

BORN ON ISLAND

Anticipating Life at the Edge of Louisiana

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Foreword by Robert Twilley

*Executive Director: Louisiana Sea Grant College Program
Professor: LSU Oceanography and Coastal Sciences*

Since 1968, Louisiana Sea Grant has addressed many of the complex and often interrelated ecological, economic and social challenges that affect coastal Louisiana, one of the largest and most dynamic coastal regions in the United States. The most important research and outreach challenges that Louisiana Sea Grant faces relate to sustainability of communities and ecosystems in the hurricane-prone deltaic coast bordering the northern Gulf of Mexico. This deltaic coast, with reliance of communities on ecosystem services, will also continue to be confronted with the effects of climate change, sea level rise, and land subsidence on coastal parishes and their residents. Eighty-five percent of Louisiana's population – LSG's primary constituency – resides in this coastal region, which is also a major locus of strategically important seafood, oil & gas, maritime, refining, and petrochemical industries. The program can provide services most effectively by establishing and maintaining partnerships with university research capacity along with other state and federal agencies and private companies to supplement limited resources. One of those partnerships at LSU is with the Coastal Sustainability Studio, established to develop a multi-disciplinary and systems-oriented training framework to develop pragmatic, trans-disciplinary techniques for reducing environmental vulnerability and enhancing community resiliency along the dynamic coast of Louisiana. The mission of Sea Grant and vision of LSU CSS is to provide a way to help communities meet the challenges of storm disturbances, land-use transformations, and climate change to develop adaptation in how people live in coastal Louisiana.

The goal of the CSS is to design sustainable systems that reduce vulnerability associated with diverse scenarios of coastal hazards, habitat degradation, and global environmental change. The CSS approach is to promote collaboration of local and regional experts to find innovative and sustainable solutions to critical problems associated with coastal protection and restoration in Louisiana. The CSS is approaching issues differently than traditional planning efforts in deltaic coasts, with more emphasis on achieving both environmental and economic sustainability. The CSS will embrace systems thinking which incorporates not only the needs of specific projects in design, but also the natural, social, and built systems around those projects. This systems thinking approach needs to account for the impacts of any urban/settlement design and the resulting environmental response and will be evaluated holistically in different hierarchies of geographic setting: neighborhood, city, and regional (coastal basin). The requirement for at least the three disciplines and the comprehensive approach enables CSS to collectively tackle problems and ideas that are more complex than any one discipline can solve. The projects described in this document represents the efforts of faculty and students at LSU to present to Grand Isle the type of innovative ideas that represent both CSS and Sea Grant. We look forward to working with Grand Isle and other coastal communities to search for creative ideas of how to live in a very dynamic and changing landscape – to promote economic activity, but not at the expense of public safety. Coastal Louisiana, with its wealth of natural resources, has had a long history of humans attempting to manage the risks of occupying an extremely dynamic deltaic environment. We hope that the ideas in this publication contribute to that dialogue.





Preface by Jeff Carney

*Director: LSU Coastal Sustainability Studio
Associate Professor: LSU School of Architecture*

As the only inhabited barrier island in Coastal Louisiana, Grand Isle exists on a tenuous edge between stability and the dynamic Gulf of Mexico. The island has been hit by countless hurricanes resulting in a remarkable pattern of destruction and rebuilding that continues to the present day. The vulnerability of this island to flooding is matched only by the tenacity of its residents to return and rebuild.

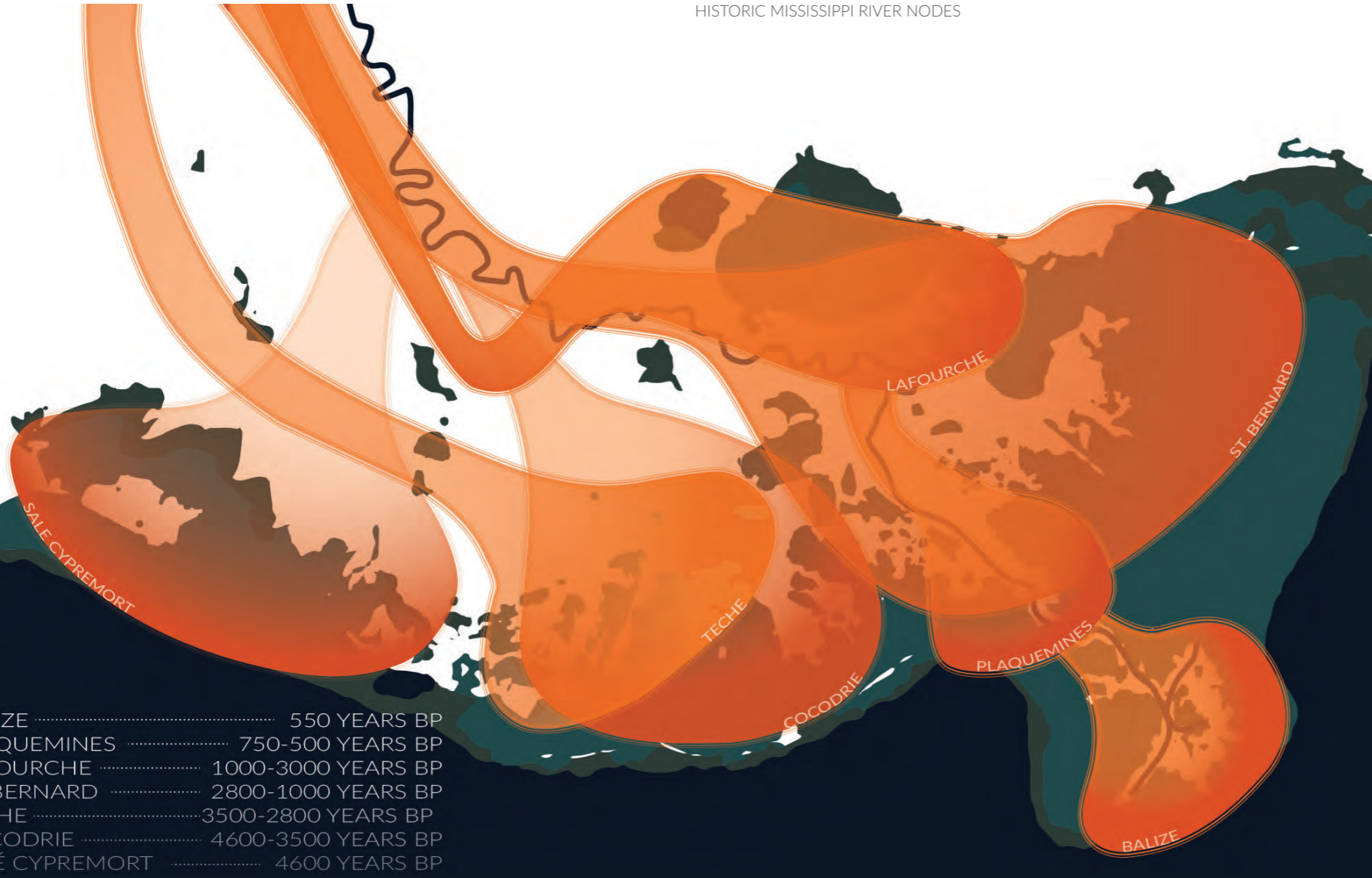
The LSU Coastal Sustainability Studio in partnership with Louisiana Sea Grant is pleased to support the Grand Isle studio taught by Liz Williams. For many of our students, Louisiana is their home. The opportunity to study and develop their craft in school, while at the same time contributing to the wellbeing of their home community, is an honor.



As a place to study, Grand Isle provides a framework for experimentation at the extreme margins of constructability. The extreme height requirements imposed by FEMA flood insurance results in an otherworldly landscape; it is at once beach town and moonscape presenting challenges and opportunities to students as we design a community for people. The contradictions are unmistakable between a place where houses have names but where the ground plane clearly belongs to the Gulf of Mexico.

The tension between the forces of extreme risk and the pressing desire for return provides a window into settlement across coastal Louisiana. For a host of reasons, coastal Louisiana communities will remain here, sometimes against the odds. Through generations these communities have adapted to an unforgiving environment. As we consider future actions to protect and plan for coastal communities statewide, Grand Isle can provide a great example to others.

How should we continue to live here? For how long? How should our communities be constructed and maintained in the face of such risk? These are all questions that will continue to grow more important to Grand Isle and other communities in the coming years. We hope that all Louisiana communities, like Grand Isle, can have the courage to face these challenges with an open mind and a willingness to not only rebuild but think clearly and ambitiously about the risks and opportunities that are part of life along the Gulf coast.



Transient Territories

An Introduction by Elizabeth Anne Williams

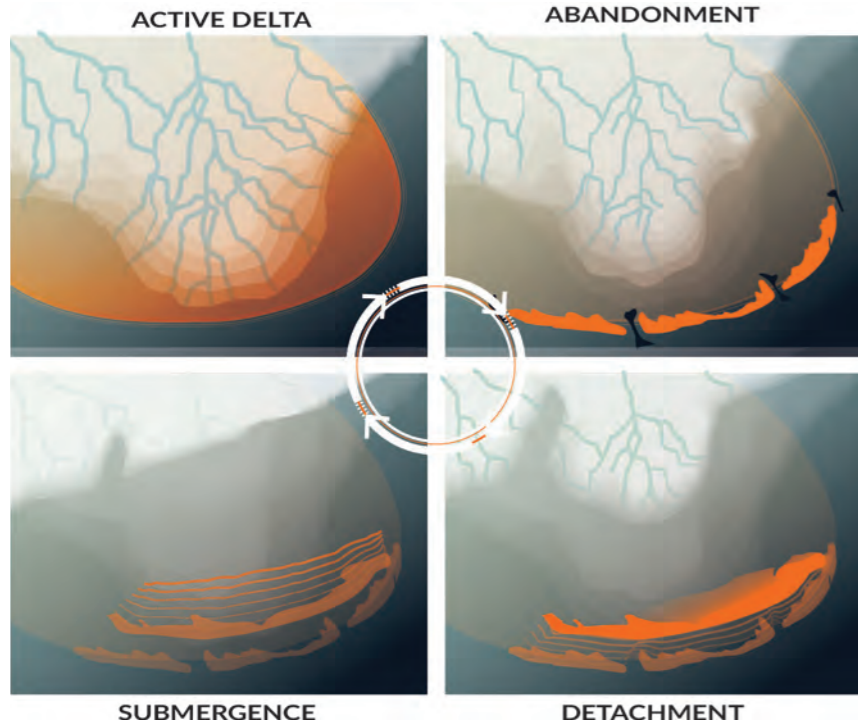
Research Fellow: LSU Coastal Sustainability Studio
Visiting Assistant Professor: LSU School of Architecture

Along the coast of Southern Louisiana, communities, ecologies, and industries inhabit a perpetually transforming landscape. Throughout the most recent centuries of urban development, settlement patterns have denied the persistent dynamism and typically constructed upon these landscapes as if they were permanent. Aligned parallel to the coastline, the long, thin sandy islands close to the shore are known as barrier islands. Sited within one of these barrier island ecosystems, the Grand Isle Studio examines the prospects for human settlement to remain amongst this edge condition.

Prior to European colonization within the lower River Basin, the Mississippi River Delta had dramatically and dynamically altered itself at regular intervals. Continually, the objective of the River is reach its open water destination by way of the shortest, steepest passage and the islands off the coast of Louisiana were all created as a product of this delta system. Generally, the River waters abide by the natural and now constructed levee systems in order to reach the Gulf of Mexico. However, in moments of highest volume, the floodwaters had historically exceeded their adjacent banks and continually deposited supplies of sands and silts to establish relatively temporary landscapes. Over time, the sediment and nutrient filled waters of the Mississippi have constructed most of Louisiana by gradually depositing sediment in territories beside the present and previous River channels. These muddy waters could not have established this southern state by remaining in that one watercourse; had they done so, the state of Louisiana would be a long, narrow peninsula stretching out into the Gulf of Mexico. In the process of the alluvium advancing southward, the River lengthens, the vertical gradient between source and mouth declines, the speed of the current slows, and sediment drops to fill the bed. Ultimately, this evolution builds the channel to the degree that it pours over the banks to one side. The new route created as the Mississippi alters its path results in the development of a new delta lobe. Consequently, the entirety of the delta plain is composed of a series of these overlapping delta lobes. At the moment when the River alters its course, the system must realign and the ecologies that inhabit the region are required to adjust accordingly.



BARRIER ISLAND EVOLUTION CYCLE



Ultimately, erosion and sea level change cause the island to become completely submerged as a shoal beneath the water. Each of the barrier islands along the Louisiana coast was produced in this process alongside the regression of a former delta lobe. Thus, including abandonment, migration, detachment, and eventual submergence, the geomorphological conditions of each barrier island naturally participate with processes of an active delta system. Human settlement trends amongst these dynamic conditions within the Mississippi River Basin adhere to different time scales than to the aforementioned geologic. Thus, the components of this dynamic system have been colonized according to traditional, historic practices instead of by continually responding to the delta cycle.

TRANSIENT TERRITORIES

Throughout the existence of the Mississippi River, the geological process of delta switching has been productive and entirely natural. As the River abandons a delta lobe, that Rivercourse begins a phase of slow decline due to the reduced supply of new sediment and freshwater. A new delta lobe grows where the River is actively depositing new material. While the River system adopts its new route, the lands surrounding the previous course subside and saltwater intrudes; the old lobe erodes and the forces of winds and waters modify the sediment. Relative sea level rise and the reworked sediment forms a headland that functions as a coastline while developing a barrier system. Yet, these coastal features become separated from the mainland with persistent subsidence, continuing to migrate and change as the previously dominant stream retreats inland.

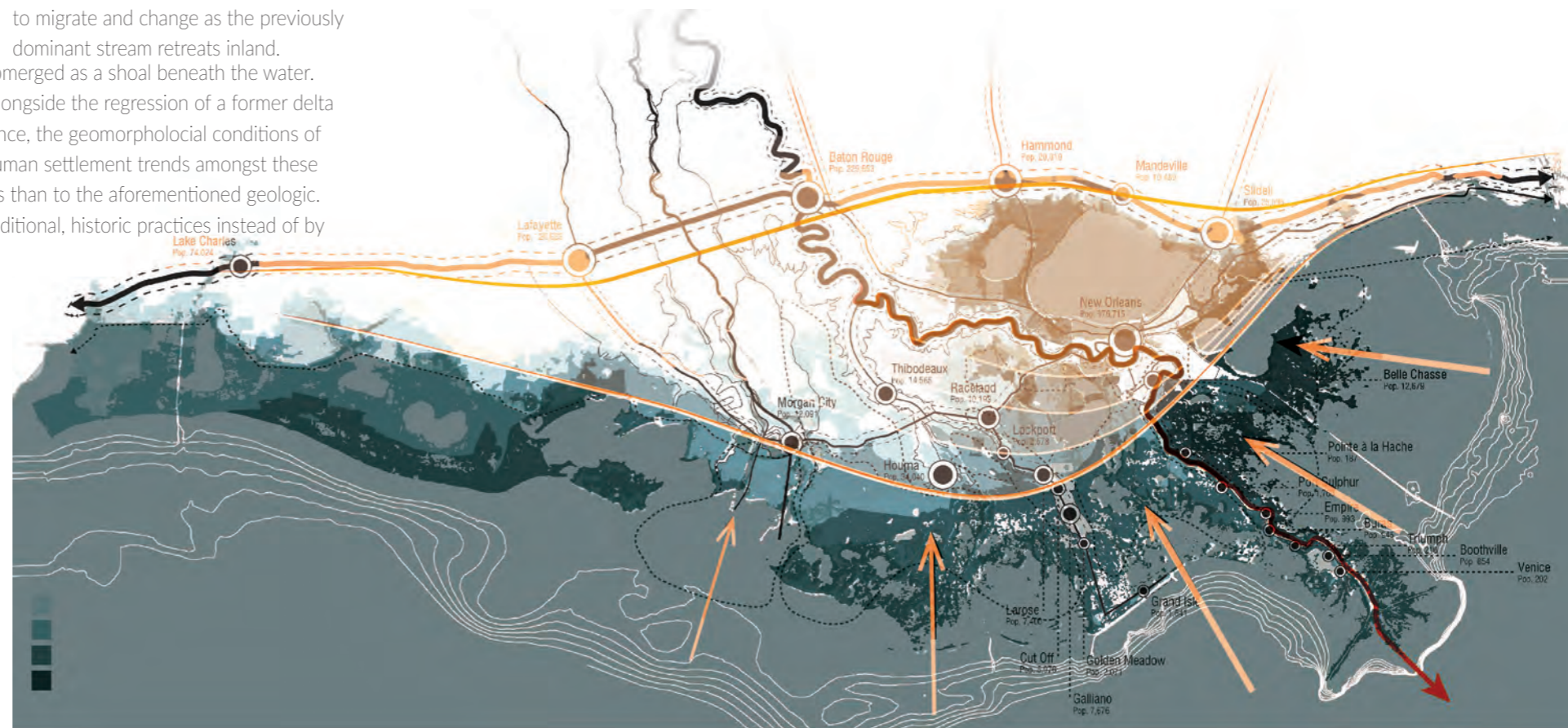
GRAND ISLE STUDIO

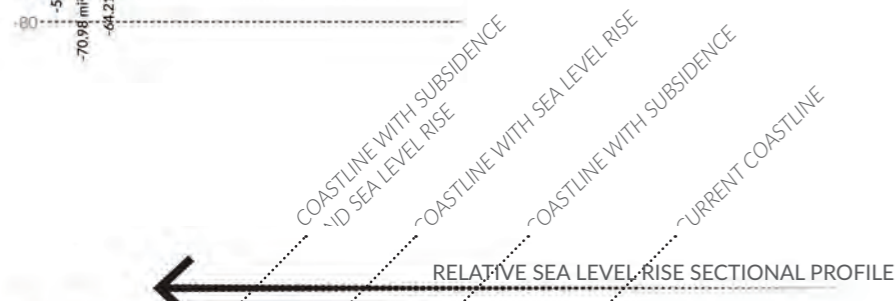
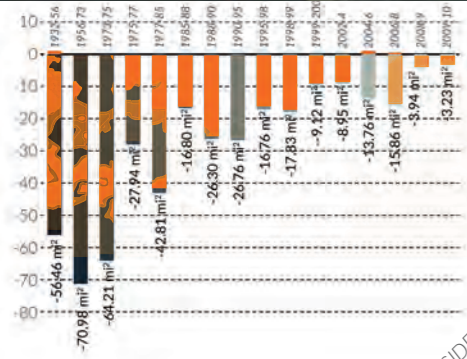
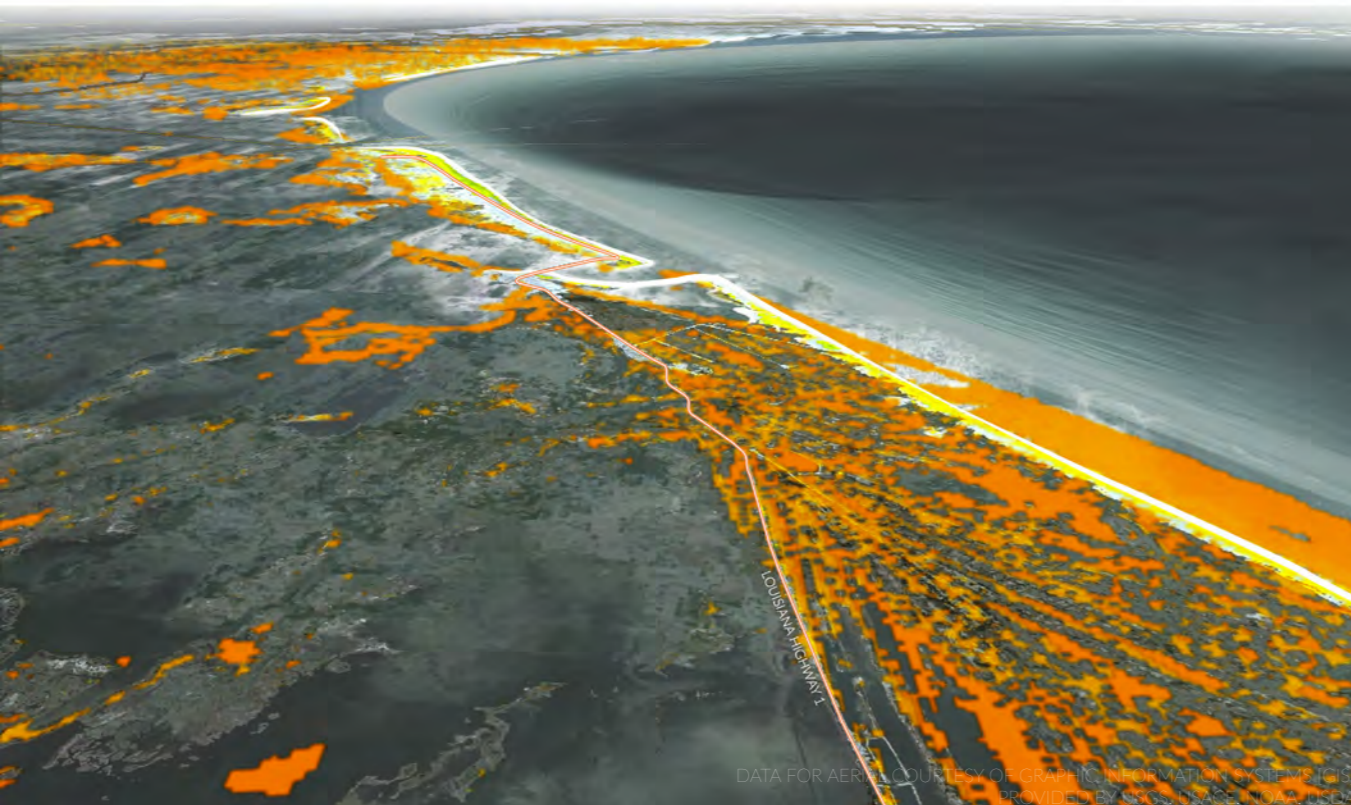
For more than 100 years, a practice of restricting Mississippi floods has been established in order to enable communities and industries to develop and prosper. Following the Great Flood of 1927, federal investment was supplied to fortify the natural, individual, and community constructed levees in order to prevent further loss and damages to River settlements and surrounding parishes. These tactics of control have prevented the inundation of new sediment to the delta landscape and have contributed to the rate of transgression within the delta plain. Paired with the removal of cypress forests and dredging of navigational channels, saltwater intrusion and erosion have transformed the coast of Southern Louisiana. 1800 square miles of land have been lost over the last century and the state of Louisiana is now poised to see this trend exacerbated due to new threats of relative sea level rise in the coming decades. The barrier system of Grand Isle, Louisiana experiences a very particular vantage point from the threshold of fading land and open water.

Grand Isle resides at the edge of the Barataria Basin and the open waters of the Gulf of Mexico. Bordered by distributary ridges of previous and present channels of the Mississippi River, the Barataria Basin is an irregularly shaped area with a salinity gradient that ranges from entirely fresh to thoroughly saline. The northern portion of the basin contains swamp and fresh marsh with a set of large lakes dividing the surface area. South of the Gulf Intracoastal Waterway [GIWW], tidally influenced marshes connect to a large bay system behind the boundary of the barrier island chain to which Grand Isle belongs. Due to the aforementioned construction of flood protection systems along the Mississippi River, freshwater and sediment input for the Barataria Basin have been practically eliminated. Additionally, a combination of natural erosional processes and human activities has contributed to the extreme rates of land loss. The absence of freshwater and sediment pose an extreme threat to the ecologies of the basin and the continual deterioration of the barrier island chain exacerbates these challenges. As the land masses of the barrier islands diminish and the navigational passes adjacent widen, larger volumes of saltwater enter the back bays. Increases in salinity and tidal amplitudes result in transformations in vegetation and larger rates of land loss throughout Barataria Basin.

STORM SURGE RISK AND RELATIVE SEA LEVEL RISE

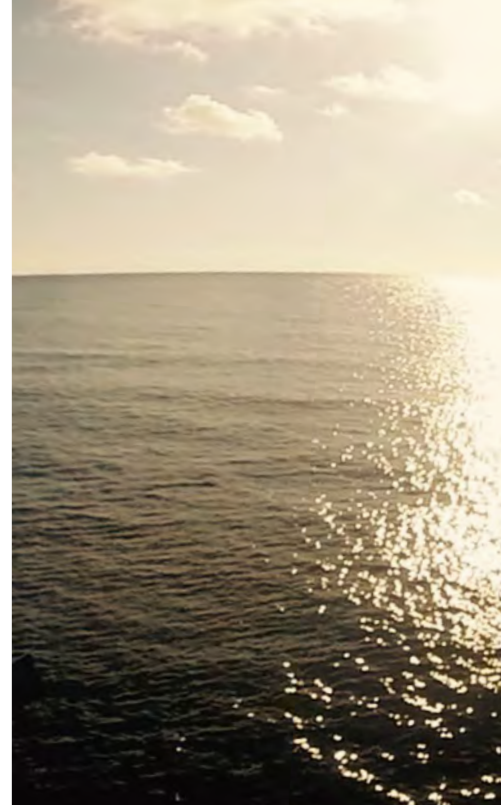
Southeastern Louisiana below the I-10 Corridor is depicted to illustrate predicted potential storm surge risk. In varied states of growth and decay, the former Mississippi River Distributary Basins are indicated and contribute to precise rates of Relative Sea Level Rise. Also shown and determined by distance from the coastline as well as likely onshore wind and water during a storm, the possible force and inundation of a storm surge impacts potential flood risk.



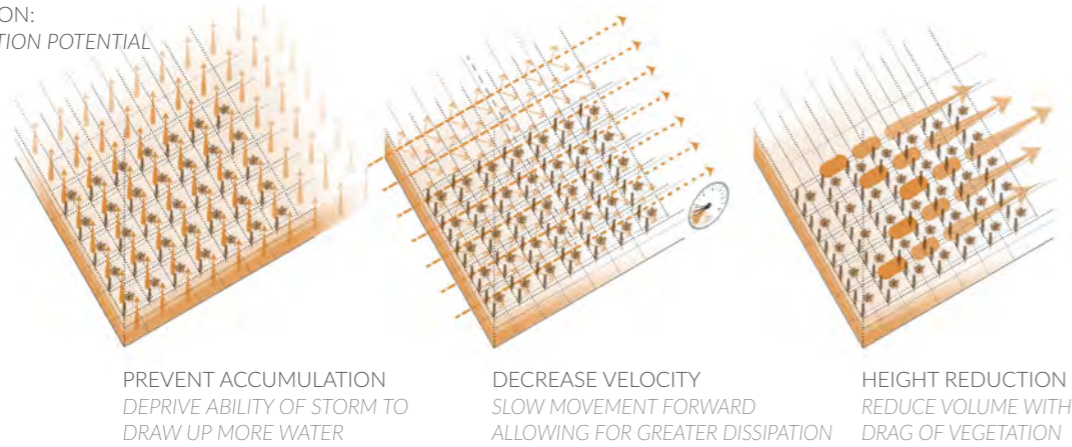


GRAND ISLE STUDIO

Both within the Barataria Basin and throughout the rest of Southeast Louisiana, this transforming landscape questions current development practices and challenges the continuation of existing coastal communities. Throughout the delta system, historic settlement patterns have required articulated, localized development patterns in order to endure the complexity of the coastal ecology. Providing each land owner with a cross section through the delta environment, a local land use system of long lots delineated large tracts of land perpendicular to existing water channels. Identified as an arpent system and introduced by French and French Canadian colonists, this settlement typology arranged distribution of growing populations along the thin strips of high ground that had been constructed by the Mississippi River system. Within Grand Isle, this arpent system was organized perpendicular to the beach facing the Gulf of Mexico; the long lots would stretch from beach to back bay. Therefore, settlers and, more specifically, land owners were granted access to firewood that washed up on the sands as well as refuge within the live oak forest towards the marsh. Four plantation plots were eventually divided amongst the larger population. Initially, structures were predominately built within the forest and atop the highest grounds while access to the back bay provided resources for wildlife and fisheries. Residues of this historic patterning are still pervasive on island and many of the streets and avenues are named for the families who first maintained that arpent. However, as the back bay of the island erodes and the last barrier island live oak forest diminishes, the resources available within each arpent slice dwindle as well.



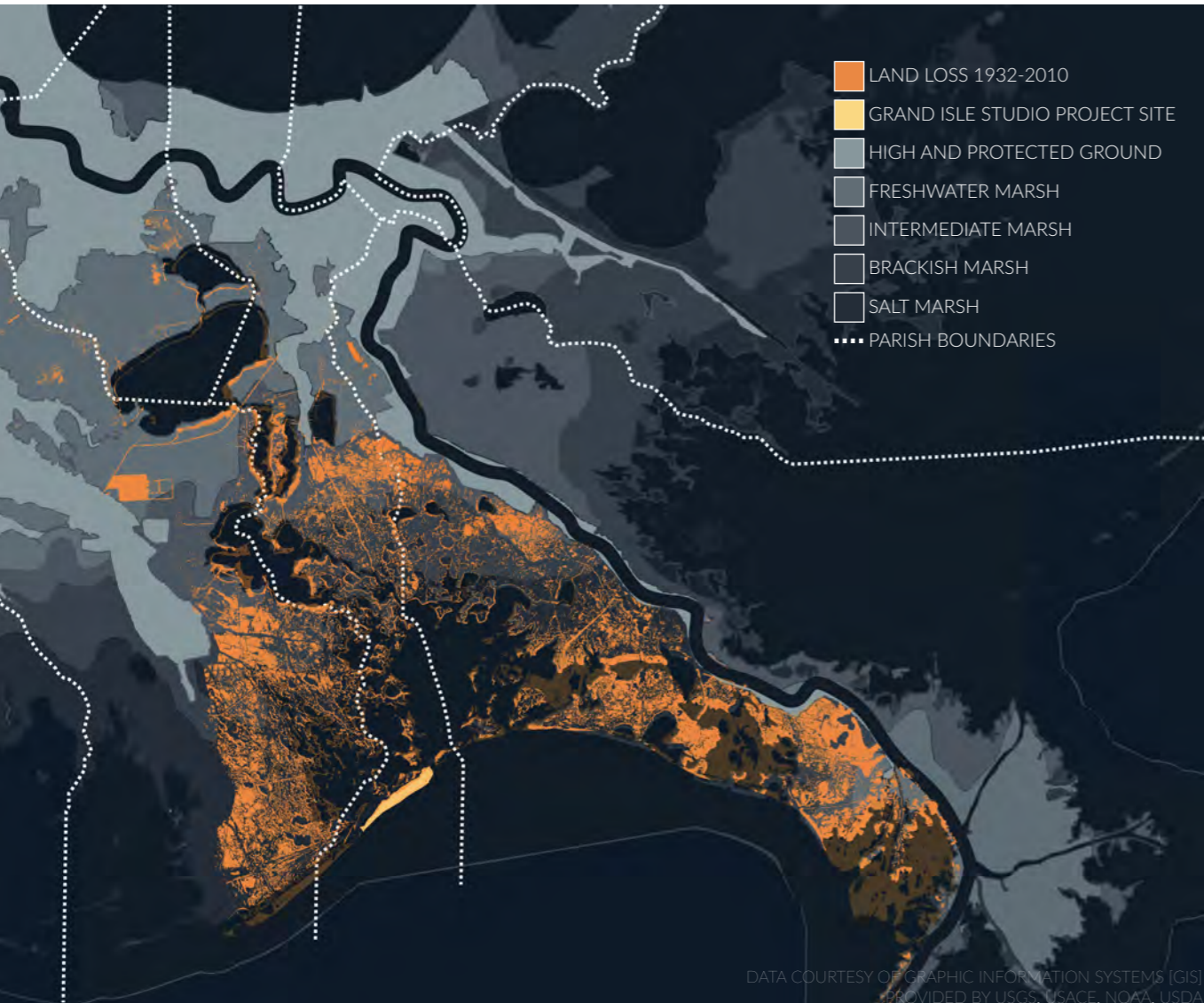
ECOSYSTEM VALUATION:
STORM SURGE REDUCTION POTENTIAL



GRAND ISLE STUDIO

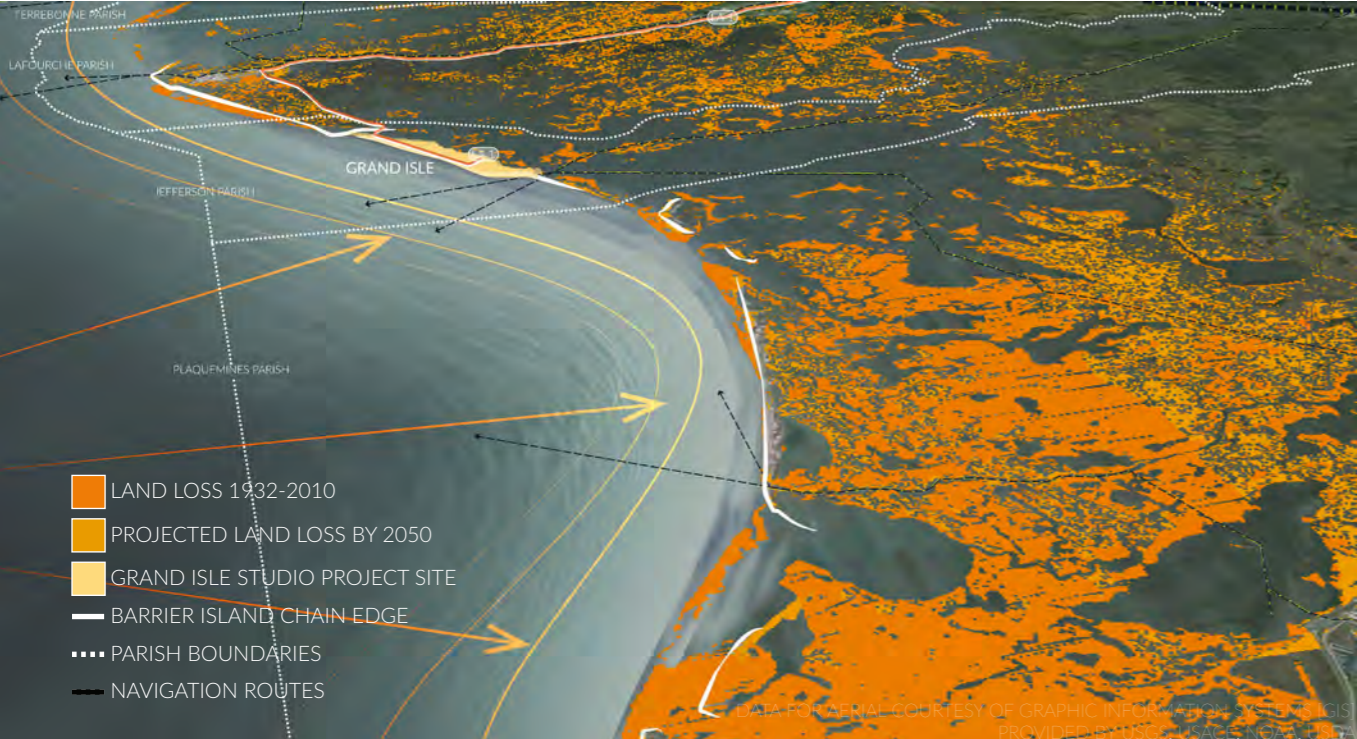
Ecosystems provide a variety of services as natural resources for cultural and socioeconomic production. Ecosystem services valuation assigns an economic value to those goods and services provided by a given ecosystem. Barrier islands, marshes, and swamps throughout our coast reduce incoming storm surge and also help to reduce flooding impacts to developed areas. Land then becomes a resource in terms of risk mitigation practice.

Across a geographic area, the physical functions provided by the wetland environment may be similar. However, valuable service to communities varies in relation to where people live and the value to those areas; the value of the health and quality of the ecoregion is then distinct from its function. The conditions and processes that influence avoided and replacement costs include the natural ecosystems and species that sustain these landscapes. Though values provided to human inhabitation of an environment are many, measurable benefits are especially considerable in terms of storm surge and risk reduction. The value of the ecosystem considers the replacement as well as avoided costs of property damages that are at greater risk without surrounding wetland environments.



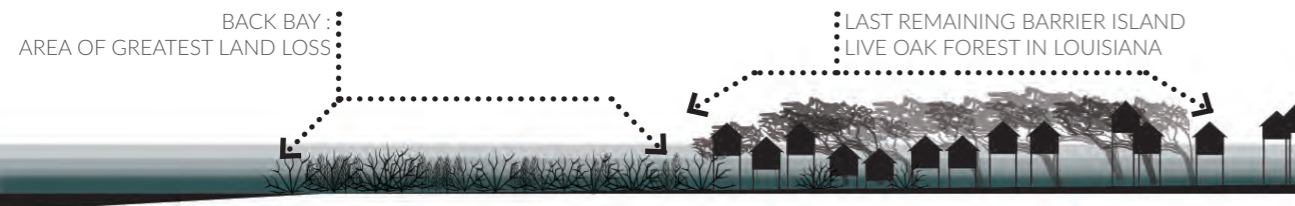
DECREASE IN POTENTIAL RISK REDUCTION WITH
LOSS OF WOODY SPECIES, LOSS OF MARSH ECOSYSTEMS,
AND INCREASE IN OPEN WATER

The twentieth and twenty-first centuries resulted in a variety of actions and activities amongst the sands of the barrier island. Partisan adversaries of the Kingfish, Huey P. Long, are rumored to have conspired on the shifting shores. Battle scars of buoyant vessels seared the skylines with enemy warfare. The end of the second World War enflamed a growing culture of entertainment and festival; beachside merriment erupted and remains measurable today. However, throughout its history of human inhabitation, the island has suffered tremendous blows by environmental occurrence. Hurricane Betsy [1965] flattened the structures along the shoreline; Katrina [2005], Rita [2005], Gustav [2008], Ike [2008], and Isaac [2012] also ravaged the constructed environs, though the mentality consistently remains that of reconstruction.



Throughout the history of Louisiana since European colonization, Grand Isle has always been an inhabited fringe at the edge of coastline. Following each catastrophic storm and the resulting destruction of property on island, the mentality of residents remains to return and rebuild. The community has always experienced this loss and prepares for restoration following each event. The residents acknowledge the dangers associated with their island paradise and accept that this cycle is a part of that lifestyle. Though, this understanding of risk and reconstruction pervades much of coastal Louisiana, more densely populated areas further inland are saturated with a less purposefully temporary built environment. As a part of Louisiana's barrier island system, Grand Isle is vital for the protection of coastal communities. Physically, these islands are the first line of defense against surges inbound from ocean waters; though, these barrier islands are no longer being built or strengthened by the natural processes of the delta system.

The illustrated cycle of barrier island evolution requires reoccupation by the freshwaters and sediment of the master stream. Thus, natural conditions that engage the River to rebuild its delta are required for natural barrier island stabilization. In order to facilitate the protection system once provided by the natural conditions of Grand Isle as well as to reduce impact of storm surge to the island residents, a set of geotextile tubes has been added to the island ecosystem. This human technology has supplemented the natural environment in order to reassert the former function of the surge break and to protect the residential areas of the island from threatening waters. More than 7 miles of vegetated sand dune receives the brunt of storm energies when the surge comes from the south; however, when the counterclockwise motion of a surge brings in water from the north, the constructed dune acts as a dam and prevents the return of the water to the open sea. The functions of this part natural, part human-constructed ecosystem affect the risks from storms to residents and adjacent communities, prescribing architectural conditions for continued occupancy.

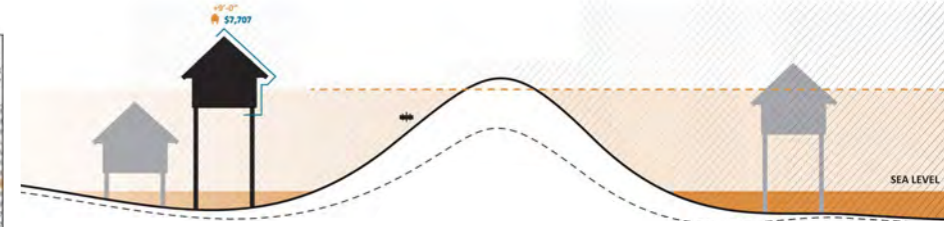


Elevation req'd FEET	Area A		Area B		Area C		Area D		Area E		Area F	
	Dwelling with 2 floors	Dwelling with 2 1/2 floors	Dwelling with 2 floors	Dwelling with 2 1/2 floors	Dwelling with 2 floors	Dwelling with 2 1/2 floors	Dwelling with 2 floors	Dwelling with 2 1/2 floors	Dwelling with 2 floors	Dwelling with 2 1/2 floors	Dwelling with 2 floors	Dwelling with 2 1/2 floors
4	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
4.5	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
5	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
5.5	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
6	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
6.5	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
7	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
7.5	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
8	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
8.5	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
9	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
9.5	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
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10.5	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
11	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
11.5	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
12	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
12.5	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
13	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
13.5	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
14	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
14.5	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
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15.5	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
16	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
16.5	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
17	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
17.5	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
18	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
18.5	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
19	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
19.5	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
20	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000



FEMA. Definition of FEMA Base Flood Elevation. Federal Emergency Management Agency. FEMA.gov, published 16 Aug 2013.

FEMA. Definitions of FEMA Flood Zones. Federal Emergency Management Agency. FEMA.gov

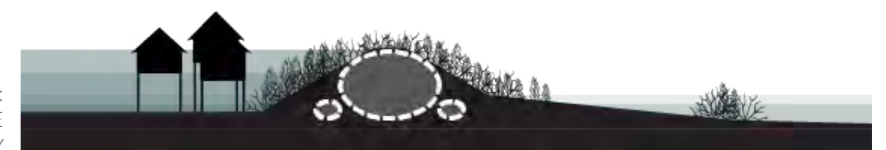


EXAMPLE FLOOD INSURANCE RATE MAP AND CORRESPONDING BASE FLOOD ELEVATION

Determined by distance from the coastline as well as likely onshore wind and water during a storm, the possible force and inundation of a storm surge impacts potential flood risk. Regardless of transforming land change conditions, Grand Isle will continue to be susceptible to incoming surges; the insurance premiums for Grand Isle owners include the risks associated within a potentially high velocity zone. In order to participate in the National Flood Insurance Program, communities and lenders require the purchase of insurance by their residents. Flood Insurance Rate Maps [FIRMs] provided by FEMA assign zones to coastal communities dependent on their risks. This zoning practice is the current basis for determining rates of insurance premiums for coastal properties. Using a variety of information sets – historic flooding, hydrologic and meteorological conditions, installed protective measures, types of land use – collected data attempts to accurately gage exposure. The FIRMs also determine Base Flood Elevations, the height to which floodwater is expected to rise during a given flood or storm, such as a 50, 100, or 500 year surge. This elevation [BFE] is the minimum regulatory requirement for structures to be considered flood proof. Additionally, the relationship between the BFE and the lowest elevation of the structure controls the flood insurance premium. Upon Grand Isle, the base flood elevation must incorporate the new elevation of the constructed geotextile sand dune and all insurable structures are required to be above the top height of this added infrastructural element.



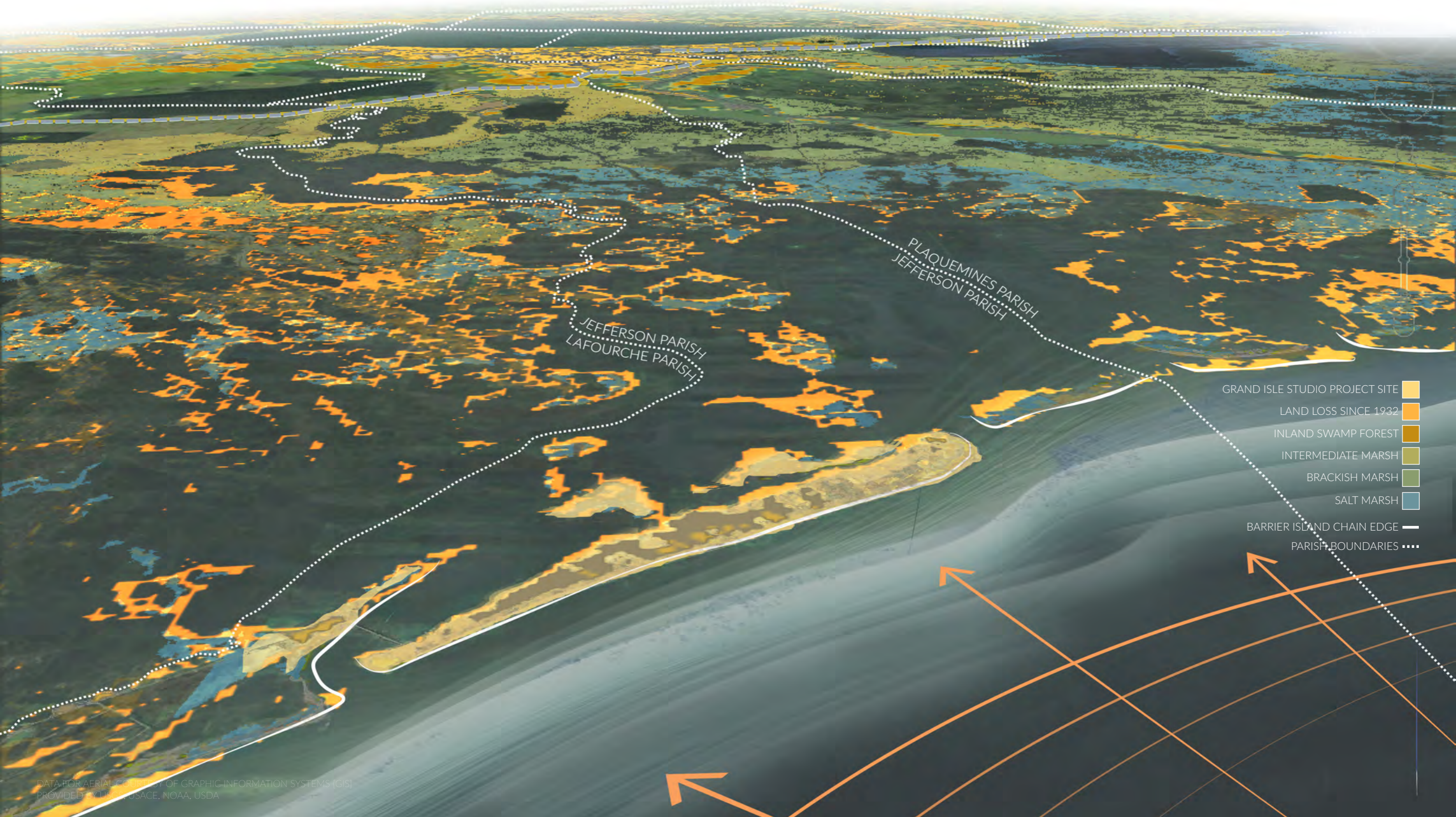
GEOTEXTILE SAND DUNE : SPEED BUMP FOR SURGE APPROACHING FROM GULF



GEOTEXTILE SAND DUNE : ACTS AS DAM WHEN SURGE INUNDATES FROM BACK BAY



GENERAL ISLAND TRANSVERSAL

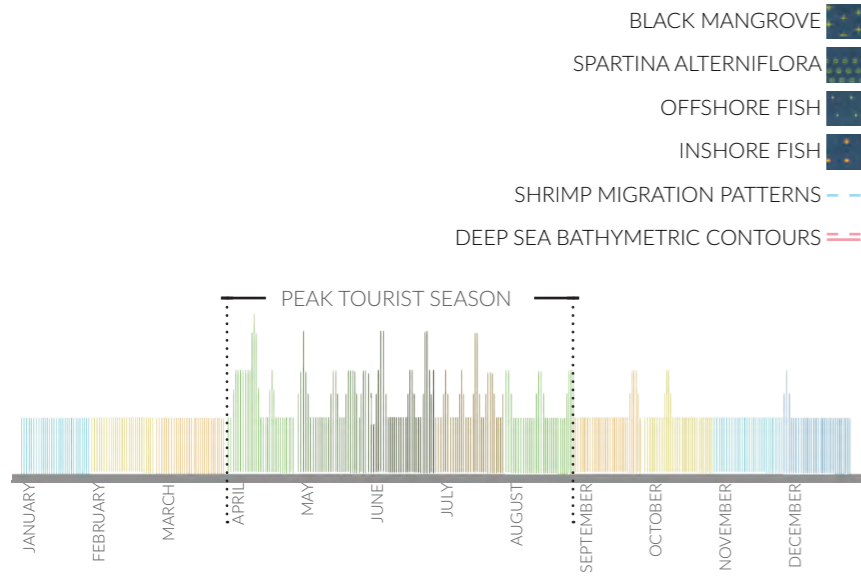


Relevant Datasets:

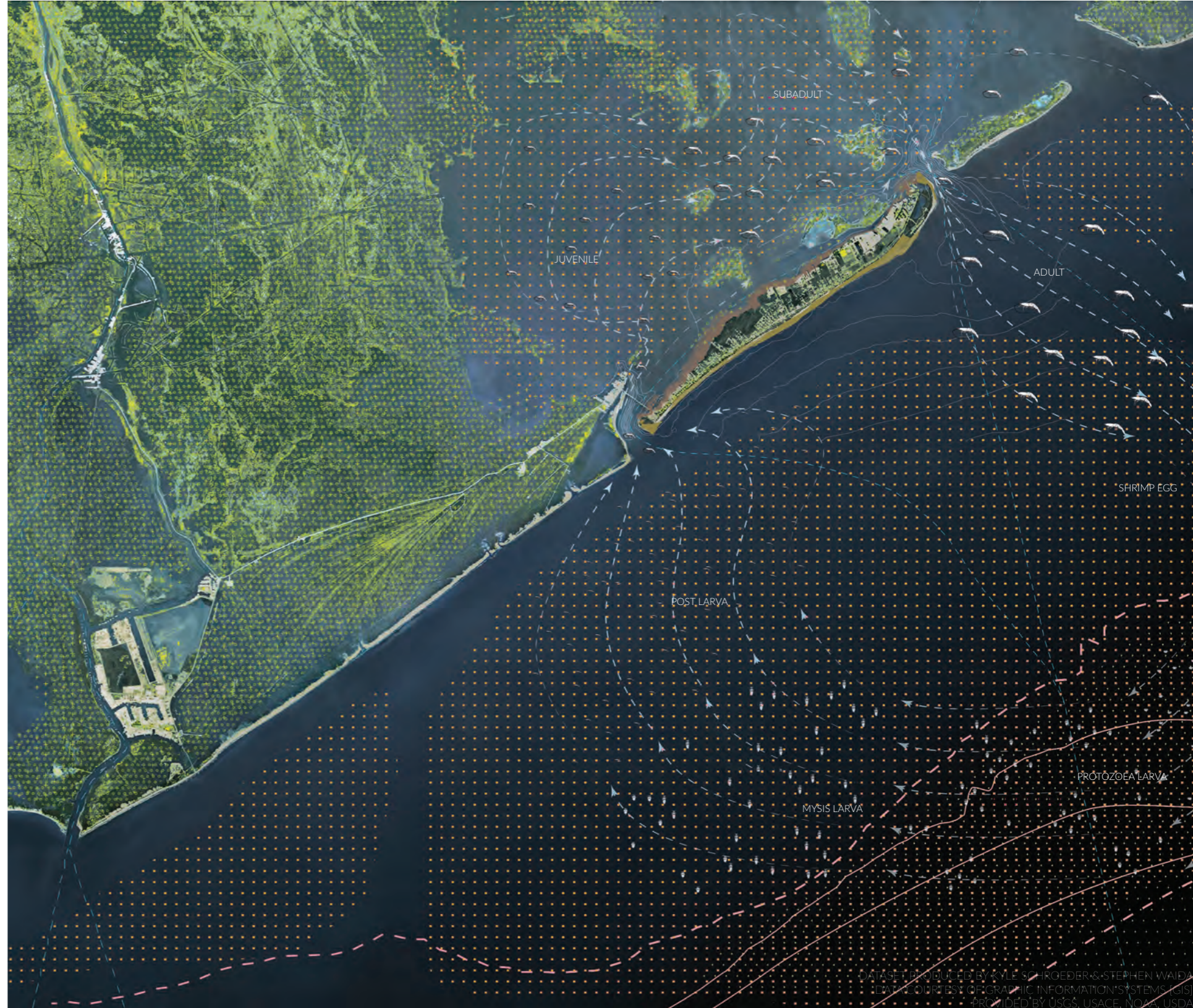
Species, habitats, charters and associated tourism

Since the mid 19th Century, Grand Isle has been established as a location in which to escape the city. Privileged New Orleanians originally departed an evolving urban life to pass time along the shores of the open sea; the island became established as a sanctuary for visitors and budding industries. Outings to the island were frequent and increasingly complete with spectrums of entertainment. Additionally, a beachside population was maintained, fortified by growing incomes from exported sales of agriculture and fisheries. By the turn of the century, ventures of farming and fishing had become extremely profitable and a culture of prosperity flourished alongside them. Dances on shrimp, cucumber festivals, and rodeos for fisheries established a vibrant, vivacious culture outside any city.

With surrounding waters and wetlands providing habitats for more than 280 species of fish, Grand Isle has been a recognized destination for the fishing industry throughout its history. This vibrant mix of onshore and offshore fisheries is accessible through nearby navigational arteries for boatmen and chartered ventures for those without their own vessel. At the very end of Louisiana's Highway One, a migrating, eroding barrier island plays host to a more than 90% increase in population annually. Inshore fish tend to thrive in waters ranging from 6" to 100', whereas offshore fish tend to settle in waters from 50' to 300' deep. Still, these visitors flock to the fading shores to reap the benefits and exploit the game of the thriving waters, regularly placing pressure on the existing island infrastructures.



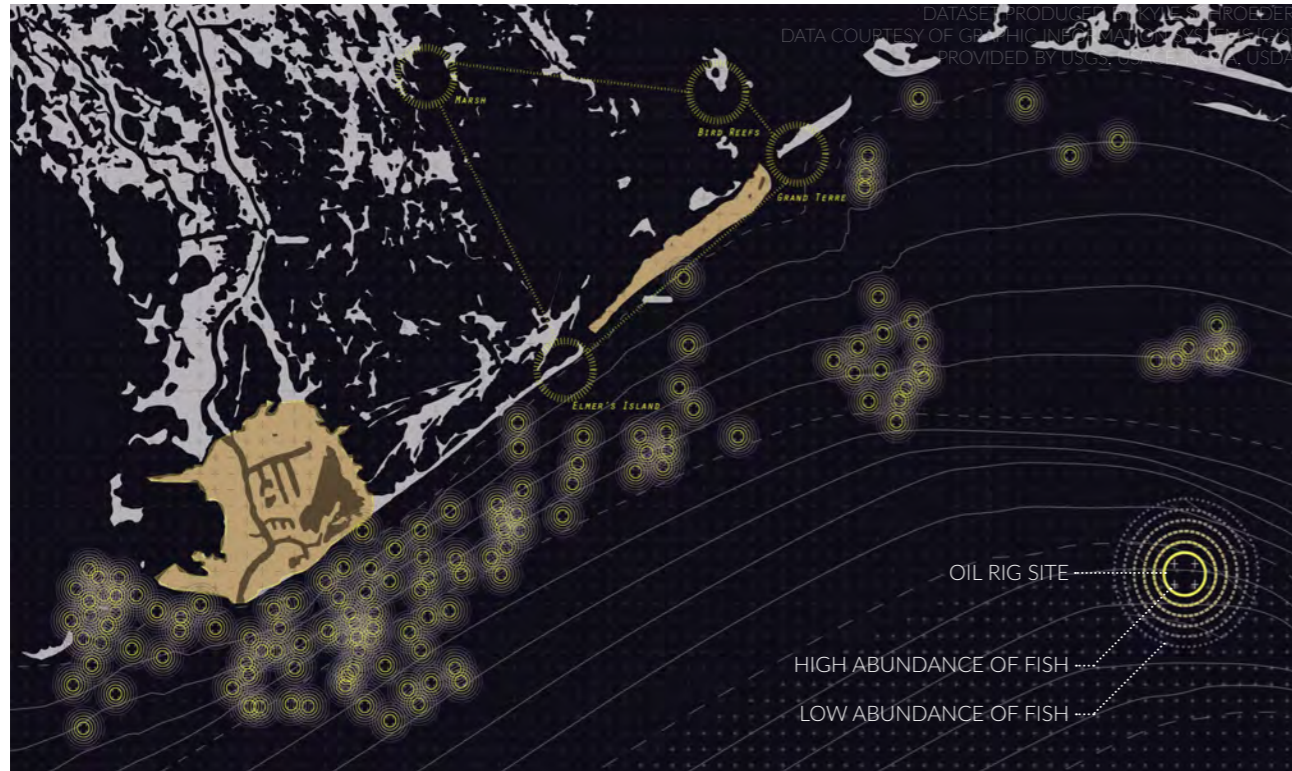
ANNUAL EVENT MAP



DATASET PRODUCED BY RYLE SCHROEDER & STEPHEN WAIDA
DATA COURTESY OF GEOGRAPHIC INFORMATION SYSTEMS (GIS)
PROVIDED BY USGS, USACE, NOAA, USDA

LOCAL FISHING HOT SPOTS

Vibrant habitats grow beneath the structures that maintain the adjacent oil and gas industry. Reefs and sea life begin to grow on the structure as many species of fish tend to feel safe around these large structural elements. Including decommissioned oil rigs as well as fish sanctuaries within the vicinity of oil rigs, these localities provide the shade and intricate crevices required to create artificial reef habitats. The rings in the adjacent image [below] indicate 120 meters off the rigs where there tend to be an abundance of fish.



FLAT BOTTOM

Typically made of aluminum or other light metals, flat bottom boats are designed to sit on top the water. This feature enables them to travel in extremely shallow waters. Typically ranging from 10-18' in length and only equipped with a small motor, they are only used for inshore fishing and are unable to handle rough waters.



CENTER CONSOLE

Able to handle very shallow marsh lands as well as deep offshore waters, these flat deck boats are widely used for many fishing excursions. Light and agile, these vessels can cut and speed through the water as well as wind through the marsh canals with ease. With a flat hull and v shaped tips, these boats maximize dynamics while sitting atop the water; they range from 15-30'.



CATAMARAN

Often sail boats but also a popular design for offshore fishing, the double hull design of the catamaran makes it great for long distances offshore and its balance in the water gives it an advantage over other boats. Ranging from 25-35', the catamaran can be mounted with a sail or motor depending on the fisherman or charter's preference.



SPORT FISHER

Sport fishers are deep sea fishing vessels and are designed to withstand rough seas as well as provide a comfortable stay for the time in the open water. These vessels generally range from 30-80', with the majority used for fishing at about 60' long. These luxury boats are optimal for overnight fishing excursions.



COMMON LOCAL FISHING VESSELS

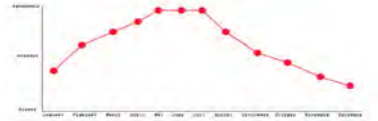
NARRATIVE CARTOGRAPHIES

GRAND ISLE STUDIO



BLACK DRUM

Living in environments with less than a foot of water to about 100', the Black Drum is a large fish that can grow up to 30". Spawning season takes place in the late winter and spring with the height of the season in the summer; these fish enjoy clear water and places where they feel safe and hidden.



SPECKLED TROUT

Mostly living on banks in bays and marshes, the medium sized Speckled Trout likes shallow water from 1' to 30' depth depending on weather and season. One of the most sought after sporting fish in the gulf, they like tall grasses, clear water and rocky areas.



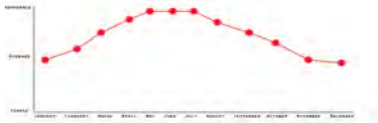
REDFISH

Known as one of the toughest fights in the gulf, the Redfish mostly lives in shallow waters of 1-3' early in life but will later travel to deeper waters. Having been known to grow up to 40", they are found in small bays against banks and rocky areas.



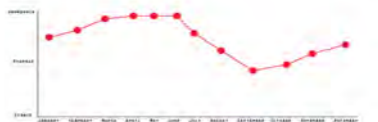
SHEEPSHEAD

Another popular game fish in the marshes and the Gulf, the Sheepshead can grow up to 30" and generally lives in water from 1-100' deep. Closely related to the Black Drum, the Sheepshead is differentiated by a set of human-like, flat incisor teeth.



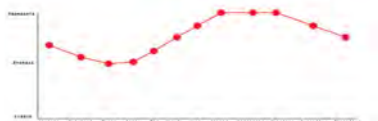
FLOUNDER

The Flounder lays on the bottom of the water with both eyes on the upward side of its head. Blending in with the ground, the Flounder is then able to strike small organisms that swim above it. Growing up to 2', the Flounder live in shallow bays but migrate to deeper waters for spawning in the fall and winter.



WHITE TROUT

Mostly living on banks in bays and marshes, the White Trout likes shallow water from 1' to 30' deep. They like tall grasses, clear water, and rocky areas, though they are not as popular as the speckled trout.



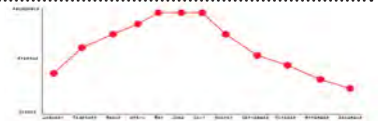
POPULAR INSHORE SPECIES

POPULAR OFFSHORE SPECIES



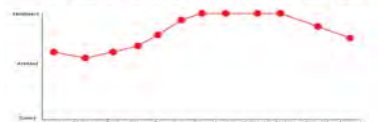
YELLOWFIN TUNA

Yellowfin Tuna is a deep water fish that tends to thrive in open sea. Feeding on smaller fish and crustaceans, this species can grow to be almost 6' in length and up to 300lbs.



RED SNAPPER

Thriving in water 50-300' deep, Red Snapper is a large deep sea fish that is most common in the gulf. Considered to be a reef fish, they are assumed to live near the bottom of the ocean. Feeding on smaller fish and crustaceans, this species can grow to be almost 2' in length and up to 30lbs.



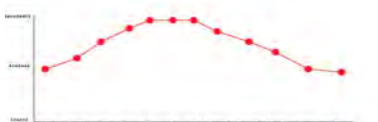
AMBERJACK

Growing up to 40" and known to reach 170lbs, the Greater Amberjack lives in near shore waters of up to 300'. Feeding on small fish and crustaceans, they are an aggressive sea predators and thrive in heavily grassed areas as well as near surface structures.



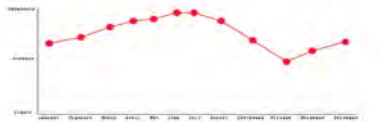
MANGROVE SNAPPER

Mangrove Snappers are medium size, popular, offshore game fish. Growing to be about 2' and 10lbs, they thrive in reefs, offshore oil platforms, and other surface obstructions.



WAHOO

Another popular offshore fish, the Wahoo includes some of the largest catchable offshore fish and can commonly be up to 7' long. A predator often feeding on larger fish, they can weigh up to 100lbs. They often live near surface obstructions, but do not school like other fish.



GAG GROUPE

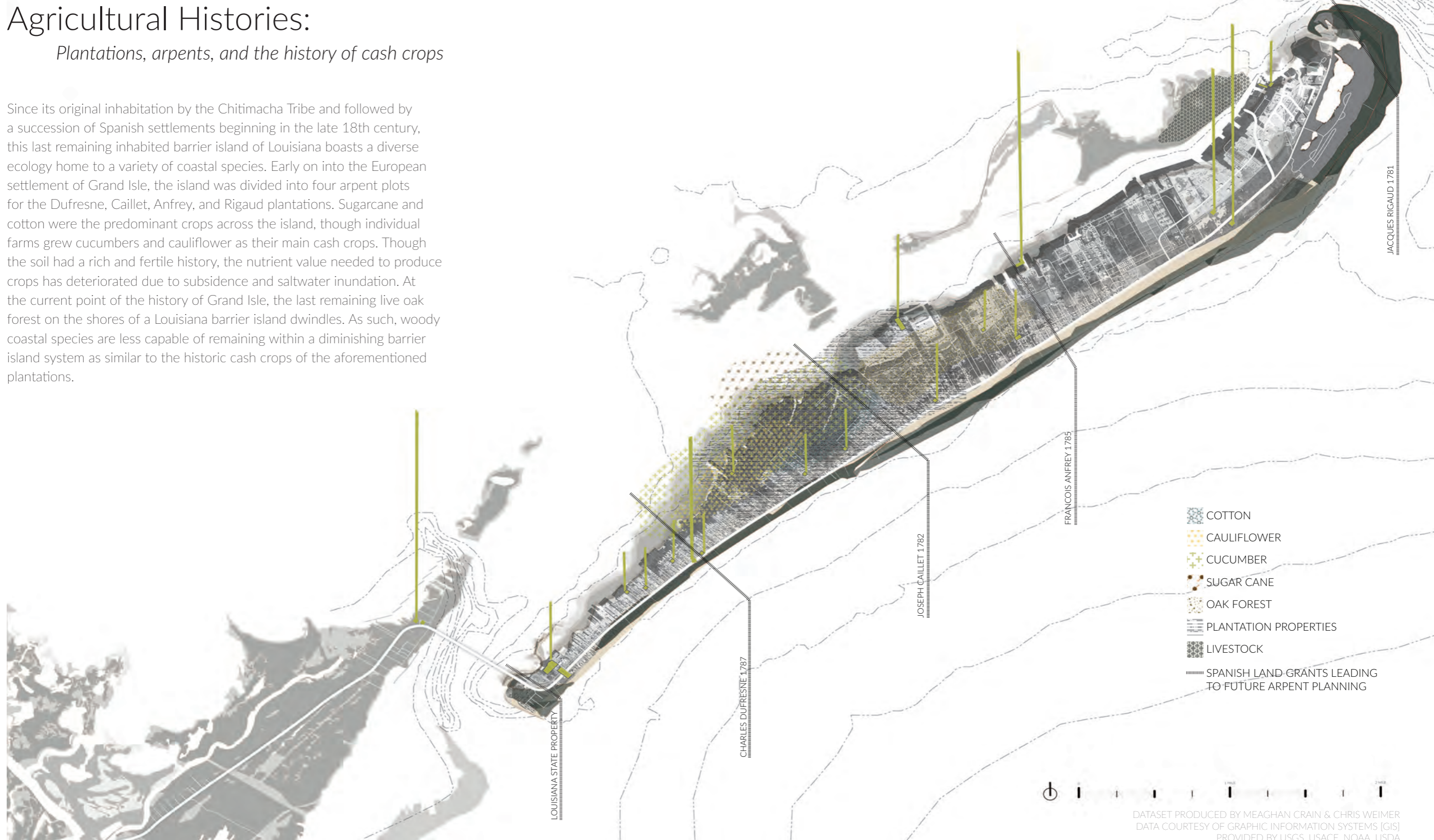
The Gag Grouper grows to be 32" and up to 50lbs. Living in waters ranging from 60-500' deep, they eat small fish and crustaceans. Also known for an excellent fillet!



Agricultural Histories:

Plantations, arpents, and the history of cash crops

Since its original inhabitation by the Chitimacha Tribe and followed by a succession of Spanish settlements beginning in the late 18th century, this last remaining inhabited barrier island of Louisiana boasts a diverse ecology home to a variety of coastal species. Early on into the European settlement of Grand Isle, the island was divided into four arpent plots for the Dufresne, Caillet, Anfrey, and Rigaud plantations. Sugarcane and cotton were the predominant crops across the island, though individual farms grew cucumbers and cauliflower as their main cash crops. Though the soil had a rich and fertile history, the nutrient value needed to produce crops has deteriorated due to subsidence and saltwater inundation. At the current point of the history of Grand Isle, the last remaining live oak forest on the shores of a Louisiana barrier island dwindles. As such, woody coastal species are less capable of remaining within a diminishing barrier island system as similar to the historic cash crops of the aforementioned plantations.



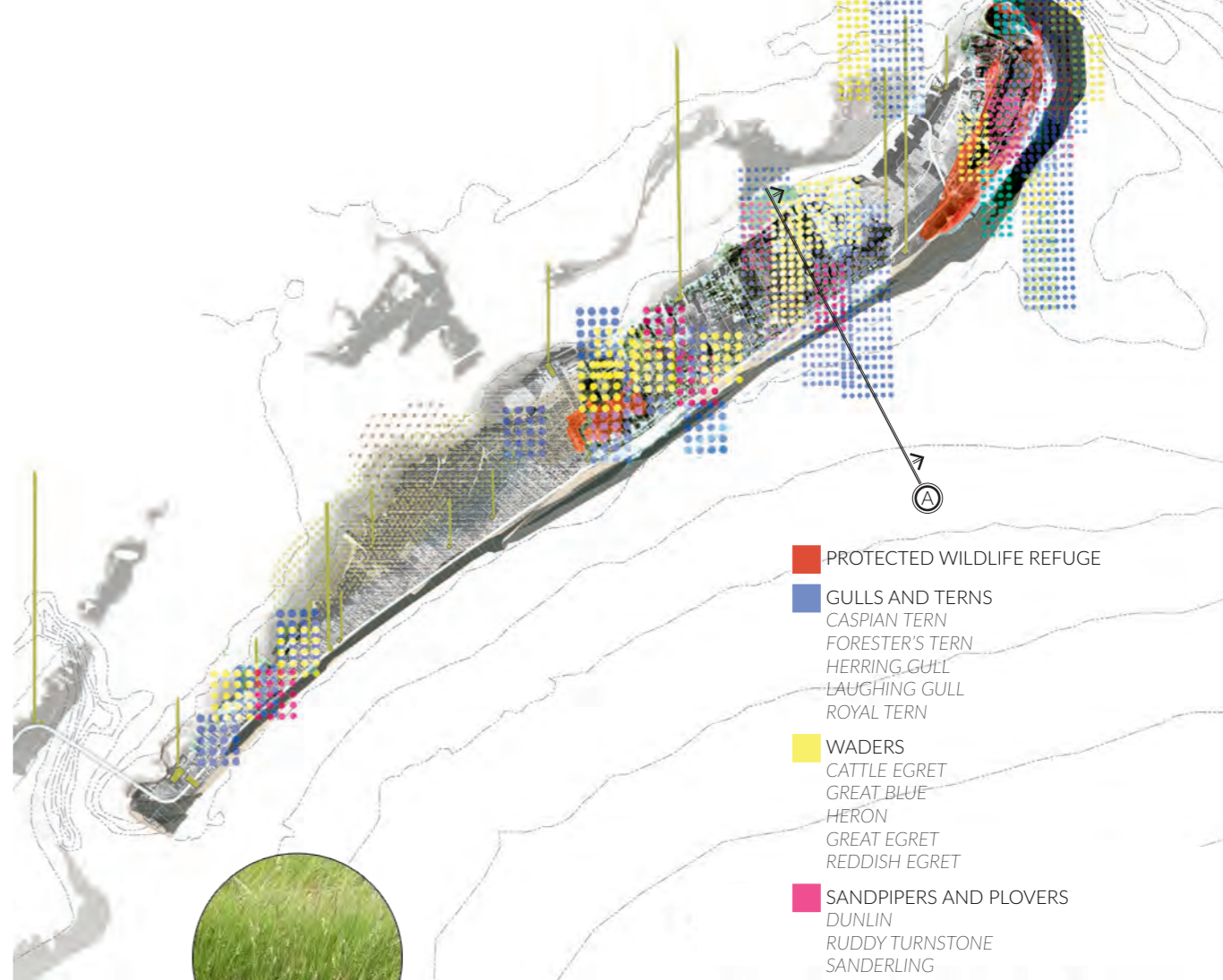
Coastal Plant and Bird Species: *Migratory pathways and species distribution*

Within the northeast part of the island and away from the rowdy tourist events and rodeos, the Grand Isle State Park provides a sanctuary for the multiple bird species that fly the 500,000 miles across the Gulf of Mexico to South America. This barrier island provides the last stopping point before this exhausting flight and so attracts bird species as well as natural tourists alike.

The declining live oak forest provides a major habitat for the migrating birds. Able to grow in sandy soils, the roots of woody plant species help to prevent the dunes from eroding and protect embedded structures from harsh winds. Additionally, black mangroves have proven themselves capable of responding to climate change as they are able to build on top of their existing root structures to adapt to rising sea levels. As the island deteriorates, the migratory pathways are at risk to disruption while the remaining soils subside beneath the surface of the water.



GRAND ISLE TO THE AMERICAS:
CONTINENTAL MIGRATORY PATHWAYS
DATASET PRODUCED BY ABBEY BROWN

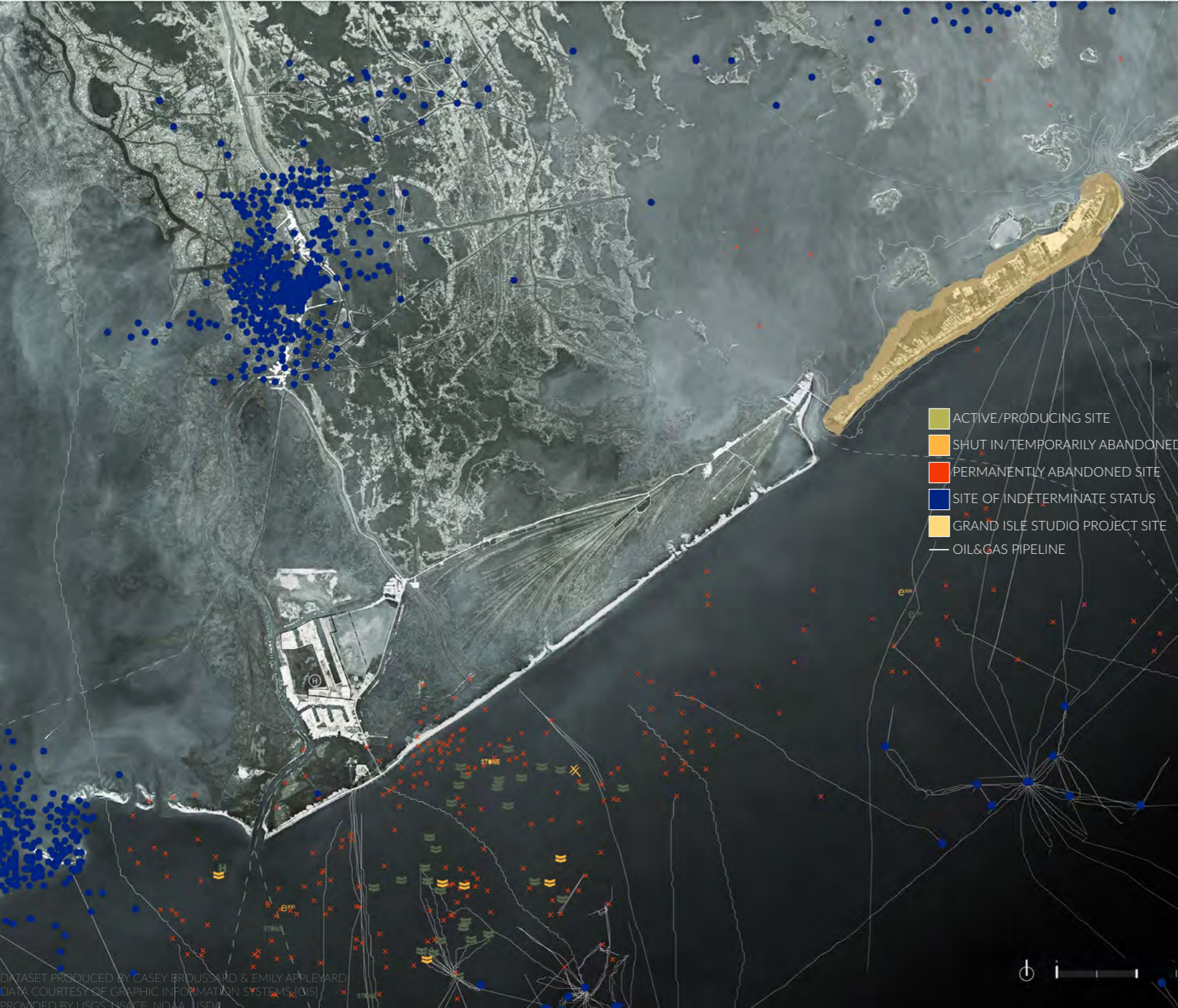


- PROTECTED WILDLIFE REFUGE
- GULLS AND TERNS
 - CASPIAN TERN
 - FORESTER'S TERN
 - HERRING GULL
 - LAUGHING GULL
 - ROYAL TERN
- WADERS
 - CATTLE EGRET
 - GREAT BLUE HERON
 - HERON
 - GREAT EGRET
 - REDDISH EGRET
- SANDPIPERS AND PLOVERS
 - DUNLIN
 - RUDDY TURNSTONE
 - SANDERLING
 - WESTERN SANDPIPER
 - WILSON'S PLOVER
- OTHER
 - AMERICAN WHITE PELICAN
 - BROWN PELICAN
 - NORTHERN GANNET
 - OSPREY

A ISLAND SECTION TRANSVERSAL
ADJACENT SPECIES PATTERNING
ACROSS THE ISLAND OF GRAND ISLE,
BACK BAY TO GULF OF MEXICO AS
VIEWED LEFT TO RIGHT



ISLAND TRANSVERSAL PRODUCED BY JONATHAN PERRET

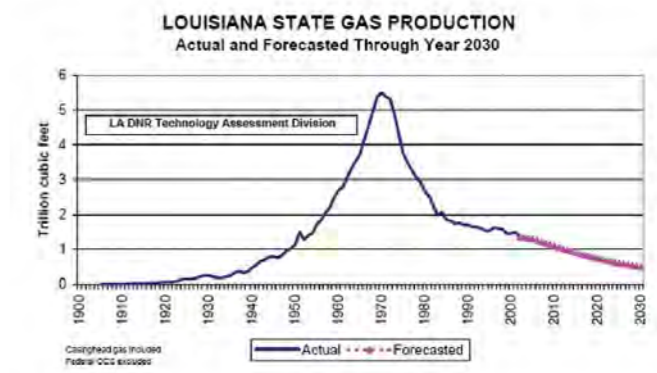
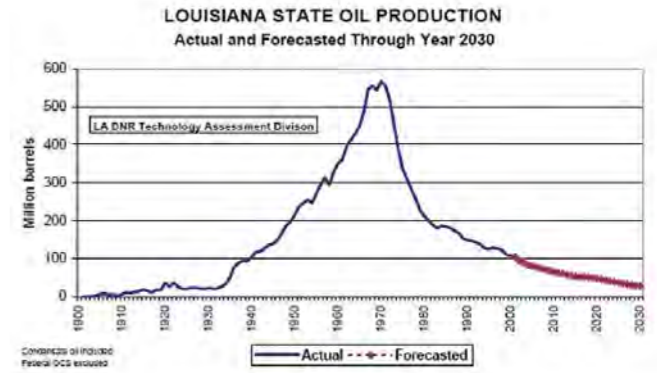


DATASET PRODUCED BY CASEY BROUSSARD & EMILY APPEYARD
 DATA COURTESY OF GRAPHIC INFORMATION SYSTEMS (GIS)
 PROVIDED BY USGS, NASA, NOAA, USDI

Oil and Gas:

Local and regional Industry assets

Located in the westward parish of Lafourche, Louisiana's only port with direct access to the Gulf of Mexico is conveniently positioned to serve industrial activities required for the exploration and development of oil and gas resources. Growing at a visible rate due to oil and gas development on the Outer Continental Shelf, Port Fourchon supports about 270 large vessels and over 1200 trucks daily. While more than 675 million barrels of crude oil travel through the port by pipeline each year, occupants of the port have handled about 20 million tons of cargo of which most was related to oil and gas.



Keithly, D.C. Lafourche Parish and Port Fourchon, Louisiana: Effects of Outer Continental Shelf Petroleum Industry on the Economy and Public Services, Part 1. OCS Study MMS 2001-019. Prepared by the Louisiana State University, Coastal Marine Institute. US Dept of the Interior, Minerals Management Service, Gulf of Mexico OCS Region. New Orleans, LA. 2001.

"Port Fourchon." World Port Source. World Port Source, n.d. Web. 29 September 2014.

The Challenge for Architectures

As the Louisiana landscape continues to transform, proposals for the built environment are required to engage a series of different physical and temporal scales. Architectural design compositions, components, and details must confront the pace of deterioration within wetland ecosystems. As a fringe of settled land and the last remaining inhabited barrier island of Louisiana, Grand Isle illustrates a variety of coastal retreats. In contrast, there is potential for participations with this continual change and critiques of designed responses to increasing risk.

Thus, mappings of the transforming environment must adequately explore and explain relevant ecologies and industries within spectrums of human inhabitation. How do we register the relevant systems, services, scales, resources, and flows present in Grand Isle? Can cartographies narrate pasts and presents in order to be conscious of design parameters and risks for the future?

As the barrier itself transforms, the island scale infrastructures are required to reconsider if, when, and how they enable and encourage inhabitation of this deteriorating landscape. Can essential island scale services be grouped and reintegrated as flexible systems that synergize evolving ecological issues, economic opportunities, and transforming risks? Is it possible for services to be multi-purpose while engaging a shifting coastline?

Along with use, function, structure, and materiality, past and present is considered through the proposals for future construction. Consequentially, how can these architectures acknowledge their vulnerabilities on the Louisiana coast? Can we incorporate the variables of future land change with design of considerate, multiscalar systems? Can architectural propositions develop reciprocal relationships with transforming sites over time in order to adequately consider risk and design possibilities?



Reciprocal Positioning

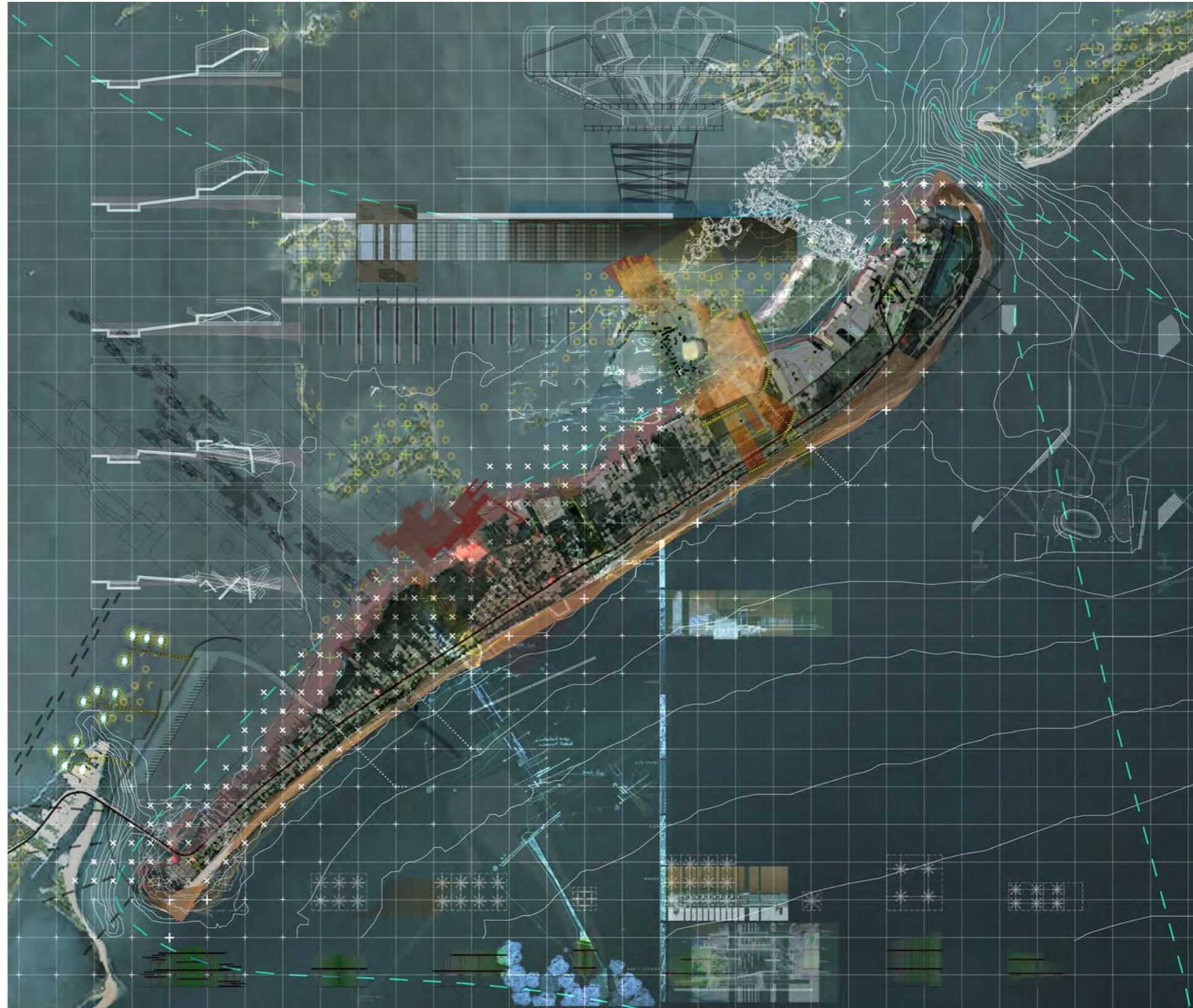
From the entirety of the island down to installations for investigation, multiple physical and temporal scales of the environment are examined on the transient territories of Grand Isle. Infrastructure and inhabitation confront coastal risks through an understanding of pasts, presents, and potential futures of settlement, industry, and ecology. Agriculture and Fisheries, Tourism, and the perpetual presence of Oil and Gas provide a picture for programmatic engagement. Throughout the term, each student worked with the instructor to establish their own unique project brief in order to more fully respond to the varied challenges faced by the inhabitants of this barrier island.

An iterative process of design and research has considered the components of adaptive, sustainable, and resilient communities; questioning these relatively established vocabularies allows the students to imagine and engage with what is possible now and what might have to be considered in the future. The Grand Isle Studio engages the impermanence of the coastal environment through a series of architectural hypotheses. Providing a framework to understand and participate with coastal issues, the brief of the studio facilitates historical events to integrate imaginative future planning.

FEATURED PROJECTS FROM WEST TO EAST

Kyle Schroeder
 Meaghan Crain
 Carole Shockley
 Casey Broussard
 Christopher Weimer
 Asalsadat Emamjomeh
 Stephen Waida
 Abbey Brown

Raised Landings
Vertical Moments
Ephemeral Pixels
Exoteric Comunete
Measurable Inceptions
The Crossing at the End of Louisiana
Seeded Ecologies
Respite Terrain

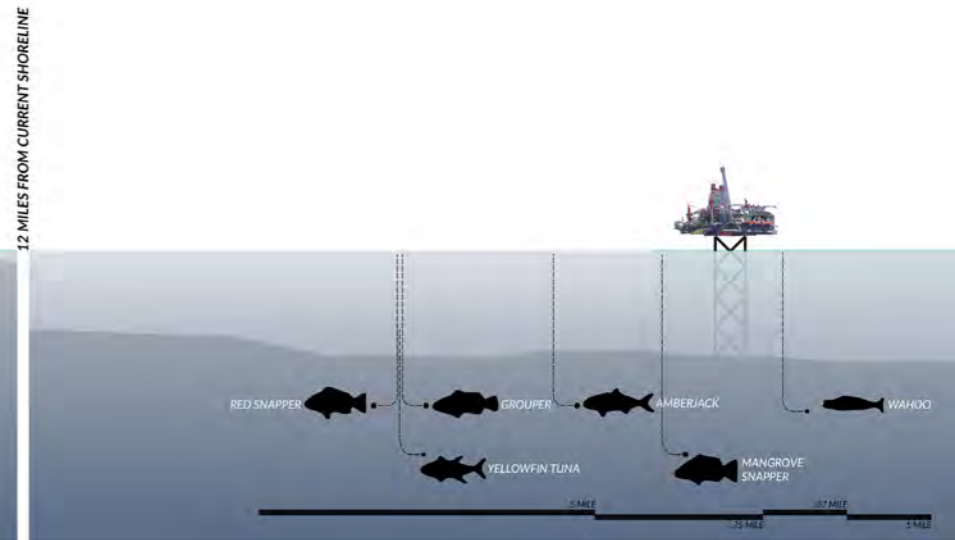
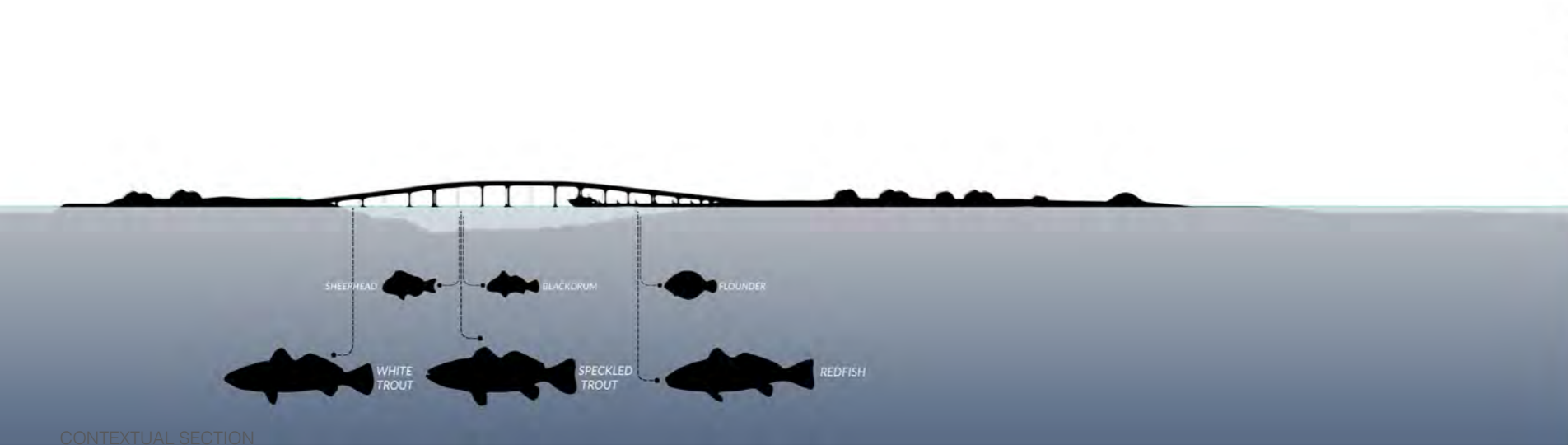
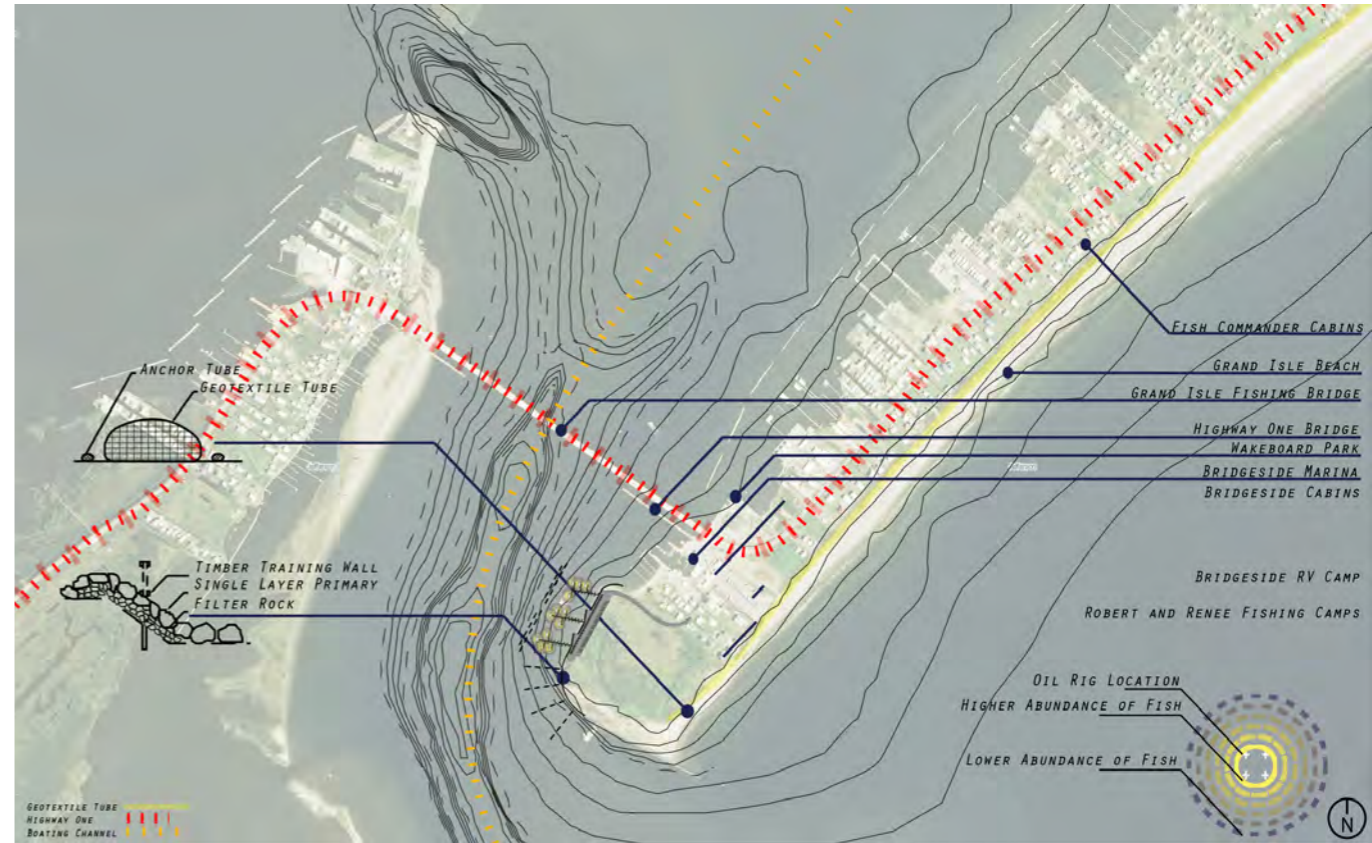
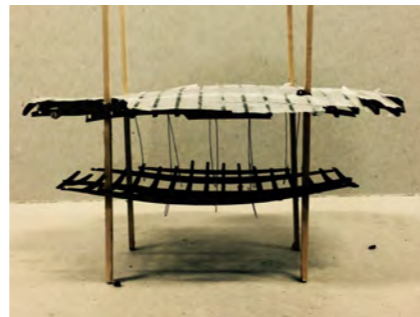


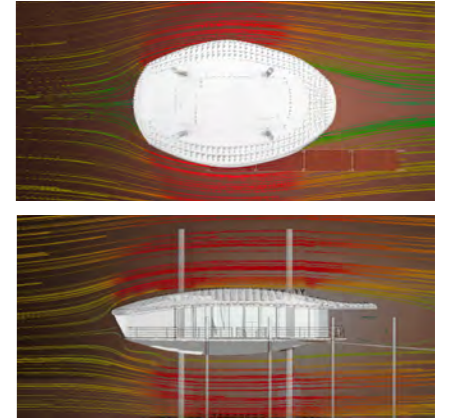
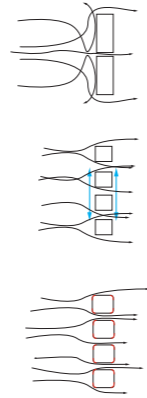
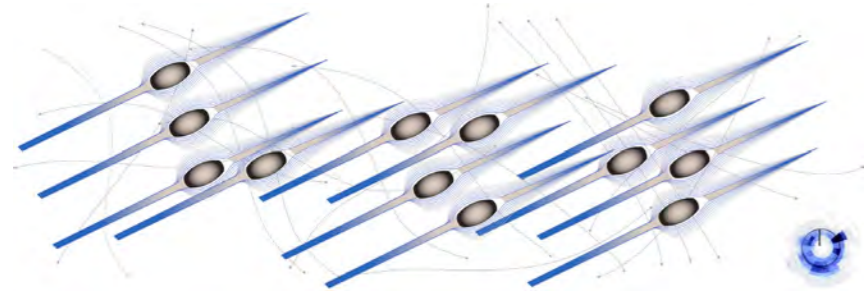
Raised Landings:

encountering force and transforming the marina

Capitalizing on the attraction to catch world-class saltwater fish within island-adjacent environs, Raised Landings engages the permanence of the fishing industry as the permanence of the island itself transforms. Attempting to match the dynamic nature of the surrounding environment with an architectural dynamism that responds to changing conditions, the landings are equipped to handle transitioning economies, infrastructures, and environments. Sited directly west of the recently constructed Highway 1 crossing to the island, this project is designed to engage a set of marinas with the rodeo culture, fishing industry, and island inhabitants for use in the present and in the future.

Though the island is facing increasingly challenging circumstances, Raised Landings presumes the continuation of onshore and offshore fisheries as thriving economies. Providing individual living quarters, direct dock access, and boat up approaches, these individual enclosures are scattered along the shoreline of Grand Isle's western tip. Present and future accessibility options encourage dock side fishing off the edge of each raised landing. The aerodynamic forms are split into individual pods in order to more efficiently handle distribution of high wind speeds. Acknowledging the vibrant habitats animate in the shadows of nearby oil rigs, these raised structures imitate the foundations and detailing of those technical systems and provide similar sanctuaries for varied habitats beneath the waters surface.

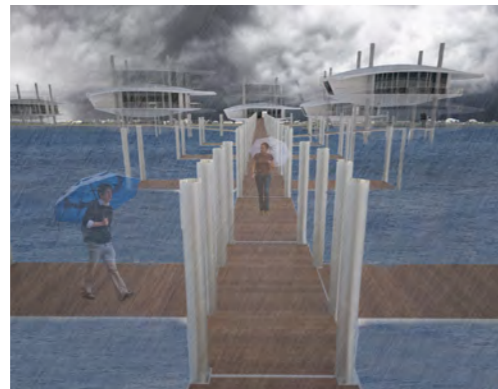




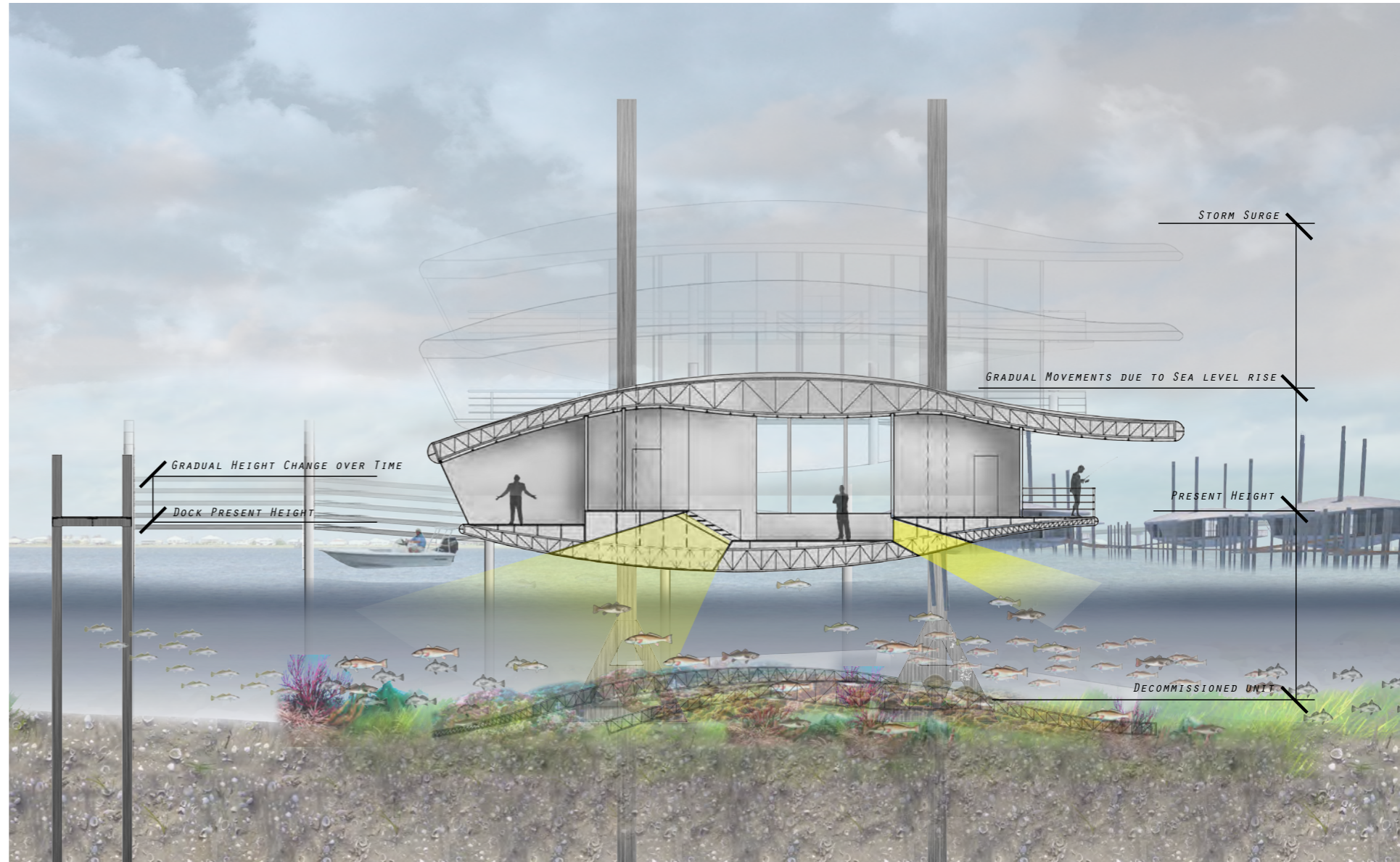
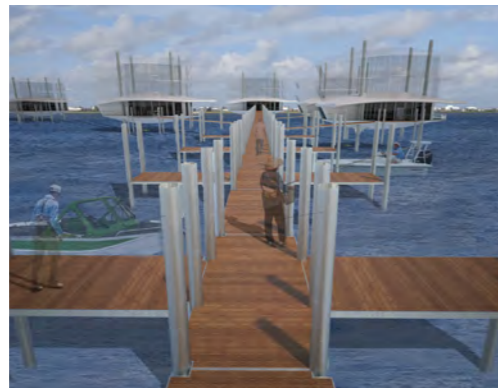
SURGE
LANDINGS RAISED ABOVE BASE
FLOOD ELEVATION



STORM
LANDINGS PREPARED FOR ELEVATION
CHANGE



CALM
LANDINGS AT GRADE FOR BOAT AND
RECREATIONAL ACCESS



Lifting mechanisms are embedded within the lightweight fiberglass skin of each pod, allowing each living space to be raised over rising sea levels and potentially devastating surges. With the landings sitting well above the waters surface to avoid tidal fluctuations and large swells, the height of the docks designed to reach the camps from the current shoreline are also removable and transformable for future challenges. This consideration of vertical detailing insures the longevity of the interventions during storm events and as the island itself continues to disintegrate. Meanwhile, voids between the steel structure expose the waters surface to visitors inside. Off an island known for its culture, its tourists, and a lifestyle built around them, Raised Landings addresses the continuation of a vibrant fishing economy regardless of island conditions.

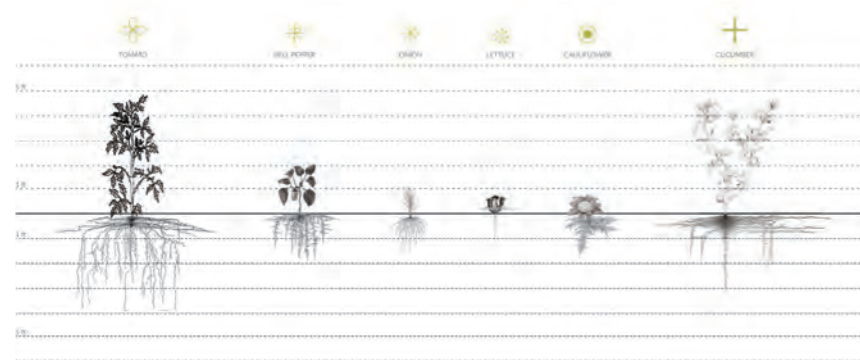


Vertical Moments:

verdant arrays of community greens

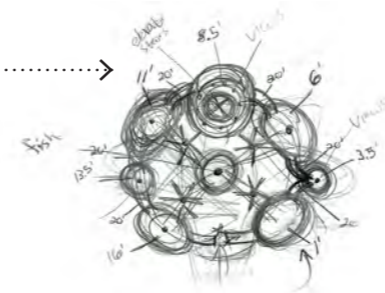
Observing the historical establishment of agricultural plots along an arpent system, a series of vertical interventions make visible both past and present. Considerate of the former plantation sites quartering the island east of the existing Highway 1 Bridge, Vertical Moments establishes a set of sites designed to provide alternate perspectives of island history and the transforming environment.

Due to continuing saltwater inundation, the soils along the barrier have lost necessary nutrient value to produce viable crops. However, through the use of vertical farming technologies, fresh greens and produce can be reintroduced along the seven mile stretch of land; a set of greenhouses provides access to community gardens for resident and visitor populations annually dispersed throughout Grand Isle. Reflective of the historical farming of cash crops such as cucumbers and cauliflower, specific locations allow for reintroduction of small scale agricultural works in conjunction with contemplation spaces. Allowing residents to grow crops within smaller areas to sustain a diminishing population, this set of community oriented activity spaces also provides strategic views to the history of the island. Each unenclosed structure welcomes natural sunlight and benefits from the moderate island environment. Ramp and platform circulation winds up and through a branching structural system at each location; surfaces parallel to the ground plane house varied species distinct to each site while surfaces perpendicular to the ground plane respond to the surrounding conditions. Aside from the 360° view atop each construction, the planes which frame views are used to channel wind for seed distribution as well as to block salt spray for less tolerant plants. All surfaces, from ramps and handrails to cables providing tertiary structural support assist in plant development by encouraging growth along predicted geometries.

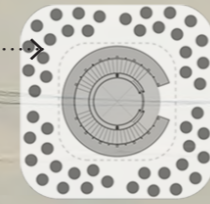


HISTORICAL AGRICULTURAL TYPES

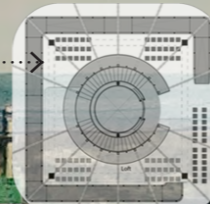
PROCESS
VISIBLE CIRCULATION AND PLANTINGS



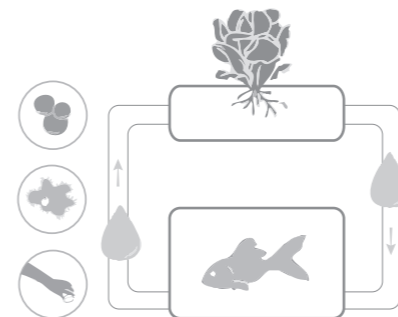
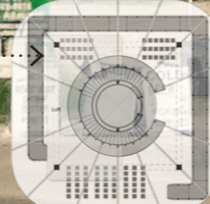
3RD LEVEL
SALT TOLERANT SPECIES



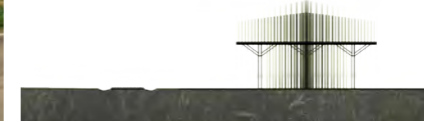
2ND LEVEL
MIX OF SALT TOLERANT AND LESS TOLERANT SPECIES



1ST LEVEL
SALT INTOLERANT SPECIES



Each structure maintains an aquaponics system in order to reintegrate required nutrients to relevant soils; at the core of each intervention, a fish tank housing local species is centered for efficient drainage and maintenance. Inclined towards a history of the early settlement of Grand Isle, Vertical Moments are positioned to take advantage of existing conditions and attractions while alluding to environmental change.



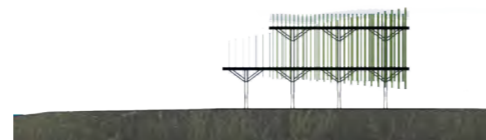
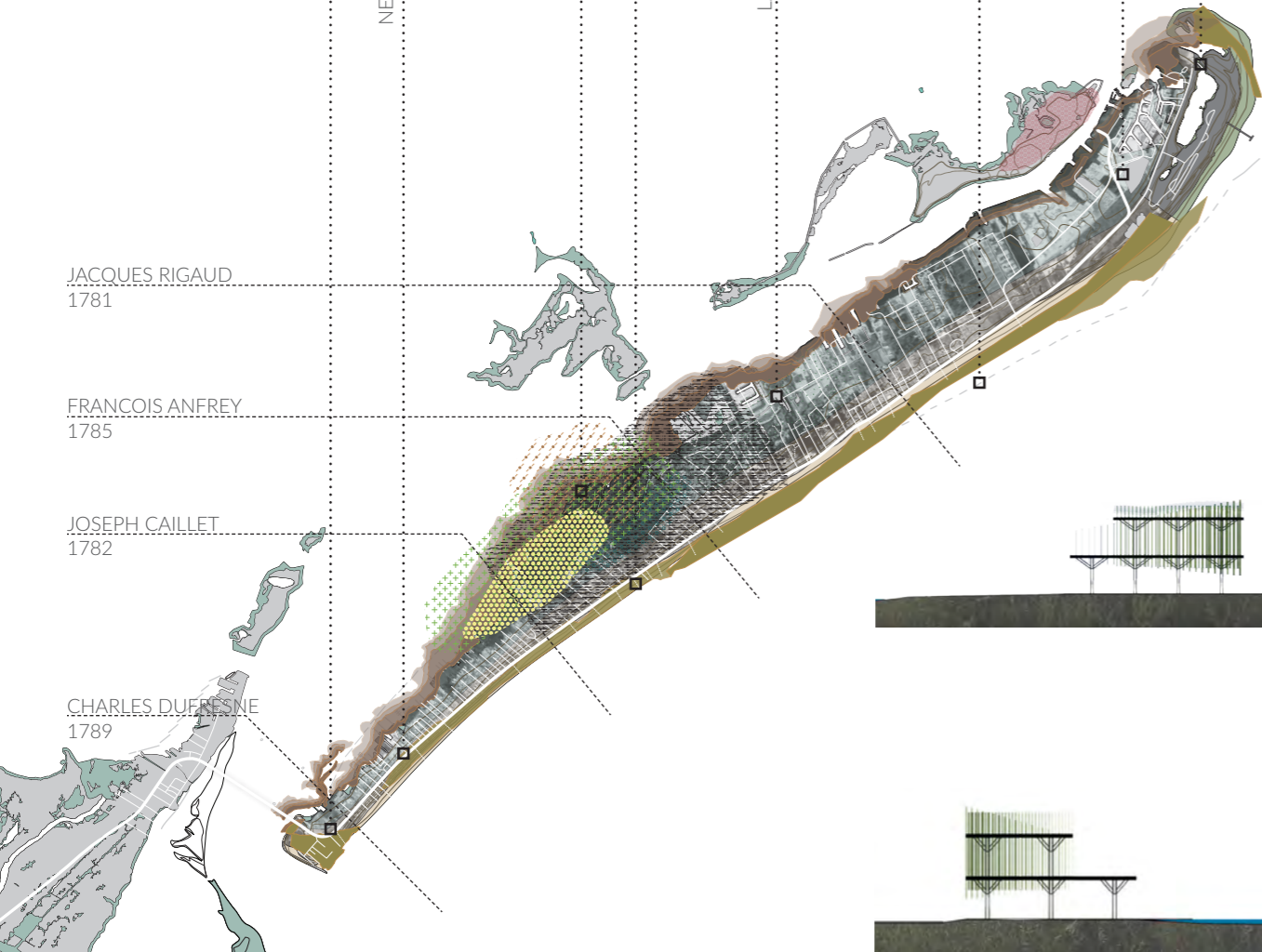
BRIDGE 1
 NEIGHBORHOOD 2
 MARSH 3
 TUBE 4
 LANDRY'S HOLE 5
 ROCK JETTY 6
 OIL & GAS 7
 RESERVE 8

JACQUES RIGAUD
1781

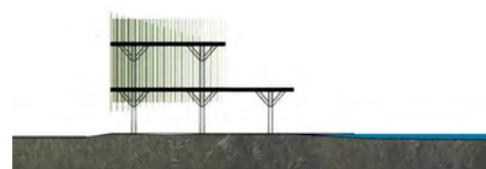
FRANCOIS ANFREY
1785

JOSEPH CAILLET
1782

CHARLES DUFRÈSNE
1789



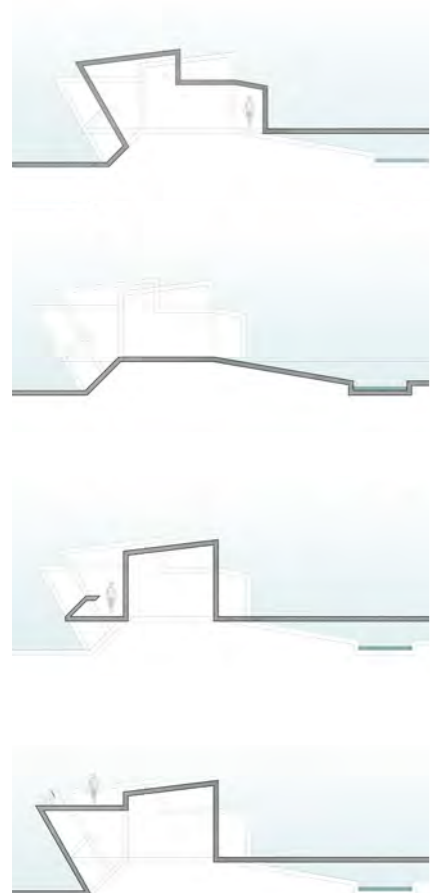
3_MARSH [ABOVE]



Ephemeral Pixels

engaging a fading landscape through temporary encampment

Catering to tourists in search for a minimal and immersive experience of the natural environment, peace and relaxation can be found in the Ephemeral Pixels stretching across the island from the gulf to the bay. Conscious of varying island populations, this series of flexible spaces for short term and local endeavors invites visitors to become embedded within the continual deterioration of the environment. A prominent destination for recurring tourists, many visitors frequently return to indulge in the natural coastal environment and vibrant wildlife amongst Grand Isle. Acknowledging the unique condition of seasonal abandonment, the project participates with gradients of vacancy.



Jerry. 63.
New Orleans weekender



Janet. 56.
Bed & Breakfast owner



Evelyn. 50.
Local educator



Alfonse. 68.
Former Grand Isle police



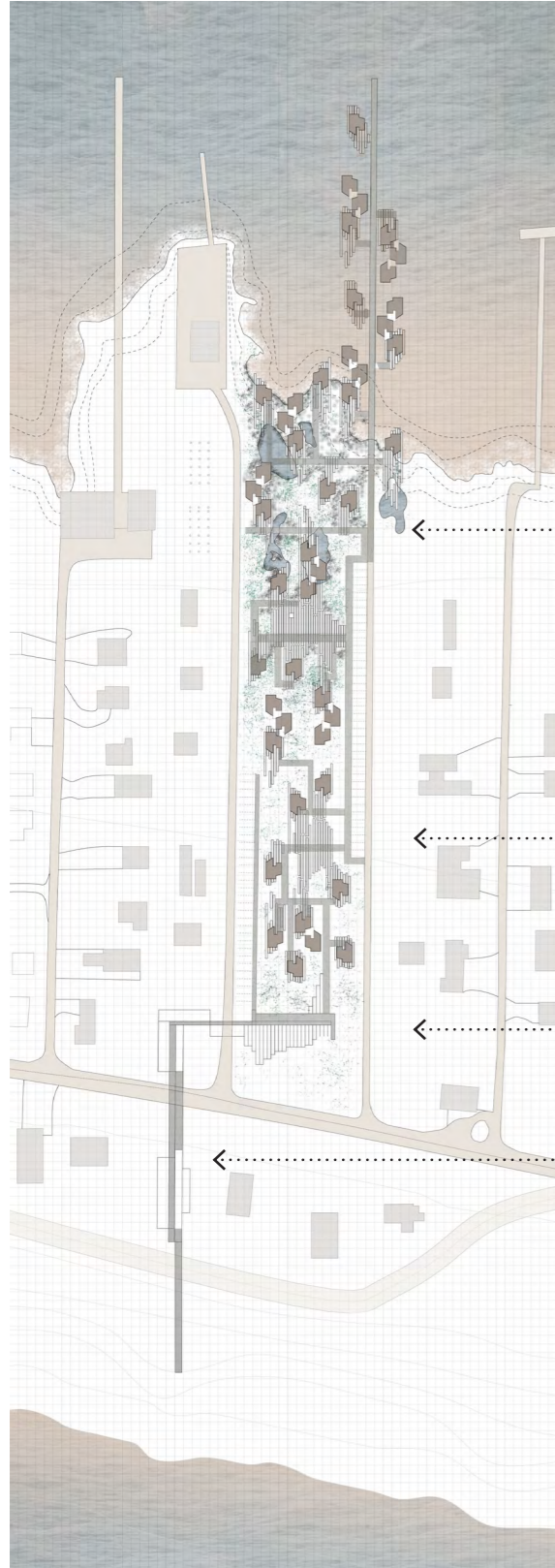
"It's probably the most unique area in the United States...it's not only an ecological disaster, it's a cultural disaster. There's a whole culture that's interrelated and intertwined with that environment....we waited too long."

"I see Grand Isle being here. I don't see us washing away....Because when Grand Isle is gone, New Orleans will be gone...right now we're losing marsh. We're not losing people's homes and their families. But eventually we will if we erode away."

"Well, there's nothing you can do...I mean nature is nature and it's the strongest thing there is... Well we're an island, we're a barrier island, and we're just not going to be here much longer."

"I see it (land loss) and I see it now. The more they (scientists and engineers) do, the more it eats away...but they've never been to Grand Isle and they're going to tell me how to protect Grand Isle."





- LODGING UNITS

SOCIAL SPACE

←

fish cleaning facility
outdoor grilling
common space
- LODGING UNITS

SOCIAL SPACE

←

fish cleaning facility
outdoor grilling
common space
- LODGING UNITS

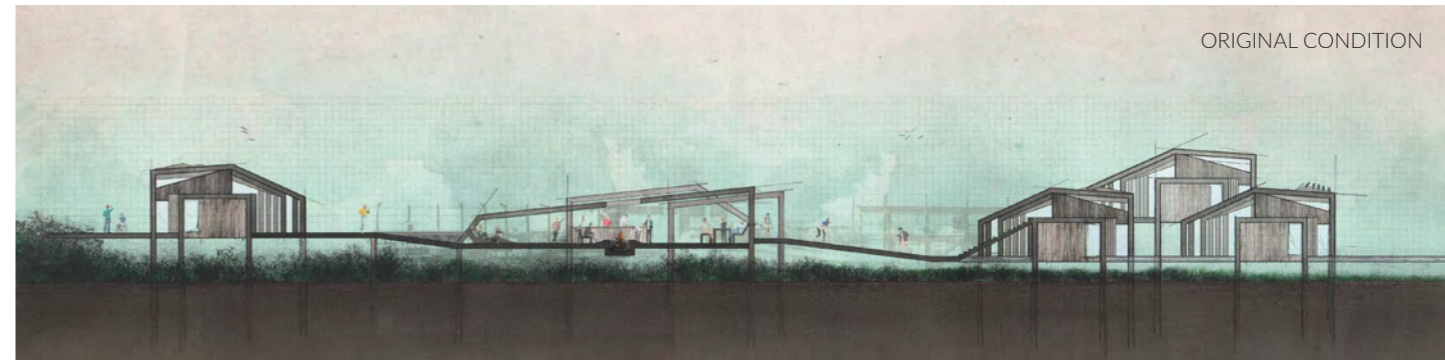
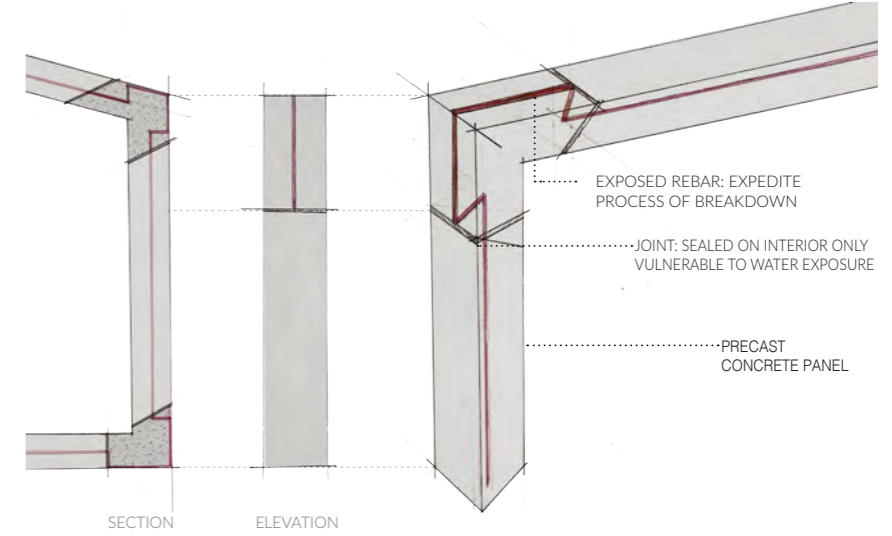
PUBLIC SPACE

←

trading post
farmers market
public forum
- PUBLIC SPACE

←

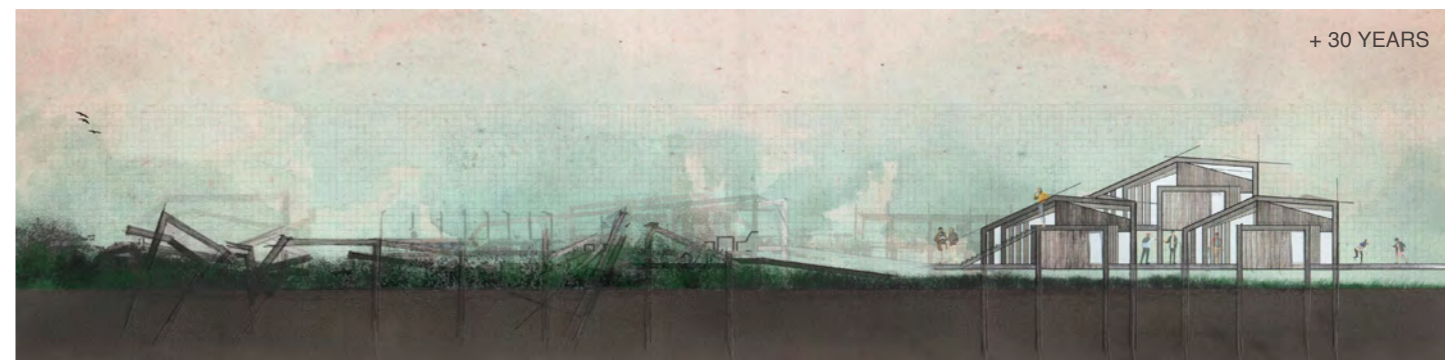
pop up kitchens
food truck arena
beach front access



ORIGINAL CONDITION



+ 15 YEARS



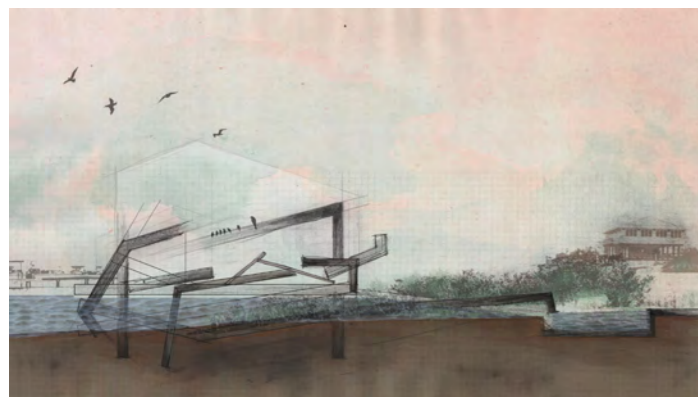
+ 30 YEARS



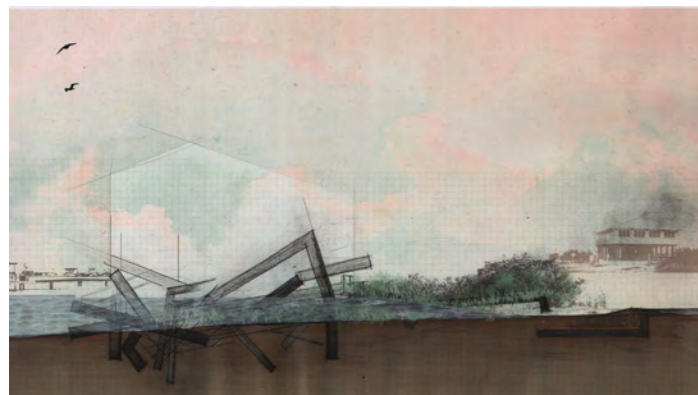
POST EVENT
 human elements removed/begin to degrade
 still accessible yet uninhabitable as a shelter



10+ YEARS
 joints begin to fail
 concrete panels slide out of place
 structure is totally uninhabitable by humans



20+ YEARS
 load of failed vertical elements breaks floor
 concrete elements begin to fall into
 landscape/earth



30+ YEARS
 structure becomes fully embedded into earth

OUTDOOR DECK

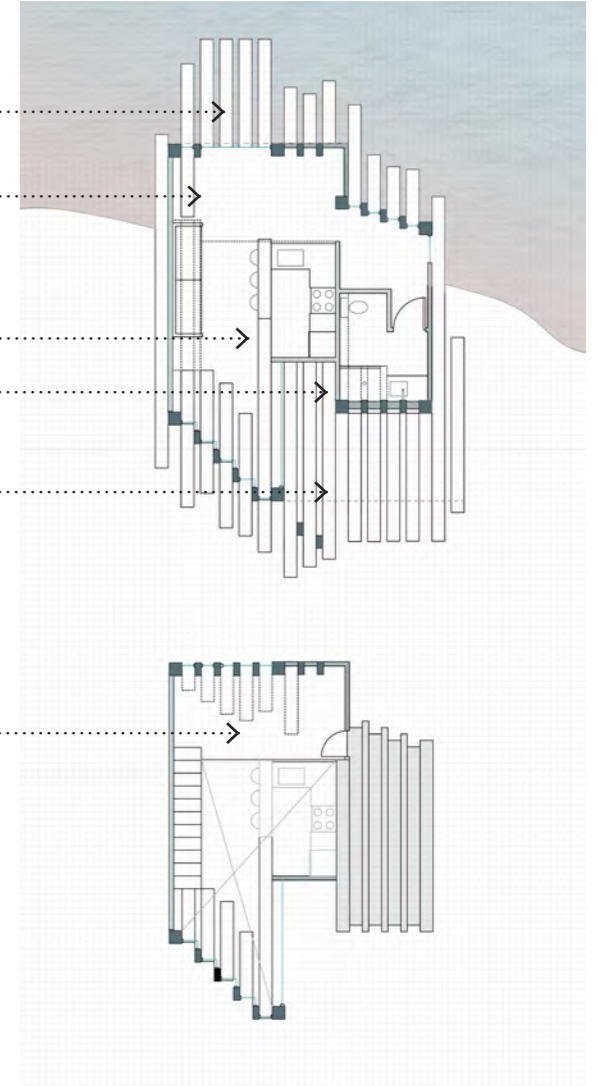
LIVING

KITCHEN

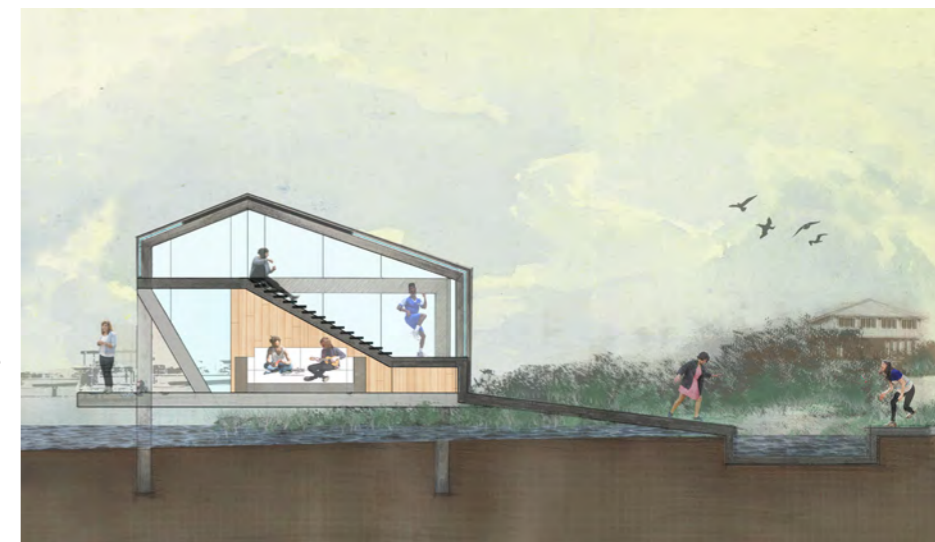
BATHROOM

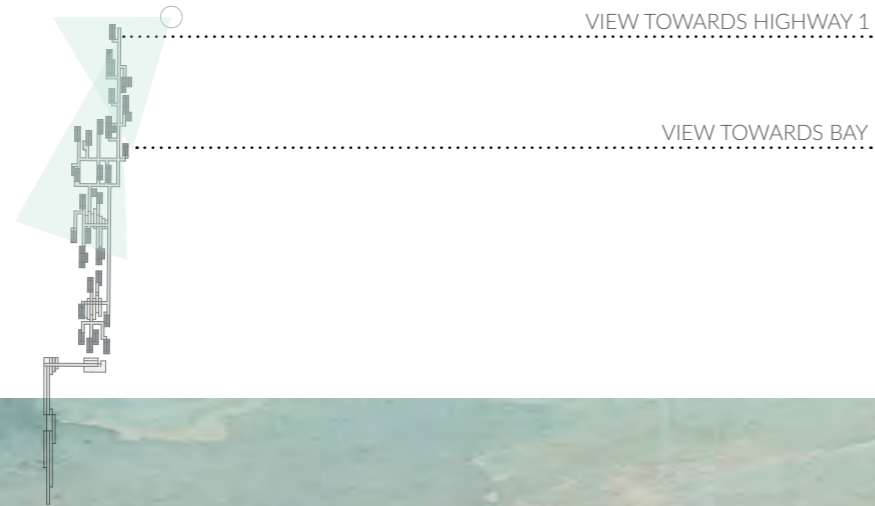
ENTRY

SLEEPING LOFT

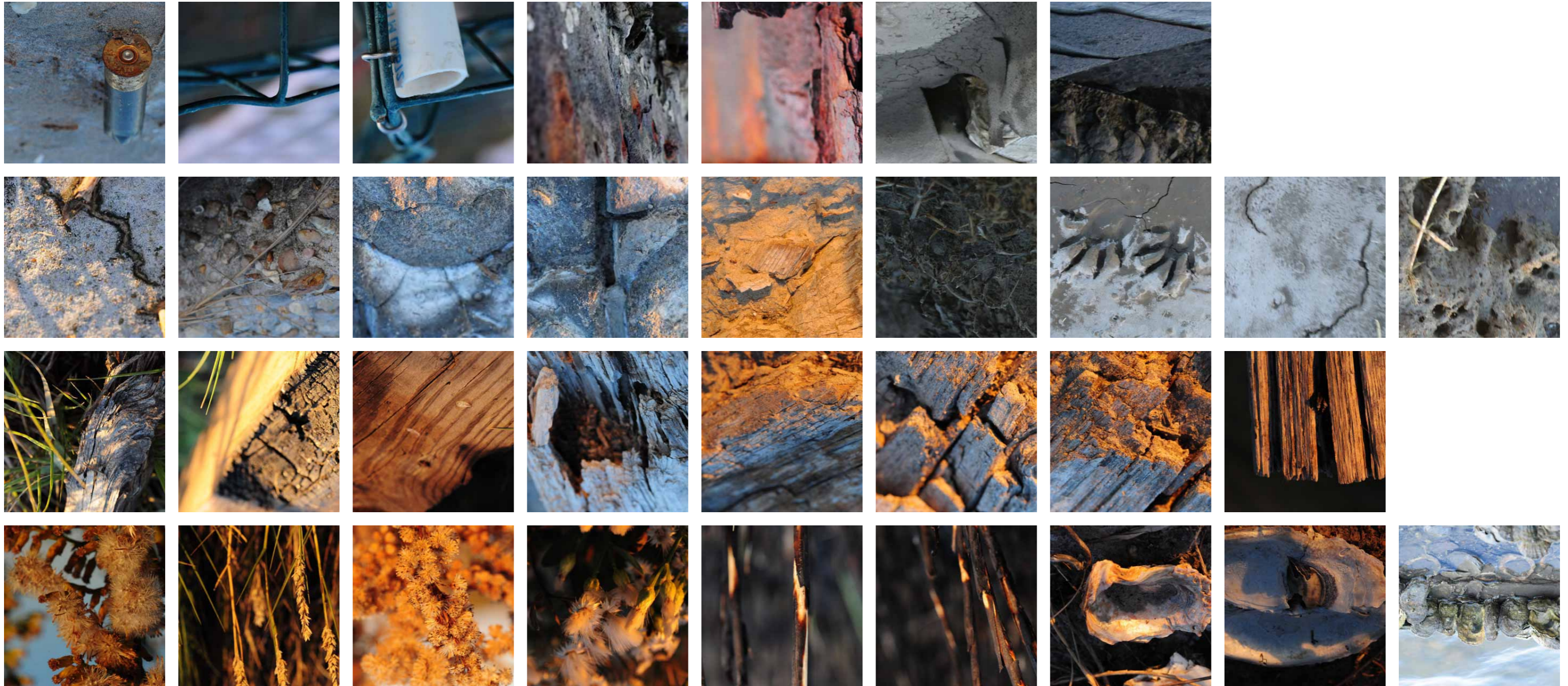


Stretching from Highway 1 to the back bay, a proposed composition of alternative lodging experiences is physically embedded within a constant state of coastal erosion. Constructed with an acknowledgement of the islands temporal nature, the units explore spatial evolutions to comfortably accommodate individuals and groups in unique, memorable methods.





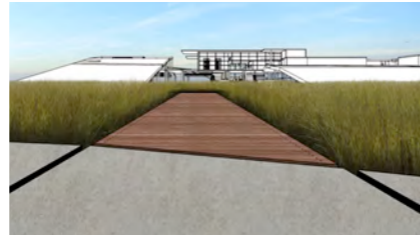
The pixels encourage visitors to re-evaluate their definition of living space as they take advantage of the various recreational and social aspects the island has to offer. Common shared spaces encourage interaction between visitors and compensates for the minimal square footage found within individual housing units. Providing visitors with a number of outdoor amenities to enhance their experience of natural tourism including provisions for fish preparation, each unit has access to one of two common social spaces located centrally among unit groupings. Consistent with the tectonic nature seen among the rest of the intervention, these spaces are designed to gradually decompose into the landscape over time. Acknowledging the constant desire of lifelong islanders to rebuild and reconstruct following each storm event, the varying programmatic units are intended to fail and accrue along striations as aggregated fragments; bits of rebar are left strategically exposed at certain heights in order to fortify the fading, linear landscape over time. Designed to crumble, the tectonic components are dimensioned according to breakwater rubble regulations. Specifically amongst the quickly vanishing bay side, the structures are gradually vacated and permitted to crumble to shape resistance to the natural threats of the island. Flexible, ephemeral pixels question island inhabitation as its environmental existence transforms.



Exoteric Comunete

a landscape for the community

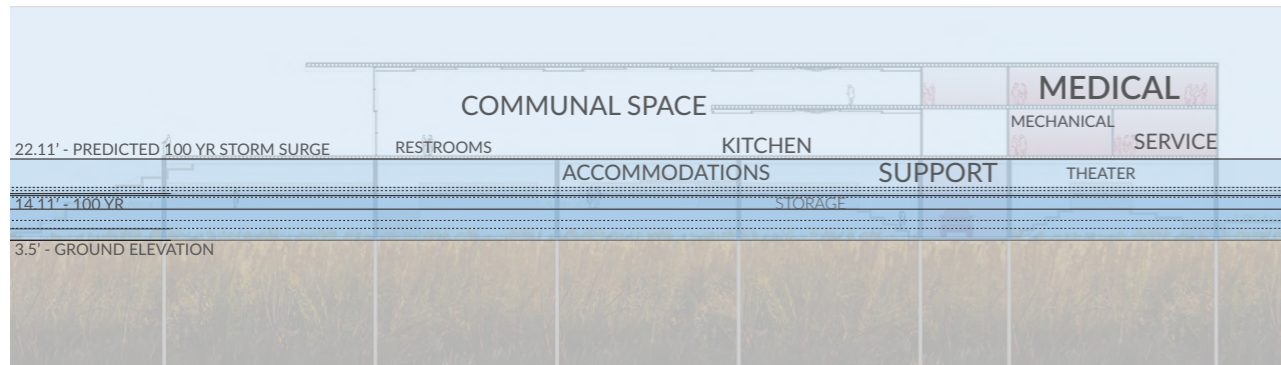
Regardless of the continual disintegration and continuing risk faced by Grand Isle, the determination of the residents to remain is uncompromising. Considerate of these convictions, this terraced center for the community will provide stability and support for the residents present and future. Supporting and enriching the island as it functions in two fundamental states, the everyday and emergency conditions are observed and considered in the design of this center.



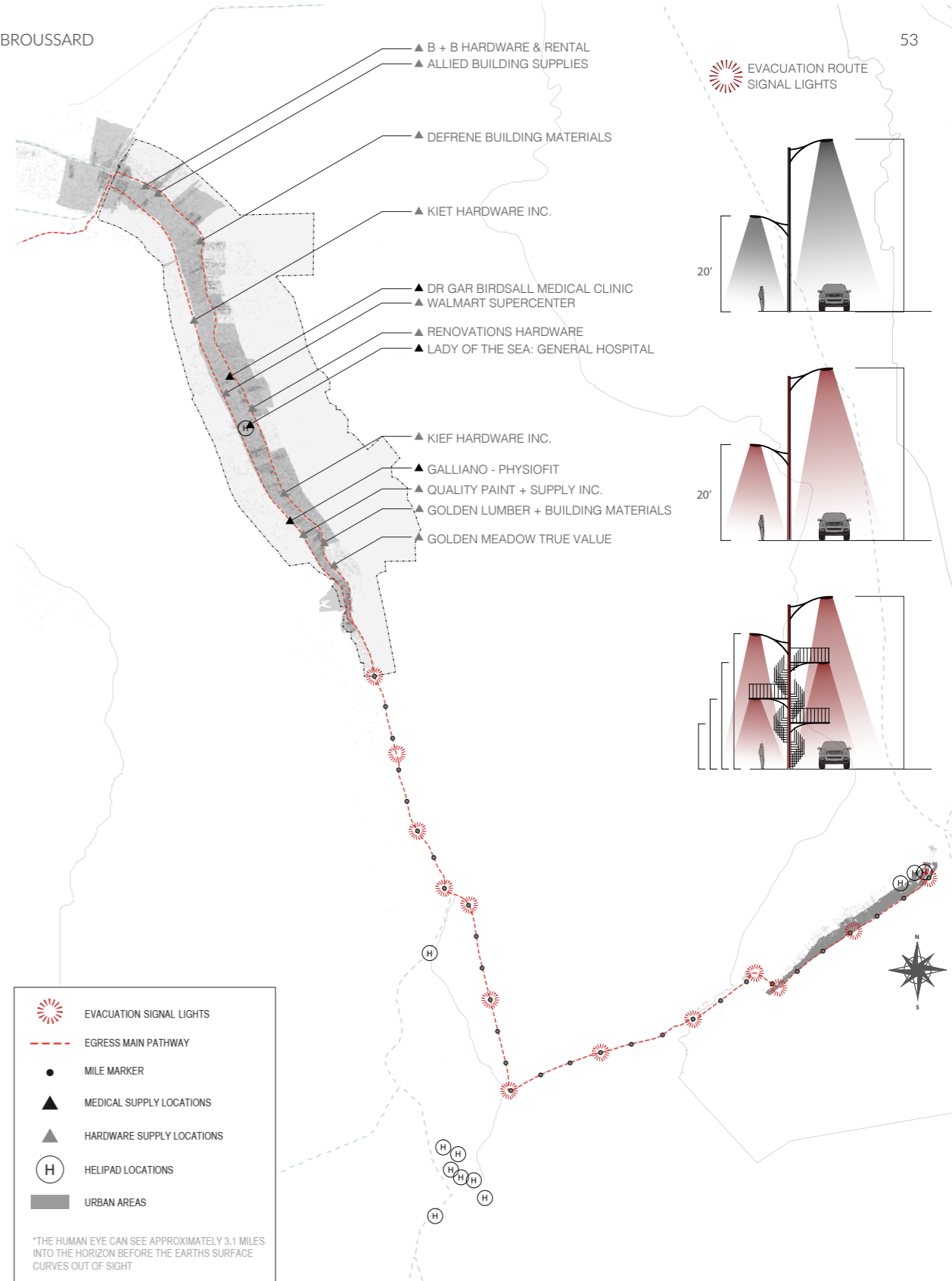
RECIPROCAL POSITIONING

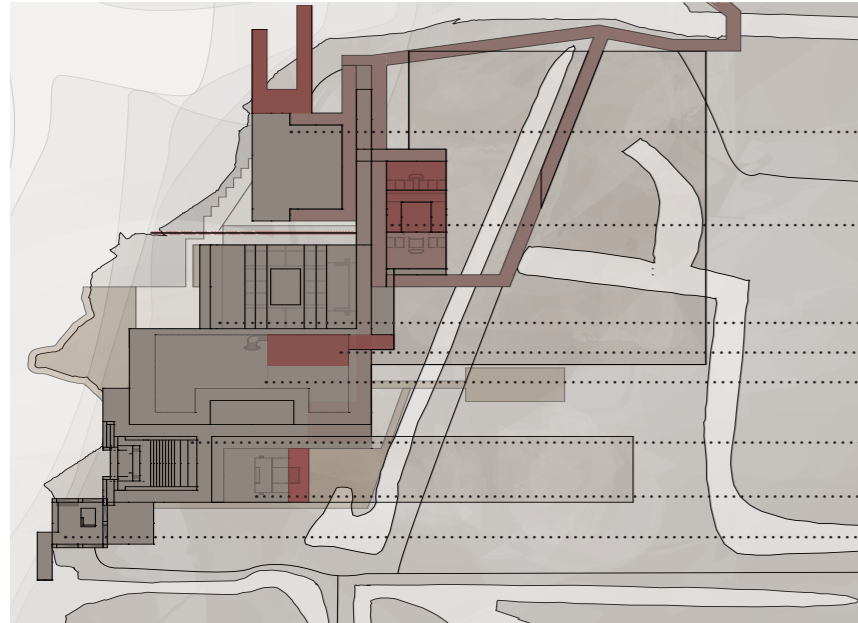


The everyday setting provides the community with spaces unique to the culture of Grand Isle; congruent with the percentage of time spent annually within a state of emergency, only a small fraction of the center operates solely within moments of crisis. Theatre, commissary, and gathering spaces can be used for small crowds, community meetings, celebrations, and large events. Sleeping spaces cater to shoreline protection workers, students and researchers, as well as any members of the island population that may need temporary housing after an emergency. In order to support the surrounding predominately aging population, a medical facility is provided for daily necessities and in times of crisis.



CASEY BROUSSARD





MAIN SITE LOCATION

Located centrally on the island the main site functions as a community center, tourist information site as well as a community park. During hurricanes, storms and other emergencies the building acts as the community relief center for the current resident population as well as a potential population flux or tourist presence.

WEST ROADSIDE

25% OF RESIDENT POPULATION 3.3 miles (7 min) from Main Community Center Location
 5% OF TOURIST POPULATION 1.8 miles (4 min) from the next Emergency Station

Standard roadside emergency station located on the west side of the island. This includes a satellite telephone to contact Emergency Services or Community Relief Base, Charging Station, up to date hurricane and wether information and first aid supplies

TOWN HALL

36% OF RESIDENT POPULATION 3.3 miles (7 min) from Main Community Center Location
 10% OF TOURIST POPULATION 1.8 miles (4 min) from the next Emergency Station

This location is surrounded by the island town hall, high school, public library, church and the Grand Isle Multiplex. In order to support and educate the community this station includes the standard emergency parts as well as interactive learning technology.

EAST ROADSIDE

10% OF RESIDENT POPULATION 3.3 miles (7 min) from Main Community Center Location
 5% OF TOURIST POPULATION 1.8 miles (4 min) from the next Emergency Station

This location is a standard roadside emergency station located on the west side of the island. This includes a satellite telephone to contact emergency services or community relief base, charging station, up to date hurricane and weather information and first aid supplies.

SAND DOLLAR MARINA

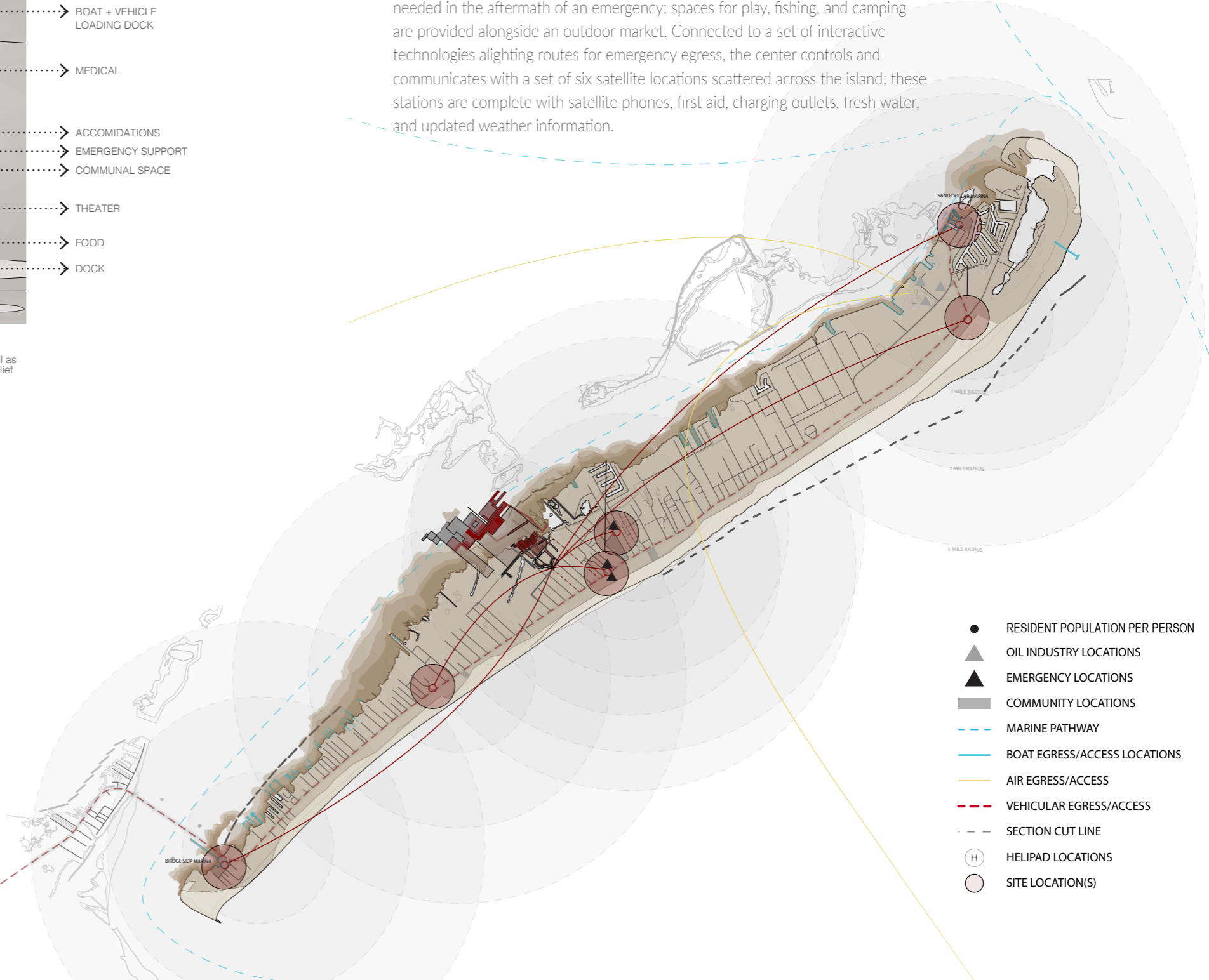
2% OF RESIDENT POPULATION 3.3 miles (7 min) from Main Community Center Location
 40% OF TOURIST POPULATION 1.8 miles (4 min) from the next Emergency Station

Located in the Sand Dollar Marina on the east side of the island. This station is placed to address the resident poulation an dpotential tourist populations. This station includes the standard emergency services as well as interactive help and learning technology.

EXOTERIC COMUNETE

CASEY BROUSSARD

A terraced fabric of impermanent spaces below the base flood elevation connects the permanent structure to the constantly changing landscape. This layering is comprised of multiple areas designed for community activities that would not be needed in the aftermath of an emergency; spaces for play, fishing, and camping are provided alongside an outdoor market. Connected to a set of interactive technologies alighting routes for emergency egress, the center controls and communicates with a set of six satellite locations scattered across the island; these stations are complete with satellite phones, first aid, charging outlets, fresh water, and updated weather information.



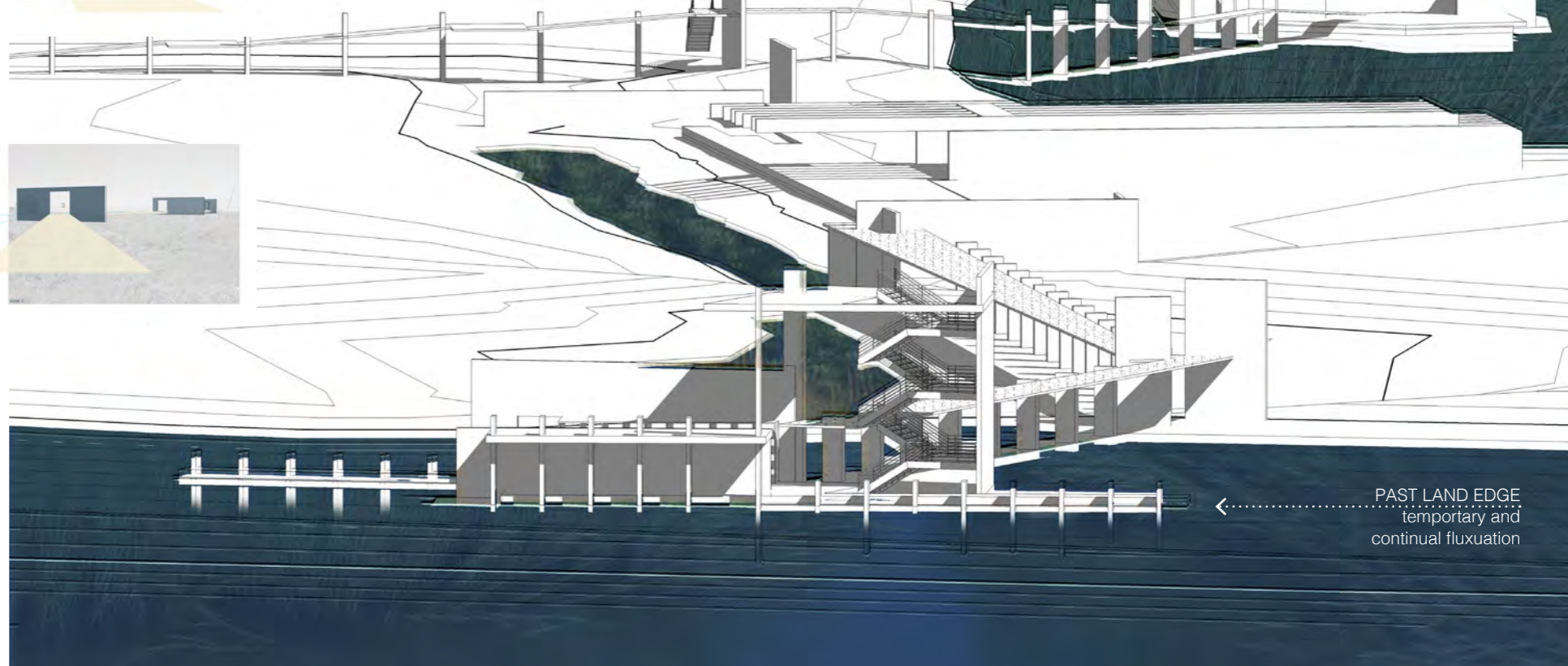
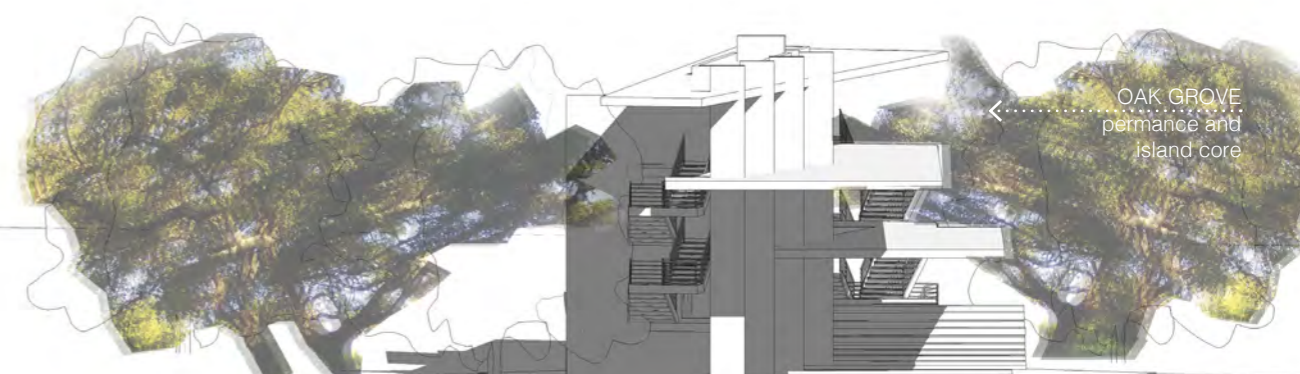
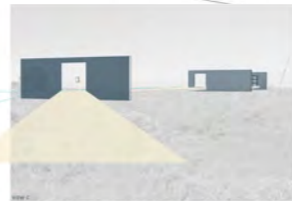


Including responses for before, during, and after, the condition of emergency is subdivided into three distinct time periods. Emergency support areas provide locations for islanders to gather and receive any necessary assistance for evacuation. Following significant events, the center reopens to provide help, support, and supplies. Additionally the water adjacent and vehicular docks allow for material distribution. This center for the community acknowledges risk and embeds preparedness and response within the culture of the everyday.

Measurable Inceptions:

contextual playscapes across the transversal

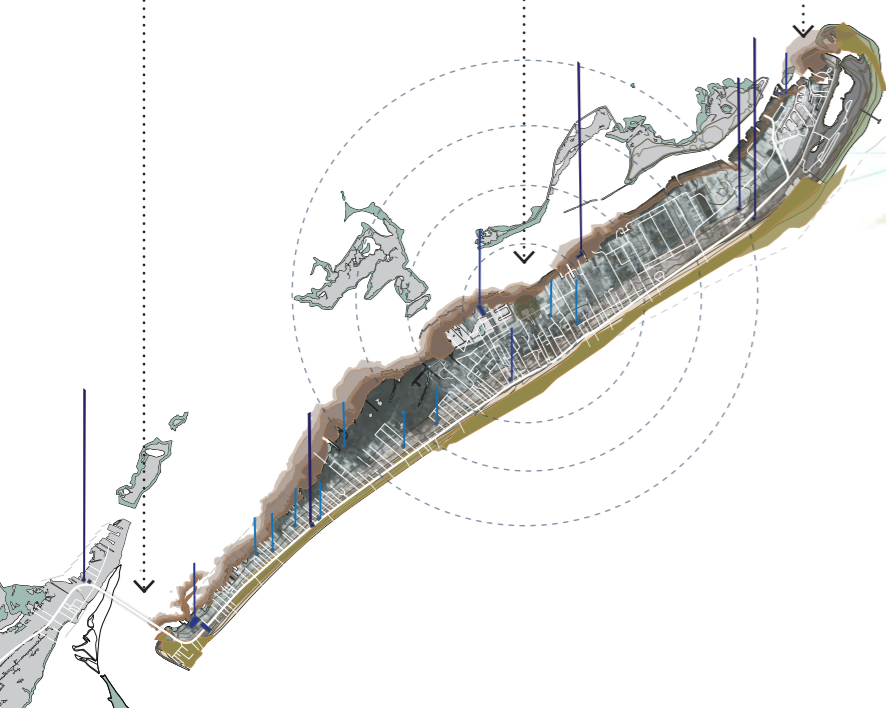
A dissolving landscape rich in resources and culture, Grand Isle is not a place that can simply be understood by word, photography, or film alone. This island can only be truly perceived through observation, discovery, and through the act of first hand exploration. As the only remaining inhabited barrier island in Louisiana, the community actively works to resist the continual transformation of its landscape, yet persistent alteration is the norm. Still, without a stable marker against the transient nature of this continual fluctuation, subsiding land can go unnoticed. Additionally, a mentality of determined permanence and desire to remain permeates the island.

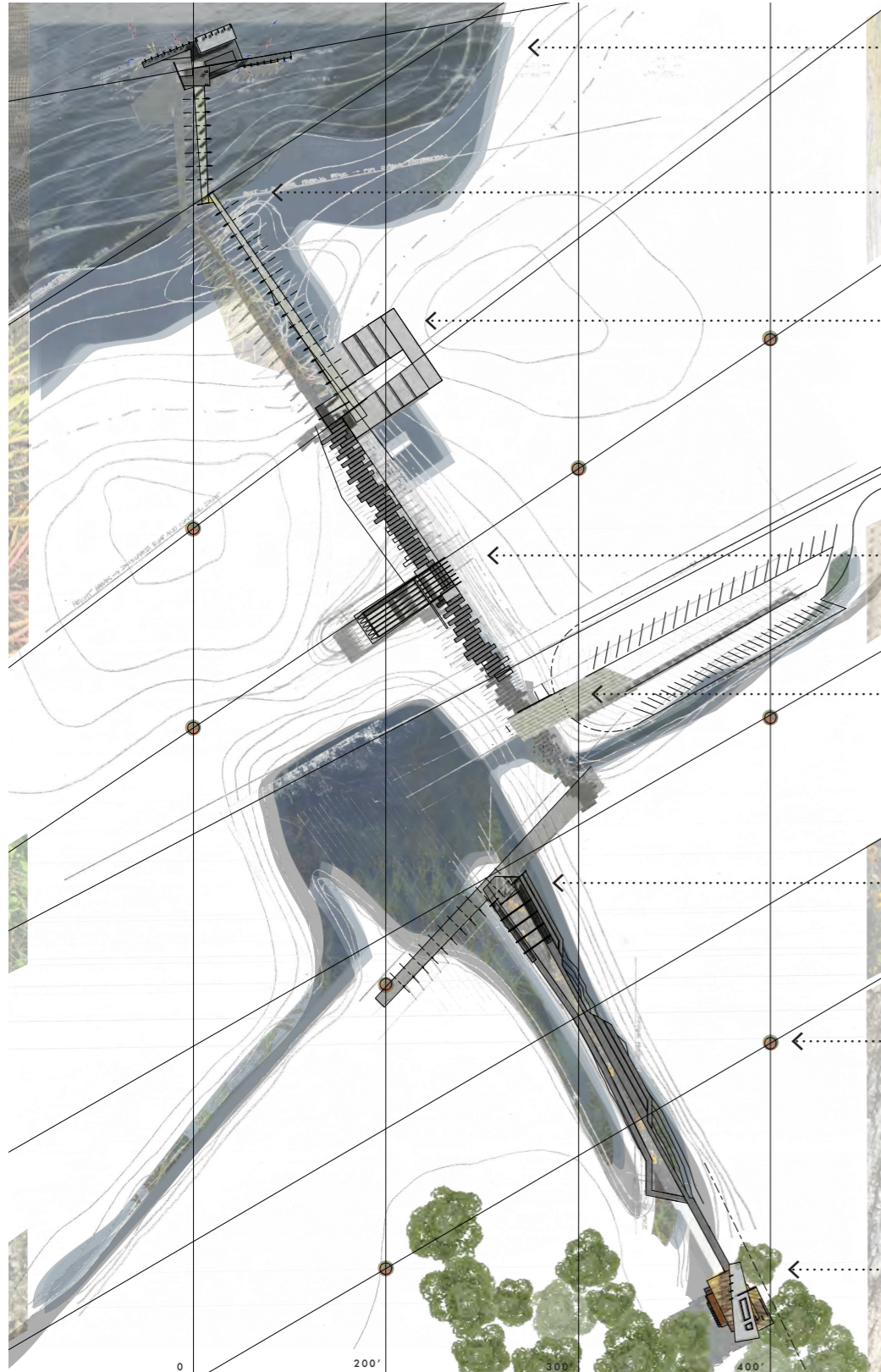


HWY. 1 BRIDGE

PROJECT SITE

COAST GUARD





DOCK
kayak launch and
previous land
edge marker

EDGE
elevated path
above fluctuating
present land edge

PUMP
high break
separating existing
tidal basin and
inland storm drains

RANGE
embedded recreational
shooting gallery

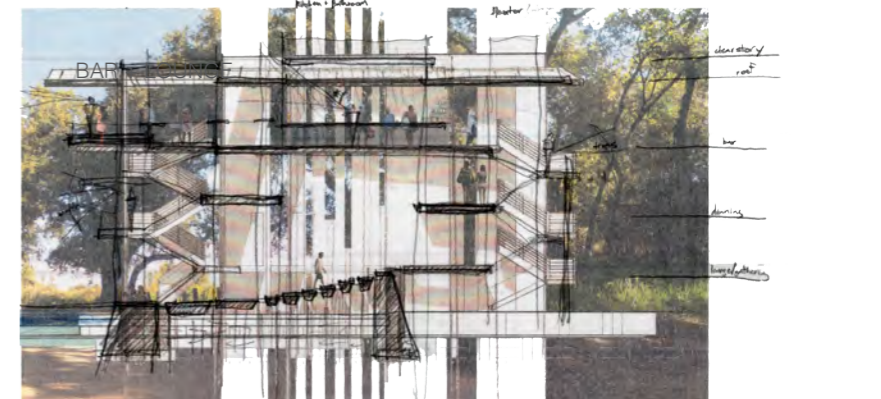
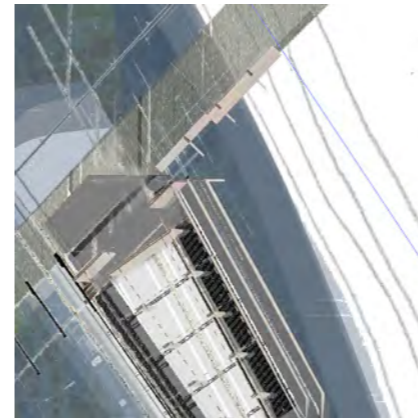
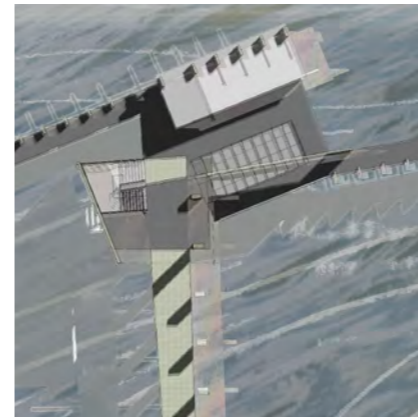
ENTRY
movement from
vehicular to
pedestrian pace

PIER
inland fishing
among sinking
ground

CHIMNEY
controlled burn
locations scattered
throughout the
grid

OAKS
treehouse bar and
lounge at live oak
grove's edge

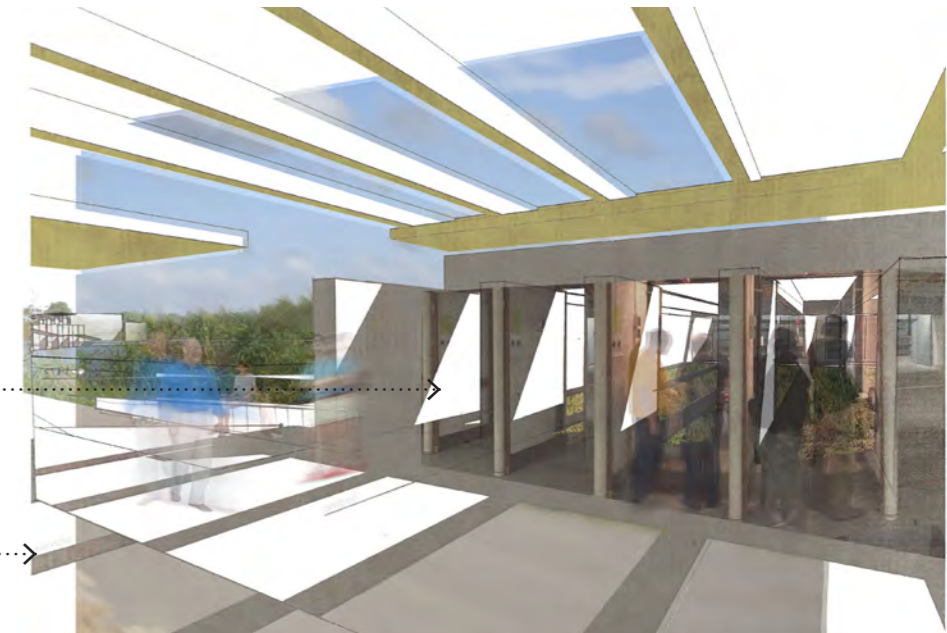
Strategizing an intervention that functions for the island in present and future states, Measurable Inceptions seeks provide a narrative timeline in order to mediate contrasting acknowledgements within gradients of permanent and visiting populations. Providing designated grounds for the colorful sporting interests of the islanders along strategically placed, spatial intervals, the landscape of attractions attempts to measure the unnoticed.





ENTRY + RANGE
alternating hard and soft ground conditions

Each pathway, pile, and intervening element serves as a constant among this constantly shifting landscape. Their regularly spaced presence acts as a ruler, measuring for the ever-changing land edge, as well as marking the present and past location of the backside of the island. Structural elements illustrate the extents of the shoreline ten, twenty, and fifty years ago while extending inland to project likely future parameters. Each programmatically charged folly, sited strategically throughout the landscape, stems from observed activity, typical of both residents and visitors to the island. The shooting range grows from this study, providing a designed solution to the makeshift target currently used by the Coast Guard and Islanders alike.



POINTS
open air one hundred yard range targets

GALLERY
stepping spectator seating



SITE PATHWAYS
shaded, linear slab on grade

INLAND FISHING PIER
sunken precast concrete segments



ROOF ACCESS BAR →

EXTERIOR GATHERING →

SITE PATHWAYS →

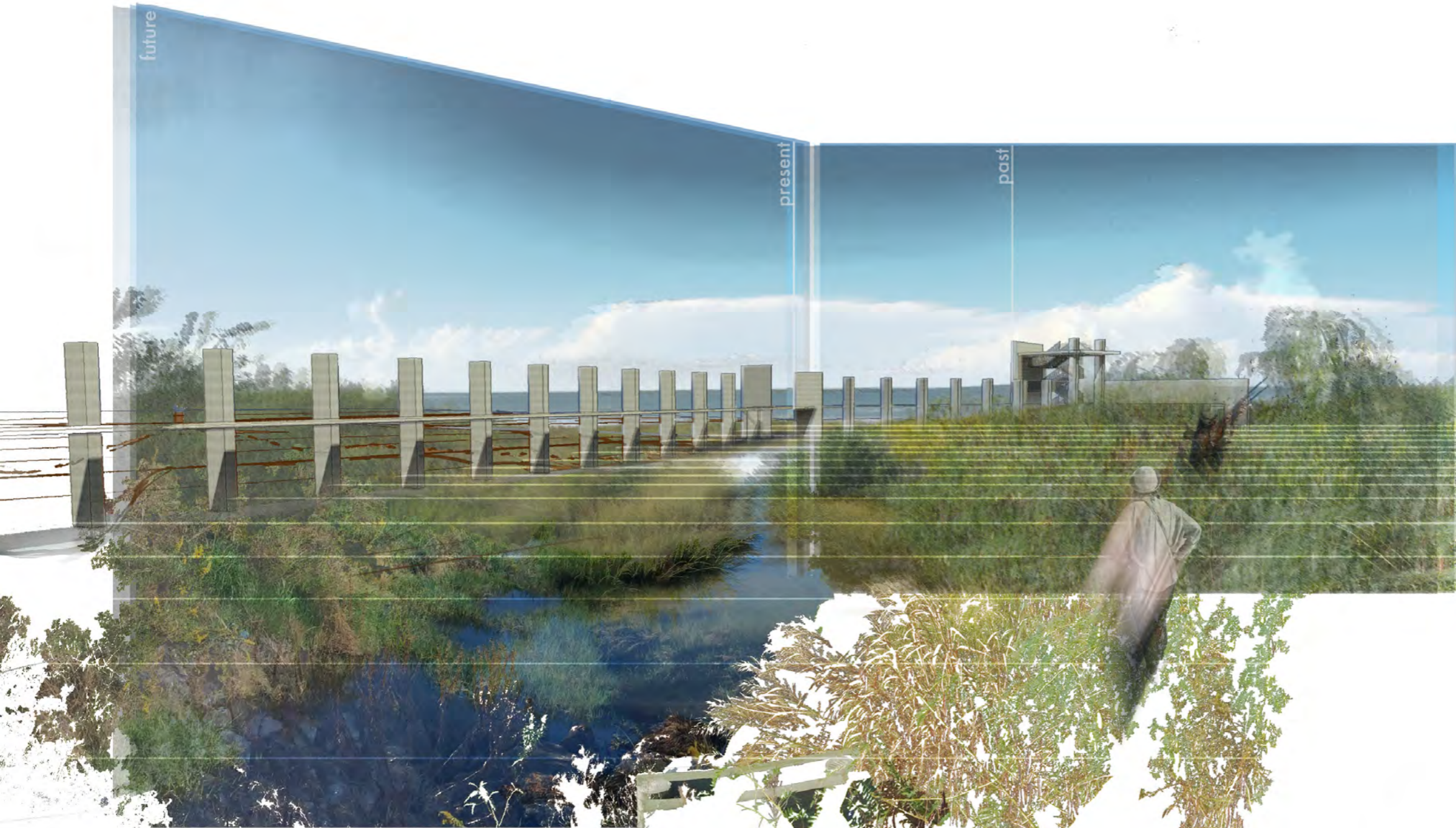


BAR OUTLOOK →



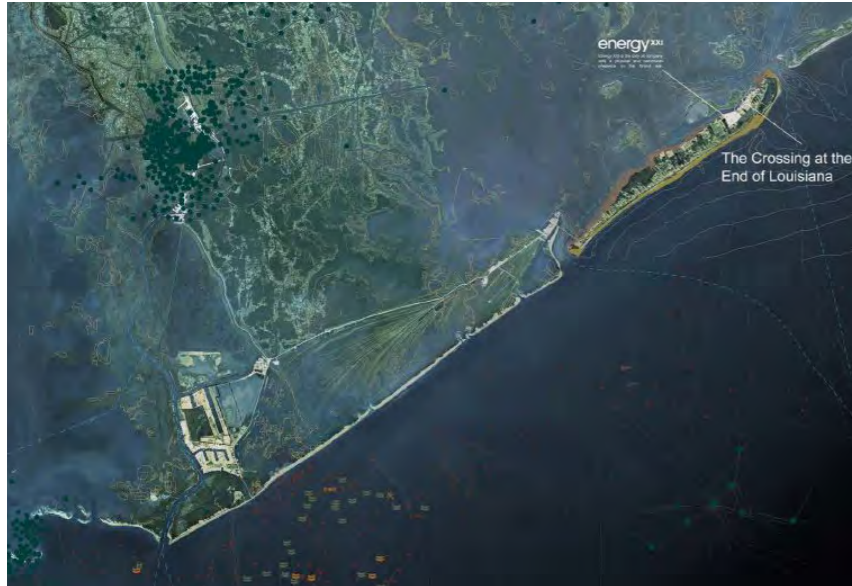
← KAYAK LAUNCH

Chimneys scattered throughout the landscape provide opportunities for dove hunting, their smoke illustrating unified activities of inhabitants. Their placement marking the edge of land from 25 years previous, the docks address the fishing culture of the island, providing opportunities for a rogue catch in the abundant waters as well as the ability to simply explore this edge from a fresh perspective. Embedded within a landscape shifting from chord grasses to century old oaks, an observation tower connects the layers of past and present. An elevated bar and lounge facilitates moments of interaction; providing panoramic views of the site and its markers, rodeo attendees and lifelong islanders can indulge in a beverage or few from the comfort of lofty heights. Grand Isle embodies the slow speed, relaxed attitude, and unique culture fit for this island context, this project provides an awareness of shifting circumstances by providing a series of constant in an environment of variables.

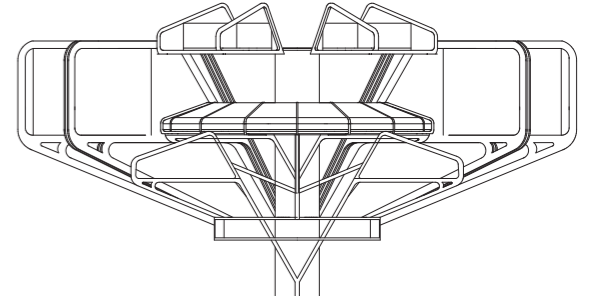
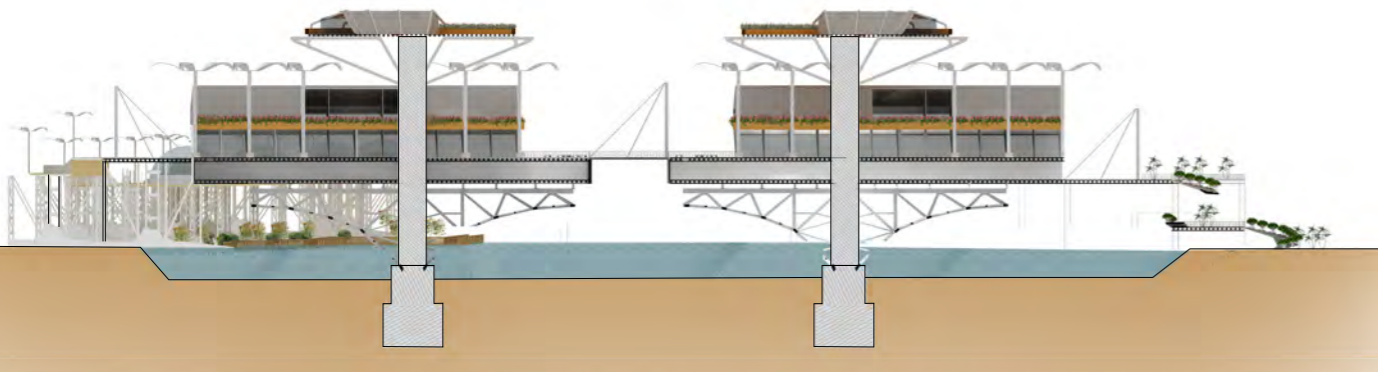


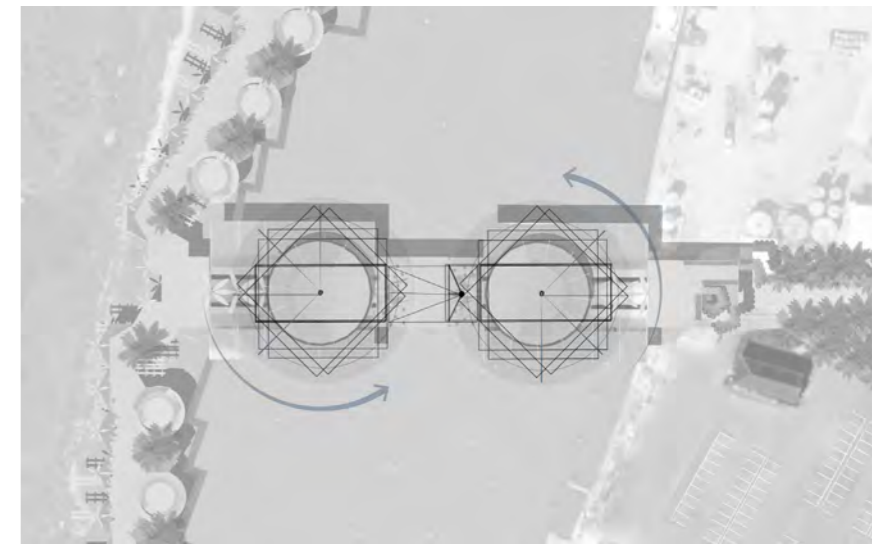
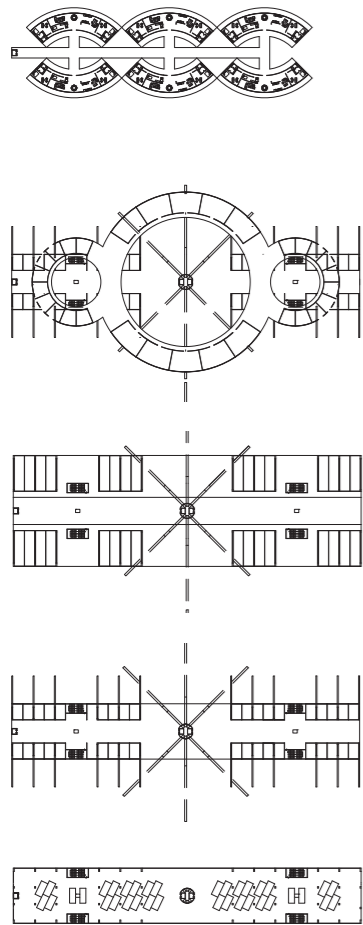
The Crossing

the end of Louisiana



Including lush gardens, exclusive shops, fine dining, and a luxury hotel, an inhabitable pair of rotating bridges at the end of Louisiana provides a unique experience for all visitors. Rivaling the vertical prominence of the Highway 1 infrastructural gateway, this elevated passage promotes delight above dwindling saltwater marshlands. Nestled within a delightful range of sounds – neighboring conversation, nonchalant footsteps, industry bustle, and migratory species – the elevated end of Louisiana provides an isolated oasis for saltwater fishing, casual promenading, and unabashed views onto the Gulf of Mexico.



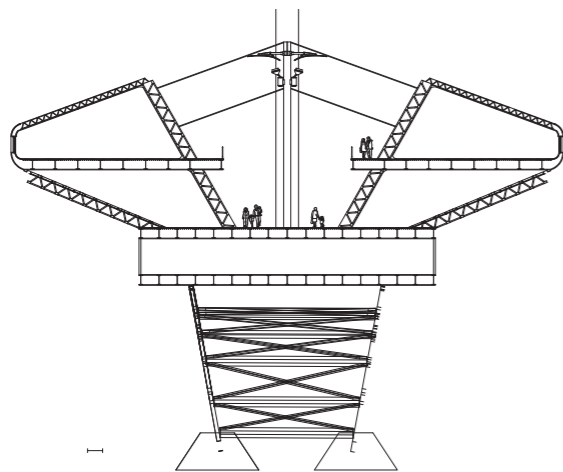


On the north side of the island that faces Bayou Rigaud, shallow waters provide rich habitats for birds, reptiles, and amphibians. Therefore, the Crossing provides direct water access from a series of locations scattered throughout the public walkways as well as private access for guests requiring isolation and exclusivity. From atop the bridge and within the elevated guest rooms, the sunrise and sunset are visible and cast glowing light through inhabitable spaces.

Splendid solitary spaces of varying costs for varied income brackets are elevated to heights that enable views of this environment that cannot be found elsewhere. From the south shore of Fifi Island, the Villas at the Crossing provide direct water access for visitors to engage with the liveliness of the landscape. A casino within the structure provides a different kind of gaming to these deep south shores. However, this vivacious variety of entertainments is hinged on an interwoven relationship between the economies of tourism, oil, and gas.



Within recent decades, the Oil and Gas industry has provided significant income and wealth for the state of Louisiana, though the past few years have seen decline in production for the area directly surrounding Grand Isle. Considerate of the interdependencies of lively communities and healthy economies, the Crossing attempts to establish another scale of tourism that would cater to specific clientele. Heliports on the Crossing provide direct access to the structure and enable a future of tourist fisheries regardless of the physical state and continued deterioration of Grand Isle. The Crossing at the End of Louisiana provides an experience of the landscape unlike anywhere else.

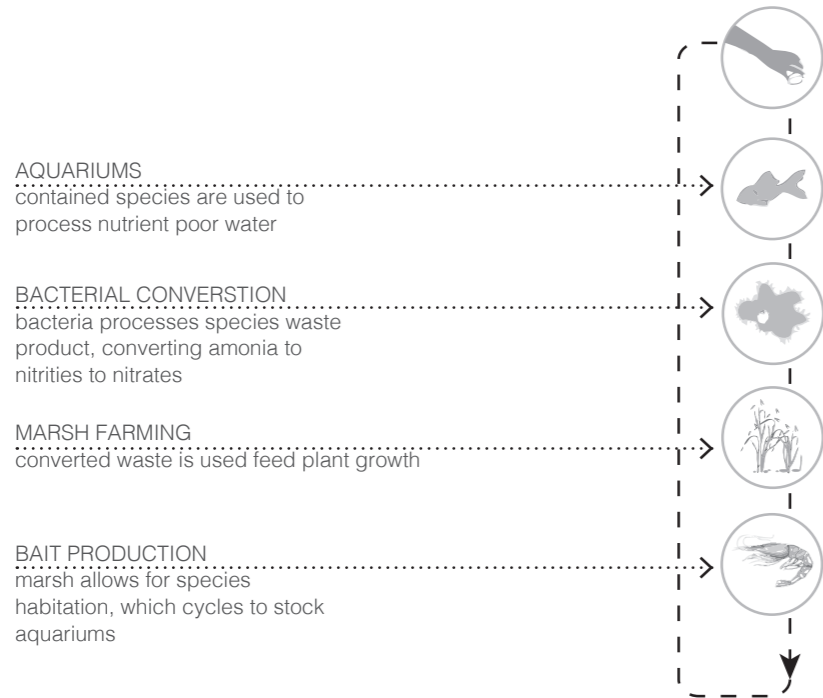


Seeded Ecologies:

hydrophonic marsh and bait emporium

Traversing the space between the continually fortified Fifi Island and the back bay of Grand Isle, Bayou Rigaud provides an avenue for waterborne commerce between Barataria Pass and Caminada Bay. This channel provides a navigation route for a series of industrial and recreational ventures; passing commercial shrimping vessels and work boats continually traverse the expanses en route to the gulf and recreational ventures of all kinds exploit the expanding water. Alongside this increasingly choppy channel, rubble breakwaters and rip rap attempt to keep the shoreline in place.

Incorporating necessities for lucrative fisheries and transforming ecosystems, Seeded Ecology provides a stopping point for vessels of all sizes heading out into the fruitful wetlands and surrounding waters. Located amongst the linear breakwater that extends from the eastern tip of Fifi Island, this intervention is adjacent to the Sand Dollar marina and the Coast Guard base as well as residential and commercial docks. Taking advantage of the dredged channel within Bayou Rigaud, this intervention lays claim to a landscape, even now, only accessible by water. The set of structures looks forward to a future with boat travel as a primary means of transportation as the surrounding landscape continues to deteriorate.



PROJECT SITE

ROCK JETTY

BATH SHOP

BAR

DOCKS + FARMS





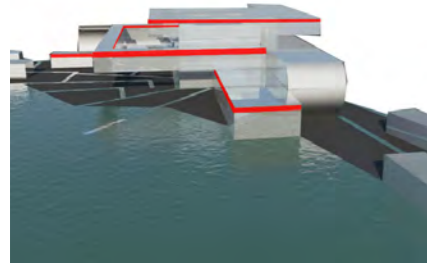
Within this intervention, varied species of bait are cultivated alongside a different variety of salt marsh grasses. Boat slips are provided perpendicular to the shipping channel in order to provide easy, quick access to the site. The lower portion of the structure, up to 25' above the current water surface, is constructed of concrete and consists of docking space and circulation for services; above this height, a heavy timber structure replaces the concrete one below. This set of pitched bays allows natural light in to illuminate the workings within the structure.



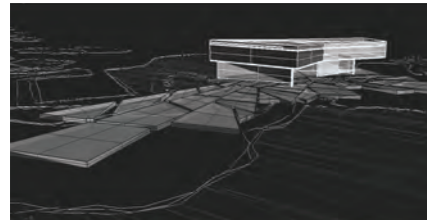
As the fisherman head out to their ventures, they can pick up bait and salt marsh species for the journey; this acquisition suggests that they just might continue to add the strength of roots to their favorite, potentially still land adjacent, fishing spot. Additionally, the bar on the top level serves as a lookout over the landscape where neighbors might return after the days journey to enjoy a beverage while they discuss catches and concerns. Seeded Ecology attempts to create a network where land loss confronts industry and recreation cultivates communication.

Respite Terrain: *the first and last point for migratory species*

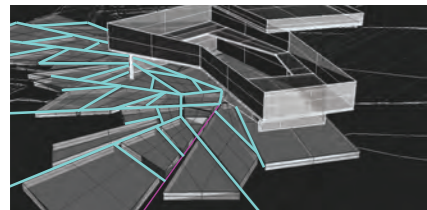
Throughout its existence, Grand Isle has provided a stopping point for the migratory species bound for and from South America. The roots of the live oak forests had not only held a shifting landscape in place, but had provided a vibrant sanctuary at the threshold of the expansive adjacent open waters. As the island itself deteriorates, humans are only a fraction of the island visitors that will be forced to acquire a new landing for their journeys; many species will no longer be able to inhabit this refuge in relation to hundreds of miles of travel. Considering this transforming island access, ecotourism will no longer be able to survive as an industry in the manner that it has previously existed.



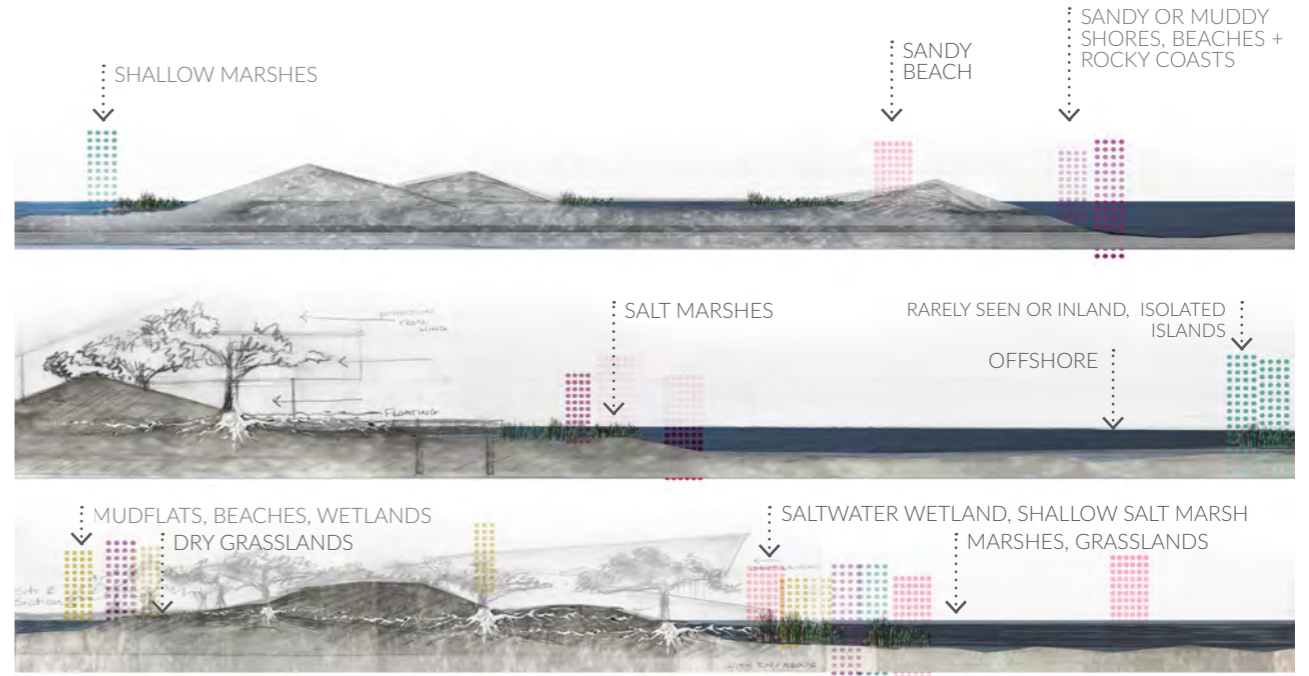
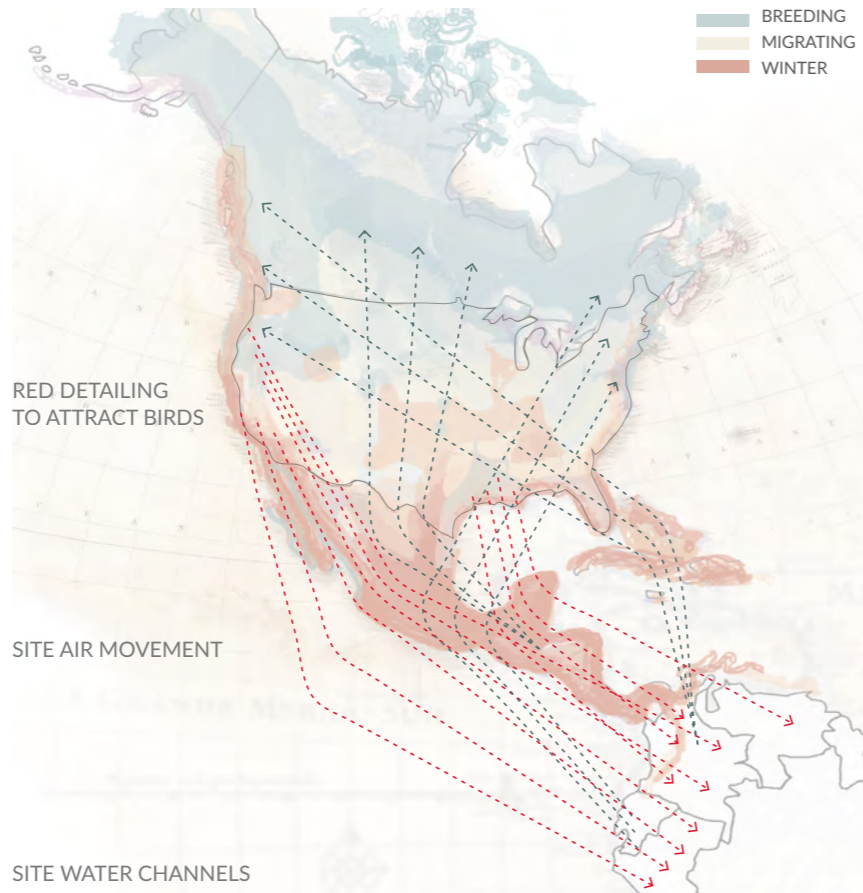
RED DETAILING TO ATTRACT BIRDS

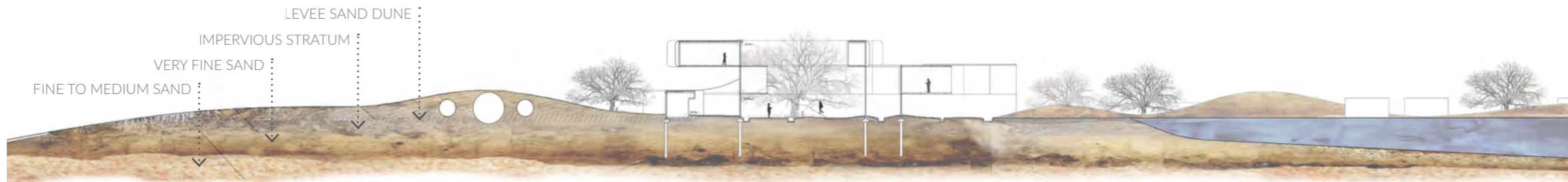
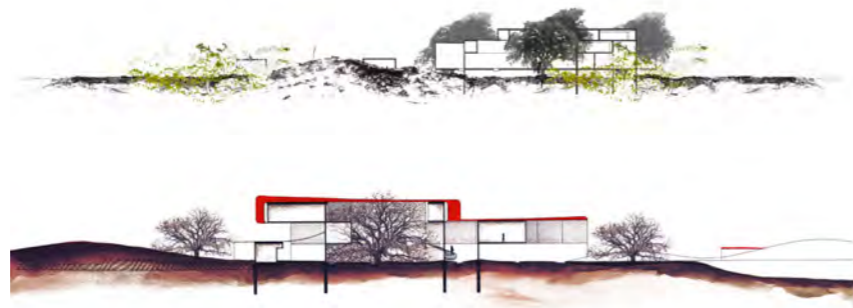


SITE AIR MOVEMENT



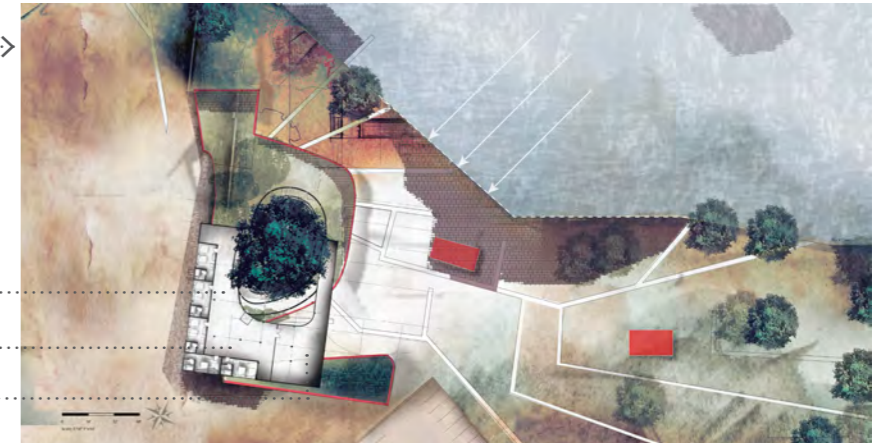
SITE WATER CHANNELS





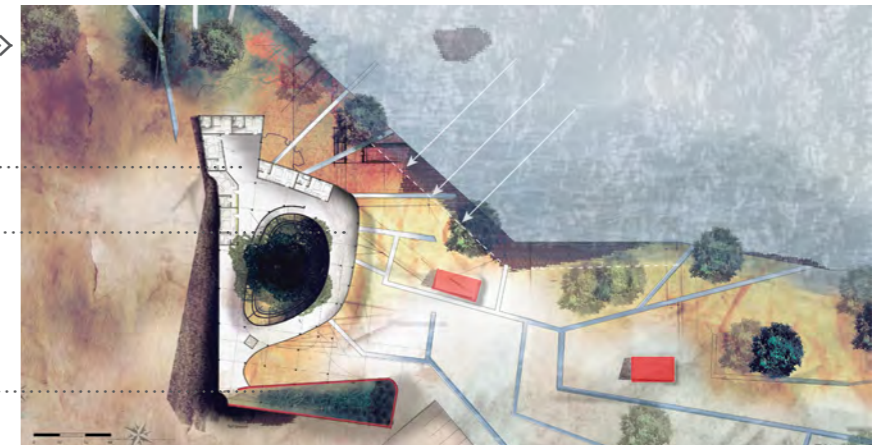
THIRD FLOOR
Winter Habitats
December- February
extremely low tide

rooms (13' x 26')
lobby
bird sanctuary



SECOND FLOOR
Summer Habitats
April - September
average tide

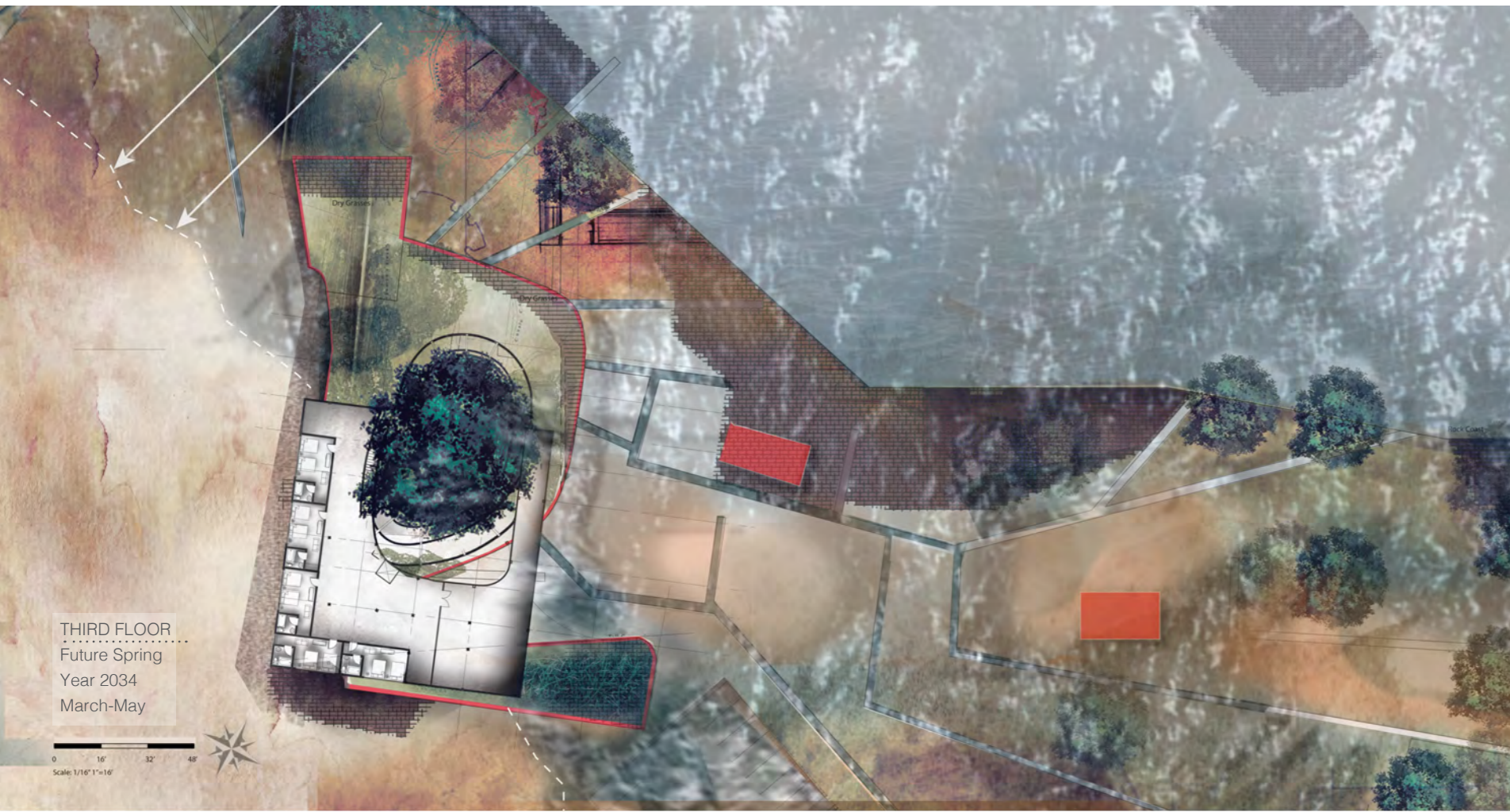
rooms (13' x 26')
bird watching
green roof

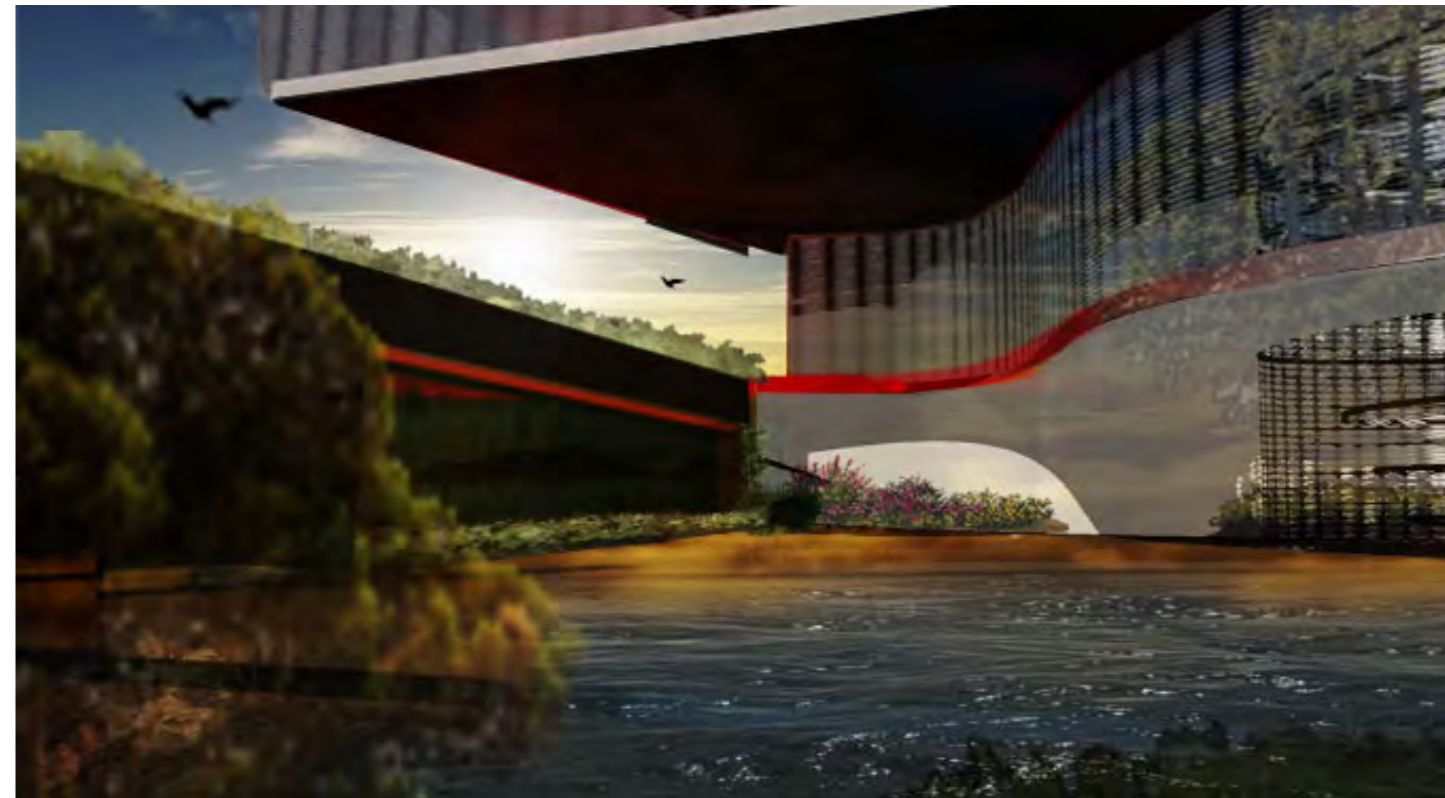
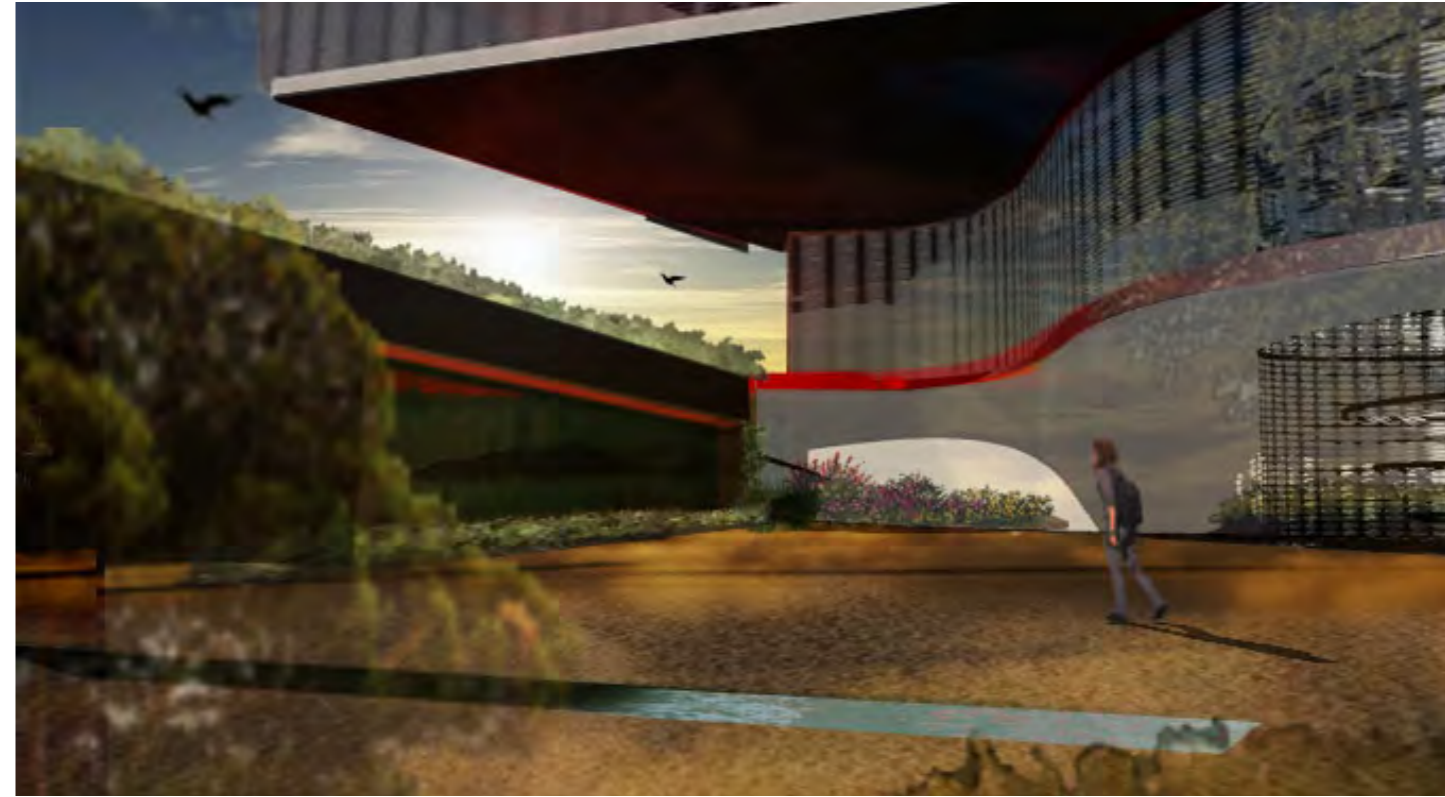
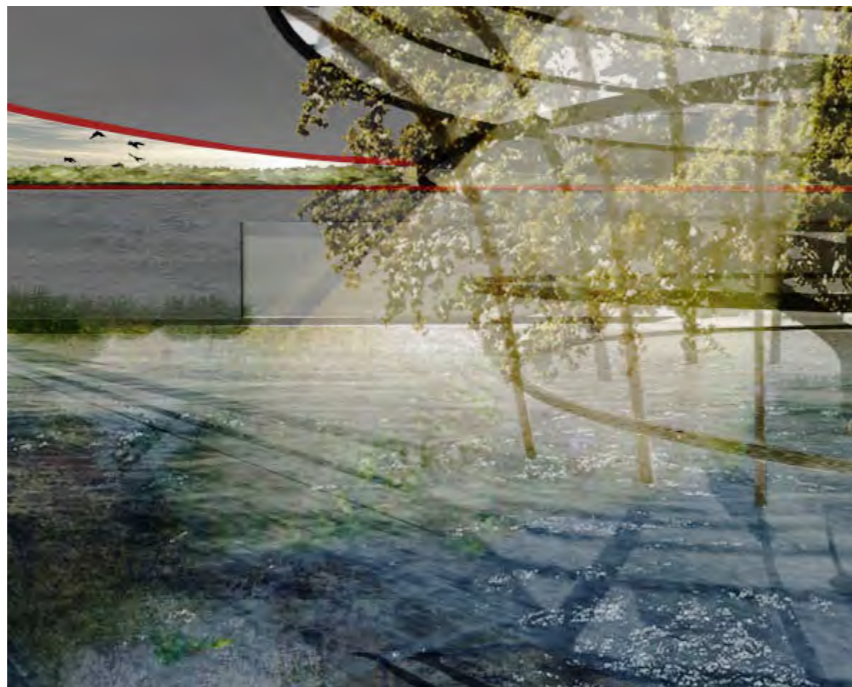
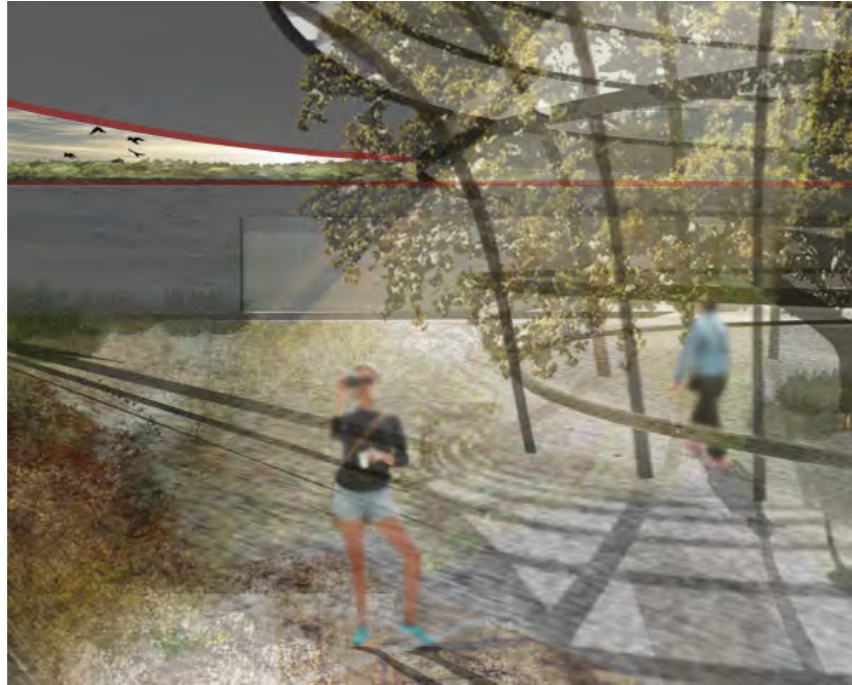


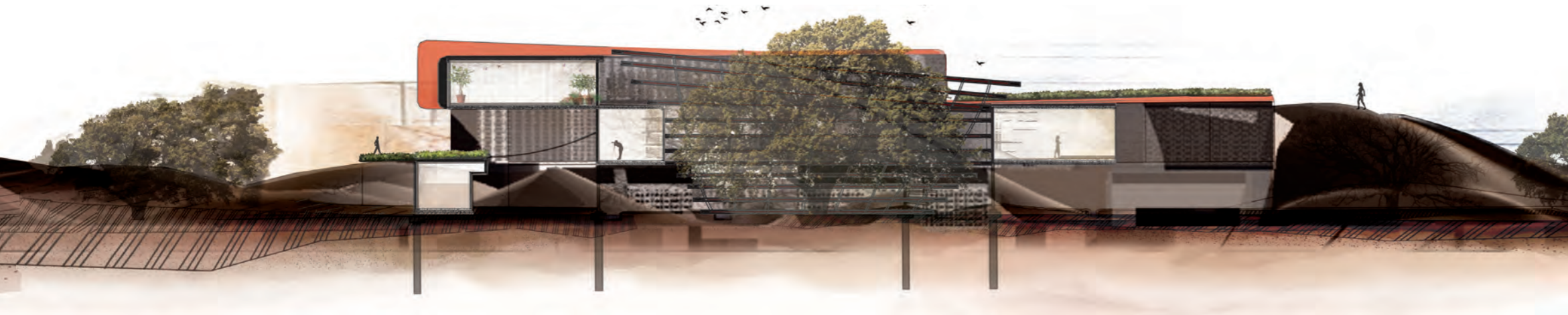
FIRST FLOOR
Fall Habitats
September - December

golf cart storage
green house
exterior garden
restuarant









Respite Terrain provides a series of inhabitable environments for these species as the island surrounding the proposal continues to fade. Similar to the historical role of this barrier island, the intervention attempts to create a set of terraced environments that provide a larger ecosystem. Tall grasses, mudflats, sandy shores, and live oaks are distributed throughout the built environment; additionally, flows paths are designed for water drainage and distribution throughout the constructed landscape. Capitalizing on the attraction of many bird species to bright colors, red detailing is incorporated into the material assignments in order to attract the species to this new destination. Habitats are provided on the roofs and down to what is now the ground plane and semi-interior spaces open to these ramping terraces. The dunescape allows visitors of all sorts to meander through a designed ecology; small gardens allow for intimate spaces in which to view the transient species. Immersed throughout the landscape, dune cabins provide spaces for overnight stay and create a unique experience for the visiting human. Natural tourism provides an income to assist with the perpetuation of these species, equally important to the tourists and to the transforming conditions of the island. As the coastline of the island is eroded by saltwater, Respite Terrain is maintained as a terraced tray of earths hovering above the surface of the water. Providing a continuing habitat for flocks and their observers alike, all sorts of transient species are welcome to inhabit this designed ecology.



Following Efforts

Concluding Comments from an Instructor

Attempting to confront the very particular challenges of design in a transforming Louisiana landscape, the range of design interventions found in the work of the Grand Isle Studio addresses the challenge of architectural permanence in an environment of continual transformation. Each project proposes a program arisen from industry research, engagement, and consideration, while responding to community concerns or an apparent lack thereof. The uncertainties of continued existence among this last inhabited barrier island are acknowledged through research and design propositioning.

From the entirety of the island down to installations for investigation, multiple scales of the environment have been examined on the transient territories of Grand Isle. Infrastructure and inhabitation confronted coastal risk, attempting to incorporate pasts, presents, and potential futures of evolving industries and an embedded community. Agriculture and Fisheries, Tourism, and the perpetual presence of Oil and Gas provided a picture for the development of architectural program, use, and function over time. This studio endeavored to address the realm of a future built environment where the populace, environs, resources, and constructions consciously commingle within the muddy, murky terrain. With Grand Isle as a case study and perhaps, the start of an unavoidable provocation, the territory the studio has entered is seemingly familiar. Yet, *Born on Island* resides on a somehow distant coast increasingly subject to transforming circumstances.



Since the mid 19th century, Grand Isle has been established as a location in which to escape the city; the island is a place both close and far enough to influence a deliberate distancing from conventional ways of living, working, and thinking. Privileged New Orleanians originally departed an evolving urban life to pass time along the shores of the open sea; the island became established as a sanctuary for residents, visitors, and budding industries alike. Outings to the island were frequent and increasingly complete with spectrums of entertainment. Legends, myths, and realities of dances on shrimp, cucumber festivals, and rodeos for fisheries established a vibrant, vivacious culture outside any city. The Grand Isle Studio pursued an engagement with this mystical place, capitalizing on its relationship with larger, interwoven systems while encouraging imagination and innovation amongst a dwindling paradise.

Yet, throughout its multifaceted history of human inhabitation, the island has suffered tremendous blows by environmental occurrence. 50 years ago, Betsy flattened the structures along the shoreline; within the last 10, Katrina, Rita, Gustav, Ike, and Isaac have ravaged the constructed environs. On a yearly, monthly, weekly, and occasionally daily basis, one can almost watch the land against Bayou Rigaud disappear into the back bay. Even still, the islanders remain driven to remain, resolved to build and rebuild. The land directly east of the recently reconstructed Highway 1 overpass deteriorates more quickly than most anywhere else on Isle. Originally, the island was reached by ferry; perhaps, by ferry one must soon again return.



Having never before been sited amongst such a transient landscape, the students endeavored to understand issues of scale, both physical and temporal. A requirement to investigate the challenging conditions and propose an engagement with those circumstances simultaneously was rigorous and difficult within such a limited timeframe. Only a pair had the experience of previous architectural investigation amongst coastal Louisiana; additionally, the group encountered an unfamiliar and added requirement of writing their own unique and individual project brief in response to their design research. The capacity, desire, and drive to participate with this educational augmentation has been both exciting and appreciated; magic is needed so that one can wave the wand of reason.

The Value of Risk *by Jori Erdman*

Director and Professor: LSU School of Architecture

Risk is defined as the potential for losing something of value. However, in its uncertainty, risk also allows for the possibility that value could be gained as well. All human endeavors involve some degree of risk but the question is what a person is willing to lose in hopes of gaining more? How do we mitigate the risk of loss through knowledge and better decision-making processes? In the case of the projects we see in the pages preceding this essay, we can question the value of risk itself and the discussion surrounding risk valuations.

Through this project we see evidence of risk-taking in various forms: from the community of Grand Isle who allowed our agents, students and faculty from Louisiana State University and Louisiana Sea Grant to envision new forms of occupation and building; to creative students engaging in an entirely new type of architectural project; to advocacy agencies like Louisiana Sea Grant who worked to mediate between the community and students in these speculative projects. We know that doing nothing to change the direction of the environment in locations like Grand Isle means rapid loss of land and population. After which, the question becomes what to do and how much risk are we willing to take as we struggle to sustain inhabitation on the island. One precept that underlies the majority of the work is that Grand Isle will continue to be occupied for the foreseeable future. Despite repeated destruction and rebuilding, the islanders remain committed to their lifestyle, economy, and culture. These residents believe the risk of inhabitation balances in the favor of value gained rather than lost - the fruit of life for them is out on the limb of the little spit of sand they call home.



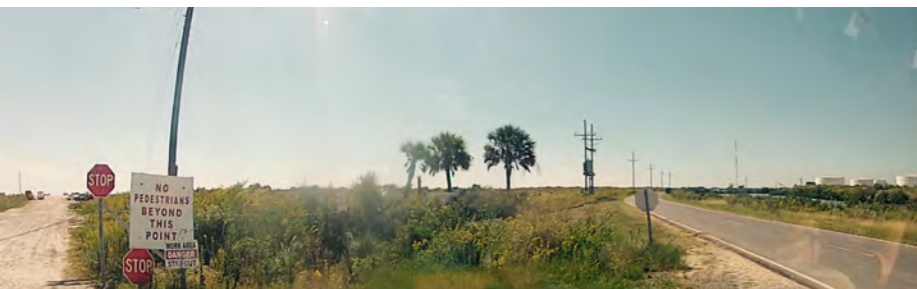
As the businessman Warren Buffett says, "Risk comes from not knowing what you're doing." The LSU School of Architecture has a mission to educate students about, on, and within the deltaic landscape of the lower Mississippi River valley. Our students conducted the design research presented here in the final stages of an undergraduate degree program in architecture. While the work itself is engaging and thoughtful, the process of seeking to understand the peculiar conditions of Grand Isle, Louisiana was just as important. These students will soon be young professionals with opportunities to do building and infrastructure projects in this and other similar landscapes. For us, this is not a typical architectural project or part of a traditional architectural curriculum. Thus, the risk for the School of Architecture, the faculty members, and the students themselves is in having those same students engage in unproven project types while maintaining our educational standards and expectations.

The project provided an exciting opportunity for our students to engage with the Louisiana Sea Grant and the Coastal Sustainability Studio to provide innovative and speculative ideas for continued and evolving inhabitation of a fragile environment. The dynamic landscape of the Louisiana delta, particularly areas on the far reaches of the deltaic outlet, demands an architectural endeavor that defies traditional architectural design processes. With that in mind, our faculty and students have engaged in projects that explore ideas of temporal occupation, performative intervention, and programmatic adaptability. While some of the projects may seem to be fantastical, within each of them are nuggets of wisdom and components that could realistically be implemented within the coastal context.

Through the critical lens of the architectural design process, observations became structures, forms and strategies for occupation. The risk was rewarded with some excellent and innovative projects as well as some truly poetic moments. For example, the Ephemeral Pixels project by Carole Shockley defies architectural principles of longevity by proposing an architecture that is detailed to decay and disintegrate in a specific and rapid progression. Proposing an architectural collapse into the marsh, the images she presents of a time lapse over 30 years as parts of an architectural composition. Haunting and provocative, these visualizations suggest that we no longer seek immortality in our buildings, instead actively participating in their demise.

As a corollary to that project, Abbey Brown's project, Respite Terrain, foresees a future where the island will be gone, imperiling the large population of migratory birds that use the island as a stop after crossing the Gulf. Her project of raised and seemingly floating terraces participates in the ecosystems while relying on architectural techniques for execution. Her assessment and processes led her to a conclusion where human occupation is much more limited and transitory. In a similar poetic interpretation, Measurable Inceptions by Chris Weimer project refuses definition as either a purely architectural or landscape project. He employs techniques of prospect, aperture, and promenade in a project that intends to mark and register the transformations of this dynamic landscape. The architectural program is provisional and temporary but repetitive occupation necessitates the primal architectural forms he deploys as mnemonic devices to reflect time and change. In an intermingling of movement across space with moments of stasis and reflection, he aspires to reveal the nature of the site with great success.

Exoteric Comunete by Casey Broussard examines the response to disasters and buildings that will become infrastructure during disasters. Through her study, she resists the idea that these buildings need to become concretes bunkers with minimal openings and a massive, unwelcoming presence in the community. Her proposal is for an open, columned structure that serves as community gathering space during the majority of non-disaster time frame but closes down and transforms during a weather event to become a central staging point for relief efforts on the island. While the proposal remains incomplete in its final form, the ideas explored offer novel and progressive ideas about this type of building and how we reconsider how to engage in materials and space for disaster proof buildings.



Other students examined the key element of sustaining economy. In Vertical Moments, Meaghan Crain proposed container based vertical farming as a way for the islanders to continue having fresh produce while Seeded Ecologies by Stephen Waida speculated about the fishing industry with a contemporary bait shop and transportation center. In a more provocative proposal, Amal Emamjomeh anticipates the spectacle of the fragile island will be enhanced by the construction of a casino and hotel, drawing on our contemporary fascination with event-based tourism. Ironic allusions to gambling aside, the proposals allowed the students to examine and present forward to the community thoughtful and well-articulated options for economic sustainability that would not have been possible without the academic freedom and risk-taking capacity we have at the university.

From the perspective of architecture, both our school as well as the discipline, we strongly believe that the risk of engaging in these novel projects has the potential for far greater value gain than the prospect of maintaining a more conventional path. Through this project of Reciprocal Propositioning as well as other projects with the Coastal Sustainability Studio, our understanding of how architecture performs in the natural environment has evolved. We can no longer assume that our role as architects and designers is limited to space planning and basic enclosure within a static and relatively unchanging environment. Our work, projected and built, is a part of an ecosystem and we need to make sure our students and alumni partake in discussions about concepts larger than a building footprint.

The citizens of Grand Isle trusted our students with the opportunity to explore these globally significant questions through proposals for their community. Ultimately, there are no easy or clear resolutions to the questions raised by risk assessment and the potential for value gained but we hope that we have provided some thought provoking and even implementable ideas for their future.

The School of Architecture would like to thank the Louisiana Sea Grant and the LSU Coastal Sustainability Studio for this opportunity. We also thank Visiting Assistant Professor Elizabeth Williams who deserves credit for pushing the students as well as other faculty beyond their comfort zones in search of greatness and excellence. Her contributions to the coastal discussion through these and other projects are invaluable to us all.

Acknowledgements and Contributors

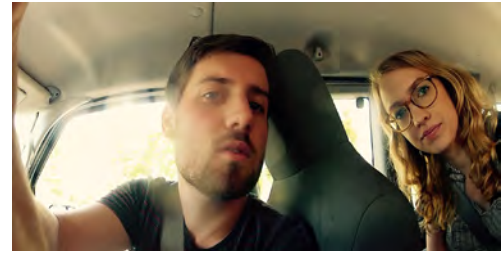
First and foremost, a special thank you to the LSU Coastal Sustainability Studio and Louisiana Sea Grant for the generous support that made these works possible. Funding for the experience of the Louisiana wetland and trip down to Grand Isle were entirely transformative in regards to the student work. To Robert Twilley, for leading us on a hike across an island transversal to explore the local ecologies, both your patience and your enthusiasm are much appreciated. For Rusty Gaude, thank you for the island and islander introductions and continual support. A comprehensive understanding of the issues facing this coastal region within the coming decades would not have been possible without the encouragements for this extraordinary adventure.

Secondly, the Grand Isle Studio acknowledges the incredible support from within the LSU School of Architecture. Without the mission to understand and address these transformative landscape characteristics and the desire to not only respond to but participate with these conditions, the future of human inhabitation throughout the state would be even more uncertain. The School of Architecture is well poised to consider and contribute within these increasingly relevant territories; your encouragement has incited tremendous territories of possibility and promise.

To Kristen and Danny Wray, your hours of expertise on the island surroundings, histories, presents, and futures have been invigorating and incredibly valuable. From pirate burial grounds to characteristics of the community and aerial photographs, the “tour” we received was anything but ordinary.

Finally, to Chris and Carole, all of your efforts on for this publication have not gone unnoticed; the memorialization of the work would have literally been impossible without you. And now, do as you will, on to bigger and brigrter things.

Elizabeth Anne Williams



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