

From: [Peer, Waymon T.](#)
To: [Assenza, Adam](#)
Cc: [Johnson, Jay C.](#); [Kelsey Calvez](#); [Tom Dixon](#); [Nina Reins](#); [Whitney Broussard](#)
Subject: FD 36633 - PPHD - NOGC Mainline Extension Project Information Paper
Date: Friday, August 8, 2025 10:09:15 AM
Attachments: [2025.08.08 - PPHD - NOGC Mainline Extension Project Information Paper.pdf](#)
[LGT Mainline Extension Project - Environmental Constraints Assessment 2022-11-02.pdf](#)
[LGP Mainline Rail Extension Alignment \(2025 07-22\).kmz](#)

Adam,

Please find attached the Information Paper regarding the NOGC Mainline Extension Project that is being proposed by our client, the Plaquemines Port Harbor and Terminal District.

Additionally, we have included the .kmz files and an Environmental Constraints Assessment prepared by WSP, USA. Please note that we are working to get updated design drawings and expect to have them soon.

With the referenced attachments and forthcoming design drawings, this should respond to the email information request we received from FNI on July 22, 2025.

Please do not hesitate to contact us if you should have any questions.

Best,

Waymon

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Information Paper

Extension of the New Orleans & Gulf Coast Railroad Mainline Project

Plaquemines Port Harbor and Terminal District

August 8, 2025

1.0 Background

The New Orleans & Gulf Coast Railroad Mainline Extension Project (“NOGC Mainline Extension Project”) is a proposed 10-mile rail extension in Plaquemines Parish, Louisiana. The rail extension would start at the current end of the existing New Orleans and Gulf Coast Railway (“NOGC”) line and run to the future site of a 200-acre container terminal facility known as the Louisiana Gateway Container Terminal. The Louisiana Gateway Container Terminal is a joint effort between the Plaquemines Port Harbor and Terminal District¹ (“PPHTD”) and APM Terminals to develop a state-of-the-art container terminal on the west bank of the Mississippi River capable of handling the largest container ships going through the Panama Canal.

Once the NOGC Mainline Extension Project is complete, NOGC will operate and maintain the line. NOGC currently operates a 32-mile former Union Pacific Railroad (“UP”) branch line outside New Orleans that connects with the UP mainline in Westwego, Louisiana. This UP line serves over 20 switching and industrial customers and is the only railroad operating east of Avondale, Louisiana on the west bank of the Mississippi River.

Construction of the NOGC Mainline Extension Project is being sponsored by PPHTD, a public corporation and political subdivision of the State of Louisiana that is governed by the Plaquemines Parish Commission Council. PPHTD’s territorial jurisdiction includes all of Plaquemines Parish, making it geographically one of the nation’s largest seaports. Within that jurisdiction, PPHTD’s vision is to be the leading international gateway port in the Gulf, helping existing customers continue to grow and attracting new business partners using bigger ships from Asia, South America, and Europe.

2.0 Project Overview

The NOGC Mainline Extension Project area stretches from just above Ironton, Louisiana in the north to Woodland, Louisiana in the south, generally following the Mississippi River. The area in which the project will be built has long been used for industrial purposes and is commonly referred to as the “industrial corridor.” Given the area’s industrial nature, the rail project will have little-to-no negative impact to the current land use. Indeed, PPHTD is the majority landowner in the project area, and it is committed to working with the remaining private owners, companies, and developers to ensure minimal impacts. The map below shows PPHTD’s preferred rail route through the industrial corridor:

¹ Since this project began, PPHTD has been rebranded as the Louisiana Gateway Port. However, for consistency with all application and petition materials, the applicant will continue the project using the name PPHTD.

Figure 1: Overview of Proposed Route. The bright green line on this map is PPHTD's preferred rail alignment in the industrial corridor, which is largely unchanged from past proposals. The blue dots show where the route has been shifted to minimize effects on the Ironton community.



The NOGC Mainline Extension Project will use continuous welded rail to extend NOGC's line about 10 miles south to the future Louisiana Gateway Container Terminal. The Louisiana Gateway Container Terminal will accept the largest vessels currently traversing the Panama Canal. It will be designed to transload containers from those ocean vessels to river vessel. It will also be able to transload containers for transportation by truck. The NOGC Mainline Extension Project would add rail transloading capability.

To accommodate this rail traffic from the Louisiana Gateway Container Terminal, PPHTD seeks Surface Transportation Board ("STB") authority to construct and operate a new rail line within a right-of-way that will vary between 40 feet and 100 feet in width. The project would also include an 8,000-foot siding.

3.0 Project Purpose and Need

The NOGC Mainline Extension Project is needed because the future Louisiana Gateway Container Terminal lacks rail access. Without rail, when that facility receives containers, they would have to be transported by truck or river-going vessel. Those modes of transportation are often less efficient than rail. Adding a rail extension would thus make the Louisiana Gateway Container Terminal both more environmentally friendly and more attractive to shippers by enhancing multi-modal options.

Given this need, the purpose of the NOGC Mainline Extension Project is to build a rail corridor that connects the future Louisiana Gateway Container Terminal to the Class I railroad network via NOGC.

The NOGC Mainline Extension Project would also create economic development opportunities in Plaquemines Parish. The project area parallels the Mississippi River, where several river-based operations for commodities such as liquid bulk and dry bulk (including agricultural grains and aggregates) are already established. While nothing is reasonably foreseeable, a rail corridor could give these existing operations an opportunity to add inland transport capabilities and diversify their operations. The proposed rail corridor also includes a facility owned by Venture Global Plaquemines Liquefied Natural Gas (LNG) LLC and large tracts of undeveloped land, as well as land that is now being developed by private industry. Potential future development along the rail corridor would become more commercially attractive with rail service.

4.0 Proposed Action and Alternatives

PPHTD has evaluated potential routes that would meet the project purpose and need by connecting the proposed new rail corridor to the national rail network. Based on this evaluation, PPHTD has identified two potential route options: Option A and Option B. Option A is shown in

Figure 1 above and has been improved from its previous submission, as discussed further below. Option B is unchanged from past submissions.

Option A, as shown in the accompanying .kmz files, is PPHTD's preferred option. It runs from the NOGC mainline and extends south to Station 474+49, generally following Louisiana Highway 23 and parts of the old New Orleans and Lower Coast Railroad roadbed that historically operated from 1890 into the 1970s. Starting at the NOGC mainline near Myrtle Grove, Louisiana, as this route approaches Ironton, Louisiana, it dips south, away from the river and towards Highway 23, to avoid the town and a communications tower nearby. After passing the International Marine Terminal, it continues south along Highway 23 to its proposed operational terminus in Woodlands, Louisiana. This route is generally similar to the one proposed in 2022, but it is routed further south to entirely avoid Ironton, benefitting residents there by eliminating any impact to the Ironton athletic field and going around the Entergy communications tower.

Option B also starts at the NOGC mainline and extends further south to Station 499+25. No adjustments or modifications have been made to the Option B alternative since the 2022 Information Paper. For several reasons, Option B remains an inferior alternative. Besides having greater social and environmental impacts, Option B moves south from NOGC's mainline to the future terminal and has to cross Highway 23 twice—once as it moves south from the NOGC mainline and a second time as it moves back north to the terminal site. Given the traffic on Highway 23 and the fact that the highway serves as a hurricane evacuation route, both crossings would have to be grade-separated. These features make Option B infeasible from a cost and logistics perspective. For these reasons, Option B was eliminated from detailed consideration and PPHTD does not recommend its inclusion within the Environmental Assessment.

To understand the potential environmental impacts of both route options, PPHTD relied on a November 2022 report prepared by Golder Associates USA Inc. that studied a 400-foot area surrounding each route. Because the route options have generally remained unaltered,² PPHTD continues to rely on data from the 2022 Golder Sustainability Evaluation Tool ("GoldSET"), which considers several environmental, social, and technical indicators within the study area. The GoldSET analysis showed that the area around Option A contained the fewest emergent wetlands, the least woodland landcover, oil and gas wells, and several buildings. As a result, GoldSET concluded that Option A would have the least environmental and social impact. Indeed, the GoldSET analysis shows that Option A would have no significant environmental impacts. Further, to confirm the accuracy of this analysis, PPHTD also relies on Freese and Nichols (FNI) to conduct an additional assessment pursuant to the parties agreement.

² As noted above, PPHTD now proposes shifting the alignment even further away from the Ironton community. This change means that "Alignment C" in the Golder report is no longer relevant.

5.0 Potential Environmental Effects

PPHTD understands that the STB Office of Environmental Analysis' ("OEA") third-party contractor (FNI) will evaluate the potential environmental effects of the project under the National Environmental Policy Act and other relevant laws. To assist in that effort, PPHTD notes the following environmental issues:

- The proposed route crosses only one road. Because there is little reason to believe that trains will stop while traveling, delays should be minimal.
- There are few if any residences that will experience noise and vibration from the NOGC Mainline Extension Project. PPHTD has already been working with the Ironton community to ensure that any such impacts are mitigated, including by making the routing change described above that places it furthest from the community.
- Because the proposed route largely parallels Highway 23 at or near its right-of-way, the route is not pristine. Impacts to existing water resources, wetlands and biological resources will be minimal, and PPHTD will mitigate any such impacts as required by state and federal law.
- The air quality impacts from 2–3 trains per week will be minimal. Indeed, if that same traffic were to move by truck, the air quality impacts would be significantly greater.

Because PPHTD expects the project to have minimal environmental impacts it intends to send a letter asking that OEA consider preparing an Environmental Assessment instead of an Environmental Impact Statement.

6.0 Required Permits and Approvals

PPHTD anticipates obtaining these permits and authorizations for the NOGC Mainline Extension Project:

- USACE Section 404 permit (Nationwide Permit 12, or Programmatic General Permit 1 or 2) for potential impacts to wetlands and waterbodies under USACE jurisdiction.
- USACE Section 408 permit/consultation for work within 1,500 feet of a federally maintained levee.
- USFWS concurrence for potential impacts to federally protected species.
- LADOTD – Louisiana Department of Transportation and Development authorization as it coordinates with federal partners to ensure rail infrastructure compliance with the Louisiana State Rail Plan.

- LDNR OCM – Coastal Use Permit or Exemption concurrence for work within the Louisiana Coastal Zone.
- LDWF LNHP – State protected species concurrence for potential impacts to species protected by the Louisiana Department of Wildlife and Fisheries.
- LDWF Office of State Lands – State Lands approval for impacts to State Lands.
- SHPO – Consultation and concurrence to avoid, minimize, or mitigate impacts to historic or cultural resources.
- Plaquemines Parish – Construction/Coastal Zone approval for construction impacts in Plaquemines Parish.

PPHTD understands that OEA will reach out to these permitting agencies as appropriate.

7.0 Conclusion

PPHTD looks forward to working with OEA to complete the environmental review of the NOGC Mainline Extension Project.



REPORT

LGT Mainline Extension Project
Environmental Constraints Assessment

Submitted to:

Chris Feters

LA23 Development Company, LLC

c/o Sam Matheny

Volkert, Inc.

Submitted by:

WSP USA / Golder Associates Inc.

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April 25, 2022

REVISED May 6, 2022

REVISED November 2, 2022

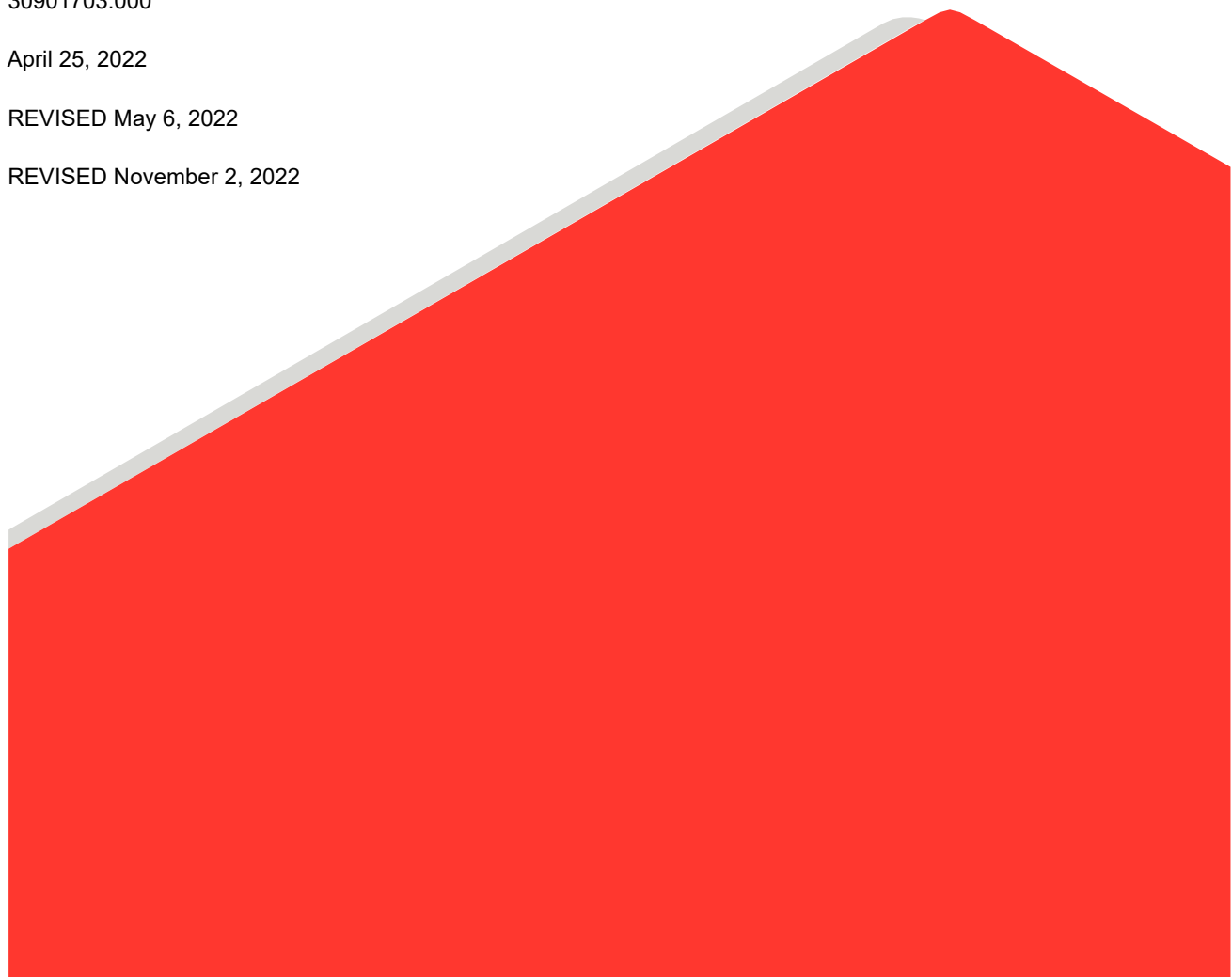


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1.0 INTRODUCTION

Golder Associates USA Inc., a Member of WSP, (Golder) utilized GoldSET® (“Golder Sustainability Evaluation Tool”) to compare alternative alignments for the LA23 LGT Mainline Extension Project (Project) in Plaquemines Parish, Louisiana. This evaluation provides a thorough understanding of the strengths and weaknesses associated with each alternative alignment under consideration. Ultimately the results support the selection of the most appropriate alignment by using a traceable and repeatable approach with publicly available data.

GoldSET is a proprietary tool developed by Golder to implement sustainable development at the operational level by providing a means to better understand and manage business risks associated with projects in the context of our changing environment. The tool was originally developed in 2007 to investigate the sustainability issues involved with environmental remediation projects and is now widely used by several multinational companies in Canada, the USA, Europe, Australia etc. In Canada, Canadian National Railway (CN) has been relying on GoldSET for the past 9 years to support the selection of remediation technologies for all its site clean-up activities. Environment Canada in partnership with Public Works and Government Services Canada are also developing with Golder a similar approach, informed by GoldSET principles, to help manage federal contaminated sites. Golder has also used GoldSET on numerous other occasions across North America, within mining, oil and gas, transportation, manufacturing, and governmental clients.

The multicriteria analysis (MCA) approach was selected as the basis for GoldSET because of its versatility in evaluating alternatives based on a broad range of decision criteria and stakeholder perspectives. The approach was also originally selected based on an international best-practice recommendation for sustainable remediation. MCA has been used in other sustainability assessment tools, sustainable infrastructures, life-cycle assessment, municipal sustainability assessment, and chemical product and process design.

GoldSET provides an intuitive visual representation of results. Impacts are scored and rolled-up into the three dimensions of sustainable development: environmental, social, and technical. For each dimension, the rolled-up score ranges from 0% to 100% — the higher the score, the better the result. The three axes of the triangle illustrate the performance of each option with respect to the three dimensions. Under normal circumstances, the optimal option is illustrated by the largest, most balanced triangle.

The graphical representation of GoldSET results facilitates discussion on the sustainability issues and trade-offs, leading to more effective decisions. Furthermore, through the intuitive graphics, GoldSET can also be used to support the communication among various stakeholders. The framework facilitates communication on the key impacts, benefits, and drawbacks of different alternatives, and provides traceability and transparency throughout the decision-making process.

2.0 METHODOLOGY

The following four alignment alternatives were provided by LA23 for the Project:

- Alignment A
- Alignment B
- Alignment CA
- Alignment CB

Appendix A includes an aerial overview map of the four alignment alternatives. Appendix B includes Environmental Constraints maps for each alignment. Flood Emergency Management Agency (FEMA) Flood Hazard Zone maps for each alignment are shown in Appendix C.

The GoldSET evaluation process for the four alignment alternatives was conducted in four steps as described in the following sections below.

2.1 Step 1: Project Description

The first step of the evaluation is an initial assessment in which Golder reviews the available options/alternatives and identifies potential stakeholders and constraints.

2.2 Step 2: Indicator Selection and Weighting

The second step of the evaluation consisted of Golder selecting and weighting indicators within the Project area to mirror key decision criteria influencing project performance. Numerous environmental, social, and technical indicators were selected and the corresponding dataset for each indicator was downloaded. Refer to Table 1 and Table 2 in Appendix D for lists of reviewed data sources. Each indicator was then provided a weight based on the level of anticipated influence for the Project. These weights were calculated based on environmental knowledge of the site and potential constraints for each alignment. The weight scores indicate the risk on environmental, social, and technical resources as follows: 1 for low risk, 3 for moderate risk, and 5 for high risk.

2.3 Step 3: Data Download and Calculations

During this step, each of the four alternative alignments were buffered by 200 feet (100 feet on either side of the centerline) to create a 400 foot study area. Golder's GIS team then downloaded standard national and state GIS datasets for each indicator (environmental, social, and technical). WSP also incorporated data obtained from on-ground pedestrian field surveys for wetlands, waterbodies, protected species and habitats, and cultural resources. Once the datasets were downloaded, the spatial distribution of those datasets in relation to the study area was evaluated. This included calculating the area of overlap with the study area for each alignment or a count of the number of crossings (for example, road crossings or river crossings). Note that field surveys have only been partially completed to date, pending obtainment of outstanding landowner access approvals. Table 1 in Appendix D shows the results from these calculations. Table 2 in Appendix D shows National and State datasets reviewed but not included in the calculations due to lack of data or relevancy within the study area.

2.4 Step 4: Normalization of the Data and GoldSET Analysis

A normalization process was used to translate every indicator into a common scale so that all indicators will be compared with each other on a common basis for every option under consideration. The quantitative indicators have been normalized automatically by GoldSET between 0 and 100, according to predefined linear relationships.

In GoldSET, a score of 100 indicates that the performance is being maximized for any given indicator, while a score of 0 indicates that the performance is being minimized. Scores between 0 and 100 were also assigned, allowing for more precise, nuanced evaluation of the indicators. Of all the indicators listed in Appendix D, only the "Parallel Existing Roads" indicator was considered progressive with higher values within the study area indicating a higher score. The remaining indicators were all considered regressive with higher values indicating a lower score.

Within each dimension, an aggregate score out of 100% was calculated as a weighted average (results are multiplied by their weights, then divided by the sum of the weights), considering the scores and the weights assigned to each option for every indicator. This approach was used to derive the relative performance out of 100% for each of the environmental, social, technical dimensions, and for each option.

3.0 RESULTS AND DISCUSSION

Results of the spatial analysis are included in Table 1 in Appendix D. This shows the number and acreage of overlap for each of the four alignments as well as the weights associated with each indicator. Results of the GoldSET Options Analysis are shown in Appendix E. These results show that Alignment A scored the highest in all categories and is the preferred route based on the indicator list and the associated weights.

The final ranking of the alignments based on this analysis is Alignment A, CA, B, and then CB. Reviewing the results from the spatial and options analyses, the study area for Alignment A contained the lowest amount emergent wetlands, woodland landcover, oil and gas wells, and buildings, the second lowest acreage of forested/shrub wetlands, and was the shortest in length. Many of these indicators were weighed the highest and thus lower amounts in Alignment A's study area accounted for a higher score in the options analysis. The opposite is true for the B alignments, which had large amounts of highly weighed indicators thus resulting in a lower score.

Based on the results from this analysis and the indicator list, Alignment A would be considered the preferred alignment due to the high scores in the environmental, social, and technical categories.

Signature Page

Golder Associates Inc.

A handwritten signature in blue ink, appearing to read "Matt D. Brown".

Matt D. Brown
Senior Biologist

A handwritten signature in blue ink, appearing to read "Jon J. Donovan".

Jon Donovan, PE
Vice President
Project Manager



golder.com

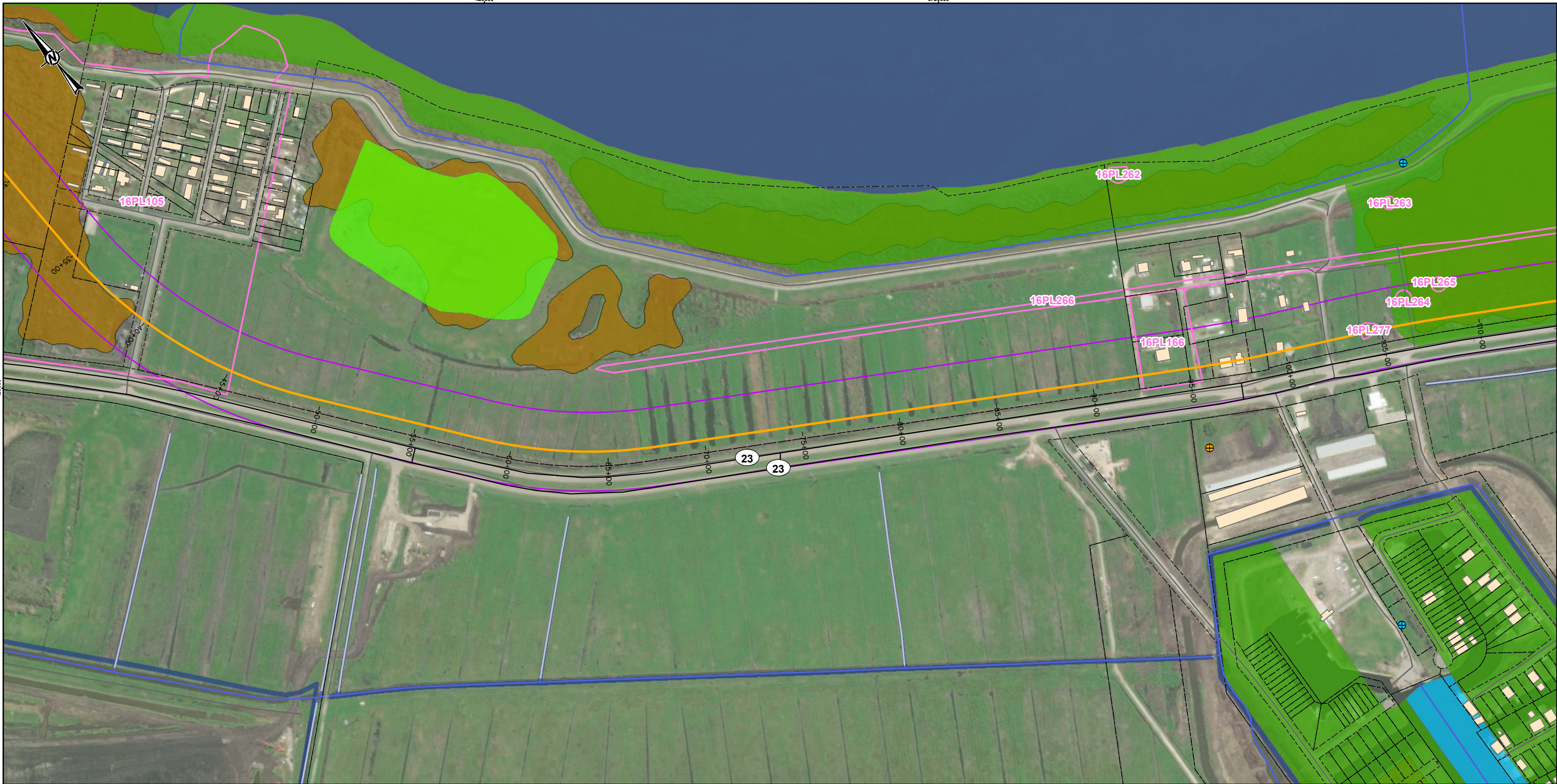
Appendix A –
Proposed Alignments
Overview Map

Appendix B – Environmental Constraints Maps

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LEGEND

- Oil and Gas Wells
- Water Wells
- Parcel Boundaries
- Local Roads
- Proposed Alignment A
- Building Footprints
- Study Area, 400ft Width
- Woodland Landcover
- Previously Recorded Cultural Resource Sites

National Wetland Inventory

- Estuarine and Marine Deepwater
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Riverine

National Hydrography Dataset Flowlines

- ArtificialPath
- CanalDitch
- StreamRiver



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SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY



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LA 23 DEVELOPMENT COMPANY

CONSULTANT

wsp GOLDER

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DESIGNED	JGW
PREPARED	JGW
REVIEWED	MB
APPROVED	####

REFERENCE(S)

- PROPOSED ROUTES, STUDY AREA: WSP 2022
 - PARCEL BOUNDARIES: WSP 2021
 - BUILDING FOOTPRINTS: ESRI/MICROSOFT 2021
 - WATER WELLS, WELL PITS, OIL AND GAS WELLS: DOWNLOADED FROM SONRIS 2022
 - HYDROLOGY FLOWLINES: NATIONAL HYDROLOGY DATASET 2022
 - NATIONAL WETLAND INVENTORY: USFWS 2021
- COORDINATE SYSTEM: NAD 1983 STATEPLANE LOUISIANA SOUTH FIPS 1702 FEET
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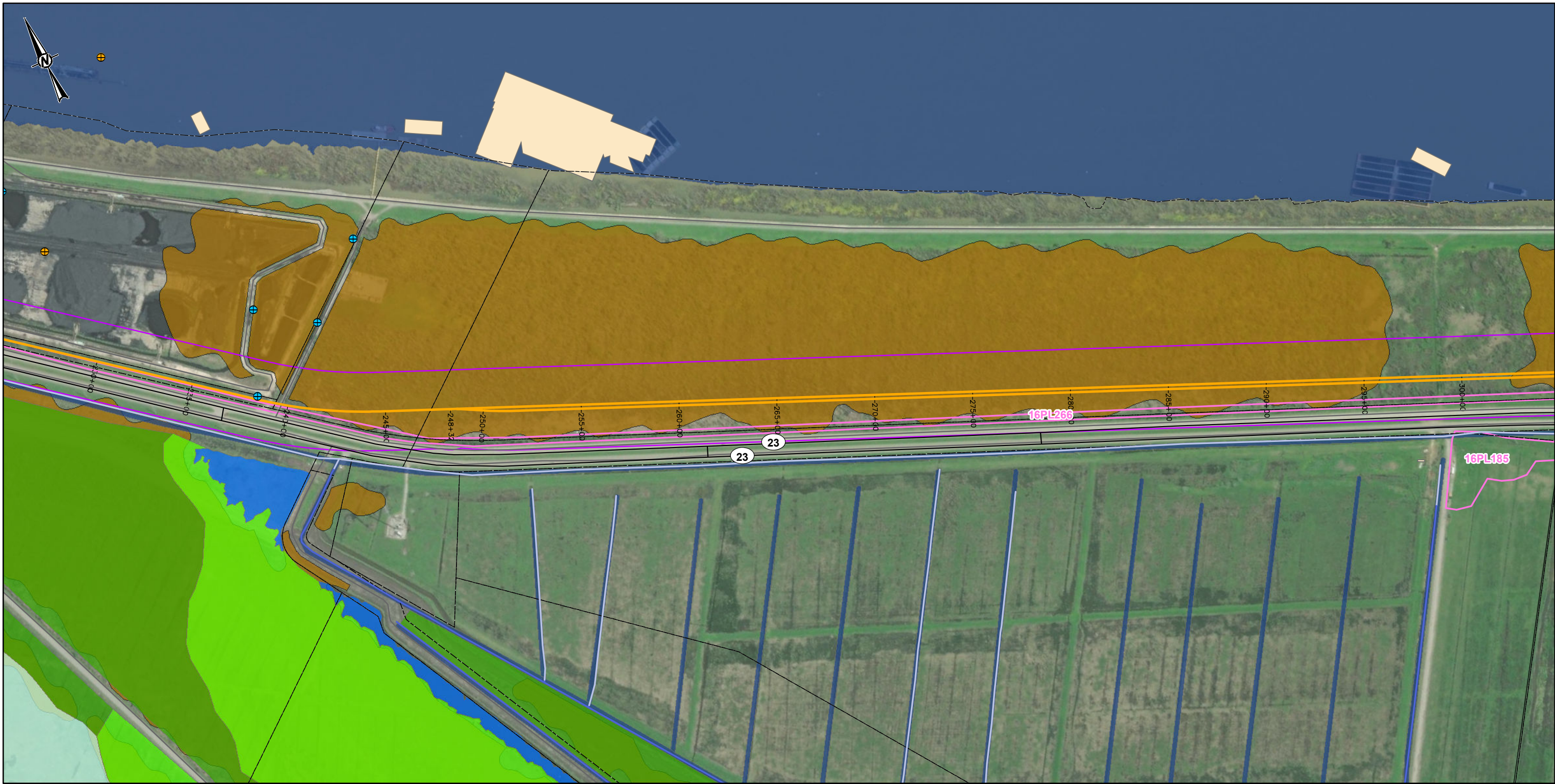
PROJECT
LGT MAINLINE EXTENSION

TITLE
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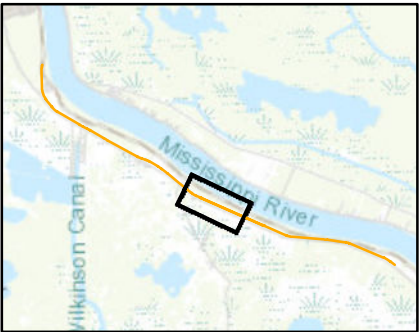
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- Water Wells
- Parcel Boundaries
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- Proposed Alignment A
- LNG Terminal Site Boundary
- Building Footprints
- Study Area, 400ft Width
- Woodland Landcover
- Previously Recorded Cultural Resource Sites

National Wetland Inventory

- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

National Hydrography Dataset Flowlines

- ArtificialPath
- CanalDitch



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	DESIGNED	JGW
	PREPARED	JGW
	REVIEWED	MB
	APPROVED	####

wsp GOLDER

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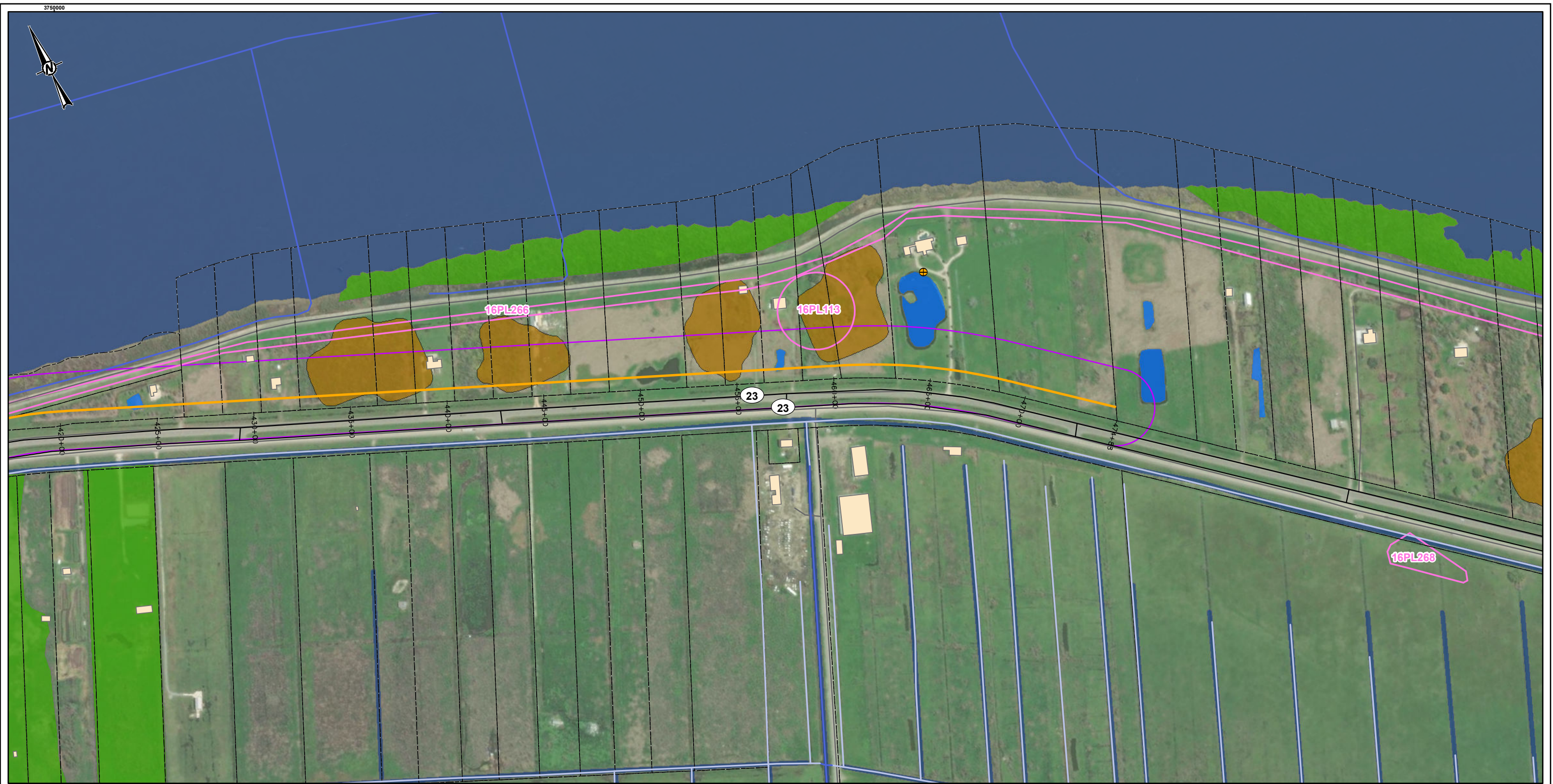
PROJECT
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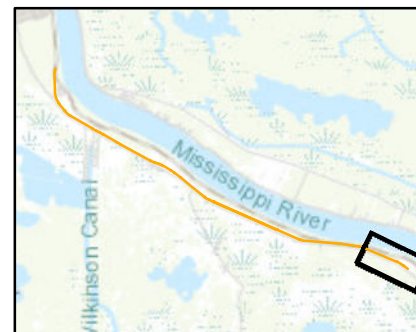
LEGEND

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-  Parcel Boundaries
-  Local Roads
-  Proposed Alignment A
-  Building Footprints
-  Study Area, 400ft Width
-  Woodland Landcover
-  Previously Recorded Cultural Resource Sites

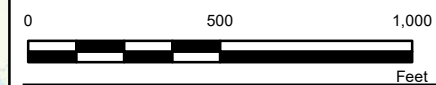
National Wetland Inventory

-  Freshwater Forested/Shrub Wetland

- National Hydrography Dataset Flowlines**



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DESIGNED JGW

PREPARED JGW

REVIEWED
MB

APPROVED #####



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 6. NATIONAL WETLAND INVENTORY: USFWS 2021
- COORDINATE SYSTEM: NAD 1983 STATEPLANE LOUISIANA SOUTH FIPS 1702 FEET
PROJECTION: LAMBERT CONFORMAL CONIC
DATUM: NORTH AMERICAN 1983

PROJECT
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ENVIRONMENTAL CONSTRAINTS - ALIGNMENT A

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FIGURE 2-8



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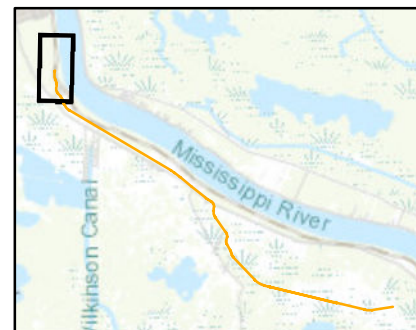
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-  Parcel Boundaries
-  Local Roads
-  Existing Railroads
-  Proposed Alignment B
-  Building Footprints
-  Study Area, 400ft Width
-  Woodland Landcover
-  Previously Recorded Cultural Resources

National Wetland Inventory

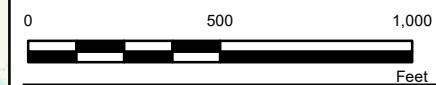
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PROJECT
LGT MAINLINE EXTENSION

	TITLE
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ENVIRONMENTAL CONSTRAINTS - ALIGNMENT B

PROJECT NO.
30901703

CONTROL
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FIGURE 3-1



LEGEND

- Oil and Gas Wells
- Water Wells
- Parcel Boundaries
- Local Roads
- Proposed Alignment B
- Building Footprints
- Study Area, 400ft Width
- Woodland Landcover
- Previously Recorded Cultural Resource Sites

National Wetland Inventory

- Estuarine and Marine Deepwater
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Riverine

National Hydrography Dataset Flowlines

- ArtificialPath
- CanalDitch
- StreamRiver



SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY



CLIENT
LA 23 DEVELOPMENT COMPANY

CONSULTANT	YYYY-MM-DD	2022-11-01
	DESIGNED	JGW
	PREPARED	JGW
	REVIEWED	MB
	APPROVED	####

wsp **GOLDER**

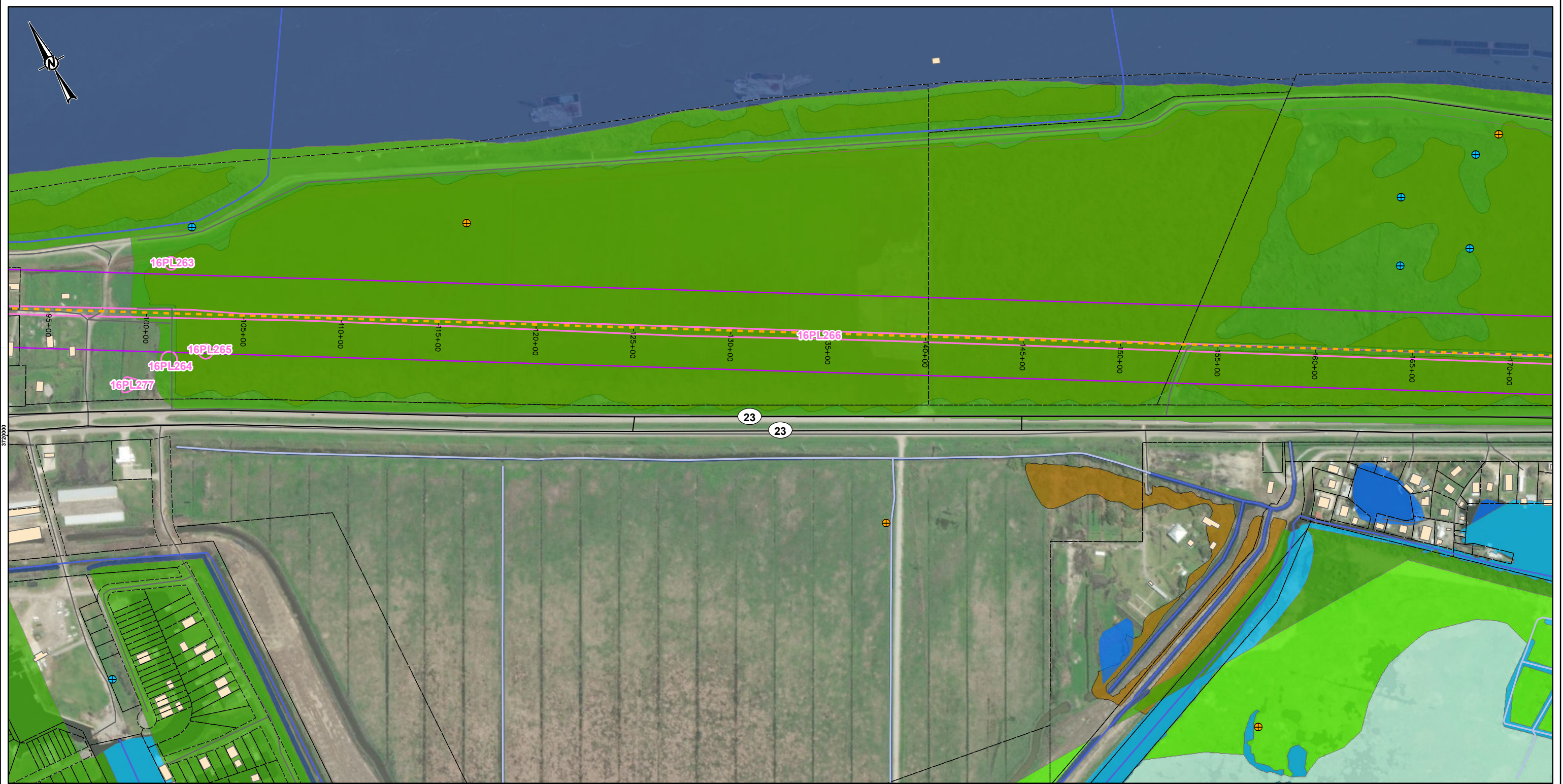
REFERENCE(S)

- PROPOSED ROUTES, STUDY AREA: WSP 2022
 - PARCEL BOUNDARIES: WSP 2021
 - BUILDING FOOTPRINTS: ESRI/MICROSOFT 2021
 - WATER WELLS, WELL PITS, OIL AND GAS WELLS: DOWNLOADED FROM SONRIS 2022
 - HYDROLOGY FLOWLINES: NATIONAL HYDROLOGY DATASET 2022
 - NATIONAL WETLAND INVENTORY: USFWS 2021
- COORDINATE SYSTEM: NAD 1983 STATEPLANE LOUISIANA SOUTH FIPS 1702 FEET
PROJECTION: LAMBERT CONFORMAL CONIC
DATUM: NORTH AMERICAN 1983

PROJECT
LGT MAINLINE EXTENSION

TITLE
ENVIRONMENTAL CONSTRAINTS - ALIGNMENT B

PROJECT NO.	CONTROL	REV.	FIGURE
30901703	A001	0	3-2



LEGEND

-  Oil and Gas Wells
-  Water Wells
-  Parcel Boundaries
-  Local Roads
-  Proposed Alignment B
-  Building Footprints
-  Study Area, 400ft Width
-  Woodland Landcover
-  Previously Recorded Cultural Resources

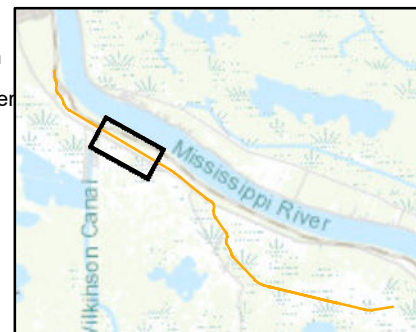
National Wetland Inventory

- | | |
|---|-----------------------------------|
|  | Estuarine and Marine Deepwater |
|  | Estuarine and Marine Wetland |
|  | Freshwater Emergent Wetland |
|  | Freshwater Forested/Shrub Wetland |
|  | Freshwater Pond |
|  | Riverine |

National Hydrography Dataset Flowlines

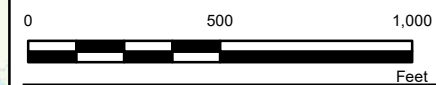
- ArtificialPath

- CanalDitch
- StreamRiver



SERVICE USER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP, GBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDINANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY



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CONSULTANT

YYYY-MM-DD 2022-11-01

DESIGNED JGW

PREPARED JGW

REVIEWED
MB



REFERENCE(S)

1. PROPOSED ROUTES, STUDY AREA: WSP 2022
 2. PARCEL BOUNDARIES: WSP 2021
 3. BUILDING FOOTPRINTS: ESRI/MICROSOFT 2021
 4. WATER WELLS, WELL PITS, OIL AND GAS WELLS: DOWNLOADED FROM SONRIS 2022
 5. HYDROLOGY FLOWLINES: NATIONAL HYDROLOGY DATASET 2022
 6. NATIONAL WETLAND INVENTORY: USFWS 2021
- COORDINATE SYSTEM: NAD 1983 STATEPLANE LOUISIANA SOUTH FIPS 1702 FEET
PROJECTION: LAMBERT CONFORMAL CONIC
DATUM: NORTH AMERICAN 1983

PROJECT
LGT MAINLINE EXTENSION

TITLE
ENVIRONMENTAL CONSTRAINTS - ALIGNMENT B

PROJECT NO.
30901703

CONTROL
A001

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FIGURE 3-3

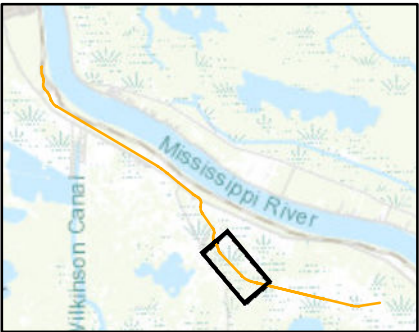
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LEGEND

- Belowground Pipeline Crossing
- Oil and Gas Wells
- Parcel Boundaries
- Local Roads
- Proposed Alignment B
- LNG Terminal Site Boundary
- Building Footprints
- Study Area, 400ft Width
- Woodland Landcover
- Previously Recorded Cultural Resource Sites

- National Wetland Inventory**
- Estuarine and Marine Deepwater
 - Estuarine and Marine Wetland
 - Freshwater Emergent Wetland
 - Freshwater Forested/Shrub Wetland
 - Riverine
- National Hydrography Dataset Flowlines**
- ArtificialPath
 - CanalDitch



SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY



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LA 23 DEVELOPMENT COMPANY

CONSULTANT	YYYY-MM-DD	2022-11-01
	DESIGNED	JGW
	PREPARED	JGW
	REVIEWED	MB
	APPROVED	####

wsp **GOLDER**

REFERENCE(S)

- PROPOSED ROUTES, STUDY AREA: WSP 2022
- PARCEL BOUNDARIES: WSP 2021
- BUILDING FOOTPRINTS: ESRI/MICROSOFT 2021
- WATER WELLS, WELL PITS, OIL AND GAS WELLS: DOWNLOADED FROM SONRIS 2022
- HYDROLOGY FLOWLINES: NATIONAL HYDROLOGY DATASET 2022
- NATIONAL WETLAND INVENTORY: USFWS 2021

COORDINATE SYSTEM: NAD 1983 STATEPLANE LOUISIANA SOUTH FIPS 1702 FEET
PROJECTION: LAMBERT CONFORMAL CONIC
DATUM: NORTH AMERICAN 1983

PROJECT
LGT MAINLINE EXTENSION

TITLE
ENVIRONMENTAL CONSTRAINTS - ALIGNMENT B

PROJECT NO.	CONTROL	REV.	FIGURE
30901703	A001	0	3-6

1in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B



LEGEND

-  Water Wells
-  Parcel Boundaries
-  Local Roads
- Existing Railroads

-  Proposed Alignment CA
 Building Footprints
 Study Area, 400ft Width

- Woodland Landcover
 Previously Recorded Cultural Resource Sites

National Wetland Inventory

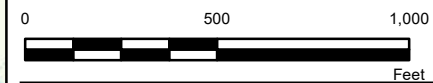
-  Freshwater Forested/Shrub Wetland
 Freshwater Pond
 Riverine

National Hydrography Dataset Flowlines

- ArtificialPath
— CanalDitch



SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP, GEBCO, USGS, FAO, NPS, NRCAN, GEBCO, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY



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LA 23 DEVELOPMENT COMPANY

CONSULTANT



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DESIGNED JGW

PREPARED JGW

REVIEWED MB

REFERENCE(S)

1. PROPOSED ROUTES, STUDY AREA: WSP 2022
 2. PARCEL BOUNDARIES: WSP 2021
 3. BUILDING FOOTPRINTS: ESRI/MICROSOFT 2021
 4. WATER WELLS, WELL PITS, OIL AND GAS WELLS: DOWNLOADED FROM SONRIS 2022
 5. HYDROLOGY FLOWLINES: NATIONAL HYDROLOGY DATASET 2022
 6. NATIONAL WETLAND INVENTORY: USFWS 2021
- COORDINATE SYSTEM: NAD 1983 STATEPLANE LOUISIANA SOUTH FIPS 1702 FEET
PROJECTION: LAMBERT CONFORMAL CONIC
DATUM: NORTH AMERICAN 1983

PROJECT
LGT MAINLINE EXTENSION

TITLE	
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ENVIRONMENTAL CONSTRAINTS - ALIGNMENT CA

PROJECT NO.
30901703

CONTROL
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FIGURE 4-1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: A AND B

Appendix C – Federal Emergency Management Agency (FEMA) Flood Hazard Zones



LEGEND

- Local Roads
- Existing Railroads
- Proposed Alignment B
- Study Area, 400ft Width
- Flood Zone AE
- Flood Zone VE

NOTE(S)
FEMA FLOOD ZONE DEFINITIONS:

FLOOD ZONE AE: AREAS WITH A 1% ANNUAL CHANCE OF FLOODING AND A 26% CHANCE OF FLOODING OVER THE LIFE OF A 30-YEAR MORTGAGE. BASE FLOOD ELEVATIONS HAVE BEEN CALCULATED FOR THIS ZONE.

FLOOD ZONE VE: COASTAL AREAS WITH A 1% OR GREATER CHANCE OF FLOODING AND AN ADDITIONAL HAZARD ASSOCIATED WITH STORM WAVES. THESE AREAS HAVE A 26% CHANCE OF FLOODING OVER THE LIFE OF A 30-YEAR MORTGAGE. BASE FLOOD ELEVATIONS DERIVED FROM DETAILED ANALYSES ARE SHOWN AT SELECTED INTERVALS WITHIN THESE ZONES.

SERVICE LAYER CREDITS: SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, IGN, AND THE GIS USER COMMUNITY

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DESIGNED JGW
PREPARED JGW
REVIEWED MB
APPROVED #####

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REFERENCE(S)
1. PROPOSED ROUTES, STUDY AREA; WSP 2022
2. FLOODZONE: FEMA 2021

COORDINATE SYSTEM: NAD 1983 STATEPLANE LOUISIANA SOUTH FIPS 1702 FEET
PROJECTION: LAMBERT CONFORMAL CONIC
DATUM: NORTH AMERICAN 1983
FALSE EASTING: 3,280,833.3333

PROJECT
LGT MAINLINE EXTENSION

TITLE
FEMA FLOOD HAZARD ZONES- ALIGNMENT B

PROJECT NO. 30901703	CONTROL A002	REV. 0	FIGURE 7
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Appendix D – Tables

Table 1: Indicator List and Spatial Analysis Results for the Four Proposed Alignments

Constraint	Units	Alignment A	Alignment B	Alignment CA	Alignment CB	Weight*	Source
Environmental							
NHD Flowline Crossings - Artificial Path	Count	0	4	0	4	3	USGS NHD Layer
NHD Flowline Crossings - Canals/Ditches	Count	0	10	0	10	3	USGS NHD Layer
Land/Cover Woodland	Acres	153.32	180.72	181.69	208.79	2	USGS National Land Cover database
Floodplain - 100yr Flood Zone - AE	Acres	36.37	195.49	62.89	222.1	1	FEMA
Floodplain - 100yr Flood Zone - VE	Acres	396.78	261.34	396.78	261.31	1	FEMA
Freshwater Emergent Wetlands	Acres	31.71	89.05	31.99	89.33	5	USFWS – NWI, Field Survey Data
Freshwater Forested/Shrub Wetlands	Acres	127.93	150.04	155.05	178.05	5	USFWS – NWI, Field Survey Data
Freshwater Pond	Acres	3.27	2.42	3.27	2.42	2	USFWS – NWI, Field Survey Data
Riverine	Acres	1.80	4.65	1.80	4.65	4	USFWS – NWI, Field Survey Data
Coastal Conservation Plan Area	Acres	3.07	3.07	3.07	3.07	1	USGS National Map
Oil and Gas Wells	Count	1	2	1	2	5	SONRIS
Well Pits	Count	0	1	0	1	5	SONRIS
Water Wells	Count	8	8	8	6	5	SONRIS
Social							
Urban Areas	Percent	0	0	0	0	4	LADOTD
Parks and Recreational Areas	Acres	0	0	0	0	2	State/national layers
Buildings	Count	13	17	13	17	5	Microsoft /ESRI
Parcels	Count	38	16	38	16	2	From Surveyor
Cultural Resources	Count	8	6	9	7	5	NPS, NRHP, Field Survey Data
Technical							
Rail Length	Miles	10.33	10.78	10.83	11.3	3	Golder/WSP
Below-Ground Pipeline Crossings	Count	0	1	0	1	3	Venture Global
Above-Ground Pipeline Crossings	Count	1	0	1	0	5	Venture Global
Parallel Existing Roads	Miles	7.94	1.22	7.81	1.12	1	US Census – Tiger Layer
Minor Road Crossings	Count	10	8	10	8	3	US Census – Tiger Layer
Major Road Crossings	Count	0	1	0	1	5	US Census – Tiger Layer (LA23)
*Weight= The weight scores indicate the risk on environmental, social, and technical resources as follows: 1 for low risk, 3 for moderate risk, and 5 for high risk.							
NHD = National Hydrography Dataset, USGS = United States Geological Survey, FEMA = Federal Emergency Management Agency, USFWS = United States Fish & Wildlife Service, NWI = National Wetlands Inventory, SONRIS = Strategic Online Natural Resources Information System, LADOTD = Louisiana Department of Transportation and Development, ESRI = Environmental Systems Research Institute, NPS = National Park Service, NRHP = National Register of Historic Places							

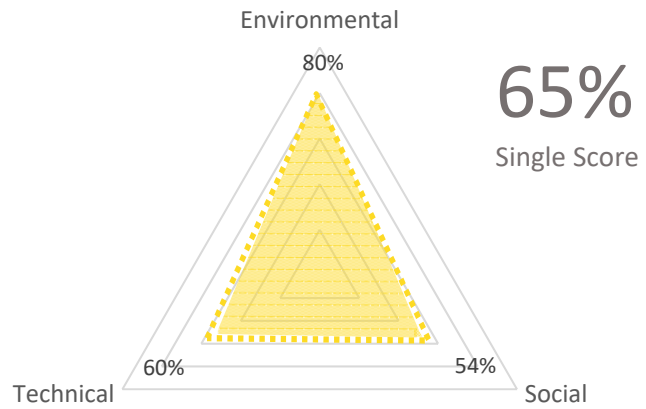
Table 2: National and State Datasets Reviewed but Not Located Within Study Area

Data Set Name	Source
National Datasets	
Critical Habitat	USFWS
Fisherman Gear Hang Points	USGS
Native American Area	USGS Government Unit
Unincorporated Place	USGS Government Unit
Jurisdictional	USGS Government Unit
Incorporated Place	USGS Government Unit
State Claimed Water Bodies	USGS National Hydrology Dataset
Structures	USGS National Map
Airports	USGS National Map
National Parks/Federal lands/Wildlife Refuges	USGS/NPS/USFS/ESRI
National Register of Historic Places	NPS
Installations/Ranges	USDOD
Pipelines	US Energy Information Administration
State Datasets - SONRIS	
<i>Coastal Management Section</i>	
Beneficial Use	SONRIS
Coastal Permit Lines/Polygons	SONRIS
Mitigation Areas	SONRIS
Gulf Ecological Management Site	SONRIS
<i>Mineral Resources</i>	
Active Leases	SONRIS
Exclusive Geophysical Agreements	SONRIS
Releases	SONRIS
Tract Archive 2001 to present	SONRIS
Tracts	SONRIS
<i>Oil and Gas</i>	
Bottom Hole	SONRIS
Injection Wells	SONRIS
Oil and Gas Fields	SONRIS
<i>Coastal Protection and Restoration Authority (CPRA)</i>	
Christmas Tree Point	CPRA
Outreach Projects	CPRA
Levee gates	CPRA
Monitoring Stations	CPRA

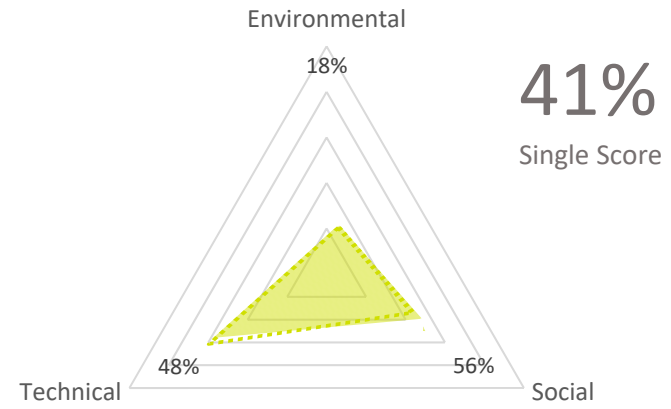
Data Set Name	Source
Model Domains	CPRA
Vegetation Planting Program	CPRA
Vegetation	CPRA
Louisiana State Parks	DNR
Public Oyster Areas	DNR
Water Management Areas	DNR
Bear Sightings	DNR
<i>LA Department of Transportation and Development (LADOTD)</i>	
Metropolitan Planning Areas	LADOTD
Urbanized Areas	LADOTD
USFWS = United States Fish & Wildlife Service, USGS = United States Geological Survey, NPS = National Park Service, USFS = United States Forest Service, ESRI = Environmental Systems Research Institute, USDOD = United States Department of Defence, SONRIS = Strategic Online Natural Resources Information System, DNR= Department of Natural Resources	

Appendix E – Results from the GoldSET Options Analysis for the Four Alignments

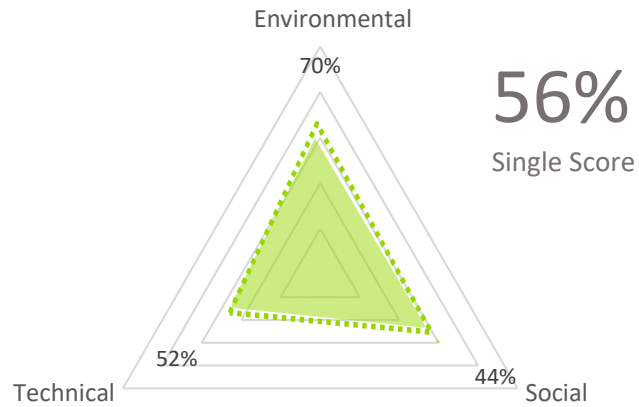
ALIGNMENT A



ALIGNMENT B



ALIGNMENT CA



ALIGNMENT CB

