# SECTION 9 ENVIRONMENTAL

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# **ENVIRONMENTAL**

# **INTRODUCTION**

The City of Gretna is located along the Mississippi River, directly south of New Orleans. The City was settled and developed because of its location along the River, providing it with unique alluvial areas that should be embraced. As the City has no natural waterways, limited tree cover, and is mostly built out, this Environmental Element will review current conditions and make recommendations on how to enhance the natural environement of Gretna, making it a more attractive place for current and future residents.



Figure 9.1: Gretna Soil Survey

### **GEOLOGY**

Gretna is located between three bodies of water: the Mississippi River to the north, the Whitney Canal to the east, and the Hero Canal to the west. The Mississippi River deposited layers of sediment over thousands of years to build the land that is now developed in Gretna. As a result, the soils are comprised of mostly silty clay deposits.

Figure 9.1 illustrates the soils of Gretna, showing that most of the City is comprised of Schriever silty clay loam. Gretna also has Harahan Clay and Cancienne silt loam. which are similar to the Schriever silty clay loam, in that they have shallow slopes and low infiltration rates. These clay soils, or vertisols, are very deep, have a high nutrient level, and are made up of fine materials which are very slow to drain. The vertisols tend to shrink and swell with the presence or absence of moisture from stormwater infiltrating into the ground. Because of the amount of impervious surface that coincides with development of a city, stormwater has less opportunity to infiltrate into the clay. In Gretna, the stormwater catch basins guickly remove water from the streets and channel it into pipes, which eventually outfall into concrete lined and/or earthen canals. Typical development doesn't allow for water to enter the ground naturally, the clay soils tend to reside in a more shrunken state. Restricting stormwater from entering into our native soils causes subsidence that is damaging building foundations, roads, pipes, and other property improvements.



# **ECOLOGY**

Gretna is located in the 73k and 73o ecoregions, which are part of the larger Mississippi Alluvial Plain. Ecoregion 73k, Southern Holocene Meander Belts, tends to be flatter with clay-like soils, lower stream gradients, and a major bird migration corridor. Ecoregion 73o, Deltaic Coastal Marshes & Barrier Islands, tends to have silt and clay soils that have a high water content, meaning they will shrink dramatically when drained (*Ecoregions of the Mississippi Alluvial Plain*).

Because of the vast number of species of birds that use a flyway through Gretna, the tree canopy plays an important role in providing a diverse habitat for these migrating birds. Gretna is one of a few cities in Louisiana that participates in the Arbor Day Foundation Tree City Program, which supports the maintenance and increase of a healthy tree canopy. The most common species of trees in the City are:

#### • Oak trees:

- » Quercus virginiana Southern Live Oak
- » Quercus nigra Water Oak
- Cypress trees:
  - » Taxodium distichum Bald
  - » Taxodium ascendens Pond
- Pine trees:
  - » Pinus glabra Spruce
  - » Pinus palustris Longleaf
- Lagerstroemia indica Crepe Myrtle
- Platanus occidentalis Sycamore
- Magnolia virginiana Southern Magnolia
- Acer rubrum Red Maple



Figure 9.2: Louisiana Ecoregions



Figure 9.3: Ecoregions of the Alluvial Flood Plain

#### **1. TREE CANOPY**

The tree canopy of Gretna makes up about 12% of the City's roughly 2,570 acres of land. The American Forests reports that 27% coverage is the national average in major US cities, but an ideal coverage is 40% (*DeepRoot*).

*Figure 9.8* illustrates the tree coverage in Gretna and it becomes clear which areas of the City lack sufficient tree cover. Old Gretna–Mechanickham lacks trees close to the River and in more residential areas near the Westbank Expressway. These residential areas typically have a wide, grassy area between the road and the sidewalk, which are ideal spaces for street trees. Jonestown is also lacking street trees along Newton and Lafayette Streets. In the New Garden Park commercial corridor along Stumpf Boulevard, there are a very limited number of trees in the vast parking lots of large, big-box commercial stores. McDonoghville has large, established trees in the commercial corridor neutral grounds, but are lacking trees in residential areas.

Cities around the country like Washington DC, Philadelphia, New York City, and Denver, to name a few, are creating urban tree planting programs to provide residents trees for their property for free or reduced cost. The goals of these cities is to increase the urban tree canopy that raises property values and enhances neighborhoods, all while reducing the urban heat island effect and utility bills for residents. Casey Trees is program in Washington DC that will plant trees at homes and schools. This program provides trees to residents at reduced costs as well as a rebate to owners of private property, both residential and commercial, that have purchased and planted trees on their property. A major component of Casey Trees is about education and advocacy. The program educates property owners about how to properly care for their trees while also making them aware about the larger effects of trees have on the City's environment.

A local example is Baton Rouge Green (BRG), a nonprofit organization in Baton Rouge, LA that has a "Neighborwoods" program which "selects an environmentally underserved neighborhood each year throughout Baton Rouge for tree plantings," (batonrougegreen.com). This program partners with neighborhood organizations to plant trees with volunteers, while also educating the residents to maintain and care for their newly planted trees. BRG works with the residents to select native tree species that will work best in their yard and help the homeowner decide where to plant it.



Figure 9.4: Live Oak Trees along Franklin Street



Figure 9.5: Street Trees along Huey P. Long Avenue



Figure 9.6: Large Right-of-Way in Bellevue Provides Opportunity for Tree Planting to Increase Canopy Coverage in the City



Figure 9.7: Newly Planted Street Trees in New Orleans



Figure 9.8: Gretna Tree Coverage

A tree planting model can be applied in the City of Gretna by mimicking the models of other cities and by partnering with nonpropfits that exist locally, like NOLA Tree Project, which aims to replant trees lost during past hurricanes. Additional effort should go towards retrofitting commercial developments that have a large expanse of paving where there is little to no vegetation. Not only do trees increase property value by up to 10% (*U.S. Forestry Service*), but they also reduce urban heat island effects, sequester air pollutants, and provide water uptake and evapotranspiration benefits.

An effort to increase the tree canopy can also be a part of a larger initiative to make the City of Gretna more environmentally sensitive. Tree plantings can coincide with the installation of projects that manage stormwater. Installing green infrastructure facilities can reduce localized flooding while providing increased vegetation. Stormwater management is discussed later in this Element in Section 4.B.



Figure 9.9A: Existing Conditions along a Neighborhood Street in New Orleans



Figure 9.9B: Proposed Enhancements with the Addition of Stormwater Management Facilities, Street Trees, and Crosswalks

# **DRINKING WATER**

The drinking water for the City of Gretna comes from the Mississippi River, as it does for the Greater New Orleans Metro Area. The water is treated by Gretna Waterworks, a facility that can produce enough drinking water for over double the population of Gretna. Waterworks serves the entire City with the exception of the Timberlane neighborhood, which is still serviced by Jefferson Parish. Waterworks produces an annual report publishing average levels of chemicals in the water and comparing them with National requirements. There have been no reported issues with Gretna's drinking water in the last five years.

Waterworks does lead and copper testing at least every three years in the City's high target areas, which include homes and businesses that were built before the 1980s. In the late 1980s, plumbing codes were updated to eliminate the use of lead joints in drinking water pipes. This testing happens in roughly two-thirds of the City, since most of Gretna's housing stock was built in the 1960s. There have been no reports of the leaching or corrosion of lead in the drinking water in recent years.

In regard to the City's drinking water supply, saltwater intrusion into the Mississippi River poses concern for the future quality of fresh water resources. In 2012, due to low water levels in the River, Louisiana declared a state of emergency for Plaquemines Parish as saltwater began threatening the supply of the Parish's drinking water, nearly 90 miles upriver from the Gulf of Mexico. If worsened, saltwater intrusion could cause problems at the Greater New Orleans treatment facilities, none of which are equipped to desalinate water. In response, the State built a sill barrier at the bottom of the River to prevent the flow of saltwater from coming further upriver.

# **SURFACE WATERS**

#### 1. CANALS

Gretna relies solely on gravity fed drainage lines that outflow into canals. Stormwater drains into either the Hero, Verret, or Whitney Canals. These outflow into the Bayou Barataria Outfall Canal where it is then pumped into the Intercostal Waterway.

The Hero Canal, which is on the western side of the City, is channelized with concrete edges north of the Westbank Expressway and then becomes an open, grass-edged canal on the south side of the Expressway. The Whitney Canal, on the east side of the City, is an underground, channelized canal until it crosses Stumpf Boulevard where it becomes partially open, but still has concrete edges. The Verret Canal, which transitions from the Whitney Canal south of Belle Chasse Highway, has both grass and concrete edges, but is open. Concrete edged canals can appear to be an easier solution for maintenance, but as time progresses, these canals tend to have weed growth between joints, causing the concrete to develop cracks. The concrete edges also do not provide any improvement to water quality before it discharges. To make these canals more of an amenity for the surrounding neighborhoods, these edges can be re-naturalized and planted with native species on the slopes to prevent erosion, filter stormwater pollutants, and absorb water. These waterways can also become alternative transportation networks for bicycles and pedestrians, as discussed in Element 8: Parks and Recreation. Figure 9.11A shows the existing conditions of the Hero Canal in the Bellevue Neighborhood. The land along the Canal is underutilized, therefore it often becomes a site that frequently attracts dumping and litter. By activating the Canal's edge and using it as an amenity rather than merely a drainage facility, this forgotten space can be used as a recreational space that also becomes part of the non-vehicular transportation network, as shown in Figure 9.11B.

The City of Gretna should therefore abandon the practice of installing concrete lined drainage canals and retention basins, and further, mandate that these existing features be retrofitted as designed green infrastructure elements that promote naturalized edges and benefit riparian zones.



Figure 9.10: WPA Ditch in the McDonoghville Neighborhood



Figure 9.11A: Existing Conditions of the 25th Street Canal in the Bellevue Neighborhood



Figure 9.11B: Proposed Enhancements along the 25th Street Canal with the Addition of Lighting, Pedestrian Facilities, and Improved Riparian Edge

Besides the main drainage canals in the City, the older and more historic neighborhoods north of the Westbank Expressway have Works Progress Administration (WPA) ditches that act as stormwater conveyance. According to the Flood Hazard Mitigation Plan (FHMP), these WPA ditches were built in the 1930s. The small, open, concrete ditches provide an asset for the neighborhoods as they can provide more storage capacity than enclosed pipes and allow for temporary detention and evaporation, limiting the amount of stormwater that enters the City's pipes. The WPA ditches should include adequate pedestrian infrastructure to make crossing safe.

#### 2. STORMWATER MANAGEMENT & GREEN INFRASTRUCTURE

Stormwater is typically seen as something that should immediately be discarded into a pipe as quickly as possible. A different way of thinking is to temporarily detain the water where it falls, so that the City system is not overloaded during intense rainfall events that frequently occur in Southeast Louisiana. Green infrastructure rethinks the typical methods of stormwater management by installing facilities that receive, detain, and filter stormwater runoff while also allowing for infiltration into the ground and absorption by plants.

There are many types of green infrastructure facilities, such as bioswales, bioretention cells, pervious pavement, detention basins, and stormwater planters. Each facility has different environmental benefits. Some of the environmental benefits include: intercepting rainfall, improving air and water quality, recharging groundwater, and reducing the urban heat island effect.

Rainfall interception reduces the amount of water that will ever enter the drainage pipes. Air quality would be improved as additional tree canopy coverage would be provided, reducing pollutants such as carbon monoxide, nitrogen dioxide, and ozone. Improvements to water quality would be greatly enhanced, as green infrastructure can remove a range of pollutants such as TSS, phosphorus, nitrogen, lead, copper, and E. coli.



Figure 9.12A: Existing Conditions along a Street in McDonoghville



Figure 9.12B: Enhancements to a Street in McDonoghville that Includes Urban Bioswales and Street Trees

Recharging ground water can reduce the risk of subsidence, limiting the damage to existing infrastructure and private property. Additionally, the introduction of trees and shrubs to the City would reduce the surrounding temperatures, limiting the urban heat island effect, and reduce energy consumption and costs. Stormwater management is discussed more in *Element 1: Resiliency* and in *Element 6: Infrastructure*.

#### **3. CITY PARK PONDS**

The ponds in Gretna's City Park are a major water feature that are part of the City's drainage system and one of the first green infrastructure facilities in Gretna. In 1990, the ponds were constructed to mitigate drainage problems in surrounding neighborhoods (*FHMP 2007*). The Hazard Mitigation Plan states that "the basin has control structures that allow releases when the receiving canals can take the water." Since the ponds in the Park are collecting runoff from impervious surfaces in the Bellevue neighborhood, the water likely has pollutants containing suspended solids, polycyclic aromatic hydrocarbon (PAH), and volatile organic compounds (VOCs). The removal of these pollutants is best done with native-planted bioretention facilities and sand filters. An improvement in the water quality of the lakes would provide enhanced recreational opportunities as discussed in *Element 8: Parks and Recreation*.

#### 4. VIRGIL STREET RETENTION BASIN

The Virgil Street retention basin is another example of existing green infrastructure in Gretna. Built in the early 2000s, the Virgil Street retention basins collects stormwater from the McDonoghville neighborhood before eventually out flowing into the Whitney Canal. This retention basin, like the ponds in City Park, are also collecting stormwater from a neighborhood with vast areas of impervious surfaces, therefore this water likely has the same pollutants; PAH, VOCs, and TSS.



Figure 9.13A: City Park Pond



Figure 9.13B: Enhancements of City Park Pond's Riparian Zone; Rendering Courtesy of Tulane Regional Urban Design Center

To improve the water quality before it enters the retention basin, the inflow of the along Virgil Street could be retrofitted to include additional green infrastructure interventions. For example, the shelf of the basin can be made shallower and a constructed wetland could be designed and installed. This wetland would allow the runoff to flow through, thoroughly cleaning it of pollutants before entering the larger pond. Providing improved water quality could allow the retention basin to act as a recreational asset, as discussed previously for the City Park ponds.

#### 5. ALLUVIAL AREAS OF GRETNA

While there are no designated wetlands in Gretna, there is a batture on the river side of the Mississippi River levee. The batture, a mostly southern term, is an elevation of the bed of a river under the surface of the water that can become exposed when the water level is low. The Gretna batture is used for recreational purposes when there is low tide. During the Gretna Heritage Festival, the main stage is step up on the batture. Because this is such a unique landscape offering beautiful views of the New Orleans skyline and river boat activity, the City is interested in expanding the recreational opportunities on the batture. See *Element 8: Parks and Recreation* for more information.

# **AIR QUALITY**

Air quality is an important factor for the City of Gretna since it can directly affect its residents on a daily basis. The air quality index (AQI) is the national standard of measuring the quality of our air by the EPA. The AQI is measured daily and includes ozone, particle pollution, carbon monoxide, and sulfur dioxide. AQI readings are taken daily and reported on many outlets, including the EPA's AirNow website, and are based on a rating system between 0 and 500, as shown in *Table 9.1: Air Quality Index Values*. AQI that is measured below 100

Table 9.1: AQI Values	
Air Quality Index (AQI)	Levels of Health Concern
0 to 50	Good
51 to 100	Moderate
101 to 150	Unhealthy for Sensitive Groups
151 to 200	Unhealthy for Sensitive Groups
201 to 300	Very Unhealthy
301 to 500	Hazardous
Source: EPA AirNow.gov	

is considered satisfactory and anything above 100 is considered unhealthy to certain groups depending on the quality measurement. Recently in Gretna the average AQI was 45, while the Louisiana average was 106, and the National average was 50. This puts Gretna roughly 10% below the National average.

A continued reduction of air pollutants can be accomplished by reducing vehicular-source pollutants from both private and city vehicles. Transitioning the City's vehicular fleets to fuel-efficient, environmentally sustainable vehicles should be considered, which should include heavily used patrol vehicles in the Gretna Police Department. The replacement of vehicles with ones that are more fuel-efficient should be done when existing vehicles reach their expected lifespan. In the meantime, the City can work on implementing idle reduction policies and using appropriately sized vehicles for each job. Promoting walkable and bikeable communities, discussed more in *Element 5: Transportation*, can reduce the need for vehicular transportation, thus reducing greenhouse gases from entering the atmosphere.

# **BROWNFIELDS**

ABrownfieldsiteisapropertythatisvacantorunderutilized where real or perceived environmental contamination inhibits its reuse, redevelopment, or the expansion of current operations. Given the City's past development including railroad corridors and industrial uses that were intermingled with residential uses, and neighborhood commercial businesses such as historic gas stations, dry cleaners, and automotive repair facilities that were in operation before environmental regulations were in place, the potential for environmental contamination on properties within Gretna exists. Common contamination found near railroad corridors includes arsenic, heavy metals, asbestos, petroleum-related contaminants, and spilled or leaked liquids such as oil, gasoline, and cleaning solvents. Abandoned gas stations and mechanic shops may have leaking underground storage tanks. Historic dry cleaning operations may have resulted in soil and groundwater contamination including perchloroethylene. In addition, buildings built before the 1980s may contain asbestos and lead-based paint which needs to be addressed prior to redevelopment.

EPA's Brownfield Program provides technical and financial assistance to communities to asses and remediate environmental contamination at Brownfield sites to facilitate their reuse including:

- EPA's Targeted Brownfield Assistance Program: Through the U.S. Army Corps of Engineers, the EPA can provide environmental assessments of vacant and underutilized properties to determine if contamination is present.
- Kansas State University's Technical Assistance to Brownfields Program: The EPA-funded technical assistance which provides resources for community outreach, planning, and inventories related to Brownfield redevelopment.
- EPA Assessment Grants: Through an annual national competition, the EPA awards grants to local governmental entities to administer Brownfield Program including conducting environmental assessments and developing cleanup plans for Brownfield sites.
- EPA Cleanup Grants: Also through an annual national competition, the EPA awards grants to government entities and nonprofits to cleanup environmental contamination on properties.
- EPA Brownfield Cleanup Revolving Loan Fund Grants: Through a national competition, the EPA awards Brownfield Cleanup Revolving Loan Fund Grants to eligible entities to provide a pool of funding for the cleanup of Brownfield sites. The City of Gretna was awarded a Brownfield Cleanup Revolving Loan Fund Grant in 2000, which it loaned to itself to clean up the Former Malter Chemical site. The City paid the loan back when the property was sold to Zatarain's. The loan repayment and related interest is referred to as "Program Income." The Program Income can be used for Brownfield-related activities in the City in accordance with the agreement between The City of Gretna and the EPA.

Other resources to help facilitate the redevelopment of brownfield sites include:

- Louisiana Dept. of Environmental Quality's (LDEQ's) Targeted Brownfield Assistance Program: LDEQ can provide funding to government and nonprofit entities for environmental assessments of vacant and underutilized properties to help facilitate their reuse.
- RPC's Brownfield Redevelopment Program: The City of Gretna can utilize the technical assistance provided through RPC's Brownfield Program as well as partner with RPC to apply for funding for environmental assessments in targeted areas.

In order to be eligible for EPA, LDEQ or RPC Brownfield assistance, the proposed redevelopment must be income producing (e.g. commercial development, apartment complex with rental housing, manufacturing, etc.) or for a community benefit (e.g. park, community center, health care clinic, etc.).

Focusing on prime commercial corridors, the City of Gretna should utilize the above resources to help facilitate the reuse of vacant properties and promote context-sensitive redevelopment.

# **RECOMMENDATIONS**

There is a great opportunity for the City of Gretna to improve its environmental impact, both in public and private investments. The City should be the leader in environmental resilience by acknowledging the effects of climate change on the Gulf Coast region and ensuring the government is doing all it can to make itself an environmental example.

The City should begin to increase the urban tree canopy. Focus should be on areas of the City with limited tree coverage, such as Bellevue, Jonestown, McDonoghville, and Downtown. The City should promote the planting of native trees on private property as well as within the right-of-way. By requiring street trees and sidewalks in the new zoning code, the City can ensure that development and redevelopment is done in a way that increase urban habitat, provide shade, reduce temperatures, and create a more pleasant environment for pedestrians.

Enhancing the riparian edges along the City's waterways would improve water quality, making the waterways usable to residents for recreational opportunities such as fishing. Additionally, designing and installing green infrastructure at key locations would clean water before it enters the drainage system, which feeds into the canals and ponds throughout Gretna.

During the writing of the new zoning code, the City should focus on promoting low impact develop on undeveloped land, as well as encouraging retrofits to redeveloped land. Low impact developments aim to mimic the natural process of the existing landscape prior to development of the property. Low impact developments often use smaller scale drainage features that feature one or many green infrastructure facilities. The zoning code should encourage low impact developments by requiring sites be designed with green infrastructure and limited impervious surface. The combination of these design elements leads to development becoming greener and more environmentally friendly while enhancing the overall visual character of Gretna. The zoning code should also incentivize building design that features energy efficient best practices, such as LEED certified buildings.

The City should begin to take action to reduce waste and become more energy efficient. Easy steps can be taken by all departments by using less paper, recycling appropriate products, and making sure lights are turned off when rooms are not in use. More long-term energy efficient practices, such as transitioning to clean/rightsized fleet vehicles, should also be considered as the City replaces older vehicles.

When the City of Gretna begins to make some of the changes mentioned, it sets an example to private land owners in the City. These cleaner and greener methods of development, infrastructure improvements, and open space enhancements become ingrained in Gretna's identity and provide monetary as well as environmental benefits to all residents.

# GOALS

#### Goal 1: Improve water quality standards throughout the City.

#### **Objective 1.1:**

Re-naturalize canal edges and develop riparian buffers along water corridors to aid in removing pollutants before they enter the City's water ways.

#### **Objective 1.2:**

Implement green infrastructure requirements for new commercial development and redevelopment.

#### **Objective 1.3:**

Encourage private citizens to retrofit their properties with green infrastructure.

#### **Objective 1.4:**

Partner with non-profit organizations to outreach, engage, and educate citizens about what they can do at home to minimize negative environmental impacts.

#### Goal 2: Conserve open space.

#### **Objective 2.1:**

Dedicate existing open space as such on the new Land Use Map, including parks, retrofitted canals, and community accessible water features.

#### Goal 3: Preserve and enhance tree cover in the City.

#### **Objective 3.1:**

Work with arborists to identify and maintain historic tree specimens around the City.

#### **Objective 3.2:**

Require minimal site clearing during new or redevelopment and incentivize the preservation of existing trees on sites.

#### **Objective 3.3:**

Identify where tree canopy is lacking in the right-of-way and create a program to introduce new trees to those areas by working with arborists, landscape architects, and other horticulture professionals.

#### **Objective 3.4:**

Ensure diversity among species planted.

#### **Objective 3.5:**

Work with neighborhoods to identify species that will be symbols of their neighborhood.

#### **Objective 3.6:**

Work to remove invasive species in City Park.

#### **Objective 3.7:**

Establish development regulations that require tree plantings for parking lots and buffer areas to increase the urban tree canopy and thus mitigate the urban heat island effect and localized flooding, and improve air and water quality.

# Goal 4: Set standards for government projects to transition to use cleaner forms of energy.

#### **Objective 4.1:**

Transition the City's vehicular fleets to fuel-efficient vehicles as existing vehicles age.

#### **Objective 4.2:**

Ensure new- and re-developed civic buildings are built according to high quality U.S. Green Building Council standards.

#### **Objective 4.3**

Create a comprehensive waste reduction and energy conservation strategy for all City departments.

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