PRELIMINARY DRAFT

ENVIRONMENTAL ASSESSMENT FOR THE NEW CONSTRUCTION AND OPERATION OF THE LOUISIANA GREEN FUELS BIO-REFINERY CALDWELL PARISH, LOUISIANA

November 2022

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

1.0 INTRODUCTION

1.1 BACKGROUND

Strategic Biofuels, LLC (Strategic) is proposing to construct and operate the Louisiana Green Fuels (LGF) refinery, a renewable fuels bio-refinery in northeast Louisiana using forestry residue as a feedstock, powered by onsite-generated "green" power, and including Carbon Capture and Sequestration (CCS) of the carbon dioxide (CO_2) from all processes. The Carbon Intensity (CI) score of the LGF facility will be approximately minus 238 and will make it the most deeply carbon-negative liquid renewable fuels facility in the world (Strategic Biofuels 2022).

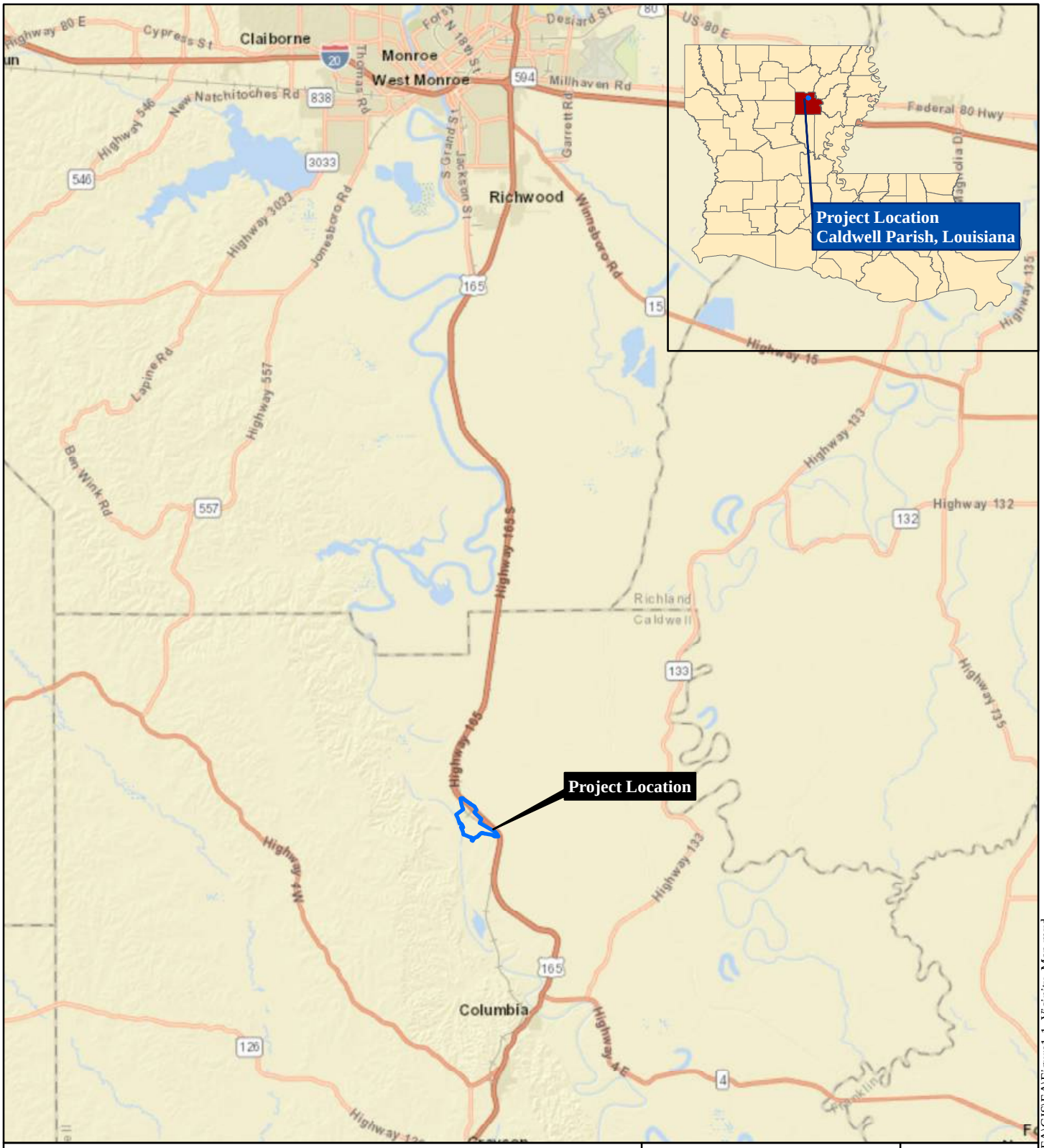
This Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, the President's Council on Environmental Quality (CEQ) regulations to implement NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508). LGF will use the findings in this EA to determine whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI) in support of federal permitting requirements.

1.2 PROJECT LOCATION

The new renewable fuels facility would be located at the Port of Columbia in Caldwell Parish, Louisiana (Figure 1-1). The industrial-certified site is an approximately 387-acre tract of mostly agricultural land in northeast Louisiana, 5 miles north of Columbia, Louisiana and 25 miles south of Monroe, Louisiana and is generally bounded by a four-lane highway (U.S. Highway 165), and the Ouachita River (Figure 1-2). A Union Pacific mainline railroad crosses the site.

1.3 PURPOSE AND NEED

The purpose of the project is to construct a renewable bio-refinery with a low carbon footprint. The bio-refinery will manufacture approximately 2,400 barrels per day of renewable diesel and renewable naphtha that will be shipped by rail to California. The feedstock will be the abundant forestry residues present in the region in the form of chips (or "biomass") sourced from commercially managed and sustainable pine plantations. The residues used to manufacture the renewable fuels are byproducts with no economic value and otherwise would be left in the forest to decompose or be burned, in either case resulting in the release of greenhouse gases (GHG). The feedstock will be compliant with the requirements of the U.S. Environmental Protection Agency (USEPA)-Renewable Fuel Standards (RFS) for earning Renewable Identification Numbers or RINs, commonly referred to as "carbon credits". The produced fuel will also qualify for somewhat similar carbon credits under California's Low Carbon Fuel Standard (LCFS). LGF has a signed Letter of Intent with an off-taker to purchase 100% of the produced fuel and the carbon credits. Additionally, the sequestered CO_2 tonnages will qualify for substantial tax credits, referred to as "45Q" credits in the federal tax code.



Legend

LGF Property

0 2 4 Miles

0 2.5 5 Kilometers

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Figure 1-1. Vicinity Map

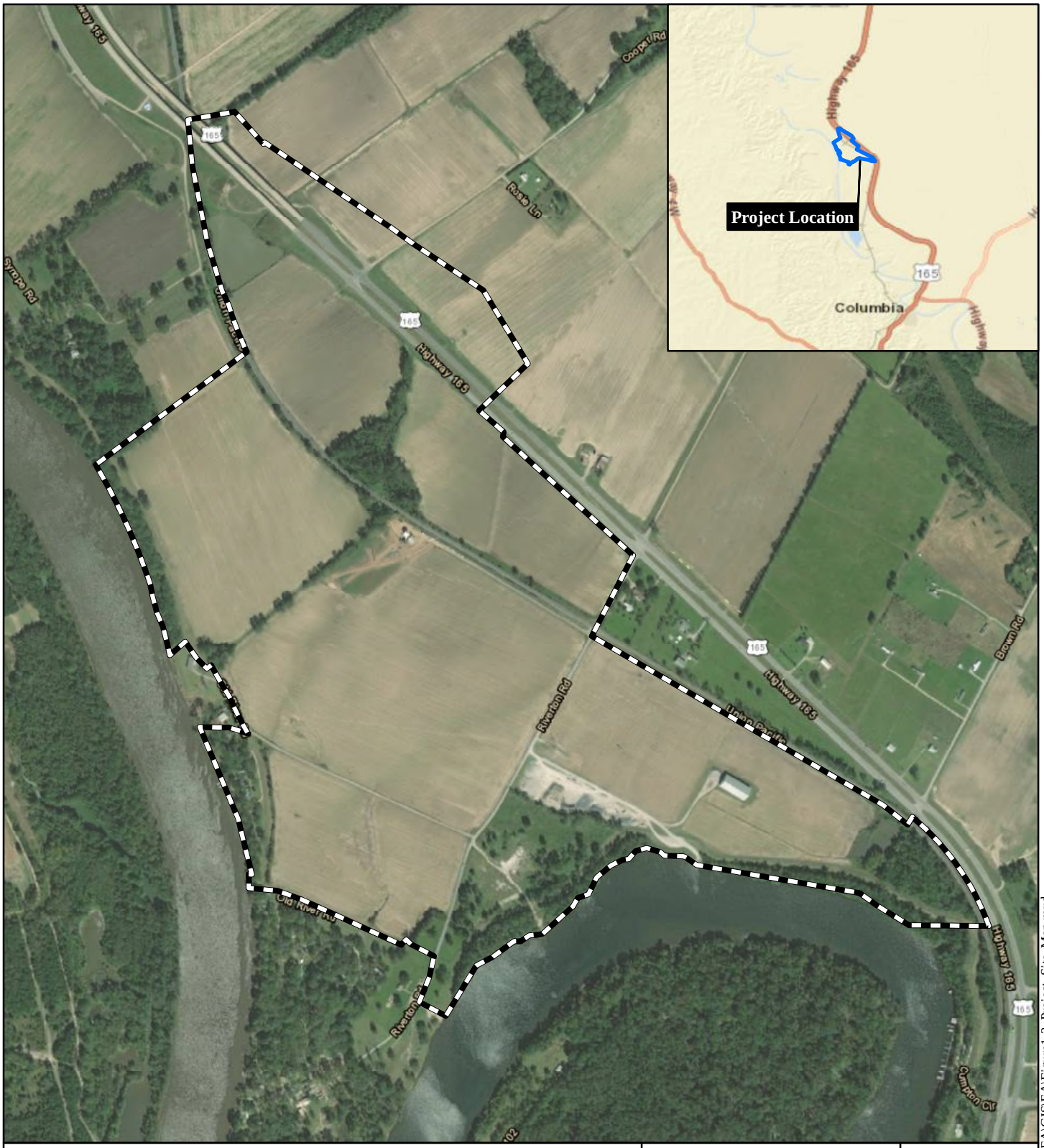


Figure 1-2. Project Site Map

LGF will also construct a 70-megawatt (MW) biomass-boiler power generation plant to provide "green" electric power to operate the bio-refinery. It will be located on the same site and adjacent to the bio-refinery. The fuel for the power plant will be sawmill waste and other available biomass material that is not compliant with the RFS.

An essential feature of the overall project is the CCS facility that will capture over 90% of the CO_2 produced from both the bio-refinery and the electric power plant. The CO_2 will be compressed into a "supercritical" or near-liquid state, injected through three USEPA-regulated "Class VI" wells, and stored permanently underground in a mile-deep sequestration reservoir. One injection well will be located onsite and two additional wells and associated pipelines will be located offsite. The exact location of the offsite wells are not known at this time and will be analyzed in a separate supplemental EA. Only the on-site well is analyzed in this EA.

The unique combination of biomass-derived fuel, biomass-derived power for the bio-refinery, and the capture and sequestration of CO_2 produced from both operations pushes the CI to a deeply negative number, thereby generating an exceptionally high number of LCFS credits. The minus 238 CI score can be compared to the plus 100 CI score of an ordinary fossil fuel refinery and indicates that operation of the combined facility will actually improve the environment, removing more than three times as much CO_2 from the atmosphere as a fossil fuel refinery with similar fuel production capacity would emit. The LGF facility is expected to become a model for future biomass-based renewable fuels plants.

1.4 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

In accordance with 40 CFR §1501.7, 1503, and 1506.6, Strategic Biofuels, LLC initiated agency scoping activities to identify significant issues related to the Proposed Action (Appendix A). Formal and informal coordination has been conducted with the following agencies:

Federal Agencies:

- U.S. Fish and Wildlife Service (USFWS)
- U.S. Environmental Protection Agency (USEPA)
- U.S. Army Corps of Engineers (USACE)
- U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS)

State Agencies:

- Louisiana Department of Wildlife and Fisheries (LDWF)
- Louisiana State Historic Preservation Officer (SHPO)
- Louisiana Department of Environmental Quality (LDEQ)

Other:

- Native American Tribes
- Caldwell Parish

- City of Columbia
- Tensas Basin Levee District

This EA documents the context and intensity of the environmental effects of the Proposed Action and alternatives. The EA allows decision makers to determine if the Proposed Action would or would not have a significant impact on the natural, cultural, social, economic, and physical environments, as well as whether the action can proceed to the next phase of project development or if an EIS is required. The process for developing the EA allows for input and comments on the Proposed Action from the concerned public, interested non-governmental groups, and interested government agencies to inform Strategic Biofuels, LLC's decision making.

A Notice of Availability (NOA) will be published in the *The Caldwell Watchman* newspaper (Appendix A) on To Be Determined to announce the public comment period and the availability of the draft EA. The 30-day public comment period will allow for all interested parties to review the analysis presented in the draft EA and provide feedback. The draft EA will be available to the public to review in hard copy at the Caldwell Parish Library, 211 Jackson Street, Columbia, Louisiana 71478.

2.0 PROPOSED ACTION AND ALTERNATIVES

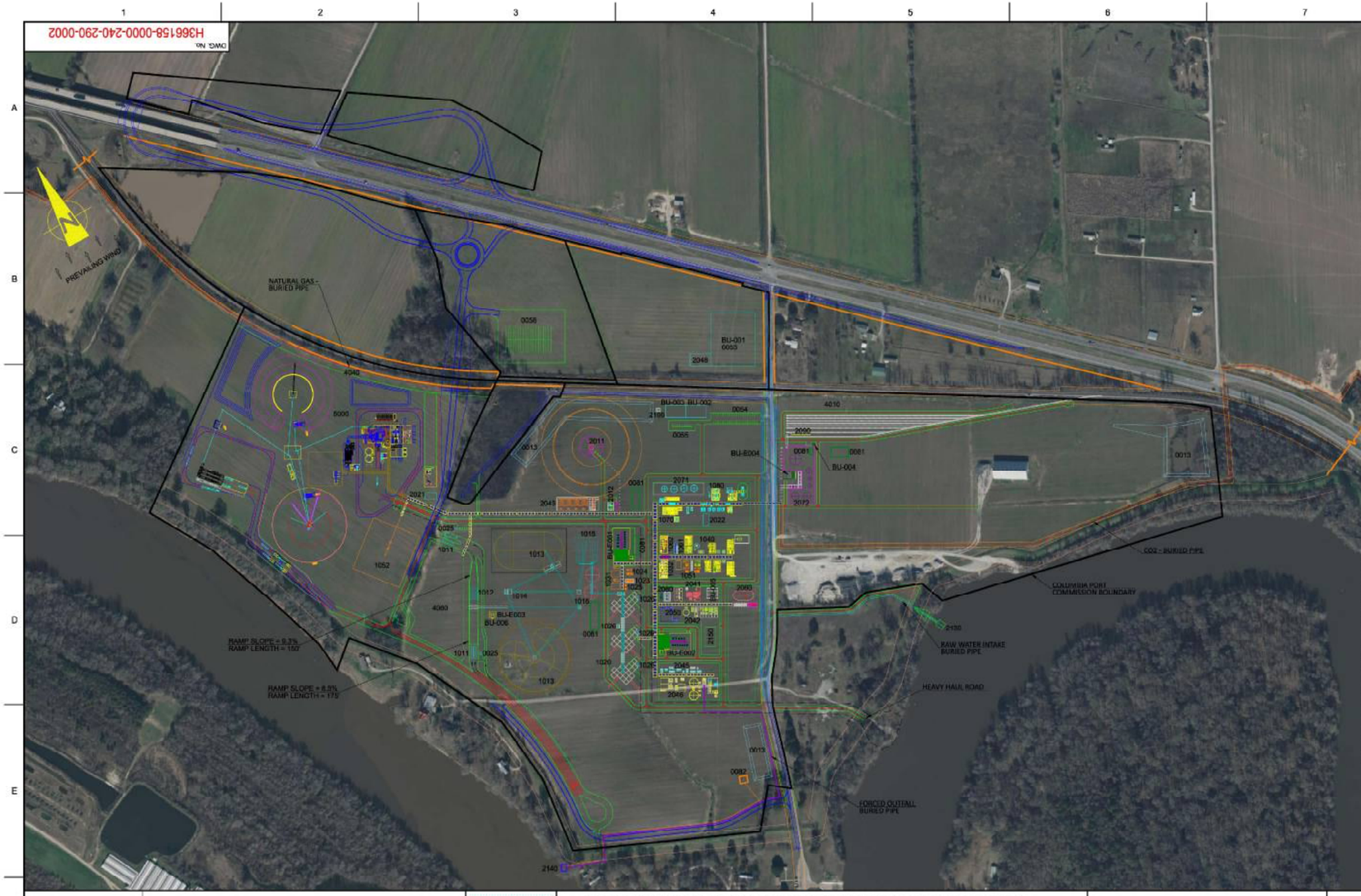
The NEPA process consists of an evaluation of the environmental effects of a federal action, including its alternatives. This section describes alternatives proposed and considered in addressing the purpose and need stated above.

The Proposed Action and one alternative (No Action Alternative) were identified and considered during the planning stages of the proposed project. The Proposed Action consists of the construction of the proposed new LGF facility and associated infrastructure that meet the purpose and need for the project. As required by NEPA and CEQ regulations, the No Action Alternative reflects conditions within the project area should the Proposed Action not be implemented. One potential proposed new LGF facility site is carried forward for evaluation in the EA. The site is discussed in the following subsection.

2.1 PROPOSED ACTION

The Proposed Action would construct the proposed new LGF facility on an approximately 387-acre site located 5 miles north of Columbia, Louisiana and 25 miles south of Monroe, Louisiana. The new facility would be constructed at the Port of Columbia. The majority of the project site is agricultural lands. The LGF facility would consist of a renewable biofuel refinery, 70-MW biomass-boiler power generation plant, and one Class IV well (Figure 2-1). The following is a list of site features that would occur at the proposed facility:

- Biomass Preparation and Drying Area
- Fixed Stacker
- Biomass Scales
- Wood Chip Truck Dump
- Stacker Reclaimer
- Ash, Tramp, and Slag Handling Area
- Gasifier Island
- Particulate Filtration System
- Start-up Recirculation Compressor
- Emission Control System
- Syngas Compressor
- Syngas Clean-up and Conditioning
- Acid Gas Removal
- CO_2 Compression and Distribution
- Sequestration Wells (1 onsite and 2 offsite)
- H_2 Pressure Swing Adsorption Unit
- Syngas Polishing
- FT Units
- Upgrading
- Flare System
- Thermal Oxidizer System
- Fuel Gas & Natural Gas System (To Be Determined [TBD])
- Fuel Gas Main Distribution Line (TBD)
- Nitrogen and Oxygen Distribution (TBD)
- Raw Water Treatment
- Demineralized Water Treatment
- Cooling Water System
- Potable Water System
- Waste Water Treatment System
- Sewage System
- Administrative Building Sewage Treatment
- Boiler Feed Water, Steam and Condensate
- Raw Water Intake
- Raw Water/Firewater Tanks and Pumps
- Intermediate Produce Tanks & Slops
- QC/Day Tanks
- Sales Tanks



FBS	SYSTEM
BU-001	Administration Building
BU-002	Lab and Control Room
BU-003	Maintenance/Workshop/Warehouse
BU-004	Operator Shelter
BU-005	Chemicals and Catalyst Storage
BU-006	Operator Shelter
BU-E001	Electrical Building
BU-E002	Electrical Building
BU-E003	Electrical Building
BU-E004	Electrical Building
0013	Storm Water Retention/Detention Ponds
0034	Emergency Diesel Generator - TBD
0053	Administrative Bldg. paved parking
0054	O&M personal vehicle paved parking
0055	O&M plant vehicles paved parking
0056	Auxiliary gravel parking
0081	First Flush Basins
0082	Storm Water Sump
1011	Biomass Truck Weigh Scales
1012	Biomass Truck Dumper
1013	Biomass Storkpile Stackers/Reclaimers
1014	Biomass Preparation
1015	Biomass Feedstock Drying
1016	Biomass Feedstock Dried Storage
1020	Gasification Island
1023	Particulate Filtration
1024	Start-up Recirculation Compression
1025	Emission Control
1026	Ash, Slag, and Tramp handling
1031	Syngas Compression
1032	Syngas Clean-up and Conditioning
1040	Acid Gas Removal
1051	CO2 Compression
1052	CO2 Sequestration Wells
1061	H2 Pressure Swing Absorption
1062	Syngas Polishing
1070	Fischer Tropsch Unit
1080	Upgrading
2011	Flare
2012	Thermal Oxidizer
2021	Refinery Natural Gas Supply
2022	Fuel Gas & Natural Gas Distribution System
2031	Oxygen Distribution "TBD"
2032	Nitrogen Distribution "TBD"
2041	Raw Water Treatment
2042	Demineralized Water Treatment
2043	Cooling Water
2045	Wastewater Treatment System
2046	Biological Water Treatment System
2048	Admin Building Sanitary Water Treatment
2050	Boiler Feed Water, Steam and Condensate
2060	Fire Protection - TBD
2071	Intermediate Products Tanks & Slops
2072	QC and Sales Tanks
2080	Instrument and Utility Air
2090	Product Dispatch and Loading
2100	Potable Water
2130	RW Intake
2140	Forced Outfall
2150	Maintenance Wash Pad
4010	Rail Spurs
4040	Natural Gas Pipeline
4050	Electric Overhead Power Line Connection "TBD"
4060	Air Separation Unit
5000	Power Plant

HATCH

DRAFTSPERSON	M. YEPES	NR
DESIGNER	C. JACKSON	NR
CHECKER	C. JACKSON	
DESIGN COORD.	S. POND	
RESP. ENG.	D. CARRUTH	
LEAD DISC. ENG.	D. CARRUTH	
ENG. MANAGER	G. BAWA	
PROJ. MANAGER	C. ATIK	

No.	DESCRIPTION	BY	CHK'D	DATE
D	ISSUED FOR REVIEW	M.Y.	C.J.	2022-10-18
C	ISSUED FOR REVIEW	M.Y.	C.J.	2022-04-22
B	APPROVED FOR FEL2	C.A.	T.Z.	2021-12-17
A	ISSUE FOR REVIEW	T.Z.	C.A.	2021-11-04

REVISIONS

ROLE	NAME	SIGNATURE	DATE
DRAWING APPROVAL STATUS:	Client Review		

DRAWING No. | DRAWING TITLE
REFERENCE DRAWINGS

REG. PROFESSIONAL

STRATEGIC BIOFUELS

LOUISIANA GREEN FUELS PROJECT

OVERALL SITE PLAN
PHASE 1

SCALE: NTS OR AS NOTED

DWG. No. H366158-0000-240-290-0002

REV D

SHEET SIZE: D

1" = 300'-0"

SCALE IN FEET: 0, 150, 300, 450, 600

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Figure 2-1. Project Design

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- Plant Instrument Utility Air System
- Product Dispatch and Loading System
- Hydrocarbon Drain System (TBD)
- Maintenance Wash Pad
- Storm Water Retention Pond
- Sales Tanks Containment
- Intermediate Products Tank Containment
- QC/Day Tanks Containment
- Administrative Building
- Warehouse/Workshop/Maintenance Building
- Operating Shelters
- Chemicals Storage
- Security Shelter
- Fire Station
- Lab Building/Control Room
- Catalyst Storage
- E-House 01
- E-House 02
- Sub Station (TBD)
- Emergency Diesel Generator (TBD)
- E- Room Biomass Area
- E- Room Product Storage and Dispatch
- Parking Lot
- Plant Vehicles
- First Flush Basin
- Forced Outfall
- Rail Spurs
- Main Natural Gas Distribution Line (TBD)
- Entergy Over Head Power Line (TBD)
- Air Separation Unit
- Power Plant

2.2 NO ACTION ALTERNATIVE

The No Action Alternative would preclude the construction, operation, and maintenance of the proposed LGF facility. The tracts that compose the project site would remain in their current use. The No Action Alternative does not meet the purpose and need for the proposed project but will be carried forward for analysis, as required by CEQ regulations. The No Action Alternative describes the existing conditions in the absence of the Proposed Action and serves as a baseline comparison of impacts from other action alternatives.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER CONSIDERATION

In addition to the location included in the Proposed Action, LFG considered two other potential alternatives that were eliminated from further consideration. The alternatives and the reasons for elimination are provided below:

- Bee Bayou Site: This site lacks river access, therefore river transport to the plant is not available. Also, there is no river to supply cooling water and dispose of waste water. Further, there is no financial support available for this site, thus making it cost prohibitive.
- Taylor Site: This site lacks river access, therefore river transport to the plant is not available. Also, there is no river to supply cooling water and dispose of waste water. Additionally, there is no financial support available for this site, thus making it cost prohibitive. This site would require deeper sequestration wells, thus increasing the cost of development.

2.4 ALTERNATIVES SUMMARY

The two alternatives selected for further analysis are the Proposed Action (Preferred Alternative) and the No Action Alternative. The Proposed Action fully meets the purpose of and need for the project, and the preferred construction site offers the best combination of terrain, environment, land ownership, and operational requirements to serve as a bio-refinery facility. An evaluation of how the Proposed Action meets the project's purpose and need is provided in Table 2-1.

Table 2-1. Alternatives Matrix of Purpose of and Need for Alternatives

Purpose and Need	Proposed Action	No Action Alternative
Provide a renewable bio-refinery.	Yes	No
Provide a facility with a low carbon footprint.	Yes	No
Produce bio-diesel and naptha from a renewable biomass	Yes	No

3.0 AFFECTED ENVIRONMENT AND CONSEQUENCES

3.1 PRELIMINARY IMPACT SCOPING

This section describes the natural and human environments that exist within the Area of Potential Effect (APE) and the potential impacts of the No Action Alternative, and the Proposed Action outlined in Section 2.0 of this document. The APE for the proposed new LGF facility and its associated infrastructure is an approximately 387-acre site in Caldwell Parish, Louisiana and waterbodies immediately adjacent to the site. The Proposed Action would be located on State of Louisiana Property. Only those issues that have the potential to be affected by any of the alternatives are described, per CEQ guidance (40 CFR § 1501.9 [3]).

Some topics are limited in scope due to the lack of direct effect from the Proposed Action on the resource or because that resource is not located within the project area (Table 3-1).

Table 3-1. Resources Analyzed in the Environmental Impact Analysis Process

Resource	Potential to Be Affected by Implementation of the Proposed Action	Analyzed in This EA	Rationale for Elimination
Wild and Scenic Rivers	No	No	No rivers designated as Wild and Scenic Rivers (16 U.S.C. § 551, 1278[c], 1281[d]) are located within or near the project area.
Land Use	Yes	Yes	Not Applicable
Geology	Yes	Yes	Not Applicable
Soils	Yes	Yes	Not Applicable
Prime Farmlands	Yes	Yes	Not Applicable
Water Resources	Yes	Yes	Not Applicable
Floodplains	Yes	Yes	Not Applicable
Vegetative Habitat	Yes	Yes	Not Applicable
Wildlife Resources	Yes	Yes	Not Applicable
Threatened and Endangered Species	No	Yes	Not Applicable
Cultural, Archaeological, and Historical Resources	Yes	Yes	Not Applicable
Air Quality	Yes	Yes	Not Applicable
Noise	Yes	Yes	Not Applicable
Utilities and Infrastructure	Yes	Yes	Not Applicable
Roadways and Traffic	Yes	Yes	Not Applicable
Aesthetic and Visual Resources	No	No	No aesthetic or visual resources would be affected
Hazardous Materials	Yes	Yes	Not Applicable
Unique and Sensitive Areas	No	No	No unique or sensitive areas would be affected
Socioeconomics	Yes	Yes	Not Applicable

Table 3-1. Resources Analyzed in the Environmental Impact Analysis Process, Continued

Resource	Potential to Be Affected by Implementation of the Proposed Action	Analyzed in This EA	Rationale for Elimination
Environmental Justice and Protection of Children	Yes	Yes	Not Applicable

Per 40 CFR §1508.1(g), effects are defined as changes to the human environment from the Proposed Action or alternatives that are reasonably foreseeable and have a close causal relationship to the proposed action or alternatives, including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the Proposed Action or alternatives.

Per 40 CFR §1508.1(g), effects are not considered if they are remote in time, geographically remote, or would be as a result of a lengthy causal chain. They were also not considered if Federal Emergency Management Agency (FEMA) has no ability to prevent the effect or if the effect would occur regardless of the Proposed Action.

Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic (such as the effects on employment), social, or health effects. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if the agency believes that the effect would be beneficial. As discussed in this section, the alternatives may create temporary, short-term, long-term, or permanent effects.

Whether an effect is significant depends on the potentially affected environment and degree of effects of the action (1501.3[b]). The potentially affected environment refers to the setting in which the impact occurs, and may include society as a whole, the affected region, the affected interests, and the locality. Effects on each resource can vary in degree or magnitude, from a slightly noticeable change to a total change in the environment. For the purpose of this analysis, the intensity of effects would be classified as negligible, minor, moderate, or major. The intensity thresholds are defined as follows:

- **Negligible:** A resource would not be affected, or the effects would be at or below the level of detection, and changes would not be of any measurable or perceptible consequence.
- **Minor:** Effects on a resource would be detectable, although the effects would be localized, small, and of little consequence to the sustainability of the resource. Mitigation measures, if needed to offset adverse effects, would be simple and achievable.
- **Moderate:** Effects on a resource would be readily detectable, long-term, localized, and measurable. Mitigation measures, if needed to offset adverse effects, would be extensive and likely achievable.

- **Major:** Effects on a resource would be obvious and long-term and would have substantial consequences on a regional scale. Mitigation measures to offset the adverse effects would be required and extensive, and success of the mitigation measures would not be guaranteed.

3.2 LAND USE

The existing land use for the proposed LGF facility is primarily composed of agriculture and forestland. Other nearby existing land use includes rangeland and developed land. Columbia (approximately 5 miles south of the project area) is the county seat of Caldwell Parish.

Caldwell Parish is approximately 346,240 acres in size with approximately 67,723 acres being used as farms. Seventy-seven percent of the farmland in Caldwell Parish is used as woodland or cropland (U.S. Department of Agriculture [USDA] 2017a). Using the 2019 National Land Cover Database, it was determined that 13 different land cover classifications occur within the project boundary (Multi-Resolution Land Cover Characteristics Consortium 2019). The definitions of each of the classifications are described below. Table 3-2 shows the various classifications as well as the approximate acreage of each classification.

Table 3-2. Land Use Classifications

Land Use Class	Land Use Classification Description	Acres
Water	Open Water	5.78
Developed	Developed, Open Space	7.12
	Developed, Low Intensity	11.79
	Developed, Medium Intensity	12.23
	Developed, High Intensity	2.89
Forest	Evergreen Forest	0.44
	Mixed Forest	3.56
Shrubland	Shrub/Scrub	0.22
Herbaceous	Grassland/Herbaceous	0.22
Planted/Cultivated	Pasture/Hay	0.67
	Cultivated Crops	307.57
Wetlands	Woody Wetlands	29.58
	Emergent Herbaceous Wetlands	5.78
	Total	**387.85**

Water

***Open Water*:** These are areas of open water, generally with less than 25 percent cover of vegetation or soil.

Developed

***Developed, Open Space*:** These areas possess a mixture of some constructed material, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20 percent of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.

***Developed, Low Intensity*:** These areas possess a mixture of constructed materials and vegetation. Impervious surfaces account for 20 to 49 percent of total cover. These areas most commonly include single-family housing units.

***Developed, Medium Intensity*:** These areas have a mixture of constructed materials and vegetation. Impervious surfaces account for 50 to 79 percent of the total cover. These areas most commonly include single-family housing units.

***Developed, High Intensity*:** These areas are highly developed with people residing or working in high numbers. Examples include apartment complexes, row houses, and commercial/industrial. Impervious surfaces account for 80 to 100 percent of the total cover.

Forest

***Evergreen Forest*:** These areas are dominated by trees generally greater than five meters tall, and greater than 20 percent of total vegetation cover. More than 75 percent of the tree species maintain their leaves all year. Canopy is never without green foliage.

***Mixed Forest*:** These areas are dominated by trees generally greater than 5 meters tall, and greater than 20 percent of total vegetation cover. Neither deciduous nor evergreen species are greater than 75 percent of total tree cover.

Shrubland

***Shrub/Scrub*:** These areas are dominated by shrubs; less than 15 feet tall with shrub canopy typically greater than 20 percent of total vegetation. This class includes true shrubs, young trees in an early successional stage, or trees stunted from environmental conditions.

Herbaceous

***Grassland/Herbaceous*:** These areas are dominated by graminoid or herbaceous vegetation, generally greater than 80 percent of total vegetation. These areas are not subject to intensive management such as tilling but can be used for grazing.

Planted/Cultivated

***Pasture/Hay*:** These areas are dominated with grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20 percent of total vegetation.

***Cultivated Crops*:** These areas are used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and also perennial woody crops such as orchards and vineyards. Crop vegetation accounts for greater than 20 percent of total vegetation. This class also includes all land being actively tilled.

Wetlands

***Woody Wetlands*:** These are areas where forest or shrubland vegetation accounts for greater than 20 percent of vegetative cover and the soil or substrate is periodically saturated with or covered with water.

***Emergent Herbaceous Wetlands*:** These are areas where perennial herbaceous vegetation accounts for greater than 80 percent of vegetative cover and the soil or substrate is periodically saturated with or covered with water.

3.2.1 Alternative 1: Proposed Action

Implementation of the Proposed Action would result in permanent, minor changes from the current primary land use of Cultivated Crops (i.e., agricultural farmland) to Developed, High Intensity (i.e., proposed new Green Fuels Facility) and would convert approximately 387.85 acres of land into new buildings, parking lots, and other infrastructure associated with the project. Due to the large number of farms in the surrounding area, the conversion of this parcel would have minor, long-term effects on land use in the area.

3.2.2 Alternative 2: No Action Alternative

The No Action Alternative would have no impacts, either beneficial or adverse, on the area's land use. The site could be potentially developed at some time in the future, regardless of whether the LGF facility uses the site, or the site could remain in its current state. No construction activities would occur as part of the No Action Alternative; therefore, no impacts on land use would occur.

3.3 SOILS

According to the *Natural Resources Conservation Service Web Soil Survey of Caldwell Parish, Louisiana*, there are six soil types in the proposed project site: Gallion silt loam; Hebert silt loam, 0 to 1 percent slopes; Hebert silt loam, gently undulating, occasionally flooded; Levees-Borrow pits complex, nearly level to strongly sloping; Perry silty clay loam; and Rilla silt loam, 1 to 3 percent slopes (USDA 2022a) (Figure 3-1). Acreages of each soil type and their status as a prime farmland soil is included in Table 3-3.

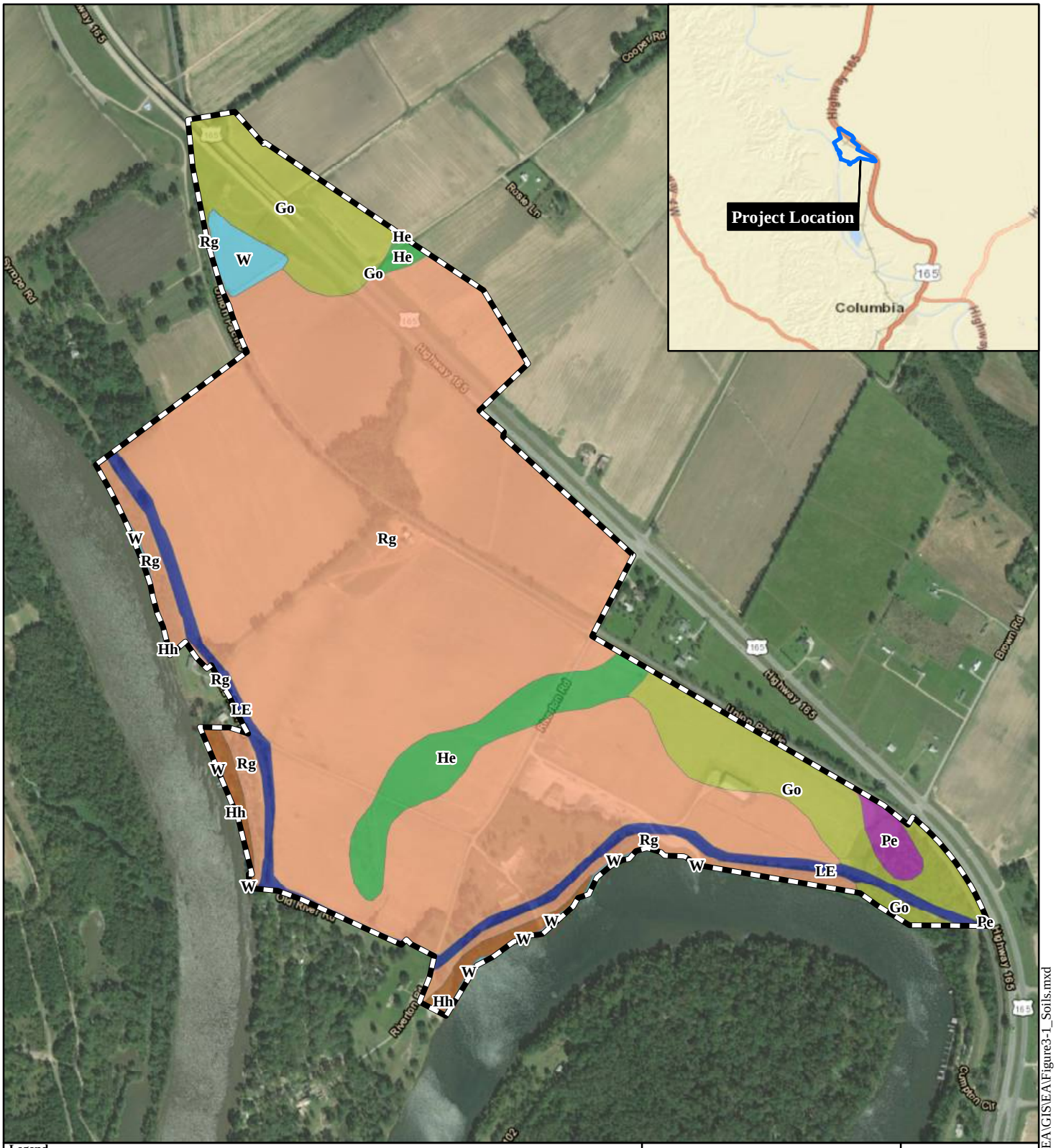


Figure 3-1. Soils Map

Table 3-3. Soil Types Found Within the Project Area

Soil Type	Acreage	Prime Farmland
Gallion silt loam	48.59	Yes
Hebert silt loam, 0 to 1 percent slopes	18.67	Yes
Hebert silt loam, gently undulating, occasionally flooded	5.55	Yes
Levees-Borrow pits complex, nearly level to strongly sloping	14.82	No
Perry silty clay loam	3.65	Yes
Rilla silt loam, 1 to 3 percent slopes	290.05	Yes
Water	5.65	N/A

Source: USDA 2022

The Gallion series consists of very deep, well drained, moderately permeable soils that formed in loamy alluvium. These soils are found on natural levees of the Ouachita River and in abandoned channels of the Arkansas River. Gallion series soils are typically used for cultivated crops or pasture. Principal crops include cotton (*Gossypium* sp.), soybean (*Glycine max*), and corn (*Zea mays*). Principal pasture grass is bermudagrass (*Cynodon dactylon*). Native vegetation consists of mixed hardwood forest (USDA 2017b). Gallion series soils are considered prime farmland, unique farmland, or farmland of statewide or local importance soils (USDA 2022b).

The Hebert series consists of very deep, somewhat poorly drained, moderately slowly permeable soils that formed in silty alluvium. These soils are found on natural levees along present and abandoned channels of the Arkansas and Red Rivers. Low areas are subject to flooding. Hebert series soils are used for pasture and cultivated crops such as cotton, soybeans, or corn. Native vegetation consists of bottomland hardwood forest (USDA 2002a). Hebert series soils are considered prime farmland, unique farmland, or farmland of statewide or local importance soils (USDA 2002a).

The Perry series consists of very deep, poorly drained, very slowly permeable soils that formed in clayey alluvium. These soils are on level to gently undulating alluvial plains of the Arkansas and Red Rivers and their distributaries. Areas not protected can be subject to flooding. Areas containing Perry series soils that have been cleared, drained, and protected by levees are used for cultivation of soybeans, rice (*Oryza* sp.), wheat (*Triticum* sp.), oats (*Alvena* sp.), and pasture. Native vegetation consists of hardwood forest (USDA 2002b). Perry series soils are considered prime farmland, unique farmland, or farmland of statewide or local importance soils (USDA 2022b).

The Rilla series consists of very deep, well drained, moderately permeable soils that formed in reddish silty and loamy alluvium. These soils are on nearly level to gently sloping natural levees along the Red River and the present and abandoned channels of the Arkansas River. Most areas containing Rilla series soils are cleared and used for cultivation of cotton, soybeans, corn, or pasture (USDA 2002c). Rilla series soils are considered prime farmland, unique farmland, or farmland of statewide or local importance soils (USDA 2022b).

3.3.1 Alternative 1: Proposed Action

Under the Proposed Action, approximately 381.33 acres of soils (366.51 acres of prime farmland soils) would be permanently disturbed or removed from biological production at the proposed LGF facility. Approximately 48.59 acres of Gallion silt loam, 24.22 acres of Hebert silt loam,

3.65 acres of Perry silty clay loam, and 290.05 acres of Rilla silt loam would be permanently impacted. The direct impact from the disturbance and removal from biological production of approximately 381.33 acres of soil would be negligible due to the small size of the project footprint relative to the amount of the same soils throughout the APE. Upon completion of construction, all temporary disturbance areas would be revegetated with a mixture of native plant seeds and nursery plantings, or allowed to revegetate naturally, if applicable.

3.3.2 Alternative 2: No Action Alternative

No new ground-disturbing activities would occur as a result of this alternative. The No Action Alternative would continue to disturb soils and potentially increase erosion as a result of tilling for agricultural purposes.

3.4 GEOLOGY

The project area is located in north-central Louisiana on the southern flank of the Monroe Uplift, formerly referred to as the Monroe-Sharkey Platform. Figure 3-2 shows the project area in relation to nearby geologic uplifts. The project area also straddles the Richland/Caldwell Paleoridge, a buried Paleozoic horst that extends southwest from the Mondro Uplift to the LaSalle Arch. The drape of Mesozoic sediments over the Richland/Caldwell Paleohigh was later overprinted by the episodic upward movement of the Monroe Uplift, which profoundly impacted the entire area. To the south, the smaller but still significant LaSalle Arch also uplifted older beds in the Late Cretaceous Period; however, in the project area, the Monroe Uplift is the most profound and dominant structural element impacting geology in this region (Vision Exploration 2020).

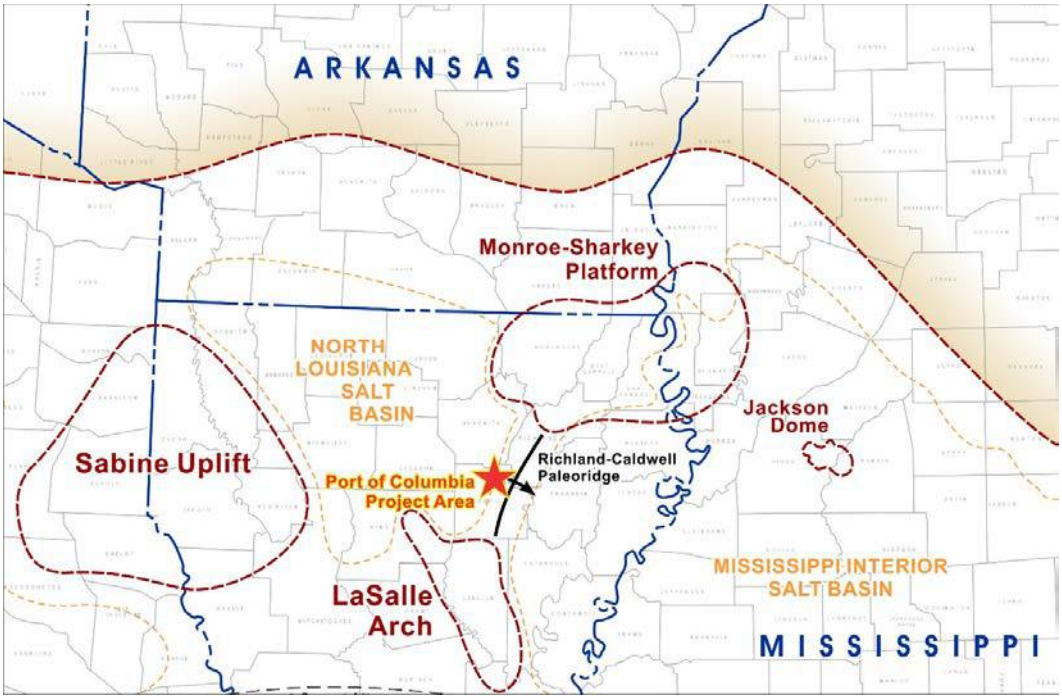


Figure 3-2. General regional map of the North Louisiana area, showing the location of the project area.

Various geologic formations exist within the project area including the Sparta formation; Cane River formation; Tallahatta formation; Wilcox formation; Midway Shale formation; Upper Cretaceous Chalk formation; Upper, Middle, and Lower Tuscaloosa formations; Washita-Fredericksburg formation, Paluxy formation; Mooringsport formation; and Ferry Lake Anhydrite formation (Vision Exploration 2020). Table 3-4 provides information on each of the aforementioned geologic formations.

Table 3-4. Geologic Formations Found at the Project Site

Formation	Composition	Depth Range (feet)	Overlayed by	Notes
Sparta	Water	600-800	Upper Eocene, Cook Mountain, and/or Cockfield sediments	Base of Sparta formation is considered the base of drinking water
Cane River	Mostly shale	100-200	Sparta formation	N/A
Tallahatta	Marls, quartzitic lenses, and shale	50-60	Cane River formation	Poor in porosity and not permeable.
Wilcox	Sandstone, lignites, and shale	1,300-1,900	Tallahatta formation	Variable thickness of this formation is attributable to the Monroe Uplift
Midway Shale	Shale and marls	600	Wilcox formation	Represents a significant impermeable barrier
Upper Cretaceous Chalk	Selma chalk, argillaceous middle chalk, sand, and chalky limestone	600-1,200	K/P boundary	Youngest cretaceous formation.
Upper Tuscaloosa	Shale, mudstones, siltstones, and sandstones	640	Upper Cretaceous Chalk	This formation represents the optimum injection interval
Middle Tuscaloosa	Shale	60-100	Upper Tuscaloosa	The shale of this formation is the first confining interval beneath the Upper Tuscaloosa formation
Lower Tuscaloosa	Basal Sand and Stringer Sand	60-100	Middle Tuscaloosa	Very sensitive to drilling
Washita-Fredericksburg formation	Shale and crystalline limestone	0-1,200	Lower Tuscaloosa	Considered an excellent confining zone
Paluxy formation	Primarily sandstone	700-1,000	Washita-Fredericksburg formation	Like the Washita-Fredericksburg, the Paluxy formation was subjected to substantial erosion
Mooringsport formation	Shales containing sandstones, evaporites, and limestones	500	Paluxy formation	N/A
Ferry Lake Anhydrite formation	evaporitic and tight carbonate facies and limestone	350	Mooringsport formation	One of the most effective confining units in the vicinity

The Proposed Action includes the pumping of liquefied CO_2 and hydrogen sulfide (H_2S) underground for permanent storage. The H_2S would be a minor component of the mixture. CO_2 pumped underground would not mix with groundwater or significantly alter the local geology. The liquid CO_2 would fill pore gaps at injection sites and harden to form a solid. Figure 3-3 shows a composite log and wellbore schematic. The left half of the schematic shows the injection site/intervals, depths to restrictive layers, and underlying freshwater. Between the injection sites and the freshwater there are multiple restrictive layers and reservoirs. Injection sites are placed between confining sediments to prevent unpredictable release. The main confining interval is the Midway shale formation. The Midway Shale is approximately 600 feet thick across the project area. The lower 100 feet of the unit is generally known as the "Clayton Marl" in Eastern Louisiana and Southern Mississippi and consists of calcareous shales and marls. The Basal Paleocene Clayton Marl was deposited unconformably atop the Upper Cretaceous Selma Chalk at the K/P boundary. Above the Clayton Marl lies the Porters Creek Shale, which is a thick, dense, black terrigenous shale. This impermeable shale grades upward in the uppermost portion of the Porters Creek to a slightly calcareous shale (Vision Exploration 2020). Liquified CO_2 would not penetrate this layer. Beyond the Midway shale formation is an approximately 2,000-foot think saline reservoir within the Wilcox formation and past that is an additional confining layer. In total, the shortest distance between an injection interval and freshwater is 3,750 feet while the primary injection site would be almost 1 mile above it at 4,550 feet (Vision Exploration 2020). The right half of the schematic on Figure 3-3 shows a cross section of a hypothetical injection site.

3.4.1 Alternative 1: Proposed Action

The proposed LGF facility would have a long-term, moderate effect on geology due to the pumping of liquid CO_2 and H_2S into the earth. While liquid CO_2 is not considered to be particularly harmful, it would harden underground and change the natural physiogeologic processes at the injection sites.

3.4.2 Alternative 2: No Action Alternative

Under the No Action Alternative, no construction or demolition activities would occur; therefore, no impacts to geological resources would occur.

3.5 VEGETATIVE HABITAT

The proposed project site is located in the Mississippi Alluvial Plain Ecoregion (Inland swamp) (Daigle et. al 2006). This riverine ecoregion extends from southern Illinois, at the confluence of the Ohio River with the Mississippi River, south to the Gulf of Mexico. The Mississippi Alluvial Plain is mostly a broad, flat alluvial plain with river terraces, swales, and levees providing the main elements of relief. Winters are mild and summers are hot, with temperatures and precipitation increasing from north to south. Bottomland deciduous forest covered the region before much of it was cleared for cultivation. The ecoregion contained one of the largest continuous wetland systems in North America. Today, constructed levees restrict the Mississippi River from overflowing, opening large areas for extensive agricultural use. In Louisiana, cotton, corn, soybeans, pasture, and rice are major crops in the northern and central portions of the state and sugarcane (*Saccharum* sp.), soybeans, and pasture are dominant in the south.

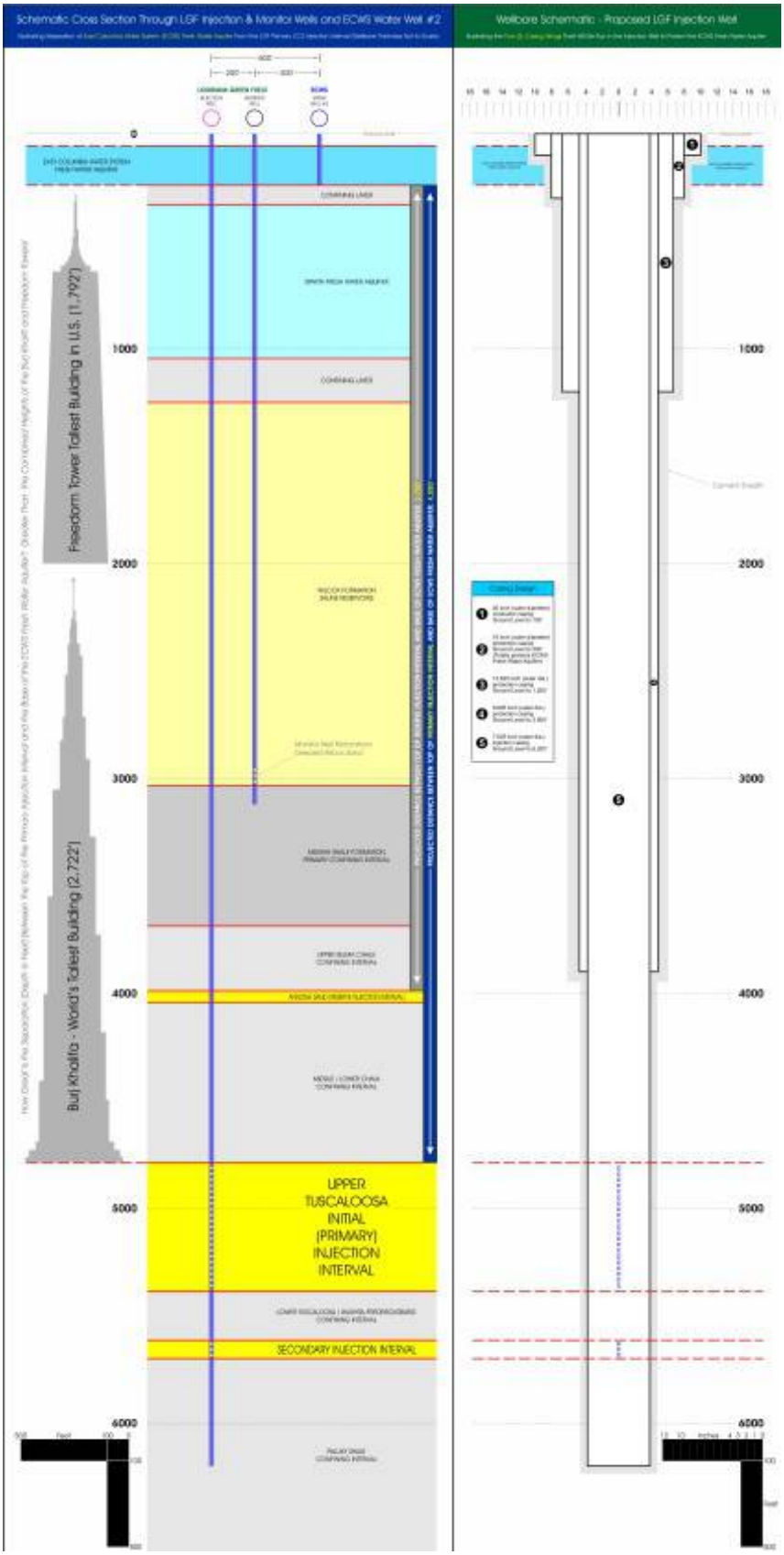


Figure 3-3. A Composite Log and Wellbore Schematic.

The predominant natural vegetative community in this region is bottomland hardwood forest; however, an estimated 50 to 75 percent of the original pre-settlement acreage has been lost due to development and agriculture. Common tree species for the area include American elm (*Ulmus americana*), boxelder (*Acer negundo*), sugarberry (*Celtis laevigata*), red maple (*Acer rubrum*), American sweetgum (*Liquidambar styraciflua*), Nuttall oak (*Quercus texana*), water oak (*Quercus nigra*), black willow (*Salix nigra*), Chinese privet (*Ligustrum sinense*), laurel oak (*Quercus laurifolia*), cherrybark oak (*Quercus pagoda*), cottonwood (*Populus deltoides*), American sycamore (*Platanus occidentalis*), silver maple (*Acer saccharinum*), pecan (*Carya illinoinensis*), honey locust (*Gleditsia triacanthos*), and baldcypress (*Taxodium distichum*) (USFS 2008). Common shrubs, vines, grasses, and wildflowers in this ecoregion according to LDWF are Virginia creeper (*Parthenocissus quinquefolia*), bermudagrass, northern spicebush (*Lindera benzoin*), spring spiderlily (*Hymenocallis liriosme*), soft rush (*Juncus effusus*), poison ivy (*Toxicodendron radicans*), Pennsylvania blackberry (*Rubus pensilvanicus*), American jumpseed (*Persicaria virginiana*), heartleaf peppervine (*Ampelopsis cordata*), river cane (*Arundinaria gigantea*), and many sedges (*Carex* and *Cyperus* spp.) (LDWF n.d.).

In all, 61 individual plant species were identified on the project area, many of which were the common species listed above. No federally or state-listed plant species were observed at the project area. A complete list of floral species observed during wetland surveys of the proposed project site is included in Table 3-5. Most of the natural vegetation exists along ditches or other mesic features where farming practices are not practical. These wet, natural areas are characterized by hardwood trees such as ash (*Fraxinus* spp.) and oak (*Quercus* spp.) in the overstory with a mid-story composed of maples (*Acer* spp.) and birch (*Betula* spp.). Vines like greenbriers (*Smilax* spp.) are abundant in the understory and many invasive plant species have established along the edges of these small woodlots.

Table 3-5. Observed Floral Species

Common Name	Scientific Name	Form
Trumpet creepter	*Campsis radicans*	Vine
Virgin's bower	*Clematis virginiana*	Vine
Whitestar	*Ipomoea lacunosa*	Vine
Common morning-glory	*Ipomoea purpurea*	Vine
Japanese honeysuckle	*Lonicera japonica*	Vine
Virginia creeper	*Parthenocissus quinquefolia*	Vine
Saw greenbrier	*Smilax bona-nox*	Vine
Round-leaf greenbrier	*Smilax rotundifolia*	Vine
Poison ivy	*Toxicodendron radicans*	Vine
Muscadine grape	*Vitis rotundifolia*	Vine
Boxelder	*Acer negundo*	Tree
Red maple	*Acer rubrum*	Tree
River birch	*Betula nigra*	Tree
Pecan	*Carya illinoinensis*	Tree
Sugarberry	*Celtis laevigata*	Tree
Honey locust	*Gleditsia triacanthos*	Tree

Table 3-5. Observed Floral Species, Continued

Common Name	Scientific Name	Form
Sweetgum	*Liquidambar styraciflua*	Tree
Sycamore	*Platanus occidentalis*	Tree
Willow oak	*Quercos phellos*	Tree
Water oak	*Quercus nigra*	Tree
Red oak	*Quercus rubra*	Tree
Black willow	*Salix nigra*	Tree
Baldcypress	*Taxodium distichum*	Tree
Chinese tallow	*Triadica sebifera*	Tree
Winged elm	*Ulmus alata*	Tree
American elm	*Ulmus americana*	Tree
Trifoliate orange	*Poncirus trifoliata*	Shrub
Cotton	*Gossypinius hirsutum*	Shrub
Chinese privet	*Ligustrum sinense*	Shrub
Blackberry	*Rubus* sp.	Shrub
Dwarf palm	*Sabal minor*	Shrub
Bermudagrass	*Cynodon dactylon*	Grass
Hairy crabgrass	*Digitaria sanguinalis*	Grass
Perennial ryegrass	*Lolium perenne*	Grass
Vasey's grass	*Paspalum urvillei*	Grass
Yellow foxtail	*Setaria pumila*	Grass
Johnson grass	*Sorghum halespense*	Grass
False nettle	*Boehmeria cylindrica*	Forb
Water pepper	*Persicaria hydropiper*	Forb
Garlic mustard	*Alliarai petiolata*	Forb
Alligator weed	*Alternanterha philoxeriodes*	Forb
Giant ragweed	*Ambrosia trifida*	Forb
Cherokee sedge	*Carex cherokeensis*	Forb
Asiatic dayflower	*Commelina communis*	Forb
Blue mistflower	*Conoclinium coelestinum*	Forb
Yellow nutsedge	*Cyperus esculentus*	Forb
Yellow flatsedge	*Cyperus flacenscens*	Forb
Fragrant flatsedge	*Cyperus odoratus*	Forb
Showy tick-trefoil	*Desmodium canadense*	Forb
Buttonweed	*Diodia virginiana*	Forb
Creeping spikerush	*Eleocharis palustris*	Forb
Wingleaf primrose-willow	*Ludwigia decurrens*	Forb
Littleleaf buttercup	*Ranunculus abortivus*	Forb
Fasciculated beaksedge	*Rhynchospora corniculata*	Forb
Curly dock	*Rumex crispus*	Forb

Table 3-5. Observed Floral Species, Continued

Common Name	Scientific Name	Form
Lanceleaf arrowhead	*Sagittaria lancifolia*	Forb
Lizard's tail	*Saururus cernuus*	Forb
American senna	*Senna hebecaroa*	Forb
Giant goldenrod	*Solidago gigantea*	Forb
Virginia spiderwort	*Tradescantia virginiana*	Forb
Corn	*Zea mays*	Forb

Gulf South Research Corporation (GSRC) 2021; 2022

3.5.1 Alternative 1: Proposed Action

The Proposed Action would have a permanent, minor impact on vegetation in the project area. Approximately 308 acres of agricultural and pastureland and approximately 33 acres of bottomland hardwood forest would be permanently impacted as a result of the construction of the proposed LGF facility. These community types are locally common and not considered rare or imperiled (USEPA 2006). Considering the natural vegetative community in the project area has mostly been removed through agriculture conversion, a vast majority of the land needed for the LGF facility would have already been converted for anthropogenic uses. Further, the permanent loss of the limited amount of bottomland hardwood forest acreage on the project area would not adversely affect the population viability of any plant species in the region. In addition, several species of vegetation found during the biological surveys, such as bermudagrass and Chinese privet, are non-native, invasive species, and extremely common. In order to ensure that the Proposed Action does not actively promote the establishment of non-native and invasive species in the area, best management practices (BMPs; described in Section 4.0) would be implemented to minimize the spread and reestablishment of non-native vegetation. Upon completion of construction, all temporary disturbance areas would be revegetated with a mixture of native plant seeds or nursery plantings or allowed to revegetate naturally. These BMPs, as well as measures protecting vegetation in general, would reduce potential impacts from non-native invasive species to a negligible amount.

3.5.2 Alternative 2: No Action Alternative

Under the No Action Alternative, no impacts on vegetative habitat would occur as no construction or demolition activities would be completed.

3.6 WILDLIFE RESOURCES

The Region of Influence (ROI) is located within Western Gulf section of the Outer Coastal Plain Mixed Forest Province within the Coastal Plains and Flatwoods Ecoregion (Daigle et al. 2006; United States Forest Service [USFS] 1995). Common mammals within this province include the white-tailed deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*), striped skunk (*Mephitis mephitis*), eastern gray squirrel (*Sciurus carolinensis*), fox squirrel (*Sciurus niger*), eastern chipmunk (*Tamias striatus*), eastern cottontail (*Sylvilagus floridanus*), swamp rabbit (*Sylvilagus aquaticus*), and various rodent (Ceritidae) and shrew (Soricidae) species (USFS 1995).

Bird species are especially abundant in this region as the project is located within the Mississippi flyway. Approximately 189 avian species, including Neotropical migrants, shorebirds, raptors, and waterfowl are known to occur in Caldwell Parish (Sullivan *et al.* 2009). The presence of wild turkey (*Meleagris gallopavo*), bobwhite quail (*Colinus virginianus*), and mourning dove (*Zenaida macroura*) is widespread in the region. Additional bird species potentially found in the region include the blue-gray gnatcatcher (*Polioptila caerulea*), wood duck (*Aix sponsa*), Louisiana waterthrush (*Parkesia motacilla*), great blue heron (*Ardea herodias*), northern cardinal (*Cardinalis cardinalis*), tufted titmouse (*Baeolophus bicolor*), summer tanager (*Piranga rubra*), ruby-throated hummingbird (*Archilochus colubris*), hooded warbler (*Setophaga citrina*), red-winged blackbird (*Agelaius phoeniceus*), great egret (*Ardea alba*), double-crested cormorant (*Phalacrocorax auritus*), Carolina wren (*Thryothorus ludovicianus*), cattle egret (*Bubulcus ibis*), killdeer (*Charadrius vociferus*), and red-cockaded woodpecker (*Leuconotopicus borealis*) (USFS 1995).

Common reptiles and amphibians include the common box turtle (*Terrapene carolina*), Fowler's toad (*Anaxyrus fowleri*), squirrel tree frog (*Hyla squirella*), southern leopard frog (*Lithobates sphenocephalus*), Cope's gray tree frog (*Hyla chrysoscelis*), green anole (*Anolis carolinensis*), North American racer (*Coluber constrictor*), western ribbon snake (*Thamnophis proximus*), plain-bellied watersnake (*Nerodia erythrogaster*), diamondback watersnake (*Nerodia rhombifer*), common slider (*Trachemys scripta*), eastern copperhead (*Agkistrodon contortrix*), northern cottonmouth (*Agkistrodon piscivorus*), speckled kingsnake (*Lampropeltis holbrooki*), common snapping turtle (*Chelydra serpentina*), eastern mud turtle (*Kinosternon subrubrum*), river cooter (*Pseudemys concinna*), little brown skink (*Scincella lateralis*), common five-lined skink (*Plestiodon fasciatus*), and American alligator (*Alligator mississippiensis*) (iNaturalist 2022 and USFS 1995).

3.6.1 Alternative 1: Proposed Action

The permanent loss of approximately 300 acres of mostly agricultural land would have a long-term, negligible impact on wildlife. The historical vegetative community has already been removed from this site by previously converting it for agricultural use, and species that are likely to occur in the project area are extremely common. There are also few trees or shrubs located on the site. The wildlife habitat present in the project area is both locally and regionally common, and the permanent loss of approximately 300 acres of agricultural land would not adversely affect the population viability or fecundity of any wildlife species in the region.

3.6.2 Alternative 2: No Action Alternative

No wildlife or aquatic resources would be adversely affected by the No Action Alternative.

3.7 PROTECTED SPECIES AND CRITICAL HABITAT

The Endangered Species Act (ESA) was enacted to protect and recover imperiled species and the ecosystems upon which these species (endangered and threatened) depend for their survival. All federal agencies are required to implement protective measures for designated species and to use their authorities to further the purposes of the ESA. The Secretary of the Interior and the Secretary of Commerce (marine species) are responsible for the identification of threatened or endangered species and development of any potential recovery plan. USFWS is the primary agency responsible for implementing the ESA and is responsible for birds and other terrestrial

and freshwater species. USFWS responsibilities under the ESA include (1) the identification of threatened and endangered species; (2) the identification of critical habitats for listed species; (3) implementation of research on, and recovery efforts for, these species; and (4) consultation with other federal agencies concerning measures to avoid harm to listed species.

An endangered species is a species officially recognized by USFWS as being in danger of extinction throughout all or a significant portion of its range. A threatened species is a species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Proposed species are those that have been formally submitted to Congress for official listing as threatened or endangered. Species may be considered eligible for listing as endangered or threatened when any of the five following criteria occur: (1) current/imminent destruction, modification, or curtailment of their habitat or range; (2) overuse of the species for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) inadequacy of existing regulatory mechanisms; and (5) other natural or human-induced factors affecting their continued existence.

In addition, USFWS has identified species that are candidates for listing as a result of identified threats to their continued existence. The candidate designation includes those species for which USFWS has sufficient information to support proposals to list as endangered or threatened under the ESA; however, proposed rules have not yet been issued because such actions are precluded at present by other listing activity. Although not afforded protection by the ESA, candidate species may be protected under other federal or state laws.

Federally Listed Species

There are two federally listed threatened or endangered species and one candidate species known to occur within Caldwell Parish (USFWS 2022a). A list of these species is presented in Table 3-6. No federally listed species were observed during wetland surveys of the project area. The project area is dominated by croplands with little to no wildlife habitat value.

Table 3-6. Federally Listed Species for Caldwell Parish, Louisiana

Common Name	Status[1]	Habitat	Potential to Occur at Site	Effect Determination
Mammals				
Northern long-eared bat (*Myotis septentrionalis*)	*T*	Mature, intact interior forests, with caves or abandoned mines for hibernation.	No	No effect
Birds				
Red-cockaded woodpecker (*Leuconotopicus borealis*)	*E*	Nest in mature pine with low understory vegetation; forage in pine and pine hardwood stands.	No	No effect
Insects				
Monarch butterfly (*Danaus plexippus)*	*C*	Occurs over a large geographic range in North, Central, and South America. Milkweeds (primarily *Asclepias* spp.) are the obligate host plants.	Yes	No impacts

Source: USFWS 2022a

[1]: Endangered – E, Threatened – T, Candidate – C

Northern Long-eared Bat

The northern long-eared bat (*Myotis septentrionalis*) is a small, insectivorous bat distinguished from other *Myotis* species by their long ears, long pointed tragus, large wing area, and long tail (USFWS 2020). They are most active at pre-dawn and dusk, and are primarily found in mature interior forests, utilizing trees as sites to roost, forage, and raise young. From late fall to early spring, the northern long-eared bat hibernates, primarily in caves or abandoned mines, which provide constant temperature and humidity (New York State Department of Environmental Conservation [NYSDEC] 2020).

The biggest threat to northern long-eared bat populations is white-nose syndrome (WNS), a fungus that thrives in the cold environments where bats hibernate, and which has resulted in the death of millions of bats since its emergence in the U.S. in 2006 (USFWS 2020). As a result, the species was listed by the USFWS as threatened in 2015 (USFWS 2020). Due to a lack of suitable habitat, the northern long-eared bat does not have the potential to occur in the project area.

Red-cockaded Woodpecker

The red-cockaded woodpecker (RCW) has been listed as endangered under the ESA since its passage in 1973. It is also listed as state endangered by the State of Louisiana. The historic range of RCW extended from east Texas and Oklahoma, north to Missouri, and east to Virginia, Maryland, and Delaware, and was found in all states to the south. Due to the loss of open pine woodlands and savannahs that once dominated the southeast, their range has been reduced to regions of east Texas and Oklahoma, east through Arkansas and Louisiana to North Carolina, and the states south. This species has being extirpated from Missouri, Tennessee, Kentucky, Virginia, Maryland, and Delaware. RCW use open pine woodlands and savannas with large old-growth pines for nesting and roosting and cavity trees are typically a minimum of 60 to 80 years old. Their nest cavities are excavated in living pines, which is unique for woodpeckers (USFWS 2019). The original USFWS recovery plan was published in 1979 and the second revision was published in 2003. The species' spatial distribution remains unchanged since 2003 and the species status has been improving annually since the mid-1990s. The RCW was proposed for down listing from endangered to threatened status in 2020 (USFWS 2022b). Old growth pine trees and cavity trees that could be used by RCW for nesting and roosting are not present within the project area. As a result, this species does not have the potential to occur within the project area.

Monarch Butterfly

The monarch butterfly (*Danaus plexippus*) is a candidate species and is not yet listed or proposed for listing. There are generally no Section 7 requirements for candidate species, but the USFWS encourages agencies to take advantage of any opportunity that may arise to conserve the species.

Adult monarch butterflies are large and conspicuous, with orange wings with black and white borders and covered with black veins. During the breeding season, monarch butterflies lay eggs on obligate milkweed (*Asclepias* spp.) host plants and larvae emerge after 2 to 5 days. Larvae develop through five larval instars over a period of 9 to 18 days, at which point the larva pupates into a chrysalis before emerging as an adult butterfly after 6 to 14 days (USFWS 2022c).

The monarch butterfly has the potential to occur within the project, but it is unlikely to be impacted by Proposed Action as milkweed host plants have not been observed in the project area.

Critical Habitat

The ESA also calls for the conservation of what is termed critical habitat, the areas of land, water, and air space that an endangered species needs for survival. Critical habitat also includes such things as food and water, breeding sites, cover or shelter, and sufficient habitat area to provide for normal population growth and behavior. One of the primary threats to many species is the destruction or modification of essential habitat by uncontrolled land and water developments. No critical habitat has been designated within Caldwell Parish (USFWS 2022a).

State-Listed Species

LDWF lists several state-listed species that may also occur within or near the project areas in Caldwell Parish. No state-listed species were observed during the wetland surveys. See Appendix B for a list of Louisiana state-listed species that have the potential to occur in Caldwell Parish.

3.7.1 Alternative 1: Proposed Action

Under the Proposed Action, there would be no impacts on any threatened or endangered species or their habitat. The Proposed Action would have no effect on any federally or state-listed species as no individuals or habitat exist on-site.

3.7.2 Alternative 2: No Action Alternative

Under the No Action Alternative, there would be no impacts on threatened or endangered species or their habitats as no construction or demolition activities would occur.

3.8 GROUNDWATER

The project area is located within the Mississippi River Alluvial Aquifer, which is the dominant aquifer in Caldwell Parish, ranging from the Ouachita River to the eastern boundary of Caldwell Parish. Secondary groundwater resources are provided from the Cockfield Aquifer, and to a lesser degree the Sparta Aquifer (U.S. Geological Survey [USGS] 2014). The Mississippi River Alluvial Aquifer covers 33,000 square miles from the Louisiana-Arkansas border to central Louisiana in the south. The Mississippi River Alluvial Aquifer has a reported annual groundwater availability of 536 million acre-feet and an annual recharge rate from 10 to 50 millimeters per year depending on the location (Broom and Lyford 1981, Beigi and Tsai 2015). Freshwater can generally be found throughout the Mississippi River Alluvial Aquifer in Caldwell Parish, with the exception of sporadic lenses of perched saltwater. The Cockfield Aquifer has freshwater throughout its bounds. The Cockfield Aquifer is located throughout Caldwell Parish, but it is generally absent from the northeastern corner of the Parish. The Sparta Aquifer is also located throughout Caldwell Parish; however, the only freshwater portions of the aquifer in the Parish is in the northwestern section of the Parish.

Mississippi River Alluvial Aquifer alluvium consists of poorly to moderately well sorted, with fine-grained to medium-grained sand near the top, grading to coarse sand and gravel in the lower

portions. It is confined by layers of silt and clay of varying thicknesses and extent. The Mississippi River Alluvial Aquifer consists of two distinct components; valley trains and meander-belt deposits that are closely related hydrologically. The Mississippi River Alluvial Aquifer is hydraulically connected with the Mississippi River and its major streams. Recharge is accomplished by direct infiltration of rainfall in the river valley, lateral and upward movement of water from adjacent and underlying aquifers, and overbank stream flooding (Ecology and Environment, Inc. 2011). The amount of recharge from rainfall depends on the thickness and permeability of the silt and clay layers overlying it. Water levels are generally within 30 to 40 feet of the land surface and fluctuate seasonally in response to precipitation trends and river stages. Natural discharge occurs by seepage of water into the Mississippi River and its streams, but some water moves into the aquifer when stream stages are above aquifer water levels. Water from this aquifer is generally used for potable water, irrigation (primarily for rice crops), aquaculture, and industry purposes (Ecology and Environment, Inc. 2011). Groundwater use categories specific to Caldwell Parish include public supply, rural domestic, livestock, and rice irrigation. The state registration records show 208 wells currently in use in Caldwell parish, these include 90 domestic wells, 78 irrigation wells, 33 public supply wells, and 7 industrial wells (USGS 2014).

The Proposed Action includes the pumping of liquefied CO_2, mixed with H_2S, underground for permanent storage. CO_2 pumped underground would not mix with groundwater or significantly alter the local geology. The liquid CO_2 would fill pore gaps at the injection site and harden to form a solid. See Figure 3-3 for a composite log and wellbore schematic. The left half of the schematic shows the injection sites/intervals, as well as the depths to and restrictive layers and the underlying freshwater. Between the injection site and the freshwater there are multiple restrictive layers and reservoirs. The injection site is placed between confining sediments to prevent unpredictable release. The main confining interval is the Midway Shale Formation. The Midway Shale is approximately 600 feet thick across the project area. The lower 100 feet of the unit is generally known as the Clayton Marl in Eastern Louisiana and Southern Mississippi and consists of calcareous shales and marls. The Basal Paleocene Clayton Marl was deposited unconformably atop the Upper Cretaceous Selma Chalk at the K/P boundary. Above the Clayton Marl lies the Porters Creek Shale, which is a thick, dense, black terrigenous shale. This impermeable shale grades upward in the uppermost portion of the Porters Creek to a slightly calcareous shale. Liquified CO_2 would not penetrate this layer. Beyond the Midway shale formation is an approximately 2,000- foot think saline reservoir within the Wilcox formation and past that is an additional confining layer. In total, the shortest distance between an injection interval and freshwater is 3,750 feet while the primary injection site is almost 1 mile above it at 4,550 feet. The right half of the schematic on Figure 3-3 shows a cross section of a hypothetical injection site.

3.8.1 Alternative 1: Proposed Action

The Proposed Action would have negligible impacts on groundwater availability in the region. Groundwater would not be utilized during construction or daily operations of the new LGF facility. The pumping of liquid CO_2 mixed with H_2S would have a permanent, negligible effect on groundwater. The CO_2 would not mix with groundwater; therefore, no impacts are anticipated on the freshwater aquifers located below the CO_2 injection site. There is a potential for groundwater contamination as a result of a surface spill potentially entering the municipal

groundwater well adjacent to the LGF facility. BMPs, including secondary containment around the well, would be in place to prevent any accidental spills from entering the well site.

3.8.2 Alternative 2: No Action Alternative

Under the No Action Alternative, no construction or demolition activities would occur; therefore, no impacts to groundwater would occur.

3.9 SURFACE WATER AND WATERS OF THE UNITED STATES

The Clean Water Act (CWA) §303[d][1][A] requires that each state monitor surface waters and compile a "303[d] List" of impaired streams and lakes. The proposed LGF facility is located in northern Louisiana within the Ouachita River Basin watershed and is situated adjacent to the Ouachita River. The Ouachita River flows from Arkansas into northern Louisiana and creates the centerline of the Ouachita River Basin. The Ouachita River flows through Ouachita and Caldwell Parishes before joining the Tensas River and forming the Black River which flows into the Red River (LDEQ 2022). The 2020 Louisiana Water Quality Inventory: Integrated Report lists the Ouachita River from Arkansas River to Columbia Lock and Dam as an impaired stream (LDEQ 2020).

Approximately 2.67 million gallons per day (Mgal/d) of surface water was withdrawn in Caldwell Parish in 2010 (USGS 2014). About half of all surface water withdrawals are for rice irrigation.

Waters of the United States are defined within the CWA, and jurisdiction is addressed by USACE and USEPA. Wetlands are a subset of the Waters of the United States that may be subject to regulation under Section 404 of the CWA (40 CFR 230.3). Wetlands are those areas inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. GSRC completed wetland delineations of the approximately 387-acre project area and received four preliminary jurisdictional determinations from the USACE, Vicksburg District. Wetland delineations identified approximately 6.1 acres of potentially jurisdictional wetlands, approximately 16,153 linear feet of Waters of the United States, and approximately 5.3 acres of other Waters of the United States in the form of ponds throughout the project area (Appendix C).

3.9.1 Alternative 1: Proposed Action

The Ouachita River will be the primary water source for construction and day to day operations of the new LGF facility. The intake is proposed to be constructed on an oxbow loop of the Ouachita River, known as Riverton Lake. Only one end of the oxbow connects to the main channel of the river. For the purposes of this regulation, the intake will be considered a lake, which is defined as a body of water having a hydraulic retention time greater than seven days. Raw water intake for the LGF facility is estimated to be 5,625 gallons per minute (gpm) (12.53 cubic feet per second [ft^3/s]). Daily discharge for the Ouachita River is approximately 2,468,121 gpm (5,499 ft^3/s) (USGS 2022); therefore, the Proposed Action would result in long-term, minimal impacts on surface water availability.

Temporary, negligible impacts on surface waters may occur as a result of increases in erosion and sedimentation during periods of construction. Disturbed soils and hazardous substances (i.e., antifreeze, fuels, oils, and lubricants) could directly impact water quality during a rain event; however, with the use of BMPs, these effects would be minimized. A Construction Stormwater General Permit would be obtained prior to construction, and this would require approval of a site-specific Storm Water Pollution Prevention Plan (SWPPP). A site-specific Spill Prevention, Control and Countermeasure Plan (SPCCP) would also be in place prior to the start of construction. BMPs outlined in these plans would reduce potential migration of soils, oil and grease, and construction debris into local surface waters. Once the construction project is complete, any temporary construction footprints would be revegetated with native vegetation, as outlined in the SWPPP, which would mitigate the potential of non-point source pollution to enter local surface waters.

Portions of the project area contain jurisdictional wetlands and Waters of the United States in the form of ponds and a ditch system that drains into the Ouachita River outside of the project area. Under the Proposed Action, approximately 6.1 acres of potentially jurisdictional wetlands, approximately 16,153 linear feet of Waters of the United States, and approximately 5.3 acres of other Waters of the United States have the potential to be impacted. However, LGF would permit the fill of these wetlands through the USACE; therefore, no net loss of wetlands would occur. Additionally, a Section 10 Permit would be obtained for the water intake in the oxbow and wastewater discharge into the Ouachita River. A long-term, minor effect on surface water resources would be anticipated under this alternative.

3.9.2 Alternative 2: No Action Alternative

Under the No Action Alternative, no construction or demolition would occur; therefore, no impacts on surface waters or Waters of the United States would occur.

3.10 FLOODPLAINS

A floodplain is the area adjacent to a river, creek, lake, stream, or other open waterway that is subject to flooding when there is a major rain event. Floodplains are further defined by the likelihood of a flood event. If an area is in the 100-year floodplain, there is a 1-in-100 chance in any given year that the area will flood. FEMA floodplain maps were reviewed to identify if the project area is located within mapped floodplains. Per FEMA Flood Insurance Rate Map (FIRM) panels 22021C0175C (dated September 5, 2012) and 22083C0450D (dated September 18, 2013), the location of the proposed LGF facility shows that approximately 114.1 acres of the proposed site are located in an area with a one percent annual chance of flooding (Zone A), otherwise known as the 100-year floodplain (Figure 3-4) (FEMA 2022).

3.10.1 Alternative 1: Proposed Action

The Proposed Action would not increase the risk or impact of floods on human safety, health, and welfare, or adversely impact the beneficial values that floodplains serve. While portions of the proposed site are located within the 100-year floodplain and would increase impervious surfaces within the floodplain, the Proposed Action would not increase duration, frequency, elevation, velocity or volume of flood events, and no floodplain resources would be lost. Further, building designs would take into account floodplain considerations. Therefore, the

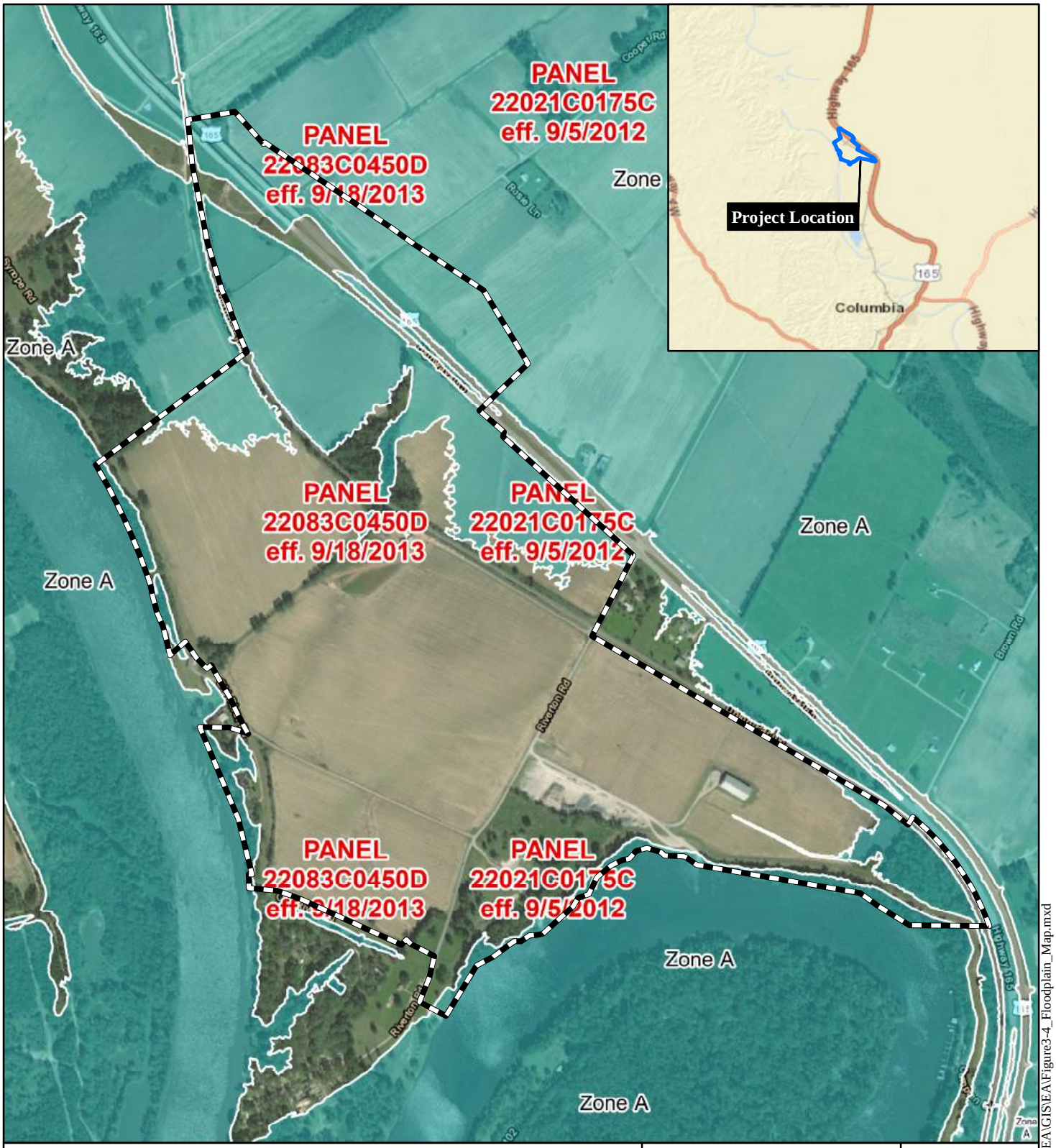


Figure 3-4. FEMA Floodplain Map

Proposed Action would have no impacts on floodplains and would be in compliance with EO 11988, Floodplain Management, and 44 CFR part 9.

3.10.2 Alternative 2: No Action Alternative

Under the No Action Alternative, no construction or demolition activities would occur; therefore, there would be no direct impacts on floodplains.

3.11 AIR QUALITY

The USEPA established National Ambient Air Quality Standards (NAAQS) for specific pollutants determined to be of concern with respect to the health and welfare of the general public. Ambient air quality standards are classified as either "primary" or "secondary." The major pollutants of concern, or criteria pollutants, are carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), particulate matter less than 10 microns (PM-10), particulate matter less than 2.5 microns (PM-2.5), and lead. NAAQS represent the maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect the public health and welfare. The NAAQS are included in Table 3-7.

Areas that do not meet these NAAQS standards are called non-attainment areas; areas that meet both primary and secondary standards are known as attainment areas. The Federal Conformity Final Rule (40 CFR Parts 51 and 93) specifies criteria or requirements for conformity determinations for federal projects. The Federal Conformity Rule was first promulgated in 1993 by USEPA, following the passage of Amendments to the Clean Air Act in 1990. The rule mandates that a conformity analysis must be performed when a federal action generates air pollutants in a region that has been designated as a non-attainment or maintenance area for one or more NAAQS.

A conformity analysis is the process used to determine whether a federal action meets the requirements of the general conformity rule. It requires the responsible federal agency to evaluate the nature of a proposed action and associated air pollutant emissions and calculate emissions as a result of the proposed action. If the emissions exceed established limits, known as *de minimis* thresholds, the proponent is required to implement appropriate mitigation measures.

The USEPA has designated Caldwell Parish as in attainment for all NAAQS (USEPA 2022b).

Table 3-7. National Ambient Air Quality Standards

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Times
Carbon Monoxide	9 ppm (10 mg/m^3)	8-hour [1]	None	
	35 ppm (40 mg/m^3)	1-hour [1]		
Lead	0.15 µg/m^3 [2]	Rolling 3-Month Average	Same as Primary	
	1.5 µg/m^3	Quarterly Average	Same as Primary	
Nitrogen Dioxide	53 ppb [3]	Annual (Arithmetic Average)	Same as Primary	
	100 ppb	1-hour [4]	None	
Particulate Matter (PM-10)	150 µg/m^3	24-hour [5]	Same as Primary	
Particulate Matter (PM-2.5)	12.0 µg/m^3	Annual [6] (Arithmetic Average)	15.0 µg/m^3	Annual [6] (Arithmetic Average)
	35 µg/m^3	24-hour [7]	Same as Primary	
Ozone	0.075 ppm (2008 std)	8-hour [8]	Same as Primary	
	0.070 ppm (2015 std)	8-hour [9]	Same as Primary	
	0.12 ppm	1-hour [10]	Same as Primary	
Sulfur Dioxide	75 ppb [11]	1-hour	0.5 ppm	3-hour [1]

Source: USEPA 2022a

Units of measure for the standards are parts per million (ppm) by volume, parts per billion (ppb - 1 part in 1,000,000,000) by volume, milligrams per cubic meter of air (mg/m^3), and micrograms per cubic meter of air (µg/m^3).

[1] Not to be exceeded more than once per year.

[2] Final rule signed October 15, 2008.

[3] The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.

[4] To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective January 22, 2010).

[5] Not to be exceeded more than once per year on average over 3 years.

[6] To attain this standard, the 3-year average of the weighted annual mean PM2.5 concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m3.

[7] To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m3 (effective December 17, 2006).

[8] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm (effective May 27, 2008).

[9] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.070 ppm (effective December 28, 2015).

[10] (a) USEPA revoked the 1-hour ozone standard in all areas, although some areas have continuing obligations under that standard ("anti-backsliding").

(b) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1.

[11] (a) Final rule signed June 2, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

3.11.1 Greenhouse Gases and Climate Change

Global climate change refers to a change in the average weather on the earth. Greenhouse gases are gases that trap heat in the atmosphere. They include water vapor, carbon dioxide, methane (CH_4), nitrous oxide (N_2O), fluorinated gases including chlorofluorocarbons (CFC) and hydrofluorocarbons (HFC), halons, as well as ground-level O_3 (California Energy Commission 2007). The major GHG-producing sectors in society include transportation, utilities (e.g., coal and gas power plants), industry/manufacturing, agriculture, and commercial/residential. End-use

sector sources of GHG emissions include transportation (28 percent), electricity generation (27 percent), industry (22 percent), agriculture (10 percent), and commercial/residential (12 percent) (USEPA 2020).

3.11.2 GHG Threshold of Significance

The CEQ provided draft guidelines for determining meaningful GHG decision-making analysis. The CEQ issued a final guidance on August 1, 2016, that stated agencies should consider potential effects of a proposed action on climate change as indicated by addressing GHG emissions and the effects of climate change on a proposed action and its environmental impacts (CEQ 2016). While the final rule does not include a quantified threshold of significance, the draft guidance for this rule stated that if the proposed action would be reasonably anticipated to cause direct emissions of 25,000 metric tons (27,557 U.S. tons) or more of CO_2 GHG emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public. For long-term actions that have annual direct emissions of less than 25,000 metric tons (27,557 U.S. tons) of CO_2, CEQ encourages federal agencies to consider whether the action's long-term emissions should receive similar analysis. CEQ does not propose this as an indicator of a threshold of significant effects, but rather as an indicator of a minimum level of GHG emissions that may warrant some description in the appropriate NEPA analysis for agency actions involving direct emissions of GHGs (CEQ 2014).

On January 20, 2021, President Joseph Biden issued EO 13990, "Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis," to establish a national policy "to empower our workers and communities; promote and protect our public health and the environment; and conserve our national treasures and monuments, places that secure our national memory." Section 7(e) of this E.O. directed CEQ to review, revise, and update its 2016 GHG Guidance. CEQ will address in a separate notice its review of and any appropriate revisions and updates to the 2016 GHG Guidance. In the interim, agencies should consider all available tools and resources in assessing GHG emissions and climate change effects of their proposed actions, including, as appropriate and relevant, the 2016 GHG Guidance.

Construction Activities

Construction activities cause temporary and minor increases in air pollution that would occur from the use of construction equipment (combustion emissions) and the disturbance of soils (fugitive dust) during construction of the proposed facility. Section 3.10.3 describes the air calculation methodologies utilized to estimate air emissions produced by the construction activities associated with the Proposed Action.

Operational Activities

Air emissions during the operation of the facility for the Proposed Action Alternative would occur from transportation of commuting workers, delivery trucks, visitors to the facility, heating boilers, and operations, testing, and maintenance of generators for emergency back-up power.

3.11.3 Alternative 1: Proposed Action

Under the Proposed Action, air pollution emissions would be generated during the construction and operation of the proposed new LGF facility by:

- Temporary use of construction vehicles and equipment during the construction of the proposed facility;
- Emissions from worker commuting vehicles;
- Emissions from supply vehicles;
- Emissions from the vehicles of visitors to the proposed facility;
- Emissions from the biomass-boiler power generation plant; and
- Regular testing and maintenance of the emergency diesel generator as well as operation of the generator for emergency power.

The purpose of this assessment is to evaluate impacts to ambient air quality from the proposed actions. Air quality impacts from the proposed actions would be significant if emissions would:

1) Increase ambient air pollution concentrations above the NAAQS;
2) Contribute to existing violations of the NAAQS;
3) Interfere with, or delay timely attainment of, the NAAQS;
4) Impair visibility within federally-mandated Prevention of Significant Deteriorations Class I areas;
5) Result in the potential for any new stationary source to be considered a major source of emissions as defined in 40 CFR Part 52.21 (total emissions of any pollutant subject to regulations under the Clean Air Act (CAA) that is greater than 250 tons per year for attainment areas);
6) for mobile source emissions, the increase in emissions to exceed 250 tons per year for any pollutant; or
7) for GHG emissions, exceed 25,000 metric tons (27,557 U.S. Tons) of direct CO_2-equivelent emissions on an annual basis.

Per 40 CFR Part 93, Chapter 153, a conformity determination is required for each criteria pollutant or precursor where the total of direct and indirect emissions from the criteria pollutant or precursors in a nonattainment or maintenance area caused by a federal action would equal or exceed specified *de minimis* levels. In determining the significance of the Proposed Actions, all compounds would be compared to significance levels specified in (1) through (7), above. Since Caldwell Parish is an attainment area for all priority pollutants, *de minimis* thresholds are for major sources as defined in 40 CFR Sections 51.165 and 51.166.

Construction Activities

Construction activities are anticipated to last approximately 37 months from the notice to proceed to substantial completion. Fugitive dust emissions were calculated using the emission factor of 0.22 ton per acre-month (Air Emissions Guide for Air Force Transitory Sources, Methods for Estimating Emissions of Air Pollutants for Transitory Sources at U.S. Air Force Installations, August 2018), which is a more current standard than the 1995 PM-10 emission factor of 1.2 tons per acre-month presented in AP-42 Section 13, Miscellaneous Sources, 13.2.3.3 (USEPA 1995).

USEPA's Motor Vehicle Emission Simulator (MOVES) model was used to calculate emissions from construction equipment. Combustion emission calculations were made for standard construction equipment, such as front-end loaders, excavators, bulldozers, cranes, and cement

trucks. Assumptions regarding the total number of days each piece of equipment will be used and the number of hours or miles per day each type of equipment will be used were made to estimate air emissions for the Proposed Action.

Construction workers would temporarily increase the combustion emissions in the airshed during their commute to and from the project area. Emissions from construction-related delivery trucks would also contribute to the overall air emission budget. Emissions from construction-related delivery trucks and construction worker commuters traveling to the job site were also calculated using the MOVES model.

Table 3-8 provides a summary of the construction emissions from the Proposed Action and a determination of their significance.

Table 3-8. Total Air Emissions (tons/year) from the Proposed Construction Project versus the *de minimis* Threshold Levels

Pollutant	Total (tons/year)	Significance Thresholds (tons/year)	Significant Impact
CO	10.65	250	No
Volatile Organic Compounds (VOC)	0.01	250	No
Nitrogen Oxides (NO_x)	94.27	250	No
PM-10	43.27	250	No
PM-2.5	0.47	250	No
SO_2	1.20	250	No
CO_2e	3,014.6	27,557	No

Source: 40 CFR 93.153(b)(1) and Gulf South Research Corporation (GSRC) model projections (Appendix D).

Operations Activities

During operation of the proposed new LGF facility, employees are anticipated to commute primarily from the Columbia and Monroe area but could come from other parts of the state. Delivery trucks and visitors are also expected to travel from nearby towns.

The Proposed Action will include the construction of a renewable bio-refinery as well as a 70-MW biomass-boiler power generation plant that provides “green” electric power to operate the bio-refinery. Fuel for the facility will include sawmill waste and other available biomass material that is not compliant with the RFS.

Table 3-9 provides a summary of potential emissions from the operations of the Proposed Action and a determination of their significance. Note that while the total air emissions of CO_{2e} is greater than the *de minimis* threshold level, the LGF facility is estimated to possess a CI score of minus 238, and as a whole will be net negative for CO_{2e}. Much more CO_{2e} will be sequestered via injection well than is emitted to the atmosphere.

Table 3-9. Total Potential to Emit (PTE) Air Emissions (tons/year) from the Proposed Facility Operations versus the *de minimis* Threshold Levels

Pollutant	Total (tons/year)	Significance Thresholds (tons/year)	Significant Impact
CO	69.86	250	No
Volatile Organic Compounds (VOC)	92.18	250	No
Nitrogen Oxides (NO_x)	75.69	250	No
PM-10	80.75	250	No
PM-2.5	79.57	250	No
SO_2	38.07	250	No
CO_2e	209,722	27,557	Yes*

Source: 40 CFR 93.153(b)(1) and Gulf South Research Corporation (GSRC) model projections (See Appendix D).
*Emissions will be offset by carbon sequestration methods

With the exception of CO_{2e}, total emissions from all activities are demonstrated to be below the *de minimis* threshold levels; however, operation of the LGF Facility will result in much more CO_{2e} being sequestered via CCS than will be released into the atmosphere. Therefore, the LGF facility will be net negative for the production of CO_{2e}. It is estimated that approximately 90% of CO_{2e} emissions will be recovered and injected via the facility's onsite CO_{2e} sequestration well. As a result, the Proposed Action would not have an adverse effect on the air quality.

3.11.4 Alternative 2: No Action Alternative

Under the No Action Alternative, there would be no construction activities at the proposed LGF facility site. Therefore, there would be no adverse impacts to air quality as a result of the No Action Alternative.

3.12 NOISE

Noise is generally described as unwanted sound, which can be based either on objective effects (i.e., hearing loss, damage to structures) or subjective judgments (e.g., community annoyance). Sound is usually represented on a logarithmic scale using the decibel (dB) unit. Sound on the decibel scale is referred to as sound level. The perceived threshold of human hearing is 0 dB, and the threshold of discomfort or pain is around 120 dB (USEPA 1974). The A-weighted sound level (dBA) is a measurement of sound pressure adjusted to conform to the frequency response of the human ear.

Noise levels occurring at night generally produce a greater annoyance than do the same levels occurring during the day. It is generally agreed that people perceive intrusive noise levels at night as being 10 dBA louder than the same level of intrusive noise during the day, at least in terms of its potential for causing community annoyance. This perception is largely because background environmental sound levels at night in most areas are also about 10 dBA lower than those during the day. Long-term noise levels are computed over a 24-hour period and adjusted for nighttime annoyances to produce the day-night average sound level (DNL). DNL is the community noise metric recommended by the USEPA and has been adopted by most federal agencies (USEPA 1974).

3.12.1 Alternative 1: Proposed Action

The construction of the proposed LGF facility would require the use of common construction equipment. Table 3-10 describes noise emission levels for construction equipment that range from 47 dBA to 85 dBA at a distance of 50 feet (Federal Highway Administration [FHWA] 2007).

Table 3-10. A-Weighted (dBA) Sound Levels of Construction Equipment and Modeled Attenuation at Various Distances[1]

Noise Source	50 feet	100 feet	200 feet	500 feet	1000 feet
Bulldozer	82	76	70	62	56
Concrete mixer truck	85	79	73	65	59
Crane	81	75	69	61	55
Drill rig	85	79	73	65	59
Dump truck	84	78	72	64	58
Excavator	81	75	69	61	55
Front-end loader	79	73	67	59	53
Generator	47	41	35	27	21

Source: FHWA 2007

1. The dBA at 50 feet is a measured noise emission. The 100- to 1,000-foot results are GSRC modeled estimates.

Assuming the worst-case scenario of 85 dBA from general construction equipment, the noise model predicts that noise emissions would have to travel 1,255 feet before they would be attenuated to acceptable levels equal to or below 57 dBA, which is the criterion for National Monuments and Wildlife Refuges (23 CFR § 772, Table 1), or 500 feet to attenuate to 65 dBA, which is the criterion for residential receptors.

The project site is located within an area currently utilized for commercial and agricultural purposes. No sensitive receptors (i.e. residential homes) would fall within the 500-foot noise contour. Once construction is complete, noise levels would return to ambient levels. BMPs would also be established, including the use of heavy equipment only in daylight hours, to reduce the level of noise impacts produced during construction. Therefore, impacts on noise levels would be short-term and negligible. **EDITOR NOTE: ADDITIONAL ANALYSIS REQUIRED**

3.12.2 Alternative 2: No Action Alternative

Under the No Action Alternative, no impacts on noise levels would occur as the construction of the proposed LGF facility would not occur.

3.13 CULTURAL RESOURCES

The cultural history of northeast Louisiana can be placed in the context of the more extensive Lower Mississippi Valley region. The prehistoric cultural chronology of the region is comprised of four major periods that extend through millennia: The Paleoindian Period (12,500-10,000 years before present [B.P.]), Archaic Period (10,000-3,000 B.P), Woodland Period (2,450 B.P.-

750 B.P.), and the Mississippi Period (750-250 B.P.) (Anderson and Sassaman 1996, 2004; Rees and Livingood 2007; Saunders et al. 2006). By comparison, the entire historic period is relatively recent and short, beginning with the intermittent interactions of Native Americans, Europeans, and Africans during the mid-sixteenth and late seventeenth centuries.

The APE for the proposed LGF facility consists of the current phase I cultural resources survey (GSRC 2022) and a previously conducted phase I archaeological survey carried out by Surveys Unlimited Research Association (SURA) (Louisiana Division of Archaeology [LADOA] Report No. 22-4945) in 2015. Prior to initiation of fieldwork, an archival records check was performed using the Louisiana Cultural Resources database. This included a review of all previously conducted archaeological investigations, archaeological sites, National Register of Historic Places (NRHP)-listed properties, and any previously recorded resources within a 1.6-kilometer (km) (1-mile [mi]) radius. This information was used to identify any resources that may be affected by the proposed project and, in addition, provide insight into the type of resources that may be encountered during the survey. The current phase I archaeological survey is discussed below.

Existing Archaeological Sites and Previously Conducted Archaeological Surveys

Archaeological research conducted within the area consists of academic investigations and contract archaeology focusing on compliance with Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108). Fourteen previously conducted archaeological investigations are on file with the Louisiana Division of Historic Preservation (LADOA) within 1-mi of the survey area, none of which overlap with the current APE. One prehistoric site/ cemetery (16CA62), seven historic sites (16CA55, 16CA57, 16CA81, 16CA129, 16CA134, 16CA135, and 16CA136), three multicomponent sites (16CA79, 16CA80, and 16CA82), two historic cemeteries (16CA28 and 16CA56), two Louisiana Historic Resource Inventory (LRHI) above ground resources (11-00023 and 11-00024), and two historic properties listed on the NRHP (Breston Plantation House [80001709] and Synope Plantation House [82000432]) have been recorded in a 1-mi radius of the project area. One archaeological site, 16CA80, and one LHRI standing structure, 11-00024, fall within the current APE.

In 1993, site 16CA80 was recorded by Panamerica Consultants, Inc. during a survey for the Oucahita Levees. 16CA80 overlaps the current APE and although determined not eligible to be listed on the NRHP, avoidance of the prehistoric component was recommended. This multi-component site consists of surface and subsurface prehistoric material that date to the Middle Woodland to Early Mississippian period. Artifacts included ceramics and lithic debitage, including an anvil stone. Historic debris such as brick, tin, wire, and iron pipes were recovered on the surface, and late 19th century ceramics and round nails were recovered from the subsurface. It was noted that there was a probability that intact prehistoric deposits were located in the un-surveyed cultivated field (Thomson and Walling 1993).

In 1991, historic structures assessments were conducted by LADOA (2022). One standing structure, 11-0024, was recorded within the current project area adjacent to U.S. Highway 165; however, it is no longer standing. This structure was a 15-foot residential bungalow house that was constructed circa 1930. When this structure was inventoried, it was severely deteriorated.

Since this structure is no longer within the project area, it will not be impacted from implementation of the Proposed Action.

3.13.1 Alternative 1: Proposed Action

GSRC conducted a Phase I cultural resources survey for the project area during multiple field sessions spanning from February 1, 2022 to July 28, 2022 (GSRC 2022). Cultural resources recorded during this investigation included five Isolated Occurrences (IOs) (T17-183, T18-202, T25-377, T53-527, and T69-700), four newly recorded archaeological sites (16CA150, 16CA151, 16CA152, and 16CA153), the relocation and update of previously recorded archaeological site 16CA80, seven newly recorded LRHI above ground resources (11-00288, 11-00289, 11-00290, 11-00291, 11-00292, 11-00293, and 11-00294), one updated LRHI above ground resource (11-00023), one NRHP-listed resource (1 82000432), and one cemetery (Smith Cemetery [16CA28]). One cemetery (McPherson, Bailey, and Porter Cemetery [16CA56]) and one NRHP-listed property (80001709) were not recorded due to limited access; however, potential impacts from the project were assessed (GSRC 2022). Site 16CA80 was relocated in the southern portion of the current APE, northeast of the levee and split by a private road off of Riverton Camp Road. The site was expanded beyond its original boundary to the north and south and both prehistoric and historic components of the previously recorded site were encountered based on the artifact assemblage excavated. Site 16CA80 lacks integrity and has been heavily disturbed from agricultural activity as well as levee maintenance. Future research potential is low, and it continues to be recommended not eligible for inclusion in the NRHP. Additionally, none of the newly recorded archaeological sites, IOs, LRHIs, or above ground resources are recommended eligible for the NRHP under any criteria. As a result, no adverse impacts to any archaeological resources or historic properties would occur from the Proposed Action, and no additional archaeological or above ground resources investigations are recommended for the APE. In the unlikely event that archaeological material is inadvertently uncovered during the excavations conducted at the site, all work should cease until a qualified archaeologist can examine and evaluate the nature of the uncovered remains.

3.13.2 Alternative 2: No Action Alternative

Under the No Action Alternative, no construction or demolition would occur; therefore, no impacts to cultural resources would be anticipated.

3.14 UTILITIES AND INFRASTRUCTURE

Entergy Louisiana and Northeast Louisiana Power distribute electrical energy within the project area (Find Energy LLC 2022). Once operational, the LGF facility will be powered by energy generated on site. New public infrastructure in the form of roadway improvements would be required for ingress or egress to the proposed LGF facility and are detailed in Section 3.16. Municipal water and sewerage infrastructure are provided and maintained by Caldwell Parish for the area and would be used by the new facility.

3.14.1 Alternative 1: Proposed Action

The Proposed Action would result in long-term, negligible effects on the availability of utilities throughout the APE. The requirement for energy from existing systems will be negligible as the LGF facility will utilize power generated on site. Potable water systems servicing the APE would

also be utilized at the proposed LGF facility. Sewer water and refinery wastewater for the LGF facility would be treated on site and discharged to the neighboring Ouachita River following treatment and should result in long-term, minimal effects on water within the APE.

3.14.2 Alternative 2: No Action Alternative

Under the No Action Alternative, the proposed LGF facility would not be constructed. The No Action Alternative would not affect the availability of utilities or require construction of additional facilities.

3.15 HAZARDOUS MATERIALS

Hazardous materials are substances that cause physical or health hazards (29 CFR 1910.1200). Materials that are physically hazardous include combustible and flammable substances, compressed gases, and oxidizers. Health hazards are associated with materials that cause acute or chronic reactions, including toxic agents, carcinogens, and irritants. Hazardous materials are regulated in Louisiana by a combination of mandated laws promulgated by the USEPA and the LDEQ.

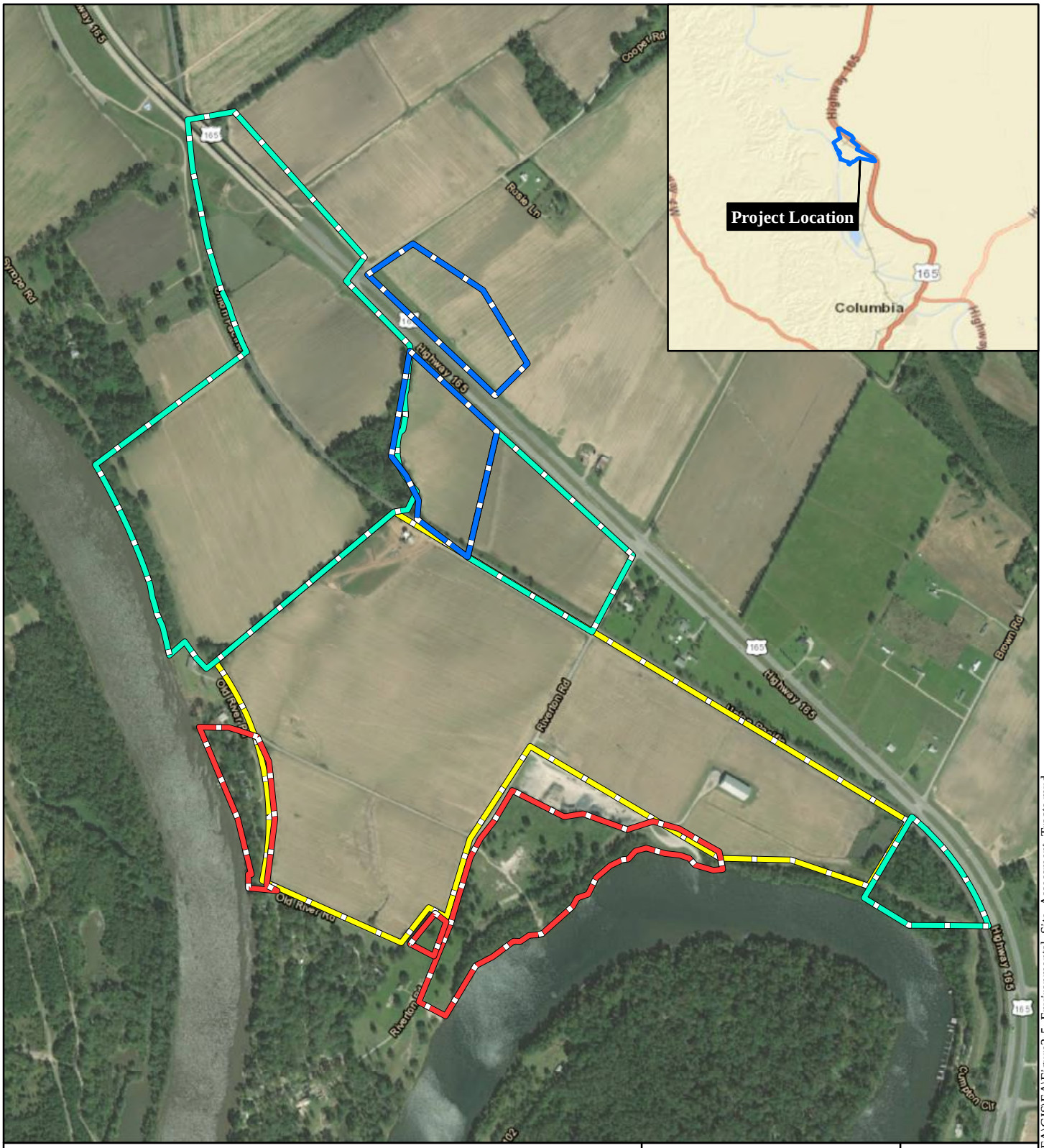
A series of Transaction Screen Site Assessments were conducted by Eagle Environmental, Inc. for the proposed project site in accordance with the American Society for Testing and Materials (ASTM) International Standard E1527-13 between April 28, 2022 and May 9, 2022 at the Port of Columbia Property, the Reynolds Property, and the Hatten and Carr Property (Eagle 2022a, 2022b, and 2022c, respectively). In total, three Phase I Environmental Site Assessment (ESA) surveys were conducted to ensure adequate coverage of the proposed project site. These assessments were performed to evaluate any potential environmental risk associated with the proposed project site. The assessments included a search of federal and state records of known hazardous waste sites, potential hazardous waste sites, and remedial activities and included sites that are either on the National Priorities List or being considered for the list. According to information gathered from document searches, interviews, and the site reconnaissance, one recognized environmental conditions exist at the subject property (Eagle 2022a, 2022b, and 2022c). Descriptions and summaries of the three Phase 1 ESA reports are provided below:

3.15.1 Port of Columbia Phase I ESA

The Port of Columbia Property is an approximately 171-acre parcel of land primarily utilized for agriculture (Figure 3-5). This particular assessment found no recognized environmental conditions connected to the Columbia Property or its previous uses.

3.15.2 Reynolds Property Phase I ESA

The Reynolds Property is composed of three separate parcels of land that total approximately 122 acres (see Figure 3-5). The two larger parcels are currently in agriculture production while the third and smallest tract is forested. This particular assessment found one recognized environmental condition connected to the Reynolds Property or its previous uses. The site assessment, performed by Eagle Environmental, Inc. concluded that, “Several five-gallon containers of unknown substance are located on the subject property. The presence of the containers of unknown substance should be considered a potential recognized environmental condition. Samples of the contents of the containers should be collected and analyzed to attempt



Legend

- Little River Property
- Hatten and Carr Property
- Reynolds Property
- Port of Columbia Property

N

0 500 1,000 Feet

0 100 200 Meters

GSRC

October 2022

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Figure 3-5. Environmental Site Assessment Tracts

to determine the contents. The containers should then be transported and disposed of in accordance with the appropriate federal, state, and local regulations."

3.15.3 Hatten and Carr Property Phase I ESA

The Hatten and Carr Property is an approximately 31-acre parcel of land primarily utilized for agriculture (see Figure 1-2). This particular assessment found no recognized environmental conditions connected to the Hatten and Carr Property or its previous uses.

3.15.4 Alternative 1: Proposed Action

Construction of the proposed new LGF facility as described in the Proposed Action would involve the use of heavy construction equipment. There is a potential for the release of hazardous materials such as fuels, lubricants, hydraulic fluids, and other chemicals during the construction activities. The impacts from spills of hazardous materials during construction would be minimized by utilizing BMPs during construction such as fueling only in controlled and protected areas away from surface waters, maintaining emergency spill cleanup kits at all sites during fueling operations, and maintaining all equipment in good operating condition to prevent fuel and hydraulic fluid leaks. Hazardous material impacts would be short-term and negligible.

All hazardous and regulated wastes and substances generated by operation of the new LGF facility would be collected, characterized, labeled, stored, transported, and disposed of in accordance with all federal, state, and local regulations, including proper waste manifesting procedures. All other hazardous and regulated materials or substances would be handled according to materials safety data sheet instructions and would not affect water, soils, vegetation, wildlife, or the safety of those who are responsible for handling these substances.

The potential impacts of the handling and disposal of hazardous and regulated materials and substances during construction activities would be negligible when BMPs, as described in Section 4.8, are implemented.

3.15.5 Alternative 2: No Action Alternative

Under the No Action Alternative, no construction or demolition activities would occur; therefore, no impacts resulting from hazardous materials would occur.

3.16 ROADWAYS AND TRAFFIC

Impacts on transportation are evaluated by how well existing roadways can accommodate changes in traffic. Adverse impacts would occur if drivers were to experience high delays, because the Proposed Action altered traffic patterns beyond existing lane capacity or resulted in the closure or detour of roadways. A traffic analysis of U.S. 165 was conducted by C.H. Fenstermaker & Associates, LLC for the project under two separate loading conditions - construction and operations (Fenstermaker 2022).

Construction of the facility is anticipated to take three years, and the anticipated peak in traffic load would occur in the early years (1.5 years) of construction. The traffic loads related to the construction of the facility during this period would include up to 685 vehicles a day for delivery

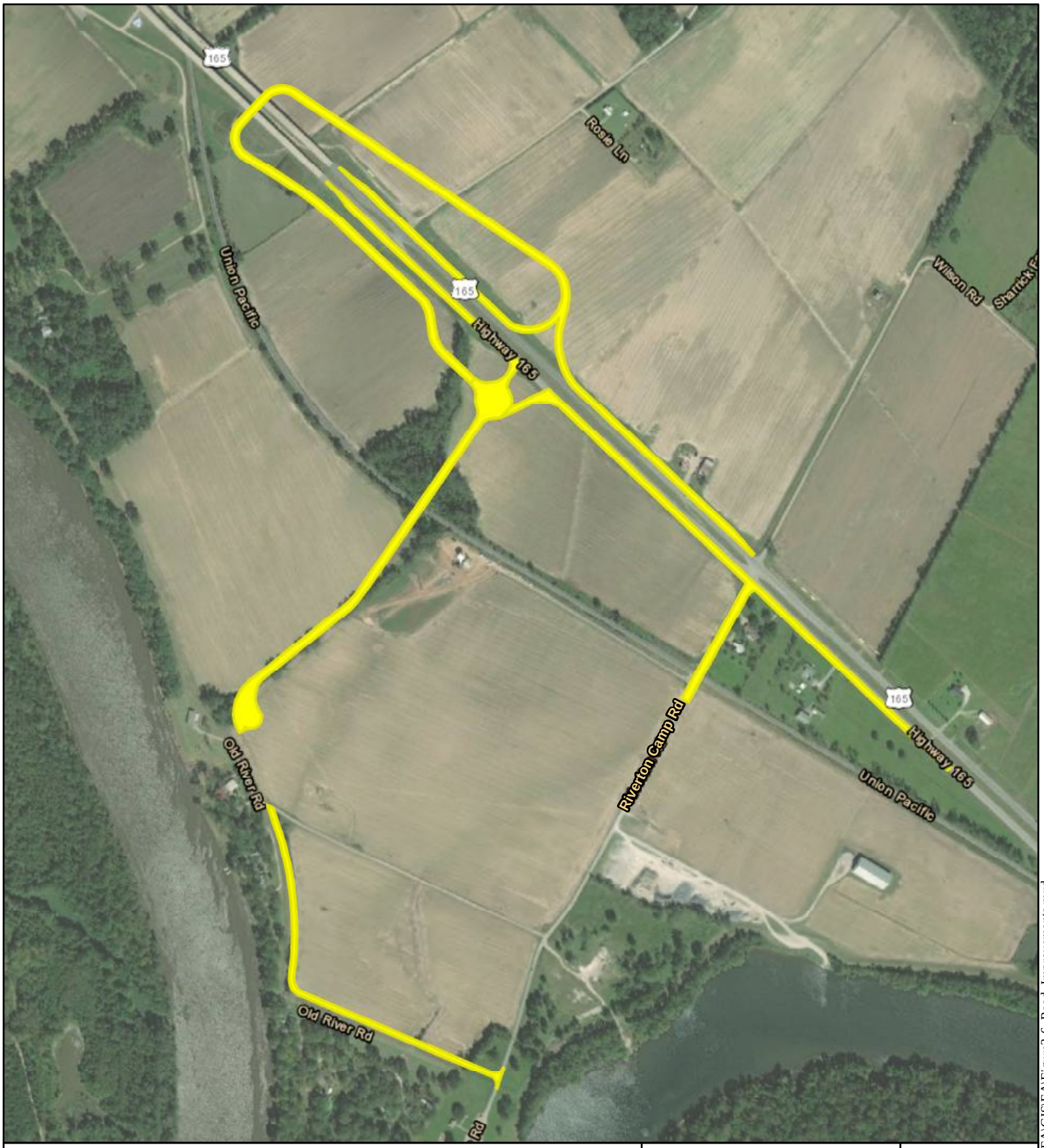
of construction materials and equipment traffic and up to 1,130 vehicles a day for construction labor traffic. Estimates for traffic during the remaining 1.5 years of construction are lower and would include up to 75 vehicles a day for construction materials and equipment traffic and 930 vehicles a day for construction labor. For the capacity analysis of U.S. 165 during construction, early year maximum estimates were used to account for a worst-case scenario. Using these figures, levels of service for traffic along U.S. 165 at LA-847, Riverton Camp/Wilson, and Cooper Road would be considered acceptable during peak hour flows. The level of service for traffic along U.S. 165 at Brown Road would be considered unacceptable, particularly for the West Bound traffic and East Bound traffic making a left-hand turn. As a result, it was concluded that the project volumes would cause a short-term deficiency for left turning vehicles exiting and entering Riverton Camp Road. This would result in a short-term adverse impact on traffic in this area. To mitigate for this adverse impact to traffic, it was recommended that shift changes during construction be scheduled to occur outside of the peak traffic hours when possible (Fenstermaker 2022).

Traffic analysis during the subsequent day-to-day operations of the facility anticipated that truck traffic into the facility would average 205 trucks per day, rail traffic would average 9 rail cars every three days, and that there would be 70 employees per shift with three shifts each day. As a result, anticipated traffic for AM and PM peak traffic hours would be 87 vehicles. The operations capacity analysis for U.S. 165 concluded that levels of service along U.S. 165 across all the intersections would be considered acceptable during peak hour flows. In addition, a right turn warrant analysis was conducted for U.S. 165 at Riverton Camp Road. It concluded that during normal operations some road improvements would be warranted at the Riverton Camp Road intersection. During operations, the facility would prohibit left turns for trucks and truck traffic will utilize right turn maneuvers to access the facility. This would require road improvements which would include the construction of a truck access Loop Road, a northwest-bound right turn lane into the truck access loop road, a southeast-bound right turn lane into the truck access Loop Road, and a southeast-bound right turn lane onto Riverton Camp Road (Figure 3-6). With these proposed road improvements, no adverse long-term impacts are anticipated to traffic flow along U.S. 165 during the day-to-day operations of the facility (Fenstermaker 2022).

3.16.1 Alternative 1: Proposed Action

The Proposed Action would result in short-term adverse impacts, particularly during the early period of facility construction when project volumes would cause a short-term deficiency for left turning vehicles exiting and entering Riverton Camp Road, which would result in traffic flow issues at the intersection of U.S. 165 and Riverton Camp Road. Shift changes during construction will be scheduled to occur outside of the peak traffic hours, when possible, to mitigate for this impact.

During operations, the facility would prohibit left turns for trucks and truck traffic will utilize right turn maneuvers to access the facility which will require road improvements. Implementation of the proposed road improvements would result in no adverse long-term impacts to traffic flow along U.S. 165 during the day-to-day operations of the facility.



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Proposed Road Improvement

N

0 400 800 Feet

0 100 200 Meters

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Figure 3-6. Proposed LGF Road Improvements

3.16.2 Alternative 2: No Action Alternative

Under the No Action Alternative, the proposed LGF facility would not be constructed and no impacts to roadways or traffic would occur.

3.17 SOCIOECONOMICS

The Region of Influence for the proposed project would primarily include the Town of Columbia and Caldwell Parish. Caldwell Parish is not part of a Metropolitan Statistical Area (MSA), it is likely that labor forces may be pulled from the Monroe MSA which is located approximately 25 miles to the northeast. The Monroe MSA is composed of two Parishes, Ouachita and Union (Bureau of Economic Analysis [BEA] 2021a).

3.17.1 Population and Race

In 2010, the Town of Columbia had a total population of 390 which decreased by 2020 to a total population of 277. This represents a 29 percent decrease in population for the Town of Columbia over the 10-year period (U.S. Census Bureau 2022a, 2022b). Caldwell Parish had a 2010 population of 10,132 and a 2020 population of 9,645. This represented a 4.7 percent decrease in population for Caldwell Parish over the 10-year period. In comparison, Louisiana had a 2010 population of 4,533,372 and a 2020 population of 4,657,757 which represents a 2.7 percent increase, and the U.S. had a 2010 population of 308,745,538 and a 2020 population of 331,449,281 which represents a 7.4 percent increase (U.S. Census Bureau 2022c). The 2020 population of the Monroe MSA was 198,836 which ranked 226th in the Nation (BEA 2021a).

Racial composition of the Town of Columbia in 2020 was predominantly Caucasian (75 percent), followed by African American (17 percent) and persons identifying as being of two or more races (6 percent) with the remaining 2 percent being split between Asian and some other race. Five percent of the Town of Columbia claim to be of Hispanic or Latino origin (U.S. Census Bureau 2022a, 2022b). Caldwell Parish had a similar racial composition with 82 percent of the population claiming to be Caucasian, 16 percent of the population claiming to be African American, and 2 percent of the population claiming to be of two or more races. The remaining 1 percent of the population was split between persons identifying as Asian or Native American. In comparison, the racial makeup of the State of Louisiana was also predominantly Caucasian (63 percent), followed by African American (33 percent), Asian (2 percent), and persons claiming to be two or more races (2 percent). Less than 1 percent of the population of the State of Louisiana claim to be Native American, Native Hawaiian, or Pacific Islander. Five percent of the total population of the State of Louisiana claim to be of Hispanic or Latino origin. The racial mix of the U.S. is predominantly Caucasian (76 percent) followed by African American (13 percent), Asian (6 percent), and those claiming to be of two or more races (3 percent). The remaining 2 percent are comprised of persons identifying as Native Hawaiian, Pacific Islander, or some other race (U.S. Census Bureau 2022c).

3.17.2 Housing

A total of 207 housing units were recorded within the Town of Columbia, and 4,994 housing units were recorded in Caldwell Parish in 2010. Of those housing units, 165 were occupied and 42 were vacant within the Town of Columbia, and 3,905 were occupied and 1,089 were vacant in Caldwell Parish (U.S. Census Bureau 2022a, 2022b). According to the 2010 American

Community Survey (ACS), 74.5 percent of the occupied housing units were owner occupied and 26.5 percent were renter occupied in Caldwell Parish and 66.7 percent were owner occupied and 33.3 percent were renter occupied in the Town of Columbia (U.S. Census Bureau 2022d). According to the 2020 Census, the Town of Columbia had 160 housing units of which 130 were occupied and 30 were vacant. The 2019 ACS shows that of the occupied housing units at that time, 73 percent were owner occupied and 27 percent were renter occupied in the Town of Columbia and 76.5 percent were owner occupied and 23.5 percent were renter occupied in Caldwell Parish at that time (U.S. Census Bureau 2022e).

3.17.3 Employment

In 2010, Caldwell Parish's annual average labor force was 4,171 persons, with an average annual employment of 3,742 persons, an average annual unemployment of 429 persons, and an average annual unemployment rate of 10.3 percent. In 2010, Monroe MSA's average annual labor force was 80,322 persons, with an annual average employment of 73,857 persons, an average annual unemployment of 6,465 persons, and an annual average unemployment rate of 8.0 percent. Both the 2010 unemployment rates of Caldwell Parish and the Monroe MSA were above the 2010 average annual unemployment rate for the State of Louisiana (7.5 percent) (Bureau of Labor Statistics 2022).

By 2020, Caldwell Parish's annual average labor force had dropped to 3,670 persons, with an average annual employment of 3,403 persons, an average annual unemployment of 267 persons, and an average annual unemployment rate of 7.3 percent. By 2020 the Monroe MSA's annual average labor force dropped to 78,792, with an annual average employment of 72,992 persons, an average annual unemployment of 5,800 persons, and an average annual unemployment rate of 7.4 percent. Both the 2020 average annual unemployment rates for Caldwell Parish and the Monroe MSA were below the 2020 average annual unemployment rate for the State of Louisiana (8.3 percent) (Bureau of Labor Statistics 2022).

The estimated annual employment rate for Caldwell Parish in 2021, using the preliminary numbers for December 2021, is 4.6 percent which is the lowest average annual unemployment rate for the last 10 years. The estimated annual unemployment rate for the Monroe MSA in 2021 is 5.2 percent. Both of these average annual unemployment rates are below the estimated 2021 average annual unemployment rate for the State of Louisiana (5.9 percent) (Bureau of Labor Statistics 2022).

3.17.4 Personal Income and Gross Domestic Product

Per capita income is a measure of the amount of money earned per person in a geographic area. This can be used to determine the average per-person income for an area and to evaluate the standard of living and quality of life of the population in the area. In 2020, Caldwell Parish had a per capita personal income (PCPI) of $38,705. This PCPI ranked 52nd of the 64 parishes in the State of Louisiana and was 76 percent of the state average of $50,874 and 65 percent of the national average of $59,510. The 2020 PCPI of Caldwell Parish reflected a 11.1 percent increase from 2019 and was significantly higher than the state change of 6.7 percent and the national change of 6.2 percent. The PCPI of the Monroe MSA in 2020 was $45,252 which ranked 299th out of the 384 MSAs in the U.S and was 76 percent of the national average. The 2020 PCPI of the Monroe MSA reflected an increase of 8.5 percent from 2019 which was greater

than increases of both the state and the Nation. In 2010, the average PCPI of Caldwell Parish was $30,387 which ranked 48th in the state at that time. The 2010 to 2020 compound annual growth rate of PCPI was 2.4 percent. This was lower than both the compound annual growth rate of the state of 2.9 percent and that of the Nation of 3.9 percent. In 2010, the average PCPI of the Monroe MSA was $32,758 and ranked 281st in the U.S. The 2010-2020 compound annual growth rate of PCPI for the Monroe MSA was 3.3 percent, which was greater than the compound annual growth rate of the state and less than the compound annual growth rate of the Nation (BEA 2020a, 2020b).

Total Personal Income (TPI) is defined as total income received from all persons from all sources and includes salaries, wages, and bonuses received from employment or self-employment, dividends and distributions received from investments, rental receipts from real estate investments, and profit sharing from businesses. TPI is often used to determine the overall income and wealth of an area and is an important component in the calculation of PCPI. TPI is measured in thousands of dollars and is not adjusted for inflation. In 2020, Caldwell Parish had a mean TPI of $380,816. This TPI ranked 59th in the state and accounted for 0.2 percent of the state total of $236,327,200. In 2020, the Monroe MSA had a mean personal income of $8,997,788. This TPI ranked 232nd among the MSAs in the Nation. In 2010 the TPI of Caldwell Parish averaged $308,371 and ranked 58th in the state. In 2010 the TPI for the Monroe MSA averaged 6,705,243 and ranked 218th out of the MSAs in the Nation (BEA 2021a, 2021b, 2021c).

Total Gross Domestic Product (GDP) is comprised of good- and service-producing industries and government. GDP estimates are in thousands of dollars. In 2020, Caldwell Parish produced $205,697 in current-dollar total GDP. This GDP ranked 61st in the state and accounted for 0.1 percent of the state total. In 2020, the Monroe MSA produced $8,171,854 in current-dollar total GDP. This GDP ranked 247th among MSAs and accounted for less than 0.1 percent of the U.S. metropolitan portion total. In 2010, the total GDP of Caldwell Parish was $182,853 which ranked 61st in the state and the GDP of the Monroe MSA was $6,733,709 which ranked 237th among the MSAs (BEA 2021a, 2021b).

3.17.5 Income and Poverty

Median household Income for the Town of Columbia in 2010 was $36,667 and for Caldwell Parish it was $37,423. Both of these median household incomes were below the median household income for the State of Louisiana ($43,445) and the Nation ($51,914). The 2019 median household income for the Town of Columbia was $42,083 and for Caldwell Parish was $37,691. This represents a compound annual growth rate of 1.4 percent and less than 0.1 percent respectively. Both the 2020 median household incomes for the Town of Columbia and Caldwell Parish were below the household median incomes for both the State of Louisiana of $49,469 and the Nation of $62,843. This represents a compound annual growth rate of 1.3 percent and 1.9 percent respectively for the State of Louisiana and the Nation. As a result, the compound annual growth rate for the Town of Columbia exceeded that of the State of Louisiana and was below that of the Nation. In contrast, the compound annual growth rate of median household income for Caldwell Parish was below both the compound annual growth rates of the State of Louisiana and the Nation (U.S. Census Bureau 2022d, 2022e).

In 2012, 22.0 percent of the population of the Town of Columbia were below poverty level. By 2019, the percentage of the population of the Town of Columbia below poverty level rose to 23.5 percent. In 2012, 22.2 percent of the population of Caldwell Parish were below poverty level. By 2019, the percentage of population below poverty level in Caldwell Parish rose to 25.1 percent. Both the Town of Columbia and Caldwell Parish had a higher percentage of their population below poverty level in 2019 when compared to the State of Louisiana (18.7 percent) and the Nation (14.9 percent) (U.S. Census Bureau 2022e, 2022f).

3.17.6 Alternative 1: Proposed Action Alternative

Overall, the project is anticipated to have long-term beneficial socioeconomic impacts. During project construction, peak employment for construction of the facility is estimated to be 1,500 individuals during the 31-month construction schedule. Indirect full-time jobs are estimated to be >750 jobs during and following completion of construction. Currently, unemployment in both the local community of Columbia, Louisiana and in Caldwell Parish is one of the lowest in the past 10 years. As a result, the substantial increase in short-term jobs during construction will likely put an additional strain on an already restricted job market, particularly in the local area of Columbia and Caldwell Parish. As a result, employment impacts will probably extend to Monroe MSA where a larger labor market is available, and a large amount of the work force would need to be supplemented by non-local laborers, particularly during the 31-month construction period. The use of non-local labor will create a temporary increase in population that may be locally significant in the Town of Columbia and in Caldwell Parish overall, both of which have experienced negative population growth over the past 10 years. This has the potential to put a strain on housing for both Columbia and Caldwell Parish as well as other infrastructure and markets in the short-term during construction due to increased demand for resources and use of infrastructure during construction.

Long-term direct employment for operation of the facility is estimated to be 151 full-time staff which overall will have a long-term beneficial impact on the local economy. The estimated average salary for the 151 employees is anticipated to be over $68,000 excluding benefits. This average salary is significantly greater than the 2020 average PCPI of the Parish and the Monroe MSA and is 175.7 percent of the Caldwell Parish average PCPI of $38,705 and 150.3 percent of the Monroe MSA PCPI of $45,252. The estimated average salary is also significantly more than the 2019 median household incomes of the Town of Columbia and Caldwell Parish and is 161.6 percent of the Town of Columbia median household income of $42,083 and 180.4 percent of the Caldwell Parish median household income of $37,691. Overall, long term impacts from the operation of the plant would increase TPI, PCPI, and overall median household income, particularly locally in the Town of Columbia and Caldwell Parish. This would also have the effect of potentially lowering the poverty rate for both the Town of Columbia and Caldwell Parish.

3.17.7 Alternative 2: No Action Alternative

Under the No Action Alternative, the proposed LGF facility would not be constructed and no impacts on socioeconomics would occur.

3.18 ENVIRONMENTAL JUSTICE

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* directs each Federal Agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations," which includes tribal or Native American populations. The Presidential Memorandum which accompanies the EO emphasizes the importance in using the NEPA review process to promote environmental justice and in particular analyzes and identifies environmental effects of their proposed actions and whether the effects may be disproportionately high on these populations.

3.18.1 Environmental Justice Screen (EJScreen)

EJScreen is an environmental mapping and screening tool that is developed by the USEPA that has a nationally consistent dataset that combines environmental and socioeconomic indicators. EJScreen uses maps and reports to present information on environmental indicators, socioeconomic indicators, and Environmental Justice (EJ)/Supplemental Indexes. The Environmental and Supplemental indexes summarize how environmental indicators and socioeconomic indicators come together for a particular area. There are 12 EJ and Supplemental Indexes that reflect 12 environmental indicators that are tracked by the EJScreen tool. These indices allow a user to compare their study area to the State and Nation for each environmental indicator and are presented as percentiles. The percentiles tell you what percent of the state or US population has an equal or lower value to that of the study area, meaning less potential for exposure/risk/proximity to certain facilities or a lower percent minority. It should be noted that EJScreen is a pre-decisional screening tool and was developed by the USEPA to highlight places that may be candidates for further review, analysis or outreach in support of EJ work. As such, the tool is not designed to be used to identify or label an area as an "EJ Community."

The EJScreen Standard Report (Appendix E) for a 3-mile area surrounded the proposed Biorefinery shows two Environmental Justices Indexes that are higher than 50 percent for both the state and nation (Lead Paint and Wastewater Discharge), and an additional three EJ Indexes that are greater than 50 percent for the Nation (PM 2.5, Air Toxics Cancer Risk, and Air Toxics respiratory HI). The highest Environmental Justice Index was for Wastewater Discharge which was 74 for the State and 77 for the Nation. The estimated population of the 1-mile area around the Biorefinery is 30 people. This area has a demographic index of 38 percent which is lower than the state (41 percent) but slightly higher than that of the Nation (35 percent). Both the Low Income and Unemployment rates were higher for the area when compared to both the state and the Nation. Given the results of the EJScreen Standard Report, wastewater discharge, lead paint exposure, and air quality are three key environmental impacts that should be investigated further to see if they may disproportionately impact minority and low-income populations.

Data from the American Community Survey report (Appendix F) for the 1-mile area around the Biorefinery matches the data which was presented above. Caucasians make up the majority of the population (79 percent) none of which claim to be Hispanic. Only 4 percent of the population has less than a high school diploma. One hundred percent of the population only speaks English and there are no linguistically isolated households. Fifty percent of the

households have a household income base that is less than $15,000. Sixty percent of the population within the 1-mile buffer area are not in the labor force. Of the remaining 40 percent of the population in the labor force, only 5 percent are unemployed. The EJScreen 2010 Census report (Appendix G) showed a much larger population for the 1-mile buffer area of 59 persons. That population was also predominantly Caucasian (79 percent), of which only 4 percent claimed to be of Hispanic heritage. Seventy-seven percent of the non-Hispanic population claimed to be Caucasian only.

3.18.2 Minority Populations

Minority populations are made up of individuals who are members of the American Indian or Alaskan Native, Asian or Pacific Islander, African American, and those that claim Hispanic or Latino origin. In accordance with the NEPA guidance provided by the CEQ, minority populations should be identified for areas where the minority population exceeds 50 percent, or the minority population percentage in the affected area is meaningfully greater than the minority population percentage in the general population. The non-Hispanic Caucasian population of the Town of Columbia (73 percent) and Caldwell Parish (78 percent) indicate that the minority populations of these areas are less than 50 percent and significantly less comparatively to the State of Louisiana and the United States whose non- Hispanic Caucasian populations make up 56 and 58 percent of their total populations respectively. The non-Hispanic Caucasian population of the Monroe MSA (56 percent) is comparatively lower to that of the Town of Columbia and Caldwell Parish, but still represents over 50 percent of the population of the MSA and equals the percentage of Louisiana and is slightly less than the percentage of the Nation overall. Given the comparatively high non- Hispanic Caucasian population, particularly in the areas immediately adjacent to the project area, the potential for environmental justice impacts related to minority populations is low.

3.18.3 Low Income Populations

In accordance with the NEPA guidance provided by CEQ, low-income populations should be identified using the annual statistical poverty threshold from the Bureau of Census' Current Population Reports on Income and Poverty. Both the 2019 median household incomes for the Town of Columbia ($42,083) and Caldwell Parish ($37,691) were lower than that compared to the State of Louisiana ($49,469) and the Nation ($62,843). In addition, the 2019 percentage of all people below the poverty level for the Town of Columbia (23.5 percent) and Caldwell Parish (25.1 percent) was higher than that of the State of Louisiana (18.7 percent) and the Nation (14.9 percent). As a result, there is a greater potential for impacts, both beneficial and adverse, that are disproportionately high on low-income populations in these areas. This is also reflected in the overall low 2020 PCPI noted for Caldwell Parish of $38,705 which ranked 52nd of the 64 parishes in the State of Louisiana and that of the Monroe MSA of $45,252 which ranked 299th of out the 384 MSAs in the Nation.

3.18.4 Alternative 1: Proposed Action Alternative

Given the results of the EJScreen Standard Report, wastewater discharge, lead paint exposure, and air quality are three key environmental impacts that should be investigated further to see if they may disproportionately impact minority and low-income populations. Based on the analysis is Sections 3.9 and 3.11, minority or low -income populations would not be disproportionately

impacted by the Proposed Action. The Proposed Action would not expose minority or low-income populations to lead base paint.

Based on the comparatively high non- Hispanic Caucasian population, particularly of the areas immediately adjacent to the project area, the potential for environmental justice impacts related to minority populations is negligible.

3.18.5 Alternative 2: No Action Alternative

Under the No Action Alternative, the proposed LGF facility would not be constructed and no impacts on EJ would occur.

3.19 SUMMARY OF IMPACTS

Table 3-11 is provided to summarize the impacts of the No Action Alternative and Proposed Action on each of the elements discussed in this section (Affected Environment and Consequences).

Table 3-11. Summary Matrix of Potential Impacts

Affected Environment	Proposed Action (Alternative 1)	No Action Alternative (Alternative 2)
Land Use	The Proposed Action would have a permanent, negligible impact on land use. Approximately 387 acres of agricultural farmland would be converted to a developed land use.	No direct impacts would occur.
Soils	Under the Proposed Action, approximately 381.33 acres of soils (366.51 acres of prime farmland soils) would be permanently disturbed or removed from biological production at the proposed LGF facility. Approximately 48.59 acres of Gallion silt loam, 24.22 acres of Hebert silt loam, 3.65 acres of Perry silty clay loam, and 290.05 acres of Rilla silt loam would be permanently impacted. The direct impact from the disturbance and removal from biological production of approximately 381.33 acres of soil would be negligible due to the small size of the project footprint relative to the amount of the same soils throughout the APE.	Soils would continue to be adversely impacted as a result of tilling for agricultural purposes.
Geology	The Proposed Action would have a long-term, moderate effect on geology due to pumping liquid CO_2 and H_2S into the earth.	No direct impacts would occur.
Vegetative Habitat	The Proposed Action would permanently alter approximately 341 acres (308 acres of agricultural and pasture and 33 acres of bottomland hardwood). The plant community associated with the project site is both locally and regionally common, and the permanent loss of approximately 341 acres of vegetation would not adversely affect the population viability of any plant or animal species in the region.	No direct impacts would occur.
Wildlife Resources	The Proposed Action would have a long-term, negligible impact on wildlife resources due to the permanent removal of approximately 341 acres, the majority of which is previously disturbed.	No direct impacts would occur.
Protected Species and Critical Habitat	The Proposed Action would have no effect on any federally protected species. No Critical Habitat is present within the project footprint for any species.	No direct impacts would occur.
Groundwater	The Proposed Action would have negligible impacts on groundwater availability in the region. Groundwater would not be utilized during construction or daily operations of the new LGF facility. Potable water for the facility would be supplied by the East Columbia Water District. The pumping of liquid CO_2 mixed with H_2S would have a permanent, negligible effect on groundwater. The CO_2 would not mix with groundwater; therefore, no impacts are anticipated on the freshwater aquifers located below the CO_2 injection site. There is a potential for groundwater contamination as a result of a surface spill potentially entering the municipal groundwater well adjacent to the LGF facility. BMPs, including secondary containment around the well, would be in place to prevent any accidental spills from entering the well site.	No direct impacts would occur.
Surface Waters and Waters of the United States	The Proposed Action would have a long-term, minor impact on surface water availability. Surface water quality could be temporarily impacted during construction activities as a result of erosion and sedimentation. Approximately 6.1 acres of potentially jurisdictional wetlands, approximately 16,153 linear feet of Waters of the United States, and approximately 5.3 acres of other Waters of the United States have the potential to be impacted. However, LGF would permit the fill of these wetlands through the USACE; therefore, no net loss of wetlands would occur. Additionally, a Section 10 Permit would be obtained for the water intake in the oxbow and wastewater discharge into the Ouachita River. A long-term, minor effect on surface water resources would be anticipated under this alternative.	No direct impacts would occur.
Floodplains	The Proposed Action would not increase the risk or impact of floods on human safety, health, and welfare, or adversely impact the beneficial values that floodplains serve. The Proposed Action would have no impacts on floodplains and would be in compliance with EO 11988.	No direct impacts would occur.
Air Quality	Temporary and minor increases in air pollution would occur from the use of construction equipment (combustion emissions) and the disturbance of soils (fugitive dust) during construction. With the exception of CO_{2e}, total emissions from all activities would be below the *de minimis* threshold levels; however, operation of the LGF Facility will result in much more CO_{2e} being sequestered via CCS than will be released into the atmosphere. Therefore, the LGF facility will be net negative for the production of CO_{2e}.	No direct impacts would occur.
Noise	Temporary and negligible increases in noise would occur during construction. Noise emissions associated with the operation of the facility would result in a long-term, moderate impact.	No direct impacts would occur.
Cultural Resources	The Proposed Action would have no significant effects on historic or archaeological resources.	No direct impacts would occur.
Utilities and Infrastructure	Negligible demands on power utilities would be required as a result of the Proposed Action.	No direct impacts would occur.
Hazardous Materials	The potential exists for minor releases of petroleum, oil, and lubricant during construction activities. BMPs will be implemented to minimize any potential contamination during construction activities. Thus, there is a potential for short-term, negligible impacts from hazardous materials during construction. During operations there is a long-term and minor impacts from hazardous materials during construction.	No direct impacts would occur.
Roadways and Traffic	The Proposed Action would result in short-term, minor adverse impacts, particularly during the early part of construction of the facility when project volumes would cause a short-term deficiency for left turning vehicles exiting and entering Riverton Camp Road, which would result in traffic flow issues at the intersection of U.S. 165 and Riverton Camp Road. Implementation of the proposed road improvements would result in no adverse, long-term impacts to traffic flow along U.S. 165 during the day-to-day operations of the facility.	No direct impacts would occur. N
Socioeconomics	The Proposed Action is anticipated to have long-term beneficial socioeconomic impacts. During project construction, peak employment for construction of the facility is estimated to be 1,500 individuals during the 31-month construction schedule. Indirect full-time jobs are estimated to be >750 jobs during and following completion of construction. Additionally, the Proposed Action would have a long-term, beneficial impact on the local economic.	No direct impacts would occur.
Environmental Justice	The Proposed Action would have no environmental health or safety risks that disproportionately affect children or minority populations or violate EO12898.	No direct impacts would occur.

4.0 BEST MANAGEMENT PRACTICES

This chapter describes those measures that will be implemented to reduce or eliminate potential adverse impacts on the human and natural environments. BMPs will be presented for each resource category that would be potentially affected. It should be emphasized that these are general BMPs and the development of specific BMPs will be required for certain activities implemented under the action alternatives. The proposed BMPs will be coordinated through the appropriate agencies and land managers/administrators, as required.

It is policy to reduce adverse impacts through the sequence of avoidance, minimization, and, finally, compensation. Compensation varies and includes activities such as restoration of habitat in other areas, acquisition of lands, etc., and is typically coordinated with the appropriate federal and state resource agencies.

4.1 GENERAL PROJECT PLANNING CONSIDERATIONS

1. Avoid contamination of ground and surface waters by storing concrete wash water, and any water that has been contaminated with construction materials, oils, equipment residue, etc., in closed containers on-site until removed for disposal. This wash water is toxic to wildlife. Storage tanks must have proper air space (to avoid rainfall-induced overtopping), be on-ground containers, and be located in upland areas instead of washes.

2. Avoid lighting impacts during the night by conducting construction and maintenance activities during daylight hours only. If night lighting is unavoidable, 1) use bulbs designed to ensure no increase in ambient light conditions, 2) minimize the number of lights used, 3) place lights on poles pointed down toward the ground, with shields on lights to prevent light from going up into the sky, or out laterally into landscape, and 4) selectively place lights so they are directed away from all native vegetative communities.

3. Avoid the spread of non-native plants by not using natural materials (e.g., straw) for on-site erosion control. If natural materials must be used, the natural material would be certified weed and weed-seed free. Herbicides not toxic to listed species that may be in the area can be used for non-native vegetation control. Application of herbicides will follow federal guidelines and can be used in accordance with label directions.

4. Place drip pans under parked equipment and establish containment zones when refueling vehicles or equipment.

4.2 SOILS

1. Clearly demarcate the perimeter of all new areas to be disturbed using flagging or temporary construction fencing. Do not allow any disturbance outside that perimeter.

2. The area of disturbance will be minimized by limiting deliveries of materials and equipment to only those needed for effective project implementation.

3. Within the designated disturbance area, grading or topsoil removal will be limited to areas where this activity is needed to provide the ground conditions necessary for construction or maintenance activities.

4. Rehabilitation will include revegetating or the distribution of organic and geological materials over the disturbed area to reduce erosion while allowing the area to naturally vegetate.

4.3 BIOLOGICAL RESOURCES

1. Materials used for on-site erosion control will be free of non-native plant seeds and other plant parts to limit potential for infestation.

2. Identify by its source location any fill material, sandbags, hay bales, and mulch brought in from outside the project area. These materials will be free of non-native plant seeds and other plant parts to limit potential for infestation.

3. Native seeds or plants will be used to revegetate temporarily disturbed areas.

4. Obtain materials such as gravel, topsoil, or fill from existing developed or previously used sources that are compatible with the project area and are from legally permitted sites. Do not use materials from undisturbed areas adjacent to the project area.

4.4 CULTURAL RESOURCES

1. If any human remains are accidentally encountered during construction, work shall cease with the human remains left undisturbed, and the state police will be notified immediately.

4.5 AIR QUALITY

1. Soil watering will be utilized to minimize airborne particulate matter created during construction activities. Bare ground may be covered with hay or straw to lessen wind erosion during the time between construction and the revegetation of temporary impact areas with a mixture of native plant seeds or nursery plantings (or both). All construction equipment and vehicles will be kept in good operating condition to minimize exhaust emissions.

4.6 WATER RESOURCES

1. Avoid contamination of ground and surface waters by collecting concrete wash water in open containers and disposing of it off-site.

2. Avoid contaminating natural aquatic and wetland systems with runoff by limiting all equipment maintenance, staging, and laydown and dispensing hazardous liquids, such as fuel and oil, to designated upland areas.

3. Cease work during heavy rains and do not resume work until conditions are suitable for the movement of equipment and materials.

4. Erosion control measures and appropriate BMPs, as required and promulgated through a site-specific SWPPP and engineering designs, will be implemented before, during, and after soil-disturbing activities.

5. Areas with highly erodible soils will be given special consideration when preparing the SWPPP to ensure incorporation of various erosion control techniques, such as straw bales, silt fencing, aggregate materials, wetting compounds, and rehabilitation, where possible, to decrease erosion.

6. Wastewater from pressure washing must be collected. A ground pit or sump can be used to collect the wastewater. Wastewater from pressure washing must not be discharged into any surface water.

7. If soaps or detergents are used, the wastewater and solids must be pumped or cleaned out and disposed of in an approved facility. If no soaps or detergents are used, the wastewater must first be filtered or screened to remove solids before being allowed to flow off-site. Detergents and cleaning solutions must not be sprayed over or discharged into surface waters.

4.7 NOISE

1. Avoid noise impacts during the night by conducting construction and maintenance activities during daylight hours only.

2. All Occupational Safety and Health Administration (OSHA) requirements will be followed. To lessen noise impacts on the local wildlife communities, construction will only occur during daylight hours. All motor vehicles will be properly maintained to reduce the potential for vehicle-related noise.

4.8 SOLID AND HAZARDOUS WASTES

1. BMPs will be implemented as standard operating procedures during all construction activities, and will include proper handling, storage, and/or disposal of hazardous and/or regulated materials. To minimize potential impacts from hazardous and regulated materials, all fuels, waste oils, and solvents will be collected and stored in tanks or drums within a secondary containment system that consists of an impervious floor and bermed sidewalls capable of containing the volume of the largest container stored therein. The refueling of machinery will be completed in accordance with accepted industry and regulatory guidelines, and all vehicles will have drip pans during storage to contain minor spills and drips. Although it is unlikely that a major spill would occur, any spill of reportable quantities will be contained immediately within an earthen dike, and the application of an absorbent (e.g., granular, pillow, sock) will be used to absorb and contain the spill.

2. All waste oil and solvents will be recycled. All non-recyclable hazardous and regulated wastes will be collected, characterized, labeled, stored, transported, and disposed of in accordance with all applicable federal, state, and local regulations, including proper waste manifesting procedures.

3. Solid waste receptacles will be maintained at the project site. Non-hazardous solid waste (trash and waste construction materials) will be collected and deposited in on-site receptacles. Solid waste will be collected and disposed of by a local waste disposal contractor.

4. Disposal of used batteries or other small quantities of hazardous waste will be handled, managed, maintained, stored, and disposed of in accordance with applicable federal and state rules and regulations for the management, storage, and disposal of hazardous materials, hazardous waste, and universal waste. Additionally, to the extent practicable, all batteries will be recycled locally.

5. All rainwater collected in secondary containment will be pumped out, and secondary containment will have netting to minimize exposure to wildlife.

6. A properly licensed and certified hazardous waste disposal contractor will be used for hazardous waste disposal, and manifests will be traced to final destinations to ensure proper disposal is accomplished.

4.9 ROADWAYS AND TRAFFIC

1. Construction vehicles will travel and equipment will be transported on established roads with proper flagging and safety precautions.

2. During the Construction period it is recommended that the shift change occur outside of the peak traffic hours where possible to ensure the proper function of Riverton Camp Road and US-165 intersection.

3. During operations, the facility will prohibit left turns for trucks, they will all enter and exit utilizing right turn maneuvers.

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6.0 ACRONYMS/ABBREVIATIONS

ACS	U.S. Census American Community Survey
APE	Area of Potential Effect
ARPA	Archaeological Resources Protection Act
ASTM	American Society for Testing and Materials
BMP	best management practices
CEQ	Council on Environmental Quality
CFC	chlorofluorocarbons
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_{2e}	carbon dioxide equivalent
CWA	Clean Water Act
dB	Decibel
dBA	A-weighted decibel
DNL	Day-night average sound level
DoD	Department of Defense
EA	Environmental Assessment
EIS	Environmental Impact Statement
EJ	Environmental Justice
EO	Executive Order
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
GDP	Gross Domestic Product
GHG	Greenhouse Gases
GSRC	Gulf South Research Corporation
H_2S	hydrogen sulfide
HFC	hydrochlorofluorocarbons
HI	Habitat Index
I.O.	Isolated Occurrence
kW	kilowatt
LADOA	Louisiana Division of Archaeology.
LDEQ	Louisiana Department of Environmental Quality
LDWF	Louisiana Department of Wildlife and Fisheries
LGF	Louisiana Green Fuels
mi	Mile
MOVES	Motor Vehicle Emission Simulator
MSA	Metropolitan Statistical Area
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act

NHPA	National Historic Preservation Act
NOA	Notice of Availability
NO_2	nitrogen dioxide
NPS	National Park Service
NRHP	National Register of Historic Places
O_3	ozone
OSHA	Occupational Safety and Health Administration
Pb	lead
PCPI	Per Capita Personal Income
PM-10	particulate matter less than 10 microns
PM-2.5	particulate matter less than 2.5 microns
PTE	Potential to emit
ROI	region of influence
SHPO	State Historic Preservation Officer
SO_2	sulfur dioxide
SPCCP	Spill Prevention, Control and Countermeasure Plan
Sq ft	square feet
SWPPP	Stormwater Pollution Prevention Plan
TCP	Traditional Cultural Property
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USFS	U.S. Forest Service

APPENDIX A
CORRESPONDENCE

May 17, 2022

U.S. Fish and Wildlife Service
Louisiana Ecological Services Field Office
Joseph Ranson
Field Supervisor
200 Duller Drive
Laffayette, LA 70506-4290

RE: Strategic Biofuels, LLC - Louisiana Green Fuels, LLC
Renewable Fuels Bio-Refinery, Caldwell Parish, Louisiana

Dear Mr. Ranson:

Strategic Biofuels, LLC - Louisiana Green Fuels, LLC (SBF-LGF) is planning construction of a renewable fuels bio-refinery in northeast Louisiana using forestry residue as a feedstock, powered by onsite-generated "green" power, and including Carbon Capture and Sequestration (CCS) of the carbon dioxide (CO_2) from both the bio-refinery and electric power plant. The Carbon Intensity (CI) score of the LGF facility will be approximately minus 294 and will make it the most deeply carbon-negative liquid renewable fuels production facility in the world.

The new renewable fuels bio-refinery would be located at the Port of Columbia in Caldwell Parish, Louisiana (Attachment 1). The site consists of approximately 300 acres of mostly agricultural land in northeast Louisiana, 5 miles north of Columbia, Louisiana and 25 miles south of Monroe, Louisiana and is bounded by a four-lane highway (US Highway 165), and the Ouachita River (Attachment 2). A Union Pacific mainline railroad crosses the site. A conceptual plan for the bio-refinery is provided as (Attachment 3). Raw water for the site will be withdrawn from an oxbow lake portion of the Ouachita River and treated wastewater will be discharged to the flowing portion of the Ouachita River (see Attachment 3).

The bio-refinery will manufacture approximately 2,400 barrels per day of renewable diesel and renewable naphtha that will be shipped by rail to California. The feedstock will be the abundant forestry-derived biomass in the region in the form of wood chips (or "biomass") primarily from commercially managed and sustainable pine plantations. The biomass used to manufacture the renewable fuels will be composed primarily of whole chipped trees from forest thinning activities. The feedstock will be compliant with the requirements of the Environmental Protection Agency (EPA)-Renewable Fuel Standards (RFS) which allows for the generation of Renewable Identification Numbers (RINS), which are tradable credits. The produced fuel will also qualify for generating carbon

credits under California's Low Carbon Fuel Standard (LCFS). Additionally, the sequestered CO_2 tonnages will qualify for substantial tax credits, referred to as "45Q" credits in the federal tax code.

LGF will also construct an 85.5-MW biomass-fired boiler power generation plant on-site to provide sufficient "green" electric power to operate the bio-refinery. It will be located on the same site and adjacent to the bio-refinery. The fuel for the power plant will be composed of forest-derived biomass materials (forest slash and sawmill materials) previously considered to have little economic value.

An essential feature of the overall project that drives its robust economics is the on-site CCS facility that will capture over 90% of the CO_2 produced from both the bio-refinery and the electric power plant. The CO_2 will be compressed into a "supercritical" or near-liquid state and, through several onsite EPA-regulated "Class VI" wells, injected and stored permanently underground in a mile-deep sequestration reservoir.

LGF is gathering data and input from state and local governmental agencies, departments, and bureaus that may be affected by, or otherwise have an interest in, this undertaking. Since your agency or organization may have particular knowledge and expertise regarding potential environmental impacts from LGF's Proposed Action, your input is sought regarding the likely or anticipated environmental effects of this undertaking. Your response should include any state and local restrictions, permitting or other requirements with which LGF would have to comply during project siting, construction, and operation.

Per 40 CFR §1501.7, 1503, and 1506.6 we will provide your agency with a copy of the official Draft EA for the proposed new LGF bio-refinery project for your review and comment. Please let us know if additional copies are needed.

Your prompt attention to this request is appreciated. If you have any questions, please contact me at (225) 757-8088 or via email at hnass@gsrcorp.com.

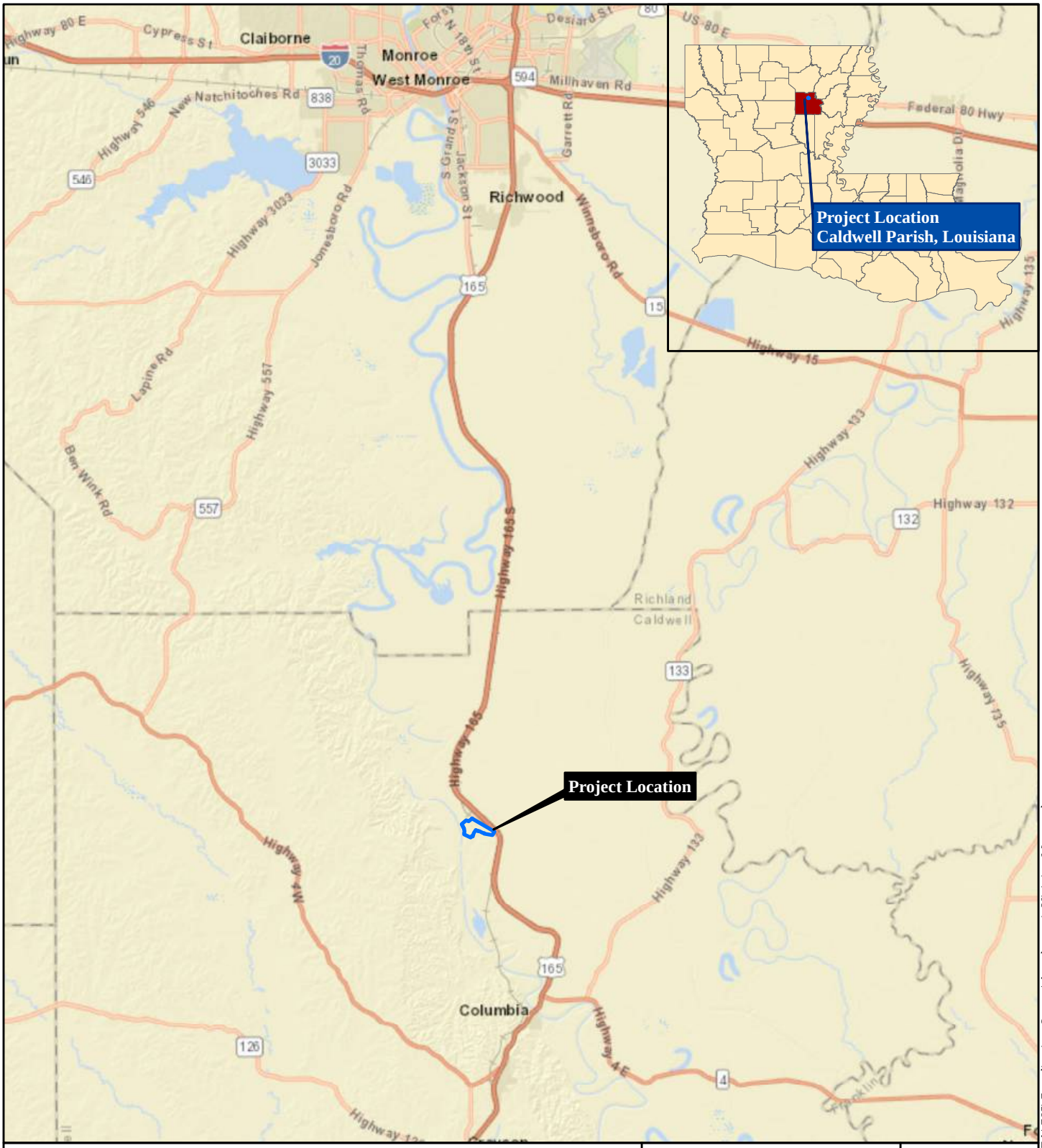
Sincerely,

Howard Nass
Natural Resources Manager

Ref: 80986004

Attachment(s)

ATTACHMENT 1



Legend

Port of Columbia

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0 2 4 Miles

0 2.5 5 Kilometers

GSRC

May 2022

Attachment 1. Vicinity Map

K:\Projects\80986004_Strategic_Biofuels_EA\GIS\Coordination_Letters\Attachment1_Vicinity_Map.mxd

ATTACHMENT 2

Legend

Port of Columbia

N

0 400 800 Feet

0 100 200 Meters

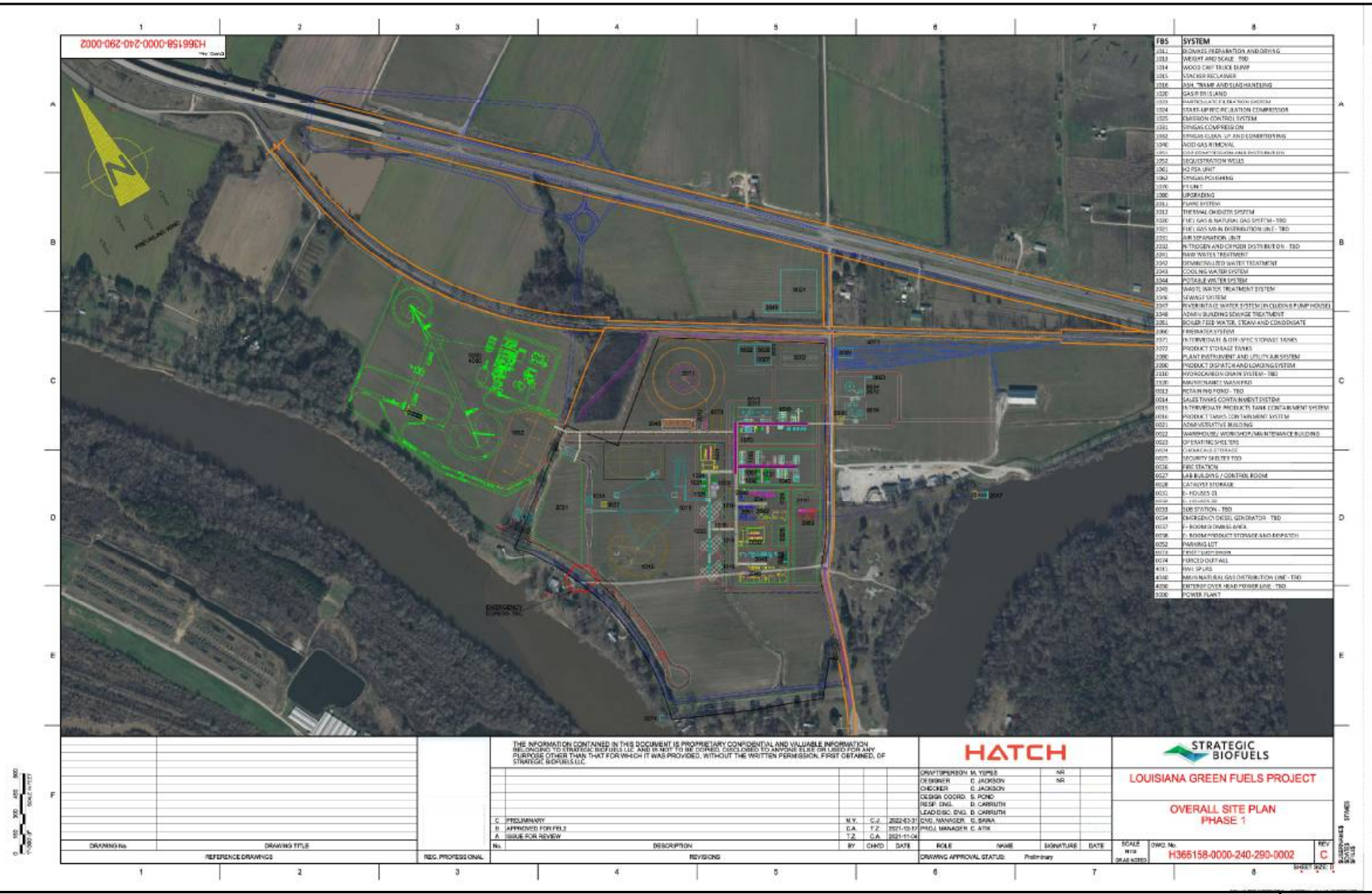
GSRC

May 2022

Attachment 2. Project Site Map

K:\Projects\80986004_Strategic_Biofuels_EA\GIS\Coordination_Letters\Attachment2_Project_Site_Map.mxd

ATTACHMENT 3



May 2022

Attachment 3. Project Design

K:\Projects\80986004_Strategic_Biofuels_EA\GIS\Coordination_Letters\Attachment3_Project_Design.mxd

Agency Coordination Mailing List

U.S. Fish and Wildlife Service
Louisiana Ecological Services Field Office
Mr. Joseph Ranson, Field Supervisor
200 Duller Drive
Laffayette, LA 70506-4290

U.S. Army Corps of Engineers, Vicksburg District
Regulatory Branch
Mr. Bryan Williamson
4155 Clay Street
Vicksburg, MS 39183-3435

Louisiana State Historic Preservation Office
Ms. Kristen Sanders
P.O. Box 44247
Baton Rouge, LA 70804

Columbia Port Commission
ATTN: Mr. Greg Richardson
Acting Port Director
P.O. Box 367
Columbia, LA 71418

Louisiana Department of Environmental Quality
Office of Environmental Services
Ms. Bliss Higgins, Assistant Secretary
Assistant Secretary
P.O. Box 4213
Baton Rouge, LA 70821-4313

Louisiana Department of Wildlife and Fisheries
Wildlife Diversity Program
Ms. Carolyn Michon
Assistant Database Manager
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Baton Rouge, LA 70898-9000

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Tensas Basin Levee District
Mr. Drew Keabey, President
505 District Road
Monroe, LA 71202

Town of Columbia
Mr. Richard Meredith, Mayor
302 Pearl Street
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Louisiana Department of Natural Resources
Mr. John Adams, Assistant Commissioner
P.O. Box 94396
Baton Rouge, LA 70804-9396

Caldwell Parish Floodplain Management
Ms. Denita Temple, Manager
6563 U.S. Highway 165
Columbia, LA 71418

May 17, 2022

Apache Tribe of Oklahoma
Bobby Komardley, Chairman
PO Box 1330
Anadarko, OK 73005

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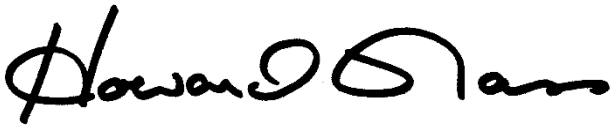

Howard Nass
Natural Resources Manager

Ref: 80986004

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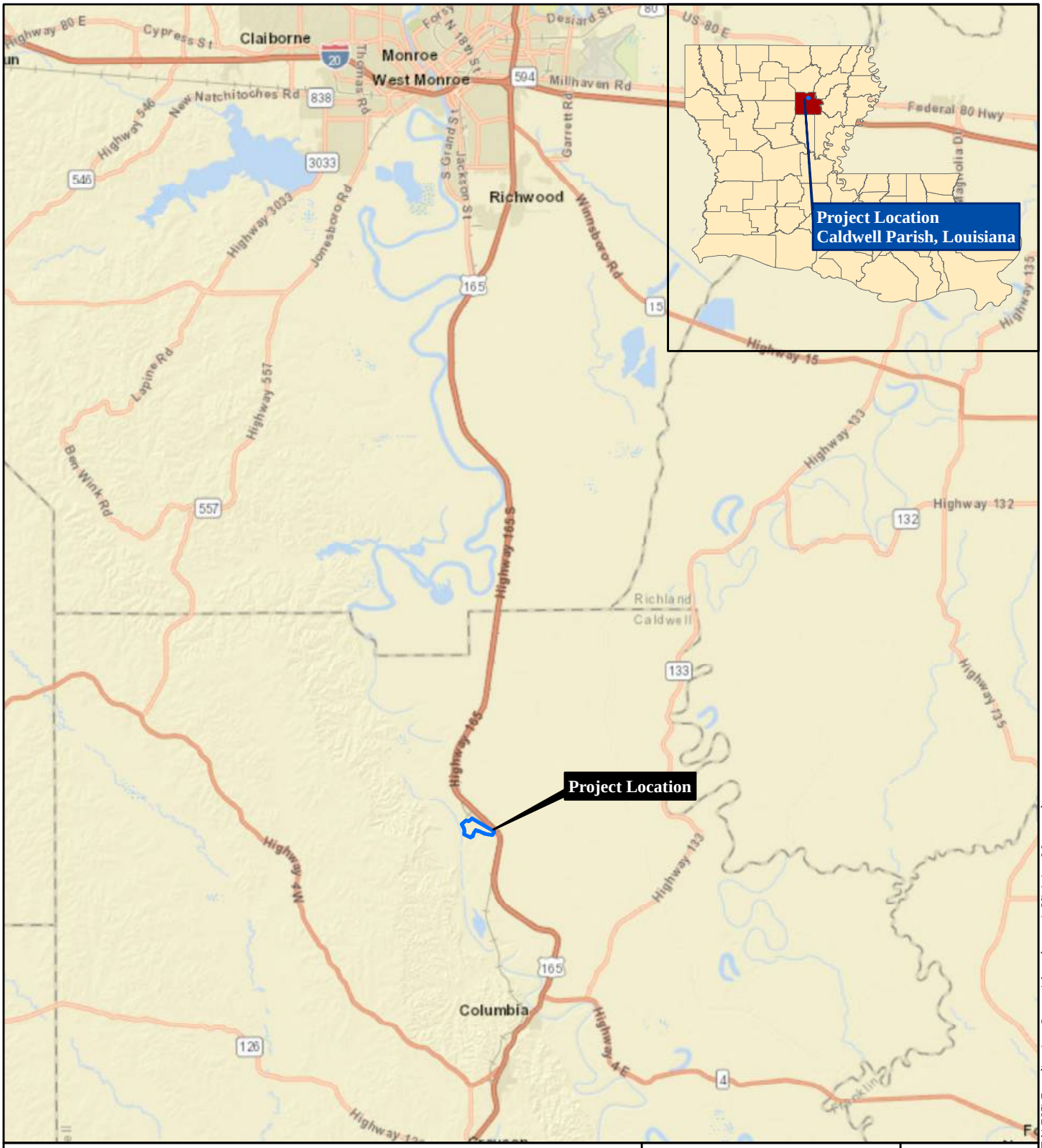

Legend

Port of Columbia

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0 2 4 Miles

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May 2022

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ATTACHMENT 2

Legend

Port of Columbia

N

0 400 800 Feet

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GSRC

May 2022

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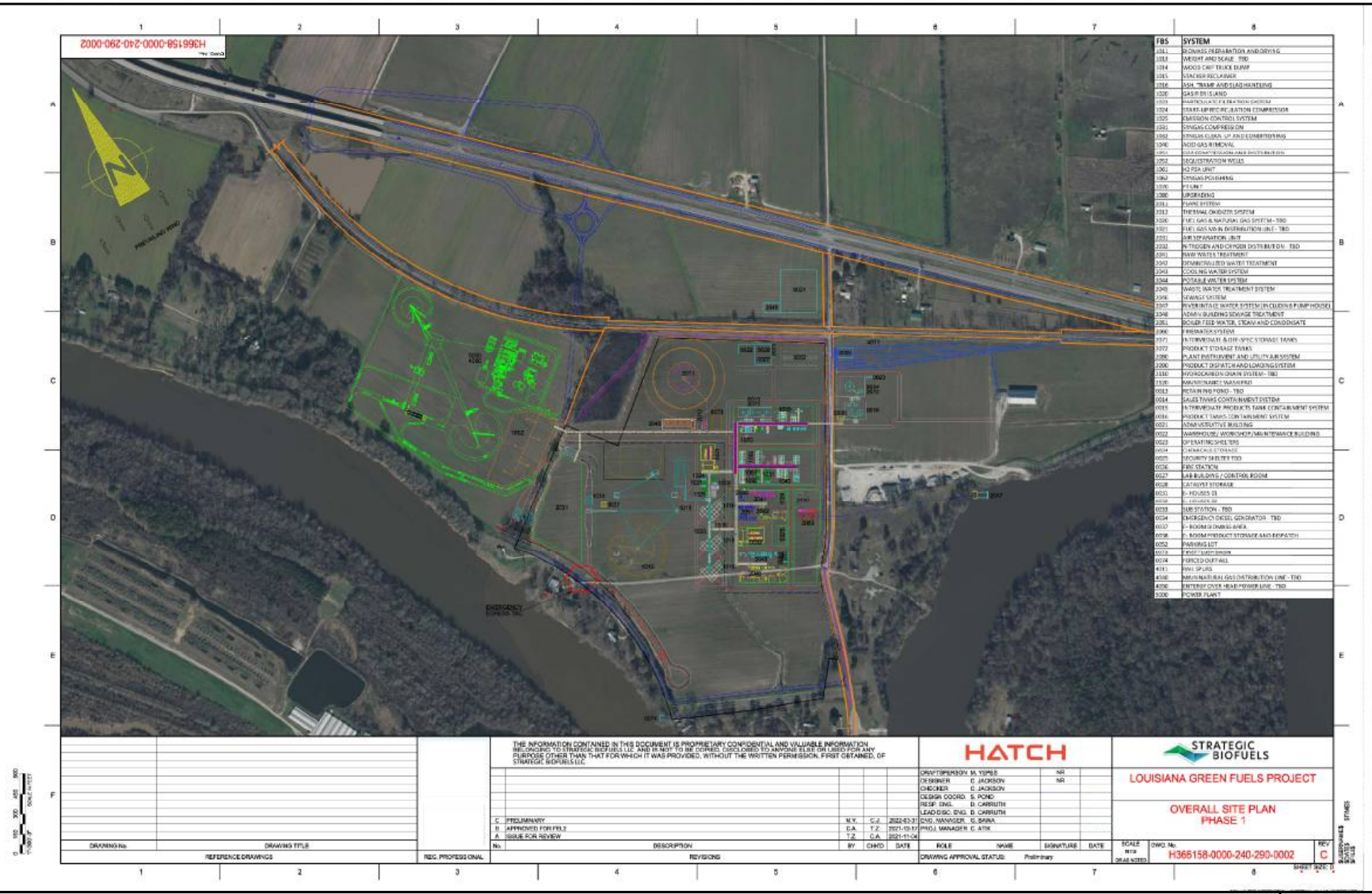

May 2022

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Tribal Mailing List

Apache Tribe of Oklahoma
Bobby Komardley, Chairman
PO Box 1330
Anadarko, OK 73005

Caddo Nation of Oklahoma
Bobby Gonzalez, Chairman
PO Box 487
Binger, OK 73009

Mississippi Band of Choctaw Indians
Cyrus Ben, Chief
PO Box 6010
Choctaw, MS 39350

Choctaw Nation of Oklahoma
Gary Batton, Chief
PO Drawer 1210
Durant, OK 74702

Jena Band of Choctaw Indians
B. Cheryl Smith, Principal Chief
PO Box 14
Jena, LA 71342-0014

Coushatta Tribe of Louisiana
David Sickey, Chairman
PO Box 818
Elton, LA 70532

Tunica-Biloxi Indian Tribe
Marchall Pierite, Chairman
10 Melacon Drive
Marksville, LA 71351

Alabama-Coushatta Tribe of Texas
Ricky Sylestine, Chairman
571 State Park Road 56
Livingston, TX 77351

July 5, 2022

U.S. Fish and Wildlife Service
Louisiana Ecological Services Field Office
Joseph Ranson, Field Supervisor
200 Duller Drive
Laffayette, LA 70506-4290

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Thank You,

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Natural Resources Manager

Ref: 80986004

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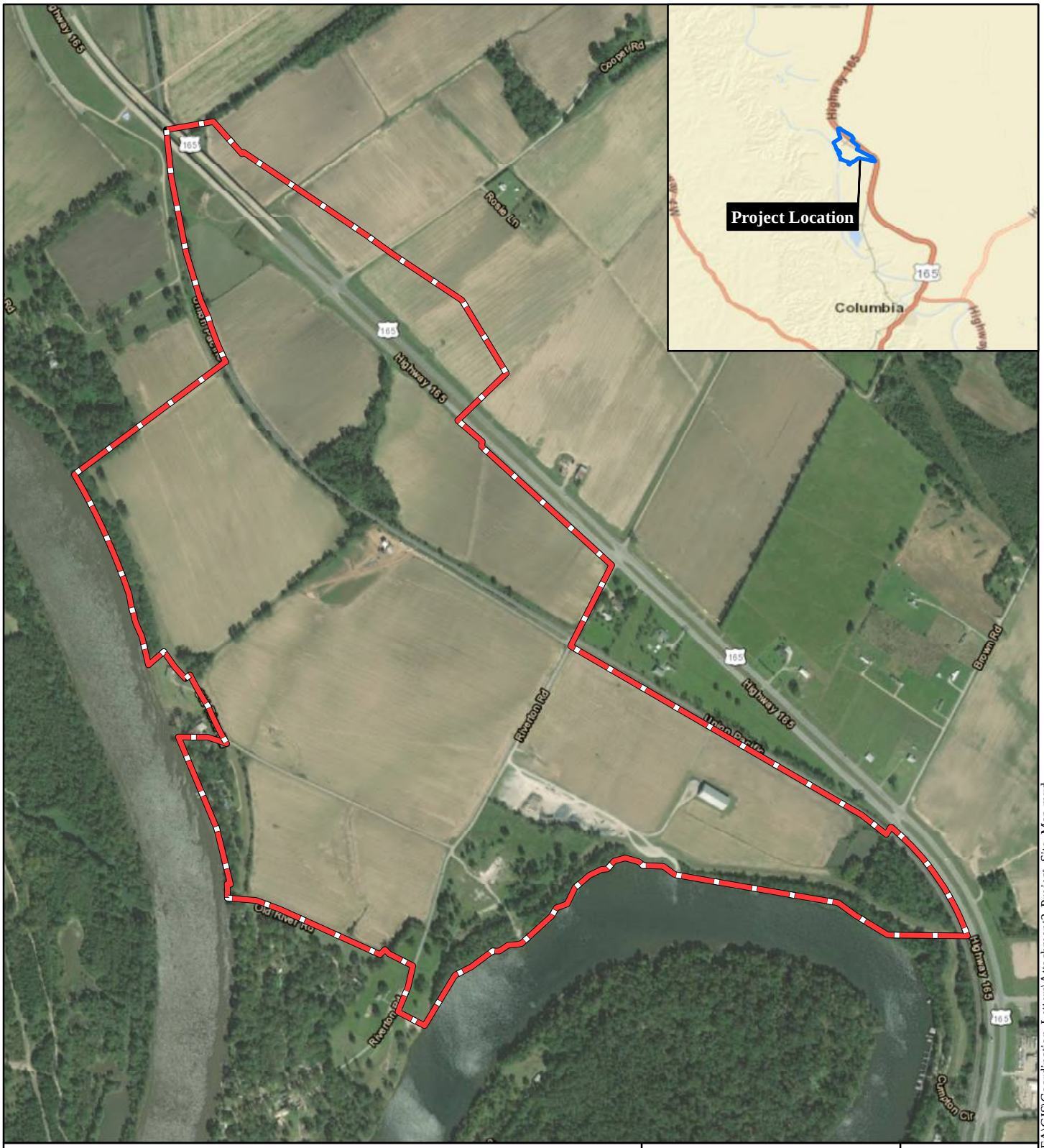

Legend

Biofuels Property

0 500 1,000 Feet

0 100 200 Meters

GSRC

June 2022

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Natural Resources Manager

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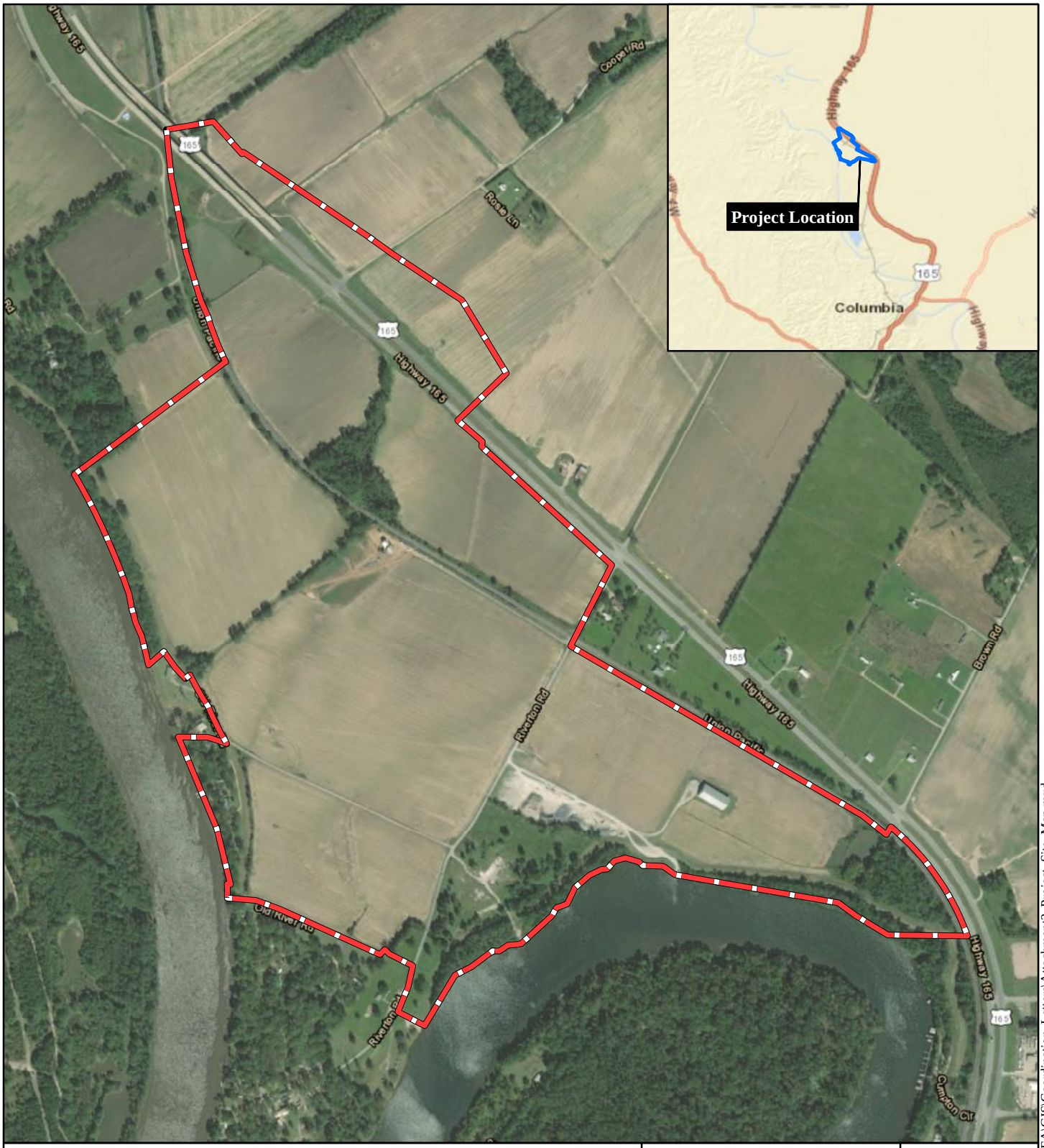

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June 2022

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Jena, LA 71342-0014

Coushatta Tribe of Louisiana
David Sickey, Chairman
PO Box 818
Elton, LA 70532

Tunica-Biloxi Indian Tribe
Marchall Pierite, Chairman
10 Melacon Drive
Marksville, LA 71351

Alabama-Coushatta Tribe of Texas
Ricky Sylestine, Chairman
571 State Park Road 56
Livingston, TX 77351

East Columbia Water District
190 Tank Street
PO Box 912
Columbia, LA 71418

Hope Lueck– General Manager

Jeff Masters- President

September 19, 2022

Dr. Paul Schubert, CEO
Louisiana Green Fuels LLC
PO Box 1269
Columbia, LA 71418

Re: Letter of "No Objection"

Dear Dr. Schubert:

The East Columbia Water District (ECWD) has been advised by Louisiana Green Fuels (LGF) of its plans to construct and operate a renewable fuels bio-refinery at the Port of Columbia adjacent to the existing facility and wells of the ECWD.

LGF has provided the ECWD with a description of the planned operations of the bio-refinery, including LGF's assessment of the risk of impacts to the aquifer source of the ECWD wells from (1) below--the injection and geologic sequestration of carbon dioxide derived from the bio-refinery operations into a deep saline reservoir for permanent storage (a carbon capture and sequestration project generally referred to as "CCS") to be certified and permitted by the Louisiana Department of Natural Resources and the US Environmental Protection Agency (a "Class VI" permit) and (2) above--the risk of surface impacts from the bio-refinery operations and biofuels produced and operationally stored at the facility.

After thorough review and discussion of all pertinent information, the ECWD has determined that the planned LGF facility poses no unacceptable risk to the ECWD and therefore has "No Objection" at this time to construction of the facility.

The ECWD has based this determination by (1) a graphic depiction of the downhole configuration and design of the proposed Class VI well provided by LGF and maintained at the ECWD office, noting the elements of mechanical and geologic integrity of the well and reservoir, (2) an assessment of the risks of surface impacts from bio-refinery operations as determined by LGF (attached) and (3) the independent evaluation and counsel of the ECWD.

In consideration of this determination, the ECWD and LGF earlier entered into an Agreement Granting Servitude related to the CCS project and also a Lease Agreement covering a portion of the ECWD real estate adjacent to the Port of Columbia.

Trusting this will meet your needs of Environmental Assessment of the impact of the LGF bio-refinery on the ECWD facility, we look forward to a successful project that will benefit all citizens of Caldwell Parish.

Sincerely,

Jeff Masters
President
East Columbia Water District

Louisiana Green Fuels Bio-Refinery
Groundwater Protection Assurance and Risk Assessment Considerations

Prepared for the East Columbia Water District
Caldwell Parish, Louisiana

This document has been prepared to address groundwater protection and risks associated with the proposed construction and operation of the Louisiana Green Fuels (LGF) Bio-Refinery at the Port of Columbia in Caldwell Parish Louisiana. The East Columbia Water District (ECWD) owns and operates water supply wells and an associated water treatment facility adjacent to the proposed site of the LGF Bio-Refinery. The bio-refinery anticipates the production of 32 million gallons of renewable diesel (87%) and renewable naphtha (a gasoline blend), 13% per year. Elements of assurance and risk assessment considering the safety and protection of the ECWD's fresh water source from the proposed bio-refinery construction and operational events, or other occurrences are identified and evaluated below:

1. Potential fuel or fluids storage and loading locations will be positioned 1,000 feet or more east of the ECWD facility next to the end of the bio-refinery process train. These locations will include aboveground storage tanks (ASTs) and the railcar loading facility, limiting the storage and handling footprint area to an area a significant distance from the ECWD facility. No underground storage tanks (USTs) or buried flowlines will be constructed at the proposed facility. All storage tanks and ancillary piping will be constructed and maintained above ground to provide frequent and full view inspections, thus eliminating the risk of belowground seepage from unknown or undetected leaks.
2. All fuel and fluids storage areas will be designed and engineered according to all applicable state and federal regulations and applicable industry standards by properly accredited engineers, contractors, operators and safety consultants. All fuel ASTs will be positioned within secondary containment areas constructed with a concrete base foundation and walls to prevent lateral discharge and vertical infiltration of a spill. The secondary containment capacity will meet or exceed federal standards. The system design will include state-of-the-art instrumentation and controls to facilitate safe operation.
3. The bio-refinery operations areas will be operated and monitored by highly skilled and trained employees, carrying all required certifications for managing such operations.
4. Bio-refinery operations areas will be managed in accordance with applicable Spill Prevention, Control, and Countermeasure (SPCC) requirements and other applicable environmental regulations. Relevant documents will be provided to the ECWD and maintained onsite to provide pre-determined, immediate emergency responses to contain and mitigate a spill, including (1) information for immediate notifications to applicable local, state and federal agencies and (2) a written plan identifying equipment, supplies and personnel available on call for deployment on short notice to counter the potential impacts of a spill.
5. In the unlikely event of escape from containment, spill response equipment will be onsite and available for immediate deployment by trained personnel in accordance with the established SPCC plan. Effective surface cleanup operations will be immediate and thorough, including removal of impacted soil if necessary.

6. In the unlikely event that spilled fuels evade detection, secondary containment and remediation, biofuel impacting soils will bio-degrade three times faster than fossil fuel derived diesel, 80-91% within 30 days, according to numerous published studies on biofuels.
7. In the unlikely event the spilled fuels do not bio-degrade as expected any portion that does not adhere to the soil might theoretically descend to the top of the water table. Please note that the fuel has a significantly lower density of 6.5 pounds per gallon (lb/gal) compared to water at 8.34 lb/gal. The ECWD wells are constructed with groundwater withdrawal at depths of 240 feet below ground surface. The water table has been determined to be approximately 15-20 feet below ground surface near the ECWD facility by recent geotechnical evaluation.
8. The LGF will drill shallow "monitoring" wells to voluntarily monitor groundwater conditions between the ground surface and the water table and at approximately 150 feet below ground surface. These groundwater monitoring wells will be strategically placed to intercept any potential impacts due to the proposed bio-refinery operations or fuel storage and handling areas. These groundwater monitoring wells will be utilized for routine collection and laboratory analysis of groundwater samples to confirm that the aquifer remains fully protected from surface impacts due to the bio-refinery operations.
9. The LGF will comply with all applicable permits, regulations and compliance orders required by the Louisiana Department of Environmental Quality (LDEQ), Louisiana Department of Natural Resources (LDNR) or the US Environmental Protection Agency (EPA) or other regulatory authority.

These considerations lead LGF to conclude that the risk of adverse impacts to the ECWD facility or to the source water aquifer at the Port of Columbia potentially caused by the planned construction and operation of the LGF bio-refinery is small and poses no unacceptable risk and LGF therefore requests that the ECWD issue a letter of "No Objection" for this project.

This document is informational only to the ECWD and nothing herein shall be construed as advice or counsel from LGF to the ECWD regarding the subject matter nor is it intended to replace the independent evaluation of the ECWD.

BILLY NUNGESSER
LIEUTENANT GOVERNOR

State of Louisiana
OFFICE OF THE LIEUTENANT GOVERNOR
DEPARTMENT OF CULTURE, RECREATION & TOURISM
OFFICE OF STATE PARKS

BRANDON BURRIS
ASSISTANT SECRETARY

April 26, 2022

EAGLE Environmental Services, Inc.
18379 Petroleum Drive
Baton Rouge, LA 70809

Re: Strategic Biofuels LLC

Dear Michael Kyle:

The Office of State Parks has no parks, sites or other recreational areas located within three miles of the Strategic Biofuels LLC facility in Caldwell Parish.

Best regards,

Britt Evans
Natural Resources Manager

BE:be

JOHN BEL EDWARDS
GOVERNOR

JACK MONTOUCET
SECRETARY

PO BOX 98000 | BATON ROUGE LA | 70898

Date	May 31, 2022
Name	Howard Nass
Company	Gulf South Research Corporation
Street Address	8081 Innovation Park Drive
City, State Zip	Baton Rouge, LA 70820
Project	Strategic Biofuels, LLC Louisiana Green Fuels, LLC Caldwell Parish, LA
Project ID	202022
Invoice Number	22053101

Personnel of the Louisiana Wildlife Diversity Program (WDP) have reviewed the preliminary data for the captioned project. After careful review of our database, no impacts to rare, threatened, or endangered species or critical habitats are anticipated for the proposed project. No state wildlife refuges, wildlife management areas, or scenic streams are known to occur at the specified site within Louisiana's boundaries.

The Wildlife Diversity Program (WDP) has compiled data on rare, endangered, or otherwise significant plant and animal species, plant communities, and other natural features throughout the state of Louisiana. WDP reports summarize the existing information known at the time of the request regarding the location in question. The quantity and quality of data collected by the WDP are dependent on the research and observations of many individuals. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Louisiana have not been surveyed. This report does not address the occurrence of wetlands at the site in question. WDP reports should not be considered final statements on the biological elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. WDP requires that this office be acknowledged in all reports as the source of all data provided here. If at any time WDP tracked species are encountered within the project area, please contact the WDP Data Manager at 225-763-3554. If you have any questions, or need additional information, please call 337-735-8734.

Sincerely,

for Carolyn Michon

Nicole Lorenz, Program Manager
Wildlife Diversity Program

JOHN BEL EDWARDS
GOVERNOR

JACK MONTOUCET
SECRETARY

PO BOX 98000 | BATON ROUGE LA | 70898

Date	July 22, 2022
Name	Howard Ness
Company	GSRC
Street Address	8081 Innovation Park Drive
City, State Zip	Baton Rouge, LA 70820
Project	Strategic Biofuels LLC-Louisiana Green Fuels Project Revised
Project ID	
Invoice Number	22072212

Personnel of the Louisiana Wildlife Diversity Program (WDP) have reviewed the preliminary data for the captioned project. After careful review of our database, no impacts to rare, threatened, or endangered species or critical habitats are anticipated for the proposed project. No state wildlife refuges, wildlife management areas, or scenic streams are known to occur at the specified site within Louisiana's boundaries.

The Wildlife Diversity Program (WDP) has compiled data on rare, endangered, or otherwise significant plant and animal species, plant communities, and other natural features throughout the state of Louisiana. WDP reports summarize the existing information known at the time of the request regarding the location in question. The quantity and quality of data collected by the WDP are dependent on the research and observations of many individuals. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Louisiana have not been surveyed. This report does not address the occurrence of wetlands at the site in question. WDP reports should not be considered final statements on the biological elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. WDP requires that this office be acknowledged in all reports as the source of all data provided here. If at any time WDP tracked species are encountered within the project area, please contact the WDP Data Manager at 225-763-3554. If you have any questions, or need additional information, please call 337-735-8734.

Sincerely,

for Carolyn Michon

Nicole Lorenz, Program Manager
Wildlife Diversity Program

BILLY NUNGESSER
LIEUTENANT GOVERNOR

State of Louisiana
OFFICE OF THE LIEUTENANT GOVERNOR
DEPARTMENT OF CULTURE, RECREATION & TOURISM
OFFICE OF CULTURAL DEVELOPMENT
DIVISION OF ARCHAEOLOGY

KRISTIN P. SANDERS
ASSISTANT SECRETARY

August 1, 2022

Gulf South Research Corporation
8081 Innovation Park Drive
Baton Rouge, LA 70820
Attn: Howard Nass

RE: Strategic Biofuels, LLC – Louisiana Green Fuels, LLC Renewable Fuels Bio Refinery, Caldwell Parish, Louisiana

Dear Howard,

This is in response to your submittal received by our office on July 11, 2022 regarding the above-referenced project. We reviewed the project and offer the following response.

The proposed project is located within a portion of the state that is considered high probability for encountering archaeological sites. There are six recorded sites within the project area, three determined as ineligible for nomination to the National Register of Historic Places and three whose eligibility is undetermined. Given the previously recorded archaeological sites, sensitivity of the project location, and the proposed ground disturbance, it is the opinion of the State Historic Preservation Office that the project could impact unrecorded archaeological resources. Therefore, we are recommending a Phase I Cultural Resources Survey of the project area and a Phase II Cultural Resources Survey of the three sites of undetermined eligibility. Guidelines for assessing eligibility are available on the DOA's website.

If you have any questions, please contact Renee Erickson at rerickson@crt.la.gov.

Sincerely,

Kristin P. Sanders

Kristin Sanders
State Historic Preservation Officer

CALDWELL PARISH E-911 COMMUNICATIONS DISTRICT & PERMIT OFFICE

219 Main Street/P.O. BOX 1377 * COLUMBIA, LOUISIANA 71418
PH: (318)649-6446 FAX: (318)649-3222

Chairman: Charles Hearns
Co-Chairman: Scott Meredith

Director: Denita Temple
denita@caldwell911.org

May 20, 2022

Gulf South Research Corporation
8081 Innovation Park Drive
Baton Rouge, LA 70820

RE: Strategic Biofuels, LLC – Louisiana Green Fuels, LLC
Renewable Fuels Bio – Refinery, Caldwell Parish, Louisiana

Dear Mr. Nass,

As the floodplain administrator and the building permit office for Caldwell Parish I am responsible for permit intake for all development within the parish.

A building permit will be required for any development and plans will be reviewed by our Building Official to determine what the permit fees will be to meet the requirements of the Louisiana State Uniform Construction codes and the International Building Codes (IBC). A Louisiana State Fire Marshal review will also be required and submitted for Life Safety NFPA requirements by the State Fire Marshal's office in Baton Rouge and a copy of the review letter provided to our Building Official for review.

Our office will also review for NFIP requirements to see if the development is within any special flood hazard areas and for compliance with the parish floodplain ordinance.

Also please provide a copy of the Environmental Impact Statement that you prepare for the project for our review.

Sincerely,

Denita Temple

Denita Temple
Floodplain Administrator

JOHN BEL EDWARDS
GOVERNOR

JACK MONTOUCET
SECRETARY

PO BOX 98000 | BATON ROUGE LA | 70898

Date	April 28, 2022
Name	Mike Kyle
Company	Eagle Environmental Services, Inc.
Street Address	18379 Petroleum Drive
City, State Zip	Baton Rouge, La 70809
Project	Stategic Biofuels, LLC-Louisiana Green Fuels Project New Facility Construction & Permitting Columbia, Caldwell Parish, Louisiana
Project ID	
Invoice Number	22042810

Personnel of the Louisiana Wildlife Diversity Program (WDP) have reviewed the preliminary data for the captioned project. After careful review of our database, no impacts to rare, threatened, or endangered species or critical habitats are anticipated for the proposed project. No state wildlife refuges, wildlife management areas, or scenic streams are known to occur at the specified site within Louisiana's boundaries.

The Wildlife Diversity Program (WDP) has compiled data on rare, endangered, or otherwise significant plant and animal species, plant communities, and other natural features throughout the state of Louisiana. WDP reports summarize the existing information known at the time of the request regarding the location in question. The quantity and quality of data collected by the WDP are dependent on the research and observations of many individuals. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Louisiana have not been surveyed. This report does not address the occurrence of wetlands at the site in question. WDP reports should not be considered final statements on the biological elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. WDP requires that this office be acknowledged in all reports as the source of all data provided here. If at any time WDP tracked species are encountered within the project area, please contact the WDP Data Manager at 225-763-3554. If you have any questions, or need additional information, please call 225-765-2357.

Sincerely,

for Carolyn Michon

Nicole Lorenz, Program Manager
Wildlife Diversity Program

APPENDIX B
LOUISIANA STATE-LISTED SPECIES

Rare Species and Natural Communities by Parish

RARE, THREATENED, AND ENDANGERED RANKS AND STATUSES

RARE ANIMALS TRACKING LIST (PDF)

RARE PLANTS TRACKING LIST (PDF)

RARE NATURAL COMMUNITIES TRACKING LIST (PDF)

RARE SPECIES AND NATURAL COMMUNITIES TRACKING LIST (PDF)

RARE ANIMAL SPECIES FACT SHEETS

RARE PLANT SPECIES FACT SHEETS

NATURAL COMMUNITIES FACT SHEETS

Search

Enter a keyword

Filter by GLOBAL RANK

<Any>

Filter by STATE RANK

<Any>

Filter by FEDERAL STATUS

<Any>

Filter by STATE STATUS

<Any>

Filter by PARISH

Caldwell

Filter by FACT SHEET

<Any>

Rare Species and Natural Communities by Parish

COMMON NAME	SCIENTIFIC NAME	ELEMENT TYPE	GLOBAL RANK	STATE RANK	FEDERAL STATUS	STATE STATUS	PARISH	FACT SHEET

Alligator Snapping Turtle	Macrochelys temminckii	Reptile	G3	S3	Proposed Threatened	Restricted	Acadia, Allen, Ascension, Avoyelles, Beauregard, Bienville, Bossier, Caddo, Calcasieu, Caldwell, Catahoula, Concordia, De Soto, East Baton Rouge, East Carroll, Franklin, Grant, Iberia, Iberville, Jefferson, La Salle, Lafayette, Lafourche, Livingston, Madison, Morehouse, Natchitoches, Ouachita, Rapides, Red River, Richland, Sabine, St. Charles, St. John the Baptist, St. Landry, St. Martin, St. Tammany, Tangipahoa, Tensas, Terrebonne, Union, Vernon, Washington, West Feliciana, Winn	Yes

Western Chicken Turtle	Deirochelys reticularia miaria	Reptile	G5T5	S2			Acadia, Allen, Avoyelles, Beauregard, Caddo, Calcasieu, Caldwell, Cameron, Catahoula, Concordia, De Soto, East Carroll, Evangeline, Franklin, Iberia, Iberville, Jefferson Davis, Lincoln, Morehouse, Natchitoches, Ouachita, Pointe Coupee, Rapides, Richland, St. John the Baptist, St. Landry, St. Martin, Union, Vermilion, Vernon, West Baton Rouge, West Carroll, Winn
Slender Glass Lizard	Ophisaurus attenuatus	Reptile	G5	S3			Acadia, Allen, Beauregard, Bossier, Caddo, Calcasieu, Caldwell, Cameron, De Soto, Evangeline, Grant, Morehouse, Natchitoches, Ouachita, Rapides, St. Tammany, Vermilion, Vernon, Webster, Winn

Smooth Softshell	Apalone mutica	Reptile	G5	S3			Allen, Avoyelles, Beauregard, Bossier, Caddo, Caldwell, Catahoula, Concordia, De Soto, East Baton Rouge, Franklin, Grant, Iberville, La Salle, Madison, Morehouse, Natchitoches, Ouachita, Pointe Coupee, Red River, Richland, Sabine, St. Landry, St. Martin, Union, Vernon, West Feliciana, Winn
Timber Rattlesnake	Crotalus horridus	Reptile	G4	S3S4			Ascension, Bienville, Caldwell, Catahoula, East Carroll, Grant, Lafourche, Morehouse, Natchitoches, Ouachita, Richland, Tensas, Vernon, Winn
Ouachita Map Turtle	Graptemys ouachitensis	Reptile	G5	S3			Avoyelles, Bossier, Caddo, Caldwell, Catahoula, Concordia, Franklin, Iberbille, Madison, Morehouse, Natchitoches, Ouachita, Pointe Coupee, Red River, St. Landry, St. Martin, Tensas, Union, West Baton Rouge, West Feliciana, Winn
Yellow Pimpernel	Taenidia integerrima	Plant	G5	S2			Bienville, Bossier, Caddo, Caldwell, Natchitoches, Vernon, Winn

Southern Lady's-slipper	Cypripedium kentuckiense	Plant	G3	S1			Bienville, Bossier, Caldwell, Catahoula, De Soto, Evangeline, Grant, Jackson, Lincoln, Natchitoches, Ouachita, Rapides, Red River, Sabine, Union, Vernon, Winn	Yes
Prairie Pleatleaf	Nemastylis geminiflora	Plant	G4	S2S3			Bossier, Caddo, Caldwell	
Nuttall's Deathcamas	Zigadenus nuttallii	Plant	G5	S1			Bossier, Caddo, Caldwell, De Soto	
Starry Campion	Silene stellata	Plant	G5	S2			Bossier, Caddo, Caldwell, De Soto, East Feliciana, Lincoln, St. Helena, Union, Vernon	
Yellow Coneflower	Ratibida pinnata	Plant	G5	S2?			Bossier, Caddo, Caldwell, La Salle, Natchitoches, Rapides, Vernon, Winn	
Purple Bluet	Houstonia purpurea var. calycosa	Plant	G5T5	S2			Bossier, Caldwell, Grant, La Salle, Webster, Winn	
Northern Red Oak	Quercus rubra	Plant	G5	S1S3			Caddo, Caldwell, De Soto, East Carroll, Morehouse, Ouachita, Rapides, Richland, St. Tammany, Union, Washington, West Carroll	
Purple Coneflower	Echinacea purpurea	Plant	G4	S2			Caddo, Caldwell, La Salle, Morehouse, Natchitoches, Richland, Tensas, Vernon, Washington,	

Durand Oak	Quercus sinuata var. sinuata	Plant	G4G5T4	S1			Caldwell	
Lanceleaved Buckthorn	Rhamnus lanceolata	Plant	G5	SH			Caldwell	
Northern Prickly-ash	Zanthoxylum americanum	Plant	G5	S1			Caldwell	
Purple Boneset	Eupatorium purpureum	Plant	G5	S1			Caldwell	
Sideoats Grama	Bouteloua curtipendula	Plant	G5	S1			Caldwell	
Tall Bellflower	Campanulastrum americanum	Plant	G5	S1			Caldwell	
Three-flowered Hawthorn	Crataegus triflora	Plant	G2G3	S1			Caldwell	Yes
Wahoo	Euonymus atropurpureus	Plant	G5	S1			Caldwell	
Whiteleaf Leatherflower	Clematis glaucophylla	Plant	G4?	S1			Caldwell	
Yellow-wood	Cladrastis kentukea	Plant	G4	S1			Caldwell	
Eastern Leatherwood	Dirca palustris	Plant	G4	S1			Caldwell, Catahoula	
Oglethorpe's Oak	Quercus oglethorpensis	Plant	G3	S1			Caldwell, Catahoula	Yes
Silky Camellia	Stewartia malacodendron	Plant	G4	S2S3			Caldwell, Catahoula, East Baton Rouge, East Feliciana, Franklin, Grant, Livingston, St. Helena, St. Tammany, Tangipahoa, Washington, West Feliciana	
Bay Starvine	Schisandra glabra	Plant	G3	S3			Caldwell, Catahoula, East Feliciana, Evangeline, Iberia, Jackson, Lincoln, Natchitoches, Rapides, St. Helena, St. Mary, West Feliciana, Winn	Yes
Shadow-witch Orchid	Ponthieva racemosa	Plant	G4G5	S2			Caldwell, Catahoula, West	

Crested Coralroot	Hexalectris spicata	Plant	G5	S2			Caldwell, Claiborne, Evangeline, Jackson, Lincoln, Natchitoches, Ouachita, Rapides, Union, Vernon, Webster, West Feliciana	
Purple Milkweed	Asclepias purpurascens	Plant	G5?	S1			Caldwell, Lincoln	
Autumn Coralroot	Corallorhiza odontorhiza	Plant	G5	S1			Caldwell, St. Helena	
Mixed Hardwood-loblolly Forest	Mixed hardwood-loblolly forest	Natural Community	G3G4	S3			Allen, Bienville, Bossier, Caddo, Caldwell, Catahoula, Claiborne, East Feliciana, Evangeline, Franklin, Grant, Jackson, La Salle, Lincoln, Natchitoches, Ouachita, Rapides, Richland, Sabine, St. Tammany, Tangipahoa, Union, Vernon, Washington, Webster, West Carroll, West Feliciana, Winn	Yes

Bottomland Hardwood Forest	Bottomland hardwood forest	Natural Community	G4G5	S4			Avoyelles, Bossier, Caddo, Calcasieu, Caldwell, Catahoula, Concordia, East Baton Rouge, East Carroll, Franklin, Grant, Iberville, Lincoln, Livingston, Madison, Natchitoches, Orleans, Plaquemines, Rapides, Richland, Sabine, St. Landry, St. Martin, St. Tammany, Tangipahoa, Tensas, Union, Vernon, Webster, West Baton Rouge, West Carroll, Winn	Yes
Hardwood Slope Forest	Hardwood slope forest	Natural Community	G2G3	S3			Bienville, Bossier, Caddo, Caldwell, Catahoula, East Carroll. East Feliciana, Evangeline, Grant, Jackson, La Salle, Natchitoches, Ouachita, Rapides, St. Helena, St. Mary, St. Tammany, Tangipahoa, Union, Washington, West Carroll, West Feliciana	Yes
Calcareous Forest	Calcareous forest	Natural Community	G2?Q	S2			Bossier, Caldwell, Grant, Winn	Yes
Cedar Woodland	Cedar woodland	Natural Community	G1	S1			Caldwell	Yes
Jackson Calcareous Prairie	Jackson calcareous prairie	Natural Community	G1Q	S1			Caldwell, Grant, Winn	

Big Brown Bat	Eptesicus fuscus	Mammal	G5	S2			Allen, Beauregard, Bienville, Bossier, Caldwell, De Soto, Grant, Jackson, La Salle, Lincoln, Natchitoches, Orleans, Ouachita, Rapides, Sabine, St. Helena, Tangipahoa, Tensas, Union, Vernon, West Feliciana, Winn	Yes
Northern Long-eared Bat	Myotis septentrionalis	Mammal	G2G3	S1	Threatened	Threatened	Avoyelles, Bienville, Bossier, Caldwell, Catahoula, De Soto, Grant, Jackson, La Salle, Morehouse, Natchitoches, Ouachita, Rapides, Richland, Sabine, Union, Vernon, Webster, West Feliciana, Winn	
Texas Emerald	Somatochlora margarita	Insect	G2G3	S2			Bienville, Bossier, Caldwell, Claiborne, Jackson, Lincoln, Natchitoches, Ouachita, Rapides, Red River, Webster, Winn	
Dusted Skipper	Atrytonopsis hianna	Insect	G4G5	S3			Bienville, Caldwell, East Baton Rouge, East Feliciana, Grant, Jackson, La Salle, Livingston, Natchitoches, Rapides, St. Helena, Tangipahoa, Vernon, Winn	

Lace-winged Roadside-Skipper	Amblyscirtes aesculapius	Insect	G3G4	S3			Bossier, Caddo, Caldwell, Catahoula, De Soto, East Baton Rouge, East Feliciana, Livingston, Orleans, Red River, St. Helena, St. Landry, St. Tammany, Tangipahoa, West Feliciana	
Chub Shiner	Notropis potteri	Fish	G4	S3			Avoyelles, Bossier, Caddo, Caldwell, Catahoula, Concordia, Grant, Natchitoches, Rapides, Red River	
Ouachita Fencing Crawfish	Faxonella creaseri	Crustacean	G2	S2			Avoyelles, Bienville, Caldwell, Catahoula, Claiborne, Grant, Jackson, La Salle, Lincoln, Natchitoches, Ouachita, Rapides, Red River, Union, Webster, Winn	Yes
Pine Hills Digger	Fallicambarus dissitus	Crustacean	G3	S2			Beauregard, Bienville, Calcasieu, Caldwell, Claiborne, Grant, La Salle, Lincoln, Winn	
Vernal Crawfish	Procambarus viaeviridis	Crustacean	G5	S1			Caldwell, Concordia, Franklin, Morehouse, Ouachita, Tensas	

Bald Eagle	Haliaeetus leucocephalus	Bird	G5	S3	Delisted	Delisted	Ascension, Assumption, Avoyelles, Beauregard, Bienville, Bossier, Caddo, Calcasieu, Caldwell, Cameron, Catahoula, Claiborne, Concordia, De Soto, East Baton Rouge, Franklin, Grant, Iberia, Iberville, Jackson, Jefferson, La Salle, Lafourche, Livington, Morehouse, Natchitoches, Orleans, Ouachita, Plaquemines, Pointe Coupee, Rapides, Red River, Richland, Sabine, St. Bernard, St. Charles, St. James, St. John the Baptist, St. Landry, St. Martin, St. Mary, St. Tammany, Tangipahoa, Tensas, Terrebonne, Union, Vermilion, West Baton Rouge, West Feliciana	Yes
White-breasted Nuthatch	Sitta carolinensis	Bird	G5	S3			Caddo, Caldwell, Claiborne, Grant, Winn	

Waterbird Nesting Colony	Colonial Waterbird Nesting Area	Animal Aggregation	GNR	SNR			Acadia, Allen, Ascension, Assumption, Avoyelles, Beauregard, Bossier, Caddo, Calcasieu, Caldwell, Cameron, Catahoula, Concordia, Evangeline, Franklin, Grant, Iberia, Iberville, Jefferson, Jefferson Davis, Lafourche, Livingston, Madison, Morehouse, Natchitoches, Orleans, Ouachita, Plaquemines, Pointe Coupee, Rapides, Red River, Richland, Sabine, St. Bernard, St. Charles, St. James, St. John the Baptist, St. Landry, St. Martin, St. Mary, St. Tammany, Tangipahoa, Tensas, Terrebonne, Vermilion, Vernon, Washington, Webster, West Baton Rouge, West Feliciana

Louisiana Department of Wildlife and Fisheries
PO Box 98000
2000 Quail Drive
Baton Rouge, LA 70898
800.256.2749
225.765.2800
CONTACT US

APPENDIX C
USACE JURISDICTIONAL DETERMINATION

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, VICKSBURG DISTRICT
4155 CLAY STREET
VICKSBURG, MISSISSIPPI 39183-3435

December 13, 2021

Regulatory Division

SUBJECT: Jurisdictional Determination – Eagle Environmental Services, Incorporated, Proposed Economic Development Site, Port of Columbia, Caldwell Parish, Louisiana; MVK-2015-207

Mr. Howard Nass
Gulf South Research Corporation
8081 Innovation Park Drive
Baton Rouge, Louisiana 70820

Dear Mr. Nass:

This is in response to your request for a jurisdictional determination for the subject property that encompasses approximately 170 acres located in section 48, T14N-R4E, Caldwell Parish, Louisiana. The location of the property is depicted on the enclosed project map (enclosure 1).

Based upon the information provided, it appears that there are jurisdictional wetlands and other waters of the United States located within the boundary of the property subject to regulation pursuant to Section 404 of the Clean Water Act. The approximate extent of jurisdictional waters of the United States is depicted on the enclosed map (enclosure 1). Any work involving the discharge of dredged or fill material (land clearing, ditching, filling, leveeing, dredging, culvert crossings, etc.) within the identified jurisdictional waters will require a Department of the Army Section 404 permit prior to beginning work. For your information, I have enclosed an appeals form for this preliminary determination (enclosure 2).

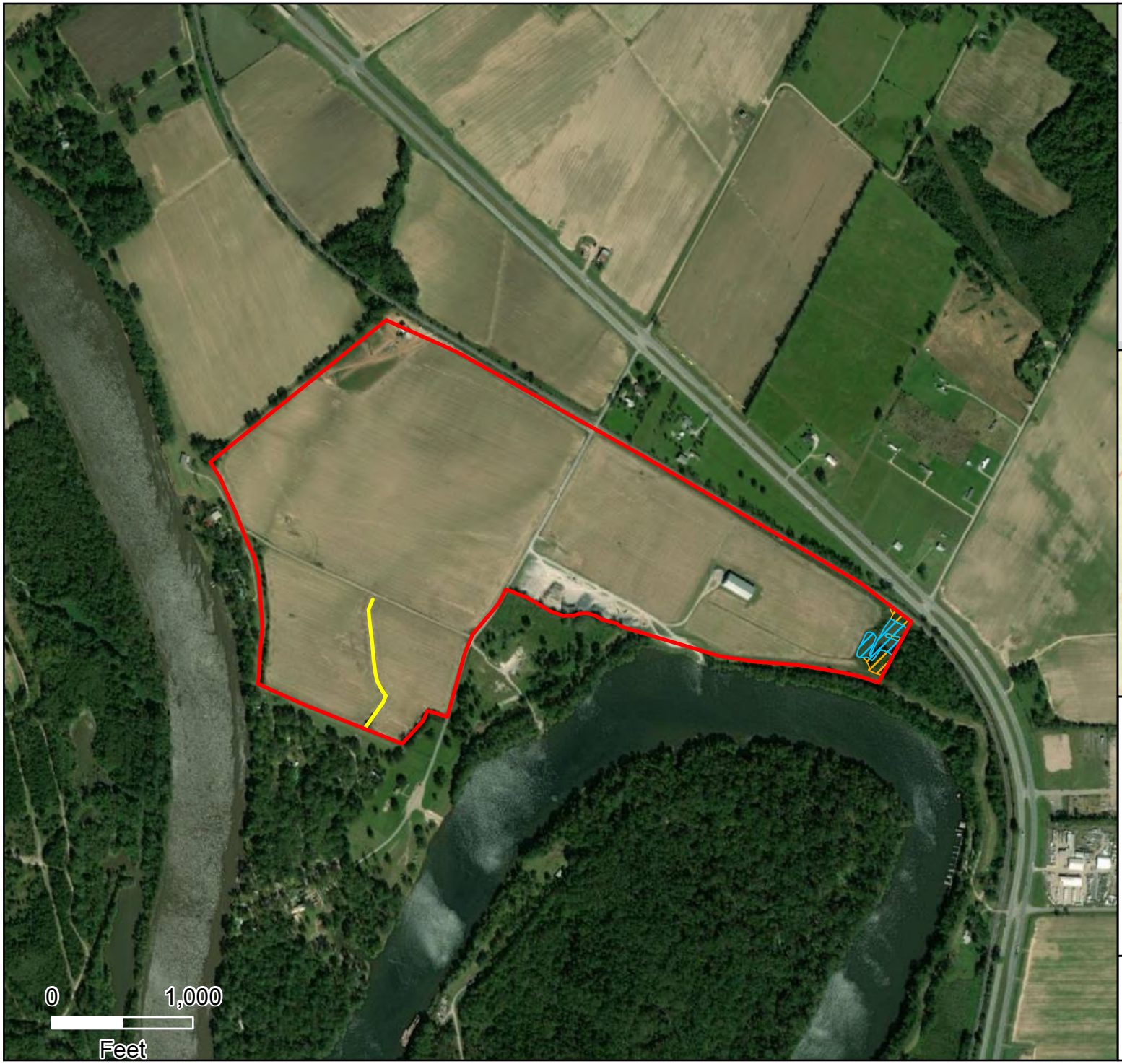
For your convenience, I am enclosing a Department of the Army permit application package, with instructions (enclosure 3). Your application for any proposed work in jurisdictional wetlands or other waters of the United States should be submitted at least 120 days in advance of the proposed starting date. To expedite the evaluation process, please refer to Identification No. MVK-2015-207, when submitting the application.

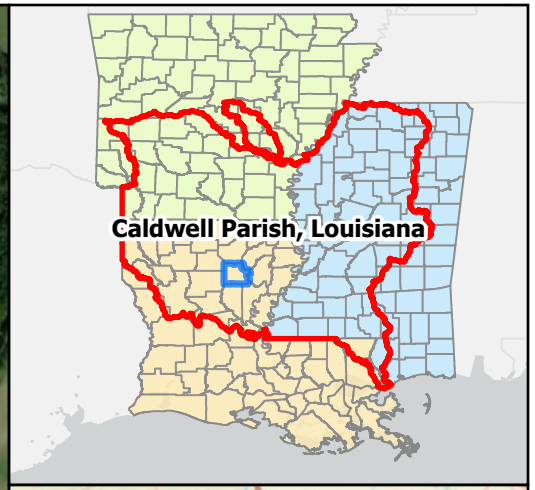
If you have any questions, please contact Mr. Bryton Hixson of this office, telephone 601-631-5591, or e-mail address: bryton.k.hixson@usace.army.mil.

Sincerely,

Gerald G. Bourne
Acting Chief, Enforcement and Compliance Branch
Regulatory Division

Enclosures





Legend

- Project Boundary
- Potentially Jurisdictional Water (987 LF)
- Potentially Jurisdictional Pond (1.1 ac.)
- Potentially Jurisdictional Wetlands (0.75 ac.)

*There are jurisdictional wetlands and other waters of the U.S. within the project boundary; therefore, any activity involving the discharge of dredged or fill material requires a permit.

N

MVK-2015-207
Port of Columbia: Economic Development

Preliminary JD

13 December 2021
Bryton Hixson

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, VICKSBURG DISTRICT
4155 CLAY STREET
VICKSBURG, MISSISSIPPI 39183-3435

August 17, 2022

Regulatory Division

SUBJECT: Preliminary Jurisdictional Determination – Eagle Environmental Services Biofuels Hatten and Carr Sections 41 and 48 T14N-R4E and Section 18, T14N-R3E; Caldwell Parish, Louisiana; MVK-2022-524

Mr. Beau Rapier
Gulf South Research Corporation
8081 Innovation Park Drive
Baton Rouge, Louisiana 70820

Dear Mr. Rapier:

This is in response to your request for a preliminary jurisdictional determination for the subject property located in Caldwell Parish, Louisiana. The location of the property is depicted on the enclosed project map (enclosure 1).

Based upon the information provided, there appear to be jurisdictional waters of the United States located within the property boundary subject to regulation pursuant to Section 404 of the Clean Water Act. Any work involving the discharge of dredged or fill material (land clearing, ditching, filling, leveeing, culvert crossings, etc.) within the identified jurisdictional waters (including work within the ordinary high-water elevation of streams) will require a Department of the Army Section 404 permit prior to beginning work. Please note that this determination is preliminary and should be used for planning purposes only. A final determination of permit requirement will be made upon the submission of a permit application with detailed project plans. For your information, I have enclosed a copy of the appeals form (enclosure 2).

For your convenience, an application packet may be obtained at our Regulatory Program webpage: http://www.mvk.usace.army.mil/Missions/Regulatory/Permits.aspx. I have also enclosed a Department of the Army permit application package with instructions (enclosure 3). Your application for any proposed work in jurisdictional wetlands or other waters of the United States should be submitted at least 120 days in advance of the proposed starting date. To expedite the evaluation process, please refer to Identification No. MVK-2022-524 when submitting the application.

This determination of Department of the Army regulatory requirements does not convey any property rights, either in real estate or material or any exclusive privileges and does not authorize any injury to property or invasion of rights or local laws or regulations or obviate the requirement to obtain state or local assent required by law for the activity discussed herein.

If you have any questions, please refer to Identification No. MVK-2022-524, and contact Mr. Andy Sanderson of this office, telephone 601-631-5083, or e-mail address: Andy.Sanderson@usace.army.mil.

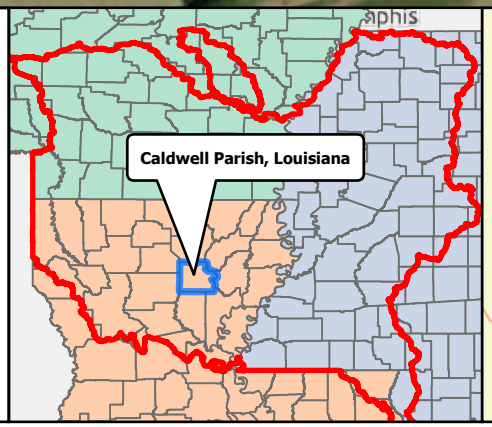
Sincerely,

Jeremy Stokes
Team Lead, Enforcement and Compliance Branch
Regulatory Division

Enclosures

Legend

- Project Boundary
- Jurisdictional Non-RPW - 2,113 lf
- PFO Wetlands - 0.16 ac



17 August 2022

MVK-2022-524

Eagle Environmental Services, Inc. Biofuels Hatten and Carr Sections 41 and 48, T14N-R4E and Section 18, T14N-R3E

Caldwell Parish, Louisiana

Preliminary Jurisdictional Determination

Andy Sanderson

US Army Corps of Engineers

N

Regulatory Division

Enforcement Branch

0 580

Feet

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, VICKSBURG DISTRICT
4155 CLAY STREET
VICKSBURG, MISSISSIPPI 39183-3435

August 22, 2022

Regulatory Division

SUBJECT: Preliminary Jurisdictional Determination – Eagle Environmental Services JD Request for Sections 24, 40, & 43, T14N-R3E and Sections 19 & 41, T14N-R4E, Caldwell Parish, Louisiana; MVK-2022-525

Mr. Beau Rapier
Gulf South Research Corporation
8081 Innovation Park Drive
Baton Rouge, Louisiana 70820

Dear Mr. Rapier:

This is in response to your request for a preliminary jurisdictional determination for the subject property located in Caldwell Parish, Louisiana. The location of the property is depicted on the enclosed project map (enclosure 1).

Based upon the information provided, there appear to be jurisdictional waters of the United States located within the property boundary subject to regulation pursuant to Sections 10 of the Rivers and Harbors Act and 404 of the Clean Water Act. Any work involving the discharge of dredged or fill material (land clearing, ditching, filling, leveeing, culvert crossings, etc.) within the identified jurisdictional waters (including work within the ordinary high-water elevation of streams) will require a Department of the Army Section 10 and/or 404 permit prior to beginning work. Please note that this determination is preliminary and should be used for planning purposes only. A final determination of permit requirement will be made upon the submission of a permit application with detailed project plans. For your information, I have enclosed a copy of the appeals form (enclosure 2).

For your convenience, an application packet may be obtained at our Regulatory Program webpage: http://www.mvk.usace.army.mil/Missions/Regulatory/Permits.aspx. I have also enclosed a Department of the Army permit application package with instructions (enclosure 3). Your application for any proposed work in jurisdictional wetlands or other waters of the United States should be submitted at least 120 days in advance of the proposed starting date. To expedite the evaluation process, please refer to Identification No. MVK-2022-525 when submitting the application.

This determination of Department of the Army regulatory requirements does not convey any property rights, either in real estate or material or any exclusive privileges and does not authorize any injury to property or invasion of rights or local laws or regulations or obviate the requirement to obtain state or local assent required by law for the activity discussed herein.

The applicant should also be informed that a separate authorization may be required by the U.S. Army Corps of Engineers pursuant to 33 U.S.C. 408 if the proposed project could potentially alter, temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project (i.e., levee). In order to determine whether this authorization would be required, please contact Mr. Neal Lewis at (601) 631-7493, or by email: Neal.Lewis@usace.army.mil.

If you have any questions, please refer to Identification No. MVK-2022-525, and contact Mr. Andy Sanderson of this office, telephone 601-631-5083, or e-mail address: Andy.Sanderson@usace.army.mil.

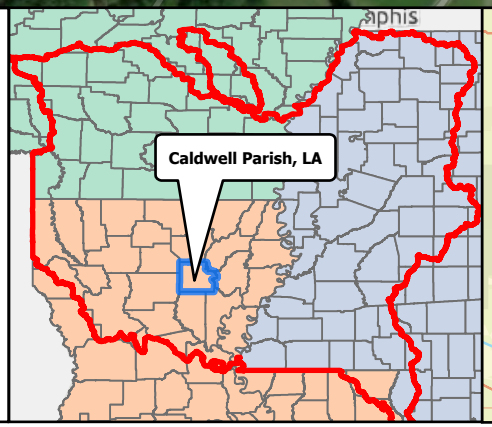
Sincerely,

Jeremy Stokes
Team Lead, Enforcement and Compliance Branch
Regulatory Division

Enclosures

Legend

- Project Boundary
- Jurisdictional Section 10 Water - 2.40 ac



20 August 2022

MVK-2022-525

Eagle Environmental Services JD Request for Sections 24, 40, & 43, T14N-R3E and Sections 19 & 41, T14N-R4E

Caldwell Parish, Louisiana

Preliminary Jurisdictional Determination Map B

Andy Sanderson

US Army Corps of Engineers

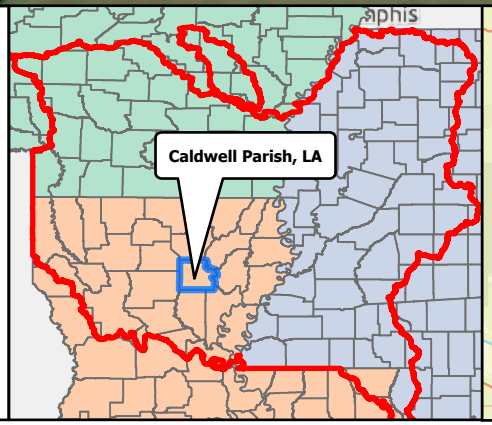
N

Regulatory Division
Enforcement Branch

0 520
Feet

Legend

- Project Boundary
- Jurisdictional Non-RPW - 993 lf



20 August 2022

MVK-2022-525

Eagle Environmental Services JD Request for Sections 24, 40, & 43, T14N-R3E and Sections 19 & 41, T14N-R4E

Caldwell Parish, Louisiana

Preliminary Jurisdictional Determination Map A

Andy Sanderson

US Army Corps of Engineers

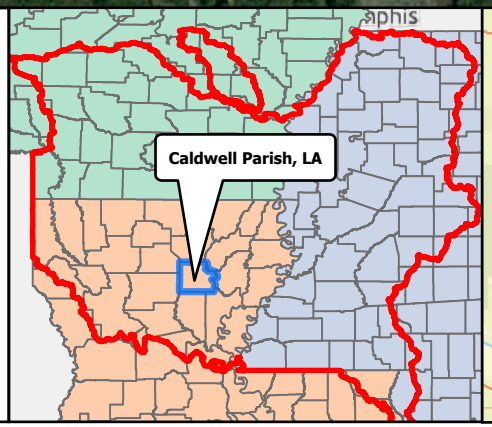
N

Regulatory Division
Enforcement Branch

0 250
Feet

Legend

- Project Boundary
- Jurisdictional Section 10 Water - 2.40 ac
- Jurisdictional Non-RPW - 993 lf



20 August 2022

MVK-2022-525

Eagle Environmental Services JD Request for Sections 24, 40, &43, T14N-R3E and Sections 19 &41, T14N-R4E

Caldwell Parish, Louisiana

Preliminary Jurisdictional Determination

Andy Sanderson

US Army Corps of Engineers

N

Regulatory Division
Enforcement Branch

0 1,000
Feet

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, VICKSBURG DISTRICT
4155 CLAY STREET
VICKSBURG, MISSISSIPPI 39183-3435

December 14, 2021

Regulatory Division

SUBJECT: Strategic Biofuels, LLC, Eagle Environmental Services, PJD Request on 114 Acre Tract, Caldwell Parish, Louisiana- MVK-2021-984

Mr. Howard Nass
Gulf South Research Corporation
8081 Innovation Park Drive
Baton Rouge, Louisiana 70820

Dear Mr. Nass:

I refer to your jurisdictional determination request for the subject 114-acre site located in sections 43 and 49, T14N-R3E, and sections 41 and 48, T14N-R4E, Caldwell Parish, Louisiana. The location of the property is depicted on the enclosed map (enclosure 1).

Based upon the information provided, there appears to be jurisdictional wetlands and other waters of the United States located within the project boundary subject to regulation pursuant to Section 404 of the Clean Water Act. Any work involving the discharge of dredged or fill material (land clearing, ditching, filling, leveeing, culvert crossings, etc.) within the identified jurisdictional wetlands will require a Department of the Army Section 404 permit prior to beginning work. For your convenience, I have enclosed a copy of our appeals form for this preliminary determination (enclosure 2).

This determination of Department of the Army regulatory requirements does not convey any property rights, either in real estate or material or any exclusive privileges and does not authorize any injury to property or invasion of rights or local laws or regulations or obviate the requirement to obtain state or local assent required by law for the activity discussed herein.

For your convenience, an application packet may be obtained at our Regulatory Program webpage: http://www.mvk.usace.army.mil/Missions/Regulatory/Permits.aspx. An application for work in wetlands or other waters of the United States should be submitted at least 120 days in advance of the proposed starting date. To expedite the evaluation process, please refer to Identification No. MVK-2021-984, when submitting the application or requesting project updates.

If you have any questions, please contact Mr. Durham Norman, of this office, telephone 601-631-7478, or e-mail address: Durham.A.Norman@usace.army.mil.

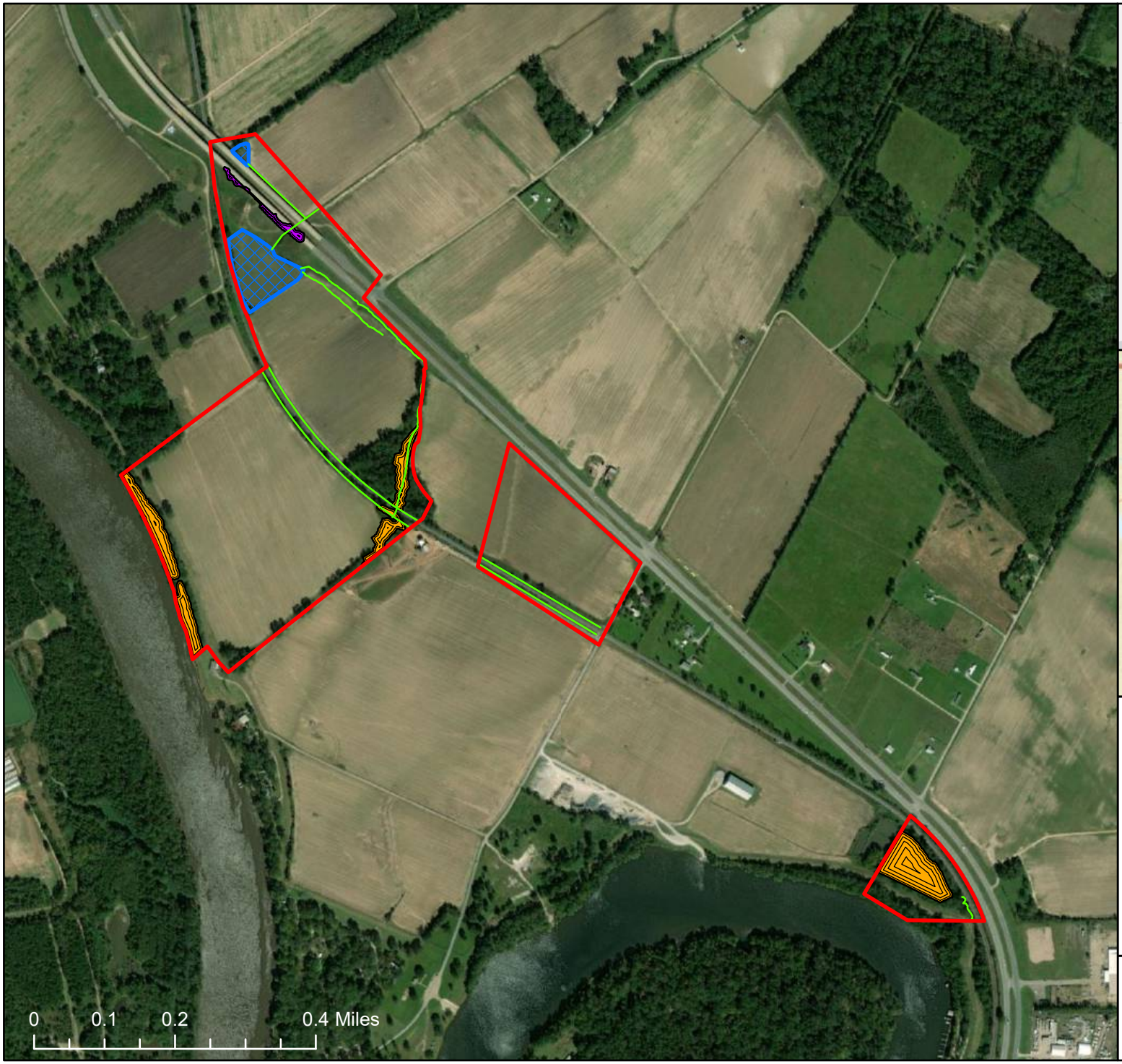
Sincerely,

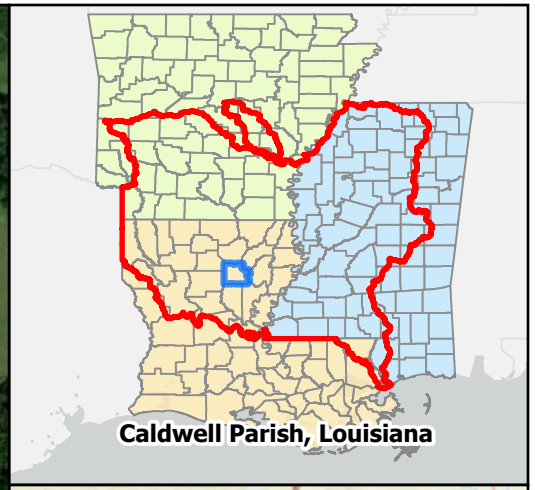
Jeremy Stokes

For

Gerald G. Bourne
Acting Chief, Enforcement and Compliance Branch
Regulatory Division

Enclosures





Legend

- Project Location (142.50 acres)
- Jurisdictional Non-RPW (10,480.58 LF)
- Palustrine Forested Wetland (5.65 acres)
- Palustrine Emergent Wetland (0.65 acres)
- Open Water Feature (4.53 acres)

*There are jurisdictional wetlands and other waters of the U.S. within the confines of the project area.
ENCLOSURE 1

N

MVK-2021-984
143-Acre Tract: Caldwell Parish, Louisiana

Preliminary Jurisdictional Determination

14 Dec. 2021
Durham Norman

APPENDIX D
AIR QUALITY MODEL PROJECTIONS

APPENDIX E
EJSCREEN

EJScreen Report (Version 2.1)

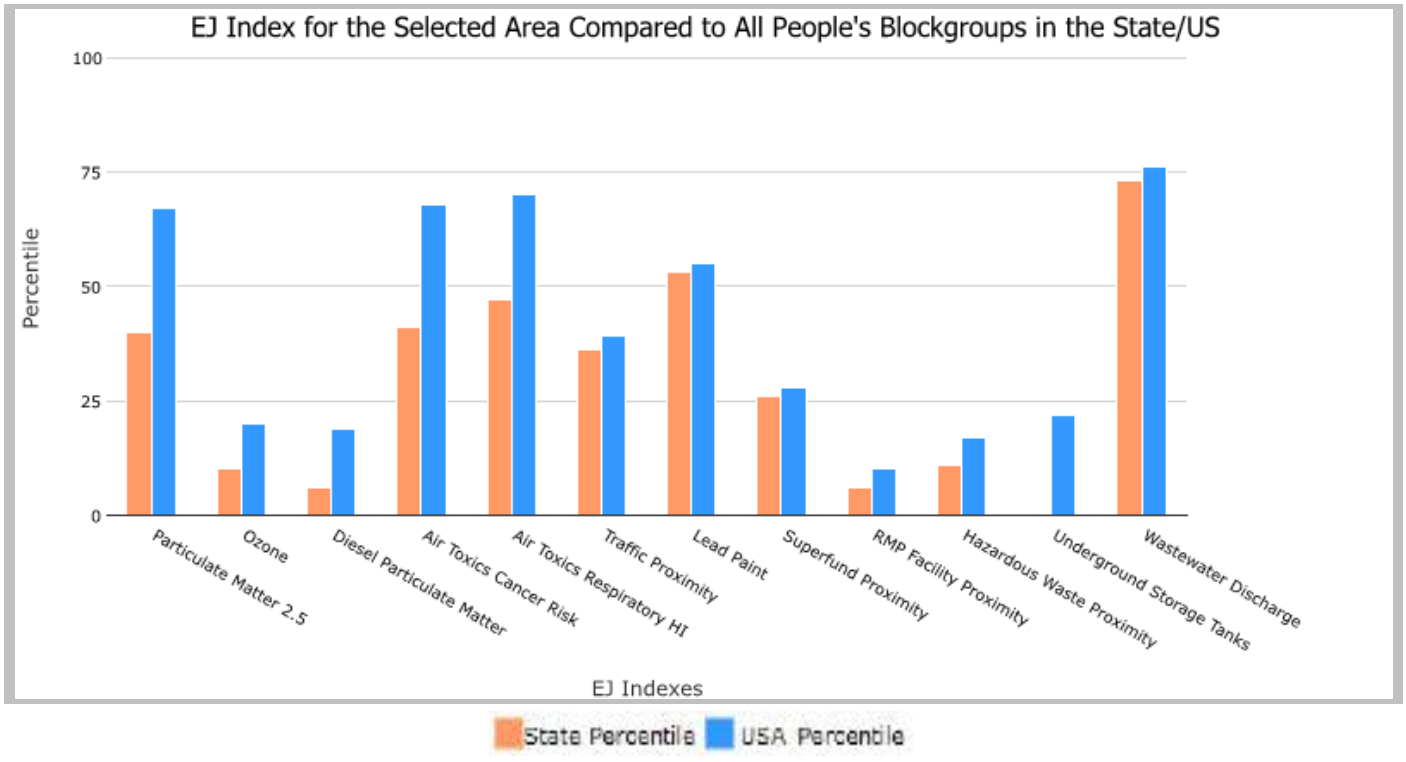
3 miles Ring around the Area, LOUISIANA, EPA Region 6

Approximate Population: 211

Input Area (sq. miles): 40.43

LGF Biorefinery 3 Mile

Selected Variables	State Percentile	USA Percentile
Environmental Justice Indexes		
EJ Index for Particulate Matter 2.5	40	67
EJ Index for Ozone	10	20
EJ Index for Diesel Particulate Matter*	6	19
EJ Index for Air Toxics Cancer Risk*	41	68
EJ Index for Air Toxics Respiratory HI*	47	70
EJ Index for Traffic Proximity	36	39
EJ Index for Lead Paint	53	55
EJ Index for Superfund Proximity	26	28
EJ Index for RMP Facility Proximity	6	10
EJ Index for Hazardous Waste Proximity	11	17
EJ Index for Underground Storage Tanks	0	22
EJ Index for Wastewater Discharge	73	76



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

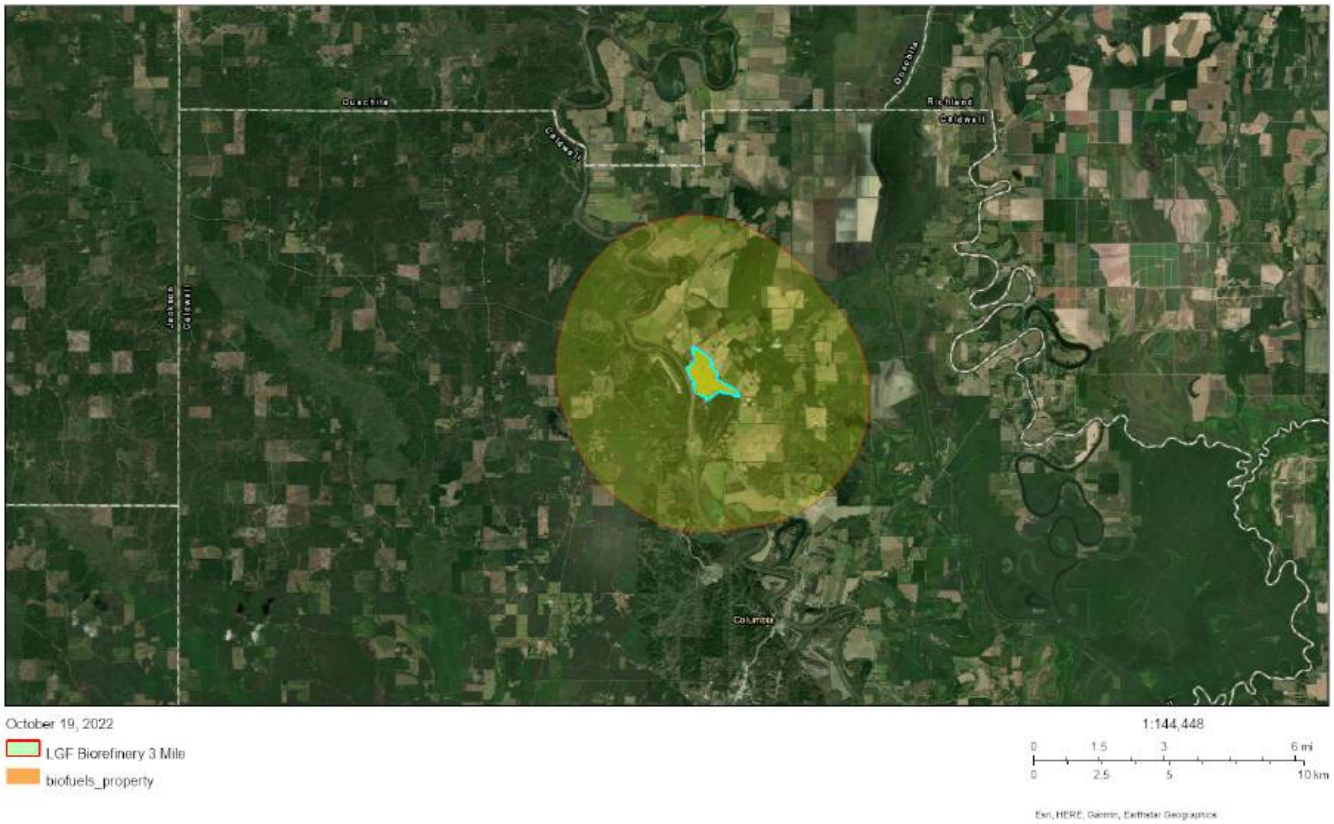
EJScreen Report (Version 2.1)

3 miles Ring around the Area, LOUISIANA, EPA Region 6

Approximate Population: 211

Input Area (sq. miles): 40.43

LGF Biorefinery 3 Mile



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

EJScreen Report (Version 2.1)

3 miles Ring around the Area, LOUISIANA, EPA Region 6

Approximate Population: 211

Input Area (sq. miles): 40.43

LGF Biorefinery 3 Mile

Selected Variables	Value	State Avg.	%ile in State	USA Avg.	%ile in USA
Pollution and Sources					
Particulate Matter 2.5 (µg/m^3)	8.83	9.2	29	8.67	57
Ozone (ppb)	34.7	37	6	42.5	10
Diesel Particulate Matter* (µg/m^3)	0.0799	0.297	3	0.294	<50th
Air Toxics Cancer Risk* (lifetime risk per million)	30	40	52	28	80-90th
Air Toxics Respiratory HI*	0.4	0.45	62	0.36	80-90th
Traffic Proximity (daily traffic count/distance to road)	53	640	26	760	24
Lead Paint (% Pre-1960 Housing)	0.12	0.2	46	0.27	37
Superfund Proximity (site count/km distance)	0.017	0.076	18	0.13	14
RMP Facility Proximity (facility count/km distance)	0.042	0.96	3	0.77	4
Hazardous Waste Proximity (facility count/km distance)	0.042	1.4	6	2.2	7
Underground Storage Tanks (count/km^2)	0.0037	2.2	0	3.9	0
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.014	0.37	80	12	72
Socioeconomic Indicators					
Demographic Index	37%	41%	52	35%	61
People of Color	21%	42%	35	40%	41
Low Income	53%	38%	71	30%	83
Unemployment Rate	13%	7%	82	5%	89
Limited English Speaking Households	0%	2%	0	5%	0
Less Than High School Education	7%	14%	33	12%	46
Under Age 5	4%	7%	40	6%	37
Over Age 64	14%	15%	51	16%	46

*Diesel particular matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

For additional information, see: www.epa.gov/environmentaljustice

APPENDIX F
AMERICAN COMMUNITY SUMMARY REPORT

EJSCREEN ACS Summary Report

Location: User-specified polygonal location
Ring (buffer): 3-miles radius
Description: LGF Biorefinery 3 Mile

Summary of ACS Estimates	2016 - 2020
Population	211
Population Density (per sq. mile)	6
People of Color Population	45
% People of Color Population	21%
Households	131
Housing Units	164
Housing Units Built Before 1950	19
Per Capita Income	20,703
Land Area (sq. miles) (Source: SF1)	34.74
% Land Area	97%
Water Area (sq. miles) (Source: SF1)	1.12
% Water Area	3%

	2016 - 2020 ACS Estimates	Percent	MOE (±)
Population by Race			
Total	211	100%	199
Population Reporting One Race	211	100%	366
White	167	79%	192
Black	34	16%	91
American Indian	10	5%	41
Asian	0	0%	14
Pacific Islander	0	0%	14
Some Other Race	0	0%	14
Population Reporting Two or More Races	0	0%	14
Total Hispanic Population	1	0%	20
Total Non-Hispanic Population	210		
White Alone	166	79%	190
Black Alone	34	16%	91
American Indian Alone	10	5%	41
Non-Hispanic Asian Alone	0	0%	14
Pacific Islander Alone	0	0%	14
Other Race Alone	0	0%	14
Two or More Races Alone	0	0%	14
Population by Sex			
Male	142	67%	131
Female	69	33%	118
Population by Age			
Age 0-4	8	4%	32
Age 0-17	20	9%	56
Age 18+	191	91%	154
Age 65+	30	14%	94

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. **Source:** U.S. Census Bureau, American Community Survey (ACS) 2016 - 2020 .

EJSCREEN ACS Summary Report

Location: User-specified polygonal location
Ring (buffer): 3-miles radius
Description: LGF Biorefinery 3 Mile

	2016 - 2020 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	160	100%	179
Less than 9th Grade	7	5%	39
9th - 12th Grade, No Diploma	4	3%	86
High School Graduate	49	31%	109
Some College, No Degree	52	32%	74
Associate Degree	0	0%	0
Bachelor's Degree or more	47	30%	79
Population Age 5+ Years by Ability to Speak English			
Total	203	100%	199
Speak only English	203	100%	179
Non-English at Home[1+2+3+4]	0	0%	14
[1]Speak English "very well"	0	0%	14
[2]Speak English "well"	0	0%	14
[3]Speak English "not well"	0	0%	14
[4]Speak English "not at all"	0	0%	14
[3+4]Speak English "less than well"	0	0%	14
[2+3+4]Speak English "less than very well"	0	0%	14
Linguistically Isolated Households*			
Total	0	0%	14
Speak Spanish	0	0%	14
Speak Other Indo-European Languages	0	0%	14
Speak Asian-Pacific Island Languages	0	0%	14
Speak Other Languages	0	0%	14
Households by Household Income			
Household Income Base	131	100%	108
< $15,000	62	47%	98
$15,000 - $25,000	17	13%	40
$25,000 - $50,000	19	15%	54
$50,000 - $75,000	17	13%	63
$75,000 +	16	12%	36
Occupied Housing Units by Tenure			
Total	131	100%	108
Owner Occupied	74	57%	101
Renter Occupied	57	43%	92
Employed Population Age 16+ Years			
Total	192	100%	183
In Labor Force	76	40%	97
Civilian Unemployed in Labor Force	10	5%	36
Not In Labor Force	116	60%	164

Data Note: Datail may not sum to totals due to rounding. Hispanic population can be of anyrace.
N/A means not available. **Source:** U.S. Census Bureau, American Community Survey (ACS)
*Households in which no one 14 and over speaks English "very well" or speaks English only.

EJSCREEN ACS Summary Report

Location: User-specified polygonal location
Ring (buffer): 3-miles radius
Description: LGF Biorefinery 3 Mile

	2016 - 2020 ACS Estimates	Percent	MOE (±)
Population by Language Spoken at Home*			
Total (persons age 5 and above)	521	100%	362
English	521	100%	362
Spanish	0	0%	14
French, Haitian, or Cajun	0	0%	14
German or other West Germanic	0	0%	14
Russian, Polish, or Other Slavic	0	0%	14
Other Indo-European	0	0%	14
Korean	0	0%	14
Chinese (including Mandarin, Cantonese)	0	0%	14
Vietnamese	0	0%	14
Tagalog (including Filipino)	0	0%	14
Other Asian and Pacific Island	0	0%	14
Arabic	0	0%	14
Other and Unspecified	0	0%	14
Total Non-English	0	0%	512

Data Note: Detail may not sum to totals due to rounding. Hispanic popultion can be of any race.
N/A meansnot available. **Source:** U.S. Census Bureau, American Community Survey (ACS) 2016 - 2020.
*Population by Language Spoken at Home is available at the census tract summary level and up.

APPENDIX G
EJSCREEN 2010

EJSCREEN Census 2010 Summary Report

Location: User-specified polygonal location
Ring (buffer): 3-miles radius
Description: LGF Biorefinery 3 Mile

Summary	Census 2010
Population	309
Population Density (per sq. mile)	7
People of Color Population	66
% People of Color Population	21%
Households	147
Housing Units	184
Land Area (sq. miles)	41.69
% Land Area	97%
Water Area (sq. miles)	1.24
% Water Area	3%

Population by Race	Number	Percent
Total	309	-------
Population Reporting One Race	306	99%
White	250	81%
Black	54	18%
American Indian	1	0%
Asian	1	0%
Pacific Islander	0	0%
Some Other Race	1	0%
Population Reporting Two or More Races	3	1%
Total Hispanic Population	10	3%
Total Non-Hispanic Population	299	97%
White Alone	243	79%
Black Alone	52	17%
American Indian Alone	0	0%
Non-Hispanic Asian Alone	1	0%
Pacific Islander Alone	0	0%
Other Race Alone	0	0%
Two or More Races Alone	3	1%

Population by Sex	Number	Percent
Male	147	47%
Female	162	53%

Population by Age	Number	Percent
Age 0-4	21	7%
Age 0-17	77	25%
Age 18+	232	75%
Age 65+	45	15%

Households by Tenure	Number	Percent
Total	147	
Owner Occupied	117	80%
Renter Occupied	30	20%

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.
Source: U.S. Census Bureau, Census 2010 Summary File 1.