

# **Sabine Pass to Galveston Bay, Texas Coastal Storm Risk Management and Ecosystem Restoration**

## **Final Integrated Feasibility Report – Real Estate Plan**

**May 2017**

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# **Sabine Pass to Galveston Bay, Texas Feasibility Study**

## **Real Estate Plan**

### **1. Purpose**

This Real Estate Plan (REP) has been prepared in support of the feasibility study that describes the lands, easements, rights of way, relocation, and disposal (LERRD) required for the for the Sabine Pass to Galveston Bay, Texas, Feasibility Study. The information contained herein is tentative in nature and intended for planning purposes only.

### **2. Project Location**

The study area consists of three distinct project areas: Orange, Jefferson, and Brazoria regions. The Orange region is located about 90 miles east of the City of Houston and shares a border with the State of Louisiana. The region is approximately 356 square miles in size and 333 square miles is land and 23 is water. A total of seven incorporated cities (Orange, Vidor, Bridge City, West Orange, Rose City, Pinehurst, and Pine Forest) are in this region. The Jefferson region is located about 90 miles east of the City of Houston. The region is approximately 1,111 square miles in size and 904 square miles is land and 207 is water. A total of nine incorporated cities (Beaumont, Port Arthur, Nederland, Port Neches, Groves, China, Nome, Bevil Oaks, and Taylor Landing) are in this region. The Brazoria region is located about 60 miles south of the City of Houston. The region is approximately 1,597 square miles in size and 1,386 square miles is land and 211 is water. A total of 20 incorporated cities (Angleton, Pearland, Lake Jackson, Brazoria, Alvin, Freeport, Clute, Rosharon, Manvel, Sweeny, West Columbia, Surfside Beach, Danbury, Richwood, Qunitana, Oyster Creek, Jones Creek, Iowa Colony, Brookside Village, and Liverpool) are in the County. The study area is identified on Exhibit A.

For the purposes of this report the Recommended Plan project areas were renamed as Orange Coastal Storm Risk Management (CSRM), Port Arthur and Vicinity CSRM, and Freeport and Vicinity CSRM. Within the project area are different reaches. Reaches of project areas are listed below and are shown on Exhibits B-D.

### **3. Project Authorization**

Authorization for the study is derived from a resolution from the Committee on Environmental and Public Works dated June 23, 2004 entitled "Coastal Texas Protection and Restoration Study".

*By resolution dated June 23, 2004 entitled "Coastal Texas Protection and Restoration Study", the Committee on Environment and Public Works, U.S. Senate has requested that in accordance with Section 110 of the Rivers and Harbors Act of 1962 the Secretary of the Army develop a comprehensive plan for severe erosion along coastal Texas for the purposes of shoreline erosion and coastal storm damages, providing for environmental restoration and protection, increasing*

*natural sediment supply to coast, restoring and preserving marshes and wetlands, improving water quality, and other related purposes to the interrelated ecosystem along the coastal Texas area.*

The study fits into the overall concept of the authorization to conduct an integrated and coordinated approach to locating and implementing opportunities for CSRM. The purpose of the study is to recommend for Congressional approval a regional CSRM project that encompasses counties of the upper Texas coast between Sabine Pass and Galveston Bay.

### **3. Non-Federal Sponsor**

The USACE Galveston District was responsible for the overall management of the study and the report preparation. As the non-Federal sponsor (NFS), the Texas General Land Office (GLO) was actively involved throughout the study process. GLO is the NFS for the study phase only.

As the project moves towards implementation, three different entities have been identified as NFS for the three different project areas. As public entities, Velasco Drainage District (VDD) will oversee Freeport and Vicinity CSRM, Jefferson County Drainage District #7 (DD7) will oversee Port Arthur and Vicinity CSRM features and Orange County will oversee Orange CSRM.

### **4. Lands, Easement & Rights-of-Way**

The Non-Federal Sponsor is responsible for acquiring and furnishing all lands, easements, rights-of-way, relocations (i.e., P.L. 91-646 relocations and utility/facility relocations), borrow material, and dredged or excavated material disposal areas (LERRD) for the project, if required. Lands needed for this project will be acquired in fee excluding minerals, permanent levee easements, temporary staging easements and a nonstandard estate for TPWD owned lands needed for mitigation. A review of LERRD requirements is set forth below. The real estate requirements for the Project must support construction as well as the continued operation and maintenance of the Project. The majority of the acreage affected by the project consists of residential, commercial, industrial, and vacant/undeveloped and marsh land. At the feasibility level over 600 tracts have been identified as being impacted by the project. However, each tract's ownership was not researched at the level of detail as it will be prior to construction.<sup>1</sup>

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<sup>1</sup> There has been some discussion of the possibility of a revision to the levee slope design during completion of the design in PED. For purposes of this study, a 3:1 slope was utilized to determine the land requirements for the levee. If the design changes to a 6:1 slope, the project footprint would be smaller, resulting in less acreage required in the levee easements than that identified in this REP.



The real estate interests for this project are as follows. The following Corps Standard Estates are applicable:

- Standard Estate #3 Fee Excluding Minerals - *The fee simple title to the land, subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines; excepting and excluding all (coal) (oil and gas), in and under said land and all appurtenant rights for the exploration, development, production and removal of said (coal) (oil and gas), but without the right to enter upon or over the surface of said land for the purpose of exploration, development, production and removal therefrom of said (coal) (oil and gas).*
- Standard Estate #9 Flood Protection Levee Easement - *a perpetual and assignable right and easement in the land described to construct, maintain, repair, operate, patrol and replace a flood protection levee, including all appurtenances thereto; reserving, however, to the owners, their heirs and assigns, all such rights and privileges in the land as may be used without interfering with or abridging the rights and easement hereby acquired; subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.*
- Standard Estate #15 Temporary Work Area Easement - *a temporary easement and right-of-way in, on, over and across the land described, for a period not to exceed \_\_\_\_ months, beginning with date possession of the land is granted to the United States, for use by the United States, its representatives, agents, and contractors as a (work area), including the right to (borrow and/or deposit fill, spoil and waste material thereon) (move, store and remove equipment and supplies, and erect and remove temporary structures on the land and to perform any other work necessary and incident to the construction of the \_\_\_\_\_ Project, together with the right to trim, cut, fell and remove there from all trees, underbrush, obstructions, and any other vegetation, structures, or obstacles within the limits of the right-of-way; reserving, however, to the landowners, their heirs and assigns, all such rights and privileges as may be used without interfering with or abridging the rights and easement hereby acquired; subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.*

**Project Levee and Floodwall Alignment. Project features are shown in Exhibits A.**

**Orange CSRM:** The recommended plan of the Orange CSRM is a levee/floodwall flood risk reduction system located on the southern half of Orange County along the Sabine River and Bessie Heights Marsh. The recommended plan indicate 15 miles of new levee and 11 miles of new floodwall will be constructed. For the levees, a perpetual easement ranging from 100 feet to 150 feet was devised, variations in such easement requirements are due to the varying nature of the elevation of the flood risk reduction system and the existing natural ground. For the floodwalls, which have a smaller footprint than the levees, a uniform 78 foot wide easement was assumed for permanent use. Two gate structures will also be constructed at Cow

and Adams bayous. In general, the alignment for the levee and/or floodwall starts near Rose City (I-10) and meanders in a southeast direction, turning north near Bridge City, to the terminus near the City of Orange and adjacent to I-10.

The types of lands affected by this project consist of residential (14%), commercial (7%), industrial (14%), vacant/undeveloped (18%), and marshland (47%). 85 acres will need to be acquired for this section of the project as shown in Exhibit A. Total number of ownerships impacted by this section of the project is 168 with the number of tracts being 335. This number was determined by reviewing aerial maps of the alignment and seeing which tracts were affected. For example, an ownership was found to be impacted even if the alignment fell on a 10ft portion of the tract. The total number of structures impacted is 30. This number was determined by reviewing aerial maps of the alignment and seeing what structures were impacted. Access to the project site will be by barge or public roads. Also, the width of the area acquired in a perpetual easement is sufficient to accommodate all the construction activities for the levee and/or floodwall.

Approximately 80 acres of Texas Parks and Wildlife (TPWD) fee lands will be affected by construction of the floodwall/levee features located in the Orange reach. The impacts of these requirements have resulted in the need for environmental mitigation, discussed in detail below in paragraph 9. We expect to work out any additional impacts to TPWD lands that are revealed during the design phase, and TPWD will convey the standard permanent easement for these construction features. The local TPWD land managers have expressed support verbally to the District team for the proposed plan. The letter from the TPWD Austin office is necessarily conservative in nature now due to the work yet to be done during the design phase. It is understood that, once in the land acquisition stage, the acquisition of easements for the levee and floodwall features by the NFS over the 80 acres owned by TPWD must follow the process identified in chapter 26 of the Texas Parks and Wildlife Code. This is the only way TPWD can convey interests in land to the NFS. The land acquisition schedule will be set accordingly.

**Port Arthur and Vicinity CSRM:** An existing Hurricane Flood Protection Project (HFPP) protects the Port Arthur area from coastal storm surge events coming from the Gulf of Mexico. It also protects against flooding from the Sabine River. The levee system consists of 27.8 miles of earthen embankment and 6.6 miles of floodwall, including 3.5 miles of cantilever wall. The recommended plan consists of portions of the existing system of levees and floodwalls and/or closure system to be improved with resiliency features or replaced. There will also be a new levee section on the northeastern end of the system measuring 1,830 LF which will require perpetual easements. The majority of the proposed work will be within the existing HFPP right-of-way. Total number of ownerships impacted by this section of the project is 62. Total number of structures impacted is 8.

**Freeport and Vicinity CSRM:** The existing HFPP at Freeport consists of approximately 43 miles of levees, wave barriers and floodwalls, pump stations, multiple gates and culverts. The recommended plan for the Freeport and Vicinity CSRM Project involves construction of

floodwalls, raising of levees, replacement of vehicular closure structures, and constructing a navigable gate structure in an active barge canal. The majority of the proposed work will be within the existing HFPP right-of-way in which the NFS, VDD, holds a perpetual easement. The total number of ownerships impacted by this section of the project is 22. The total number for of structures identified impacted by this section of the project is 1 industrial structure.

## **5. Borrow Material**

Material needed for the levee will be acquired commercially rather than obtained from a borrow area. This will be a construction cost and the NSF will not be eligible for LERRD crediting for these cost.

## **6. Access/Staging Area**

Access to the construction areas will be over existing public roads and navigable waters throughout the project areas. Also, width of the area acquired for the easements for the levee and/or floodwall, negates the need to acquire TWE and Road Easements in those areas. For access in the Port Arthur and Freeport Vicinity areas, access will be via the existing levee Right-of- Way in which VDD and DD7, hold perpetual easements. Staging areas that will be needed for all project areas and are shown in Exhibit A.

## **7. Recreation Features**

The proposed Project does not have any recreation features.

## **8. Induced Flooding**

Modeling did show induced impacts that could reach to levels of 1 to 1.5 feet in areas along the Neches River and the Orange County levee. The levees on the Neches River that were causing the most adjacent impact and could induce damages in this area have since been removed from the selected plan and these impacts will not occur. Regarding Orange 3, some induced flooding was determined, the largest being along the Neches River. Again these sections of levee have been removed from the final selected plan and impacts in this area will be negligible.

## **9. Mitigation**

All environmental impacts identified for the Recommended Plan are associated with the Orange 3 CSRM Plan and the associated land requirements will be the responsibility of Orange County. Planning for the avoidance and minimization of environmental impacts began with the initial selection of the Orange CSRM alignment. The proposed mitigation plan is to restore approximately 453 acres of emergent marsh, and preserve in perpetuity approximately 559 acres of forested wetlands. Mitigation is needed to compensate for a loss of forested wetlands and coastal wetlands. Mitigation construction consists of containment dikes, pumping dredged

material into open water areas, dewatering, marsh plantings and containment dike removal. Monitoring and adaptive management is also required, consisting of periodic inspections and any necessary corrective actions.

There are six areas identified as land to be utilized for the mitigation. These areas are identified as Mitigation Areas (MA) 28, 29, 31, 52, 11, and 161. MAs 52, 11, 161 are privately owned, total 622 acres, and the NFS will be required to acquire the land for these mitigation sites in accordance with standard Army policy, using standard fee estate three: Fee Excluding Minerals With a Restriction on Use of the Surface. For further discussion of the treatment of minerals, see Section 17 of this Appendix.

MAs 28, 29 and 31 are owned in fee by Texas Park and Wildlife Department (TPWD) and total 390 acres. The mitigation sites on TPWD fee lands are compatible with TPWD land use and mission and are not a concern with regard to TPWD's cooperation and concurrence. However, pursuant to Texas state law, TPWD cannot convey its fee interest in these lands. Army policy requires fee acquisition for mitigation lands. As a result, a non-standard estate will be necessary and HQUSACE approval will be required prior to acquisition by the NFS. Preliminary coordination has already begun with TPWD regarding a nonstandard estate for its' lands identified as proposed mitigation sites. In the event a satisfactory non-standard estate cannot be acquired and approved by HQUSACE, the District will identify additional privately owned lands for mitigation and the NFS will acquire these in fee as described above. Costs to address this additional private land requirement, if it develops, are included in project contingency funds.

Ongoing coordination with TPWD regarding the acquisition of TPWD lands for mitigation will be necessary for this project feature.

## **10. Federally Owned Land & Existing Federal Project**

There is no existing federally-owned land within the limits of this Project. However, the recommended plan affects two existing federal projects, the Port Arthur and Port Freeport Hurricane Flood Protection Projects.

Port Arthur: The Port Arthur HFPP is owned and operated by the Jefferson County Drainage District #7, the NFS for the current Port Arthur and Vicinity CSRM features. As a part of the HFPP, the NFS owns permanent levee easement. Some of the proposed project features in this CSRM reach for replacement or resiliency improvements will be constructed within the same real property footprint as the HFPP existing project where it has been determined that the acreage and the estate are sufficient. For features that have been identified as not within existing rights, those acquisition requirements, like temporary staging areas, are included in the acreage and costs to be acquired by the NFS in this report. No LERRD credits will be given for any lands previously provided as an item of local cooperation for the HFPP. The HFPP deeds and legal descriptions will be compared with the plans and specs during the design phase to be certain all LERRD requirements are properly identified in writing prior to PPA execution and

that no LERRD credits are given for lands previously provided as an item of cooperation for the HFPP.

**Port Freeport:** The Freeport Hurricane Flood Protection Project is owned and operated by the Velasco Drainage District, the NFS for the Freeport and Vicinity CSRM. As a part of the HFPP, the NFS owns permanent levee easement. Some of the proposed project features in this CSRM reach for replacement or resiliency improvements will be constructed within the same real property footprint as the HFPP existing project where it has been determined that the acreage and the estate are sufficient. For features that have been identified as not within existing rights, those acquisition requirements, like temporary staging areas and permanent rights for the drainage overflow are included in the acreage and costs to be acquired by the NFS in this report. No LERRD credits will be given for any lands previously provided as an item of local cooperation for the HFPP. The HFPP deeds and legal descriptions will be compared with the plans and specs during the design phase to be certain all LERRD requirements are properly identified in writing prior to PPA execution and that no LERRD credits are given for lands previously provided as an item of cooperation for the HFPP.

## **11. Non-Federal Sponsor Owned Land**

**Orange CSRM:** Orange County owns the underlying fee lands for 116 acres of the 379 acres needed for this section of the project. The majority of the 116 acres is located on the northeastern portion of the Orange CSRM in the city of Orange.

**Port Arthur and Vicinity CSRM:** Jefferson County Drainage District #7 owns permanent easements for the existing HFPP located in the Port Arthur and Vicinity CSRM project area. The existing system consists of 27.8 miles of earthen embankment and 6.6 miles of floodwall, including 3.5 miles of cantilever wall.

**Freeport and Vicinity CSRM:** Velasco Drainage owns permanent easements for the existing HFPP located in Freeport and Vicinity CSRM project area. The existing system consists of approximately 43 miles of levees, wave barriers, floodwalls, pump stations, multiple gates and culverts.

All of the NFSs understand that their existing lands will be utilized as much as possible for the recommended project features and all have expressed their willingness to make their lands available. They also understand that no LERRD credits are given for lands previously provided as an item of local cooperation for the HFPP or any other federal project. For new project features that have been identified as not within existing rights, those acquisition requirements, like temporary staging areas and permanent rights for the drainage overflow and levee easements for extensions of the existing levees are included in the REP acreage and costs to be acquired by the NFS.

## **12. Navigation Servitude**

Portions of the project structures, specifically flood gates on Cow and Adams Bayou Channels, lie within the navigable waters of the United States. When properly exercised, the navigation servitude operates as an exception to the Fifth Amendment's Takings Clause and no compensation is required for actions that would otherwise constitute a taking. Whether the navigation servitude is available for a coastal storm damage reduction project depends on the project's relationship to navigation. For example, coastal storm damage reduction measures may be related to navigation if the measures contribute to preventing or mitigating damage caused by navigation measures, involve the placement of material dredged from navigation channels, or otherwise have an impact on navigation.

This project is a broad multi-purpose project to develop a plan to address severe erosion and storm damages along coastal Texas. The proposed project flood gates protect two commercial navigation channels that are used for interstate and foreign commerce. The floodgates will be designed to protect commercial navigation along these channels that are part of the Gulf Intracoastal Waterway (GIWW) system. The GIWW in Texas is a nationally significant channel that supports energy, chemical and agricultural industries. These flood gate project features are integrally linked to preventing storm and flood damage impacts on navigation and interstate and foreign commerce. A District Counsel legal opinion has been completed and supports application of the servitude for these flood gate features. No land acquisition has been identified as necessary by the NFS for these gates that are within the servitude.

## **13. Public Law 91-646 Relocation Assistance**

The benefits of Title II of the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970 (P.L. 91-646), as amended, are applicable for this project. Title II requires that persons and businesses displaced by a Federal project be given advisory services and assistance in the location of replacement dwellings and businesses.

Under Title II, displaced persons are entitled to reimbursement for actual and reasonable moving of personal property, differential housing payment, and incidental costs associated with the relocation. Differential housing payment is a payment made by the Government when the compensation paid for the property being acquired is not sufficient to cover the costs of a replacement dwelling for the displaced persons. Differential payments are capped at \$34,000 for homeowners and \$10,200 for tenants. Commercial businesses are entitled to receive advisory services, reimbursement for actual reasonable moving costs, re-establishment costs which are capped at \$10,000 and certain reasonable and necessary incidental costs associated with the relocation. For purposes of this study, the estimate of relocation for business includes all of these costs and was estimated to be approximately \$100,000 per industrial business and \$50,000 per commercial business. Non-Federal Sponsor will be required to perform and pay for PL 91-646 relocations which will be eligible for LERRD crediting.

There are a total of approximately 39 residential, commercial or industrial structures identified as needing to be relocated for this project.

Orange: 9 Residential  
4 Commercial  
17 Industrial

Port Arthur: 8 Residential

Freeport: 1 Industrial

## **14. Assessment of Non-Federal Sponsor Land Acquisition Capabilities**

An Assessment of each Non-Federal Sponsor's Real Estate Capabilities is attached as Exhibit D.

As described previously, the Orange CSRМ includes requirements on property owned by the TPWD. The NFS, Orange County, does not have the legal authority to condemn lands owned by TPWD. If a consensual land transaction approved by USACE cannot be reached between the NFS and TPWD, then other private lands will be utilized, if possible, as discussed in the mitigation paragraph above.

The Assessment of NFS's Land Acquisition Capabilities survey indicates no major issues with any NFS's ability to acquire lands for this project. However, if it is established at some point in the future that a survey was mistakenly answered, a NFS maintains the option to request Government assistance to acquire subject lands on its behalf.

Both the Orange and Port Arthur projects propose features constructed on land owned by railroad companies. DD7 has the apparent legal authority to condemn a railroad if needed. Currently it is uncertain if Orange County has legal authority to condemn a railroad. If Orange County is not able to condemn a railroad property and cannot reach amicable agreement approved by USACE, the NFS will have to request USACE to complete the land transactions on their behalf.

## **15. Baseline Cost Estimate for Real Estate**

Refer to Exhibit B for the Baseline Cost Estimate/Chart of Accounts estimate for Orange, Port Arthur and Freeport CSRМ project areas. The costs include land payments as well as administrative costs and incremental costs associated with acquiring the real estate interests. These estimates include costs of acquiring mitigation lands.

A gross appraisal was done for all project areas. The appraisal report contained estimates for acquisitions of real property interest, residential (PL-91-646), commercial and industrial relocation cost, damages/severances, condemnation, and contingencies. During the time of this report, the Galveston Real Estate Division was still coordinating with the NFS on determining certain Non-Federal Costs for the Freeport and Orange project areas. Below are the Federal and Non-Federal real estate costs for this project.

### Orange

Non-Fed: \$33,199,506.00

Fed: \$5,706,150.00

### Port Arthur

Non-Fed: \$8,377,956.73

Fed: \$786,910.40

### Freeport

Non-Fed: \$10,876,984.47

Fed: \$501,250.00

## **16. Acquisition Schedule**

An acquisition schedule has not been determined at this time. It is assumed that the project will be constructed in sections. A detailed acquisition schedule will be prepared during PED once the 95% plans and specifications are prepared for each section of the project. The NFS will be required to acquire all LERRD for the Recommended Plan CSRM features, after a PPA has been signed and prior to the advertisement for construction, such that the features can be constructed and available for use as scheduled. Additional days were added to the Milestone table to account for the number of tracts needing to be acquired. Description of acquisition milestones for the NFS are listed below.

<b>Milestones are based on the Project Partnership Agreement being signed</b>	
Transmittal of ROW drawings & estate(s)	90 days after PPA signed
Obtain Surveys	90 days after transmittal of ROW drawings & estate(s)
Obtain Title Evidence	180 days after obtaining surveys
Obtain Appraisals	180 days after obtaining titles
Appraisal Review (Federal Task)	180 days after obtaining appraisals
Authorization to Proceed with Offer	30 days after obtaining appraisals & reviews
Conclude Negotiations	360 days after start of negotiations
Conclude Closings	180 days after concluding negotiations

## **17. Minerals**

The lands to be acquired in fee for the project are all in the Orange CSRM reach and are needed for mitigation of environmental impacts. These lands are privately owned and will be acquired in fee by the NFS, Orange County, using the estate described previously. Use of this estate excepts and excludes minerals from the acquisition. While the estate includes a surface restriction that will be effective against the surface owner, to the extent the surface owner



retains any mineral interests, it leaves third party mineral interests outstanding and unrestricted.

The recommendation to leave the third party mineral rights outstanding beneath the fee lands to be acquired for Mitigation Areas 11, 52 and 161 is based on a determination of low risk to the project. These three mitigation sites are estimated in size as follows: site 11 - 447 acres; site 52 - 63 acres; and, site 161 - 112.5 acres. The District viewed the risk exposure in light of the extensive administrative effort to identify the third party mineral title owners and the time and cost it would then take the NFS to acquire a subordination of all of the fractional interests needed. Condemnation of some mineral interests would be expected in order to clear title for unknown owners or for unwilling sellers.

The low risk determination is based upon a review of available mineral activity data from the Texas Railroad Commission public records. Although there are no wells directly within the project area or footprint, these records reflect that several dry wells have already been drilled within approximately one mile of Mitigation Area 161. In the vicinity of Mitigation Area 52, there are perhaps 100 wells active or plugged within 1 mile of the site. Mitigation area 11 is within a mile or less of multiple dry extraction wells. The extraction technology used in the area is directional drilling and this allows for extraction from adjacent lands, resulting in minimal onsite surface impacts. The relative small size of the mitigation areas facilitates offsite extraction. Mineral production in this vicinity is largely complete, with production rates on the decline. Any remaining extraction under the mitigation sites would likely occur through directional drilling from the existing well sites in order to avoid the federal project mitigation features. Land loss rates due to subsidence are also declining and any possible additional subsidence under the sites would take decades to occur, with expected minimal impacts to the mitigation features. The adaptive management plan already includes requirements for the NFS to monitor and mitigate to protect the project features, watching to see if natural accretion and subsidence are in balance. Any delta would be a NFS responsibility. The risk has been coordinated with the NFS, and the NFS concurs in the recommendation to not acquire third party mineral interests beneath the fee parcels. In addition, to the extent that 33 USC 408 applies, USACE, through its permission process, will have an opportunity to affect any proposed mineral extraction that would impact the federal project so as to prevent injury to the public interest or impairment to the usefulness of the project.

## **18. Facilities/Utilities/Pipeline Relocation & Removals**

Relocation data was collected and detailed by the USACE Galveston District, Engineering and Construction Division, to a feasibility level of design.

There are several oil and natural gas pipelines (165), utilities and railroads that have been identified to be impacted by this project. These facilities are listed and discussed in detail in the Engineering Appendix. Because of the sheer number of facility/utility/ and pipeline relocations identified and the PDT's resources, Attorney Opinions of Compensability were not done at the time of this report. To adjust for this gap, all of the affected facilities were assumed to be

entitled to a substitute facility in exchange for the real estate rights needed, and the estimated costs for labor and construction have been included in Exhibit B for each. The Non-Federal Sponsors will perform these relocations as a part of their responsibility under the project partnership agreement. The Government will make a final determination of the relocations necessary for the construction, operation or maintenance of the project during the design phase and will complete Final Attorney Opinions of Compensability as required by Chapter 12 of ER 405-1-12.

## **19. HTRW or Other Environmental Contaminates**

Database searches were performed to identify potential sites of concern in the project area. This investigation indicates no HTRW areas are within or adjacent to the proposed project areas which could impact this project. Based on findings of the searches, the potential of encountering HTRW is considered low. A more detailed description of HTRW can be found in the HTRW Appendix.

## **20. Landowner Opposition**

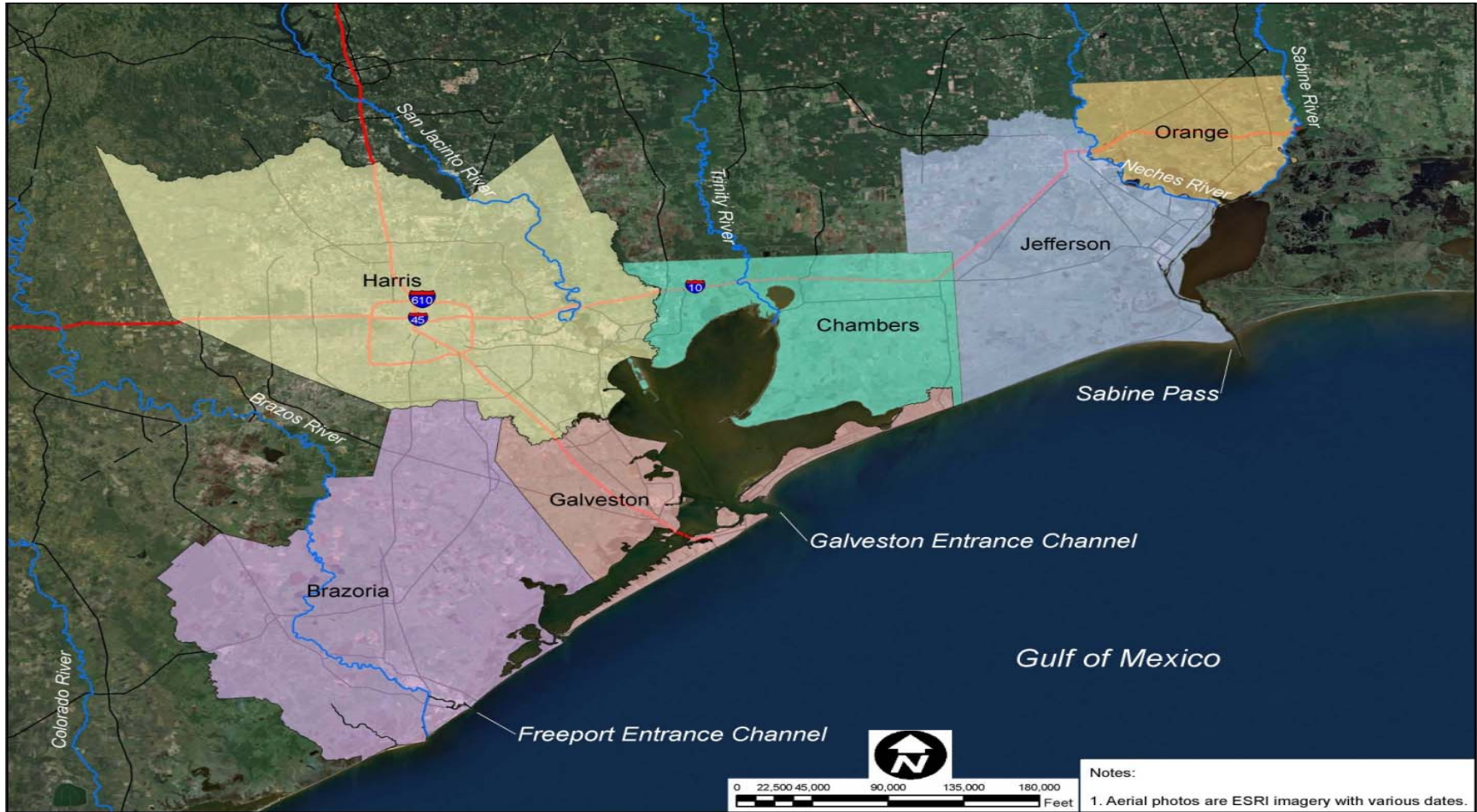
During the preliminary phases of this report there was a mix of both support and opposition from landowners. Landowner concerns were due to the alignment of the levee and flood walls. It was explained that this project is only in the preliminary study phase and final design has not been determined.

## **21. Zoning**

No application or enactment of zoning ordinances is proposed in connection with the Project.

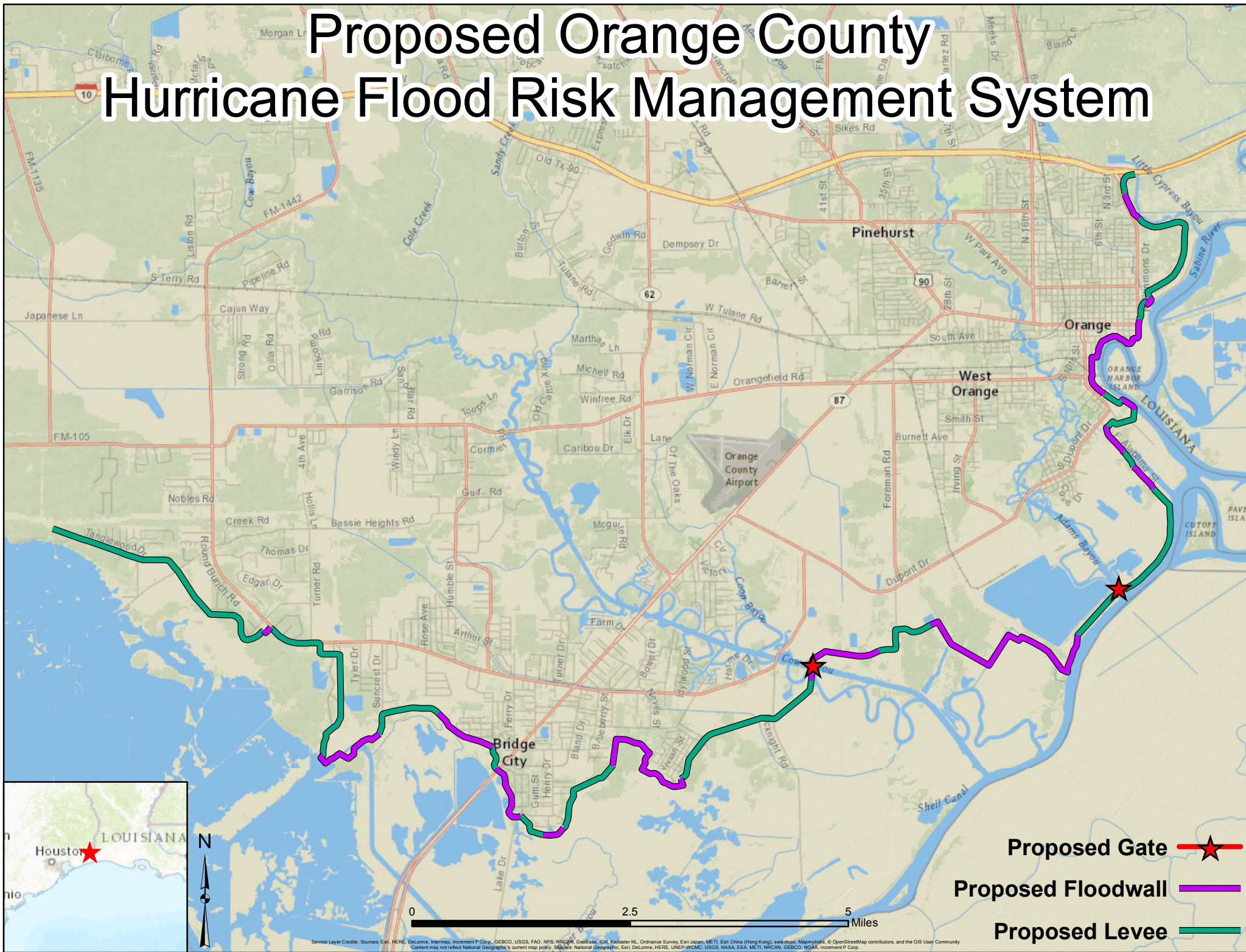
EXHIBIT A  
PROJECT MAPS

## Study Area





# Proposed Orange County Hurricane Flood Risk Management System



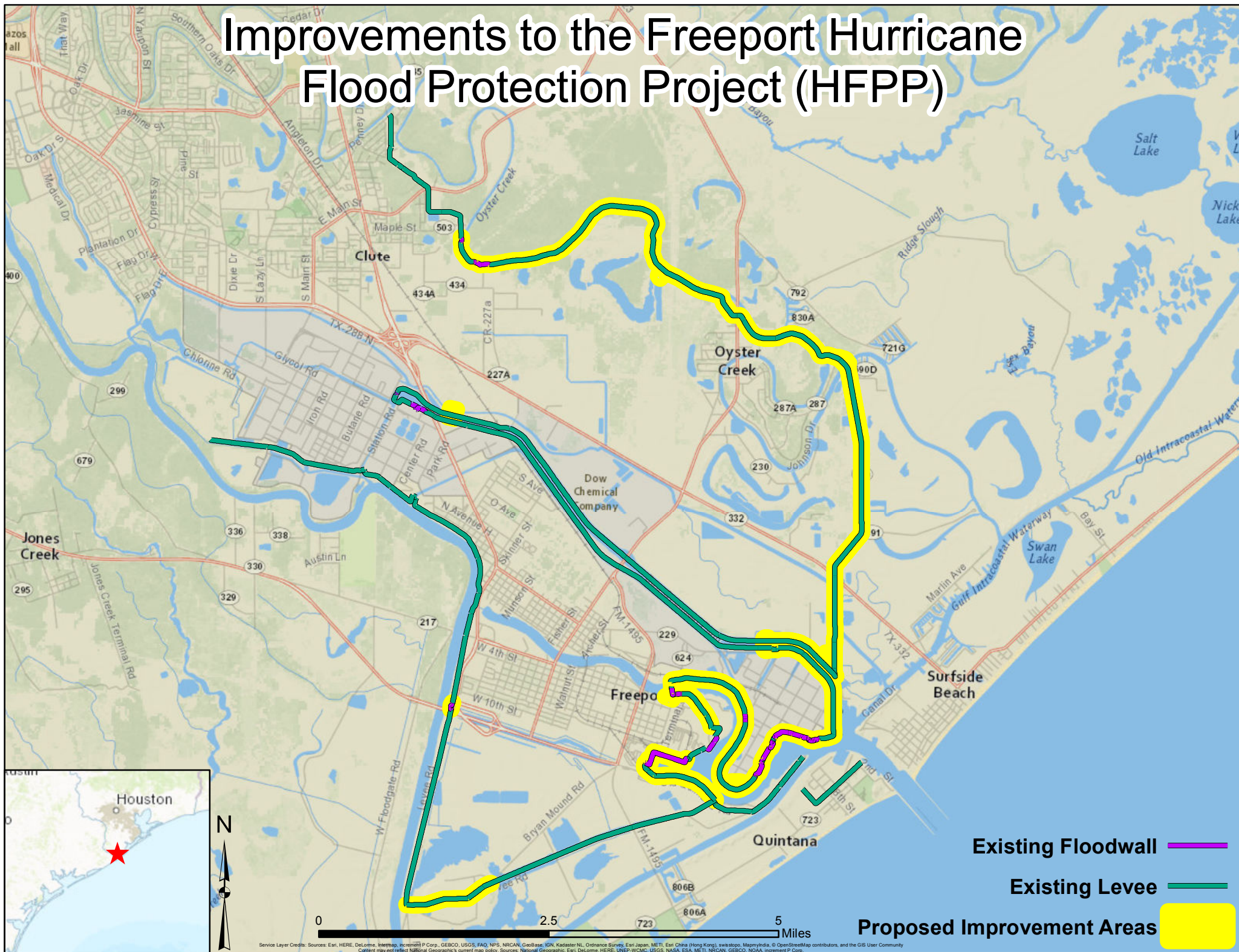


# Improvements to the Port Arthur Hurricane Flood Protection Project (HFPP)

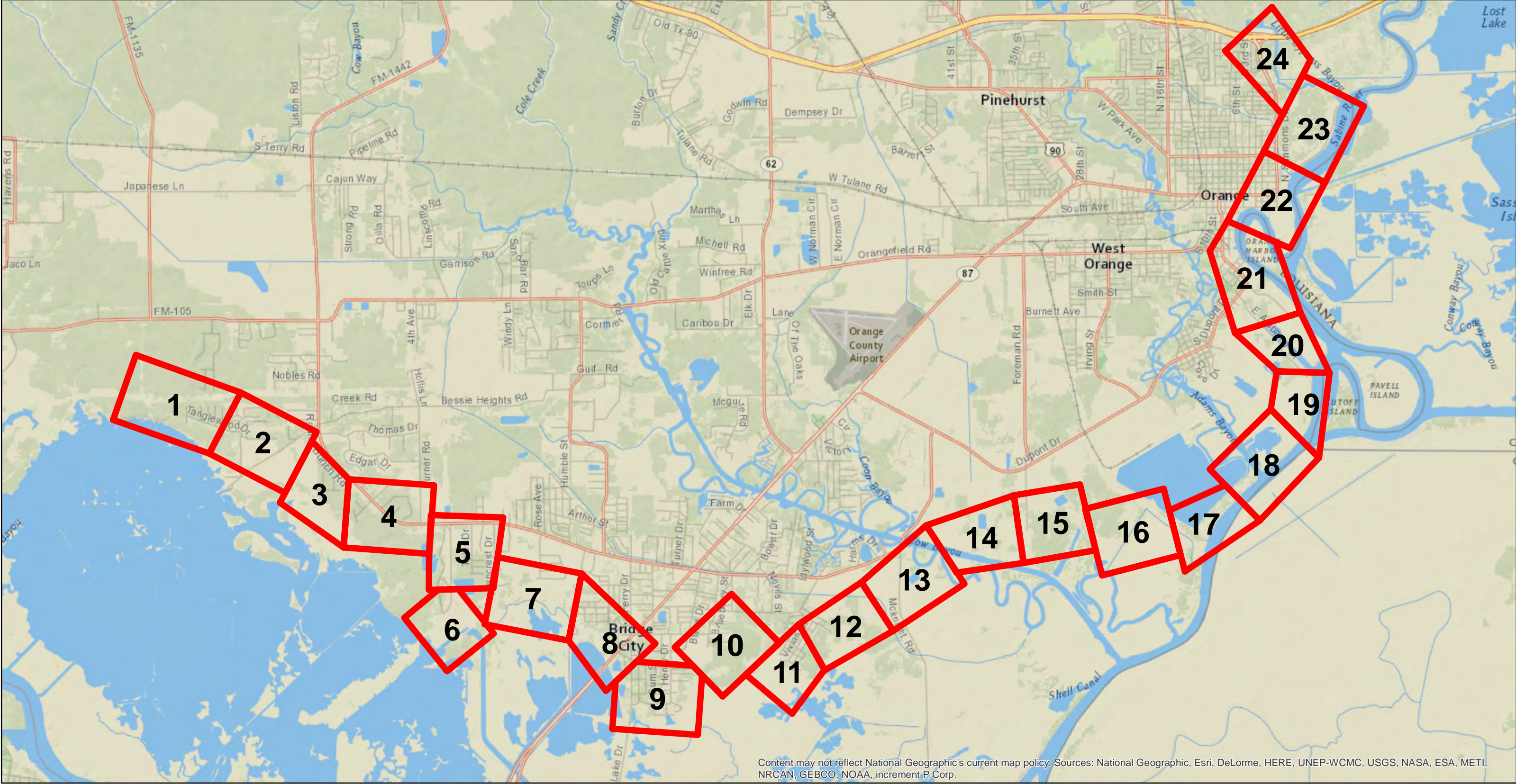




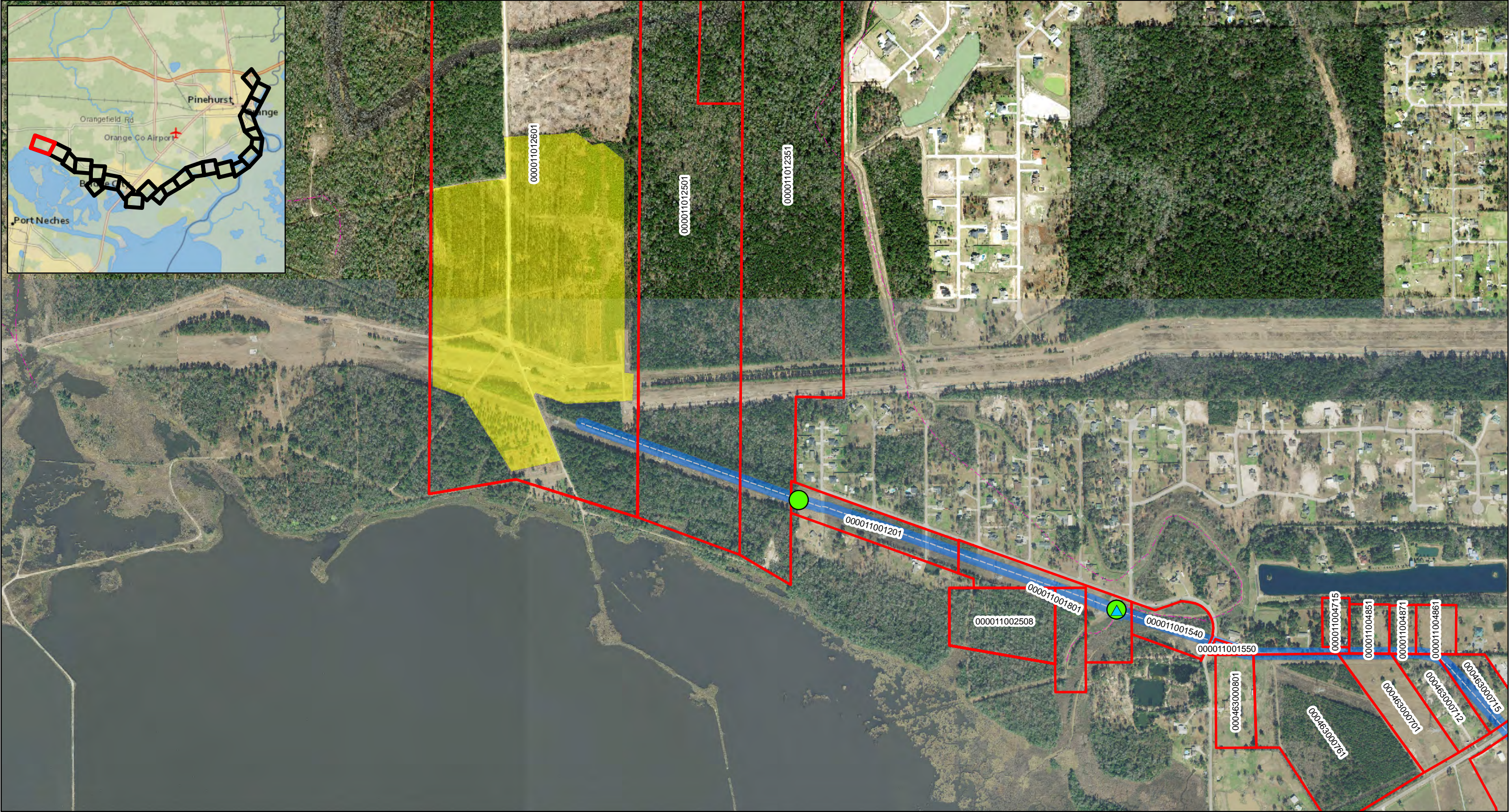
# Improvements to the Freeport Hurricane Flood Protection Project (HFPP)











Legend

- Orange Co. Parcels
- FPLE
- TWAE
- Pump Location
- Outfall Location
- Outfalls
- Levee
- Floodwall
- Gate

DATUM: NORTH AMERICAN 1983  
PROJECTION: UTM  
ZONE: 15 NORTH  
Page 1 of 24

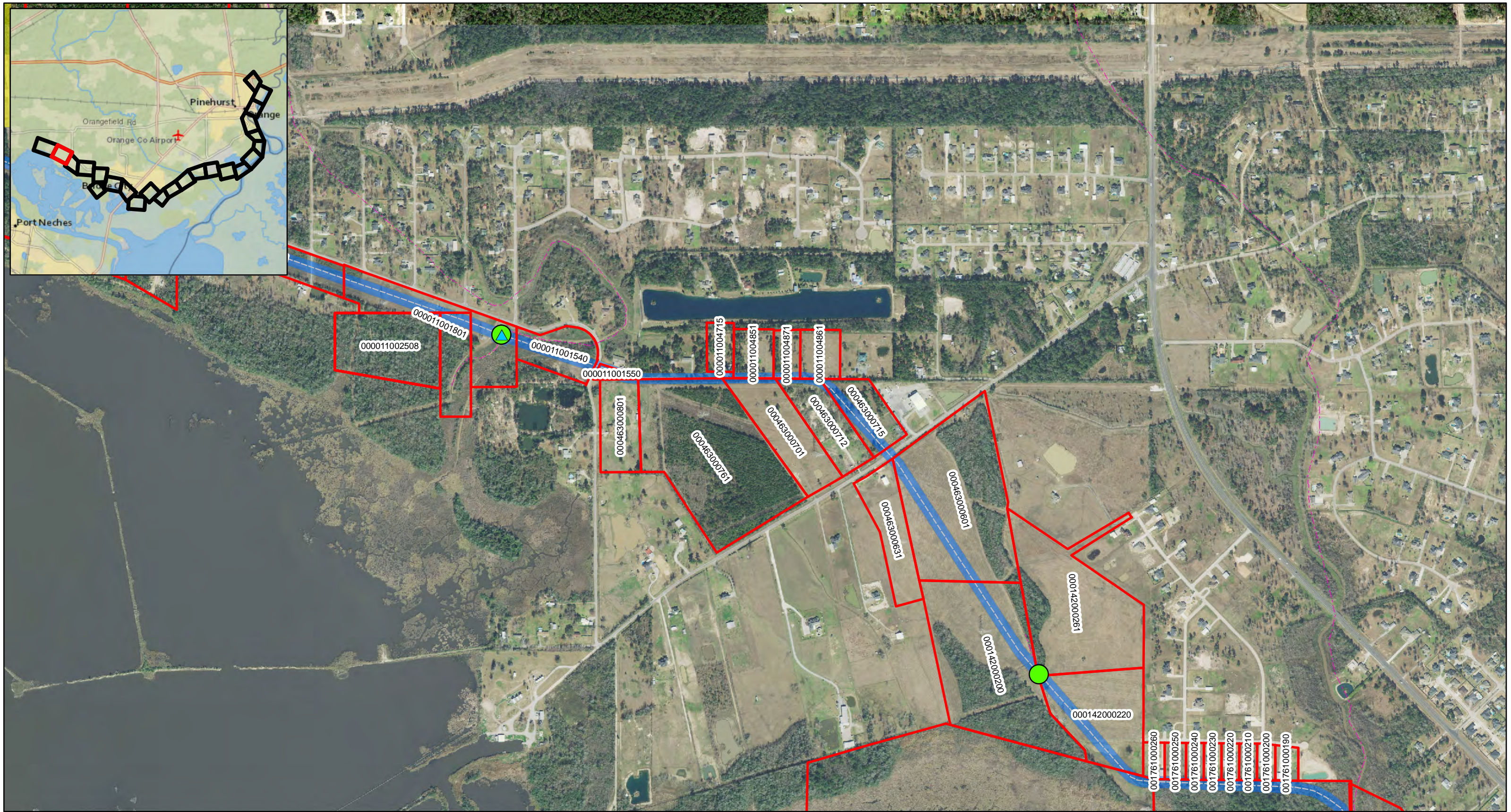
SABINE PASS TO GALVESTON BAY FEASIBILITY STUDY  
ORANGE COUNTY, TEXAS  
REAL ESTATE MAPS 2016

0 2,000 4,000 Feet

The data is only a representation of features on the earth compiled by computer program from raw data obtained from different sources and is not necessarily, in whole or in part, based upon any physical recording, study or survey, professional or otherwise, of the covered property. This information is not intended as a substitute for a field survey by a licensed professional or any other use or application that requires legal or engineering accuracy.







Orange Co. Parcels

FPLE

TWAE

Pump Location

Outfall Location

Outfalls

Levee

Floodwall

Gate

N

W

E

S

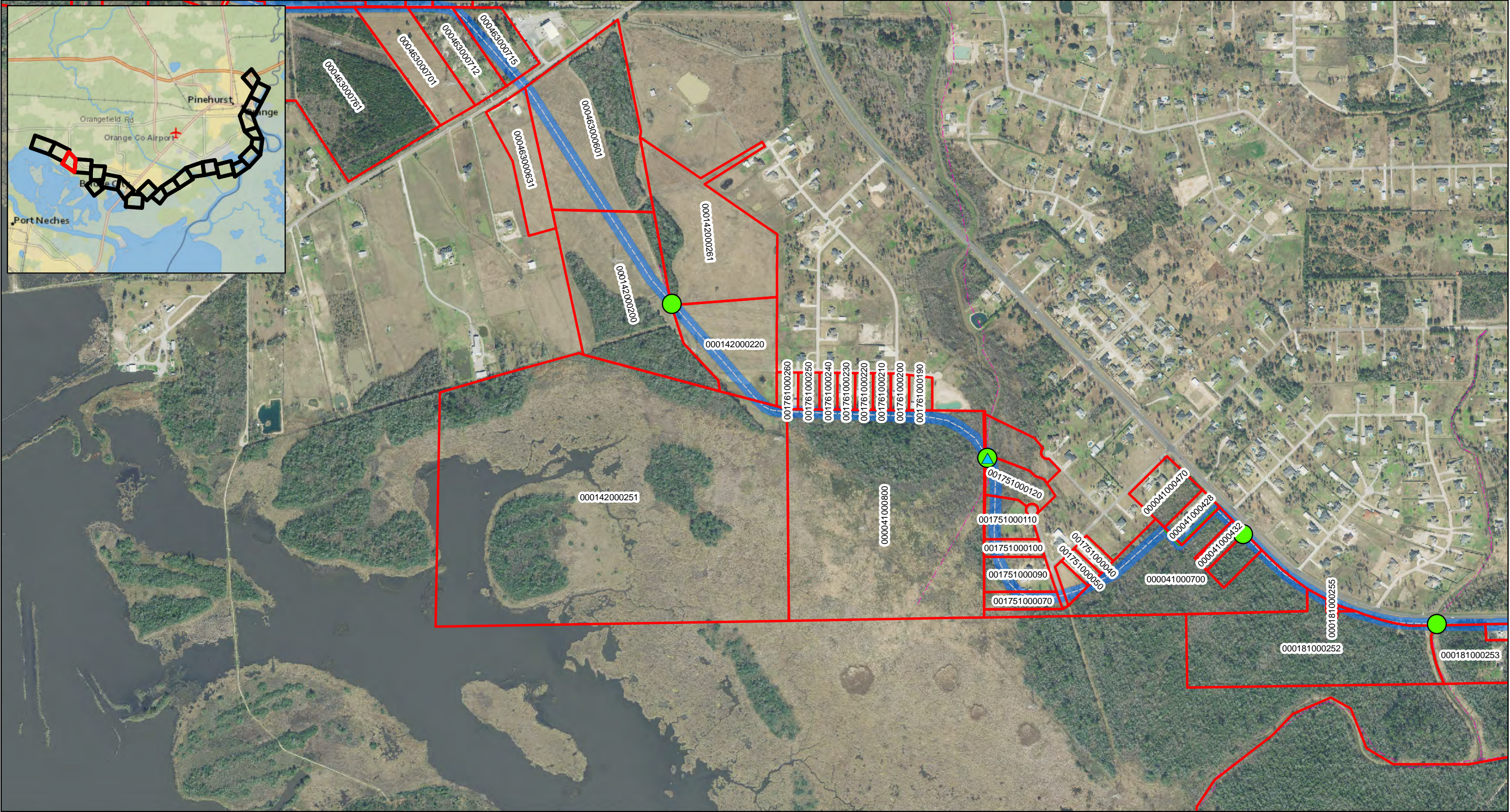
DATUM: NORTH AMERICAN 1983  
PROJECTION: UTM  
ZONE: 15 NORTH

Page 2 of 24

SABINE PASS TO GALVESTON BAY FEASIBILITY STUDY  
ORANGE COUNTY, TEXAS  
REAL ESTATE MAPS 2016

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Orange Co. Parcels

FPLE

TWAE

Pump Location

Outfall Location

Outfalls

Levee

Floodwall

Gate

N

W

E

S

DATUM: NORTH AMERICAN 1983  
PROJECTION: UTM  
ZONE: 15 NORTH

Page 3 of 24

SABINE PASS TO GALVESTON BAY FEASIBILITY STUDY

ORANGE COUNTY, TEXAS

REAL ESTATE MAPS 2016

0

2,000

4,000

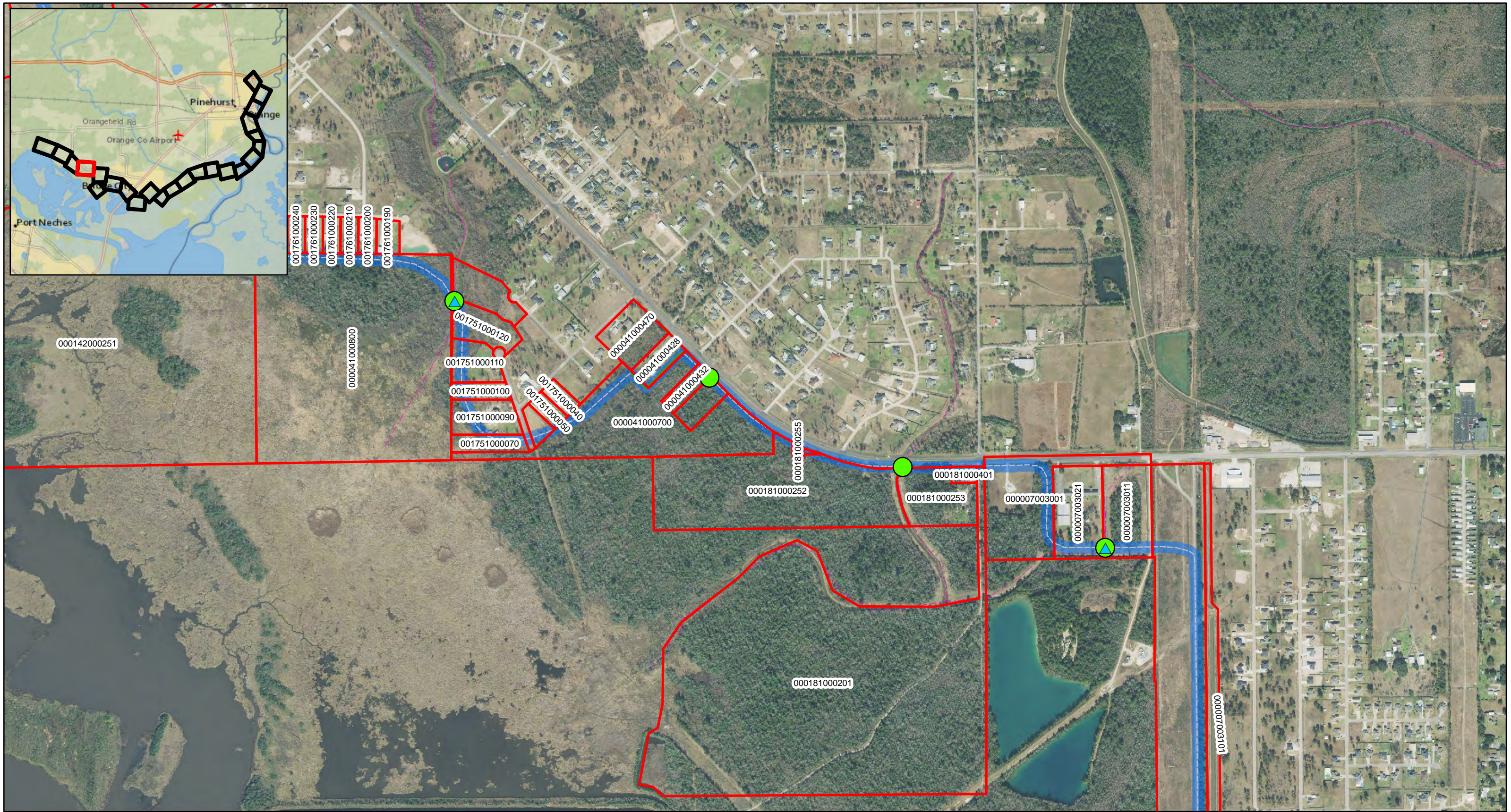
Feet

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US Army Corps of Engineers®

Galveston District





Orange Co. Parcels

FPLE

TWAE

Pump Location

Outfall Location

Outfalls

Levee

Floodwall

Gate

N

W

E

S

DATUM: NORTH AMERICAN 1983

PROJECTION: UTM

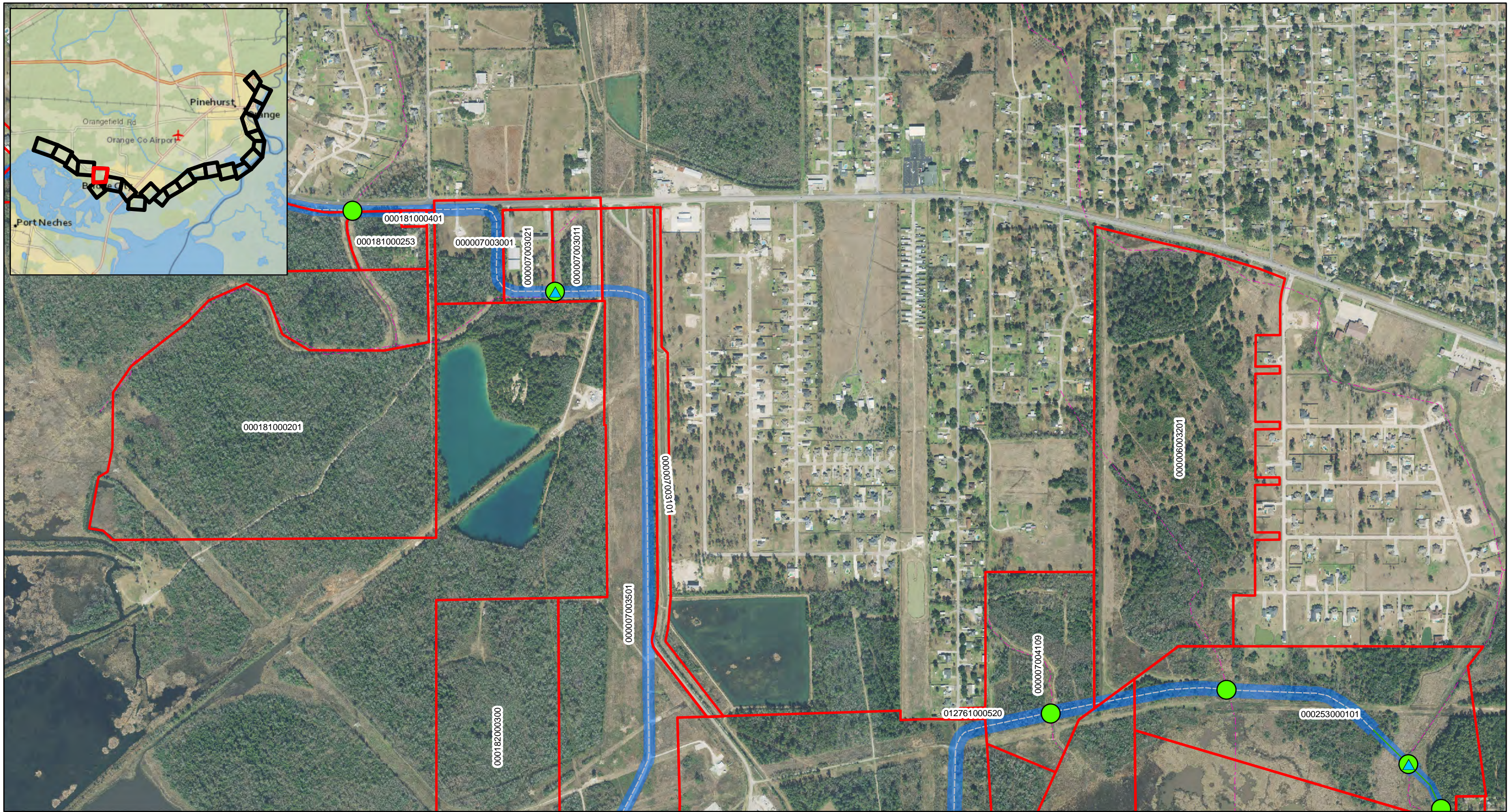
ZONE: 15 NORTH

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SABINE PASS TO GALVESTON BAY FEASIBILITY STUDY  
ORANGE COUNTY, TEXAS  
REAL ESTATE MAPS 2016

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Legend

- |                    |           |
|--------------------|-----------|
| Orange Co. Parcels | Outfalls  |
| FPLE               | Levee     |
| TWAE               | Floodwall |
| Pump Location      | Gate      |
| Outfall Location   |           |

DATUM: NORTH AMERICAN 1983  
PROJECTION: UTM  
ZONE: 15 NORTH  
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SABINE PASS TO GALVESTON BAY FEASIBILITY STUDY  
ORANGE COUNTY, TEXAS  
REAL ESTATE MAPS 2016

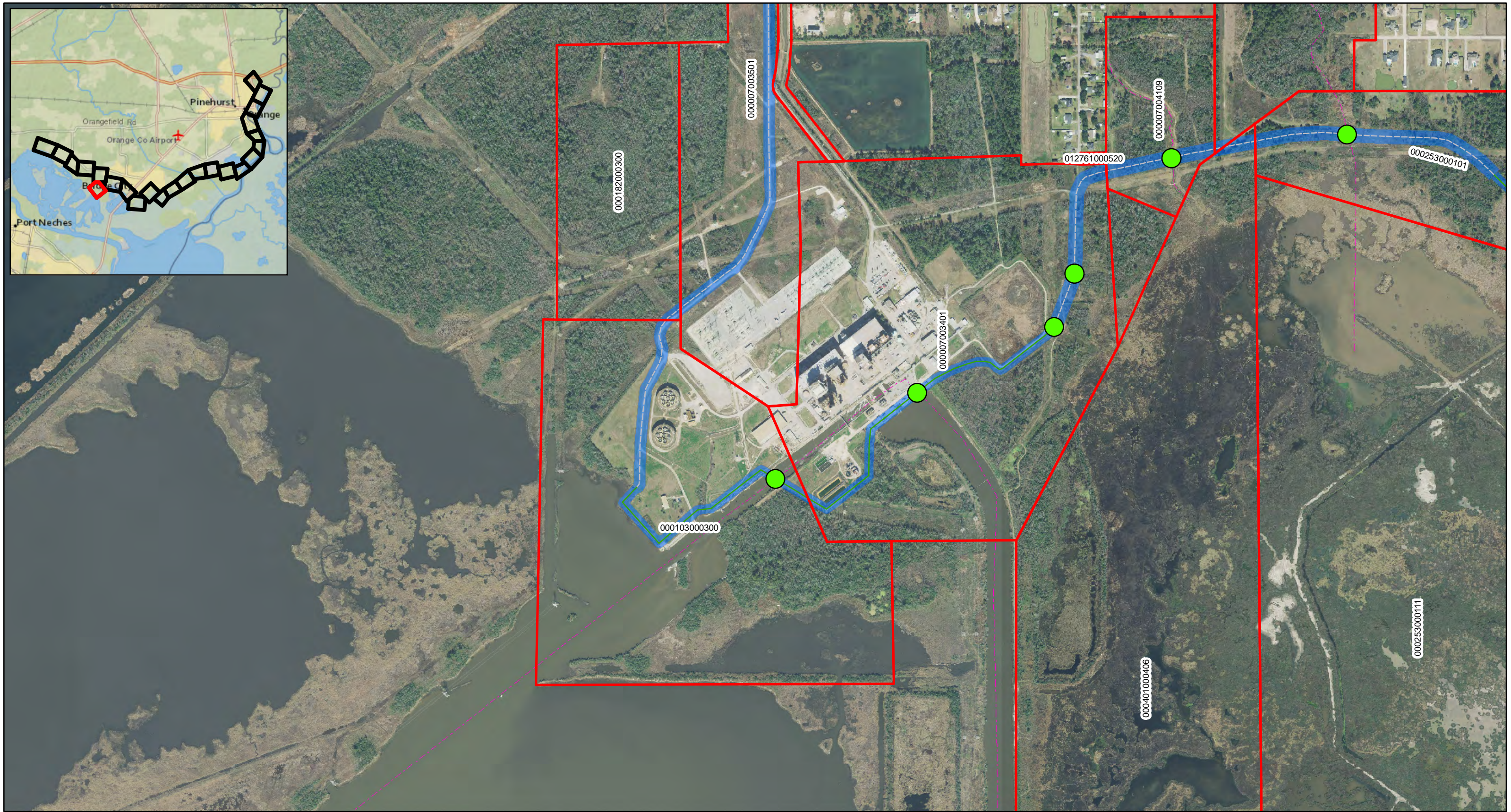
0 2,000 4,000 Feet

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of Engineers®  
Galveston District





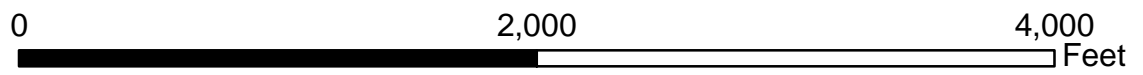
**Legend**

Orange Co. Parcels	Outfalls
FPLE	Levee
TWAE	Floodwall
Pump Location	Gate
Outfall Location	

DATUM: NORTH AMERICAN 1983  
PROJECTION: UTM  
ZONE: 15 NORTH

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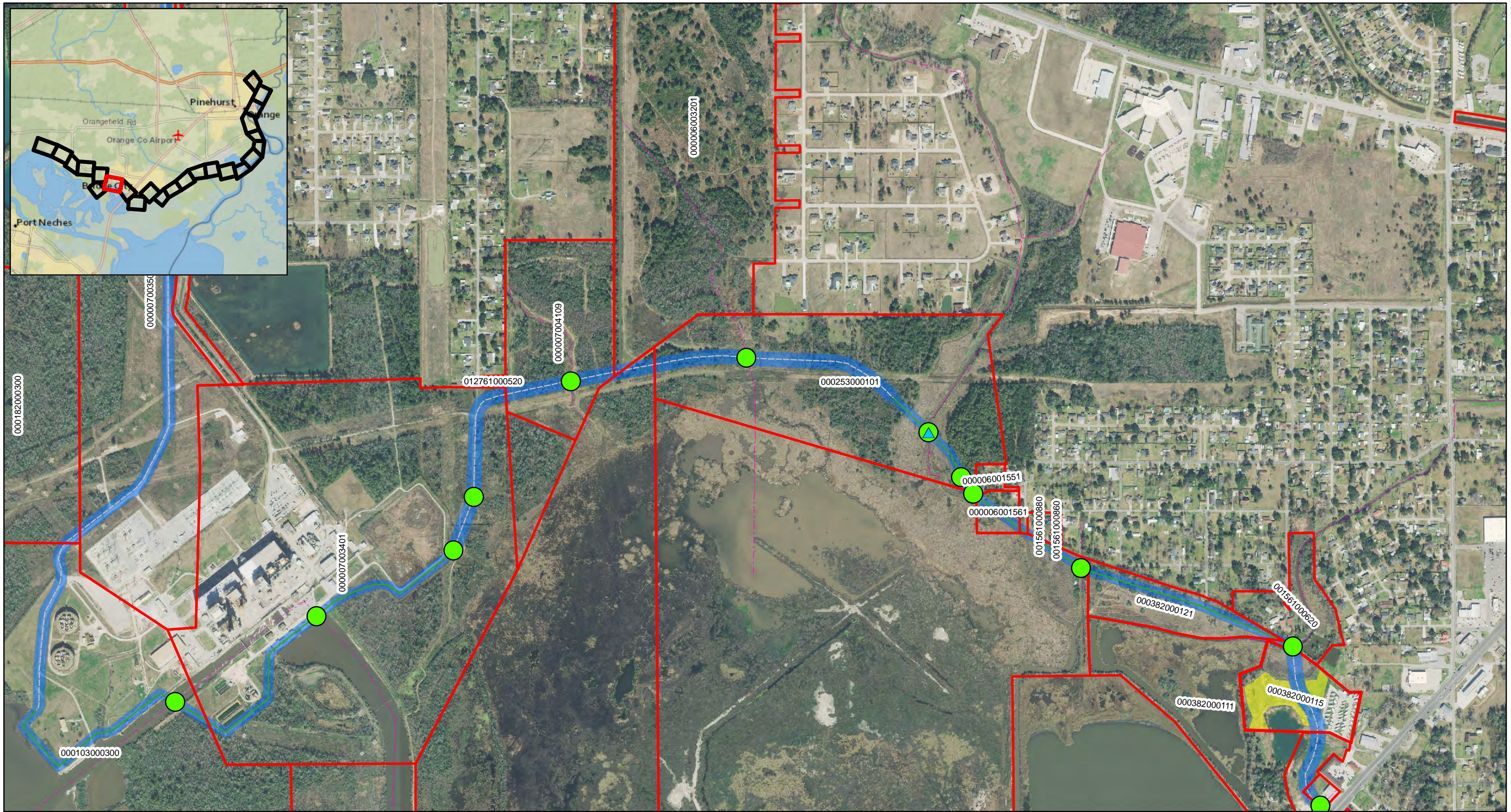
SABINE PASS TO GALVESTON BAY FEASIBILITY STUDY  
ORANGE COUNTY, TEXAS  
REAL ESTATE MAPS 2016



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**Legend**

Orange Co. Parcels	Outfalls
FPLE	Levee
TWAE	Floodwall
Pump Location	Gate
Outfall Location	

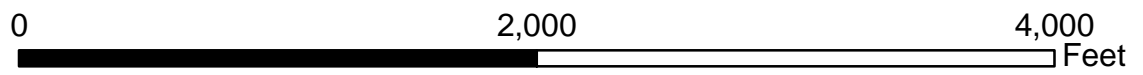
DATUM: NORTH AMERICAN 1983  
PROJECTION: UTM  
ZONE: 15 NORTH

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# SABINE PASS TO GALVESTON BAY FEASIBILITY STUDY

## ORANGE COUNTY, TEXAS

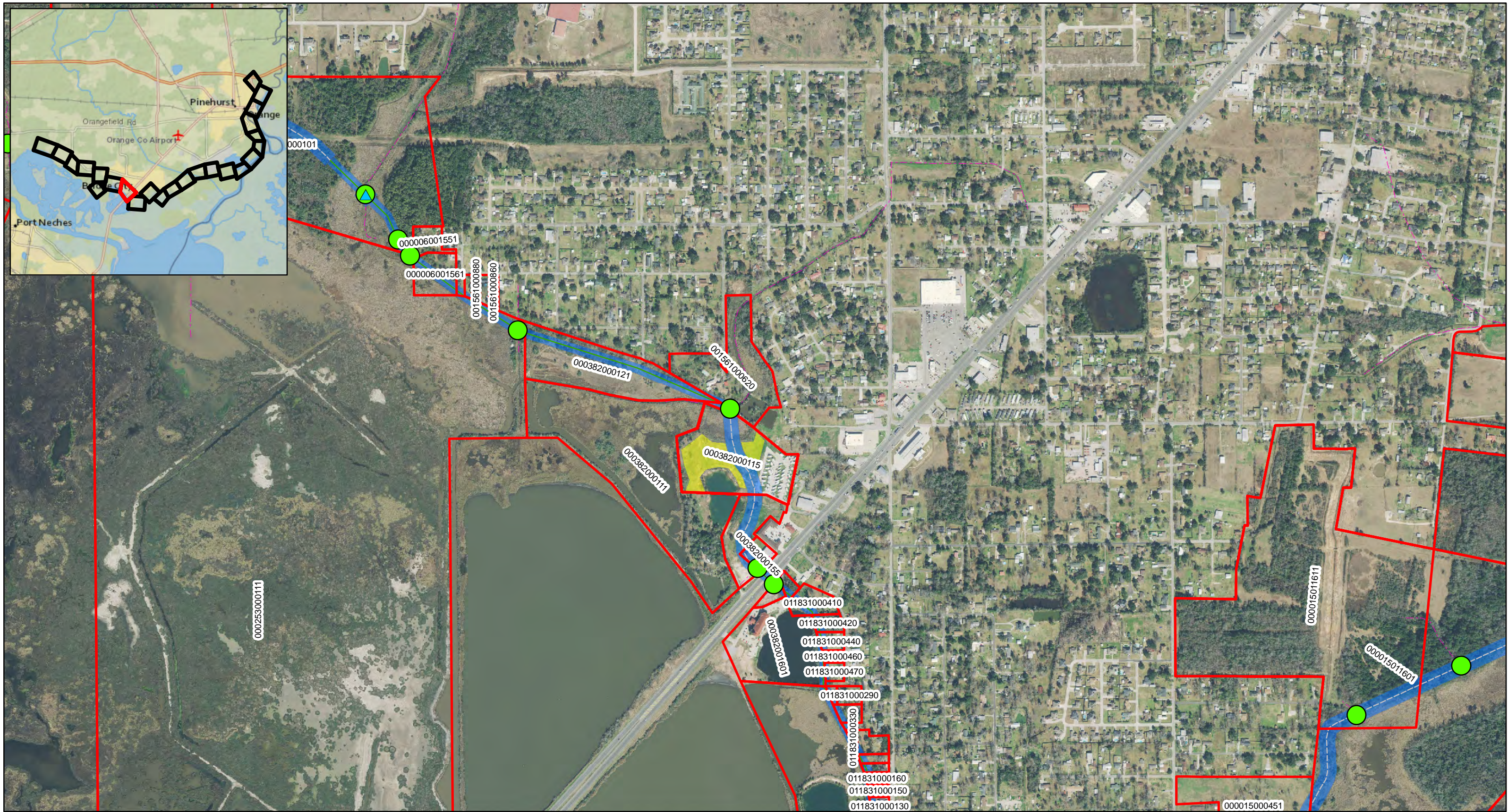
### REAL ESTATE MAPS 2016



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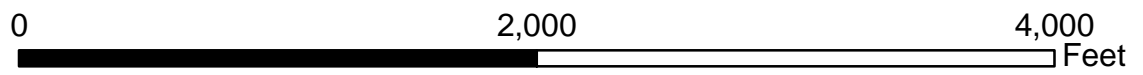
**Legend**

Orange Co. Parcels	Outfalls
FPLE	Levee
TWAE	Floodwall
Pump Location	Gate
Outfall Location	

DATUM: NORTH AMERICAN 1983  
PROJECTION: UTM  
ZONE: 15 NORTH

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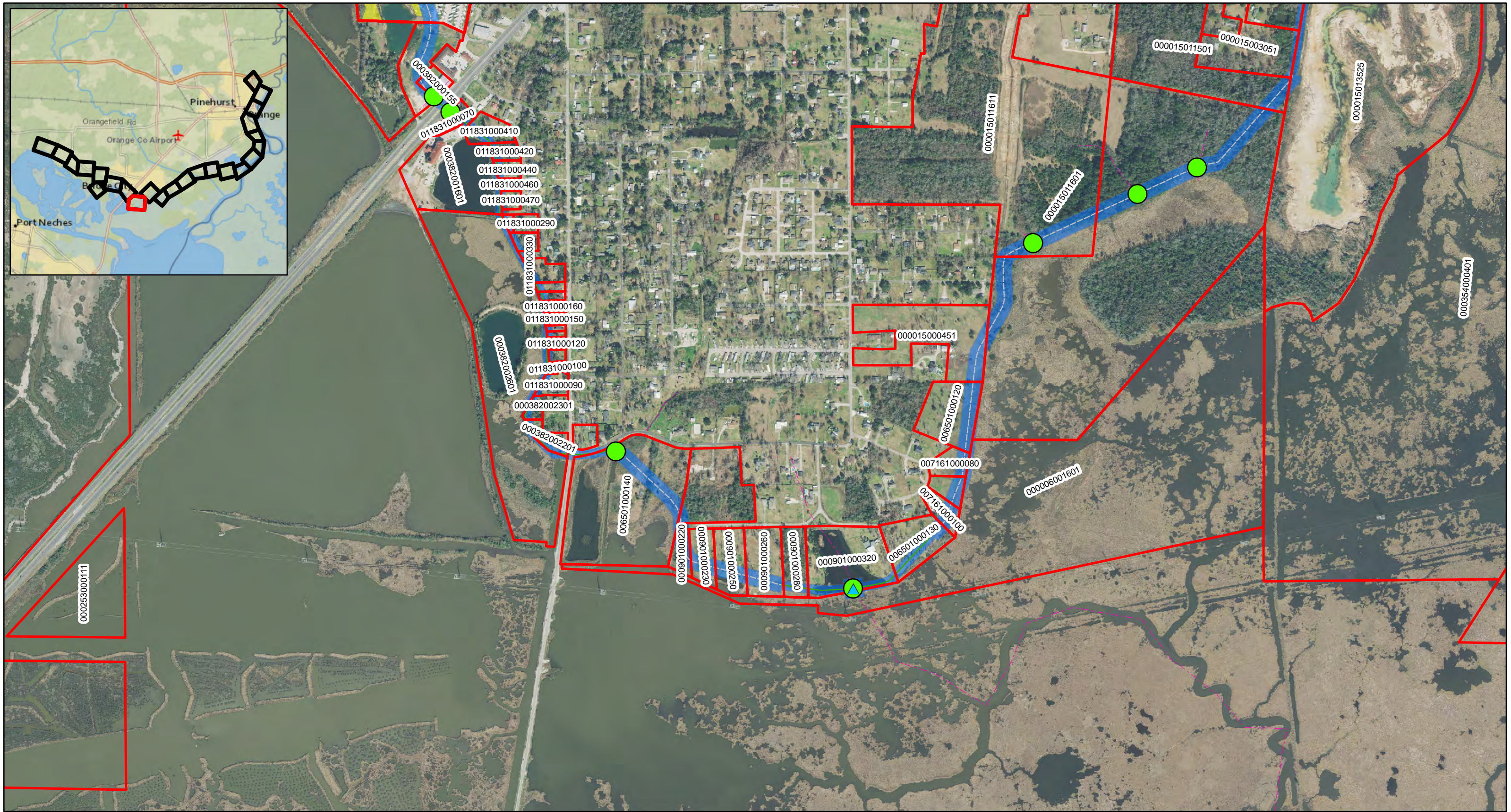
SABINE PASS TO GALVESTON BAY FEASIBILITY STUDY  
ORANGE COUNTY, TEXAS  
REAL ESTATE MAPS 2016



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Orange Co. Parcels

FPLE

TWAE

Pump Location

Outfall Location

Outfalls

Levee

Floodwall

Gate

N

W

E

S

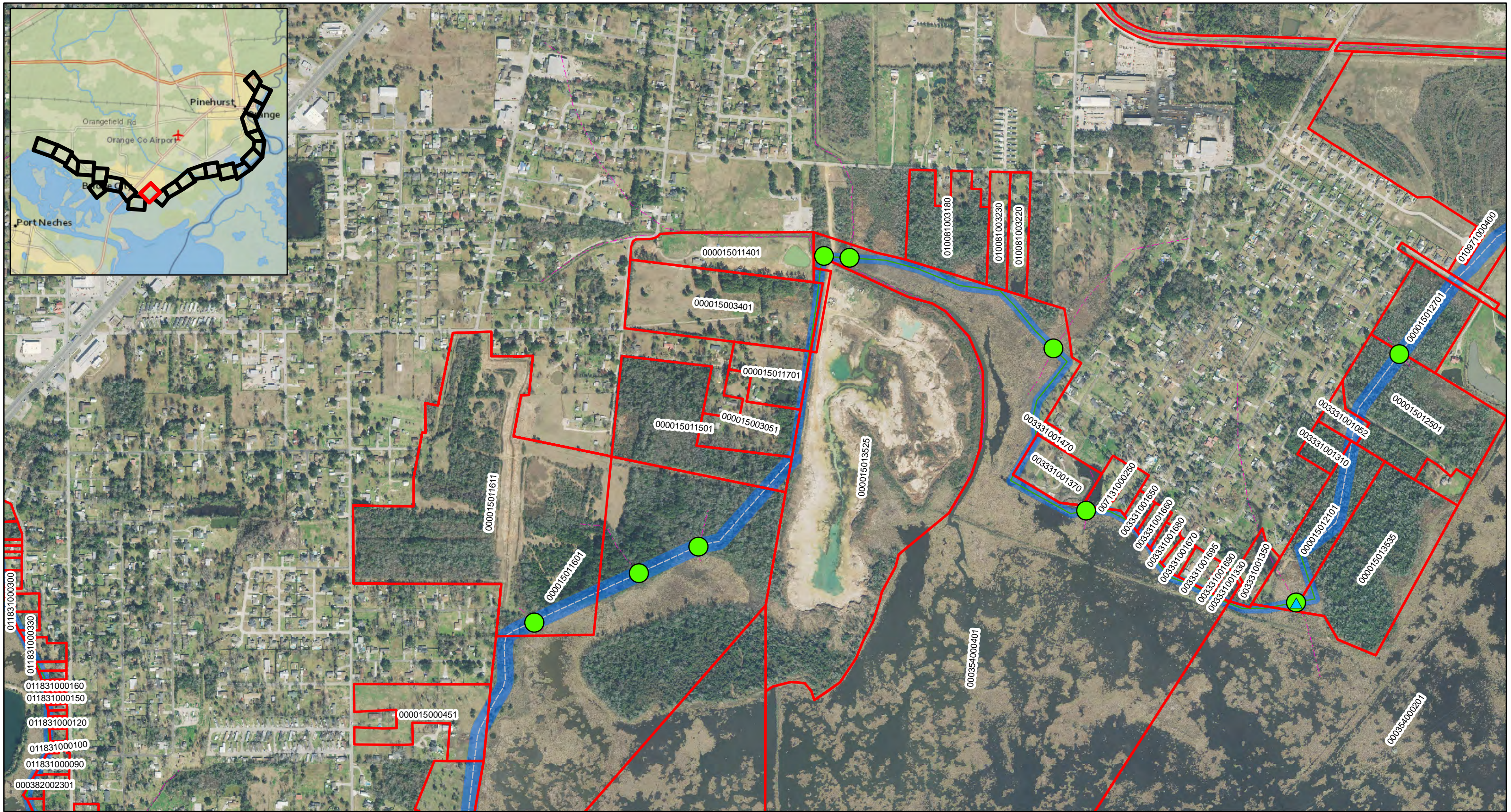
DATUM: NORTH AMERICAN 1983  
PROJECTION: UTM  
ZONE: 15 NORTH

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SABINE PASS TO GALVESTON BAY FEASIBILITY STUDY  
ORANGE COUNTY, TEXAS  
REAL ESTATE MAPS 2016

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**Legend**

	Orange Co. Parcels		Outfalls
	FPLE		Levee
	TWAE		Floodwall
	Pump Location		Gate
	Outfall Location		

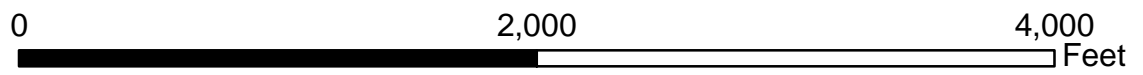
DATUM: NORTH AMERICAN 1983  
PROJECTION: UTM  
ZONE: 15 NORTH

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# SABINE PASS TO GALVESTON BAY FEASIBILITY STUDY

## ORANGE COUNTY, TEXAS

### REAL ESTATE MAPS 2016



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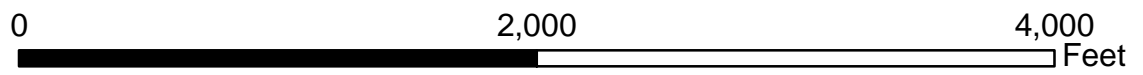
**Legend**

Orange Co. Parcels	Outfalls
FPLE	Levee
TWAE	Floodwall
Pump Location	Gate
Outfall Location	

DATUM: NORTH AMERICAN 1983  
PROJECTION: UTM  
ZONE: 15 NORTH

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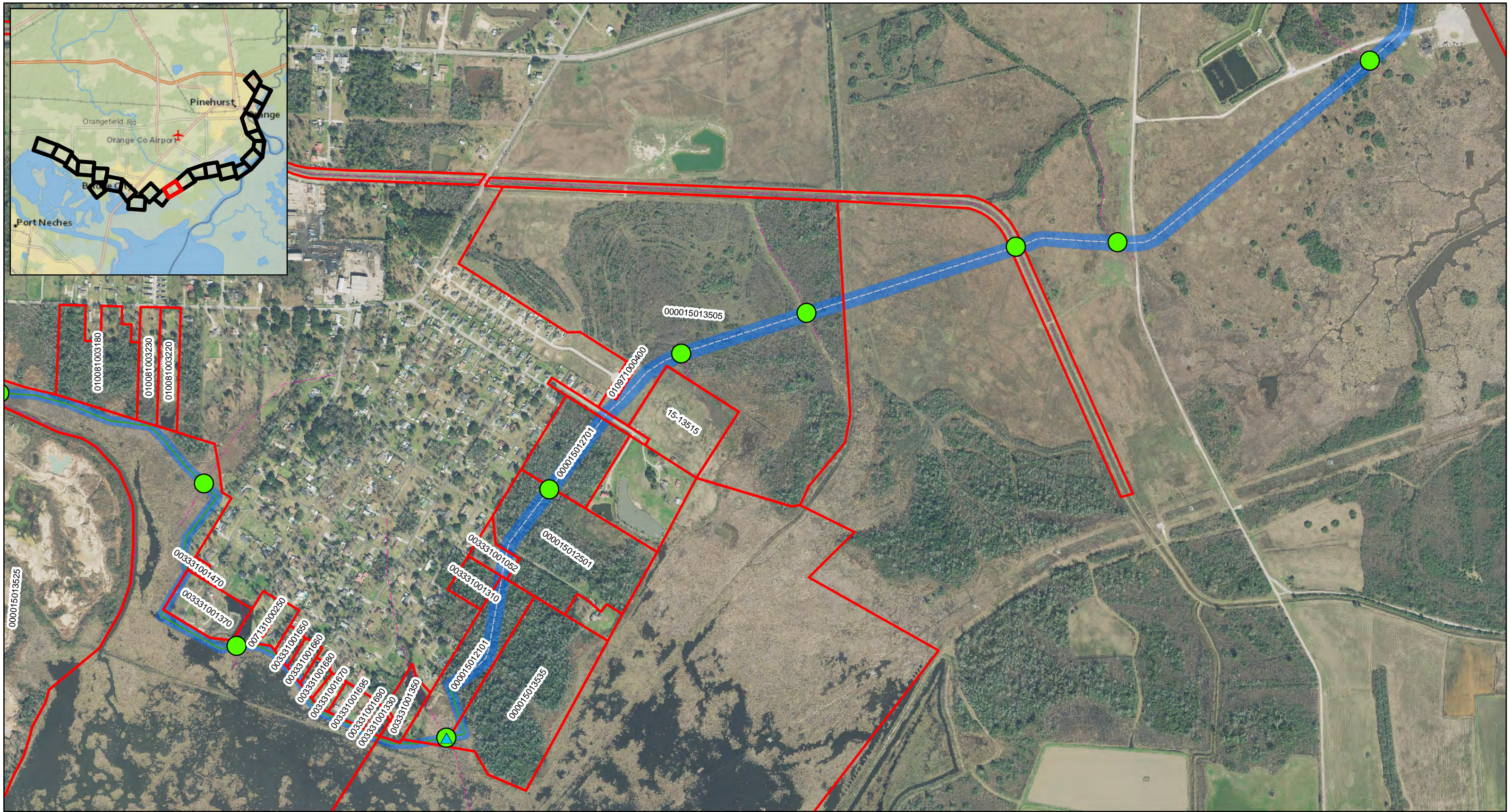
# SABINE PASS TO GALVESTON BAY FEASIBILITY STUDY ORANGE COUNTY, TEXAS REAL ESTATE MAPS 2016



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Orange Co. Parcels

FPLE

TWAE

Pump Location

Outfall Location

Outfalls

Levee

Floodwall

Gate

N

W

E

S

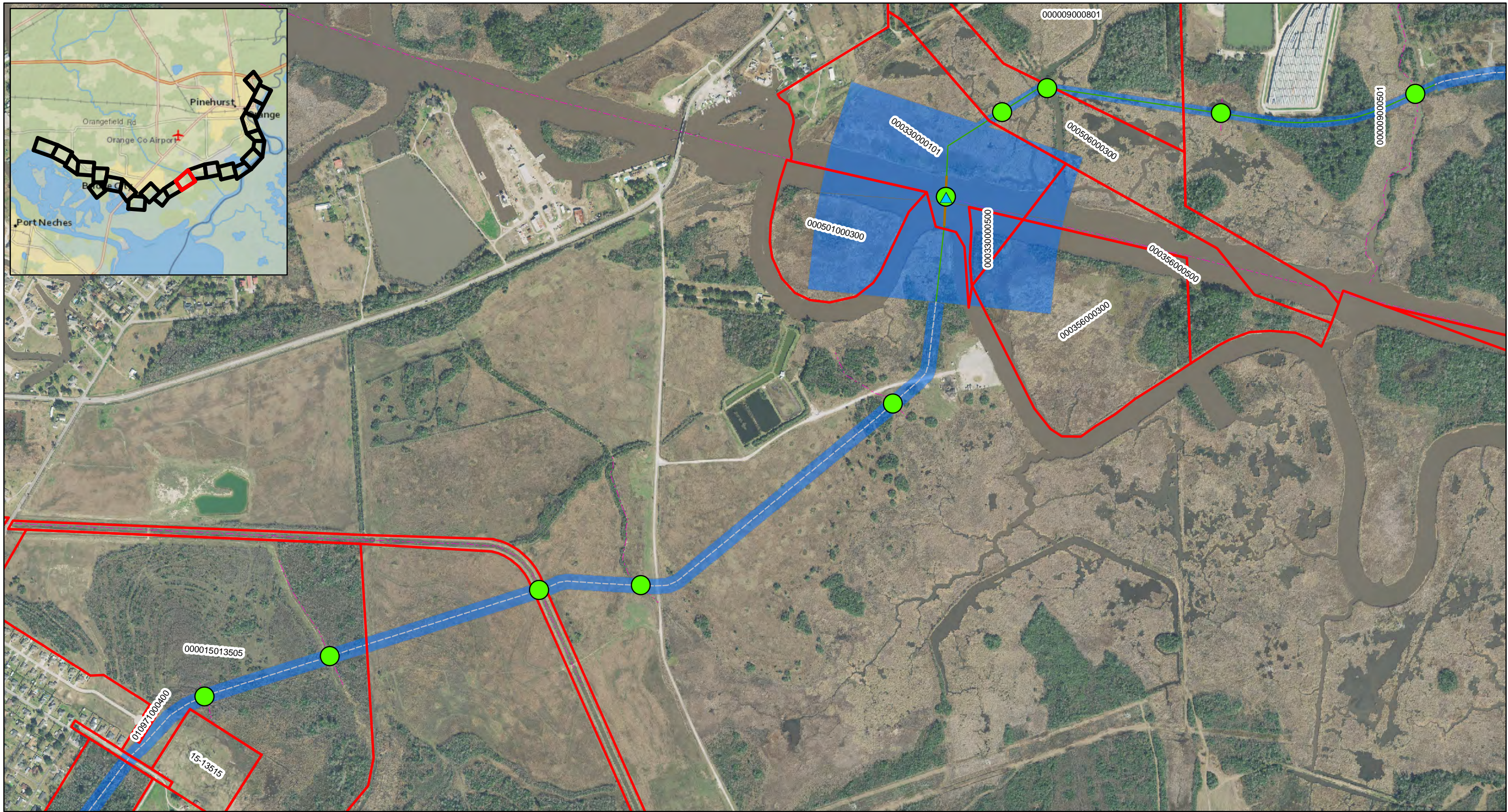
DATUM: NORTH AMERICAN 1983  
PROJECTION: UTM  
ZONE: 15 NORTH

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SABINE PASS TO GALVESTON BAY FEASIBILITY STUDY  
ORANGE COUNTY, TEXAS  
REAL ESTATE MAPS 2016

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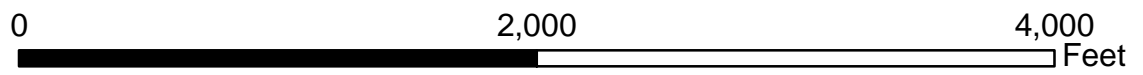
**Legend**

Orange Co. Parcels	Outfalls
FPLE	Levee
TWAE	Floodwall
Pump Location	Gate
Outfall Location	

DATUM: NORTH AMERICAN 1983  
PROJECTION: UTM  
ZONE: 15 NORTH

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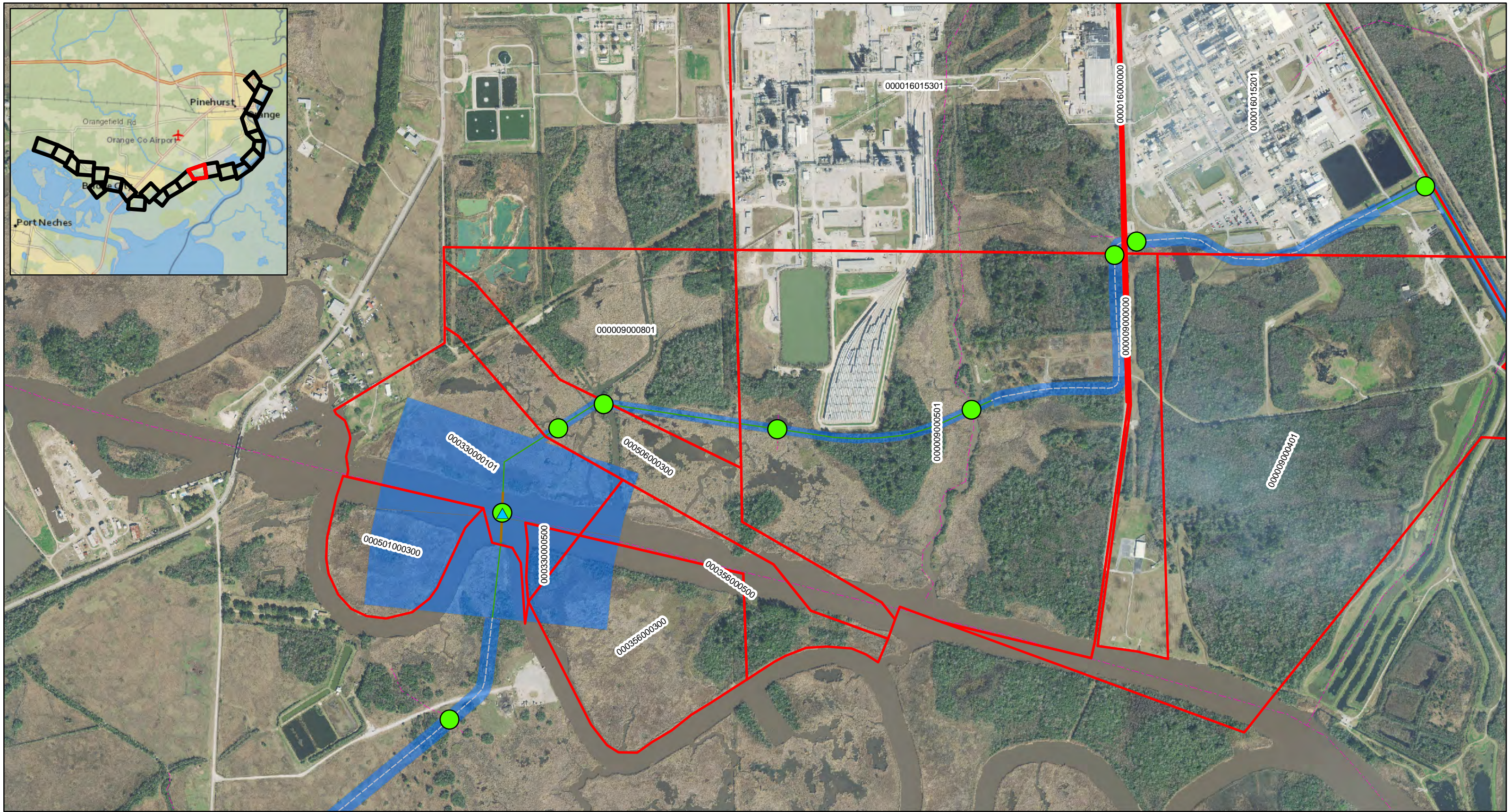
# SABINE PASS TO GALVESTON BAY FEASIBILITY STUDY ORANGE COUNTY, TEXAS REAL ESTATE MAPS 2016



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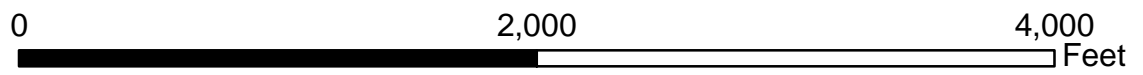
**Legend**

Orange Co. Parcels	Outfalls
FPLE	Levee
TWAE	Floodwall
Pump Location	Gate
Outfall Location	

DATUM: NORTH AMERICAN 1983  
PROJECTION: UTM  
ZONE: 15 NORTH

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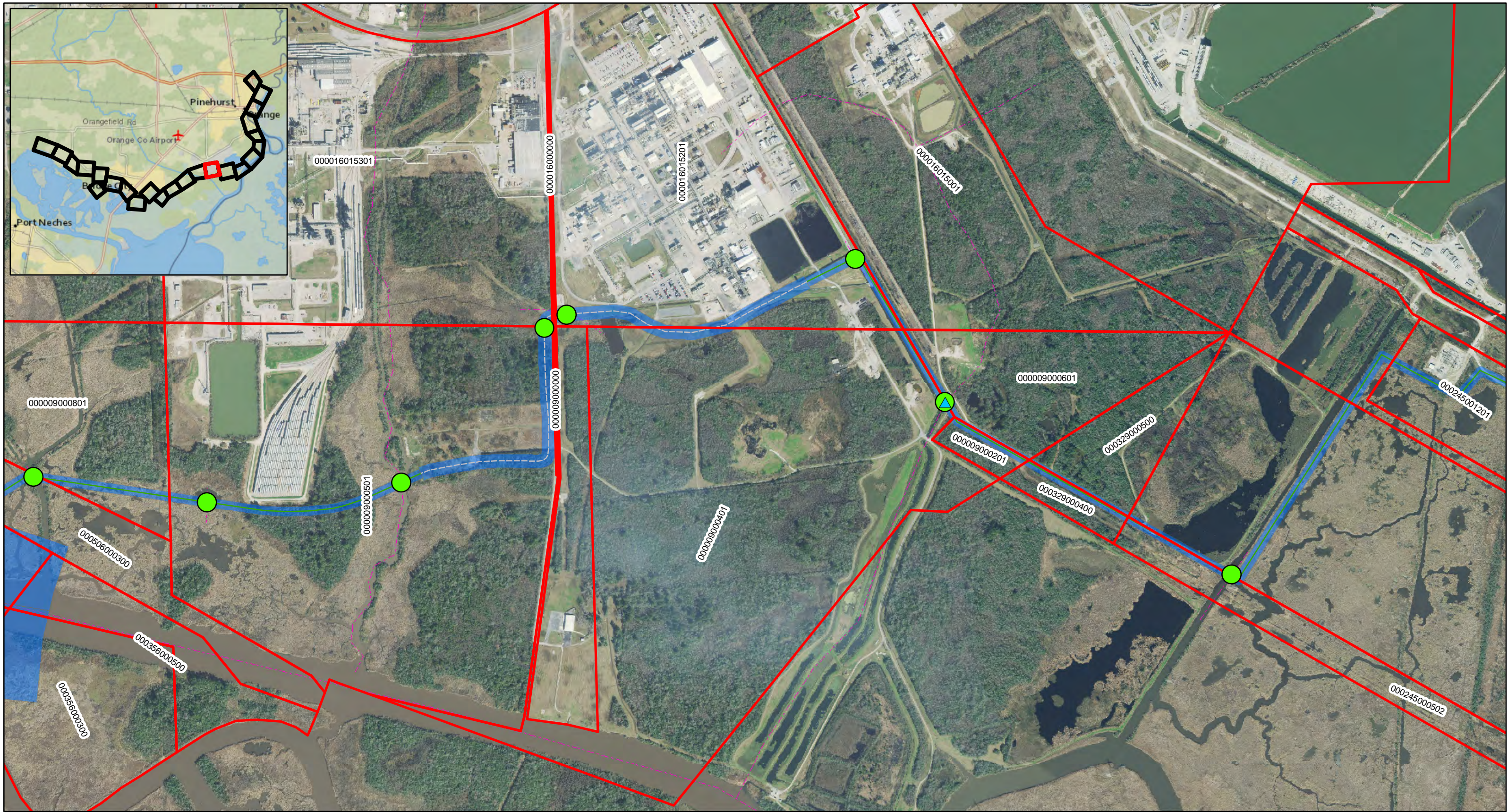
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ORANGE COUNTY, TEXAS  
REAL ESTATE MAPS 2016



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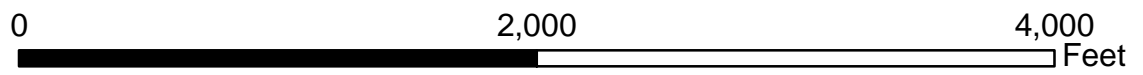
**Legend**

Orange Co. Parcels	Outfalls
FPLE	Levee
TWAE	Floodwall
Pump Location	Gate
Outfall Location	

DATUM: NORTH AMERICAN 1983  
PROJECTION: UTM  
ZONE: 15 NORTH

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SABINE PASS TO GALVESTON BAY FEASIBILITY STUDY  
ORANGE COUNTY, TEXAS  
REAL ESTATE MAPS 2016



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**Legend**

Orange Co. Parcels	Outfalls
FPLE	Levee
TWAE	Floodwall
Pump Location	Gate
Outfall Location	

DATUM: NORTH AMERICAN 1983  
PROJECTION: UTM  
ZONE: 15 NORTH

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## SABINE PASS TO GALVESTON BAY FEASIBILITY STUDY

### ORANGE COUNTY, TEXAS

### REAL ESTATE MAPS 2016

0 2,000 4,000 Feet

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**US Army Corps of Engineers**  
Galveston District





Orange Co. Parcels

FPLE

TWAE

Pump Location

Outfall Location

Outfalls

Levee

Floodwall

Gate

N

W

E

S

DATUM: NORTH AMERICAN 1983

PROJECTION: UTM

ZONE: 15 NORTH

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SABINE PASS TO GALVESTON BAY FEASIBILITY STUDY  
ORANGE COUNTY, TEXAS  
REAL ESTATE MAPS 2016

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Orange Co. Parcels

FPLE

TWAE

Pump Location

Outfall Location

Outfalls

Levee

Floodwall

Gate

N

W

E

S

DATUM: NORTH AMERICAN 1983  
PROJECTION: UTM  
ZONE: 15 NORTH

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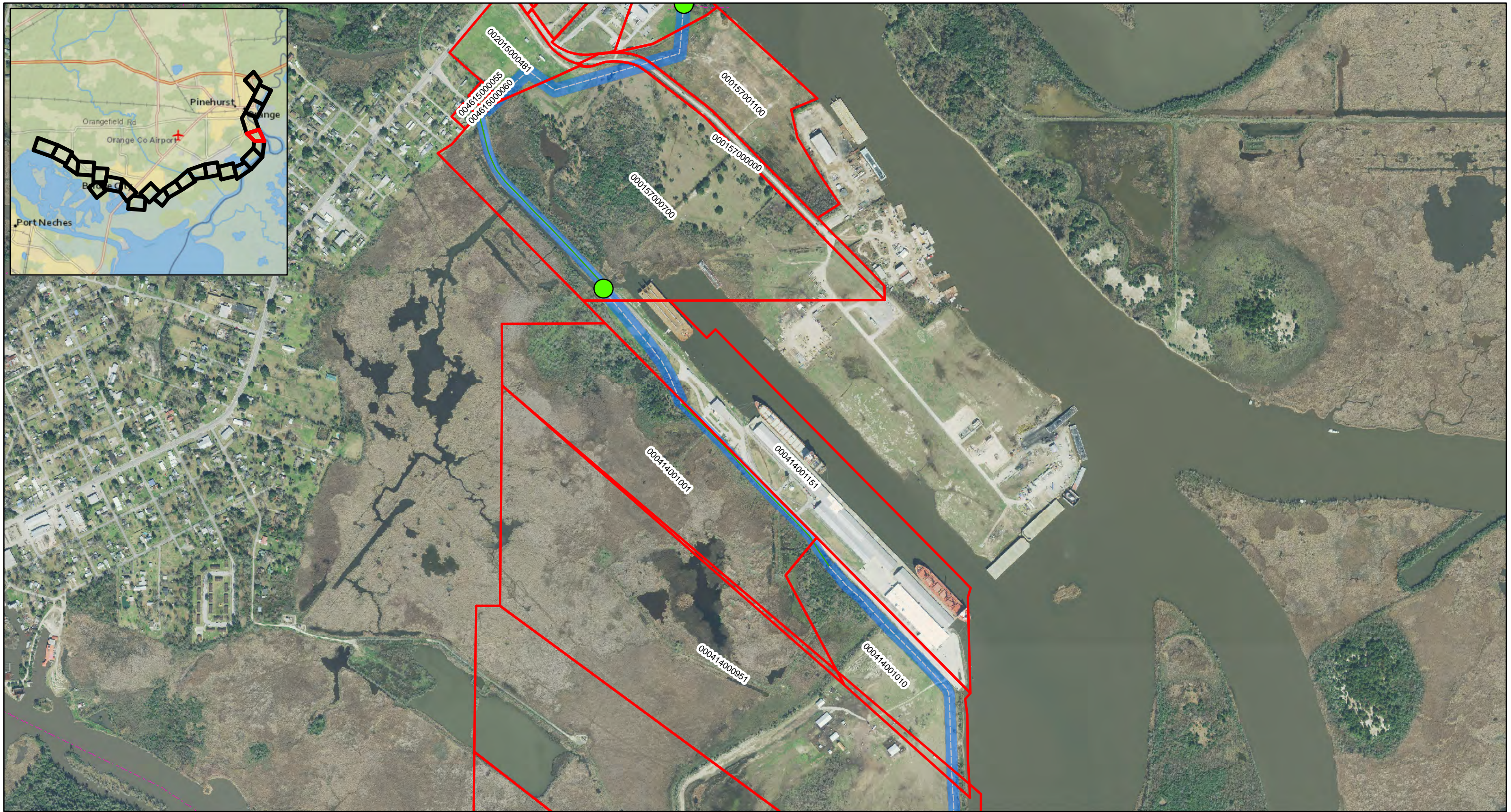
SABINE PASS TO GALVESTON BAY FEASIBILITY STUDY  
ORANGE COUNTY, TEXAS  
REAL ESTATE MAPS 2016

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**Legend**

- |                    |           |
|--------------------|-----------|
| Orange Co. Parcels | Outfalls  |
| FPLE               | Levee     |
| TWAE               | Floodwall |
| Pump Location      | Gate      |
| Outfall Location   |           |

DATUM: NORTH AMERICAN 1983  
PROJECTION: UTM  
ZONE: 15 NORTH  
Page 20 of 24

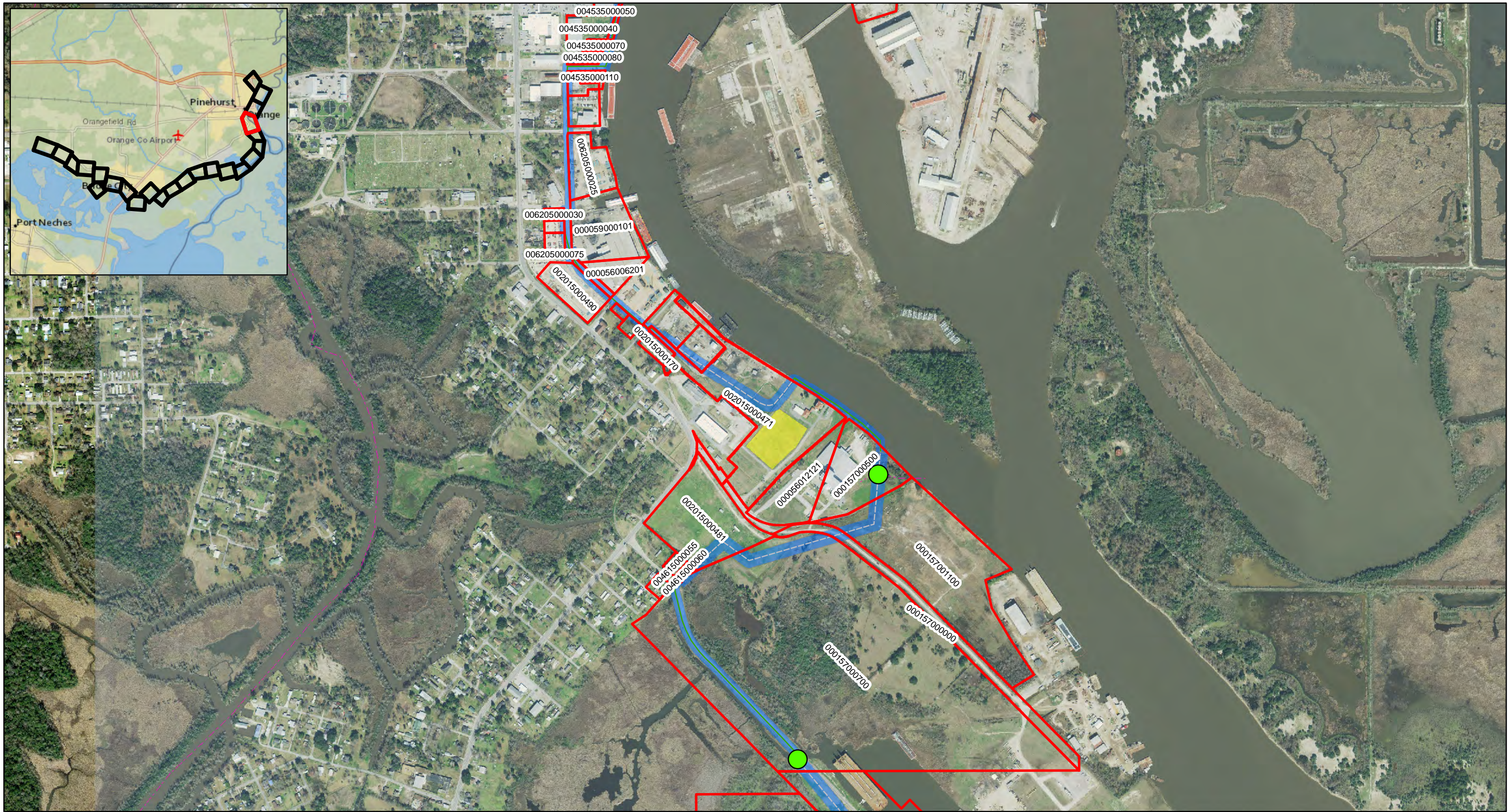
**SABINE PASS TO GALVESTON BAY FEASIBILITY STUDY  
ORANGE COUNTY, TEXAS  
REAL ESTATE MAPS 2016**

0 2,000 4,000 Feet

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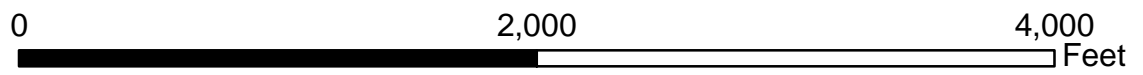
**Legend**

Orange Co. Parcels	Outfalls
FPLE	Levee
TWAE	Floodwall
Pump Location	Gate
Outfall Location	

DATUM: NORTH AMERICAN 1983  
PROJECTION: UTM  
ZONE: 15 NORTH

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SABINE PASS TO GALVESTON BAY FEASIBILITY STUDY  
ORANGE COUNTY, TEXAS  
REAL ESTATE MAPS 2016



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