HEADWATERS INC.
NATURAL RESOURCES CONSULTING

Date: August 29, 2019

To: The Kansas City Southern Railway Company

From: Clay Cromwell
Headwaters, Inc.

RE: The Kansas City Southern Railway Company
SWG-2013-00399
Port Arthur Terminal Facility
Jefferson County, Texas
Alternative Analysis Discussion

Headwaters, Inc. has been retained by The Kansas City Southern Railway Company (KCS) to serve as agent on their behalf in all matters regarding the needed wetland permitting authorization for the above referenced proposed Port Arthur Terminal Facility located along the Sabine Neches Canal in the City of Port Arthur, Jefferson County, Texas. This alternative analysis discussion is being presented as a part of the U.S. Army Corps of Engineers (USACE) Section 404 wetland permit application request for the planned project.

Purpose and Need

Prior to discussing alternatives, it is important to understand the purpose and need of the proposed project. The information herein is intended to address 40 CFR §230.10 (a) wherein "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences" (i.e. the least environmentally damaging practicable alternative or LDEPA).

Need for Proposed Project

The need for the proposed project is very simply defined by the opportunity to couple the ability to provide employment opportunities with the construction of a large transloading facility within the City of Port Arthur, Jefferson County, Texas. It is vital that the facility locate in this specific geographic region due to the required logistics, marine access, transportation infrastructure and general vicinity to associated industry to support the facility. The project would serve as a location that accepts hydrocarbon products via rail, and distributes the hydrocarbon products to local industry or by loading them onto marine vessels docked within the adjacent Sabine Neches Canal.

The planned project will allow the transloading of various types of crude oil, bitumen, distillates, renewable fuels, natural gas liquids and/or related petroleum products as market conditions dictate. The construction and development of the transloading facility will provide the opportunity to transload these commodities between rail and marine transportation modes. As domestic and North American oil production expand energy companies are finding the national pipeline network insufficient to transport their output. Railroads are increasingly being utilized to transport unrefined and refined products to terminals located along the southern coastline. Generally, these products are transported to refineries located along the coast or are loaded onto marine vessels for transport.

The increase in hydrocarbon production throughout the United States and North America has led to the need to construct facilities to deliver such product to Gulf Coast refineries. According to the Association of American Railroads, the United States rail system transported 407,642 carloads of crude oil in 2013 up from 9,500 carloads in 2008. Although transporting crude oil by pipeline is generally cheaper than by rail, transporting by rail has its advantages, including speed. For instance, transporting oil from North Dakota's Bakken shale fields to the Gulf Coast can take five to seven days by rail, compared with about 40 days by pipeline. There are nearly 140,000 miles of railroad in the United States, while the crude oil pipeline system is just 57,000 miles long, according to federal data. For a company with crude to transport, railroads can be the simpler solution if a link to a pipeline is not already in place.

The existing railroad infrastructure throughout the United States is proving to out-compete the construction of new pipeline systems to readily transport hydrocarbon products. By laying track and constructing new loading facilities, oil and gas operators are quickly connecting remote areas of oil production with the existing networks of national railroad companies such as Union Pacific, BNSF Railway and The Kansas City Southern Railway.

The purpose of the proposed transload facility is driven by the increase of hydrocarbon transportation via rail. Regarding the need for the proposed project, the significant increase in rail use to transport various types of crude oil and associated petroleum products, transloading facilities located along the Gulf Coast line are required to support this mode of transportation. The proposed Port Arthur Terminal Facility will be located along the Sabine Neches Canal within the City of Port Arthur. The planned facility is designed to manage and transload various types of crude oil, bitumen, distillates, renewable fuels, natural gas liquids and/or related petroleum products between rail and marine transportation modes. The facility will be served via KCS, which provides rail transportation from Kansas City, Missouri south to Central America. The project is designed to provide a central location along the Gulf Coast to transfer products from one mode of transportation to another where they can be shipped for processing, sales or distribution, etc. The geographic location has been identified by the applicant based on a feasibility, industry, logistical and employment basis.

Purpose of Proposed Project and Location

As previously described, the purpose of the planned project is to provide a transloading facility for various types of crude oil and petroleum-based products between rail and marine transportation modes. The facility is hinged on the location, due in part, to the presence of the existing KCS railway, industry and marine access via the Sabine Neches Canal. The project site

was also chosen due to the existing bulkhead located on a parcel adjacent to the project site referenced as the Gulf Copper Dock. Other site criteria included marine access, minimal size of 200 contiguous acres, available workforce, and multiple modes of logistical transportation including rail, truck (interstate) and port.

Once the site requirements were identified, KCS began searching for available locations that would meet each of the requirements. A primary component of the property search was to identify potential properties with KCS rail access, owned or operated by KCS, adjacent or desired industry support and with marine access. The results of this search revealed three (3) locations within the Port Arthur region.

Alternative Site A

Alternative Site A is located at the Kansas City Southern Railway Company (KCS) Port Arthur Bulk Facility (PABFAC) and south of the Chosen Alternative. This site is referred to as the Texaco Island Property and is operated by KCS. This site is located along the Sabine Neches Canal near its juncture with the Port Arthur Canal and the Intercostal Waterway comprising of approximately 237 acres. Initially, indications were that this parcel would provide the requirements of KCS and its customers to construct the desired terminal facility. The site provided direct rail access via KCS with rail entering the property along the northeast boundary. The facility also offered the opportunity to contract with Union Pacific Railway as a separate Class I rail transportation and supplier. The facility offered direct access to the Sabine Neches Canal being in close proximity to the Intercostal Waterway. Existing infrastructure such as bulkhead, marine vessel slips, rail, and truck access seemed positive when initially evaluating this site as a viable option.

Further investigations during the initial project planning included the completion of a wetland delineation and determination report covering the approximate 237 acre parcel. The wetland delineation revealed that 0.75 acres of forested wetlands, 1.01 acres of emergent wetlands and approximately 2,734 linear feet of improved drainage features are present within the limits of the site. This related to approximately 1.3 percent of the property being classified as jurisdictional waters of the U.S. Since the property is positioned within an industrial setting and has been utilized for industrial use over time, other adverse environmental concerns were not observed during the evaluation of this site.

However, after further consideration from a design prospective, it proved to be difficult to incorporate the desired loop track design within the confines of this alternative site. The existing industrial developments and their current rail lead tracks caused train capacity concerns. The existing industry lead tracks created logistical concerns to design a loop track that would handle the capacity desired by KCS and its customers. Although there were only minimal environmental concerns for this tract, the property size, configuration and current developments would not allow the opportunity to design the desired multiple rail loop track concept with tank battery. Shorter loop tracks will not service full capacity trains (120 rail car unit trains), which are being operated on KCS and associated rail lines. Overall, the configuration of this alternative and the existing infrastructure would not support a design desired by KCS to support the current customer demands. With the understanding that Alternative A could not support the capacity of rail cars needed for the project, further

considerations to utilize Alternative Site A were not pursued as a viable option for the planned project.

Alternative Site B

Alternative Site B is located abutting the south boundary of the Chosen Alternative comprising of approximately 183 acres. KCS owns an approximate 500 acre parcel of land located north of the PabTex Facility and along the Sabine Neches Canal. The parcel is generally described as an undeveloped open field and forested habitat bordered by Taft Ave to the south, Texas Highway 87/73 to the west, Drainage District 7 (DD7) Levee Road to the north and the Sabine Neches Canal to the east. Generally, the parcel is uniform in shape with minimal easements extending through the central portion of the site. KCS purchased the property as an investment with the intent for future industrial development. In fact, the Chosen Alternative was carved from the overall +\- 500 acre parcel being the northern ½ of the tract. Alternative Site B is therefore, considered as the southern ½ of the KCS tract.

Initially, Alternative Site B was considered as a viable option for the planned development. Alternative Site B and A are similar in nature providing similar logistics, infrastructure and design options. Alternative Site B is located adjacent to the PabTex Facility to the south. PabTex currently has and operates a docking facility along the Sabine Neches Canal as a part of their daily operations. Initial consideration was to utilize portions of their infrastructure including the bulkhead and dock. KCS would construct the planned loop track facility to the north of the PabTex facility, but would rely on PabTex for certain operation functions. Initial thoughts were that this would operate smoothly. In terms of the loop track facility, the subject property offered property sufficient in size and configuration to design the necessary multiple loop track concept with associated tank battery and required infrastructure. This site also provided direct rail access from KCS along Highway 87/73. Interior access could be provided along Taft Ave. located to the south and along the north boundary of PabTex. The lead track from the KCS mainline would be considered the same for both Alternative B and the Chosen Alternative.

Further investigations included the completion of a wetland delineation and determination covering the approximate 183 acre parcel of land. The wetland delineation revealed that approximately 76.12 acres of forested wetlands, 10.01 acres of emergent wetlands and 867.89 linear feet of improved drainages associated with the DD7 A-1 Lateral are present within the limits of the site. This related to approximately 47 percent of the property being classified as potential jurisdictional waters and subject to Section 404 wetland permitting requirements.

Given the general location of the wetland habitats identified within the site, concerns were that the majority of each habitat would need to be impacted to complete the planned project. A large portion of the forested wetland habitats are located within the western and central portions of the site. In order to grant rail access into this parcel, design the preferred loop track and tank battery, the significance of the wetland habitats would be adversely impacted. Consideration to use Alternative Site B would have increased the unavoidable impact to jurisdictional waters than other alternatives. Given the significant increase to wetland impacts when designing the project and logistical concerns when working with PabTex, consideration to design the project to the north was preferred.

Alternative Site C (Chosen Alternative)

Alternative Site C or the Chosen Alternative is located abutting the north boundary of Alternative Site B comprising of approximately 271.10 acres. As you know, the Chosen Alternative is located along the south boundary of DD7 Levee Road, east of Highway 87/73 and along the west bank of the Sabine Neches Canal. Similar to Alternative Site B, this parcel can be described as an undeveloped parcel of land occupied by an open field and forested habitat. DD7 Hurricane Protection Levee is present along the east boundary (adjacent to the Sabine Neches Canal) and along the north boundary doubling as the DD7 Levee Road. The project includes the incorporation of the Gulf Copper Facility and the Gulf Copper Dock located immediately northeast of the project site. This parcel is currently developed as a marine bulkhead and barge maintenance facility. Marine transload activities will occur at the Gulf Copper Dock being part of the facility.

Similar to Alternative Site B, this site provided a clean slate to design the desired multiple loop track with tank battery within the Facility. The Facility was considered sufficient in size and capacity to achieve the goals of the planned terminal project.

Rail service would be provided by KCS, located along the west property boundary and Highway 87/73. As mentioned, the current dock facility at Gulf Copper would be utilized for marine access. A planned piping infrastructure would extend east from the facility over the DD7 Hurricane Protection Levee via the construction of a pipe bridge feature. Access to the Sabine Neches Canal provides the opportunity to transload to marine vessels. The Gulf Copper Dock facility provides the opportunity to support various sized vessels.

As consideration to utilize this site strengthened, a wetland delineation and determination was conducted on the property to understand the potential environmental concerns when utilizing this site. The wetland delineation revealed that approximately 28.03 acres of forested wetlands, 1.64 acres of emergent wetlands, and 108.2 feet of improved drainage features were present within the limits of the site. Other features identified within the site were determined to be isolated in nature and non-jurisdictional to the USACE and therefore were not included in these estimates. This related to approximately 9.2 percent of the property being classified as jurisdictional waters and subject to Section 404 wetland permitting requirements. Given this, the Chosen Alternative provided the best opportunity to avoid and minimize potential jurisdictional waters impacts when designing the project from Alternative Site B.

It was determined that the Chosen Alternative had fewer jurisdictional waters than other alternatives allowing the reduction of wetland impacts from other potential properties. The Chosen Alternative also provided the amenities desired by KCS for a successful project. For these reasons and for reasons previously presented, the Chosen Alternative was considered as the least environmentally damaging practicable alternative (LEDPA) for the development of the terminal project.

No Build Alternative

Evaluation of the No Action Alternative is required to provide a baseline for comparison of action alternatives. Under the No Action Alternative, it is assumed that the applicant would not construct the proposed action at the Port Arthur Terminal Facility; therefore, no federal action would be required. KCS would not be able to service their clients in this region and expand their operations.

The referenced products are currently being transported via rail with numbers steadily increasing. The infrastructure and industry located along the Gulf Coast makes this region naturally applicable for the development of management of transloading type facilities specifically to service the transport of crude oil and associated petroleum products. Under the No Action Alternative, demand would continue to exceed capacity of the rail system and customers could seek their needs from other facilities or rail providers. Under the No Action Alternative, the growth in freight shipped on other rail providers would likely increase creating logistical concerns and projects in other regions. However, the need to access a deep-water dock facility limits the overall property availability.

Alternative Designs Considered

Upon the completion of the alternative site analysis, consideration was given to potential alternative site designs to further avoid and minimize potential impacts to wetlands and "other waters of the U.S." within the Chosen Alternative Site. Limitations included train and car length, rail car capacities, Hurricane Protection Levees, DD7 drainage easements as well as existing infrastructure. The KCS mainline lead track was considered as constant in the design and a requirement for a successful project. The KCS mainline is located along the west boundary of the site providing direct rail access to the central portion of the KCS property. If you recall, Alternative Site B was the south half of the KCS property. In general, the same KCS lead track could service either side with a similar capacity loop track project. Given that there are no current projects in place on this property, consideration for either the north or south was considered. Future developments or growth would need to consider other off-site alternatives in terms of similar evaluation processes. Once the design efforts entered the Chosen Alternative Site, design limitations included track length to support train size and rail car capacities. The loop track design would not offer many variables and so therefore the consideration for additional infrastructure was completed to further minimizing potential impacts to wetlands and "other waters of the U.S.".

Early designs considered the placement of set out tracks within the southern portion of the loop track causing increased impacts to wetlands and "other waters of the U.S.". You will note that the wetlands are concentrated within the southern and southwest corner of the site. These areas would be directly impacted through the placement of the tank battery and associated infrastructure within this area. This would provide further opportunities for development within the northern portion of the interior loop track facility.

After further review, it was quickly realized that the design of the tank battery could be revised to locate the terminal further north. The design also benefited by placing the terminal further north in terms of loading and off loading trains and providing access to the Gulf Copper

Facility. Access would be via the north boundary and DD 7 Levee Road and therefore constructing the terminal within the northern portion of the loop track was feasible and thus allowed the further avoidance and minimization of wetlands within the site.

The set-out tracks were also positioned within the southeast quadrant of the planned loop track offering the opportunity to avoid direct impacts to wetlands and "other waters of the U.S.". Further, staying within the interior of the loop track providing the opportunity to avoid further forest fragmentation and impacts beyond what was considered necessary to secure the purpose and need of the planned project.

In conclusion, upon careful consideration and review of alternative designs, it was determined that impacts to wetlands and "other waters of the U.S." would be required to complete the initial infrastructure and loop track project. However, the completion of the tank battery and associated pipe rack and infrastructure could be completed while avoiding additional wetland impacts. It was determined that impacts to wetlands and "other waters of the U.S." would be minimized to the extent of 84% with the chosen site design. Since this design would secure and provide the amenities desired by KCS and their customers meeting the purpose and need of the project, it was determined that this chosen site and design was considered as the LEDPA for the development of the terminal project.

Thanks!

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Date Created: 8/30/2019 | Created by: JDL

The Kansas City Southern Railway Company
KCS Port Arthur Terminal

Jefferson County, Texas

Alternative Analysis Site Location Map

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NAD 1983 StatePlane Texas South Central FIPS 4204 Feet

ESRI World Imagery Basemap

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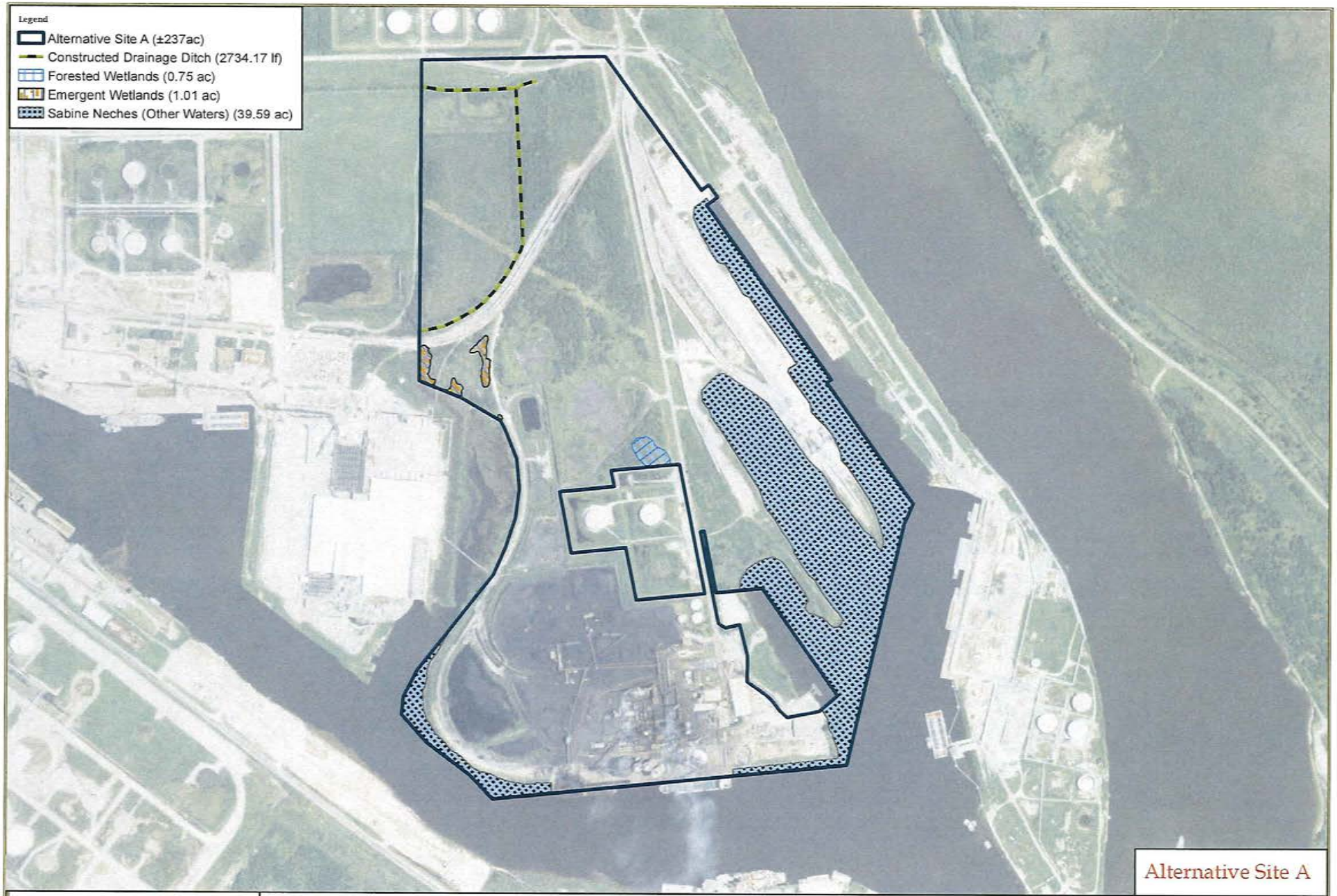

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KCS Port Arthur Terminal

Jefferson County, Texas

Wetland Location Map

0 500 1,000 Feet
1:10,000

NAD 1983 StatePlane Texas South Central FIPS 4204 Feet

USDA NAIP 2016 Imagery Basemap

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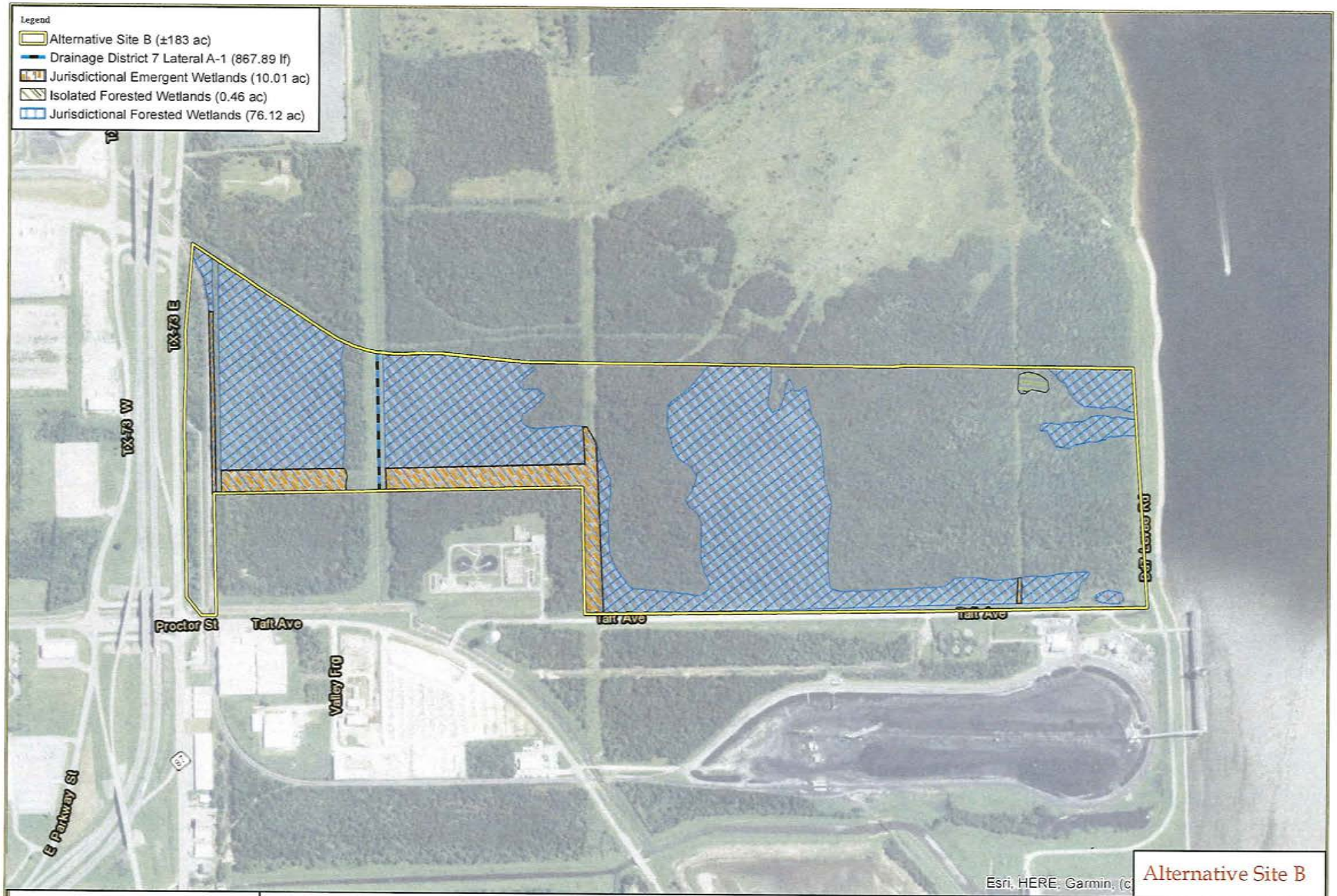

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Wetland Location Map

NAD 1983 StatePlane Texas South Central FIPS 4204 Feet

USDA NAIP 2016 Imagery Basemap

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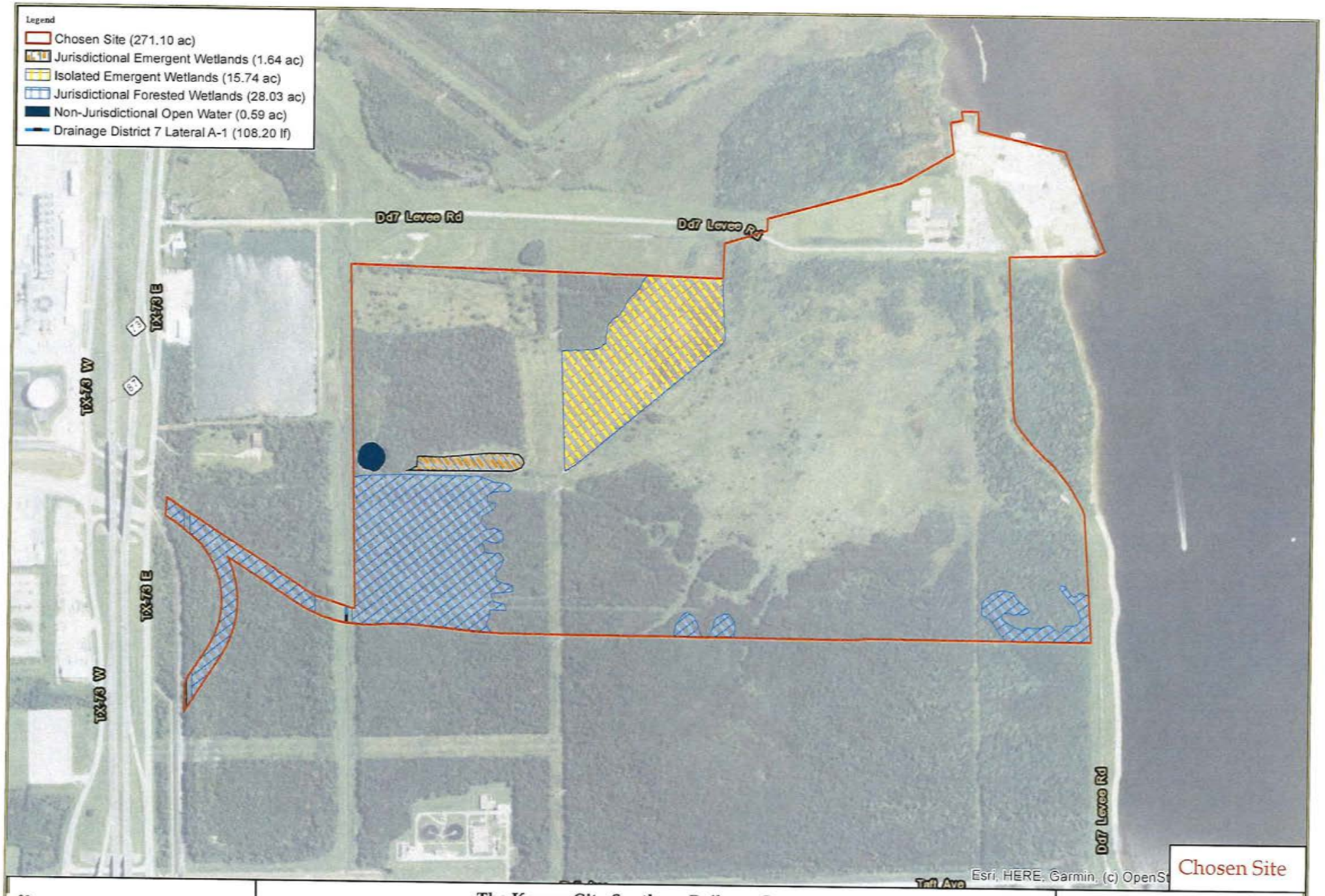

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Wetland Location Map

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