found relating to implementation of infrastructure or amenities, the costs will be reconciled and re-evaluated. A summary of the initial infill and suburban development costs is shown in Figure 3.3.

		SUBURBAN DEVELOPMENT	INFILL DEVELOPMENT
LAND ACQUISITION COST			
	TOTAL	\$214,912.50	\$1,094.94
DEVELOPMENT FEES			
ENGINEERING FEES		\$17,234	\$0.00
SURVEYING FEES		\$12,153	\$1,583.68
LA TESTING AND INSPECTION LAB		\$4,653	\$0.00
SITE PERMITS		\$0	\$105.00
	TOTAL	\$34,040.00	\$1,688.68
CONSTRUCTION COSTS			
ITEM DESCRIPTION			
MOBILIZATION		\$5,000.00	\$0.00
EARTH WORK (EXCAVATION)		\$11,488.00	\$19,915.68
ENTERGY (UTILITIES AND STREET LIGHTS)		\$1,450.00	\$15.78
DITCH WORK/ EROSION CONTROL		\$2,302.50	\$2,092.68
SINGLE 6" SANITARY SEWER WYE		\$35.00	\$0.00
DOUBLE 6" SANITARY SEWER WYE		\$250.00	\$0.00
SINGLE INLET SIDE DRAIN		\$4,500.00	\$0.00
SINGLE INLET CROSS DRAIN		\$6,250.00	\$0.00
DOUBLE INLET SIDE DRAIN		\$2,500.00	\$0.00
DOUBLE INLET CROSS DRAIN		\$2,000.00	\$0.00
JUNCTION BOX		\$3,600.00	\$0.00
15" STORM DRAIN PIPE		\$16,200.00	\$0.00
18" STORM DRAIN PIPE		\$13,720.00	\$0.00
24" STORM DRAIN PIPE		\$8,672.00	\$0.00
24" RCP CULVERT		\$2,400.00	\$0.00
4" MOUNTABLE CURB		\$36,440.00	\$0.00
HYDRATED LIME (12% BY VOLUME)		\$7,980.00	\$0.00
PROCESSING LIME		\$7,500.00	\$0.00
SOIL CEMENT (12% BY VOLUME)		\$21,420.00	\$0.00
PROCESSING CEMENT		\$9,000.00	\$0.00
1 1/2" ASPHALTIC CONCRETE		\$22,275.00	\$0.00
8" PVC WATER MAIN		\$21,600.00	\$0.00
FIRE HYDRANT ASSEMBLY		\$7,500.00	\$0.00
8" WATER TIE-IN		\$1,000.00	\$0.00
JACK AND BORE		\$2,000.00	\$0.00
2" PE GAS MAIN		\$7,446.00	\$0.00
GAS SHUTOFF VALVES		\$250.00	\$0.00
2" GAS TIE IN		\$500.00	\$0.00
RIP RAP		\$3,036.00	\$0.00
	TOTAL	\$228,314.50	\$22,024.14
TOTAL DEVELOPMENT COSTS		\$477,267.00	\$23,760.30

Figure 3.3
Summary of Development Costs - 1

The apparent differences in expenditures are evident throughout Figure 3.3. There are apparent cost differences relative to land acquisition, development fees, and construction costs associated with the suburban and infill sites.

The land acquisition costs for the suburban development are fairly straightforward. The land was acquired by means of public bid for \$8,250/acre. The estate was put up for sale and the property was obtained by means of a high bid. In order to determine the costs of the infill land, two blocks of adjudicated property were identified. The land assessment and improvement costs of each individual property were evaluated and averaged. The average acquisition costs for the adjudicated infill property was \$1,177/acre.

Accumulated fees for the suburban development included engineering, surveying, and state regulated soil testing. Site permits were not included in the development cost information obtained from the developer. The accumulated development fees total \$1,306/acre for the suburban development. Fees accrued during the infill process included surveying fees and site permits. When totaled, the development fees associated with the infill site were \$1,815/acre.

The most glaring differences in the costs comparison summary are evident in the construction costs. Both the infill and suburban sites accumulated costs for earthwork, utilities, and erosion control. However, the implementation of a road, drainage structures, and infrastructure in the suburban site increased the costs significantly. Materials and labor were required for the installation of a twenty-seven foot wide asphalt road complete with curbs, concrete drain inlets, and drainage pipe. Also, infrastructure including the city water, fire hydrants, and gas mains had to be extended to service the

new subdivision. These costs totaled \$8764/acre. The infill site already included infrastructure consisting of city water, gas, and utilities capable of supporting a significant population increase, yet the sum of the implementation costs associated with its construction was \$23,681/acre.

The total costs accrued for the suburban and infill developments are \$18,321/acre and \$25,548/acre, respectively. The total costs for the infill development are \$.17/square foot more than the costs for the suburban development despite all of the additional construction costs.

Analysis

The acquisition cost of the suburban land was \$6958 more per acre than the infill land. The development fees and construction costs, however, were higher for the infill development. Development fees were \$509 higher for the infill development than the suburban. The major differences in development are evident in the construction costs. These costs were \$14,917 more per acre for the infill site than the suburban development.

In conducting my literature review, the vast majority of the sources contradicted on many of the issues associated with infill and suburban development. Most, however, tended to indicate that the costs of suburban development should be higher. My results using a direct comparison indicated that the overall development costs for infill were \$.17 more per square foot than suburban development.

Further evaluation leads me to the determination that these sites should not be directly compared using the costs provided without an evaluation. The first problem arises upon acquisition of both properties. The suburban site was acquired by means of public bid from an independent owner. The owner determined the apparent value of his

property upon sale. The value of the infill land, being adjudicated property, is a reflection of the context that it is in. A comparison to the average value of adjudicated property in the mid-city area reveals the same land price. The city determines the value, and sells this land at bargain price in attempts to encourage economic and residential/commercial development in an area. The sale of private and state owned property could be used in a direct comparison of acquisition costs in this case due to the desired context. My desire was for a suburban development to be compared to an infill development site. Both of these sites exemplify prime locations for their respective types of development. Although the methods of acquisition were through private and public sources, both sites have been developed for residential housing and can be compared directly.

An adequate comparison of costs can be obtained from the summary; however, the numbers must be adjusted to generate a more accurate reflection of the accrued costs. A general look at the site plans indicates that a direct comparison of land will be difficult to establish. The two sites differ in terms of size, layout, and topography. Not only are the sites drastically different in size, the layout consist of irregular lots with severe grading issues in the infill development compared to regular lots on a flat site in the suburban development. These drastic differences in accumulated costs of development are directly related to the physical characteristics of both sites.

Upon selecting a site, Habitat for Humanity, chose a site that required extensive dirt work and grading including the removal of an existing retaining wall. Listed under earthwork in the summary of costs, the drastic differences in expenditures can be observed in Figures 3.4 and 3.5. Earthwork accounted for eighty-four percent of the

total development cost for the infill site compared to two percent in the suburban development. Eliminating the appraised cost of \$12,000 to flatten the infill site only makes it more directly comparable to the flat suburban site.



Figure 3.4
Infill Development Land Characteristics



Figure 3.5
Suburban Development Land Characteristics

More differences are evident when existing infrastructure is directly compared to implemented infrastructure. City sewer lines were not included in the costs of the suburban development. Each individual lot or homeowner was responsible for providing

a modad or treatment facility for his or her home. These treatment facilities cost the individual homeowners \$2,100. On a site of this size the developer saved approximately \$54,600. In order for the sites to be considered equal, the costs accrued for the implementation of this infrastructure must be included in the costs of development.

Other costs to take into consideration are the costs of extras. These costs including the installation of sidewalks and streetlights should be included in the costs of suburban development because they already exist in mid-city. Both are provided at each site, but the costs again vary drastically. The costs of installing electrical utilities at the suburban site was significantly less than normal due to the sites' location on the overlapping geographical boundaries of two competing utility companies, Entergy and Demco. In attempts to obtain customers, utilities and streetlights were provided for the cost of \$1,500. This price compared to the normal costs of \$190/lot and \$7.50 per streetlight. The utility providers saved the developer \$4,227.50 towards the total development costs due to the unusual location. This cost must be included to establish an adequate comparison of costs. Along with the costs of streetlights, the costs of sidewalks must be taken into consideration. Both sites include sidewalks, however, subdivision mandates in the suburban development state that each individual homeowner is responsible for the costs of the sidewalk spanning their lot. These costs, approximately \$300/lot for materials and labor, are not included in the costs of development. Sidewalks are provided at the infill site by the city, therefore the costs must be included to establish a more accurate comparison. If the numbers are adjusted to establish a more accurate reflection of the total development costs, a different outcome results. A summary of the

more accurate development cost comparisons, with numerical changes highlighted in red, is shown in Figure 3.6.

		SUBURBAN DEVELOPMENT	INFILL DEVELOPMENT
LAND ACQUISITION COST			
	TOTAL	\$214,912.50	\$1,094.94
DEVELOPMENT FEES			
ENGINEERING FEES		\$17,234	\$0.00
SURVEYING FEES		\$12,153	\$1,583.68
LA TESTING AND INSPECTION LAB		\$4,653	\$0.00
SITE PERMITS		\$0	\$105.00
	TOTAL	\$34,040.00	\$1,688.68
CONSTRUCTION COSTS			
ITEM DESCRIPTION			
MOBILIZATION		\$5,000.00	\$0.00
EARTH WORK (EXCAVATION)		\$11,488.00	\$7,915.68
ENTERGY (UTILITIES AND STREET LIGHTS)		\$5,677.50	\$15.78
DITCH WORK/ EROSION CONTROL		\$2,302.50	\$2,092.68
SINGLE 6" SANITARY SEWER WYE		\$35.00	\$0.00
DOUBLE 6" SANITARY SEWER WYE		\$250.00	\$0.00
SINGLE INLET SIDE DRAIN		\$4,500.00	\$0.00
SINGLE INLET CROSS DRAIN		\$6,250.00	\$0.00
DOUBLE INLET SIDE DRAIN		\$2,500.00	\$0.00
DOUBLE INLET CROSS DRAIN		\$2,000.00	\$0.00
JUNCTION BOX		\$3,600.00	\$0.00
15" STORM DRAIN PIPE		\$16,200.00	\$0.00
18" STORM DRAIN PIPE		\$13,720.00	\$0.00
24" STORM DRAIN PIPE		\$8,672.00	\$0.00
24" RCP CULVERT		\$2,400.00	\$0.00
4" MOUNTABLE CURB		\$36,440.00	\$0.00
HYDRATED LIME (12% BY VOLUME)		\$7,980.00	\$0.00
PROCESSING LIME		\$7,500.00	\$0.00
SOIL CEMENT (12% BY VOLUME)		\$21,420.00	\$0.00
PROCESSING CEMENT		\$9,000.00	\$0.00
1 1/2" ASPHALTIC CONCRETE		\$22,275.00	\$0.00
8" PVC WATER MAIN		\$21,600.00	\$0.00
FIRE HYDRANT ASSEMBLY		\$7,500.00	\$0.00
8" WATER TIE-IN		\$1,000.00	\$0.00
JACK AND BORE		\$2,000.00	\$0.00
2" PE GAS MAIN		\$7,446.00	\$0.00
GAS SHUTOFF VALVES		\$250.00	\$0.00
2" GAS TIE IN		\$500.00	\$0.00
RIP RAP		\$3,036.00	\$0.00
SEWAGE DISPOSAL		\$54,600.00	\$0.00
SIDEWALK CONSTRUCTION		\$7,800.00	\$0.00
	TOTAL	\$294,942.00	\$10,024.14
TOTAL DEVELOPMENT COSTS		\$543,894.50	\$12,807.76

Figure 3.6
Summary of Development Costs - 2

Simple alterations in the development cost data allows for a more accurate comparison of the development sites. The new numbers reflect costs that are in accordance with the literature review. Total costs per developed acre of the infill site were \$13,771.78, compared to \$20,878.86 for the suburban development.

Summary of Results

An overall evaluation of the costs of infill and suburban developments in the Baton Rouge area reveal infill to be the most feasible. The costs associated with infill and suburban are vastly different concerning land acquisition, development fees, and especially construction. The amenities that infill development provides with no additional costs to the developer prove to be the difference when total costs are evaluated. This \$.16/square foot difference could be the deciding factor in the development trends that will affect Baton Rouge and the surrounding areas in the future.

CHAPTER FOUR

CONCLUSION

The previous chapter has taken the costs of development into consideration, establishing infill as the more feasible cost alternative in the Baton Rouge area. Other factors including potential profitability, services for the public good, and financial incentives must be taken into consideration when determining the feasibility of both methods of development. These results are summarized in Figure 4.1.

	<u>SUBURBAN DEVELOPMENT</u>	<u>INFILL DEVELOPMENT</u>
POTENTIAL PROFITABILITY	Cheap Acquisition costs Known conditions	Expansive Acquisition costs Unknown conditions Possible neighborhood opposition
FINANCIAL INCENTIVES	Increased economic base	Enterprise Zones Program Restoration Tax Abatement Program Economic Development Award Program Federal Historic Tax Incentives Credit for the employment of the previously unemployed East Baton Rouge City-Parish Fee Waiver NeighborGrants Credit for employee basic skills training Homebuyers Assistance Program
PUBLIC GOOD	Decreased air pollution	Removal of derelict land Aesthetic Benefits New Capital Investments Neighborhood preservation of retail and cultural institutions Preservation of remaining open space Decreased non-point source runoff

Figure 4.1
Summary of Other Factors

Potential Profitability

Profitability, as discussed in the literature review, is a direct reflection on the market demand. Market results previously discussed tend to establish suburban development as the choice for most consumers. The opportunity to live on more land is

something of which people and developers are seemingly taking advantage. Developers are quite content with providing expansive land areas because the potential profitability is so high. Land is acquired at cheap rates, infrastructure is implemented and land is sold for maximum profit. Knowing exactly what you are working with and the apparent timetable is an advantage that allows developers to maximize their profit.

Due to the unknown factors, such as existing infrastructure and community opinion, developers are still somewhat apprehensive when dealing with infill opportunities. There are developers who maintain an interest in vacant properties in urban areas, however few choose to be the pioneers in such ventures. These developers tend to stray from neighborhoods, usually plagued by deteriorated housing and commercial strips. In the past such areas have not been prime locations for developers looking for profit. Concerns dealing with existing infrastructure as well as neighborhood opposition have slowed the infill development process. Developers are extremely hesitant when dealing with existing site conditions. The capacity and condition of existing subsurface infrastructure sometimes goes unknown. Potential problems could arise reducing the profitability of the site by increasing the liability on the developer. Also, concern about neighborhood opposition has limited developer interest in infill opportunities. This opposition, usually to the proposed increased densities required to generate profit, can often be eliminated simply by the use of sensitive design solutions.

In proving the cost of infill development to be cheaper than that of suburban development, the feasibility has been proven. Despite the concerns associated with the marketability and the existing conditions, the underutilized potential is evident. Earlier research presented evidence that the structure of households is changing and that there is

a growing need for smaller homes for singles, elderly, and young married couples. Not only is there a need for single-family homes, apartments, and condominiums in urban settings, there is a market for it. This is a market that is generally ignored by developers. Not only would construction costs be significantly lower, but also there would be less overhead costs resulting in less monetary risk. This accompanied by an almost identical turn around rate compared to suburban development would lead to very profitable investment.

Financial Incentives

Incentives also play an important role in site selection for the developer. Incentives are created to encourage investment in areas that possess lower financial potential. They strive to alter development opportunities in areas that might not otherwise have them. While suburban development adds to the economic base of a general population, financial incentives have been created to encourage the revitalization of previously neglected areas thus reestablishing a depleted economic base. With a strong emphasis on retaining the current citizens, incentives in the Baton Rouge area, through cooperative efforts between local government and private agencies, are intended to encourage local infill development. Aimed at the expansion, restoration, improvement, and development of existing commercial structures and owner-occupied residences, various programs and waivers are enabling developers and future homeowners the opportunity to alleviate the derelict land that has overwhelmed the mid-city area. According to the Mid-City Redevelopment Alliance, incentive programs in the Baton Rouge area include:

- Enterprise Zones Program - Encourages infill through a \$2,500 tax credit for each new job created in specifically designated areas. Also, state and local sales/use taxes on building materials and operating equipment may be rebated. These credits can be used to satisfy state corporate income and franchise tax obligations.
- Restoration Tax Abatement Program - Encourages the restoration of buildings in special districts by abating Ad Valorem taxes on improvements to the structure for up to ten years. Commercial property owners and homeowners who expand, restore, improve or develop an existing structure in a qualifying district, after completion of the work, pay these taxes based on the assessed valuation of the property prior to the commencement of the improvements.
- Economic Development Award Program – Provides financial incentives in the form of linked deposit loans, loan guarantees, and grants to industrial or business development projects that promote economic development and that require state assistance for basic infrastructure development.
- Federal Historic Tax Incentives – The Louisiana Division of Historic Preservation administers a federal tax credit program that encourages the restoration/rehabilitation of historic buildings located in Louisiana. These tax credits aim to lower tax bills while tax deductions merely lower the taxpayer's taxable income.
- Credit for the employment of the previously unemployed – Provides a one-time tax credit of \$750 for hiring employees who are receiving benefits through the Family Independence Temporary Assistance Program (FITAP) and are participating in the FIND Work Program or have been unemployed for eight consecutive weeks.
- East Baton Rouge City-Parish Fee Waiver – The city-parish will waive construction-permitting fees for eligible areas with the intention being the promotion of new development and rehabilitation in urban areas.
- Neighbor grants – Mid city renters, homeowners, business and civic associations can apply for a grant of up to \$1,000 in materials to improve the exterior of their property. The grant recipients have to complete all repairs. Priority will be given to projects that make the greatest impact on the properties appearance. A small cash match based on income may apply to help purchased supplies.
- Credit for Employee Basic Skills Training – Allows an employer to receive a one-time \$250 credit per employee up to \$30,000 for providing basic skills training to employees in reading, writing and mathematics.
- Homebuyers Assistance Programs – Enables a qualified homebuyer in obtaining an affordable first mortgage loan through a private lender such as banks, savings and loan, or mortgage companies. The HAP program provides a no interest

second mortgage loan of \$10,000 that may be applied toward down payment and/or closing costs. This loan is deferred for twenty years, and at the end of this period is repaid over a period of up to ten years. Eligible properties must be single-family, detached dwelling units located within East Baton Rouge Parish. Properties located within the corporate limits of Baker and Zachary are not eligible.

Contact information for these incentive programs is available in the Appendices.

Public Good

There are many other reasons why infill opportunities should be considered for future development. The opportunity to help the environment and existing neighborhoods is something that we as human beings should strive to do. Infill presents challenges associated with not only finances, but aesthetics and preservation as well.

The removal of derelict land is an opportunity developers have to further support the existing neighborhoods. How a community appears on the surface may be directly related to the how it is perceived in the community. Derelict land is often associated with crime and drugs, thus putting this land to use and improving the appearance of a community will add to the aesthetic appeal of the neighborhood environment. A large aspect of our jobs as future landscape architects is to provide beauty to our surrounding environments. This is not limited to flower beds in someone's back yard. The improvement of urban neighborhoods, even with something as simple as cleaning up an abandoned lot, should be an aspect of our job description. This will not only benefit the neighborhoods, but the overall appearance of our community.

A new identity resulting from changes in outward appearance can lead to changes in the economic appeal of an area. By changing the identity of an area, public opinion on these areas should change. A capital investment in growing areas and further preservation of existing retail and cultural institutions is encouraged. Investors and

developers are more likely to invest in an area they feel is making changes in attempts to provide for better environments for the citizens. The attitudes of neighborhood leadership and citizens can sway private opinion as to assure the profitability of any given site. Also, by taking initiative, the agenda of the residents is more likely to be met. Working with developers, preservation of present retail and cultural institutions can be a reality.

Neighborhoods and citizen interest are not the only positives associated with infill development. The environment is also affected in a positive manner. Not only is open space preserved, but also non-point source runoff is decreased. By developing areas that are already serviced by roads, the environmental problems accrued by increased areas of concrete and asphalt can be reduced and avoided.

Looking Ahead

With the majority of investment at the time, according to Plan Baton Rouge, being towards revitalizing the economic and social characteristics of the downtown area, the potential for the development of infill residential housing is very high. At this moment very little time and money is being devoted towards upgrading the existing neighborhoods. Nevertheless, with time all efforts will move toward focusing on the revitalization of the neighborhoods adjacent to the CBD. Potential population increases resulting from expanded employment opportunities and wide varieties of housing and income bases will only increase the potential for infill development in the area. This potential, along with the financial and social benefits of infill development, will aid the physical and social revitalization of downtown Baton Rouge.

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APPENDIX: CONTACT INFORMATION

Enterprise Zones Program – For more information contact the Louisiana Department of Economic Development, Business Incentive Division at 342-9228.

Restoration Tax Abatement Program – For more information please call the Division of Historic Preservation at 342-8160.

Economic Development Award Program – For more information please call the Chamber of Greater Baton Rouge at 381-7144.

Federal Historic Tax Incentives – For more information please call 342-8160.

Credit for the employment of the previously unemployed – For more information please call the Chamber of Greater Baton Rouge at 381-7144.

East Baton Rouge City-Parish Fee Waiver – For more information please call the Office of Community Development at 389-3039.

Neighbor grants – For more Information please call Mid City Redevelopment Alliance at 346-1000.

Credit for Employee Basic Skills Training – For more information please call the Chamber of Greater Baton Rouge at 381-7144.

Homebuyers Assistance Programs – For more information please call the Office of Community Development at 389-3039.

VITA

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