WORKING WITH NATURE
TRAINING SERIES

DEC. 15, 2021

Designing with nature-based solutions in urban areas

LOUISIANA WATERSHED INITIATIVE
working together for sustainability and resilience
AGENDA

- Program overview
- Nature-based solutions in urban areas
- Moncus Park case study
- Questions
NATURE-BASED SOLUTIONS PROGRAM OVERVIEW

MAXIMIZE NATURAL FUNCTIONS OF THE FLOODPLAIN

• Fund projects that harness natural features to reduce flood risk and improve water quality
• Provide training and technical resources to advance understanding and adoption of nature-based solutions
• Prioritize nature-based solutions across state programs and projects
• Use tools to quantify benefits and measure performance of nature-based projects
NATURE-BASED SOLUTIONS IN URBAN AREAS

Dana Nunez Brown
PRESIDENT | DANA BROWN & ASSOCIATES

Dana Nunez Brown is one of the most experienced stormwater management design professionals in Louisiana, having designed green infrastructure projects worth tens of millions of dollars throughout her 41 years as a landscape architect and planner.
Designing with nature-based solutions in urban areas

• Where are we?

• What have we been doing for decades?
  - Traditional site planning—clear the land, regrade it, pave it
  - Traditional site design—get rid of water via drainage
  - Traditional maintenance—mow and blow or no maintenance

• Nature-based design solutions
  - Design with nature
  - Low-impact development
  - Stormwater management

• Urban neighborhood retrofits
Traditional site planning

- Clear the land to create a blank canvas
- Grade the land surface, add fill, smooth out hills
- Maximize development of the parcel
- Design traditional drainage system
- Use design storm dictated by jurisdiction
- Creates a system with constrained capacity
- Often includes destruction/filling of wetlands and riparian floodplains
- Seeks to maximize developer’s profit
- Does this approach maximize development and profit?
Clearing and grading the land
Traditional drainage approach

- Costly to construct, operate and maintain
- Constrained capacity
- Often ugly
- Drainage only—single benefit
What have we been doing?

- Increased impervious surfaces
- Disturbed natural hydrology
- Flooding
- Poor water quality
- Loss of trees
- Loss of wildlife habitat
- Poor air quality
- Lack of connectivity to water
- Buried investment
What should we be doing?

**ANALYZE THE SITE AND ITS CONTEXT**

- Undisturbed sites—not undeveloped sites
- Urban sites & neighborhoods
- Watershed & subwatersheds
- Topography

- Hydrology
- Vegetation
- Soils
- Existing land uses & infrastructure
- Water bodies & tidal influences
Nature-based solutions

- Mimic natural processes
- Conserve natural areas and processes
- Stormwater management
  - Minimize impact on hydrology
  - Maintain runoff rate and duration
  - Minimize impervious surfaces
- Distribute green infrastructure across site
  - Integrated management practices
  - Decentralized, microscale that infiltrate, store, evaporate and/or detain runoff close to the source
- Works at any scale
The Woodlands: Village of Grogan’s Mill
Nature-based solutions

- Manage rainwater where it lands
- Make places for water to exist in the urban environment
- Reduce burden on grey infrastructure
- Mimic natural processes
- Reduce flooding
- Reduce soil subsidence
- Filter water for water quality
- Improves air quality
- Cools the air
- Works at any scale
Nature-based stormwater management

- **Detention**—temporarily store stormwater
- **Infiltration**—allow water time to absorb into soil
- **Filtration**—store and convey runoff to remove pollutants with plants and soil
Types of green infrastructure

- Bioretention cells
- Bioswales
- Detention basins
- Detention/retention basins
- Constructed wetlands
- Stormwater planters
- French drains
- Rain barrels
- De-paving
- Pervious paving
- Land conservation/restoration
- Subsurface storage tanks
- Infiltration columns and pits
- Trees
- Green roofs
- Blue roofs
How do we retrofit neighborhoods?

- In the public realm
  - Renovate parking
  - Reconstruct play fields
  - Revise street standards
  - Green space at civic buildings
  - Remnant parcels
  - Interstitial spaces
  - Break sectoral silos
  - Educate the public
  - PPP

- In the private realm
  - Renovate parking
  - Convert green spaces
  - Interstitial spaces
  - PPP
Urban right-of-way
Urban right-of-way
Parking lots
Parking lots
Parking lots
Parking lots
Vacant lots
Flood risk modeling
Permeable paving
Curb bump-outs and cuts
Open spaces and medians
Parks and golf courses
Parks and golf courses
Parks and golf courses
References

• ecologyandsociety.org/vol21/iss2/art39/
• doi.org/10.1016/j.envsci.2017.07.008
• wwf.panda.org/projects/one_planet_cities/what_we_do/urban_naturebased_solutions/
• mediatum.ub.tum.de/doc/1388081/file.pdf
• Pontilly HMGP Project Report. CDM Smith
Elizabeth “EB” Brooks
FOUNDER | MONCUS PARK

Elizabeth Brooks is the founder of the new 100-acre Moncus Park in Lafayette. After launching a successful campaign to save the greenspace from commercial development in 2005, she earned master's degrees in community and regional planning and urban design from the University of Texas at Austin. She returned to Lafayette in 2013 to oversee the nonprofit that is developing Moncus Park.
Moncus Park (aka Lafayette Central Park)

- 501(c)(3) nonprofit conservancy
- 99-year lease with the city with full control of operations and maintenance
- Organized sports fields and courts prohibited, with intention to create a passive park
- No dedicated local tax dollars for construction, operations or maintenance
- All features built with private dollars (except restrooms)
- Events, programming and membership support ongoing operations.
THE JOURNEY

2005 – 2012

• “Save the Horse Farm” communitywide campaign

2012

• Lafayette Consolidated Government purchases the land from UL Lafayette.

2013 – 2014

• Lafayette Central Park, Inc. forms to plan, design, build and operate the park
• $2.6 million grant from Lafayette Public Trust Financing Authority
• Nine months of community input, engaging more than 7,400 residents on park features and programming ideas
THE JOURNEY

2014
• Lafayette City-Parish Council unanimously approves the master plan.

2016
• The park is named Moncus Park in honor of lead donor, Mr. Jim Moncus.

2018
• The 99-year lease is enacted, and Phase 1 construction begins.

2021
• Phase 2 construction begins, and opening day is set for Jan. 1, 2022!
Benefits of a world-class park

- Environmental benefits
- Stormwater management
- Economic development and tourism
- Educational opportunities
- Personal and public health benefits
- Childhood development
- Community engagement
- Farmers market’s local economic impact
- Fully accessible and inclusive
ECOLOGICAL SERVICES
A CENTRAL PARK FOR THE REGION

ACADIANA REGION: 1.3 MILLION RESIDENTS

LAFAYETTE PARISH: 230,000 RESIDENTS

AT THE CENTER OF ACADIANA’S 22 PARISHES
LONG-TERM VISION
PARK PROGRESS

PHASE 1 – DONE

- New entrance and bridge
- Parking lot with rain garden
- 2 miles of trails
- 4-acre lake
- Dog park
PHASE 2

LOUISIANA WATERSHED INITIATIVE WORKING TOGETHER FOR SUSTAINABILITY AND RESILIENCE
COMING SOON

INCLUSIVE PLAYGROUND

INTERACTIVE WATER FEATURE

TREEHOUSE

VETERANS MEMORIAL

AMPHITHEATER

LOUISIANA WATERSHED INITIATIVE WORKING TOGETHER FOR SUSTAINABILITY AND RESILIENCE
FUTURE PHASES

• 2022: Farmers market pavilion
• 2022/2023: Prairie pond and detention
• TBD: Mini-golf and carousel
• TBD: Botanic garden and event venue
• TBD: Ravine garden and transect boardwalk
2022: FARMERS MARKET PAVILION

• 4,000-square-foot, open-air pavilion
• Conference room/classroom with air conditioning and catering kitchen
• Rain garden and rainwater harvesting (add alternate)
GREEN INFRASTRUCTURE

- Designed for Sustainable SITES Gold, didn’t pursue certification due to cost
- Solar lights made in New Orleans
- Mostly native plantings and installed bat boxes for integrated pest management
- Recirculating water feature
- Reused onsite materials
RAIN GARDEN

- Parking lot stormwater management
- Cascading tiers, gabion boxes for solids
- Drains in less than 72 hours
- Difficult soil specifications
WETLAND POND

- Four acres, 9 feet deep, four pumps
- Filled with diverted neighborhood stormwater
- Source of all irrigation
- Submerged islands (6 inches)
- Louisiana Iris Society’s official garden
NEW BRIDGE

LESSONS LEARNED

- Old farm bridge not included in FEMA maps—LCG audit concerns
- $500,000 bridge → $3 million → $1.5 million
- Longer span allowing for pedestrian underpass and park connectivity
- Lost time and money
BACK 20 ACRES

COMPLETED: Woodland buffer, bat boxes, pollinator/wildflower plantings

FUTURE: Wetland pond, coastal prairie and ravine restoration, pavilion, Louisiana Recreational Trails

POTENTIAL: Tiered temporary detention of diverted stormwater from Coulee Mine
COULEE MINE CUTOFF CANAL

VERMILION RIVER
COULEE MINE

REGIONAL OPPORTUNITY

• Drains 16% of the parish
• Concrete panels failing
• Cutoff Canal not concrete
• Modeling for renaturalizing the banks showed potential if Cutoff Canal was cleaned out.
OPENING SEASON

NEW YEAR’S DAY
• Gates open! Most of the park will be accessible, including trails around our new 4-acre lake, the dog park, and hiking trails in the woodland ravines

SPRING/SUMMER 2022
• Ribbon-cutting celebrations as construction is completed on Phase 2:
  - Amphitheater
  - Treehouse
  - Inclusive playground
  - Interactive water play
  - Veterans memorial

Dec. 16 – Dec. 29
12 NIGHTS OF CHRISTMAS AT MONCUS PARK
Closed Christmas Eve and Christmas Day
QUESTIONS?

CONTACT INFORMATION

dbrown@danabrownassociates.com
ebrooks@moncuspark.org