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# Sustainable development principles for East Baton Rouge Parish

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# SUSTAINABLE DEVELOPMENT PRINCIPLES FOR EAST BATON ROUGE PARISH

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## Abstract

This study examines and analyzes the sustainable development indicator data and determines what improvements and recommendations are needed for East Baton Rouge Parish's development. It identifies methods and indicators for studying sustainable developments. It studies patterns of sustainable developments in the East Baton Rouge Parish to identify trends and develops recommendations that would encourage sustainable development in the East Baton Rouge Parish. It forms fourteen sustainable principles that would encourage sustainable development in East Baton Rouge Parish and a framework for a sound development.

# 1. Introduction

## 1.1 Background

Since the population is increasing much faster than the most people can imagine, the relationship between city, community and sustainability is currently one of the most debated issues and the focus of concerns on the international environmental agenda. "Sustainable development" has become one of the key phrases in current thinking about the environment since 1990. It is defined in 1987 by the world commission on environment and development as: 'Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.'

East Baton Rouge Parish is one of the major cities in Louisiana. It has a problem of "Urban Sprawl" the same as many other cities in the world. Without proper planning, new growth can rapidly diminish the natural landscape and parish's appeal that have been the source of out wealth.

## 1.2 Problem Statement

The purpose of this study is to examine and analyze the sustainable development indicator data and determine what improvements and recommendations are needed for East Baton Rouge Parish's development and form a framework for a sound development.

## 1.3 Objectives

1. Identify methods and indicators for studying sustainable developments.
2. Study patterns of sustainable developments in the East Baton Rouge Parish to identify trends.
3. Develop recommendations that would encourage sustainable development in the East Baton Rouge Parish.

## 1.4 Scope of Study

Changes in natural resources, cultural resources, solid waste and transportation from 1990 to 2000 will be studied to see if East Baton Rouge Parish's development maintained sustainability. The natural resources include air quality, green spaces, and water quality. The scope of the study will also include how to protect the cultural resources, preserve green space, and maintain the health of the natural systems, which support life, such as solid waste, water and air quality management, and reduce traffic congestion.

## 1.5 Overview of the Study

The purpose of this study is to examine and analyze the sustainable development indicator data and determine what improvements and recommendations are needed to improve the East Baton Rouge Parish's development. The methods and procedures of the study are presented in Chapter 2. The third chapter deals with a review and analysis of the supporting literature relevant to this topic. Chapters 4, 5, 6 ,7 examine and analyze natural resources data, cultural resources, solid waste and transportation. Improvements and recommendations aimed at each aspect are presented in each chapter. The final chapter is concerned with the summary of findings, and outlines a set of planning principles, which provide a helpful framework for land planning in East Baton Rouge Parish. Suggestions for further research are recommended.

## 2. Methodology

The methodology of this study begins with a literature review of sustainability, principles of sustainability, and sustainable developments in the region, the U.S.A. and aboard. Literature review has also included plans and related documents, i.e. the Horizon Plan, for the East Baton Rouge Parish. After the initial literature review interviews were conducted with planning directors and other staff who are involved in the administration and/or management of the development process of the parish. The interviews have identified further areas of literature review toward an eye of the needs of the parish.

A list of comprehensive sustainability indicators were generated from the literature review and then their applicability to natural and cultural conditions of the East Baton Rouge Parish was assessed toward development of a list of indicators for the study area. Finally, applicable indicators were clustered for a phasing plan toward implementation recommendations.

## 3. Literature Review

The purpose of this study is to examine and analysis the sustainable development indicator data and determine what improvements and recommendations are needed to improve East Baton Rouge Parish's development. This chapter deals with the review and analysis of the studies relevant to this topic. The literature review has been divided into two sections. The first deals with the sustainable development's definition and trend. The second deals with East Baton Rouge Parish's growth and development trends.

### 3.1 Sustainable Development's Definition and Trends

Since 1990 the term "sustainable development" has become one of the key phrases in current thinking about the environment. It first came to prominence in the World Conservation Strategy (WCS) published by the World Conservation Union (IUCN) in 1980. According to the Mountain Association for Community Economic Development (MACED), sustainable community development is: "the ability to make development choices which respect the relationship between the three "E's": economy, ecology and equity." A community is unsustainable if it consumes resources faster than they can be renewed, produces more wastes than they can be renewed, produces more wastes than natural systems can process or relies upon distant sources for its basic needs (Source: Sustainable Community Roundtable). The key in the "sustainability" is the capability of natural and cultural systems should be continued over time, no matter it is called as sustainable design, sustainable development, or environmentally sensitive design.

The concept of sustainable design was mentioned frequently, as it covers a wide range of topics. No matter it covers economic topic, architecture topic or landscape topic, it integrates principles that enables humans to live in harmony with the natural world, protecting biodiversity and sharing habitats with other species. Sustainable design articulates this idea through developments that exemplify the principles of conservation and encourage the application of those principles in our daily lives. "(National Park Service, 1993) A model of the sustainable design principles is exemplified by the "Hannover Principles" or "Bill of Rights for the Planet," developed by William McDonough Architects for EXPO 2000 to be held in Hannover, Germany.

1. Insist on the right of humanity and nature to co-exist in a healthy, supportive, diverse, and sustainable condition.
2. Recognize Interdependence. The elements of human design interact with and depend on the natural world, with broad and diverse implications at every scale. Expand design considerations to recognize even distant effects.
3. Respect relationships between spirit and matter. Consider all aspects of human settlement including community, dwelling, industry, and trade in terms of

existing and evolving connections between spiritual and material consciousness.

4. Accept responsibility for the consequences of design decisions upon human well-being, the viability of natural systems, and their right to co-exist.

5. Create safe objects to long-term value. Do not burden future generations with requirements for maintenance or vigilant administration of potential danger due to the careless creations of products, processes, or standards.

6. Eliminate the concept of waste. Evaluate and optimize the full life-cycle of products and processes, to approach the state of natural systems in which there is no waste.

7. Rely on natural energy flows. Human designs should, like the living world, derive their creative forces from perpetual solar income. Incorporate this energy efficiently and safely for responsible use.

8. Understand the limitations of design. No human creation lasts forever and design does not solve all problems. Those who create and plan should practice humility in the face of nature. Treat nature as a model and mentor, not an inconvenience to be evaded or controlled.

9. Seek constant improvements by sharing knowledge. Encourage direct and open communication between colleagues, patrons, manufacturers, and users to link long-term sustainable considerations with ethical responsibility, and reestablish the integral relationship between natural processes and human activity (Source: National Park Service, 1993).

## 3.2 East Baton Rouge Parish's Growth and Development Trends

In 1967, ascending the Mississippi from its delta and reaching the first bluffs on the eastern bank some 120 miles northward, a city of some 150,000 people was the second largest city in Louisiana. Situated on a natural elevation always higher than annual rise of the River, and being naturally a commanding site, the bustling place is the Capital City, easily identified by its skyscraper capitol visible many miles distant (Fig. 1).

Through analysis the data (Source: U.S. Bureau of the Census) by using Geographic Information System, it is found that in 1990, East Baton Rouge Parish's urbanized area is about 112,132 acres (Fig. 2) while the population is 380,105 (Source: U.S. Bureau of the Census). Using GIS, it is found that in 2000, East Baton Rouge Parish's urbanized area is about 180,259 acres. (Fig.3) The population is 412,852 (Source: U.S. Bureau of the Census).

From the data and analysis above, it is found that In the 10-year period from 1990 to 2000, the population in East Baton Rouge Parish grew by 8.6 percent while East Baton Rouge Parish's urbanized land area mushroomed by 60 percent.

In other words, the amount of the resource land taken for urban and suburban development grew six to seven times faster than population (Fig. 4).

Therefore, East Baton Rouge Parish has a problem of "Urban Sprawl" the same as many other cities in the world. According to the data from U.S. Census Bureau's 1970 and 1990, in the 100 Largest U.S. Urbanized Areas, East Baton Rouge Parish ranked 52nd in square miles of sprawl from 1970 to 1990 (See Appendix C). The spread of urban sprawl increases the separation by race and income, environmental deterioration, loss of agricultural lands and wilderness, and the erosion of society's built heritage as one interrelated community building challenge.

## 3.3 Summary

Chapter 3 has presented selected literature on the sustainable development definitions and trends as well as East Baton Rouge Parish's urban development. The review of this chapter has shown that East Baton Rouge Parish has urban sprawl problem and sustainable development study is needed in the process of urban planning.

The natural resources' sustainable development will be discussed in Chapter 4.


**Figure 1. Location of East Baton Rouge Parish**

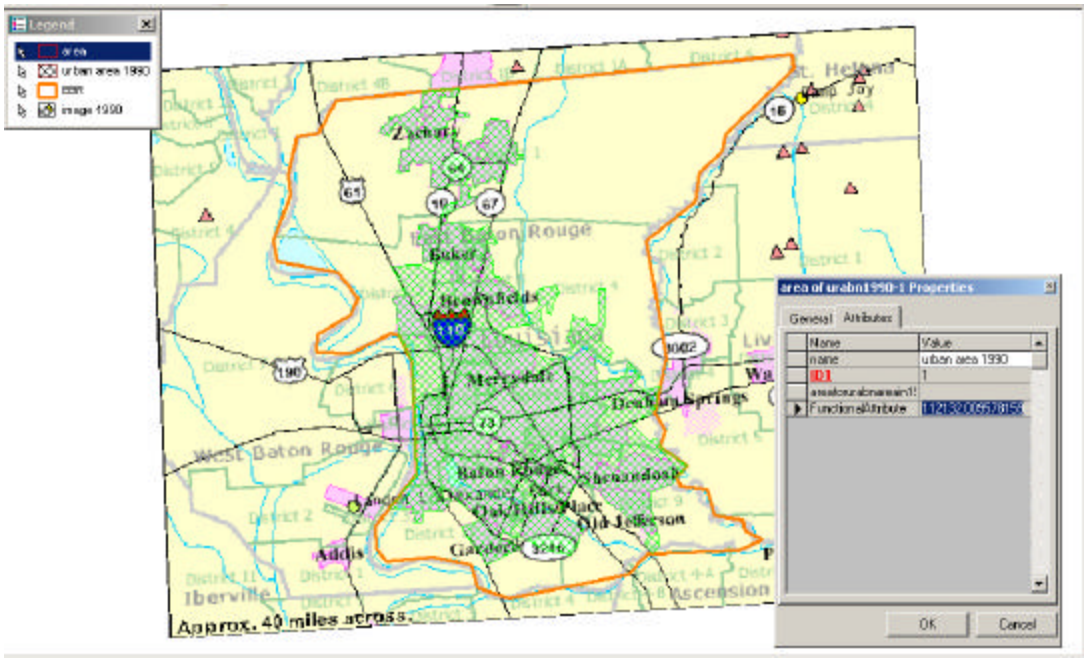



**Figure 2 Urbanized Area Analyses in 1990**

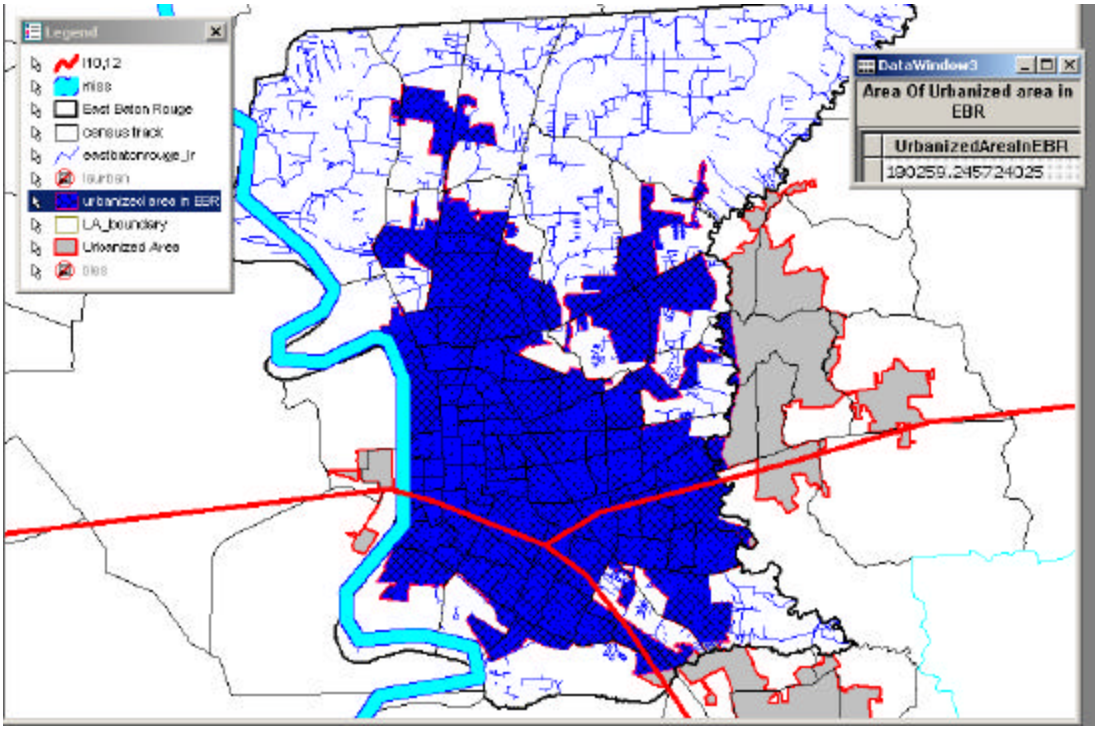



**Figure 3 Urbanized Area Analysis in 2000**

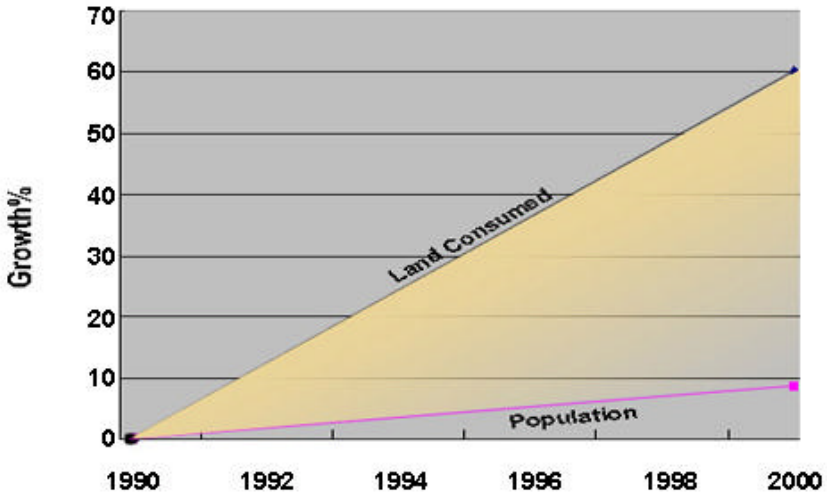



**Figure 4. Growth of Urbanized Land Versus Population in East Baton Rouge Parish, 1990-2000**

## 4. Natural Resources

As stated in Chapter 1, the purpose of this study is to examine and analysis the sustainable development indicator data and determine what improvements and recommendations are needed to improve East Baton Rouge Parish's development. This chapter will examine and analysis data of natural resources, and improvements and recommendations aim at each aspect are presented in each section. There are three major sections in this chapter: air, water, green.

City development closely and intimately depends upon associations with the natural systems around them. The plants, air, forest, lake, rivers, streams, agricultural lands in the city are necessary life support systems for the human settlements.

In 1998, Leadership Greater Baton Rouge Alumni, Inc. undertook the "Life in Baton Rouge" project. Over 100 alumni volunteers "stood up" when called to help with this major effort. Survey is the second part of the project. It is a professional conducted survey of the community. The survey of 400 East Baton Rouge Parish citizens was conducted by SCI research; a division of Survey Communications, Inc. (SCI). All interviews were gathered by telephone using random digit analog methodology. The random sample was stratified across East Baton Rouge Parish residential zip codes with respect to the most recent U.S. Census Bureau population information. All zip codes were represented. The total sample has a plus/minus 4.9% margin of error at the 95% confidence level.

The purpose of this survey is to provide the citizens, philanthropic organizations and elected officials of Baton Rouge with an honest portrait of the city. This document gather a broad range of information that, when viewed as a whole, tells a great deal about the collective personal experiences of people living in East Baton Rouge Parish.

On of the survey question is: Thinking about the environment, that is, such things as sir and water quality in East Baton Rouge Parish, do you feel it is getting worse, staying the same, or getting better?

**Table 1 Percent of Respondents 2001 vs.2000 Reports**

| | **Worse** | **Same** | **Better** | **Don't Know** |
|---|---|---|---|---|
| **Percent of Respondents 2000 Report** | 31.80% | 48.30% | 18.30% | 1.80% |
| **Percent of Respondents 2001 Report** | 33.70% | 48.30% | 16.30% | 1.70% |

The percent of respondents 2001 report shows that 33.7% people thought that the environment, that is, such things as air and water quality in East Baton Rouge is getting worse, meanwhile, 48.3% people thought that the environment is as the same as before, which means there has been no obvious improvement during recent years in East Baton Rouge Parish (Table 1)(Figure 5).

How to make our natural environment better and better and maintain it sustainable developed is a big issue in East Baton Rouge Parish. The following sections will talk about this from three aspects: air, water and green space.

## 4.1 Air

### 4.1.1 East Baton Rouge Parish's Air Pollution Conditions and Problem Analysis

More than 125 million Americans live in areas with unacceptable air pollution. The EPA attributes the premature deaths of over 64,000 Americans to air pollution annually. In addition to negative impacts on human health and environmental justice, air pollution in the form of smog and acid rain have been shown to kill or harm agricultural crops and damage buildings at a cost of between $2 and $3 billion annually.

Air quality, especially Ozone, is a major environmental issue that attracted people's attention in the 1980's. The Baton Rouge area is one of about 100 metropolitan areas in the country that are classified as ozone no attainment area exceeding National Ambient Air Quality Standards for ozone.

Atmospheric toxic chemicals can affect human health. The table (Table 2) (Fig. 6) of the Toxic Air Emission Per Payroll shows that the original Chemical TRI (the emission of toxic chemicals into the air reported to EPA under the Toxic Release Inventory (TRI)) by industries in East Baton Rouge Parish, divided by the total payroll for all non-agricultural workers in the parish is decreasing since 1994. However, the original plus added chemicals TRI (per $1000 payroll) is still increasing. This indicator measures the extent to which employment in community is tied to the emission of toxic chemicals. Over time, the increase of employment in "clean" sectors would reduce this indicator, as would the reduction of emissions by existing employers (Source: Louisiana Department of Environmental Quality for TRI data, Department of Labor for Payroll).

From the results of the Atmospheric Pollution Standard below (Fig.7), we can find that in the 7-year period from 1994 to 2000, the moderate and unhealthy days in East Baton Rouge Parish increased by 75% (from 96 days to 168 days), while the good days in East Baton Rouge Parish decreased by 26% (from 269 days to 198 days).

An EPA report (February 2002) revealed that Baton Rouge is at risk of being in non-compliance with federal air quality regulations and may suffer fines for severe air quality ratings. All the analysis above show that East Baton Rouge Parish's air quality is declining.

**Table2 Toxic Air Emission Per Payroll**

| TOXIC AIR EMISSION POUNDS PER YEAR | | | | | | |
|---|---|---|---|---|---|---|
| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
| Original Chemicals TRI (in millions of pounds) | 7.853 | 6.903 | 7.027 | 6.719 | 7.127 | 7.393 |
| Original Plus Added Chemicals TRI (in millions of pounds) | 8.142 | 11.081 | 10.365 | 12.741 | 12.36 | 12.975 |

4.1.2 Minimizing the Emissions of Automobiles and Industries

Each year individuals living and working in East Baton Rouge Parish are exposed to many pounds of air pollutants. Motor vehicles are the largest source of urban air pollution, generating more than two-thirds of the carbon monoxide in the atmosphere, a third of the nitrogen oxides which react to form smog, and a quarter of the hydrocarbons, which also form smog. Some pollutants emitted by cars and trucks are known or likely to cause cancer, including toxic substances such as soot, benzene, arsenic compounds, formaldehyde, and lead. In 1999, East Baton Rouge Parish's total criteria pollutants from transportation (tons per year) were 167863 tons. It means the total criteria pollutants from transportation were 28% of all the total criteria pollutants (Table 3). It was more than one fourth.

Therefore, the principle, which can minimize the emissions of mobile, can improve the air quality in East Baton Rouge Parish effectively.

In addition, East Baton Rouge Parish is located in the Lower Mississippi River Industrial Corridor. Nationally, Louisiana ranked fourth in air TRI emissions for 1994. Approximately 51.4% of these emissions occurred with in the industrial corridor. Three parishes –Ascension, East Baton Rouge and St. James-accounted for most of the corridor air emissions. (Source: US Environmental Protection Agency) Therefore, minimizing the industrial air pollutants through using land use planning and economic development programs is another important principle to improve the air quality in East Baton Rouge Parish. Land use planning and economic development programs should include air quality impact as a part of the review of major programs and strategies for attracting and developing industries.

**Table 3 Transportation's Contribution to Pollution of Baton Rouge**

| Area | Total Criteria Pollutants from Transportation (tons per year) (1999) | Total Criteria Pollutants from Transportation per Capita (tons per year) (1999) | Percent of Total Criteria Pollutants from Transportation (1999) |
|---|---|---|---|
| Baton Rouge, LA | 167,863 | 580 | 28.0% |

4.1.3 Increasing Vegetation in Urban Areas

Urbanization has a tremendous impact on air quality, both over the city and the surrounding countryside. Air quality attainment becomes a critical problem, and is exacerbated by urban sprawl. The "Urban Heat Island" describes a city environment that experiences higher average temperatures than its surroundings because of human alteration of the landscape. It promotes the formation of smog by increasing the speed of particles in the air and the probability of chemical interaction. When increased temperatures meet air pollutants, the results are the accumulation of smog, damage to the natural environment and increased danger to human health. Many U.S. cities experience the Urban Heat Island effect, including Chicago, Atlanta, Toronto, Canada and Baton Rouge.

Figure 8 is a quick-look image that has not be corrected for atmospheric interference or fully calibrated with ground sensor data (Source: NASA/Marshall Space Flight Center).

Hot rooftops shine brightly in a fresh, false-color image of East Baton Rouge Parish, as part of the Urban Heat Island Pilot Project (UHIPP) being conducted by NASA and other agencies. The image is from a single thermal channel on the Airborne Terrestrial and Land Acquisition Sensor (ATLAS) aboard NASA's Lear 23 jet flying about 2 km above Baton Rouge. The image was taken at 1 p.m. CDT, May 19, 1998. Computer based on infrared intensity has assigned the colors. Rooftops and other hot spots are depicted as red; cooler areas, mostly with vegetation, are green; the river is blue. Estimated temperatures on rooftops (seen in red) are a scorching 65 deg. C (149 deg. F), while areas with trees and vegetation (green) are a pleasant 25 deg. C (77 deg. F). Temperatures are taken by sensors scattered around the city and will be used to calibrate images as the study continues in the months to come. No temperatures are available yet for the river, shown in blue.

The higher temperatures in East Baton Rouge Parish are not only uncomfortable but they also have implications for air pollution in our area. The interaction between air pollution and heat is complex, but the result is clearly harmful. Urban heat islands are

created when sunlight combines with dark building materials, pavements and a lack of vegetation. Increasing vegetation in urban areas is one solution to this problem.

Vegetation provides shading, which reduces the use of air conditioning, while "evapotranspiration" draws heat from the air. There are a series of simple techniques can cool our city and reduce air pollution such as developing an alternative fuel infrastructure network. Among them, there are two aspects that related to landscape architecture profession.

First, by creating more green space and maintaining urban forests, we can lessen the Heat Island effect. According to the American Forest Foundation, cities must maintain an urban canopy tree coverage of forty-nine (49 %) to ensure clean water, clean air and to mitigate the effects of urban heat islands. Therefore, creating urban forest in the city not only makes the city prettier; it cleans the air as well. Urban forest can be networks as wildlife corridors in urban areas, which can also help many kinds of animals to pass through or move deep within our urban areas. These networks in East Baton Rouge Parish can be made up of parks, back gardens, trees, leftover lands, and Mississippi riverbank, lakes (University lake, City park lake), streams, railroad cuts, buffer planting.

Parking lots are main hot spots in East Baton Rouge Parish. The only way to erase these hot spots in our city is planting trees as much as possible. Here is an image and plan of parking lot near LTRC (Louisiana Transportation Research Center) on LSU campus and this is an image and plan of parking lot around the Wetlands Resources and Environmental Sciences Building on LSU campus. From these four figures, it is found that in the parking lot near LTRC, there are around 500 parking spaces without a tree. On the contrarily, there are about 50 trees in every 180 parking spaces. It is obviously that the parking lot around Wetlands Resources and Environmental Sciences Building is much more sustainable than parking area near CEBA. And it reduces “Heat Island effect”.

Another aspect is rooftop greening. From the remote sense photo (Fig.8) above, it shows clearly that most of the hot spots in the city are roofs of the architectures. If the city wants to reduce the “Urban Heat Island” problem, an effective method is building more rooftop gardens. Creating rooftop gardens or “green roofs” is a new and attractive adaptation strategy that placing the vegetation directly on building roofs.

Rooftop gardens have many benefits to our city. They can reduce the heat problem in East Baton Rouge Parish. They can absorb our city’s carbon dioxide and reduce air pollution. They can reduce storm water runoff, flooding, and water pollution. Besides, they can provide a green place close to people who live or worked in the building. People do not need to make the trip to the garden, maybe just by using the

elevators. They can cultivate or enjoy those green roof spaces easily, mostly privately. Furthermore, another good aspect of the roof gardens is saving energy. All materials used in the roof gardens can be salvaged from the urban waste stream. The garden beds can be made with broken packing skids. The soil can be municipal compost. The paper boxes for the beds can be taken from any grocery store.

There are two major types of rooftop gardens nowadays. The first type is called an extensive rooftop garden. This is a lightweight garden that requires little to no maintenance and uses plants that are drought tolerant. Hardy grasses, wildflowers, mosses and sedum's work best in this type of garden. The vegetation in this type of garden covers the entire roof, acting like another layer of roofing material. (Gavrilov, 2001)

The second type of garden is called an intensive rooftop garden. An intensive rooftop garden includes a more diverse selection of plants and requires a stronger structure to carry a heavier load of soil. An intensive system will have a layer of soil 6 to 14 inches deep and support a diverse mixture of grasses and perennial flowers as well as shrubs and trees. This type of garden also requires more maintenance because of the variety of plants used. (Gavrilov, 2001) No matter which type of the rooftop garden will be used, the environmental benefits in a city area are obvious.

#### 4.1.4 Summary

Air pollution is the first aspect talked in this chapter. As the air quality in East Baton Rouge Parish is declining, and the "Urban Heat Island" problem is serious. There are two main principles related to landscape architecture profession are raised. The first is minimizing the emissions of mobiles and industries. The second is creating more green space, maintaining urban forest and creating rooftop gardens.

### 4.2 Water

#### 4.2.1 Analysis of Condition in East Baton Rouge Parish

Water is a major natural resource, one of the big three: land, water and air, and it is used in many ways. To ensure the water resource to meet the demands of the future, immediate improvements are need in techniques for water conservation, storage, treatment, and reuse. (National Park Service, 1993)

In East Baton Rouge Parish's sustainable development, water is paramount. There are numerous surface water bodies and watercourses in the area that warrant concern due to their water quality. Of the greatest concern are water bodies in the Baton Rouge area that are known to be affected by toxic pollutants. They occur primarily in

major rivers, bayous, and lakes of the area and include excessive fecal bacteria in the Amite River; decline in fisheries population in the Amite River; generally poor water quality conditions in Bayou Manchac; occasional turbidity problems in the Comite River; poor water quality conditions in the six-lake City-Park-University Lakes System; and, general poor water quality conditions in area drainage ditches due to point source discharges and stagnation (Source: East Baton Rouge City-Parish Planning Commission, 1992).

Louisiana currently has an abundance of high quality ground water. Ground water is the primary source of drinking water for 61 percent of Louisiana's residents. Of this 61 percent, 12 percent use domestic wells and 49 percent rely on public water supplies. (Source: USGS, 1995)

Generally, groundwater quality in the East Baton Rouge Parish area is good. Ground water is stored in aquifers. The Baton Rouge aquifer, the source of public water supply in the Baton Rouge area, is the only source of fresh ground water for much of southeastern Louisiana.

**Table 4 Ground water use in East Baton Rouge Parish 1994-2000**

| GROUND WATER USE (Millions of Gallons Per Day) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
| Industrial | 74.8 | 76.1 | 74.5 | 75 | 78.2 | 75.1 | 89.8 |
| Public | 55.1 | 57.7 | 58.5 | 58.2 | 78.1 | 77.9 | 84.9 |

Although, East Baton Rouge Parish is fortunate to have abundant sources of high quality ground water, the ground water use still grows faster than population grows (Fig. 12) Meanwhile, East Baton Rouge Parish's water quality is threatened by salt-water intrusion from the south because of high usage rates in the area. Water usage also increases loading on sewer treatment plants. Therefore, protection of existing ground water is still important in providing affordable clean drinking water now and for the future in East Baton Rouge Parish.

According to these above problems, the following two sustainable development principles have been shaped.

4.2.2 Using Variable Treatment Methods for Different Rainwater Types

Since in East Baton Rouge Parish rainfall water is abundant, it can be a good water resource if it is treated appropriately.

There can be different water treatment methods for different rainwater types. Those rainwater run off from roofs can be allowed to infiltrate where it falls and techniques such as covering roofs with vegetation can help to detain and transpire this kind of water.

Storm water management is also needed in East Baton Rouge Parish, because storm is common here. However, storm water do not need to be seen as a bad aspect to be managed if precipitation is allowed to naturally recharge groundwater, wherever possible. A significant pollution in East Baton Rouge is from parking lots and roads deposits road salt, dirt and dust, fertilizers, pesticides, antifreeze, engine oil, rubber and metal deposits, litter and other pollutants into aquifers, lakes, rivers, streams and oceans. Sprawling growth and the associated bad drainage system contribute the resorted water. Those storm rainfall water run off from roads and vehicles can be retained in detention ponds where the water can be filtered by reed beds to remove hydrocarbons. Runoff from roads, parking lots can pollute drinking water and lead to changes in water chemistry that degrade habitat quality.

Wet detention ponds are storm water control structures providing both retention and treatment of contaminated storm water runoff. By capturing and retaining runoff during storm events, wet detention ponds control both storm water quantity and quality. The pond's natural physical, biological, and chemical processes then work to remove pollutants. For example, the parking lot in the Corporate Blvd. Plaza is built on flood zone. The runoff from the parking lot flows directly to Capitol Lake, which polluted Capitol Lake to certain extent. If a detention pond is built near the parking lot, the pollution situation will be better.

In summary, variable treatment methods for different rainwater is shown in figure 13.

### 4.2.3 Stream and Canal Restoration

Besides the Mississippi River, there are a lot of lakes and streams in East Baton Rouge Parish. Protecting and restoring streams and wetlands is another important component of water quality management. It is important not just to protect existing water systems, but also to restore lost streams and wetlands wherever possible in order to make them a system. Once the streams become a network or circulation system, the flowing water in the streams can improve water quality by filtering water through soil on the bottom of the stream and vegetation in the stream. Moreover, flowing water can afford aquatic animals, such as fish and shrimp a sound environment. Thus it helps to build a healthier ecological system for human beings. For instance, removing culverts to restore previously buried streams and dried-up wetlands is a useful restoration activity.

Flooding is one of the major problems in East Baton Rouge Parish. Stream restoration also can reduce flooding problems caused by undersized culverts, cut the costs of replacing deteriorated culverts, and improve water quality by exposing flows to air, sunlight, vegetation, and soil. It also can provide new urban recreational amenities by generating pedestrian paths. It also can provide more wildlife habitat, which can benefit nearby residents and businesses by improving property values. Most importantly, it can bring people back to nature by restoring something that once seemed lost forever (Fig. 14). Figure 15 is a proposed image for stream restoration. Prior to being dredged, the stream may be drought and lack of interests. However, after being restored, the stream can be a good place for people walking, biking and jogging.

#### 4.2.4 Summary

Water resources are precious to human beings. Many methods and techniques can be used to protect them. In this section, there are two sustainable principles. The first is using variable treatment methods for different rainwater. In the climate of East Baton Rouge Parish, this principle may effectively improve the water quality and reduce water pollution. The second sustainable principle is stream restoration.

### 4.3 Green Space

#### 4.3.1 East Baton Rouge Parish's Green Space

Like most southern urban areas, East Baton Rouge has developed on land that was primarily forest. The undisturbed landscape was a mixture of upland pine forest broken up by riparian bottomland cypress and hardwood communities. Today, this land cover pattern is further divided with urban and suburban land uses. According to the American Forest Foundation, cities must maintain an urban canopy tree coverage of forty-nine (49 %) to ensure clean water, clean air and to mitigate the effects of urban heat islands; the EPA has mandated tree planting as one of three strategies for mitigating poor air and water quality.

Based upon scientific data, East Baton Rouge's tree canopy is comprised of aging, short-lived tree species, and large expanses of existing trees are being lost on a daily basis due to commercial, residential, and industrial development (Source: Baton Rouge Green).

According to the BREC (Recreation and Park Commission for the Parish of East Baton Rouge), there are totally 128 parks in East Baton Rouge Parish in 1989. The total area is 3496.53 acres. Till 2002, there are totally 183 parks in East Baton Rouge Parish. The total area is 5521.7743 acres. Among them, not all the parks are covered by trees. The number of parks with good tree cover and total acreage and population change from

1989 to 2000 are listed in table 5. Table 5 shows from 1990 to 2002, the population in East Baton Rouge Parish grew by 8.5 percent while East Baton Rouge Parish's park (covered mainly with trees) area per person increased by 33.23 percent, which means the total area of parks is increasing. This is a good aspect in East Baton Rouge Parish's green system. The detail information of the parks in 1990 and 2002 is in the Appendix B

However, from 1990 to 2000, East Baton Rouge Parish's urbanized land area mushroomed by 60 percent, while the park with good tree cover acreage per person increased just 44.8%. Therefore, the park acreage increase still cannot match the urban growth. In other word, there are a lot of urban area has grown without green.

Figure 17 is a BREC Park System Map in 2003 drawn by GIS according to BREC park data.

4.3.2 Creating and Maintaining the Urban Forests

According to the American Forest Foundation, cities must maintain urban canopy tree coverage of 49 % to ensure clean water, clean air and to mitigate the effects of urban heat islands. Figure 8 in section 4.1 clearly demonstrates that the differences in cooling and heating between the natural and manmade surfaces can affect city temperatures. The urban green system and urban forests are important to keeping cities cool. Center of Urban Forestry points out that: "Urban Forestry is the aggregate of all vegetation and green spaces within communities that provide benefits vital to enriching the quality of life." Additionally, urban forests are an integral part of large cities, rural areas, streets, backyards, parks, and open spaces. Urban forests provide shade, beauty, and habitat for urban wildlife. Creating and maintaining urban forests can reduce heating and cooling costs, intercept and store rainwater, improve air quality, and increase property values and local tax bases.

As cities continue to grow, increasing numbers of people will choose to live, work, and play in urban forests, making the field of urban forestry critical for healthy and sustainable living. Meanwhile, urban forests can promote biodiversity in urban areas. The environment is experiencing extinction of both plant and animal species. The urban forest offers an opportunity to emphasize the establishment of biodiversity within the city. All site designs must be directed to protect local plant and animal communities, and new landscape plantings must deliberately reestablish diverse natural habitats in organic patterns that reflect the processes of the site. There needs to be enough space for nature and landscape elements to grow in the first place before we can select the most appropriate and beneficial plants for the desired effect.

In addition, the city should consider the urban forest as a continuous resource regardless of ownership boundaries. It is known that putting points together forms a line.

Therefore, disconnected green area, such as parks, can be linked to be "Greenway"(Fig. 18). With these greenways in places the potential increase in biodiversity is far higher than with isolated pockets of green spaces.

**Table 5 Growth of Park in East Baton Rouge Parish**

| | 1990 | 2000 | 2002 | Growth (1989-2002) |
|---|---|---|---|---|
| **Park Number** | 128 | | 183 | |
| **Park Acreage** | 3496.53 | | 5521.7743 | 57.90% |
| **Park (with trees) number** | 86 | | 120 | |
| **Park (with trees) Acreage** | 2653.518 | | 3842.6691 | 44.80% |
| **Population** | 379472 | | 412008 | 8.50% |
| **Park (with trees) Acreage per person (acre)** | 0.007 | | 0.0093 | 33.23% |
| **Urbanized Land Area (acre)** | 112132 | 180259 | | Growth (1990-2000) 60% |

Parks, schools, private gardens, leftover lands, and the Mississippi River Levee, lakes (University Lake, City Park Lake), streams, railroad, highway, and rights of way planting can be connected to provide a comprehensive network of green spaces for the parish that are accessible to the citizenry (Fig. 19). The whole green system can be a linear green system based on these existing green spaces which provide active and passive recreation (ball fields, tennis courts, golf courses, playgrounds, and community centers), and also provide additional recreation opportunities for users. Creating urban forests in the city not only makes the city prettier; it cleans the air as well. Urban forest also can be networks for wildlife corridors in urban areas.

Furthermore, according to a study published in Louisiana Agriculture Magazine 2001, "Rural Land Values at the Urban Fringe Study", the main direction of the East Baton Rouge Parish's development is north (Vandeveer, 2001). The study area includes the metropolitan statistical areas of New Orleans and Baton Rouge. Each symbol represents the location of each of the 237 rural land sales from 1993 to 1997. Data indicate a clustering of relatively higher per acre sales in a commuting area north of New Orleans and another clustering of such sales north of Baton Rouge (Fig. 20 Land Sale Price) (Vandeveer, 2001). Therefore, the main direction of urban reforestation should coincide with the East Baton Rouge Parish's development direction, which is north.

Another important aspect of establishing urban forests is restoration. Today, while the urban sprawl is a big problem in East Baton Rouge Parish, a lot landscape

fabric has been damaged. However, this landscape fabric must be repaired or restored. Habitat restoration helps to provide environments for wildlife displaced by development. Constructed landscapes that mimic ecological habitat models can decrease life-cycle maintenance costs, enhance wildlife survival, and blend edges of adjoining urban and rural areas. Planting and landscape system restoration, while building urban forests, requires recognition of the interdependence of all landscape factors such as soil, water, vegetation, wildlife and mankind.

4.3.3 Leaving Enough Space for Plantings

Consideration should be given to create or maintain urban forests. Usually, the plant materials used for urban canopies are very large. Therefore, the roots of large urban planting often exceed their boundaries, and sometimes damage walks and curbing. This problem can be avoided if care design and planning is applied in advance. Plantings, like human beings, need space to breathe and live.

4.3.4 Preserving Trees and Vegetation Where Possible

It is important to preserve as much of the existing trees and vegetation as possible to secure the integrity of the whole urban eco-system. Most of the existing trees and vegetation are native and natural vegetation. They can attract visitors from outside Baton Rouge to come to experience and to create a strong sense of place. Vegetation planted in man-made communities should remain as natural as possible. In the meanwhile, create more trees in the parks is an effective way to reserve trees and vegetation.

There are many parks in East Baton Rouge Parish do not have enough trees. Those parks' main function is sports, such as Ben Burge Park on 1702 Gardere Lane (Fig.21). It is a park with no green canopy. Although, its main function is for people to play soccer, or other sports activities, there left much space can be covered by trees. The trees can be planted in the middle of the main roads in the parks (Fig. 22) or along the pedestrian paths (Fig. 23) to give green shade to visitors. Either way can increase the trees in the parks.

4.3.5 Selecting Native Trees for Diversity and Suitability and that are Adapted to Local Soils

Protection of existing resources in the ecosystem is the fundamental purpose of sustainable development. Even the most developed landscapes, where every trace of nature seems to have been obliterated should be redesigned to support some component of the natural landscape to provide critical connections to adjacent habitats. After loss of habitat, invasive species represent the greatest cause of species endangerment and decline in the US. Invasive species are responsible for at least $137 billion a year in economic

losses. (White, 2000) Therefore, selecting native trees for diversity and suitability and that are adapted to local soils is very important. For example, using native tree or plant types on the roadside is a practical principle for urban green development, and all native plants disturbed by the construction should be saved, by first healing them in a temporary nursery. The site should be replanted with native materials in a mix consistent with that found in the natural ecosystem.

In addition, control of exotic species should be considered, without creative negative effects on native plants. Some exotics are highly invasive. Non-native plants increase demands for water, especially during the growing season, thereby depleting water sources. Native plants, on the other hand, have become adapted to the natural conditions of an area such as seasonal drought, pest problems, and native soils. Existing trees should be protected by avoiding cut and fill in root zones and by preventing heavy equipment from disturbing the area around and under them. The best way to protect existing vegetation is to fence off groups of trees. If disturbance is necessary and the plants cannot be recovered, restore the native plantings by reintroducing the same species. There should be an awareness of the hazards of removing exotics that may have displaced a native species, but in the process achieved a useful or even symbiotic relationship with other native plants. Plantings of native materials to control exotics may be used. The following table (Table 6) is a list of trees native to East Baton Rouge Parish. Their planting and preservation is strongly encouraged.

### 4.3.6 Summary

Green space is a very important component in any city in the world. While the green area is decreasing and the "Urban Heat Island" problem is obvious in East Baton Rouge Parish, the need to create a healthy green system in East Baton Rouge becomes more and more important. There are several sustainable principles that have been discussed. The first and most important is creating and maintaining urban forests. Creating and maintaining urban forests can reduce heating and cooling costs, intercept and store rainwater, improve air quality, and promote biodiversity in urban area. There are two concerns when creating urban forests. The first is keeping the north direction as the main direction for the urban forest development in East Baton Rouge Parish. The second is a habit restoration. The second principle is called for leaving enough space for planting and maintaining the soil structure. The third principle required preservation of existing trees and vegetation where possible. The last sustainable principle to improve the green area in East Baton Rouge Parish involves selecting trees for diversity and suitability that are native to our region and adapted to its soils.

**Table 6 Trees Native to East Baton Rouge Parish**

| Scientific Name | Common Name |
|---|---|
| | |
| Acer rubrum | Red maple |
| Catalpa bignonioiodes | Catalpa |
| Carya cordiformis | Bitternut Hickory |
| Carya ovata | Shagbark Hickory |
| Diospyros virginiana | Persimmon |
| Fagus grandifolia | American Beech |
| Fraxinus Americana | White ash |
| Juniperus nigra | Black Walnut |
| Liriodendron tulipifera | Tulip Tree |
| Magnolia grandiflora | Southern Magnolia |
| Nyssa sylvatica | Swamp Tupelo/Black Gum |
| Pinus Taeda | Loblolly Pine |
| Platanus occidentalis | Sycamore |
| Quercus lyrata | Overcup Oak |
| Quercus nuttallii | Nutall Oak |
| Quercus phellos | Willow Oak |
| Quercus shumardii | Shumard Oak |
| Quercus virginiana | Live Oak |
| Taxodium acendends | Pond Cypress |
| Taxodium distichum | Bald Cypress |
| Ulmus Americana | American Elm |
| Ulmus alata | Winged Elm |
| Carpinus caroliniana | Ironwood |
| Cercis Canadensis | Eastern Redbud |
| Chionanthus virginicus | White Fringetree |
| Cornus florida | Flowering Dogwood |
| Crataegus marshallii | Parsley Hawthorn |
| Crataegus opaca | Mayhaw |
| Halesia diptera | Silverbell |
| Ilex cassine | Dahoon Holly |
| Ilex vomitoria | Yaupon |
| Magnolia virginiana | Hop Hornbeam |
| Persea borbonia | Red Bay |
| Robinia pseudoacacia | Black Locust |

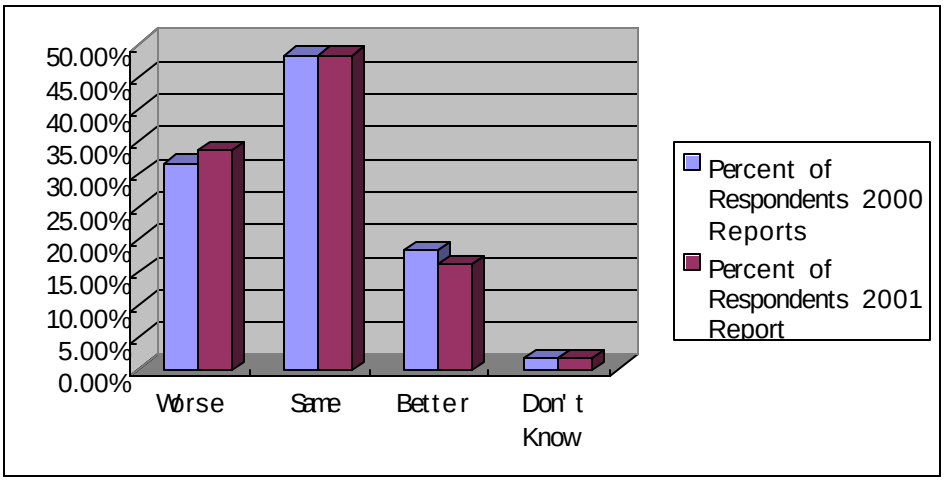



**Figure 5 Percent of Respondents 2001 vs.2000 Reports**

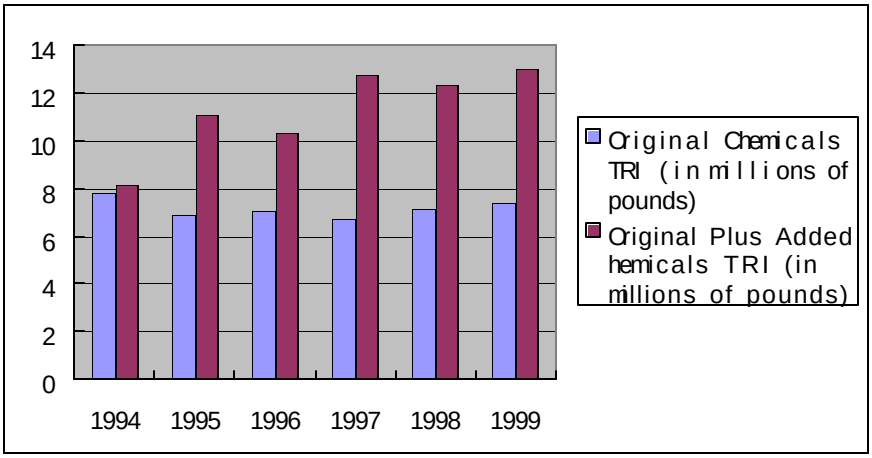
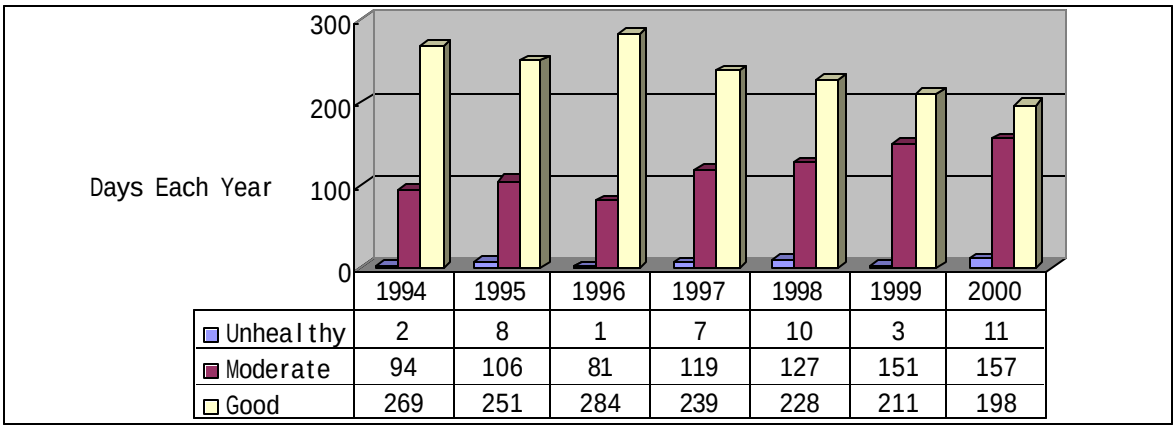



**Figure 6 Toxic Air Emission Per Payroll 1994-1999**
**Source: Louisiana Department of Environmental Quality and Life in Baton Rouge: A Community Progress Report 2001 (An annual report of Leadership Greater Baton Rouge Alumni, Inc.)**




| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|---|---|
| Unhealthy | 2 | 8 | 1 | 7 | 10 | 3 | 11 |
| Moderate | 94 | 106 | 81 | 119 | 127 | 151 | 157 |
| Good | 269 | 251 | 284 | 239 | 228 | 211 | 198 |

**Figure 7 Atmospheric Pollution Standard 1994-2000**
**Source: Louisiana Department of Environmental Quality and Life in Baton Rouge: A Community Progress Report 2001 (An annual report of Leadership Greater Baton Rouge Alumni, Inc.)**

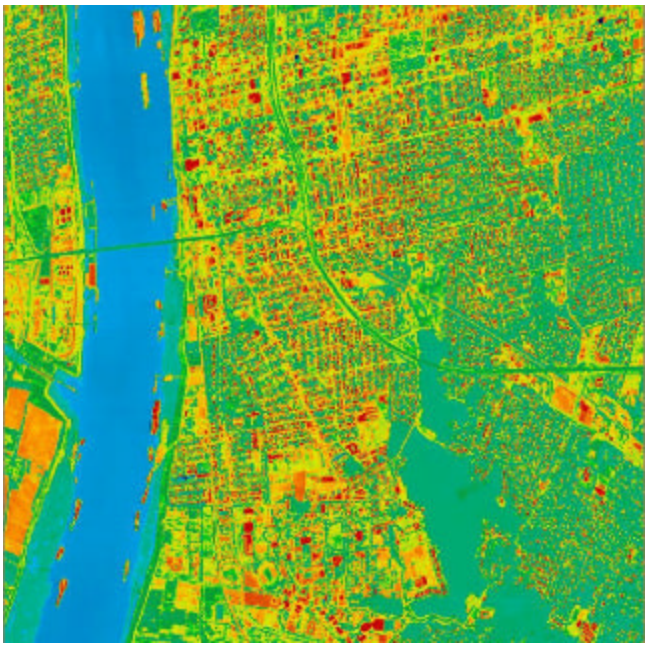


**Figure 8 Quick-look Image of Part of East Baton Rouge Parish**
**Source: NASA/Marshall Space Flight Center**


**Figure 9 Parking Lot without Trees**


**Figure 10 Parking Lot with Trees**

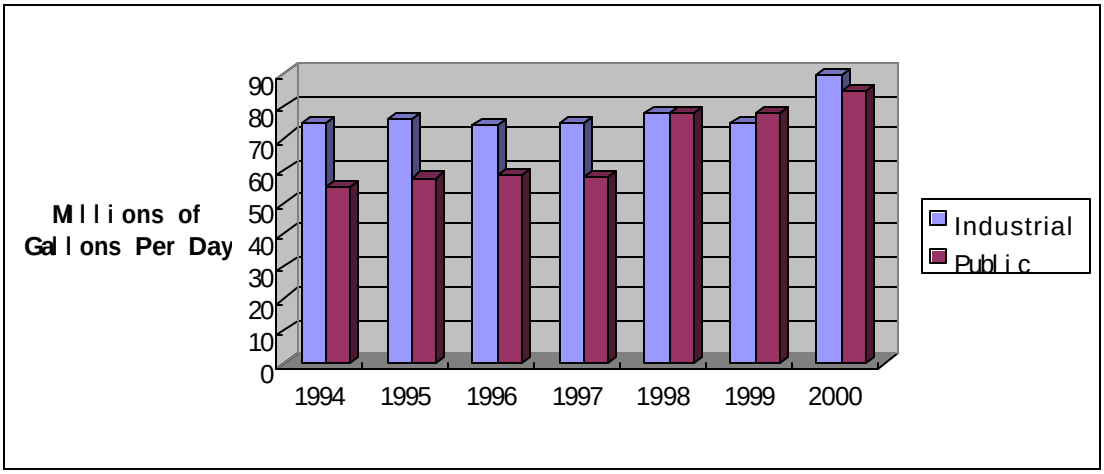



**Figure 11 Ground water use in East Baton Rouge Parish 1994-2000**

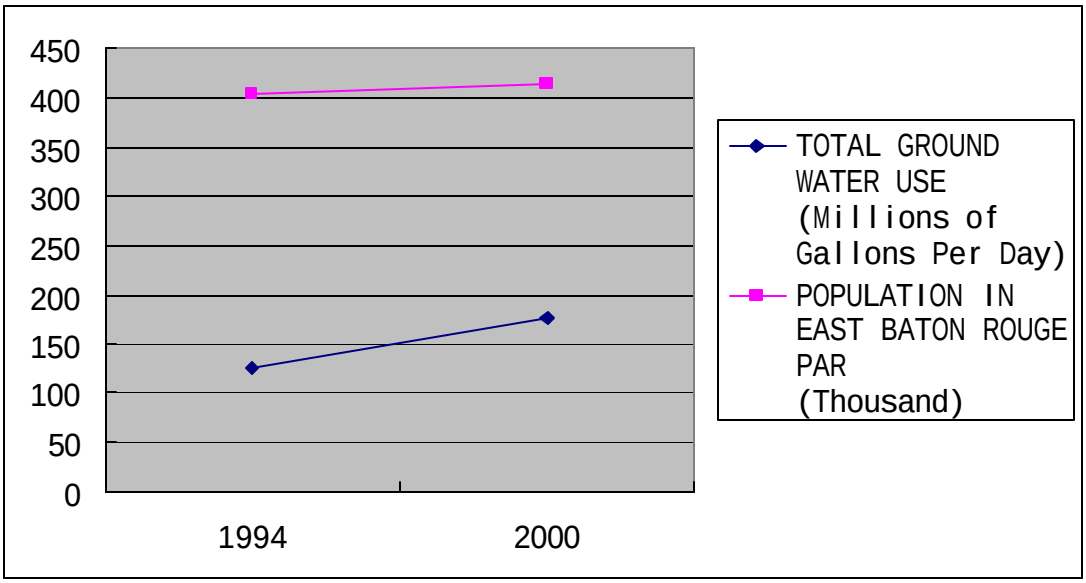



**Figure 12 Analysis of ground water use in East Baton Rouge Parish 1994-2000**

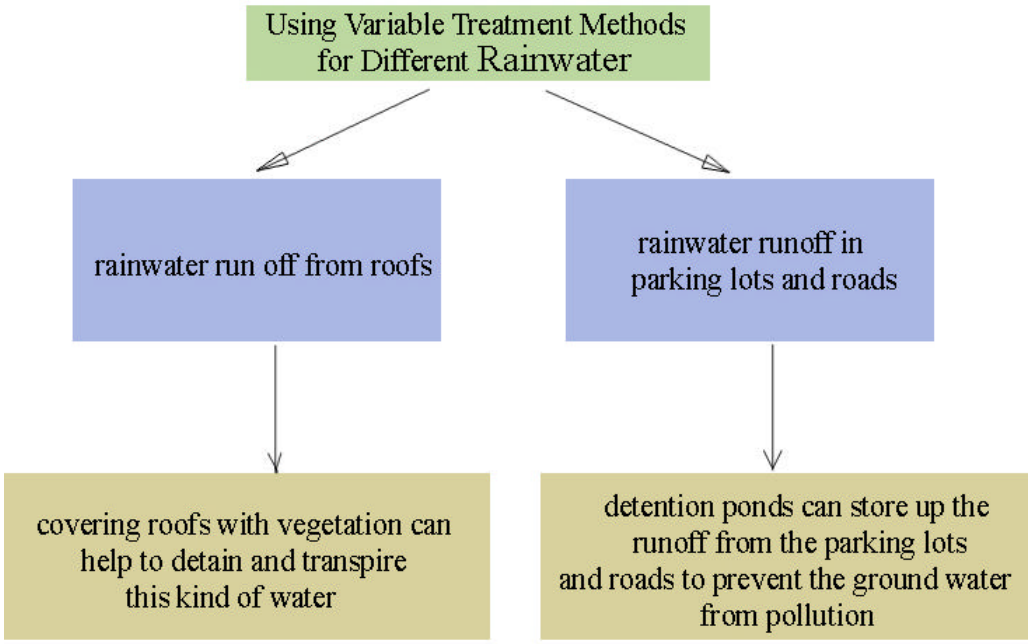



**Figure 13 Variable Treatment Methods for Different Rainwater Runoff**

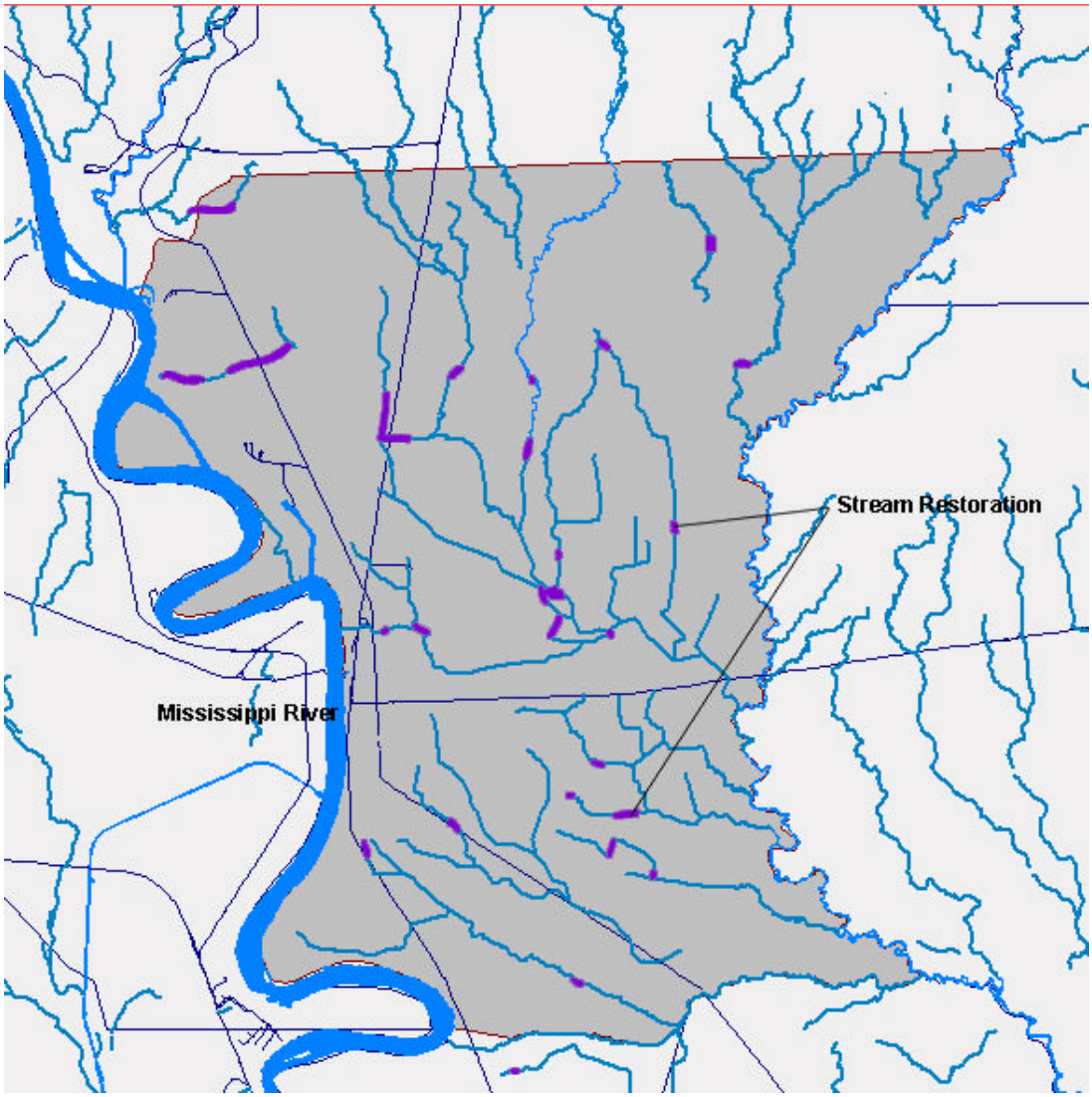



**Figure 14 Water System in East Baton Rouge Parish and Stream Restoration**

**Figure 15 Stream Restoration Proposed Image**

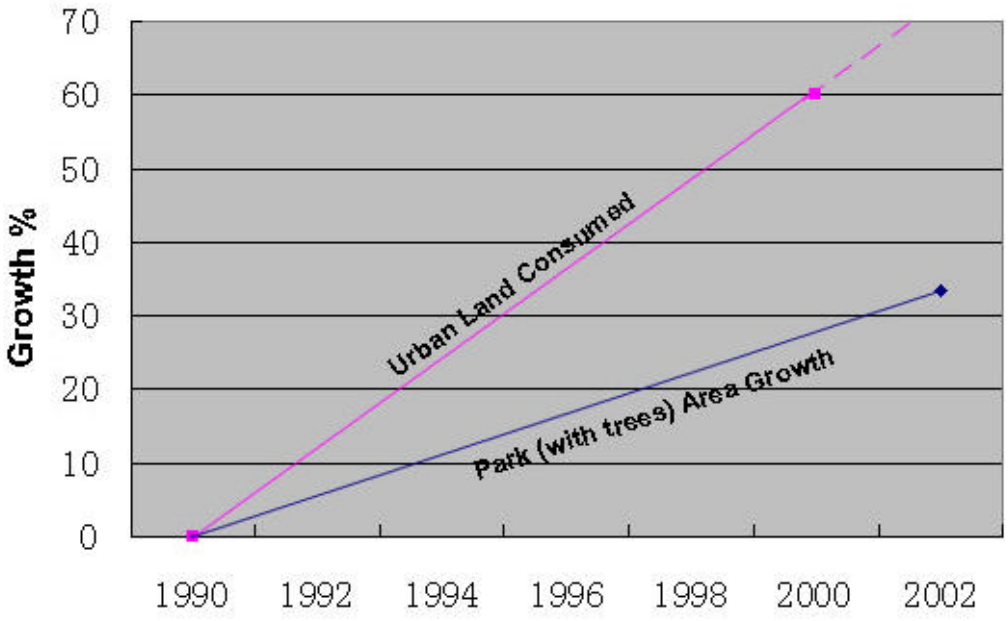



**Figure 16 Park Area vs. Urban Land Consumed**

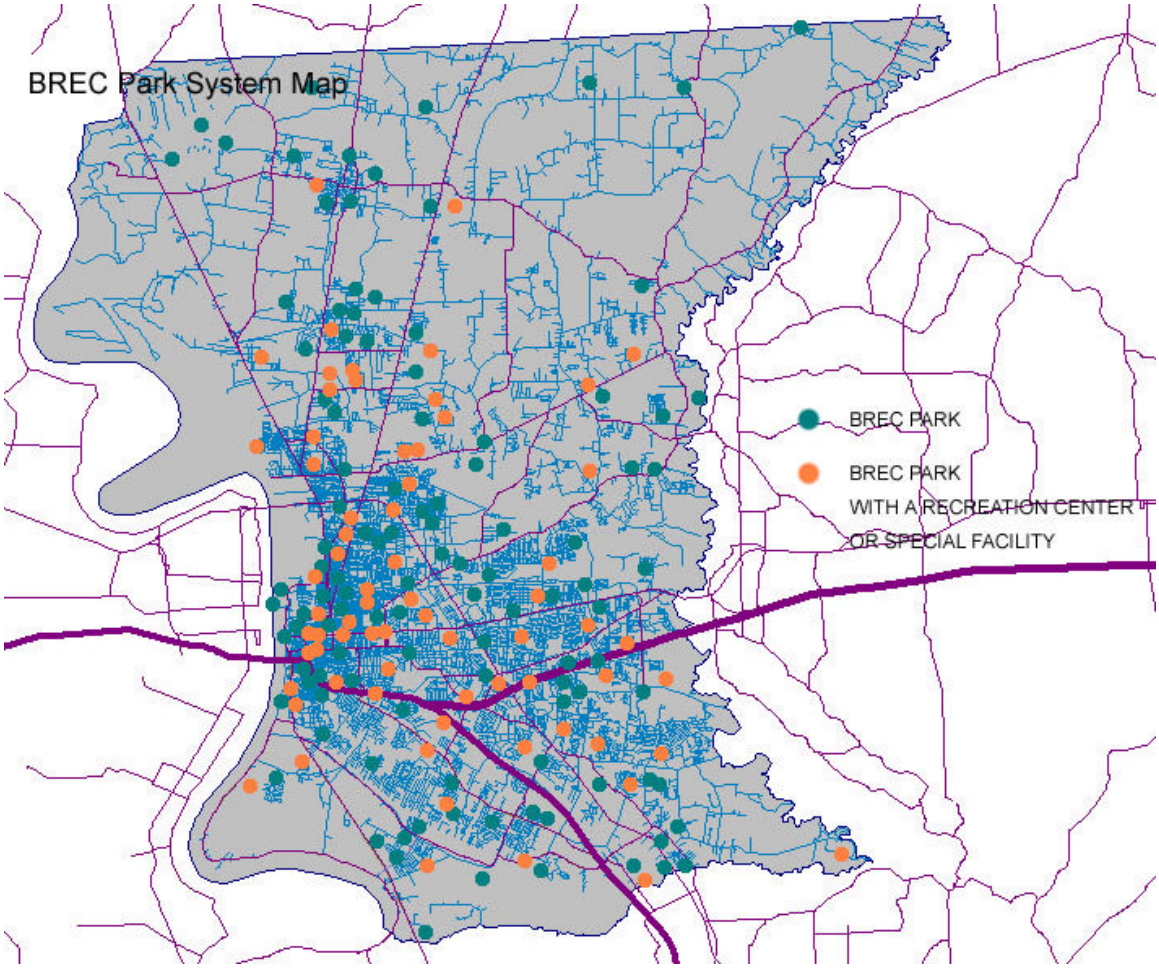



**Figure 17 BREC Park System Map**

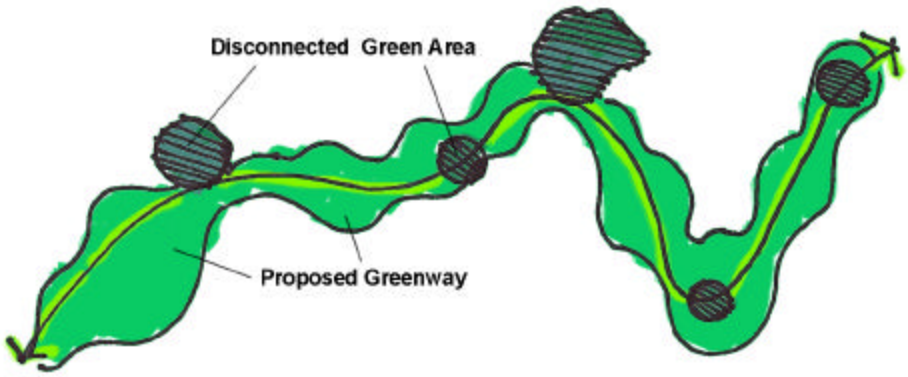



**Figure 18 Greenway**

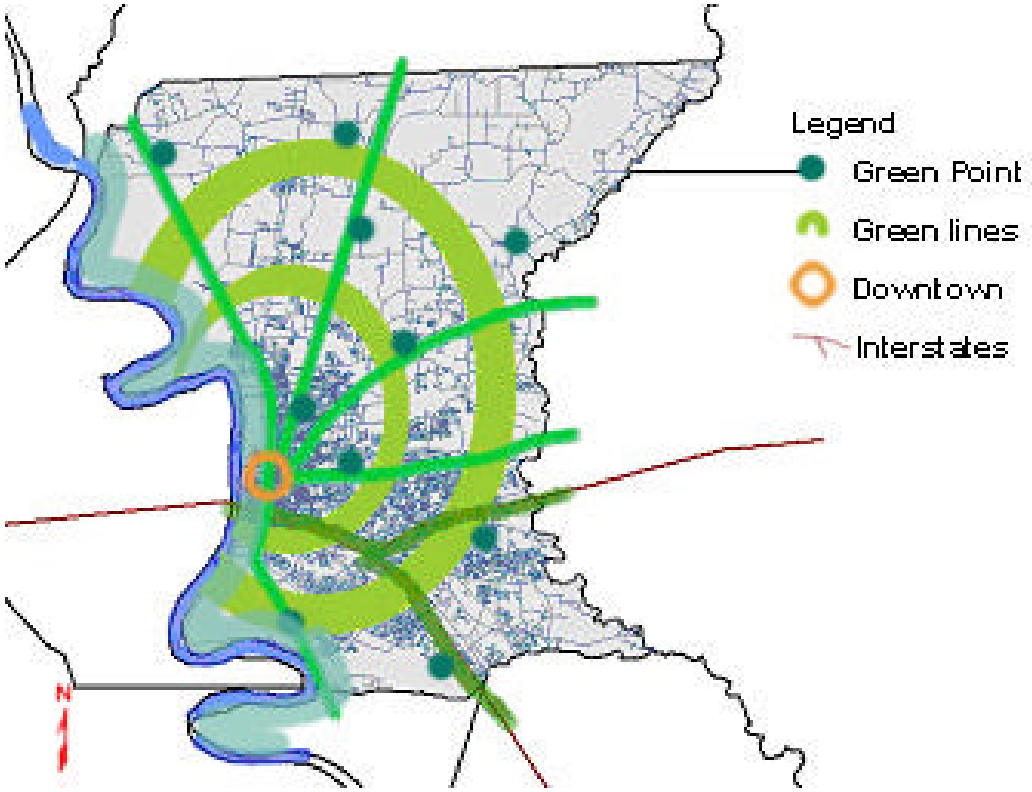



**Figure 19 Simulation of the Urban Forest Structure in East Baton Rouge Parish**

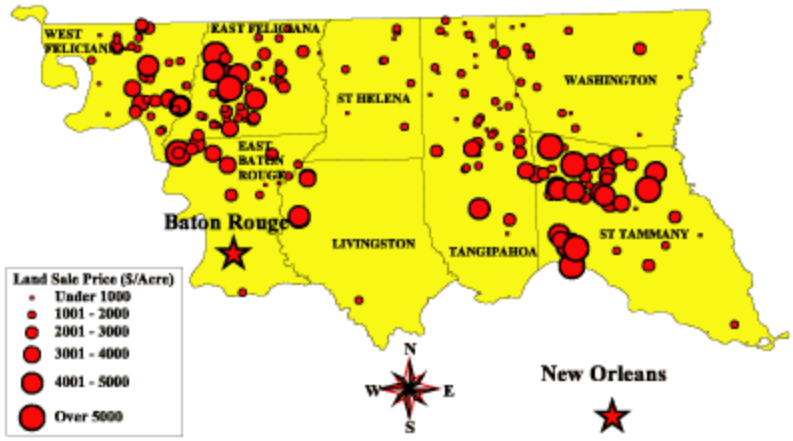



**Figure 20. Land Sale Price**
**Source: Vandeveer, 2001**

**Figure 21 Ben Burge Park**
**Source: BREC**

**Figure 22 Proposed Image of a Green Park**

**Figure 23. Proposed Image of a Green Park**

## 5. Cultural Resources

While park and green space developments usually feature natural elements, there is a growing awareness that historical heritage is equally important to human being.

### 5.1 East Baton Rouge Parish's Culture Resources

Ecological sustainability and preservation of cultural resources are complementary. Cultural resources are representative of a given culture, or that contain information about a culture. Most cultural resources are unique and nonrenewable. These cultural resources were created or occurred at specific geographic locations at certain points in time by different individuals.

The name, Baton Rouge, suggests a French influence, but even more it suggests an Indian origin. Every day, people pass the old Indian mounds and never give them a second thought, but archeologists have brought to light extraordinary facts about the first peoples to live in Baton Rouge. They have revealed that Indians lived in Louisiana in prehistoric times, building many civilizations in this area before the coming of the discoverers and explorers from Europe. Archaeologists have recorded a number of mounds and village sites along the Mississippi, Comite, Amite Rivers and Bayou Manchac.

Seven different governments have –at one time or another-reigned over the Baton Rouge area. As a result of the impacts of these governments, numerous structures and landmarks in the parish have been officially designed by state and federal agencies as historic landmarks that are significant in American history, architecture, archeology, and culture. In 1989, there were 44 historic sites or structures in East Baton Rouge Parish listed on the National Register of Historic Places. In 2000, there are 63 historic sites or structures listed on it. One third of them are houses and plantations (See Appendix D).

For more than 75 years, LSU has been at its present location. While the campus has seen many changes, the Indian mounds, located on the northwest side of campus, have remained virtually untouched. In the 1980s, scientists from the LSU Museum of Natural Science, the Department of Agronomy, and the Department of Geography & Anthropology collected soil samples from the bases of the mounds and discovered that they were part of a group of Archaic mound complexes located throughout the state. Over a dozen of these mound complexes have been identified and more are likely to be recognized in the future. These mound groups are older than any in North America, Mesoamerica, and South America, and predate the construction of the great Egyptian pyramids. Therefore, although there are only two mounds on the list of the National Register of Historic Places, preservation of Indian mounds is greatly important, for these represent a considerable amount of dedicated labor and reflect the very nature of the

culture of the particular people constructing them. Louisiana has not protected its Indian sites, and one or more in its capital city have been lost over the years.

When a cultural resource achieves sufficient importance that it is thought to be historically significant in human history, it becomes a nonrenewable resource worthy of consideration for sustainable conservation. Management, preservation, and maintenance of cultural resources should be directed to that end.

5.2 Using Environmentally and Culturally Sensitive and Sustainable Treatment and Maintenance Methods Over the Long Term

Since there are 71 historic sites or structures listed on National Register of Historic Places and thirty-two percent of them are houses and plantations, there is a great need to repaint the buildings and structures. Some toxic materials, such as lead-based paint and asbestos, are inherited. Toxic materials that exist in many historic buildings such as those plantations and plantation houses must be removed and properly disposed of.

Technical efforts to preserve cultural resources must not contribute to degradation of the environment. While preserving the Indian mound, the use of pesticides, fungicides, and other toxins should be forbidden. They damage soil and grass, so any preservation efforts should consider non-hazardous alternatives.

In addition, since East Baton Rouge Parish has humid and hot weather, there are a lot of noxious insects and reptiles around. Facilities should be planned and designed to minimize the intrusion by noxious insects or reptiles. Moreover, natural means for pest control should be ensured while operating the facilities.

5.3 Reflecting the Cultural Heritage of the Locality or Region by Architectural Style, Landscape Design, and Construction Materials

Sometimes, it is not just nostalgia that draws people to historic developments. Much of what is valued in these developments is their response to the climate, natural setting, and locally available building materials.

Often older buildings such as plantations and historic houses were designed to take advantage of natural light, non-mechanical ventilation, passive solar heating, and the ability of native materials to hold heat or cold when assembled in certain fashions. For example, some plantation houses used a window structure (Fig.24) (Fig.25) similar to blinds. They not only give a nice shade to the balcony, but also admit the wind to cool the building and people. This window structure in plantations directs breezes from lower to upper level of the balcony can be used everywhere in East Baton Rouge Parish due to the

hot and humid weather. Unfortunately, more and more recent structures may rely on energy-consumptive systems for their continued use. These low-tech features functioned during times when energy consumption was limited and should be applicable to today's efforts to conserve energy.

In addition, historic buildings and landscapes can provide opportunities to discuss building construction prior to the 20th century, when most structures were built with locally available materials. For example, many door materials in plantation house in East Baton Rouge were made of cypress although they were painted like oak, because cypress is quite common here. Obtaining this material and erecting the buildings were relatively low in energy consumption. In contrast, many modern buildings consist of materials from all over the globe, obtained at an enormous cost in energy and resulting in the rapid depletion of worldwide resources.

Furthermore, historic places and sites have some important building forms; architectural styles and layouts that can be useful in today's urban development. Oakley plantation house's ground floor was built above ground level in response to the humid climate. This structure can not only keeps the building dry but also makes a shaded walkway (Fig. 26). A similar structure is also seen on the LSU campus. This all weather arcades structure can be widely used in East Baton Rouge Parish's mixed-use community center. In street space design, the first floor can be shops and business with arcades in which people can sit or walk. The second floor and above can be residence. People enjoy these kinds of streets more than streets without these features. People choose walking rather than driving when they can enjoy this kind of street. The urban area will become more sustainable.

## 5.4 Summary

Cultural resources are reflections of past cultural, historical, and environmental influences. First, cultural resources maintenance and improvement methods should be sensitive and sustainable over the long term. The conservation and management of cultural resources needs to be done in an environmentally sensitive manner. Second, the architectural style, landscape design, and construction materials of new developments should reflect the cultural heritage of the locality or region. Cultural resources should also be interpreted to include lessons about the environmental exploitations or sustainable, environmental successes of the past.

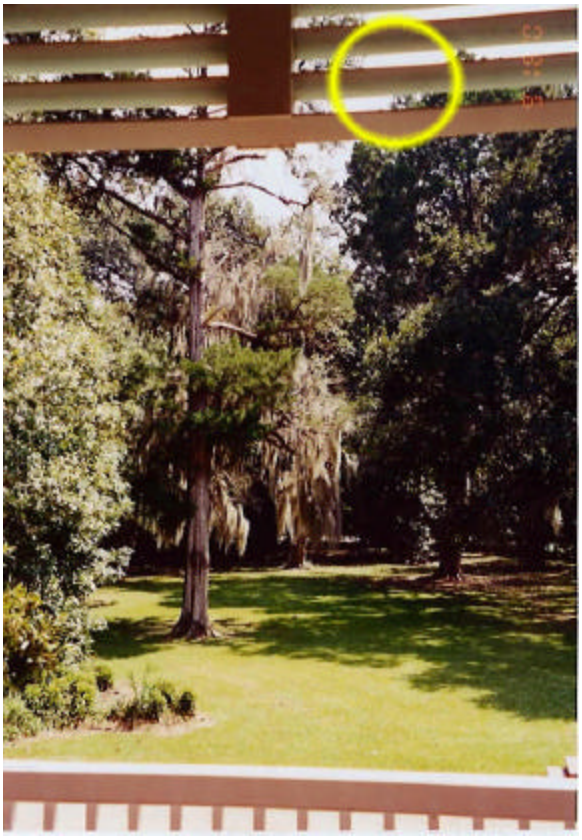


**Figure 24 Photo of the window structure in Plantation House**

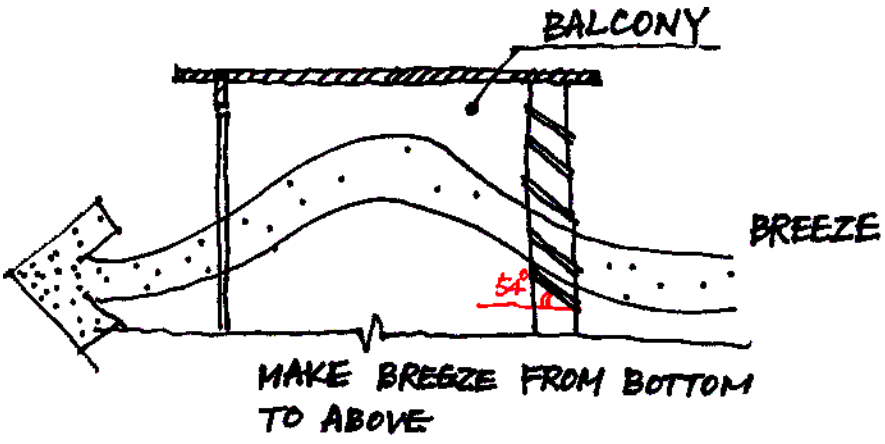



**Figure 25 Window structures in plantations that direct breezes from lower to upper level of the balcony**


**Figure 26 Elevated Above Ground Structure in Plantation House**

## 6. Solid Waste

### 6.1 East Baton Rouge Parish's Solid Waste Conditions and Problem Analysis

From 2001, recycling in Baton Rouge reduced overall emissions of sulfur dioxide, a pollutant that causes acid rain, by approximately 300 tons. Residential and commercial totals combined recycling tonnages (landfilled vs. recycled/reused) from 1989 to 2002 are listed in table 7 and figure 27.

**Table 7 East Baton Rouge City Parish Cumulative Recycling Report 1989-2002 Landfilled VS Recycled/Reused Tonnages Residential and Commercial Totals Combined**

**East Baton Rouge City Parish Cumulative Recycling Report**

**1989-2002 Landfilled VS Recycled/Reused Tonnages**

**Residential and Commercial Totals Combined**

| Year | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Landfill | 346,188 | 355,981 | 333,172 | 352,301 | 293,963 | 332,326 | 341,817 | 361,227 | 402,825 | 386,234 | 369,563 | 376,595 | 450,095 | 504,056 |
| Total Recycling | 7,011 | 9,117 | 21,716 | 30,075 | 64,056 | 111,027 | 112,502 | 118,161 | 139,785 | 132,165 | 121,984 | 146,981 | 148,890 | 165,178 |
| Percent Reduction | 2.0% | 2.5% | 6.1% | 7.9% | 17.9% | 25.0% | 24.8% | 24.7% | 25.8% | 25.5% | 24.8% | 28.0% | 25.0% | 24.70% |

The data in table 7 and figure 27 shows that the total amount of landfill increased about 45.6% from 1989 to 2002, while the population just increased 8.57%. From this analysis, it is noticed that the total solid waste problem is still as severe as the other environmental problem (such as air pollution) in East Baton Rouge Parish.

### 6.2 Increasing the Amount of Yard Waste and Paper Recycling

In East Baton Rouge Parish, a concentrated effort must be made to increase the amount of yard waste and paper recycling. According to Baton Rouge Recycling, wood/yard waste and paper/paper product build up the largest part of the total waste in 2002 (Fig 28). It equals 103396 tons per year (Source: Baton Rouge Recycling). Therefore, the effort to increase the amount of yard waste and paper recycling can reduce the pollution of whole city and improve our environment.

Office paper is the largest part of paper and paper product in the waste material (Source: Baton Rouge Department of Recycling) Usually, a coordinated office paper-recycling program resulted in an approximated 75% reduction in the waste stream generated (Billings, 1992). Therefore, an office paper-recycling program is strongly suggested.

Also East Baton Rouge Parish needs a composting program. Because the typical municipal waste is almost 40% of yard waste (Source: Baton Rouge Recycling), this is the area where the next greatest reduction of waste volume can be found. The yard waste for the parish is almost 66,000 tons annually. A recommended composting rate is 25%. (Billings, 1992) If a 25% composting rate were achieved, it would equal to a reduction of 16,500 tons of yard waste.

It is most important to make an accurate reflection of the cost of waste disposal and recycling. As waste disposal costs continue to increase, government can no longer subsidize these expenses. The consumer must be made aware of the true cost of waste disposal via landfill. Only then can they see the true value of recycling. Consequently, when public participation increases, the cost per ton to recycle decreases. This will give more reasons to recycle instead of using landfills.

## 6.3 Creating Ecological Training Parks

BREC together with BFI and Baton Rouge Recycling Office can establish one or two ecological training parks in East Baton Rouge Parish.

Ecological training parks teach the public about recycling and ecology. They can be built on old landfill sites or simulated landfill sites. The soil can be municipal compost. Entry fees may consist of bags of recycled aluminum cans, bottles or newspapers. The park can teach the public about recycling and ecology. Visitors can ride in the park's train that stops at each teaching center. All the facilities in the park can be built from recycled materials. The vegetation should be chosen carefully to show how different vegetation grows on different soils. The exhibit hall can show all kinds of recycled materials and the composting process. All the knowledge related to solid waste could be found in the parks. In addition, the ecological training parks could be linked with the BFI Recycling center and North Landfill (the only landfill in East Baton Rouge Parish) by light train or express bus along with green way system in the city. This kind of emphasis is on 'fun which learning' will be a great success especially among children. Figure 29 shows the potential location of the ecological training park and linkage to the North Landfill of East Baton Rouge Parish and BFI recycling center.

## 6.4 Summary

Solid waste is a major component in a city's sustainable development. It cannot be managed within the disciplines of landscape architecture alone. However, as landscape architects, we can through planning, design, redesign and make people minimize waste by rethinking about our surroundings, reducing the amount of waste and energy, reusing materials, and recycling. In this chapter, two principles are mentioned. The first is

increasing the amount of yard waste and paper recycling. Because wood/yard waste and paper/paper product build up the largest part of the East Baton Rouge Parish's total waste, the effort to increase the amount of yard waste and paper recycling can reduce the pollution of whole city and improve our environment. Meanwhile, the second principle involves creating ecological training parks, and recommending a potential location for an ecological training park. Linkages between the park and the BFI recycle center, and the North landfill site have been given.

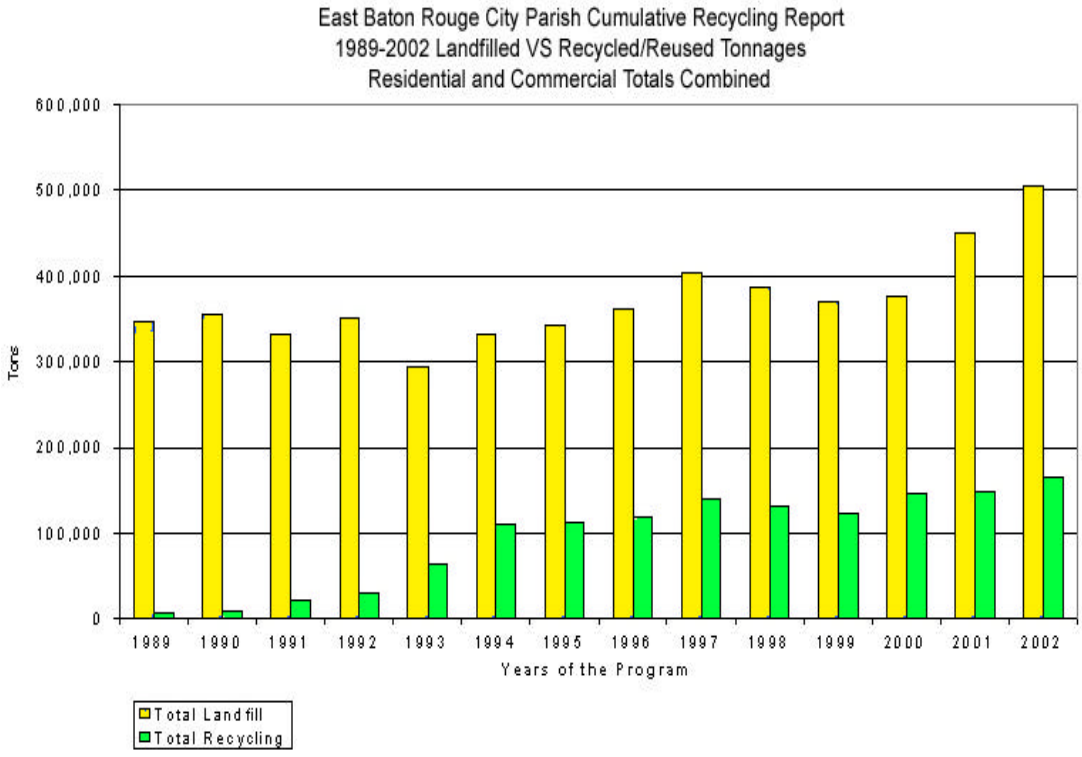



**Figure 27 East Baton Rouge City Parish Cumulative Recycling Report 1989-2002 Landfilled VS Recycled/Reused Tonnages Residential and Commercial Totals Combined**

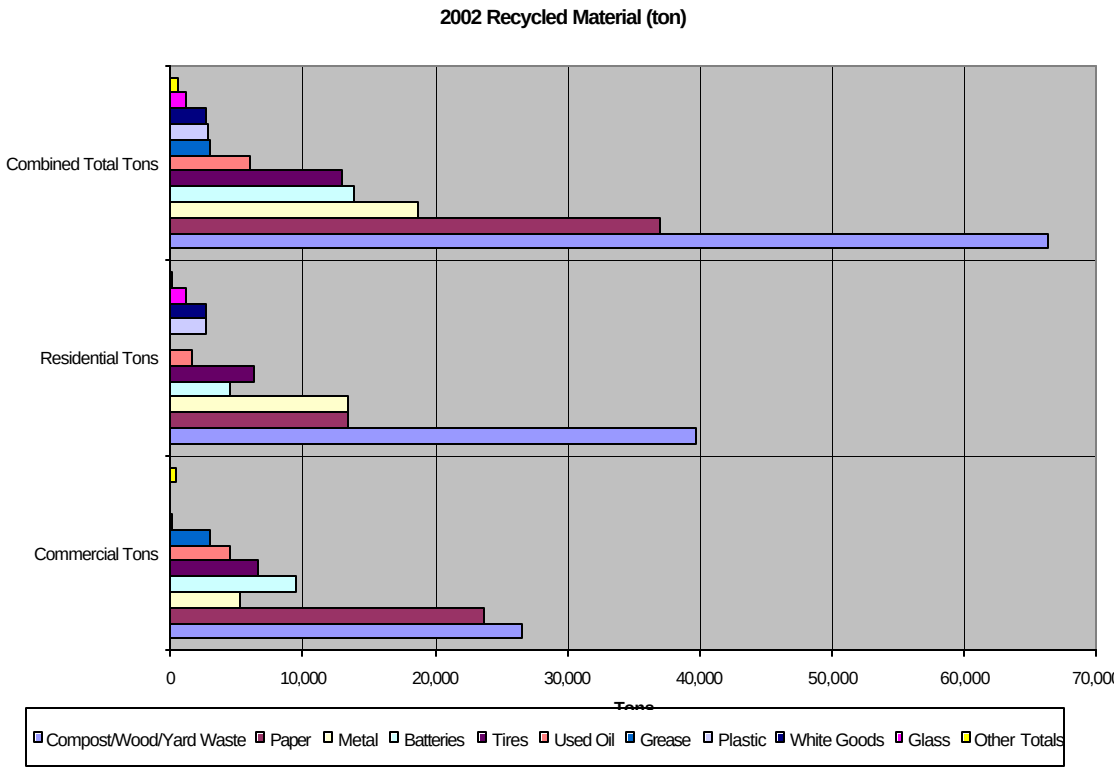



**Figure 28 Residential Material 2002**

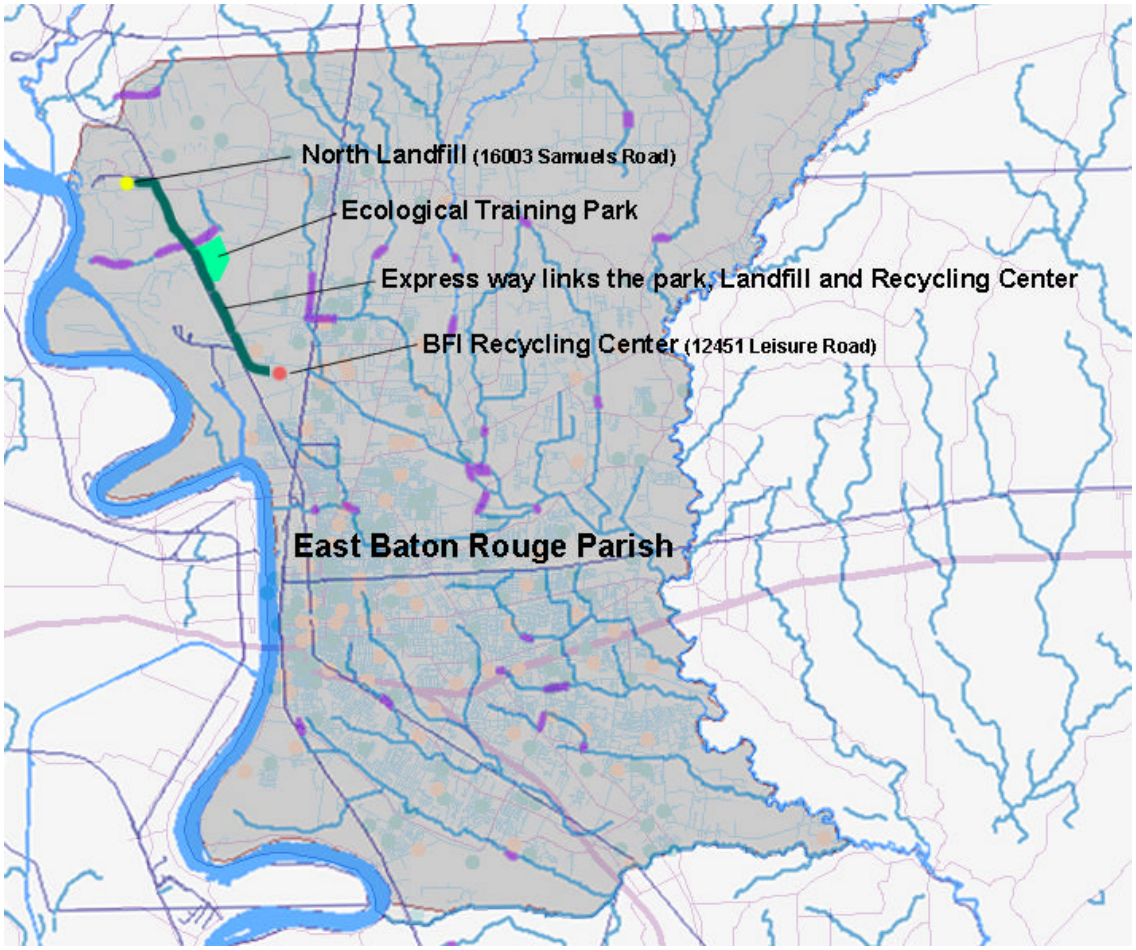



**Figure 29 Suggestion Location For an Ecological Training Park**

## 7. Transportation

### 7.1 East Baton Rouge Parish's Transportation Condition and Problem Analysis

East Baton Rouge Parish's transportation system, as in many other cities in United State about the same size, is not satisfying to the citizens. According to the "Life in Baton Rouge" survey of 2001 (mentioned in Chapter 4), more than half people who live in East Baton Rouge Parish feel dissatisfied with the traffic in East Baton Rouge Parish. Seventy-three percent of the people feel that the traffic is getting worse or staying the same.

According to US Census data, in 1990 East Baton Rouge Parish's population is 380105, but until 2000, the population is 412852. The population increased 8.62%. Does the road net in East Baton Rouge Parish can offer enough capacity to meet the need of such a rapid population growth? The low road capacity maybe is not the only reason that caused traffic congestion in East Baton Rouge Parish; it affected the unhealthy traffic condition on a certain extent.

Local traffic constitutes 80-85% of traffic on the current interstates. There is a proposed bypass; however, its does nothing for North Baton Rouge. However, residents of that area will be asked to pay for it. In addition, it does not create a loop that connects one side of the city to the other. At present there is only one four-lane route from the Southern end of Baton Rouge to downtown: I-10 (Source: Rust Environmental Services)

### 7.2 Increasing and Preserving the Road Capacity

In the long run, building new roads or expanding existing ones cannot reduce the intensity of peak-hour traffic congestion to any extent, particularly in rapidly growing areas such as northern part of East Baton Rouge Parish area. Commuters will quickly shift their routes, timing, and modes of travel. Also, the added travel capacity may help persuade more people and firms to move into the region, or it may cause more residents already living there to buy and use automobiles. Increasing transportation capacity is still an essential response to the recent increases in traffic volumes especially in the southern part of the East Baton Rouge Parish area, because there is only one four-lane route from the Southern end of Baton Rouge to downtown. In addition, the speed of the development of road capacity should be as fast as the population expands.

### 7.3 Providing the Opportunity for Alternative Transportation

The other way to improve sustainability in transportation is to provide opportunities for alternative transportation. The first kind of alternative transportation is walking and biking. According to U.S. Census Bureau, in 2000, the percentage of people

walking or biking to work in East Baton Rouge Parish is lower than the percentage in USA (Table 8). Bike and pedestrian paths are very important components for encouraging alternative transportation.

Electric bikes may encourage people to use bikes that otherwise wouldn't. Walkways and hiking paths also can encourage walking. Providing efficient, safe corridors for students to attend LSU or Southern University, for workers to use to get to their jobs in downtown or suburbs, or for school children to be able to ride their bicycles to school could be a revenue-saving transportation alternative. These green ways along the bayous, streams, railroad and existing roads, can be paved with asphalt instead of traditional concrete surfacing. This method not only can save construction costs, but also provide smooth and safe paths for all users. Along with the coordination of efficient public transportation, these pedestrian and biking paths can develop and reinforce less consumptive lifestyles.

**Table 8 Percentages of People Walking or Biking to Work**

| TRANSPORTATION TO WORK (2000) | | | | |
|---|---|---|---|---|
| | | BATON ROUGE | LOUISIANA | USA |
| | NUMBER | PERCENT | PERCENT | PERCENT |
| WORKER 16 AND OVER | 188996 | | | |
| PUBLIC TRANSPORTATION | 2658 | 1.4 | 2.4 | 4.7 |
| TRUCK, CAR, VAN OR MOTORCYCLE | 175650 | 92.9 | 91.8 | 88 |
| WALK OR BIKE | 4312 | 2.3 | 2.2 | 2.9 |
| WORK AT HOME | 4350 | 2.3 | 2.1 | 3.3 |
| | | | | |
| | | SOURCE: U.S. Census Bureau, 2000 Census | | |

The second kind of alternative transportation is public transportation. Table 10 shows that in 2000, there just 1.4% of the people in Baton Rouge go to work by public transportation while 4.7% of the people in United States go to work by public transportation. Public transportation in East Baton Rouge Parish is much less efficient than it should be. These urban problems in East Baton Rouge Parish, such as traffic congestion, unhealthy air pollution appear to be more closely linked to the sprawling development patterns that require so much driving. Adding all kinds of public mass transit between the main residential areas and downtown should be considered. It could be rail systems such as subways, light rail, or bus systems that can save energy and minimize air pollution.

Today the huge amount of daily travel by private car in East Baton Rouge area is a result of low density in residential settlements. Housing is spread over a broad territory. People have to drive long distances to commute and perform other daily tasks. However, public transport services that provide a genuine alternative to the private car will only work if there area a sufficient number of people. If many people go to work by using the buses or rapid transit systems, the peak hour traffic congestion would decline. Therefore,

the effort to integrate the road and land use planning as a whole network system to raise the residential density should be considered (Fig 30).

There are two communities (A, B) with equal area in figure 30. Also, there are ten residential houses in each community. The houses in community A are spread widely and separated, while the houses are centralized in community B. It is noticed that in community A, walking distances from houses to public transportation stops are longer than the walking distances in community B. Meanwhile, there is left much more green spaces in B community than in community A. Community B is considered more sustainable than in A, and its public transportation system is more efficient than community A.

Mixture use community centers, such as shopping centers along with the increased residential densities could support intermediate-quality bus service if surrounding residential areas have net densities high enough. The mixture use community center can include retail shops, post office, cafes, recreation centers, health center, schools and community pocket parks (Fig.31). If the facilities within the community scope can all be reached without using private cars or trucks, the traffic congestion will be reduced effectively.

These mixture use facilities will draw more people to walk or bike to the community centers to buy groceries or do other daily activities without using cars. Consequently, raising the settlement density can relatively minimize transport demands.

Furthermore, the transition of various modes of public transportation for people should be smooth and efficient. East Baton Rouge Parish has one of the lowest operating budgets for a southern city of comparable size (Source: Baton Rouge Transportation Department). People who depend on buses are poorly served by the existing system with its limited and infrequent service.

## 7.4 Summary

East Baton Rouge Parish has severe air pollution problems because of transportation emissions. Also, traffic congestion is still a big problem affecting peoples' daily lives. Creating a sustainable transportation pattern should be a big aim in East Baton Rouge Parish. Two principles related to urban planning and landscape architecture are suggested to achieve this goal. The first principle is to increase and preserve the road capacity by preserving green space. The second principle is to provide the opportunity for alternative transportation. The alternative transportation can be walking, biking and public transportation. The public transportation mode can be bus, light rail, or subway. Since urban sprawl is a big problem in East Baton Rouge Parish, while providing the

opportunity for alternative transportation, the main goal should be to raise residential density, and the transition of various mode of public transportation for people should be smoothly and efficiently. The whole transportation system should be laid out as networks with each street functional for the car but comfortable to the pedestrian.


**Figure 30 Land Use Patterns**


**Figure 31 Creating a Walkable Community**

## 8. Conclusion

This study is to examine and analysis the sustainable development indicator data and determine what improvements and recommendations are needed to improve East Baton Rouge Parish's development. This conclusion chapter is divided into two sections. A prepositional conceptual plan is designed according to the sustainable principles in the first section. Some detail design and recommendations will be helpful to understanding the principles. A phasing plan is formed in order to make these principles be applicable. The second section points out the limitations of the thesis and future research is suggested.

### 8.1 Conceptual Plan and Phasing Plan

Sustainable urban development is important for East Baton Rouge Parish as well as any city in the world. In general, reasonable sustainable principles can contribute to reducing environmental pollution, maintaining good transportation systems, clearing the air, supporting a healthful ecological system and conserving our cultural treasures.

There are 14 principles discussed in this thesis. They are:

1. Minimizing the emissions of automobiles and industries and providing the opportunity for alternative transportation
2. Creating and maintaining green spaces (urban forests and rooftop gardens)
3. Creating ecological training parks that are linked with the BFI recycling center and the North Landfill.
4. Using various treatment methods for rainwater
5. Transportation planning should be compatible with water quality goals.
6. Stream restoration
7. Leaving enough space for plantings and maintaining the soil structure
8. Preserving existing trees and vegetation where possible
9. Selecting trees for diversity and suitability that are native to our region and adapted to its soils
10. Increasing the amount of yard waste and paper recycling
11. Using environmentally and culturally sensitive and sustainable treatment and maintenance methods over the long term
12. Reflecting the cultural heritage of the locality or region with architectural styles, landscape design, and construction materials
13. Increasing and preserving the road capacity
14. Increasing the amount of yard waste and paper recycling

It is noticed that some of them are related to each other. Therefore, government managers should work together with integrated transportation planning and land use

planners, natural resources managers, transportation agencies, urban designers, landscape architects and the public towards a common goal: creating a sustainable city.

According to the 14 principles, a conceptual plan for East Baton Rouge can be designed. In this conceptual plan, the green system forms a network. The green system along the rivers, lakes, highways, pedestrian roads and railroads links the parks, schools, open spaces, and community centers. A potential ecological training park and an express path from BFI through an ecological training park to the North Landfill are components of the system. The green system can form urban forests and corridors for wildlife (Fig. 32). Trees should be planted as much as possible. Because there are many parks in East Baton Rouge Parish that do not have enough tree canopy, planting trees in those parks should be encouraged.

Moreover, parking areas compose most "hot spots" in our city. We should plant more trees in parking lots to reduce the "Heat Island Effect". Revising parking lots from figures 41 to 42 is also encouraged. Old Requirements of Chapter 18 UDC The Baton Rouge Development Code says: 1-50 spaces = 1 Class A Tree per 25 spaces; 50-100 spaces = 1 Class A Tree per 18 spaces; >100 spaces = I Class A Tree per 12 spaces. The New Requirements of Chapter 18 UDC The Baton Rouge Development Code, which goes into effect November 14,2003, says that: 1-25 spaces = 1 Class A Tree per 15 spaces; 26-100 spaces = 1 Class A Tree per 12 spaces; >100 spaces = 1 Class A Tree per 10 spaces. Two class B trees can be substituted for one Class A tree. (Note: Class A is used in some Louisiana ordinances to mean large shade trees, usually native canopy trees, 50' or taller. Class B is used in some Louisiana ordinances to mean medium sized shade or color trees 25'-35' tall. Any class can be deciduous, evergreen or semi-evergreen. ) (Source: Abbey, 1998)

Although, there will be new ordinances to increase the quantity of trees in parking lots, there also should be a guide ordinance to rebuilt those parking lots with no trees at all (Fig. 33) to improve the green in the city. In addition, Crape Myrtles (Fig. 34) are common in parking lots and along the street in East Baton Rouge. However, Crape Myrtles cannot be used as a tree canopy. They cannot form enough shade to reduce the Heat Island effect. Therefore, some kinds of native trees, such as Linden (Fig. 35), Oak (Fig. 36) and Yaupon (Fig. 37) are recommended for using in the city for the tree canopy. These trees are not only native to East Baton Rouge, but also sensitive to air pollutants, such as ethylene. Ethylene is a naturally occurring compound, which forms as a result of decaying organic matter. It is also a common by-product of plastic production in East Baton Rouge Parish.

The streams are connected where are possible to form a water network. Development is limited within the floodplain. Stream restoration can reduce flooding

problems caused by undersized culverts, cut the costs of replacing deteriorated culverts, and improve water quality by exposing flows to air, sunlight, vegetation, and soil. It also can provide new urban recreational amenities by generating pedestrian paths. Figure 38 is a proposed image for stream restoration. Prior to being dredged, the stream lacks value (Fig. 39). However, after being restored, the stream can be a good place for people walking, biking and jogging (Fig 40).

Because there is one four-lane road from the southern area to downtown (I-10), which cannot meet the needs of the traffic, the conceptual plan adds two main roads in the southern part of East Baton Rouge Parish. In addition, two other roads are added to try to create a loop from one side of the city to the other (Fig 41). In addition, making most roads or streets in small communities narrower while adding garden space can lower the speed of traffic in the community. The green space also can buffer the noise and air pollution from people.

Figure 42 is a perspective sketch of proposed design for development in the Central Business District. It shows some applications of sustainable principles. The rooftop gardens can improve air quality and increase the area's visual appeal together with street trees. The elevated structure can be used as a pedestrian corridor no matter it rains or sun shines and it reflects the structure in the local plantation. The mixture uses in the new buildings brings people to area throughout the day, raising the community density, improving economic vitality and public safety.

According to the cost, degree of urgency, time requirement and technology requirement, a phasing plan matrix has been developed as table 9.

1. The task cost least ranked 1, while cost most ranked 3.
2. The task is most urgent ranked 1, while it is least urgent ranked 3.
3. The task requires least time to be accomplished ranked 1, while it requires most time to be accomplished ranked 3.
4. The task requires least technology ranked 1, while it requires most technology ranked 3.

Therefore, the tasks' score in phase I are 6 and 7; the tasks' score in phase II are 8 and 9; the tasks' score in phase III are 10 and 11.

**Table 9 Phasing Plan**

| Phase | Task | Cost Ranking | Urgency Ranking | Time Requirement | Technology Requirement | Total |
|---|---|---|---|---|---|---|
| I | Construct a program to preserve the existing trees and vegetation. | 2 | 1 | 2 | 1 | **6** |

(table cond.)

| | | | | | | |
|---|---|---|---|---|---|---|
| I | A program to increase the amount of yard waste and paper recycling is encouraged. | 2 | 1 | 1 | 2 | **6** |
| I | Plant native trees along some streets or interstates, and in parking lots using design guidelines. Plant more trees in those parks without enough trees. | 2 | 1 | 2 | 1 | **6** |
| I | Set up management regulations for historical buildings and site conservation, including the material and pesticide that can be used at the historical sites. | 1 | 2 | 1 | 2 | **6** |
| I | Construct more biking and pedestrian paths along streets, streams, and railroads in or near residential area, schools, and universities. | 3 | 1 | 2 | 1 | **7** |
| I | Increase the green space along new roads or streets by constructing planning regulations. | 2 | 2 | 2 | 1 | **7** |
| II | Form new development guides including the percentage of first floor construction area in the whole sites, the proportion of the street widths to green belt width along them, and the main color and the main style and color of the new buildings. | 1 | 3 | 2 | 2 | **8** |
| II | Preserve and restore streams | 2 | 2 | 2 | 2 | **8** |
| II | Add mixed-use building in community centers or re-developed areas to raise density when a new area is being developed. | 1 | 2 | 3 | 2 | **8** |

(table cond.)

| | | | | | | |
|---|---|---|---|---|---|---|
| II | Apply architectural tradition to the future community centers and local new building designs by setting up design guidelines. | 2 | 2 | 2 | 2 | **8** |
| II | Encourage the creation of rooftop gardens where possible. | 3 | 1 | 2 | 3 | **9** |
| II | Construct a new four-lane route from the South Baton Rouge to downtown. | 3 | 2 | 2 | 2 | **9** |
| II | Get higher densities by demolishing existing structures and redeveloping the cleared land with more intensive uses. | 3 | 2 | 2 | 2 | **9** |
| III | The BREC, BFI and department of recycling should work together to determine the specific location, fund support and possibility to create an ecological training park in East Baton Rouge that can be linked with the BFI recycling center and the North Landfill. | 3 | 2 | 2 | 3 | **10** |
| III | Construct new roads in north East Baton Rouge Parish to form a loop, which connects one side of the city with the other. | 3 | 2 | 2 | 3 | **10** |
| III | Create new peripheral developments on vacant land at higher densities than the average for regions that are already built to get higher density, and meanwhile, increase public transportation. | 3 | 3 | 2 | 2 | **10** |
| III | Develop an education program about urban and environment sustainable development to raise public aware. | 3 | 3 | 3 | 2 | **11** |

The first phase may take 1 to 2 years to be accomplished. These tasks in the first phase are easily to be accomplished (less time is required, low technology requirements and low cost) and relatively urgent to our environment. The second phase may take 3 to 5 years to be accomplished. The tasks in the second phase may be achieved with slightly higher costs and not be so easy to be completed, although some of them are urgent and important for our environment. The third phase can be accomplished in 6 to 10 years. The tasks in the third phase need much more time to be accomplished than tasks in phase one and phase two. However, they also will bring good result to our environment in a long run.

Sustainability is not only a plan; it requires a change in mind-set, a change in values toward less consumptive lifestyles. The landscape architect's responsibility is not only to design or create a healthier environment for human beings, but also it calls on people to rethink our environment, reduce pollution, recycle and reuse energy by redesigning and re-planning. Public participation ensures conservation of natural resources and develops environmental awareness of the population. Also, time is the key to sustainability. Local communities or governments should have a long time frame to create a sustainable environment for human settlement, because many current environment problems cannot be solved within one generation. There are a lot of negative perceptions about the immediate outcomes in the short-term solutions, because these tend to be filled with perceptions of high costs relative to the benefits.

## 8.2 Revisit of the Thesis Objectives

The purpose of this study was to examine and analyze the sustainable development indicator data and determine what improvements and recommendations are needed for East Baton Rouge Parish's development and form a framework for a sound development. In order to reach to that goal, the thesis has accomplished the following objectives:

1. Identify methods and indicators for studying sustainable developments.
2. Study patterns of sustainable developments in the East Baton Rouge Parish to identify trends.
3. Develop recommendations that would encourage sustainable development in the East Baton Rouge Parish.

## 8.3 Limitations and Future Research

There are some limitations in this study. There were not sufficient accessible digitized data, such as roads data, to get the accurate transportation development trends in East Baton Rouge Parish. Second, there were not sufficient considerations for the implementation of the some detail work in East Baton Rouge Parish. Third, because this

study meant to inspire through an example rather than be prescriptive, the results after the principles are applied could not be predictable and shown in the thesis. Future research include:

1. Obtaining best and most current sustainable development indicator data, such as digitizing most current road condition data and planning map to assess the transportation sustainable trends in East Baton Rouge Parish. The more data of sustainable indicators got, the more accurate and greater synthesis of East Baton Rouge Parish sustainable development will be obtained.
2. The future research should also include more detailed implementation plan for these principles in East Baton Rouge Parish. For example, experimentation and application of rooftop gardens should also be included in the future research and consideration of the specific location of the ecological training park.
3. Assess the result of the application of these principles and modify them timely.

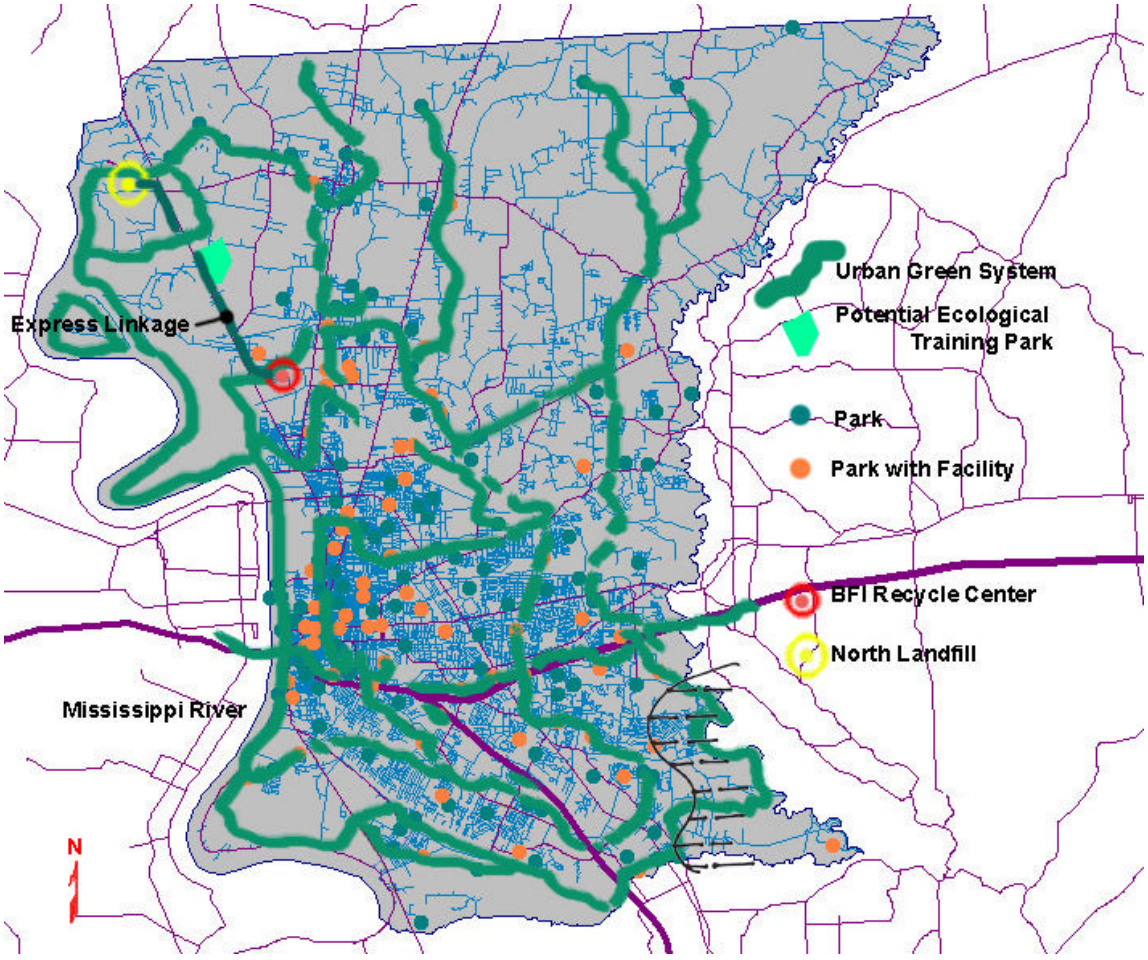



**Figure 32 Proposed Green Map**

**Figure 33 Parking Lot without Trees**

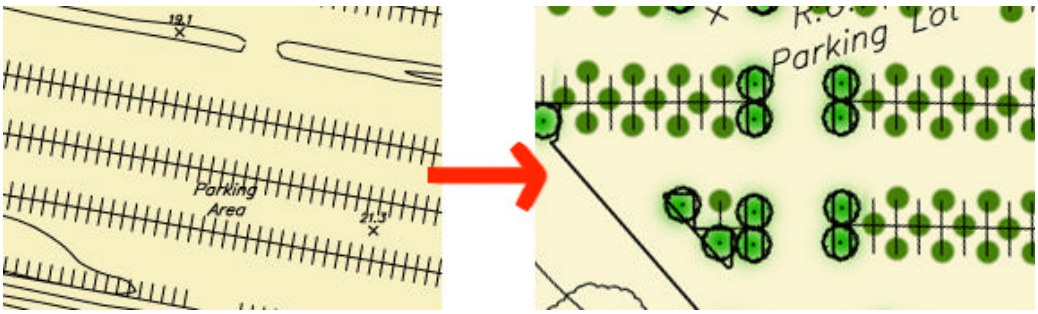



**Figure 34 Parking Lot Change**

**Figure 35 Crape Myrtles**

**Figure 36 Linden**

**Figure 37 Oak**

**Figure 38 Yaupon**

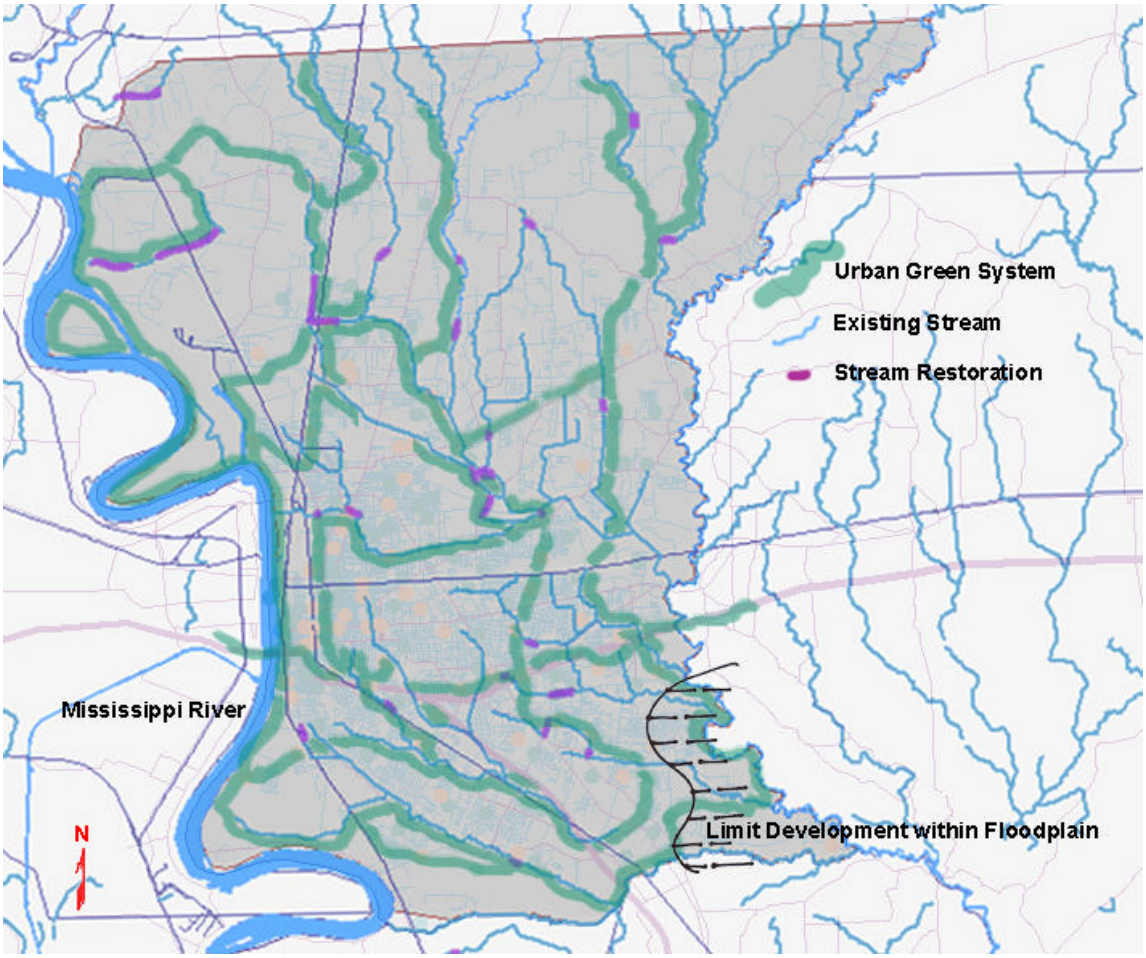



**Figure 39 Stream Restoration**

**Figure 40 Stream before Restoration**

**Figure 41 Proposed Image of Stream after Restored**

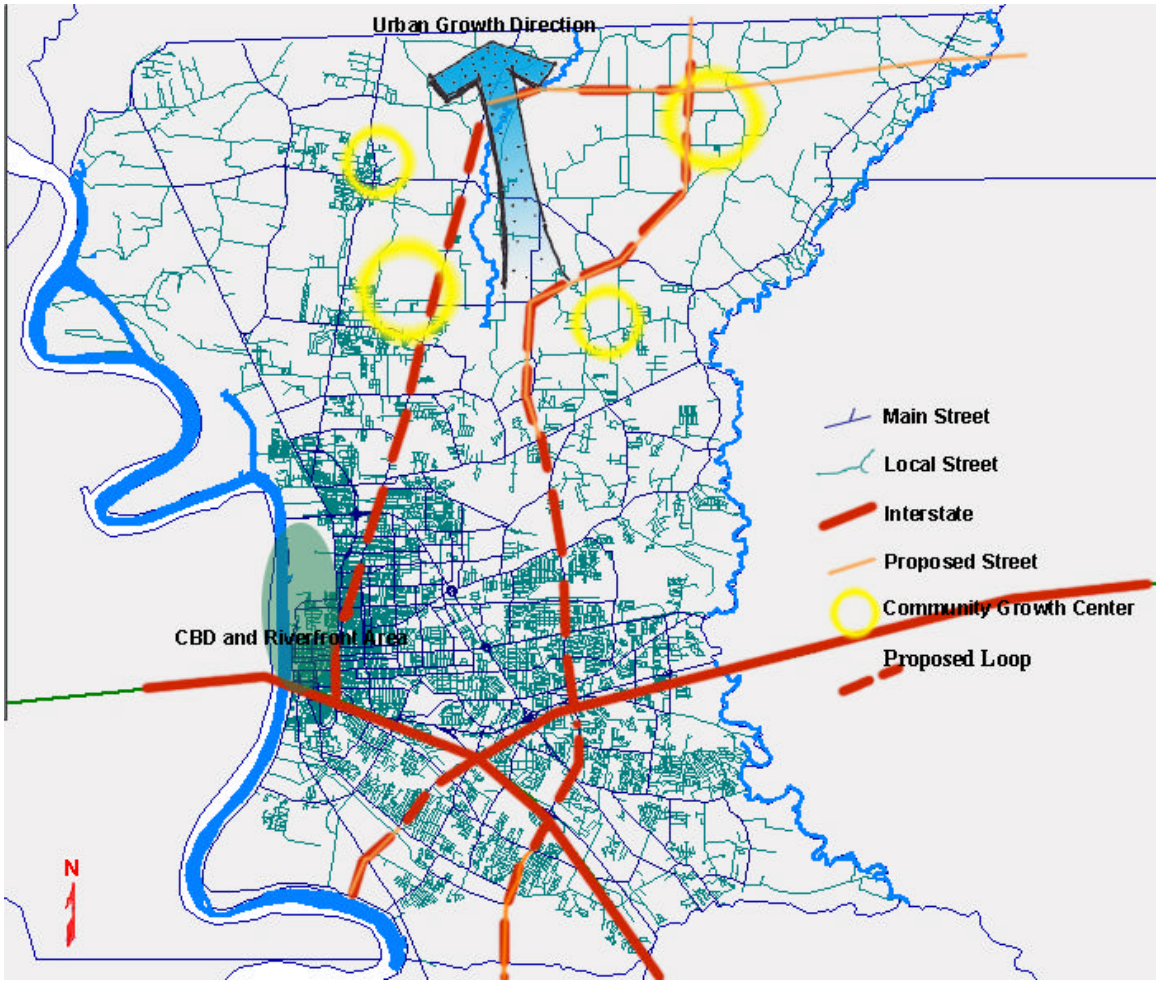



**Figure 42 Proposed Street Map**


**Figure 43 Perspective Sketch of Proposed Design for Development**

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## Appendix A Population and Components of Change of East Baton Rouge Parish

| Date | Population | % Change | Components of Change | | | | |
|---|---|---|---|---|---|---|---|
| | | | Total Population Change | Births | Deaths | International Immigration | Net Domestic Migration |
| 1970 | 285,167 | - | - | - | - | - | - |
| 1971 | 290,600 | 1.9 | 5,433 | - | - | - | - |
| 1972 | 301,800 | 3.9 | 11,200 | - | - | - | - |
| 1973 | 309,300 | 2.5 | 7,500 | - | - | - | - |
| 1974 | 317,300 | 2.6 | 8,000 | - | - | - | - |
| 1975 | 323,200 | 1.9 | 5,900 | - | - | - | - |
| 1976 | 333,400 | 3.2 | 10,200 | - | - | - | - |
| 1977 | 343,200 | 2.9 | 9,800 | - | - | - | - |
| 1978 | 350,100 | 2 | 6,900 | - | - | - | - |
| 1979 | 358,800 | 2.5 | 8,700 | - | - | - | - |
| 1980 | 366,191 | 2.1 | 7,391 | - | - | - | - |
| 1981 | 375,979 | 2.7 | 9,788 | 8,792 | 3,020 | - | - |
| 1982 | 382,572 | 1.8 | 6,593 | 7,133 | 2,449 | - | - |
| 1983 | 387,338 | 1.2 | 4,766 | 7,233 | 2,472 | - | - |
| 1984 | 387,790 | 0.1 | 452 | 7,155 | 2,365 | - | - |
| 1985 | 389,275 | 0.4 | 1,485 | 7,072 | 2,389 | - | - |
| 1986 | 387,186 | -0.5 | -2,089 | 6,949 | 2,515 | - | - |
| 1987 | 382,191 | -1.3 | -4,995 | 6,588 | 2,501 | - | - |
| 1988 | 381,140 | -0.3 | -1,051 | 6,407 | 2,598 | - | - |
| 1989 | 379,472 | -0.4 | -1,668 | 6,465 | 2,695 | - | - |
| 1990 | 380,105 | 0.2 | 633 | 4,846 | 2,047 | - | - |
| 1991 | 387,839 | 2 | 7,734 | 8,137 | 3,297 | 517 | 56 |
| 1992 | 395,911 | 2.1 | 8,072 | 6,653 | 2,784 | 486 | 1,795 |
| 1993 | 401,201 | 1.3 | 5,290 | 6,576 | 2,782 | 499 | -925 |
| 1994 | 404,146 | 0.7 | 2,945 | 6,371 | 2,998 | 390 | -2,753 |
| 1995 | 406,207 | 0.5 | 2,061 | 6,248 | 3,099 | 495 | -3,482 |
| 1996 | 407,473 | 0.3 | 1,266 | 6,040 | 3,051 | 523 | -4,217 |
| 1997 | 408,960 | 0.4 | 1,487 | 6,132 | 2,876 | 387 | -4,228 |
| 1998 | 410,256 | 0.3 | 1,296 | 6,176 | 3,029 | 328 | -4,012 |
| 1999 | 412,110 | 0.5 | 1,854 | 6,257 | 2,989 | 391 | -4,046 |
| 2000 | 412,852 | 0.2 | 742 | - | - | - | - |
| 2001 | 411,619 | -0.3 | -1,233 | 8,262 | 4,098 | 1,111 | -6,603 |
| 2002 | 412,008 | 0.1 | 389 | 6,824 | 3,444 | 886 | -3,832 |

Source: U.S. Bureau of Census

## Appendix B BREC Park Listing

| BREC PARKS LISTING | | | |
|---|---|---|---|
| **PARK AND NUMBER** | **ADDRESS** | **ACREAGE (in 2002)** | **ACREAGE (in 1989)** |
| Acadian Thruway (#171) | North Acadian Thruway | 0.6409 | |
| Airline Hwy. (#1) | 17200 Airline Highway | 133.36 | 133.36 |
| Alaska Street (#137) | 3014 Alaska Street | 3.5212 | |
| Alexander Street (#2) | 6000 Alexander Street | 8.83 | 8.83 |
| Alsen (#3) | 1001 Old Rafe Meyer Road | 19.852 | 20 |
| Anna T. Jordan (#4) | 1750 Stilt Street | 40.17 | 39.62 |
| Antioch Boulevard (#5) | 6229 Antioch Boulevard | 30.37 | 37.82 |
| Avenue M Park | 10059 Ave. M | | 2.53 |
| Avenue F (#169) | Avenue F, Zachary | 0.3 | |
| Baker (#7) | 4331 Jefferson Street, Baker | 12.926 | 8.66 |
| Baker Center (#8) | 1420 Alabama Street, Baker | 1 | 1 |
| Barringer Road (#114) | 7401 Barringer Road | 4.705 | 3.5 |
| Baywood (#9) | 20001 Pride-Baywood Road | 30.861 | 10 |
| Beaver Creek (#182) | Plains-Port Hudson Road | 199.996 | |
| Belfair (#10) | 4390 Fairfields Avenue | 0.93 | 0.93 |
| Ben Burge (#163) | 1702 Gardere Lane | 14.865 | |
| Blueberry Street (#12) | 1870 North Ardenwood Drive | 3.68 | 1.68 |
| Bluebonnet Swamp (#138) | 10503 North Oak Hills Parkway | 101.033 | |
| Boulevard de Province (#154) | Boulevard de Province | 2.5 | |
| Brookfield (#153) | 17650 Brookfield Drive | 6.48 | |
| Brooks (#13) | 1650 Fannie Street | 5.65 | 5.65 |
| Brown Heights (#14) | 11500 Ellen Drive | 6.7 | 6.7 |
| Buchanan (#15) | 2300 Buchanan Street | 0.23 | 1.25 |
| Burbank Soccer Complex (#143) | 12400 Burbank Drive | 247.839 | |
| Byrd Station (#11) | 2623 Michelli Street | 4 | 4 |
| Cadillac Street (#16) | 6117 Cadillac Street | 5.53 | 5.53 |
| Camelot (#17) | 3166 Lancelot Drive | 0.75 | 0.75 |
| Cedar Ridge (#41) | 13301 Cedar Ridge Drive | 19.59 | |
| Cedarcrest (#18) | 2490 Silverest Street | 5.1 | 5.1 |
| Chamberlain Street (#19) | 16900 Chamberlain Street | 4.706 | 4.71 |
| Church Street (#20) | 3210 Church Street, Zachary | 7.085 | 7.09 |
| City (#21) | 1442 City Park Avenue | 147.459 | 147.46 |
| Clark (#22) | 2455 Thomas Road | 125 | 125 |
| Clifford T. Seymour (#148) | Highway 19 | 18.314 | |
| Cohn Arboretum (#23) | 12206 Foster Road | 17.5 | 17.5 |
| Cohn Nature Preserve (#139) | 11332 Foster Road | 28.5 | 28.5 |
| College Town (#24) | 201 Amherst Street | 1.2 | |
| Colonial Courts (#25) | 5655 McClelland Street | 0.33 | 0.33 |
| Comite River (#26) | 8900 Hooper Road | 100.4 | 100.4 |
| Congress (#152) | Congress Boulevard at Jamestow | 2.92 | |
| Corporate Parkway (#27) | 333 East Grant Street | 0.0534 | 1 |
| Cortana Place (#28) | 9300 Cortana Place | 12 | 12 |
| Cunard Avenue (#117) | 2290 Cunard Avenue | 3.8086 | 3.81 |
| Dayton Street (#157) | Dayton Street at Interstate 110 | 1 | |
| Dover Street (#29) | 7300 Dover Street | 4 | 4 |
| Doyle's Bayou (#30) | 7801 Pride-Port Hudson Road | 97.04 | 97.04 |
| Droz Road (#31) | 7700 Droz Road | 2.75 | 2.75 |
| Drusilla Lane (#32) | 2546 Drusilla Lane | 5.03 | 5.03 |
| Duchess Drive (#33) | 1701 Duchess Drive | 20.784 | 6 |
| East Brookstown (#36) | 4300 East Brookstown Drive | 0.545 | 1 |
| East Polk Street (#35) | 1700 East Polk Street | 3 | 3 |
| Eastgate Drive (#116) | Eastgate Drive | 1.5 | 1.5 |
| Edwards Avenue (#34) | 2900 Edwards Avenue | 0.3 | 0.3 |
| Elvin Drive (#141) | 9350 Antigua Street | 18.504 | |
| Erich Sternberg (#159) | 8715 Round Oak Drive | 26.09 | |
| Evangeline Street (#37) | 4201 Evangeline Street | 7.844 | 7.94 |
| Expressway (#38) | 935 South 11th Street | 40 | 40 |
| Fairfax (#181) | 5300 South Afton Parkway | 1 | |

| | | | |
|---|---|---|---|
| Farr/Horse Activity Center (#95) | 6400 River Road | 296.8736 | 125 |
| Fiesta (#39) | 1000 Fiesta Court | 1.266 | 1.27 |
| Flannery Road (#40) | 801 Flannery Road | 16.51 | 16.51 |
| Flonacher Road (#160) | Flonacher Road | 175 | |
| Florida St. Park | 855 Florida St. | | 2.42 |
| Forest (#42) | 13900 South Harrells Ferry Road | 114.309 | 115 |
| Fortune Addition (#43) | 5900 Peerless Street | 10.18 | 10.18 |
| Forty-Eighth Street (#44) | 628 North 48th Street | 2.597 | 2.46 |
| Gayosa Street (#122) | 2129 Gayosa Street | 0.3268 | 0.3368 |
| Gentilly Court (#45) | 14443 Gentilly Court | 6 | 6 |
| Goldsby Field (#46) | 1502 Foss Street | 9.46 | 9.46 |
| Goodwood (#47) | 13000 Goodwood Boulevard | 5.56 | 5.56 |
| Greenwell Springs (#48) | 7550 Shady Park Drive | 13 | 13 |
| Greenwood (#49) | 13350 Highway 19, Baker | 390 | 535 |
| Gus Young (#50) | 4200 Gus Young Avenue | 3.94 | 3.94 |
| Harding Street (#51) | 4037 Harding Street | 10.33 | 10.33 |
| Highland Creek (#165) | Highland Road at Staring Lane | 1 | |
| Highland Rd Park / Observatory(#52) | 14024 Highland Road | 134.309 | 144.4 |
| Hooper Road (#53) | 6261 Guynell Drive | 232.85 | 232.52 |
| Hooper Road Senior Center (#178) | 9142 Corlett Drive | 1 | |
| Howell (#55) | 5509 Winbourne Avenue | 114.53 | 114.53 |
| Hunters Point Drive (#167) | Hunters Point Drive, Zachary | 0.2 | |
| Independence (#56) | 7500 Independence Boulevard | 96.02 | 96.02 |
| Industriplex (#173) | Industriplex Extension | 8.8 | |
| Jackson (#57) | 12250 Sullivan Road | 9.55 | 9.55 |
| Jacob Kornmeyer (#176) | Beaver Bayou at Hooper Road | 40 | |
| James Watson (#58) | 10800 Foster Road | 14.76 | 14.76 |
| Jefferson (#59) | 3503 Jefferson Street, Baker | 10 | 10 |
| Jefferson Highway (#150) | 8133 Jefferson Highway | 5 | |
| Jefferson Terrace (#60) | 10202 Cal Road | 11.13 | 11.13 |
| Jones Creek (#149) | Old Hammond Hwy at Jones Cree | 11.69 | |
| Kathy Drive (#158) | 1801 Kathy Drive | 34.0874 | |
| Kendalwood Road (#61) | 26501 Kendalwood Road | 85.116 | 84.63 |
| Kernan Avenue (#170) | 333 Kernan Avenue | 5.1674 | |
| Kerr Warren (#62) | 4100 Geronimo Street | 5.1634 | 5.65 |
| Kolby (#164) | 15500 Central Woods Drive | 1.4 | |
| Lafayette Street (#63) | 151 Lafayette Street | 0.5 | 0.5 |
| Lafitte Hills (#135) | 628 Jean Lafitte Avenue | 2.2635 | |
| Lafitte Street (#64) | 400 Lafitte Street | 13.45 | 13.45 |
| Lanier Drive (#65) | 3901 Lanier Drive | 3.238 | 3.24 |
| Le Brent (#168) | 6401 Le Brent Avenue | 0.1 | |
| Leeward Drive (#75) | 4800 Menlo Drive | 0.5 | 0.5 |
| Ligon Road (#66) | 21600 Ligon Road | 2.68 | 2.68 |
| Little Farms (#67) | 3754 Little Farms Drive, Zachary | 2.3 | 2.3 |
| Longfellow (#68) | 5201 Longfellow Drive | 10.91 | 8.5 |
| Longridge (#156) | Longridge Avenue at Newcastle | 11.31 | |
| Louisiana/Claycut (#132) | 6998 Antioch Road | 7.3 | |
| Lovett Road (#69) | 13600 Lovett Road | 62.47 | 62.47 |
| Madison Avenue (#123) | 1820 Madison Avenue | 0.972 | 0.97 |
| Magnolia Cemetery (#70) | 422 North 19th Street | 10 | 10 |
| Magnolia Mound (#71) | 2161 Nicholson Drive | 14.7996 | 14.83 |
| Manchac (#118) | 19010 Old Jefferson Highway | 53.67 | 54.07 |
| Maplewood (#72) | 8200 Maplewood Avenue | 11.2 | 11.2 |
| Mary Ruth Avenue (#162) | Mary Ruth Avenue at Staring Lane | 1 | |
| Mayfair (#73) | 650 Flora Lane | 24.29 | 24.29 |
| Meadow (#74) | 8300 Meadow Park Drive | 8.14 | 8.14 |
| Memorial Stadium (#133) | 1702 Foss Street | 44.47 | 31.67 |
| Mills Avenue (#6) | 424 Woodpecker Street | 4.03 | |
| Monte Sano (#76) | 2727 Greenwell Street | 54.145 | 54.14 |
| Myrtle Street (#78) | 5408 Myrtle Street, Baker | 5.469 | 4.44 |

| | | | |
|---|---|---|---|
| Nairn Drive (#79) | 2800 Valley Street | 9.294 | 7.51 |
| North Boulevard (#115) | 1640 North Boulevard | 0.155 | |
| North Street (#82) | 4100 North Street | 9.9815 | 9.71 |
| North 14th Street (#77) | 1400 North 14th Street | 0.564 | |
| North 18th Street (#124) | 1801 Gayosa Street | 0.998 | 0.998 |
| North Baton Rouge (#80) | 2013 Central Road | 1 | 1 |
| North Sherwood Forest (#81) | 3140 North Sherwood Forest Driv | 138.36 | 125.18 |
| Oak Villa Ball Complex (#174) | Oak Villa Road, between Choctaw | 69.311 | |
| Old Hammond Highway (#83) | 8900 Old Hammond Highway | 12.9 | 12.9 |
| Palomino Drive (#129) | 14100 Palomino Drive | 179.89 | |
| Parklawn (#84) | 12248 Parklawn Avenue | 5.531 | 5.53 |
| Parkview (#85) | 9000 North Parkview Drive | 5 | 5 |
| Pawnee Street (#151) | 2112 Scenic Highway | 0.766 | |
| Perkins Road (#86) | 7122 Perkins Road | 52.2 | 52.2 |
| Pinehurst (#140) | Pinehurst Drive | 5 | |
| Plank Road (#125) | 19550 Plank Road, Zachary | 82.1 | 75.8 |
| Pride (#87) | 15971 Pride-Port Hudson Rd | 10.15 | 10.2 |
| Progress (#88) | 802 North 30th Street | 3.5 | 3.5 |
| Quarter Horse Drive (#155) | Quarter Horse Drive, Zachary | 21.934 | |
| Railey Roshto (#89) | 11601 Norway Pine Drive | 13.4446 | 13.44 |
| Reames Road (#90) | 23223 Reames Road | 5 | 5 |
| Red Oaks (#91) | 2100 Greenoaks Drive | 2.8 | 2.8 |
| Rio Drive (#92) | 6900 West Rio Drive | 5.923 | 5.923 |
| Rita Street (#93) | 2315 Rita Street, Zachary | 12.91 | 12.91 |
| River Bend (#94) | 5800 Riverbend Lakes Drive | 15 | 15 |
| Rollins Road (#96) | 5794 Rollins Road, Zachary | 10.46 | 10.46 |
| Roosevelt Street (#97) | 1011 West Roosevelt Street | 3.3 | 3.3 |
| Rue Le Boeuf (#175) | Rue Le Boeuf at Rue Desiree | 5.98 | |
| Saia (#98) | 855 North Donmoor Drive | 3.74 | 3.74 |
| St. Jean Center (#177) | 16641 South Harrells Ferry Road | 0.3 | |
| Samuel D'Agostino (#99) | 10300 El Scott Avenue | 10.33 | 10.33 |
| Santa Maria Golf Course (#130) | 18460 Santa Maria Avenue | 170.901 | |
| Santa Maria Park (#179) | 18460 Santa Maria Avenue | 6.5 | |
| Scotlandville Parkway (#100) | Interstate 110 at Harding Bouleva | 109.8 | 109.8 |
| Seventeenth Street (#134) | 1385 North 17th Street | 2 | 2 |
| Seventh Street (#161) | 7th Street | 0.3 | |
| Sharlo Terrace (#101) | 4915 Alvin Dark Drive | 0.03 | 0.03 |
| Sharp Road (#102) | 501 Sharp Road | 12 | 12.15 |
| South 15th Street (#103) | 546 South 15th Street | 0.5 | 0.5 |
| South Harrells Ferry (#166) | S. Harrells Ferry Rd at Knox Bran | 29.289 | |
| South Magnolia (#54) | 2409 South Magnolia Drive, Bake | 6.75 | 6.75 |
| Spain Street (#104) | 2101 Spain Street | 0.75 | 0.75 |
| Spanish Town (#119) | 1300 Spanish Town Road | 2.26 | 2.05 |
| Sports Academy (#147) | 1002 Laurel Street | 1 | |
| Stanford Avenue (#126) | 901 Stanford Avenue | 0.5 | 0.5 |
| Starwood Court (#145) | Starwood Court | 8.54 | |
| Stevendale (#180) | Hamilton Avenue | 25 | |
| Sugarland (#120) | 4700 Sugarland Drive | 4.7464 | 4.75 |
| T.D. Bickham (#144) | 6850 Pettit Road, Baker | 203.321 | |
| Tams Drive (#105) | 11600 Tams Drive | 6 | 6 |
| Terrace Street (#106) | 700 Terrace Street | 1 | 1 |
| Thirty-Ninth Street (#107) | 3451 39th Street, Zachary | 12 | 11.79 |
| Thomas A. Maher (#108) | 8200 Oakview Drive | 5.43 | 5.43 |
| Tristian Avenue (#109) | 5209 Tristian Avenue | 10 | 10 |
| Turner Plaza (#110) | 4456 North Street | 0.3 | |
| Tuscarora Street (#111) | 4200 Tuscarora Street | 0.3 | 0.3 |
| Warren O. Watson (#172) | Baker Estates | 14.01 | |
| Webb (#112) | 1351 Country Club Drive | 91.19 | 91.19 |
| Wenonah Street (#113) | 3300 Wenonah Street | 2.68 | 0.11 |
| West Brookstown (#131) | 4500 East Brookstown Drive | 4.81 | 4.81 |
| Woodlawn Acres (#127) | 16600 Woodlawn Acres Avenue | 28.7 | |
| Woodstock (#146) | Highway 30 | 52.98 | |
| Wray (#128) | Ridgewood Drive | 47.38 | 32.3 |
| Yatasi Drive (#121) | Yatasi Drive | 1.58 | 1.58 |
| Zoo (#136) | 3601 Thomas Road | 125 | |
| | | | |
| | **TOTAL TO DATE (1.1.03)** | **5521.7743** | **3496.5378** |
| | | | Source: BREC |

## Appendix C 100 Largest U.S. Urbanized Areas Ranking

| by square miles of sprawl (1970-1990) | |
|---|---|
| **Urbanized Area** | **Square Miles of Sprawl** |
| **(ranked by amount of sprawl)** | **(growth in land area)** |
| 1. Atlanta, GA | 701.7 |
| 2. Houston, TX | 638.7 |
| 3. New York City-N.E. New Jersey | 541.3 |
| 4. Washington, DC-MD-VA | 450.1 |
| 5. Philadelphia, PA | 412.4 |
| 6. Los Angeles, CA | 393.8 |
| 7. Dallas-Fort Worth, TX | 372.4 |
| 8. Tampa-St.Petersburg-Clearwater, FL | 358.7 |
| 9. Phoenix, AZ | 353.6 |
| 10. Minneapolis-Saint Paul, MN | 341.6 |
| 11. San Diego, CA | 309.5 |
| 12. Oklahoma City, OK | 307.7 |
| 13. Chicago, IL - N.W. Indiana | 307.3 |
| 14. Baltimore, MD | 282.9 |
| 15. Kansas City, MO-KS | 268.6 |
| 16. Saint Louis, MO-IL | 267.6 |
| 17. Orlando, FL | 262.9 |
| 18. Detroit, MI | 247.4 |
| 19. Boston, MA | 226.8 |
| 20. Norfolk-Virginia Beach-Newport News, VA | 221.4 |
| 21. San Antonio, TX | 215.1 |
| 22. San Francisco-Oakland, CA | 193.1 |
| 23. Austin, TX | 187.4 |
| 24. Pittsburgh, PA | 181.7 |
| 25. Cincinnati, OH-KY | 176.6 |
| 26. Seattle, WA | 174.8 |
| 27. Birmingham, AL | 174.2 |
| 28. West Palm Beach-Boca Raton, FL | 170.2 |
| 29. Denver, CO | 166 |
| 30. Richmond, VA | 158.1 |
| 31. Jacksonville, FL | 156.4 |
| 32. Charleston, SC | 151.7 |
| 33. Riverside-San Bernardino, CA | 150.4 |
| 34. Memphis, TN | 145.5 |
| 35. Jackson, MS | 144.7 |
| 36. Tucson, AZ | 141.8 |
| 37. Chattanooga, TN-GA | 140.1 |
| 38. Nashville, TN | 140 |
| 39. Charlotte, NC | 136 |
| 40. Knoxville, TN | 132.7 |
| 41. Tulsa, OK | 124.3 |
| 42. Portland-Vancouver, OR-WA | 121.2 |
| 43. Fort Lauderdale-Hollywood-Pompano, FL | 114.9 |
| 44. Albuquerque, NM | 111.4 |
| 45. Hartford-Middletown, CT | 110.8 |
| 46. Columbus, OH | 110.4 |
| 47. Las Vegas, NV | 109.9 |
| 48. Raleigh, NC | 105.4 |
| 49. Tacoma, WA | 104.1 |
| 50. Little Rock-North Little Rock, AR | 103.9 |

| | |
|---|---|
| 51. El Paso, TX-NM | 101 |
| **52. Baton Rouge, LA** | **100.9** |
| 53. Columbia, SC | 95.6 |
| 54. Miami-Hialeah, FL | 94 |
| 55. Ogden, UT | 91.9 |
| 56. McAllen-Edinburg-Mission, TX | 91.6 |
| 57. Sacramento, CA | 89.7 |
| 58. Pensacola, FL | 88.9 |
| 59. Indianapolis, IN | 87.7 |
| 60. Colorado Springs, CO | 86.6 |
| 61. New Orleans, LA | 86.1 |
| 62. New Haven-Meriden, CT | 80.4 |
| 63. Wilmington, DE-NJ-MS-PA | 78 |
| 64. Greenville, SC | 77.2 |
| 65. Grand Rapids, MI | 77 |
| 66. Rochester, NY | 74.3 |
| 67. Louisville, KY-IN | 72.2 |
| 68. Buffalo-Niagara Falls, NY | 71.8 |
| 69. Harrisburg, PA | 71.4 |
| 70. Salt Lake City, UT | 69.8 |
| 71. Flint, MI | 67.4 |
| 72. Springfield, MA-CT | 64.1 |
| 73. San Jose, CA | 61.2 |
| 74. Mobile, AL | 60.5 |
| 75. Albany-Schenectady-Troy, NY | 58.2 |
| 76. Milwaukee, WI | 55.5 |
| 77. Providence-Pawtucket, RI-MA | 54.6 |
| 78. Worcester, MA-CT | 54.3 |
| 79. Akron, OH | 53.6 |
| 80. Fresno, CA | 53.6 |
| 81. Shreveport, LA | 52.2 |
| 82. Des Moines, IA | 50.6 |
| 83. Dayton, OH | 49.2 |
| 84. Oxnard-Ventura, CA | 45.6 |
| 85. Allentown-Bethlehem-Easton, PA | 43.6 |
| 86. Omaha, NE-IA | 41.8 |
| 87. Bakersfield, CA | 41.1 |
| 88. Wichita, KS | 39.4 |
| 89. Youngstown-Warren, OH | 38.7 |
| 90. Syracuse, NY | 37.4 |
| 91. Spokane, WA | 35.8 |
| 92. Trenton, NJ-PA | 30.4 |
| 93. Toledo, OH-MI | 27.9 |
| 94. Stockton, CA | 27 |
| 95. Lansing-East Lansing, MI | 25.3 |
| 96. Corpus Christi, TX | 25.2 |
| 97. Honolulu, HI | 23.7 |
| 98. Scranton-Wilkes-Barre, PA | 20.4 |
| 99. Bridgeport-Milford, CT | 11.9 |
| 100. Cleveland, OH | -10.2 |
| Land Area Data derived from U.S. Census Bureau's 1970 and 1990 | |
| reports on Urbanized Land Area | |
| Source: www.sprawlcity.org | |

## Appendix D Historic Places in East Baton Rouge Parish

| EAST BATON ROUGE PARISH Historic Places | |
|---|---|
| Magnolia Mound Plantation House, Baton Rouge | Sept. 7, 1972 |
| Potts House, Baton Rouge | Sept. 14, 1972 |
| Stewart-Dougherty House, Baton Rouge | March 28, 1973 |
| Powder Magazine (Old Arsenal Museum), Baton Rouge | June 4, 1973 |
| Pentagon Barracks, Baton Rouge | July 26, 1973 |
| Baton Rouge Water Works Co. Standpipe, Baton Rouge | Dec. 4, 1973 |
| Old Louisiana State Capitol, Baton Rouge | May 30, 1974 |
| Warden's House - Old Louisiana State Penitentiary, | Dec. 2, 1974 |
| Old Louisiana Governor's Mansion, Baton Rouge | July 24, 1975 |
| Magnolia Mound Dependency, Baton Rouge | Aug. 9, 1977 |
| Tessier Buildings, Baton Rouge | March 16, 1978 |
| St. James Episcopal Church, Baton Rouge | May 5, 1978 |
| Spanish Town Historic District, Baton Rouge | Aug. 31, 1978 |
| Santa Maria Plantation House, Baton Rouge | Dec. 29, 1978 |
| Reiley-Reeves House, Baton Rouge | May 24, 1979 |
| Florence Coffee House, Baton Rouge | Jan. 20, 1980 |
| Old Post Office, Baton Rouge | June 9, 1980 |
| Hart House, Baton Rouge | Aug. 1, 1980 |
| Beauregard Town Historic District, Baton Rouge | Oct. 14, 1980 |
| Manship House, Baton Rouge | Nov. 21, 1980 |
| Mount Hope Plantation House, Baton Rouge | Dec. 3, 1980 |
| Southern University Archives Building, Scotlandville | June 11, 1981 |
| McKinley High School, Baton Rouge | Nov. 16, 1981 |
| French House, LSU Campus, Baton Rouge | Jan. 13, 1982 |
| Roseland Terrace Historic District, Baton Rouge | March 11, 1982 |
| Heidelberg Hotel, Baton Rouge | May 20, 1982 |
| Leland College, Baker vicinity | Nov. 10, 1982 |
| Louisiana State Capitol & Grounds, Baton Rouge | Dec. 17, 1982 |
| Beauregard Town Historic District Boundary Increase | April 14, 1983 |
| Barthel Pigeonnier (Magnolia Mound), Baton Rouge | July 13, 1983 |
| Longwood, Baton Rouge | July 17, 1983 |
| Central Fire Station, Baton Rouge | April 5, 1984 |
| Planter's Cabin, Baton Rouge | Aug. 23, 1984 |
| Baton Rouge Jr. High School, Baton Rouge | Sept. 27, 1984 |
| Lee Site (16-EBR-51), Baton Rouge | Dec. 27, 1984 |
| Magnolia Cemetery, Baton Rouge | Jan. 31, 1985 |
| Roumain Building, Baton Rouge | April 11, 1985 |
| Main Street Historic District, Baton Rouge | Nov. 7, 1985 |
| USS Kidd, Baton Rouge (Mississippi River) | Jan. 14, 1986 |
| Joseph Petitpierre (Kleinpeter) House, Baton Rouge | Jan. 23, 1986 |
| Capital City Press Building, Baton Rouge | Oct. 16, 1986 |
| Baton Rouge High School, Baton Rouge | Nov. 6, 1986 |
| Audubon Plantation House, Baton Rouge | May 14, 1987 |
| Louisiana State University, Baton Rouge | Sept. 15, 1988 |
| St. Joseph Cathedral, Baton Rouge | March 22, 1990 |
| Les Chenes Verts (Live Oaks), Baton Rouge | Jan. 21,1993 |
| Ory House, Baton Rouge | Jan. 21, 1993 |
| Belisle Building, Baton Rouge | Oct. 19, 1993 |
| Pecue House, Baton Rouge | April 14, 1994 |
| Yazoo and Mississippi Valley Railroad Company | May 19, 1994 |
| Prince Hall Masonic Temple, Baton Rouge | June 2, 1994 |
| Scott Street School, Baton Rouge | July 7, 1994 |
| Nicholson School, Baton Rouge | Jan. 24, 1995 |
| Sanders, Jared Young, Jr. House, Baton Rouge | February 14, 1997 |
| Baton Rouge National Cemetery | July 9, 1997 |
| Gracelane Plantation House, Baton Rouge | August 29, 1997 |
| Drehr Place Historic District, Baton Rouge | November 13, 1997 |
| Kleinert Terrace Historic District, Baton Rouge | March 5, 1998 |
| Adams House, Baton Rouge | May 8, 1998 |
| Reymond House, Baton Rouge | June 3, 1998 |
| LSU Campus Mounds | March 1, 1999 |
| Port Hudson National Cemetery | May 20,99 |
| Southern University Historic District | May 20,99 |

Source: National Register of Historic Places

**Vita**

Xia Li was born in October, 1976. She was raised in Shanghai, China. In 2000, she earned a Bachelor of Science Degree in Urban Planning from Tongji University. She moved to United States of America in 2000. She began her graduate study in Landscape Architecture in 2001. She is currently a candidate for Master of Landscape Architecture at Louisiana State University.