C: Roadway and Transit Analysis

ROADWAY AND TRANSIT ANALYSIS

This appendix contains documentation of the roadway and transit preliminary analysis conducted for the Okeechobee Boulevard & SR 7 Multimodal Corridor Study corridor and alternatives. The preliminary analysis of the corridor supports the development of the desired concept to be advanced for further study. The following sections are included in this appendix.

Potential Environmental Effects

Evaluation Methodology

Transit Service Plan

Running Time / Fleet Requirements

Ridership Forecast

Operations & Maintenance Costs

Capital Costs

LRT Maintenance & Storage Facility

Conceptual Renderings

POTENTIAL ENVIRONMENTAL EFFECTS

The Okeechobee Blvd. & SR-7 Multimodal Corridor Study includes an assessment of potential environmental effects of multimodal transportation improvements in the project corridor. This assessment presents a description and documentation of existing conditions including soils and land use, wetlands and surface waters, mitigation, wildlife and habitat, special designations, floodplains, archaeological and historic sites, recreational facilities, and contamination within the project study area.

METHODOLOGY

The methodology for identifying potential environmental constraints within the project study area included a review of the following resources:

- Aerial photographs (scale, 1 inch = 400 feet), ESRI 2019;
- Various Geographic Information System (GIS) data layers from the U.S. Fish and Wildlife Service (USFWS) and Florida Fish and Wildlife Conservation Commission (FWC);
- South Florida Water Management District (SFWMD) FLUCFCS GIS Database (SFWMD 2017-2019);
- U.S. Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS), Soil Survey of Palm Beach County Area, Florida (NRCS 1978);
- Hydric Soils of Florida Handbook, 4th Edition (Florida Association of Environmental Soil Scientists, 2007);
- Efficient Transportation Decision Making (ETDM) Environmental Screening Tool (EST), https://etdmpub.fla-etat.org/est/;
- Florida Geographic Data Library, https://www.fgdl.org/metadataexplorer/explorer.jsp;
- USFWS National Wetlands Inventory (NWI) Maps (Web-based maps available from http://www.fws.gov/wetlands/Data/mapper.html);
- United States Geological Service (USGS) Quadrangle Maps;
- U.S. Fish and Wildlife Service, Endangered and Threatened Wildlife and Plants, 50 CFR 17.11 and 17.12, June 2007;
- FWC, Florida's Endangered Species and Threatened Species, January 2017;
- FWC, Eagle Nest Locator website (https://public.myfwc.com/FWRI/EagleNests/nestlocator.aspx), September 2019;
- FWC, Wading Bird Rookeries website (http://ocean.floridamarine.org/TRGIS/Description_Layers_Terrestrial.htm), 1999;
- USFWS IPaC Trust Resources Report (https://ecos.fws.gov/ipac/);
- FNAI Biodiversity Matrix Map Server (http://www.fnai.org/biointro.cfm);

- U.S. Fish and Wildlife Service, 2010-2019 Wood Stork Nesting Colonies Maps (http://www.fws.gov/northflorida/woodstorks/wood-storks.htm), January 2020;
- USFWS, Critical Habitat Portal website (http://criticalhabitat.fws.gov/crithab/);
- Florida Department of Environmental Protection (FDEP) Map Direct Database (https://ca.dep.state.fl.us/mapdirect/);
- FDEP OCULUS Database (https://depedms.dep.state.fl.us/Oculus/servlet/login); and
- ERIS Database Report, dated May 18, 2021.

The following sections of this report are based upon review of these resources.

RESULTS

Soils and Land Use

The NRCS *Soil Survey of Palm Beach County Area, Florida* (1978) mapped 26 soil types that are located within the project study area (Table 1 – Soil Types and Coverage within the Project Study Area). According to the *Hydric Soils of Florida Handbook, 4th Edition* (Florida Association of Environmental Soil Scientists, 2007), 14 of these soils are considered hydric.

Table 1. Soil Types and Coverage within the Project Study Area

Map Unit Symbol	Soil Description	Acres within Project Study Area	Percent of Project Study Area	Hydric (Y/N)
2	Anclote fine sand	2.84	0.23%	Y
4	Arents-Urban land complex, 0 to 5 percent slopes	129.44	10.41%	N
5	Arents-Urban land complex, organic substratum	7.16	0.58%	N
6	Basinger fine sand, 0 to 2 percent slopes	4.64	0.37%	Y
7	Basinger-Urban land complex	19.09	1.54%	Y
8	Basinger and Myakka sands, depressional	13.50	1.09%	Y
10	Boca fine sand	151.34	12.17%	Y

12	Chobee fine sandy loam	62.57	5.03%	Y
16	Hallandale fine sand	7.83	0.63%	N
17	Holopaw fine sand, 0 to 2 percent slopes	15.74	1.27%	Y
19	Jupiter fine sand	5.92	0.48%	Y
21	Myakka fine sand, 0 to 2 percent slopes	70.00	5.63%	Y
22	Myakka-Urban land complex	15.73	1.27%	N
24	Okeelanta muck, drained, 0 to 1 percent slopes	2.67	0.21%	Y
29	Pineda fine sand, 0 to 2 percent slopes	19.57	1.57%	N
30	Pinellas fine sand	3.63	0.29%	N
31	Pits, 0 to 5 percent slopes	7.46	0.60%	N
34	Pompano fine sand	19.85	1.60%	Y
35	Quartzipsamments, shaped, 0 to 5 percent slopes	24.81	2.00%	N
36	Riviera fine sand, 0 to 2 percent slopes	296.25	23.83%	Y
37	Riviera fine sand, depressional	183.28	14.74%	Y
38	Riviera-Urban land complex	11.01	0.89%	Y
41	St. Lucie-Paola-Urban land complex, 0 to 8 percent slopes	2.47	0.20%	N

47	Udorthents, 2 to 35 percent slopes	2.23	0.18%	N
48	Urban land	122.52	9.85%	Unranked
99	Water	41.67	3.35%	Unranked
	Total	**1243.22**	**100%**	

Vegetative communities were classified according to the *Florida Land Use, Cover, and Forms Classification System* (FLUCFCS, Florida Department of Transportation, 1999). A FLUCFCS map of the project study area is attached as Appendix A.

A description of the upland land cover included below, characterizes dominant vegetation characteristic of the land use type. The acreage provided for each land cover is approximate, based on aerial interpretation.

FLUCFCS 1110 – Fixed Single-Family Units (Less Than Two Dwelling Units Per Acre) (± 21.06 Ac.)

This land use is residential for single family units with less than two dwelling units per acre of land. Within the project study area, this land use is primarily located southeast of the US 98/SR 80 (Southern Boulevard) and SR 7 intersection.

FLUCFCS 1210 – Fixed Single-Family Units (Two-Five Dwelling Units Per Acre) (± 111.22 Ac.)

This land use is residential for single family units with two to five dwelling units per acre of land. Within the project study area, this land use is located in communities along the east and west side of SR 7 and in several sections on the north and south side of Okeechobee Blvd.

FLUCFCS 1320 – Mobile Home Units (± 6.77 Ac.)

This land cover is residential and includes mobile home units. This land use is primarily located in the east section of the project study area. Plantation Mobile Home Park is located south of Okeechobee Blvd. and east of Drexel Road and Lakeside Mobile Home Park is south of Okeechobee Blvd. and east of S. Congress Avenue.

FLUCFCS 1330 – Multiple Dwelling Units, Low Rise (± 23.12 Ac.)

This category contains multiple dwelling units of two stories or less including duplex units, triplex units, quadruplex units, apartment units, townhouse units, and patio houses. This land use is primarily located in various locations on the north side of Okeechobee Blvd.

FLUCFCS 1340 – Multiple Dwelling Units, High Rise (± 13.00 Ac.)

This land use contains multiple dwelling units of three stories or more including apartment units, townhouse units, condominium units, and mixed edits. Within the project limits, this land use is primarily located on the north side of Okeechobee Blvd.

FLUCFCS 1400 – Commercial and Services (± 309.61 Ac.)

This land cover is associated with the distribution of products and services. This includes all secondary structures associated with an enterprise in addition to the main building and integral areas assigned to support the base unit, including sheds, warehouses, office buildings, parking lots, and landscaped areas. This cover type also encompasses roadside ditches (FLUCFCS 5120) and stormwater ponds (FLUCFCS 5300) that collect stormwater runoff from these developments. Within the project study area, this land use is located throughout the project study area on both sides of the project corridor.

FLUCFCS 1411 – Retail Sales and Services (± 148.77 Ac.)

This land use is comprised of elements of central business districts, shopping centers and office building including associated structures, driveways, and parking lots. Within the project study area, this land cover is located primarily on the southwest corner on the SR 882 and SR 7 intersection. The Mall at Wellington Green is at this location and contains a variety of retail stores and services.

FLUCFCS 1490 – Commercial and Services Under Construction (± 13.87 Ac.)

This category consists of commercial and services buildings, parking lots, and other facility-related areas under construction.

FLUCFCS 1550 – Light Industry (± 31.90 Ac.)

This class is primarily for fabrication industries that use products from other processing and manufacturing industries to make parts and finished products. Light industries tend to be enclosed operations with buildings used for equipment, materials, and manufacturing. The light industry land use is in several parcels throughout the project corridor.

FLUCFCS 1620 – Sand and Gravel Pits (± 4.05 Ac.)

This land use is primarily used to support construction activities.

FLUCFCS 1700 – Institutional (± 9.94 Ac.)

This land use can include educational, religious, health, and military facilities and buildings, grounds, and parking lots associated with the facilities. Within the project study area, this land cover is located on various pieces of land throughout the project study area. The Wellington Regional Medical Center is located at the northwest corner of the SR 882 and SR 7 intersection, containing a variety of health services. There are several religious facilities along the project corridor.

FLUCFCS 1710 – Educational Facilities (± 16.89 Ac.)

This land cover consists of educational facilities including parking lots, stadiums, and all buildings and other featured related to the facility. There are several educational facilities within the project study area. Royal Palm Beach is located southwest of the

Okeechobee Blvd. and SR 7 intersection. Berean Christian School, Benoist Farms Elementary School, and Indian Ridge School are all located on the south side of Okeechobee Blvd. between Sansburys Way and Golden Lakes Boulevard. West Gate Elementary is also located south of Okeechobee Blvd. between SR 809 and N. Congress Avenue. The Mattisyn School and Renaissance Charter School at Cypress are north of Okeechobee Blvd. east of Andros Isle.

FLUCFCS 1820 – Golf Courses (± 33.02 Ac.)

This land use consists of golf courses for recreational use. Within the project study area, this land cover is primarily located southeast of the SR 7 and Okeechobee Blvd. intersection. The two golf courses within the project limits are the Breakers West Country Club and the Mayacoo Lakes Country Club.

FLUCFCS 1850 – Parks and Zoos (± 3.96 Ac.)

The parks and zoos land use consists of public recreational areas. Within the project study area, this land use is found in the far eastern section of the Okeechobee Blvd. corridor. Gateway Park is located in the northeast quadrant of the intersection of Okeechobee Blvd. and S. Australian Avenue and has a sidewalk, trees, and various landscaping. Gateway Park includes the Okeechobee Sacrifice Memorial to honor those who have lost their life on Okeechobee Blvd.

FLUCFCS 1900 – Open Land (± 10.34 Ac.)

This classification includes undeveloped land within urban areas and inactive land with street patterns but without structures. Within the project study area, there are two primary areas of this land use. There is a vacant parcel on the north side of Okeechobee Blvd. located east of the east entrance and exit ramp for Florida's Turnpike and an additional lot on the south side of Okeechobee Blvd. between N. Jog Road and Florida's Turnpike.

FLUCFCS 2510 – Horse Farms (± 2.11 Ac.)

This land use consists of farms that breed and train horses for sport using in racing, riding, and harness racing. Within the project study area, there is one horse farm located on the southwest corner of the intersection of Okeechobee Blvd. and Augustine Road.

FLUCFCS 3100– Herbaceous (Dry Prairie) (± 4.18 Ac.)

This land use includes upland prairie grasses which occur on non-hydric soils but may be occasionally inundated by water. These grasslands are generally treeless with a variety of vegetation types dominated by grasses, sedges, rushes, and other herbs including wire grasses with some saw palmetto present. Within the project study area, this land cover type is located on the south side of Okeechobee Blvd. near the intersection with Breezy Lane.

FLUCFCS 4110 – Pine Flatwoods (± 19.95 Ac.)

This class is dominated by either slash pine, longleaf pine or both and less frequently pond pine. The common flatwoods understory species include saw palmetto, wax myrtle, gallberry and a wide variety of herbs and brush. Within the project study area,

this land cover type is located near the southeast corner of the intersection of Okeechobee Blvd. and SR 7.

FLUCFCS 4340 – Hardwood – Coniferous Mixed (± 0.74 Ac.)

The hardwood-coniferous mixed land use includes forested uplands in which neither upland conifers nor hardwoods achieve 66-percent crown canopy dominance. Dominant vegetation within these communities could consist of slash pine, live oak, and cabbage palm. Within the project study area, this land cover type is located at the northwest corner of the Okeechobee Blvd. overpass over Florida's Turnpike.

FLUCFCS 8140 – Roads and Highways (± 368.46 Ac.)

This class includes those highways exceeding 100 ft. in width, with 4 or more lanes and median strips. The intent of this data layer is to include only the major transportation corridors. This cover type also encompasses roadside ditches (FLUCFCS 5120) that collect stormwater runoff from these roadways. The major roadways within the project study area included in this land cover include SR 7 and Okeechobee Blvd.

FLUCFCS 8320– Electrical Power Transmission Lines (± 1.70 Ac.)

Electrical power transmission lines travel along the west side of SR 7 along the entire corridor and along the north and south sides of Okeechobee Blvd. along the entire corridor.

Wetlands and Surface Waters

The presence of wetlands was evaluated based on the Florida unified wetland delineation methodologies, in accordance with *Chapter 62-340, Florida Administrative Code (FAC)* and the *U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual*. These methods consider the prevalence of wetland vegetation, hydric soil indicators, and wetland hydrology. Surface waters include both natural and manmade bodies of water, such as streams, lakes, ponds, canals, and ditches, and were determined through a review of aerial photography and database review. Each wetland and/or surface water habitat within the project study area was classified using FLUCFCS (FDOT 1999) and the USFWS Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al., 2013). Formal wetland boundary delineations and surveys were not conducted as a part of this study but should be completed as part of the state and federal permit process. Based on the database review, the project study area contains wetlands and surface waters (Appendix B – Wetlands and Surface Waters Map).

In accordance with EO 11990, all actions to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands have been undertaken. If the proposed project limits or needs change and unavoidable impacts to wetlands are anticipated, they will be mitigated to achieve no net loss of wetland function.

FLUCFCS 5120 – Channelized Waterway – Canals (± 17.16 Ac.)

This land cover consists of several channelized canals that are directly adjacent to both major roadways within the project limits. One is directly adjacent to the east side of SR 7 starting south of the project limits and continuing north until it meets a

perpendicular canal south of State Road 80. Two additional canals are adjacent to the east side of SR 7 beginning just north of State Road 80 and continuing north until they turn east to continue along the south side of Okeechobee Boulevard. One of these canals turns south just before Augustine Road and the other continues until reaching Florida's Turnpike. Impacts from this project to this surface water/channelized waterway system are not anticipated.

FLUCFCS 5200 – Lakes (± 22.93 Ac.)

Within the project study area, this land use is located on the north and south portions of Okeechobee Boulevard. Clear Lake is a large lake located north of Okeechobee Boulevard between I-95 and S Australian Avenue. There is a smaller lake located south of Okeechobee Boulevard between the same major roadways.

FLUCFCS 5300 – Reservoirs (± 31.90 Ac.)

Reservoirs are artificial impoundments of water used for irrigation, flood control, municipal and rural water supplies, recreation, and hydro-electric power generation.

FLUCFCS 6170 – Mixed Wetland Hardwoods (± 6.81 Ac.)

This category is for wetland hardwood communities composed of a large variety of hardwood species tolerant of hydric conditions yet exhibit a mixture of species.

FLUCFCS 6190 – Exotic Wetland Hardwoods (± 3.98 Ac.)

This land use is a wetland with a dominant exotic species such as Brazilian pepper, melaleuca, or other exotic species.

FLUCFCS 6410 – Freshwater Marshes (± 5.71 Ac.)

This land use is characterized by having one or more of the following species predominate: sawgrass, cattail, arrowhead, maidencane, buttonbush, cordgrass, giant cutgrass, switchgrass, bulrush, needlerush, common reed, or arrowroot.

Mitigation

In 2008 the USACE and the EPA issued regulations governing compensatory mitigation for activities authorized by the Department of the Army (Federal Register, 2008). These regulations, as promulgated in 33 Code of Federal Regulations (CFR) Part 332, establish a hierarchy for determining the type and location of compensatory mitigation. To briefly summarize, the rule establishes a preference for the use of mitigation bank credits if a mitigation bank has the appropriate number and resource type of credits available. If the permitted impacts are not in the service area of an approved mitigation bank, or if the appropriate number and resource type of credits are otherwise unavailable, then the rule establishes a preference for in lieu fee program credits. If an approved mitigation bank or in-lieu fee program cannot be used to provide the required compensatory mitigation, the rule establishes a preference for permittee responsible mitigation conducted under a watershed approach. Wetland impacts which will result from the construction of this project will be mitigated pursuant to Section 373.4137, F.S., to satisfy all mitigation requirements of Part IV of Chapter 373, F.S., and 22 U.S.C. §1344. Compensatory mitigation for this project is not anticipated at this time. If the proposed project limits and/or needs change and

mitigation is required, it will be completed through the use of mitigation banks and any other mitigation options that satisfy state and federal requirements. Presently, the project study area is located within the service area of Loxahatchee Mitigation Bank.

Permitting

The USACE, SWFWMD and FDEP have the potential to regulate impacts to wetlands and surface waters within the project study area. Other agencies, including the USFWS, NMFS, U.S. Environmental Protection Agency (EPA), and the FWC, review and comment on wetland permit applications. The FWC also issues permit for gopher tortoise relocation activities and nest takes for state protected avian species and the USFWS is the lead agency for eagle nest take permitting or coordination. In addition, the FDEP regulates stormwater discharges from construction sites. The complexity of the permitting process will depend on the degree of the impact to jurisdictional areas. It is anticipated that the following permits will be required for this project:

Permit	***Issuing Agency***
Section 404 Dredge and Fill Permit	USACE
Environmental Resource Permit (ERP)	SFWMD
Section 404 State Assumption	FDEP
National Pollutant Discharge Elimination System (NPDES)	FDEP

Federal Permits

The USACE regulates federally retained waters along with a 300-ft guideline and Indian Country as defined by the Memorandum of Agreement (MOA) between FDEP and the USACE. A portion of the project study area that includes Clear Lake is identified as federally retained waters and is jurisdictional to USACE. If impacts to this area are proposed, then the entire project would be reviewed under the USACE permitting guidelines and would require a Section 404 Dredge and Fill permit. If impacts are not proposed at Clear Lake but do involve impacts to other wetlands and surface waters than a FDEP State 404 program permit would be needed.

State Permits

SFWMD requires an ERP when construction of any project results in the creation of a new or modification of an existing surface water management system or results in impacts to waters of the state. The complexity associated with the ERP permitting process will depend on the size of the project and/or the extent of wetland impacts.

FDEP State 404 Program

In 2018, FDEP was given the authority to begin the rulemaking process to assume the federal dredge and fill permitting program under section 404 of the Clean Water Act within state-assumed waters. This process was completed in July 2020 and created the State 404 Program within Chapter 62-330 and 62-331, F.A.C. to facilitate this assumption. This State 404 Program is responsible for overseeing permitting for any

project proposing dredge or fill activities within state-assumed waters. The State 404 Program is a separate program from the existing ERP program, and projects within the state-assumed waters require both an ERP and a State 404 Program authorization. The wetlands and surface waters outside of the Clear Lake system would fall under the state-assumed waters definition. If impacts to the Clear Lake system are avoided, then a State 404 program permit would be needed for impacts to the wetlands and surface waters.

NPDES

40 CFR Part 122 prohibits point source discharges of stormwater to waters of the U.S. without a NPDES permit. Under the State of Florida's delegated authority to administer the NPDES program, construction sites that will result in greater than one acre of disturbance must file for and obtain either coverage under an appropriate generic permit contained in Chapter 62-621, F.A.C., or an individual permit issued pursuant to Chapter 62-620, F.A.C. A major component of the NPDES permit is the development of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP identifies potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharges from the site and discusses good engineering practices (i.e., best management practices) that will be used to reduce the pollutants.

Depending on the types of permits required from the regulatory agencies, the permitting process typically ranges from 90 to 180 days.

Local Ordinances

The project study area falls within four (4) local jurisdictions: City of West Palm Beach, Village of Royal Palm Beach, Village of Wellington, and unincorporated Palm Beach County. The proposed project will comply with all applicable regulations regarding tree preservation and removal within their respective jurisdictions.

Wildlife and Habitat

Listed species are afforded special protective status by federal and state agencies. This special protection is federally administered by the United States Department of the Interior – U.S. Fish and Wildlife Service (USFWS), and National Oceanic and Atmospheric Administration – National Marine Fisheries Service (NOAA-NMFS) pursuant to the Endangered Species Act of 1973 (as amended). The USFWS administers the federal list of animal species (50 CFR 17) and plant species (50 CFR 23). Federal protection of marine species is the responsibility of the NOAA-NMFS.

Administered by the Florida Fish and Wildlife Conservation Commission (FWC), the State of Florida affords special protection to animal species designated as State-designated Threatened or State Species of Special Concern, pursuant to Chapter 68A-27, F.A.C. The State of Florida also protects and regulates plant species designated as endangered, threatened or commercially exploited as identified on the Regulated Plant Index (5B-40.0055, F.A.C.), which is administered by the Florida Department of Agriculture and Consumer Services (FDACS), Division of Plant Industry, pursuant to Chapter 5B-40, F.A.C.

To determine federal- and state-listed protected plant and animal species that have potential to occur within the project study area and identify potential habitat for these species, available site-specific data was reviewed and evaluated.

Environmental scientists familiar with Florida natural communities conducted database reviews within and adjacent to the project study area. The database review included in-office literature reviews, FLUCFCS data review, and aerial photo interpretation. The Florida Natural Areas Inventory (FNAI) Biodiversity Matrix and USFWS Information for Planning and Consultation (IPaC) were reviewed for documented occurrences of listed species within one mile of the project study area (see Appendix C. - FNAI and IPaC Data Report). The project study area is partially or wholly within the USFWS Consultation Area (CA) for the Everglade snail kite (*Rostrhamus sociabilis*), red-cockaded woodpecker (*Picoides borealis*), and Florida bonneted bat (*Eumops floridanus*).

Based on these data reviews and evaluation of available information as described above, a listing of the state and federally listed species potentially occurring within the project study area has been compiled.

Table 2 lists species that may occur on-site or within the immediate vicinity of the project study area and their likelihood of occurrence. Likelihood of occurrence within the project study area is based on documented observation of the species, signs of the species (burrows, tracks, scat, etc.), and/or observation of potential suitable habitat.

For a species to be listed as potentially occurring within the project study area, the project study area must be within the species' distribution range. Several species were included in the USFWS IPaC Trust Resources Report because USFWS includes historic data; however, when comparing current conditions within the project study area, it was determined that many of these species would not occur within the site. Only species with potential habitat within the project study area are discussed further.

Table 2. Potential Listed Species within the Project Study Area

Common Name	Scientific Name	Federal Status	State Status	Comments	Likelihood of Occurrence
Red-cockaded Woodpecker	*Picoides borealis*	E	FE	The project study area is within the consultation area for this species. No documented occurrences were identified; however, limited potential habitat does occur onsite. Verification recommended to rule out suitability.	Low
Everglade Snail Kite	*Rostrhamus sociabilis*	E	FE	The project study area is within the consultation area for this species. No	Low

				documented occurrences were identified; however, potential habitat does occur onsite.	
Wood Stork	*Mycteria Americana*	T	FT	Minimal foraging habitat occurs on site; however, no documented occurrences were identified.	Low
Eastern Indigo Snake	*Drymarchon couperi*	T	FT	No documented occurrences were identified; however, potential habitat does occur onsite.	Low
Florida Bonneted Bat	*Eumops floridanus*	E	FE	The project study area is within the consultation area for this species. No documented occurrences were identified; however, potential habitat does occur onsite.	Medium
Florida Burrowing Owl	*Athene cunicularia*	N	ST	No documented occurrences were identified; however, potential habitat does occur onsite.	Low
Gopher Tortoise	*Gopherus polyphemus*	C	ST	No documented occurrences were identified; however, potential habitat does occur onsite.	Low

Federal Status: E = Endangered; T=Threatened; C = Candidate Species; N=Not Listed
State Status: FE – Federally Endangered; FT – Federally Threatened; ST – State Threatened

Federal Protected Species

Red-cockaded Woodpecker

The red-cockaded woodpecker is small woodpecker that is listed as endangered by both the USFWS and FWC. Red-cockaded woodpeckers inhabit open, mature pine woodlands that have a diversity of grass and shrub species. Preferred habitat includes old growth longleaf pine flatwoods in north and central Florida and mixed longleaf pine and slash pine in south-central Florida. The red-cockaded woodpecker creates cavities in within the longleaf pine tree and rely on the trees production of resin to protect them from predators. Development of longleaf pine habitat as well as fire exclusion in this fire-dependent ecosystem has led to a large decrease in populations of red-cockaded woodpeckers. The project study area is partially located within the USFWS consultation

area for the red-cockaded woodpecker; however, only a very limited amount of potential habitat for the red-cockaded woodpecker occurs within the project study area and no records of individuals were identified in the database review. Based on the urban nature of the project corridor, no impacts are anticipated to this species, but potential habitat will be assessed through an onsite field review.

Everglade Snail Kite

The snail kite is listed as endangered by the USFWS and FWC due to degradation of its restricted range of foraging habitat and its highly specific diet, which is made up almost exclusively of apple snails (*Pomacea paludosa*). Snail kites typically prefer large, open, freshwater marshes and shallow lakes (< 4 ft. deep) with a low density of emergent vegetation and typically nest in low trees or shrubs over water (commonly willow, wax myrtle, pond apple, or buttonbush, but also in non-woody vegetation like cattail or sawgrass). They are protected under the Endangered Species Conservation Act, U.S. Migratory Bird Treaty Act and state wildlife laws. The project study area is located within the USFWS consultation area for the snail kite; however, no records of individuals were identified in the database review and only limited potential habitat occurs onsite. Based on the urban nature of the project corridor, no impacts are anticipated to this species, but potential habitat will be assessed through an onsite field review.

Wood Stork

The wood stork is listed as threatened by the USFWS and threatened by the FWC. Wood storks are typically found in marshes, cypress swamps, and mangrove swamps, but their presence in artificial ponds, seasonally flooded roadside or agricultural ditches, and managed impoundments has become common. Calm, shallow water areas (between 10 and 25 centimeters) that are not overgrown with dense, aquatic vegetation usually supply good feeding conditions. A determination of potential suitable foraging habitat will need to be completed through an onsite field review to assess the steepness of the slopes approaching the various canals within the project area and the depth of the water in these canals. If these canals provide foraging habitat for this species, a wood stork site-specific foraging analysis may be required.

Eastern Indigo Snake

The eastern indigo snake is listed as threatened by both the USFWS and the FWC due to a decline in population. The eastern indigo snake occurs in a range of habitats, including pine flatwoods, scrubby flatwoods, high pine, dry prairie, tropical hardwood hammocks, edges of freshwater marshes, agricultural fields, coastal dunes, and human-altered habitats. The snake requires large tracts of land to survive and often winters in burrows of gopher tortoises, armadillos, cotton rats, and land crabs (in coastal areas) and forages in hydric habitats. No records of individuals were identified in the database review; however, potential habitat for this species is present within the project study area. Based on the urban nature of the project corridor, no impacts are anticipated to this species, but potential habitat will be assessed through an onsite field review.

Florida Bonneted Bat

The Florida bonneted bat is the largest bat species endemic to Florida and is listed as endangered by both USFWS and FWC. This species has a wide ranging USFWS consultation area but has only been recorded to occur in south Florida (Miami-Dade, Broward, Collier, Hendry, Lee, Charlotte, Glades, Highlands, Desoto, and Polk counties). This species is known to roost in natural tree cavities and tree cavities created by woodpeckers and other species as well as in man-made structures. The project study area is partially within the USFWS consultation area for the Florida bonneted bat. Further coordination with USFWS is needed to determine the level of survey needed for this project based on potential impacts within the project limits.

State Protected Species

Florida Burrowing Owl

The Florida burrowing owl is listed as a species of special concern by the FWC. This small, ground- dwelling owl is boldly spotted and barred with brown and white. Habitat includes open, native prairies and cleared areas that provide short ground cover such as pastures, agricultural fields, golf courses, airports, and vacant lots in residential areas. No records of individuals were identified in the database review; however, limited potential habitat for this species is present within the project study area. Based on the urban nature of the project corridor, no impacts are anticipated to this species, but potential habitat will be assessed through an onsite field review.

Gopher Tortoise

The gopher tortoise is listed by FWC as threatened and a candidate species for USFWS. Gopher tortoises prefer dry upland habitats such as pine flatwoods, xeric oak hammocks, open sandy pastures, and disturbed areas. No records of individuals were identified in the database review; however, natural upland FLUCFCS classifications are present within the project study area. If gopher tortoises or burrows are found within the project study area, coordination with FWC to secure any necessary permits will be needed to relocate the tortoises and associated commensal species prior to construction. At this time, no further action is anticipated for this species.

Listed Plant Species

The Florida Department of Agriculture and Consumer Service's *Notes on Florida's Threatened and Endangered Plants*, and Richard Wunderlin's *Guide to Vascular Plants of Florida*, were consulted to assess habitat requirements for listed plant species. Although listed plants were noted by FNAI and USFWS as possibly occurring in this area, no potential habitat is likely to occur due to the urban nature of the project study area. No further action is anticipated for listed plant species.

Special Designations

The project study area was evaluated for the occurrence of Critical Habitat as defined by the Endangered Species Act of 1973 as amended and 50 CFR part 424. The USFWS is the authority, as a federal agency, to protect critical habitat from destruction or adverse modification of the biological or physical constituent elements essential to the conservation of listed species. Critical Habitat is defined as the specific areas within the geographical area occupied by a species on which are found those physical or

biological features essential to the conservation of the species and which defined may require special management considerations or protection. No designated Critical Habitat occurs within the project study area.

The project study area was also evaluated for the occurrence of Aquatic Designations such as Aquatic Preserve or Outstanding Florida Waterbody. In 1975 Florida enacted the Aquatic Preserve Act managed through Florida Department of Environmental Protection (FDEP) to ensure the preservation of the natural conditions within the waters. Section 403.031(27), Florida Statutes, gives FDEP the power to establish rules that provide for a special category of waterbodies within the state, Outstanding Florida Waters (62-302.700 F.A.C.) which is a water designated worthy of special protection because of its natural attributes and is intended to protect existing good water quality. No Aquatic Designations occur within the project study area.

Floodplains

FEMA FIRM panels 12099C0583F, 12099C0579F , 12099C0578F, 12099C0559F, 12099C0558F, 12099C0554F, 12099C0562F, and 12099C0562F (all effective 10/05/2017), indicates that portions of the project study area are within Zone A or AE (areas determined to be within 1% chance of Annual Chance Floodplain) and Zone X (areas determined to be outside of the 0.2% annual chance floodplain). Impacts to floodplains will be assessed during the PD&E phase of the project. A FEMA Flood Zone Map is attached as Appendix D.

Historic and Archaeological Resources

Kimley-Horn requested an inquiry from the Department of State, State Historic Preservation Officer (SHPO) Division of Historical Resources Florida Master Site File (FMSF) regarding the presence of known historical or archaeological findings within the site. Data was also reviewed from the SHPO FMSF available from FGDL. The FMSF indicates that there are no archeological sites, no historical structures, and one linear resource within the project study area. The Miami River Canal (C-6) is listed as eligible for listing in the National Register of Historical Places but impacts to this resource are not anticipated for this project. Coordination with SHPO for concurrence on this resource is recommended before construction activities commence.

Recreational Facilities

Based on the review of available resources, eight (8) recreational facilities were documented within the project study area. A list of these resources can be found below. If federal funds are used for this project or the project requires the approval of FDOT, and impacts to the park occur, then a Section 4(f) determination of applicability and use will be required.

Contamination

A preliminary screening evaluation was conducted to identify known contamination sites within the project study area. The project study area includes the approximately 13.5-mile project corridor and 250 feet on either site of the public right-of-way (ROW). This evaluation consisted of a desktop review and did not include field reconnaissance of the project study area. Readily available records from the Florida Department of

Environmental Protection (FDEP) Map Direct Database, and a Database Report (dated May 18, 2021) provided by Environmental Risk Information Services (ERIS) were reviewed. It should be noted that the project study area is located within a densely developed urban corridor of Palm Beach County, Florida. As such, there are numerous sites identified within the ERIS Database Report and the FDEP Map Direct databases. The ERIS Database Report contains records of facilities that were identified from a variety of federal, state, and local regulatory databases. In total, the Database Report identified 331 mapped sites associated with 709 database listings within the project study area. For the purposes of this evaluation, the databases were evaluated further to identify those sites that have known contamination existing at the site.

Other listed sites, such as registered storage tank sites with no reported discharges, previous contamination sites that have achieved regulatory closure for past discharges, hazardous waste generator facilities, stormwater permits, and other listings with no documentation of existing contamination, were not included in this evaluation. A review of contaminant plume composition and extents at known contaminated sites, and an assignment of site-specific risk ratings, was not included in this evaluation. Further evaluation of known and/or potentially contaminated sites within the project study area may be performed as part of a Level I Contamination Screening Evaluation, which is discussed further below. A total of 20 known contamination sites were identified within the project study area from the databases below. These sites are summarized in *Table 3* below and a map is provided Appendix E.

- FDEP Cleanup Sites – This database layer identifies State funded sites currently awaiting cleanup funding. Cleanup programs include: Brownfields, Petroleum, EPA Superfund (CERCLA), Drycleaning, Responsible Party Cleanup, State Funded Cleanup, State Owned Lands Cleanup and Hazardous Waste Cleanup.
- Drycleaning Solvent Program Cleanup Sites – This database lists drycleaning sites that are eligible for state funding through the Drycleaning Solvent Cleanup Program (DCSP) to cleanup properties that are contaminated as a result of drycleaning operations or wholesale supply.
- Petroleum Contamination Monitoring (PCTS) Discharges – This database includes all identified petroleum contaminated discharge sites where cleanup is ongoing or complete. Discharge cleanup sites may be eligible or ineligible for state funding assistance.
- Environmental Restoration Integrated Cleanup (ERIC) Sites – This database tracks contaminated site cleanup activities within the FDEP Division of Waste Management.
- Solid Waste Facilities – This database includes authorized and unauthorized solid waste facilities, including municipal solid waste, landfills, dumps, construction and demolition disposal, and recycling facilities.
- ERNS / SPILLS Sites – The ERNS (Emergency Response Notification System) database includes oil and hazardous substances spill reports made available by the US Coast Guard National Response Center. The SPILLS database is a statewide listing of oil and hazardous materials spills and incidents recorded by the FDEP.

Table 3. Contamination Sites Summary

Site No.	Site No. per ERIS Database Report	Facility Name	Location/ Address	Facility ID	Distance from ROW	Contamination Database Category					
						DEP Cleanup Sites	Drycleaning Solvent Program Cleanup Sites	Petroleum Contamination Monitoring (PCTS) Discharges	ERIC Cleanup Sites	Solid Waste Facilities	ERNS / SPILLS Sites
01	233	Shell – First Coast Energy #2719 Shell – Petroleum Services of Palm Beach	192 S State Road 7, West Palm Beach, FL	9100151	Eastern adjacent	X		X			
02	255, 267	Texaco #021 – 1323 Short Stop	10029 Southern Boulevard, West Palm Beach, FL	8514642	Within ROW	X		X			
03	232	Chevron #48190-A08	9931 Southern Boulevard, West Palm Beach, FL	8514775	Within ROW	X		X			
04	308	Next Era Landscaping, LLC	None listed	99154	Southern adjacent						X
05	122, 123	Barney's Convenience Store	6950 Okeechobee Boulevard, West Palm Beach, FL	8513870	Southern adjacent	X		X			
06	26, 27	Family Fina #604	5028 Okeechobee Boulevard, West Palm Beach, FL	8513941	Southern adjacent	X		X			
07	67, 68	U-Haul Center West Palm Beach	4371 Okeechobee Boulevard, West Palm Beach, FL	8630507	Northern adjacent	X		X			
08	80, 81, 82, 83	Amlene Clean Duclac Inc. DBA T & W Cleaners	4275 Okeechobee Boulevard, West Palm Beach, FL	ERIC_5185	Northern adjacent	X	X		X		
09	86	Public Storage Inc. Public Storage Facility – 4200 Okeechobee	4200 Okeechobee Boulevard, West Palm Beach, FL	9805655	Southern adjacent	X		X			

10	90, 91	Critz Property	Okeechobee Boulevard & Donnell Road, West Palm Beach, FL	9700618 ERIC_6365 ERIC_10590	Southern adjacent	X		X	X
11	99, 100	Marathon – European #461 BP – European #461	4111 Okeechobee Boulevard, West Palm Beach, FL	8514748	Northern adjacent	X		X	
12	142, 143	Luxury Laundry & Drycleaning	2827 Okeechobee Boulevard, West Palm Beach, FL	ERIC_5277	Northern adjacent	X	X		X
13	N/A	Toyota of Palm Beach	2702 & 2707 Okeechobee Boulevard, West Palm Beach, FL	ERIC_8722 ERIC_10857	Northern adjacent				X
14	171, 172	THCW Land Holdings Inc.	2405 Okeechobee Boulevard, West Palm Beach, FL	8514777	Northern adjacent	X		X	
15	N/A	Florida DOT Okeechobee Blvd (SR 704) Widening Project	Okeechobee Boulevard & S Congress Avenue, West Palm Beach, FL	ERIC_10795	Within ROW				X
16	180	Sunshine #37	2274 Okeechobee Boulevard, West Palm Beach, FL	8514631	Southern adjacent	X		X	
17	185	Prime Autos	2008 Okeechobee Boulevard, West Palm Beach, FL	9100616	Southern adjacent	X		X	
18	303, 320	Amoco #447	746 Okeechobee Boulevard, West Palm Beach, FL	8513818	Southern adjacent	X		X	
19	140, 148	Braman Motor Cars	2815 & 2901 Okeechobee Boulevard, West Palm Beach, FL	52265 1104439	Northern adjacent				X
20	183	Dean Property	2158 Okeechobee Boulevard, West Palm Beach, FL	9601268	Southern adjacent			X	

SUMMARY

The project study area includes wetlands and surface waters and if unavoidable impacts to these systems are anticipated then state permits will be needed. Impacts to unavoidable wetlands and surface waters will be assessed to determine if mitigation for these impacts will be needed. An ERP from SFWMD and State 404 permit from FDEP is anticipated if impacts to wetlands or surface water will occur and mitigation may be required to offset any proposed wetland impacts. Mitigation can be provided on-site or may be comprised of off-site purchase of mitigation bank credits. A NPDES permit through FDEP to develop a Stormwater Pollution Prevention Plan. Additionally, a Tree Removal Permit will be required from if any trees are proposed for removal.

A formal Florida bonneted bat roost survey during the design phase is recommended and consultation with USFWS may be required on the survey results. Implementation of the *Standard Protection Measures for the Eastern Indigo Snake* during construction is recommended per the USFWS key. These measures consist of informational signage and construction crew educational materials to identify and avoid impacts to the species. No designated Critical Habitat or Aquatic Designations occurs within the project study area.

Portions of the project study area are within Zone A, AE and Zone X; however, impacts to the floodplain are not anticipated. No further action is anticipated. Impacts to floodplains will be assessed during the PD&E phase of the project.

Based on the Florida Master Site File, no archeological sites, no historical structures, and one linear resource within the project study area. Additional cultural resource evaluations may be required based on the Miami River Canal (C-6) eligibility. It is recommended that a compliance review be requested from SHPO to determine if additional studies will be required.

A total of 20 known contamination sites were identified within the project study area through the preliminary desktop review as previously described.

This desktop review is not meant to represent a Level I Contamination Screening Evaluation, which is described in Part 2, Chapter 20 of the Florida Department of Transportation (FDOT) Project Development and Environment (PD&E) Manual (dated July 1, 2020). A Level I evaluation may be necessary to further evaluate potential contaminant impacts to the project alternatives. The Level I evaluation is performed to screen known and/or potentially contaminated sites that may impact project alternatives. The Level I evaluation consists of a database review, review of historical resources (i.e aerial photographs, topographic maps, Sanborn maps, and city directories), review of existing land use and hydrologic features, field reconnaissance, and interviews.

Sites identified during the Level I as potential contamination sites are further evaluated for impact to the project alternatives and each site is assigned a "risk rating" of "No", "Low", Medium" or "High". It should be noted that Level I evaluations are intended to evaluate potential contamination sites within specified distances from the project study area. These distances include 500 feet from the ROW line for petroleum, drycleaners, and non-petroleum sites; 1,000 feet for non-landfill solid waste sites; and 0.5 miles for CERCLA, National Priority List (NPL) Superfund sites, or Landfill sites.

As discussed previously, the ERIS Database Report identified 331 sites across 709 database listings within 250 feet of the project ROW. Additional potential contamination sites are likely to be identified through a Level I evaluation upon entering the PD&E phase due to the expanded scope and search distances specified within a Level I evaluation.

Based on the findings of a Level I evaluation, a Level II contamination evaluation may also be warranted to further assess potential contaminant impacts to the project. The Level II evaluation, if warranted, is typically performed during the project design phase to assess the type and extent of potential contamination impacts to construction activities on the project or ROW acquisition.

SOCIOCULTURAL EVALUATION

Methodology

The study area for the social and economic analysis extends to areas within a ¼-mile of the project corridor. The *Sociocultural Effects Evaluation Handbook* recommends a ¼-mile buffer as a minimum distance for sociocultural effects evaluations to allow for the inclusion of community facilities and address connectivity.

Results

Community Facilities

Community and neighborhood feature data from the Florida Geographic Data Library was used to determine where features are located throughout the study area. Field reconnaissance and verification is recommended during the PD&E phase for the project. A summary of the community and neighborhood facilities are included in *Table 4*.

Table 4. Community Facilities within the Project Study Area

Site Name
EDUCATIONAL FACILITIES
ACADEMY FOR NURSING AND HEALTH OCCUPATIONS
ADULT EDUCATION CENTER OF PALM BEACH
ALEXANDER W DREYFOOS JUNIOR SCHOOL OF THE ARTS
BENOIST FARMS ELEMENTARY SCHOOL
BEREAN CHRISTIAN SCHOOL
CREATIVE MONTESSORI ACADEMY, LLC
FLORIDA CAREER COLLEGE - WEST PALM BEACH
INDIAN RIDGE SCHOOL
RENAISSANCE CHARTER SCHOOL AT CYPRESS
SOUTH UNIVERSITY-WEST PALM BEACH
TURNING POINTS ACADEMY
RECREATIONAL FACILITIES
CHILLINGWORTH PARK
GATEWAY PARK
HARRIET HIMMEL THEATRE
HOWARD PARK COMMUNITY CENTER
OKEECHOBEE BLVD BRANCH LIBRARY

PALM BEACH COUNTY CONVENTION CENTER
RAYMOND F KRAVIS CENTER FOR THE PERFORMING ARTS
SOUTH UNIVERSITY - SOUTH UNIVERSITY LIBRARY
RELIGIOUS FACILITIES
CHRIST FELLOWSHIP CHURCH INC
FAMILY WORSHIP CENTER
GRACE FELLOWSHIP OF WEST PALM
NEW HOPE CHRISTIAN CENTER
ROYAL POINCIANA CHAPEL
SEVENTH DAY CHURCH-THE LIVING
ST CASIMIRS ROMAN CATHOLIC CHURCH
UNITED PENTECOSTAL CHURCH
WESTGATE NEW TESTAMENT CHURCH
HEALTH CARE FACILITIES
WELLINGTON REGIONAL MEDICAL CENTER
SOCIAL SERVICE FACILITIES
CHILD AND FAMILY CONNECTIONS
GOVERNMENTAL FACILITIES
US POST OFFICE - ZIP CODE PLACE DDC ANNEX
PALM BEACH COUNTY FIRE RESCUE STATION 23 - HEADQUARTERS
PALM BEACH COUNTY FIRE RESCUE STATION 29
PALM BEACH COUNTY SHERIFF
WEST PALM BEACH FIRE RESCUE STATION 7

Access will remain for these community facilities throughout construction of the proposed project. The proposed project will provide greater mobility within the community allowing for enhanced access to these community facilities.

Community Cohesion

Community cohesion is the degree to which residents have a sense of belonging to their community. This may also include the degree in which neighbors interact and cooperate with one another, the level of attachment felt between residents and institutions in the community, and/or a sense of common belonging, cultural similarity or “togetherness” experienced by the population. Increased connections between communities and regions can be a positive effect on community cohesion particularly

in areas that are heavily congested or divided by man-made or natural barriers such as wetland or stream systems.

The corridor involves the proposal of implementing enhanced transit facilities that may include capital investments of bus rapid transit (BRT) or light rail transit (LRT) on Okeechobee Blvd. and SR 7. In developing these alternatives, consideration will be given to minimizing effects to existing neighborhoods and businesses.

Overall, connectivity will be improved due to the enhanced transit facilities, improved access along the corridor, and improved access to local businesses and community facilities.

Under the No-Build Alternative, Okeechobee Boulevard and SR 7 would remain an 8-lane divided roadway and 6-lane divided roadway, respectively. Local traffic movements within the existing communities would remain unchanged. The roadways would likely experience increased traffic volumes and decreased safety for users.

DEMOGRAPHICS

The project study area was reviewed in accordance with the *Civil Rights Act of 1964*, as amended by the *Civil Rights Act of 1968*. Additionally, the alternatives will be developed in accordance with *Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994)*. This project will be developed without regard to race, color, national origin, age, sex, religion, disability or family status.

An analysis of existing minority, low-income populations, and other vulnerable populations was conducted through a review of 2019 5-year American Community Survey (ACS) census data. The study area for reviewing the demographics included census blocks groups that overlap the study area and ¼-mile buffer.

Based on 2019 5-year estimates, the residential population in the study area is approximately 90,485. Census tracts with more minority populations than the study area are generally located between I-95 and the Florida Turnpike adjacent to Okeechobee Boulevard, and west of SR 7. ***Table 5*** includes a summary of the residential population by race.

Table 5. Population by Race (2019 5-year ACS) within the Project Study Area

Geography	Census Block Group	2019 Population	Percent White	Percent Hispanic[1]	Percent Black	Percent Other[2]
Okeechobee Boulevard & SR 7 Study Area		90,485	39.4	26.9	27.1	6.6
Census Tract 19.09	Block Group 1	2,730	16.4	50.4	28.4	4.8
Census Tract 19.11	Block Group 1	596	72.8	13.8	5.7	7.7
Census Tract 19.11	Block Group 2	308	72.4	9.4	16.2	1.9
Census Tract 19.13	Block Group 1	672	71.6	5.4	19.9	3.1
Census Tract 19.13	Block Group 2	568	84.2	12.9	1.6	1.4
Census Tract 19.13	Block Group 3	571	89.5	10.5	0.0	0.0
Census Tract 19.17	Block Group 1	1,951	39.3	13.0	39.9	7.8
Census Tract 20.05	Block Group 1	3,130	13.1	9.5	75.4	2.0
Census Tract 20.06	Block Group 1	439	38.7	30.3	23.5	7.5
Census Tract 20.06	Block Group 2	2,230	14.8	18.4	57.8	9.0
Census Tract 26.00	Block Group 1	1,301	69.9	17.8	4.8	7.5
Census Tract 27.00	Block Group 1	1,622	65.4	26.1	5.8	2.7
Census Tract 27.00	Block Group 3	1,840	75.9	12.7	8.9	2.6

Census Tract 28.00	Block Group 1	1,167	23.7	54.1	18.8	3.5
Census Tract 28.00	Block Group 3	612	69.0	29.7	0.0	1.3
Census Tract 28.00	Block Group 4	461	41.0	36.0	18.0	5.0
Census Tract 29.00	Block Group 1	2,206	7.3	83.7	9.0	0.0
Census Tract 29.00	Block Group 2	4,721	3.6	40.5	52.5	3.3
Census Tract 31.01	Block Group 2	1,598	15.8	79.1	0.0	5.1
Census Tract 31.01	Block Group 3	1,861	21.8	66.0	9.8	2.4
Census Tract 31.02	Block Group 3	2,680	7.1	35.6	55.5	1.9
Census Tract 31.02	Block Group 4	1,423	20.9	42.4	33.5	3.2
Census Tract 77.52	Block Group 1	6,055	65.5	14.0	12.1	8.4
Census Tract 77.60	Block Group 1	4,295	52.9	19.1	15.2	12.9
Census Tract 77.62	Block Group 1	1,197	59.1	17.2	11.4	12.2
Census Tract 77.62	Block Group 2	878	98.5	0.0	1.5	0.0
Census Tract 77.63	Block Group 1	2,114	56.0	42.5	0.8	0.8
Census Tract 77.63	Block Group 2	6,141	32.4	21.7	40.2	5.8

Census Tract 77.65	Block Group 1	3,206	47.7	26.2	1.3	24.9
Census Tract 77.65	Block Group 3	3,543	27.7	37.8	21.9	12.6
Census Tract 78.13	Block Group 1	4,398	38.6	30.8	26.4	4.2
Census Tract 78.13	Block Group 2	2,518	52.6	14.4	20.4	12.6
Census Tract 78.18	Block Group 1	2,013	59.7	9.9	26.9	3.5
Census Tract 78.32	Block Group 1	1,252	21.4	35.1	37.5	6.1
Census Tract 78.32	Block Group 2	771	66.1	21.4	9.1	3.4
Census Tract 78.32	Block Group 3	895	38.5	34.0	21.2	6.3
Census Tract 78.33	Block Group 2	4,511	11.4	17.1	59.4	12.1
Census Tract 78.36	Block Group 1	3,073	64.8	25.3	3.2	6.6
Census Tract 78.36	Block Group 2	1,699	32.1	12.8	53.3	1.8
Census Tract 78.37	Block Group 1	2,475	31.9	7.4	55.8	4.8
Census Tract 78.37	Block Group 2	2,420	61.6	17.1	14.6	6.7
Census Tract 78.37	Block Group 3	2,344	63.3	19.5	13.3	3.9

Source: US Census Bureau, 2015-2019 American Community Survey Five-Year Estimates.

[1]Hispanic includes persons of any race with Hispanic or Latino family heritage.

[2]Other includes: American Indian/Alaskan Native, Asian, Native Hawaiian, other single race, and two or more races.

Table 6 summarizes the household income characteristics for the study area. The 2019 5-year estimates indicate that the median household income of the study area is approximately $64,820, with approximately 14.2% of families having incomes below the federal poverty level. Census tracts with more household incomes below the poverty level are generally located between I-95 and the Florida Turnpike adjacent to Okeechobee Boulevard.

Table 6. Household Income Characteristics (2019 5-year ACS) within the Project Study Area

Geography	Census Block Group	Median Household Income (Dollars)	Percentage of Households with Incomes Below Poverty Level
Okeechobee Boulevard & SR 7 Study Area		$64,820	14.2
Census Tract 19.09	Block Group 1	$34,904	26.7
Census Tract 19.11	Block Group 1	$24,943	16.0
Census Tract 19.11	Block Group 2	$18,220	25.3
Census Tract 19.13	Block Group 1	$26,944	13.1
Census Tract 19.13	Block Group 2	$24,821	18.5
Census Tract 19.13	Block Group 3	$27,882	16.1
Census Tract 19.17	Block Group 1	$36,071	36.8
Census Tract 20.05	Block Group 1	$49,192	8.1
Census Tract 20.06	Block Group 1	$100,817	3.3
Census Tract 20.06	Block Group 2	$37,341	22.9
Census Tract 26.00	Block Group 1	$78,155	14.1
Census Tract 27.00	Block Group 1	$85,033	10.4
Census Tract 27.00	Block Group 3	$52,344	2.4
Census Tract 28.00	Block Group 1	$47,889	10.2
Census Tract 28.00	Block Group 3	$131,369	14.4
Census Tract 28.00	Block Group 4	$67,930	3.7
Census Tract 29.00	Block Group 1	$30,865	41.3
Census Tract 29.00	Block Group 2	$28,699	35.6
Census Tract 31.01	Block Group 2	$36,453	35.5
Census Tract 31.01	Block Group 3	$29,083	37.9
Census Tract 31.02	Block Group 3	$30,636	33.7
Census Tract 31.02	Block Group 4	$39,099	20.8
Census Tract 77.52	Block Group 1	$100,104	2.7
Census Tract 77.60	Block Group 1	$126,000	4.5
Census Tract 77.62	Block Group 1	$154,375	2.0
Census Tract 77.62	Block Group 2	$84,219	5.6

Census Tract 77.63	Block Group 1	$54,615	14.2
Census Tract 77.63	Block Group 2	$87,746	0.0
Census Tract 77.65	Block Group 1	$152,895	0.0
Census Tract 77.65	Block Group 3	$144,750	7.1
Census Tract 78.13	Block Group 1	$80,833	0.8
Census Tract 78.13	Block Group 2	$78,254	4.6
Census Tract 78.18	Block Group 1	$119,167	5.2
Census Tract 78.32	Block Group 1	$50,780	5.3
Census Tract 78.32	Block Group 2	$24,279	16.9
Census Tract 78.32	Block Group 3	$26,750	18.4
Census Tract 78.33	Block Group 2	$41,146	22.7
Census Tract 78.36	Block Group 1	$67,337	13.8
Census Tract 78.36	Block Group 2	$59,695	17.4
Census Tract 78.37	Block Group 1	$93,153	0.0
Census Tract 78.37	Block Group 2	$71,131	2.7
Census Tract 78.37	Block Group 3	$66,538	4.1

Source: 2015-2019 American Community Survey Five-Year Estimates

In addition to race and household income, the 2019 5-year estimates were reviewed to evaluate the percentage of households with one or more persons 65 years or older (*Table 7*) and the percentage of households with limited English proficiency (

Table 8). Limited English proficiency is defined as Census Tracts and Block Groups within the study area containing people that do not speak English "very well" or "well".

Census tracts with more households than the study area with one or more persons greater than 65 are in proximity to the Riverwalk and Century Village neighborhoods, and the Breakers West Country Club. Census tracts with more households than the study area with limited English proficiency are generally located south of Okeechobee Boulevard between I-95 and Sansburys Way.

Table 7. Household Age (2019 5-year ACS) within the Project Study Area

Geography	Census Block Group	Percentage of Households with one or more person 65 years or older
Okeechobee Boulevard & SR 7 Study Area		33.9
Census Tract 19.09	Block Group 1	13.0
Census Tract 19.11	Block Group 1	87.0
Census Tract 19.11	Block Group 2	90.9
Census Tract 19.13	Block Group 1	81.8
Census Tract 19.13	Block Group 2	77.3
Census Tract 19.13	Block Group 3	98.0
Census Tract 19.17	Block Group 1	28.4
Census Tract 20.05	Block Group 1	32.1
Census Tract 20.06	Block Group 1	3.7
Census Tract 20.06	Block Group 2	21.8
Census Tract 26.00	Block Group 1	32.5
Census Tract 27.00	Block Group 1	34.2
Census Tract 27.00	Block Group 3	36.1
Census Tract 28.00	Block Group 1	21.6
Census Tract 28.00	Block Group 3	31.2
Census Tract 28.00	Block Group 4	4.3
Census Tract 29.00	Block Group 1	3.9
Census Tract 29.00	Block Group 2	18.8
Census Tract 31.01	Block Group 2	24.4
Census Tract 31.01	Block Group 3	42.0
Census Tract 31.02	Block Group 3	10.0
Census Tract 31.02	Block Group 4	12.8
Census Tract 77.52	Block Group 1	35.7
Census Tract 77.60	Block Group 1	22.8
Census Tract 77.62	Block Group 1	15.5

Census Tract 77.62	Block Group 2	89.9
Census Tract 77.63	Block Group 1	27.3
Census Tract 77.63	Block Group 2	16.0
Census Tract 77.65	Block Group 1	20.2
Census Tract 77.65	Block Group 3	42.0
Census Tract 78.13	Block Group 1	21.8
Census Tract 78.13	Block Group 2	20.2
Census Tract 78.18	Block Group 1	57.5
Census Tract 78.32	Block Group 1	31.8
Census Tract 78.32	Block Group 2	74.6
Census Tract 78.32	Block Group 3	50.8
Census Tract 78.33	Block Group 2	6.0
Census Tract 78.36	Block Group 1	69.8
Census Tract 78.36	Block Group 2	8.6
Census Tract 78.37	Block Group 1	21.8
Census Tract 78.37	Block Group 2	30.5
Census Tract 78.37	Block Group 3	70.1

Table 8. Language Characteristics (2019 5-year ACS) within the Project Study Area

Geography	Census Block Group	Percentage of Limited English-Speaking Households
Okeechobee Boulevard & SR 7 Study Area		9.7
Census Tract 19.09	Block Group 1	20.4
Census Tract 19.11	Block Group 1	14.9
Census Tract 19.11	Block Group 2	7.5
Census Tract 19.13	Block Group 1	3.7
Census Tract 19.13	Block Group 2	7.9
Census Tract 19.13	Block Group 3	6.8
Census Tract 19.17	Block Group 1	14.1
Census Tract 20.05	Block Group 1	3.0
Census Tract 20.06	Block Group 1	8.6
Census Tract 20.06	Block Group 2	16.3
Census Tract 26.00	Block Group 1	3.2
Census Tract 27.00	Block Group 1	10.3
Census Tract 27.00	Block Group 3	5.9
Census Tract 28.00	Block Group 1	19.5
Census Tract 28.00	Block Group 3	5.3
Census Tract 28.00	Block Group 4	0.0
Census Tract 29.00	Block Group 1	44.1
Census Tract 29.00	Block Group 2	39.6
Census Tract 31.01	Block Group 2	20.4
Census Tract 31.01	Block Group 3	23.5
Census Tract 31.02	Block Group 3	25.4
Census Tract 31.02	Block Group 4	6.6
Census Tract 77.52	Block Group 1	2.0
Census Tract 77.60	Block Group 1	4.2
Census Tract 77.62	Block Group 1	4.6
Census Tract 77.62	Block Group 2	0.0
Census Tract 77.63	Block Group 1	17.4
Census Tract 77.63	Block Group 2	0.0
Census Tract 77.65	Block Group 1	0.0
Census Tract 77.65	Block Group 3	14.2
Census Tract 78.13	Block Group 1	4.2

Census Tract 78.13	Block Group 2	1.1
Census Tract 78.18	Block Group 1	0.0
Census Tract 78.32	Block Group 1	25.0
Census Tract 78.32	Block Group 2	12.3
Census Tract 78.32	Block Group 3	17.0
Census Tract 78.33	Block Group 2	15.5
Census Tract 78.36	Block Group 1	1.2
Census Tract 78.36	Block Group 2	2.2
Census Tract 78.37	Block Group 1	0.0
Census Tract 78.37	Block Group 2	4.2
Census Tract 78.37	Block Group 3	1.1

Source: 2015-2019 American Community Survey Five-Year Estimates

Minority or low-income populations are present in the study area and will be taken into consideration during future planning and design of the preferred alternative. Temporary construction impacts would be the same for all populations within the study area. The proposed project will enhance mobility for all residents, including minority and low-income populations.

MOBILITY

Corridor alternatives are proposed to improve multimodal connectivity and access with transit facilities along Okeechobee Boulevard and SR 7. Enhanced transit service will improve connections on Okeechobee Boulevard and SR 7, providing efficient connections between project termini at Forest Hill Boulevard and Rosemary Avenue in the City of West Palm Beach. Improved transit service within the project corridor will result in improved access to homes, businesses, various recreational resources, educational facilities, and religious facilities as well.

RELOCATION AND DISPLACEMENT IMPACTS

Corridor alternatives are anticipated to positively impact the local economy or tax base with a potential increase in jobs and economic activity around the station areas due to the enhanced transit service. Potential right-of-way impacts will be evaluated for the recommended alternative. In order to minimize the unavoidable effects of right-of-way acquisition and displacement of people, FDOT would carry out a Right-of-Way and Relocation Assistance Program in accordance with Florida Statute 421.55, Relocation of displaced persons, if needed.

AESTHETIC EFFECTS

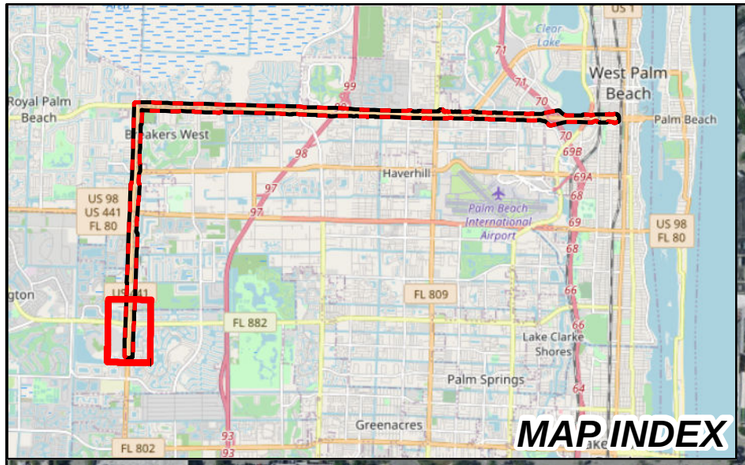
The topography of the project study area is flat consisting primarily of single- and multi-family residential use, along with single-story commercial buildings. Views within the area are restricted by the existing buildings and trees. Okeechobee Boulevard and SR 7 are already existing roadways and therefore the viewshed is not anticipated to change from the corridor alternatives' improvements. The Elevated grade-separated

LRT Alternative would present the highest risk of visual barrier to the surrounding neighborhoods and businesses, and aesthetic design choices would be considered in future phases of the project development. Future landscaping will be considered with the corridor alternatives' improvements.

LAND USE CHANGES

Future land use (FLU) was determined based on a review of Palm Beach County's FLU GIS data including categories for the City of West Palm Beach. The project study area is almost entirely developed with residential and commercial land uses. FLU shows the following land use categories: Commercial High, Commercial Low, Industrial, Institutional, Conservation, High Residential, Medium Residential, Low Residential, and Mixed Use. The study area is largely built-out but may encourage transit-oriented development and redevelopment that supports the existing businesses and residences in the area.

APPENDIX A: FLUCFCS MAP



Legend

Study Area

FLUCFCS Code: Description

- 1210: FIXED SINGLE FAMILY UNITS (TWO-FIVE DWELLING UNITS PER ACRE)
- 1400: COMMERCIAL AND SERVICES
- 1410: RETAIL SALES AND SERVICES
- 1620: SAND AND GRAVEL PITS
- 1700: INSTITUTIONAL
- 5120: CHANNELIZED WATERWAYS - CANALS
- 5300: RESERVOIRS
- 6170: MIXED WETLAND HARDWOODS
- 8140: ROADS AND HIGHWAYS

Source: Aerials courtesy of NearMap

K:\TAM_GIS\Okeechobee Mobility Study\MXD\FLUCFCS Map.mxd

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Phone (813)-620-1460
www.kimley-horn.com

Florida Land Use, Cover, and Forms Classification System Map

Okeechobee Mobility Study
Palm Beach County, FL

1 inch = 400 feet

PROJECT NUMBER: 040416206

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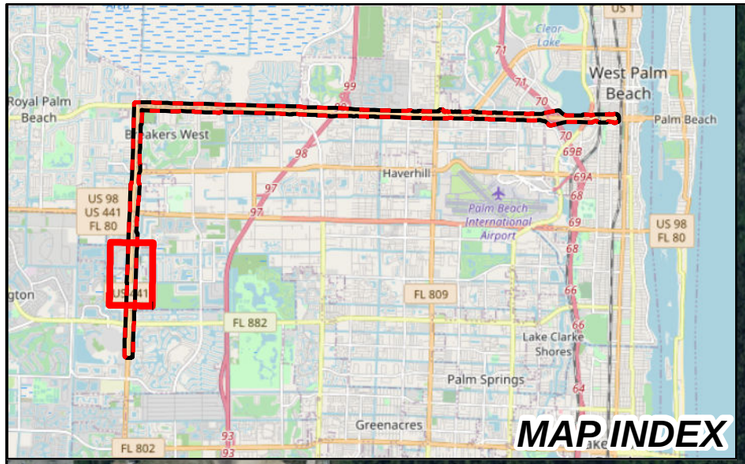
FIGURE 3 - PAGE 1 OF 15



Feet
0
400

1400 1620 1400 6190 6410 1400 5300 1210 1400 1340 1400 1340

8140 S State Road 7 5120 1210 1900 1410 6170 1400 1900 1110

Old Hammock Way
Christina Dr
Victoria Grove Blvd
Isla Verde Dr
Pioneer Rd
Westwood Cir W
Stonehaven Estates Dr

Legend

Study Area

FLUCFCS Code: Description

- 1110: FIXED SINGLE FAMILY UNITS (LESS THAN TWO DWELLING UNITS PER ACRE)
- 1210: FIXED SINGLE FAMILY UNITS (TWO-FIVE DWELLING UNITS PER ACRE)
- 1340: MULTIPLE DWELLING UNITS, HIGH RISE (THREE STORIES OR MORE)
- 1400: COMMERCIAL AND SERVICES
- 1410: RETAIL SALES AND SERVICES
- 1620: SAND AND GRAVEL PITS
- 1900: OPEN LAND
- 5120: CHANNELIZED WATERWAYS - CANALS
- 5300: RESERVOIRS
- 6170: MIXED WETLAND HARDWOODS
- 6190: EXOTIC WETLAND HARDWOODS
- 6410: FRESHWATER MARSHES
- 8140: ROADS AND HIGHWAYS

Source: Aerials courtesy of NearMap

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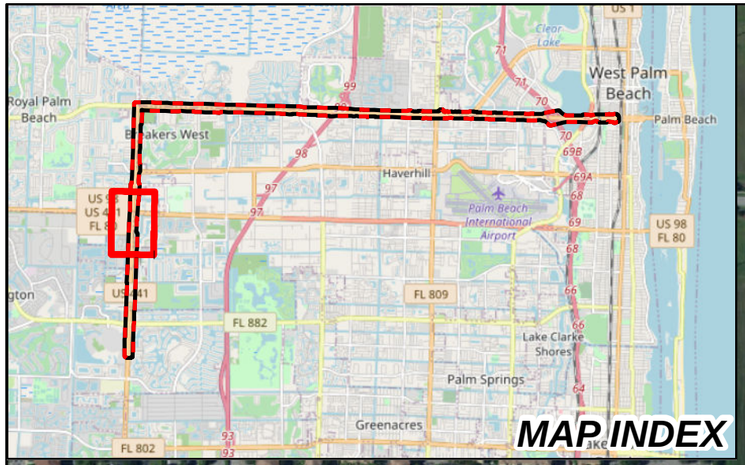

Legend

Study Area

FLUCFCS Code: Description

- 1110: FIXED SINGLE FAMILY UNITS (LESS THAN TWO DWELLING UNITS PER ACRE)
- 1340: MULTIPLE DWELLING UNITS, HIGH RISE (THREE STORIES OR MORE)
- 1400: COMMERCIAL AND SERVICES
- 1410: RETAIL SALES AND SERVICES
- 1900: OPEN LAND
- 5120: CHANNELIZED WATERWAYS - CANALS
- 8140: ROADS AND HIGHWAYS
- 8320: ELECTRICAL POWER TRANSMISSION LINES

Source: Aerials courtesy of NearMap

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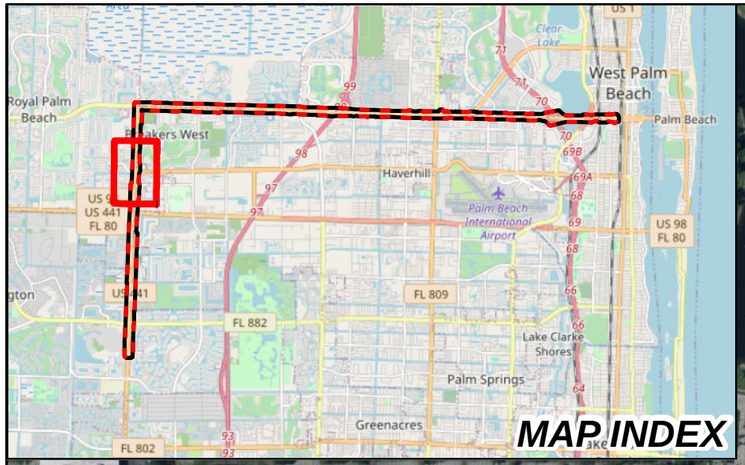
FIGURE 3 - PAGE 3 OF 15



Legend

Study Area

FLUCFCS Code: Description

- 1210: FIXED SINGLE FAMILY UNITS (TWO-FIVE DWELLING UNITS PER ACRE)
- 1400: COMMERCIAL AND SERVICES
- 1410: RETAIL SALES AND SERVICES
- 1490: COMMERCIAL AND SERVICES UNDER CONSTRUCTION
- 1820: GOLF COURSES
- 5120: CHANNELIZED WATERWAYS - CANALS
- 5300: RESERVOIRS
- 8140: ROADS AND HIGHWAYS

Source: Aerials courtesy of NearMap

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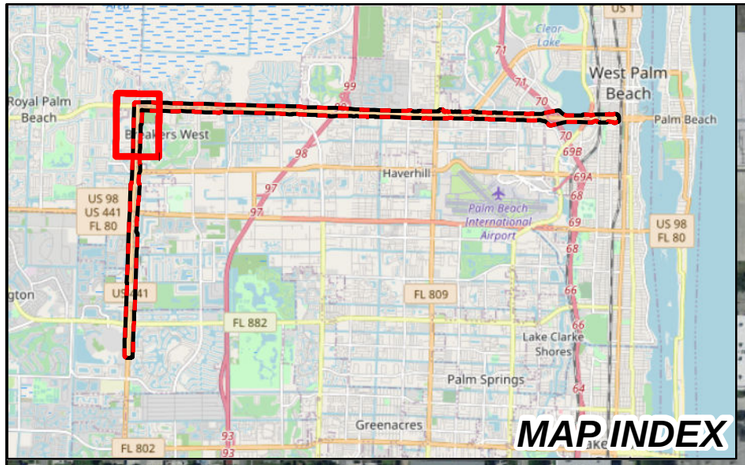
FIGURE 3 - PAGE 4 OF 15



Legend

Study Area

FLUCFCS Code: Description

- 1210: FIXED SINGLE FAMILY UNITS (TWO-FIVE DWELLING UNITS PER ACRE)
- 1330: MULTIPLE DWELLING UNITS, LOW RISE (TWO STORIES OR LESS)
- 1400: COMMERCIAL AND SERVICES
- 1410: RETAIL SALES AND SERVICES
- 1820: GOLF COURSES
- 1900: OPEN LAND
- 4110: PINE FLATWOODS
- 5300: RESERVOIRS
- 6170: MIXED WETLAND HARDWOODS
- 8140: ROADS AND HIGHWAYS

Source: Aerials courtesy of NearMap

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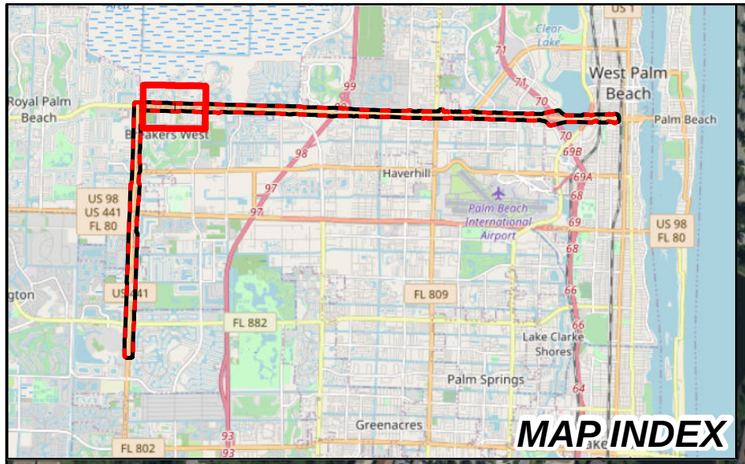

Feet
0
400

1330
1400
Baywinds Dr
Sandpiper Ln
1210
Stonington Ter
Swansea Ln
1330
Baywinds Blvd
Bay Point Cir
1210
1410
Grande Blvd
5300
Stafford Cres
5300
1330
8140
Okeechobee Blvd
4110
5300
1210
1110
Powell Rd
1820
5300
Flagler Pkwy
1110
5300
4110
1210
Nugent Trl
Palisades Dr
6410
1400
Sansburys Way
5300

Legend

Study Area

FLUCFCS Code: Description

- 1110: FIXED SINGLE FAMILY UNITS (LESS THAN TWO DWELLING UNITS PER ACRE)
- 1210: FIXED SINGLE FAMILY UNITS (TWO-FIVE DWELLING UNITS PER ACRE)
- 1330: MULTIPLE DWELLING UNITS, LOW RISE (TWO STORIES OR LESS)
- 1400: COMMERCIAL AND SERVICES
- 1410: RETAIL SALES AND SERVICES
- 1820: GOLF COURSES
- 4110: PINE FLATWOODS
- 5300: RESERVOIRS
- 6410: FRESHWATER MARSHES
- 8140: ROADS AND HIGHWAYS

Source: Aerials courtesy of NearMap

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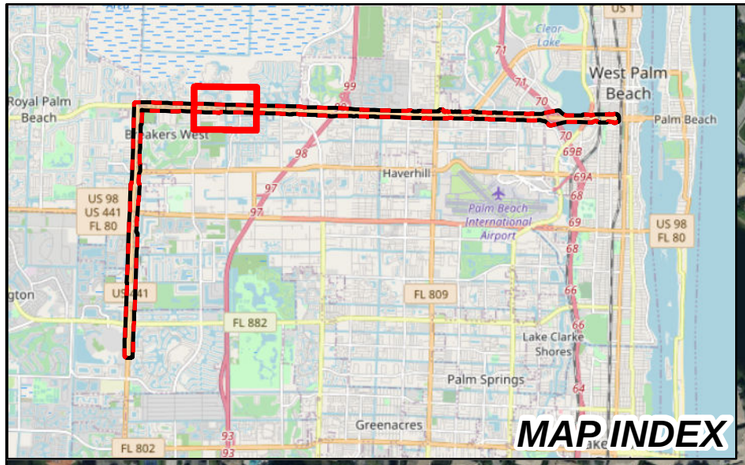
FIGURE 3 - PAGE 6 OF 15



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Study Area

FLUCFCS Code: Description

- 1110: FIXED SINGLE FAMILY UNITS (LESS THAN TWO DWELLING UNITS PER ACRE)
- 1210: FIXED SINGLE FAMILY UNITS (TWO-FIVE DWELLING UNITS PER ACRE)
- 1330: MULTIPLE DWELLING UNITS, LOW RISE (TWO STORIES OR LESS)
- 1400: COMMERCIAL AND SERVICES
- 1410: RETAIL SALES AND SERVICES
- 1490: COMMERCIAL AND SERVICES UNDER CONSTRUCTION
- 1700: INSTITUTIONAL
- 1710: EDUCATIONAL FACILITIES
- 2510: HORSE FARMS
- 5300: RESERVOIRS
- 8140: ROADS AND HIGHWAYS

Source: Aerials courtesy of NearMap

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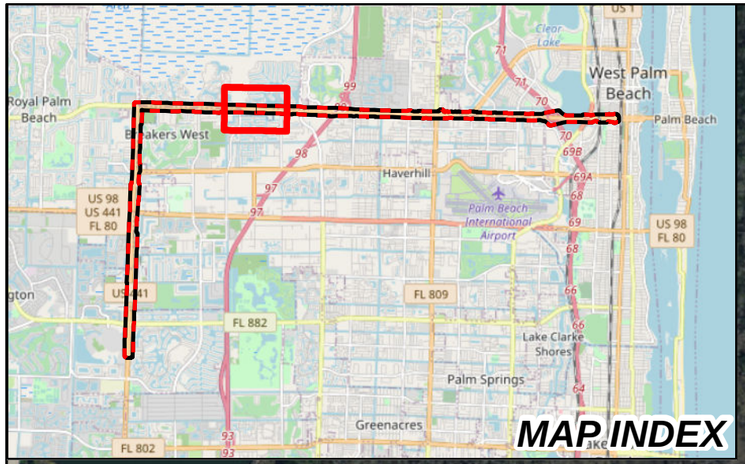
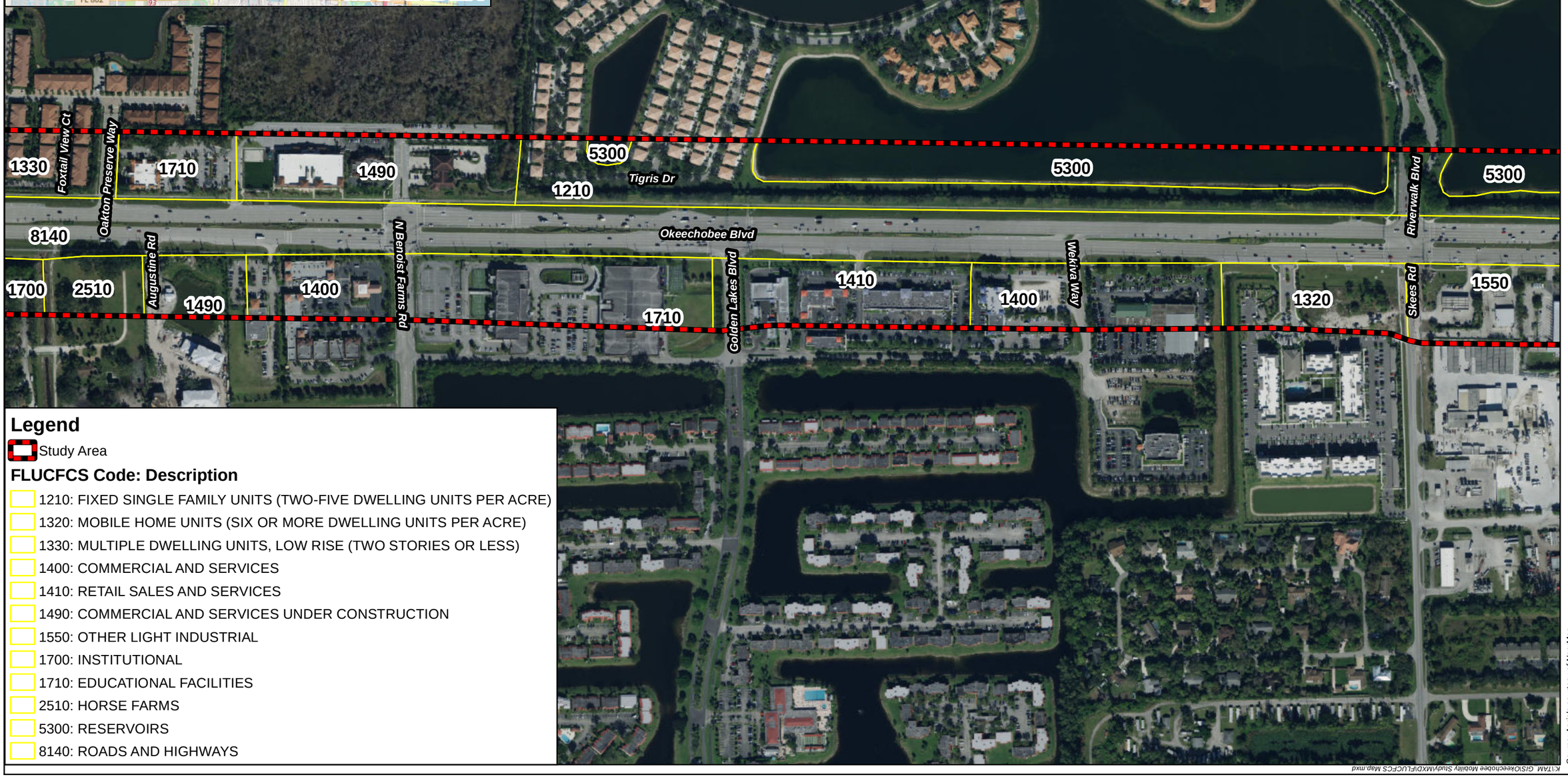
FIGURE 3 - PAGE 7 OF 15





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Study Area

FLUCFCS Code: Description

- 1210: FIXED SINGLE FAMILY UNITS (TWO-FIVE DWELLING UNITS PER ACRE)
- 1320: MOBILE HOME UNITS (SIX OR MORE DWELLING UNITS PER ACRE)
- 1330: MULTIPLE DWELLING UNITS, LOW RISE (TWO STORIES OR LESS)
- 1400: COMMERCIAL AND SERVICES
- 1410: RETAIL SALES AND SERVICES
- 1490: COMMERCIAL AND SERVICES UNDER CONSTRUCTION
- 1550: OTHER LIGHT INDUSTRIAL
- 1700: INSTITUTIONAL
- 1710: EDUCATIONAL FACILITIES
- 2510: HORSE FARMS
- 5300: RESERVOIRS
- 8140: ROADS AND HIGHWAYS

Source: Aerials courtesy of NearMap

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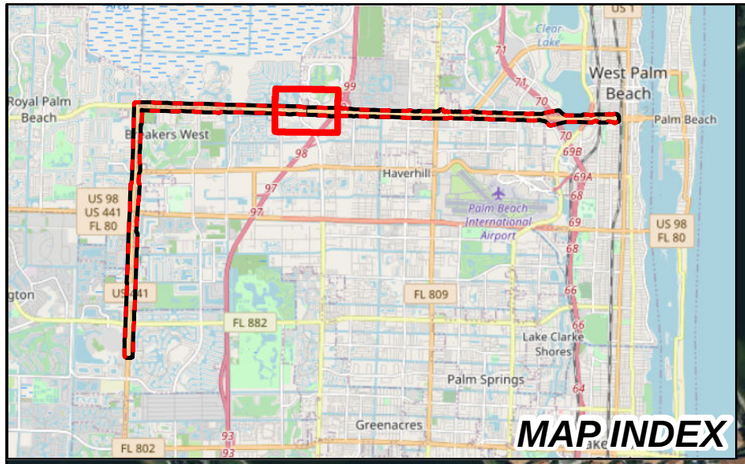

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Study Area

FLUCFCS Code: Description

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- 1320: MOBILE HOME UNITS (SIX OR MORE DWELLING UNITS PER ACRE)
- 1330: MULTIPLE DWELLING UNITS, LOW RISE (TWO STORIES OR LESS)
- 1340: MULTIPLE DWELLING UNITS, HIGH RISE (THREE STORIES OR MORE)
- 1400: COMMERCIAL AND SERVICES
- 1410: RETAIL SALES AND SERVICES
- 1550: OTHER LIGHT INDUSTRIAL
- 1820: GOLF COURSES
- 4340: HARDWOOD - CONIFEROUS MIXED
- 5300: RESERVOIRS
- 8140: ROADS AND HIGHWAYS

Source: Aerials courtesy of NearMap

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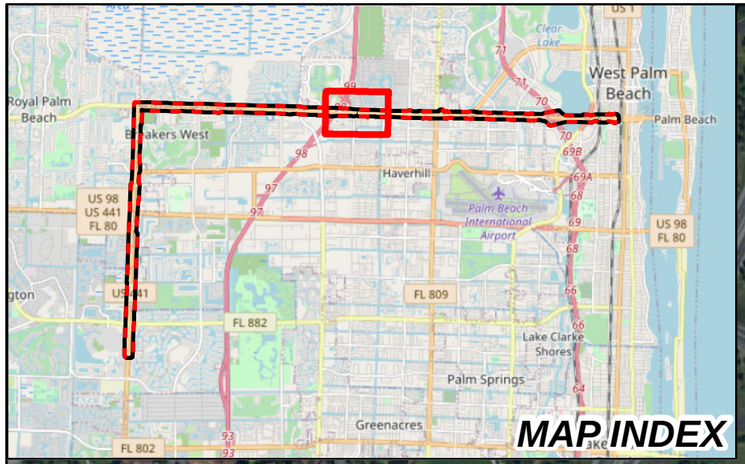
FIGURE 3 - PAGE 9 OF 15



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Study Area

FLUCFCS Code: Description

- 1320: MOBILE HOME UNITS (SIX OR MORE DWELLING UNITS PER ACRE)
- 1330: MULTIPLE DWELLING UNITS, LOW RISE (TWO STORIES OR LESS)
- 1340: MULTIPLE DWELLING UNITS, HIGH RISE (THREE STORIES OR MORE)
- 1400: COMMERCIAL AND SERVICES
- 1410: RETAIL SALES AND SERVICES
- 1820: GOLF COURSES
- 1900: OPEN LAND
- 3100: HERBACEOUS (DRY PRAIRIE)
- 4340: HARDWOOD - CONIFEROUS MIXED
- 5300: RESERVOIRS
- 6410: FRESHWATER MARSHES
- 8140: ROADS AND HIGHWAYS

Source: Aerials courtesy of NearMap

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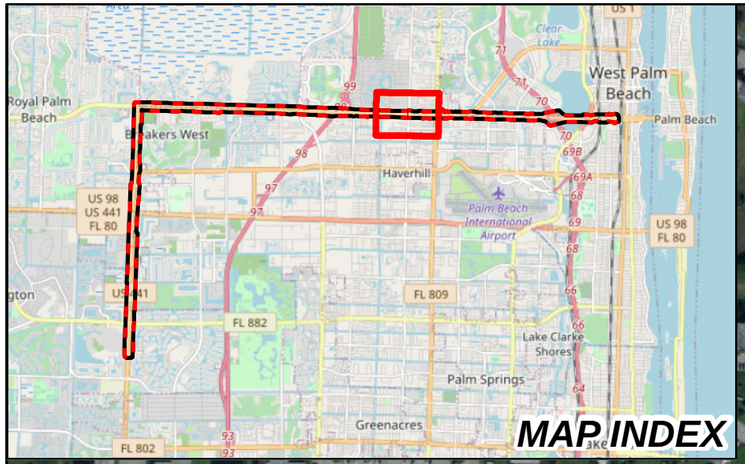
FIGURE 3 - PAGE 10 OF 15



Feet
0
400

1400
Fairway St
1340
Southampton
1410
N Haverhill Rd
1400
N Military Trl
8140
Okeechobee Blvd
Breezy Ln
1400
3100
1400
1410

Legend

Study Area

FLUCFCS Code: Description

- 1340: MULTIPLE DWELLING UNITS, HIGH RISE (THREE STORIES OR MORE)
- 1400: COMMERCIAL AND SERVICES
- 1410: RETAIL SALES AND SERVICES
- 3100: HERBACEOUS (DRY PRAIRIE)
- 8140: ROADS AND HIGHWAYS

Source: Aerials courtesy of NearMap

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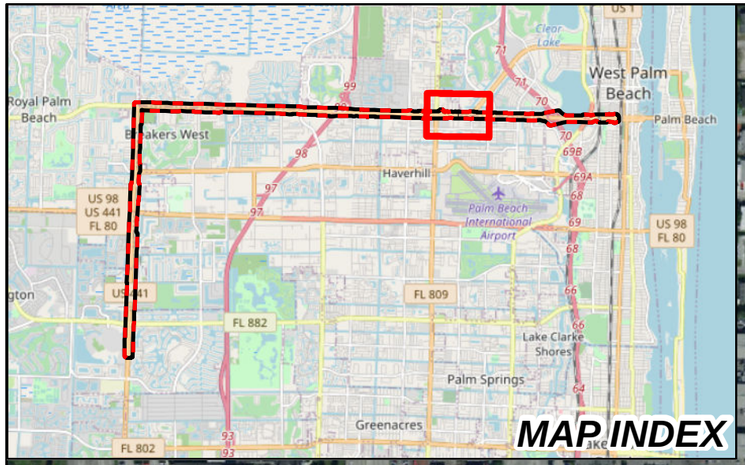
FIGURE 3 - PAGE 11 OF 15



Feet
0
400

1410
1400
N Military Trl
8140
Okeechobee Blvd
Zip Code Pl
Biscayne Blvd
Spafford Ave
Scott Ave
Indian Rd
Donnell Rd
Wabasso Dr
Tallahassee Dr
Shawnee Ave
Seminole Blvd

Legend

Study Area

FLUCFCS Code: Description

- 1400: COMMERCIAL AND SERVICES
- 1410: RETAIL SALES AND SERVICES
- 8140: ROADS AND HIGHWAYS

Source: Aerials courtesy of NearMap

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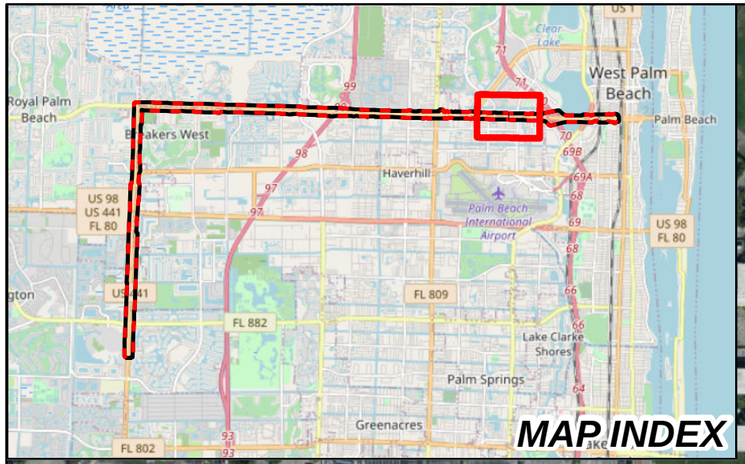
FIGURE 3 - PAGE 12 OF 15



Feet
0
400

1400
8140
1410
1400
1400
1320
Tallahassee Dr
Shawnee Ave
Seminole Blvd
Osceola Dr
Shawnee Ave
Loxahatchee Dr
Suwanee Dr
N Congress Ave
Manor Ave
Okeechobee Blvd
Church St
S Chillingworth Dr
Frank St
Spencer Dr

Legend

Study Area

FLUCFCS Code: Description

- 1320: MOBILE HOME UNITS (SIX OR MORE DWELLING UNITS PER ACRE)
- 1400: COMMERCIAL AND SERVICES
- 1410: RETAIL SALES AND SERVICES
- 8140: ROADS AND HIGHWAYS

Source: Aerials courtesy of NearMap

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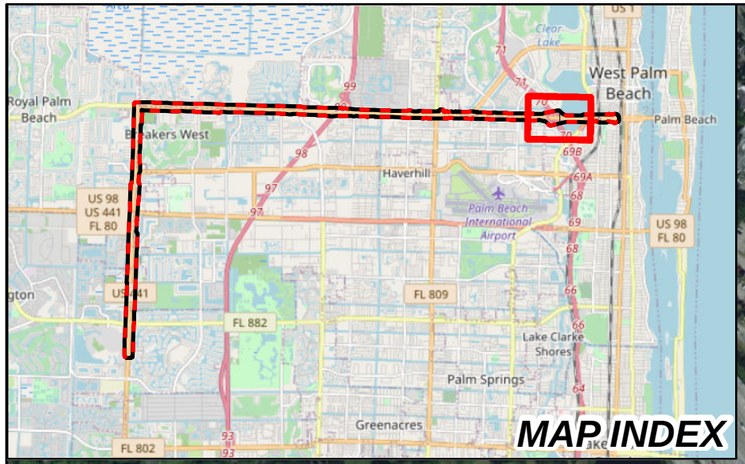
FIGURE 3 - PAGE 13 OF 15



Legend

Study Area

FLUCFCS Code: Description

- 1320: MOBILE HOME UNITS (SIX OR MORE DWELLING UNITS PER ACRE)
- 1330: MULTIPLE DWELLING UNITS, LOW RISE (TWO STORIES OR LESS)
- 1400: COMMERCIAL AND SERVICES
- 1550: OTHER LIGHT INDUSTRIAL
- 5200: LAKES
- 5300: RESERVOIRS
- 6410: FRESHWATER MARSHES
- 8140: ROADS AND HIGHWAYS

Source: Aerials courtesy of NearMap

K:\TAM_GIS\Okeechobee Mobility Study\MXD\FLUCFCS Map.mxd

Florida Land Use, Cover, and Forms Classification System Map

Okeechobee Mobility Study
Palm Beach County, FL

1 inch = 400 feet

PROJECT NUMBER: 040416206

MAY 2021

FIGURE 3 - PAGE 14 OF 15

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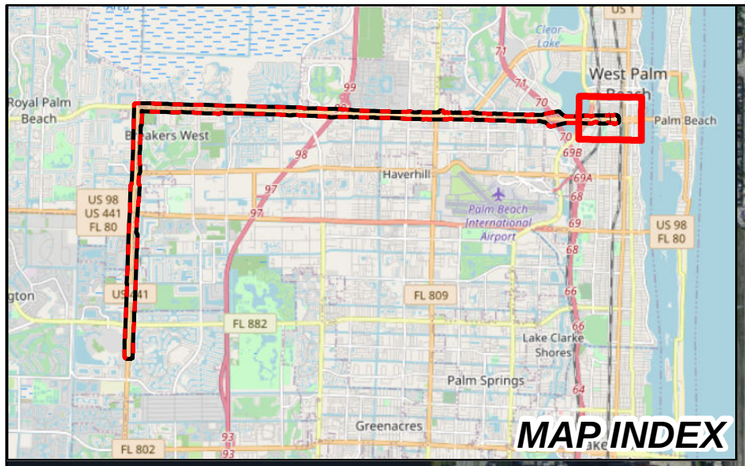
www.kimley-horn.com



Legend

Study Area

FLUCFCS Code: Description

- 1400: COMMERCIAL AND SERVICES
- 1410: RETAIL SALES AND SERVICES
- 1550: OTHER LIGHT INDUSTRIAL
- 1710: EDUCATIONAL FACILITIES
- 1850: PARKS AND ZOOS
- 5200: LAKES
- 5300: RESERVOIRS
- 8140: ROADS AND HIGHWAYS

Source: Aerials courtesy of NearMap

K:\TAM_GIS\Okeechobee Mobility Study\MXD\FLUCFCS Map.mxd

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Florida Land Use, Cover, and Forms Classification System Map

Okeechobee Mobility Study
Palm Beach County, FL

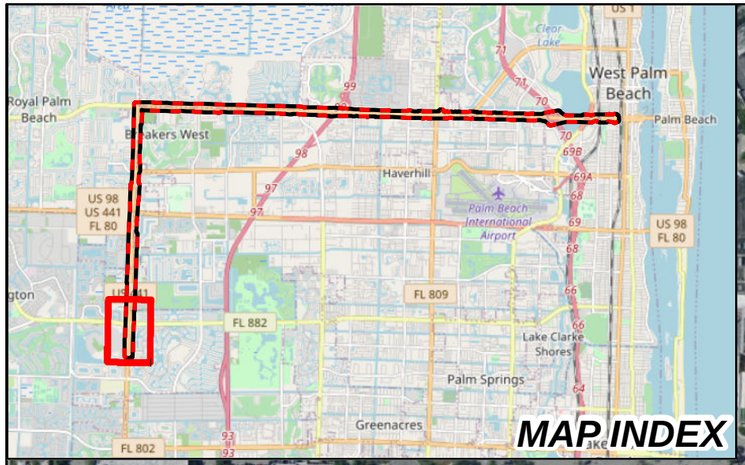
1 inch = 400 feet

PROJECT NUMBER: 040416206

MAY 2021

FIGURE 3 - PAGE 15 OF 15

APPENDIX B: WLSW MAP



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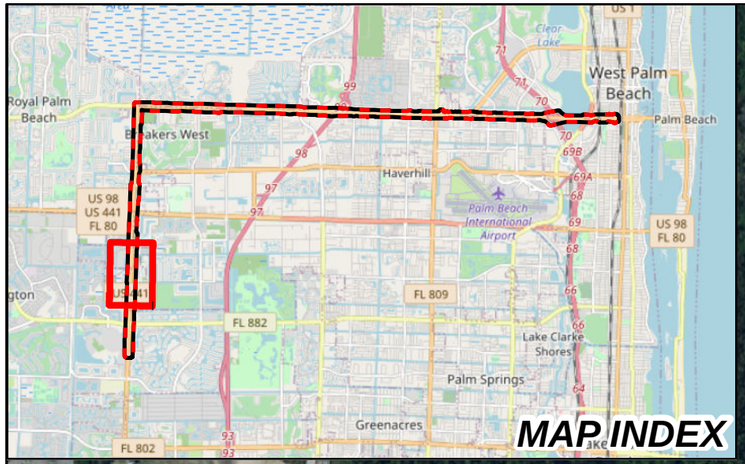
Wetlands and Surface Waters Map

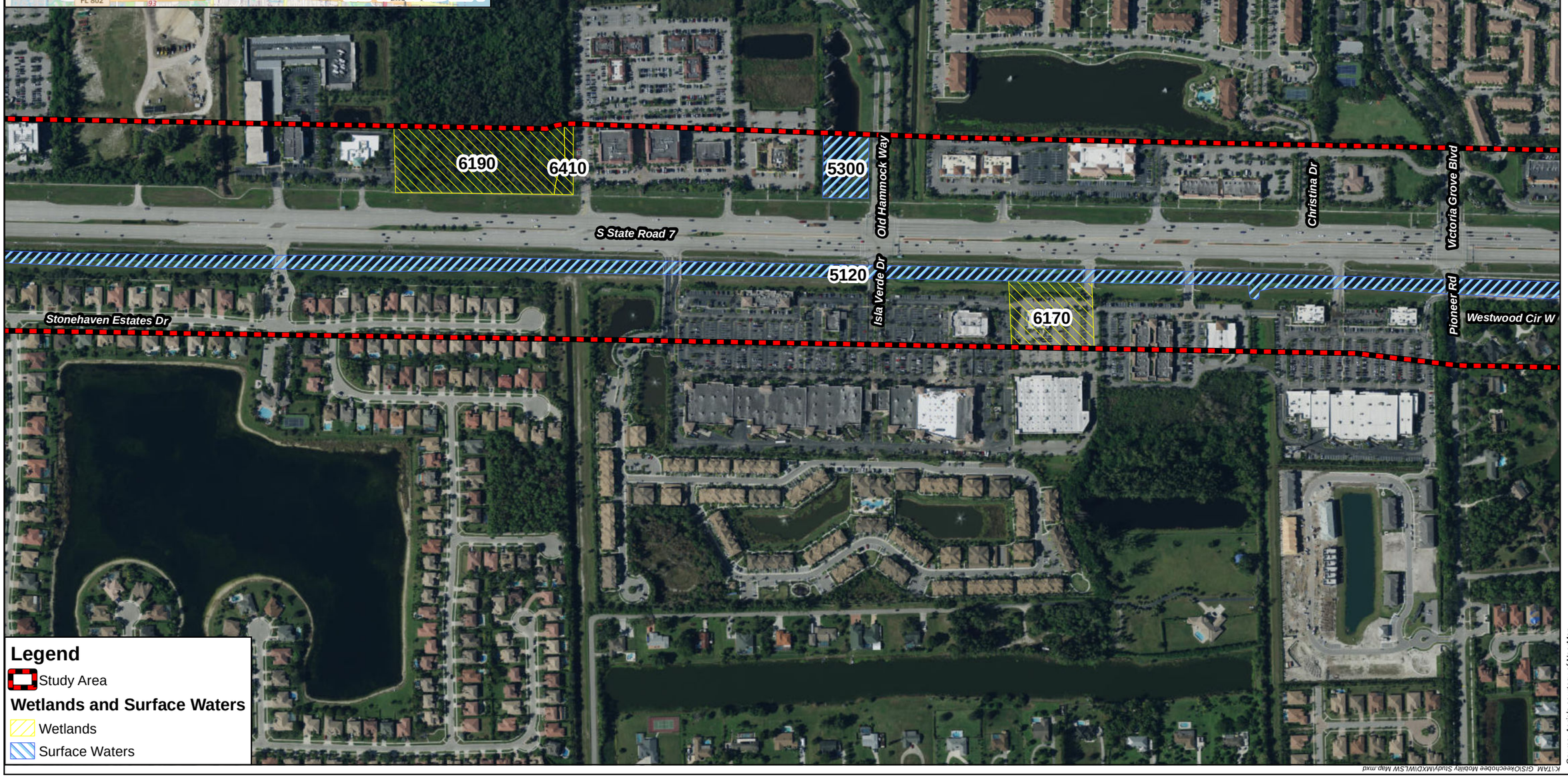
Okeechobee Mobility Study
Palm Beach County, FL

1 inch = 400 feet

PROJECT NUMBER: 040416206

MAY 2021





Source: Aerials courtesy of NearMap

K:\TAM_GIS\Okeechobee Mobility Study\MXD\WLSW Map.mxd

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1 inch = 400 feet

Wetlands and Surface Waters Map

Okeechobee Mobility Study
Palm Beach County, FL

PROJECT NUMBER: 040416206

MAY 2021

FIGURE 3 - PAGE 2 OF 15

Legend

Study Area

Wetlands and Surface Waters

Surface Waters

Source: Aerials courtesy of NearMap

K:\TAM_GIS\Okeechobee Mobility Study\MXD\WLSW Map.mxd

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1 inch = 400 feet

Wetlands and Surface Waters Map

Okeechobee Mobility Study
Palm Beach County, FL

PROJECT NUMBER: 040416206

MAY 2021

FIGURE 3 - PAGE 3 OF 15

Legend

Study Area

Wetlands and Surface Waters

Surface Waters

Source: Aerials courtesy of NearMap

K:\TAM_GIS\Okeechobee Mobility Study\MXD\WLSW Map.mxd

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Wetlands and Surface Waters Map

Okeechobee Mobility Study
Palm Beach County, FL

1 inch = 400 feet

PROJECT NUMBER: 040416206

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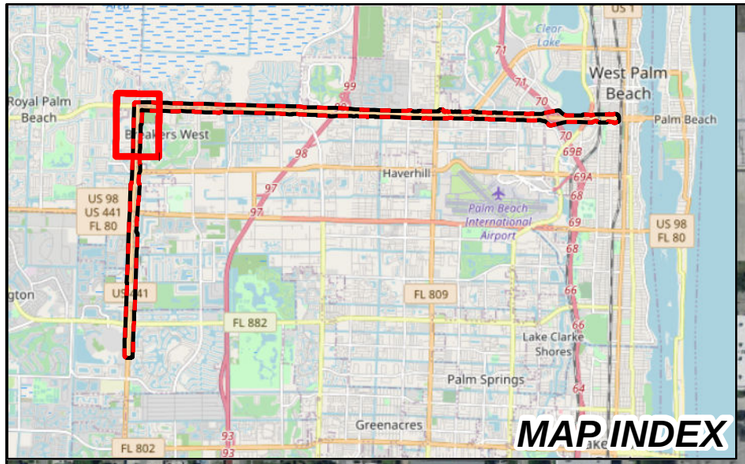
FIGURE 3 - PAGE 4 OF 15



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Wetlands and Surface Waters Map

Okeechobee Mobility Study
Palm Beach County, FL

1 inch = 400 feet

PROJECT NUMBER: 040416206

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FIGURE 3 - PAGE 5 OF 15

Source: Aerials courtesy of NearMap

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Wetlands and Surface Waters Map

Okeechobee Mobility Study
Palm Beach County, FL

1 inch = 400 feet

PROJECT NUMBER: 040416206

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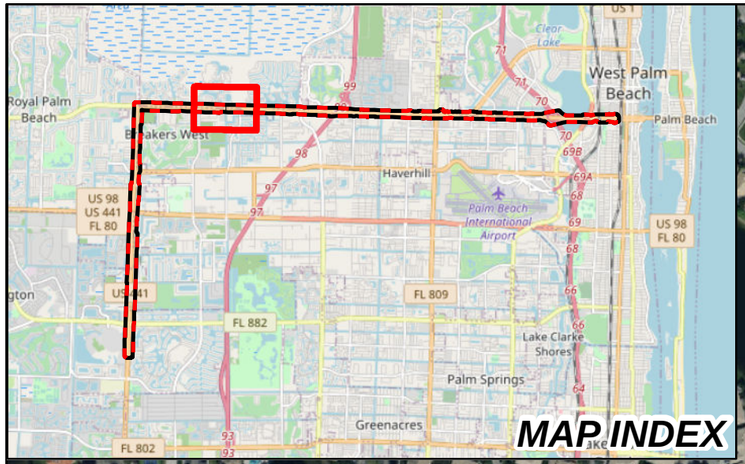
FIGURE 3 - PAGE 6 OF 15



Feet
0
400

5300
Stafford Creek
Foxtail View Ct
Tigris Dr
Grande Blvd
Okeechobee Blvd
Andros Isle
Oakton Preserve Way
Augustine Rd
N Benoist Farms Rd
Golden Lakes Blvd
Sansburys Way

Legend

Study Area

Wetlands and Surface Waters

Surface Waters

Source: Aerials courtesy of NearMap

K:\TAM_GIS\Okeechobee Mobility Study\MXD\WLSW Map.mxd

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1 inch = 400 feet

Wetlands and Surface Waters Map

Okeechobee Mobility Study
Palm Beach County, FL

PROJECT NUMBER: 040416206

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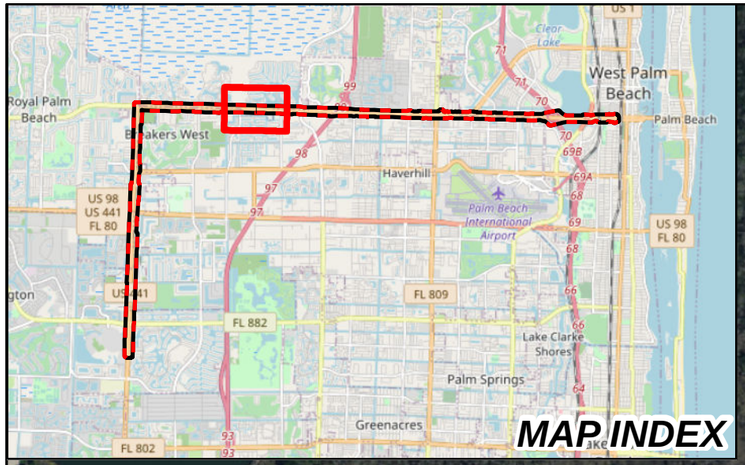
FIGURE 3 - PAGE 7 OF 15



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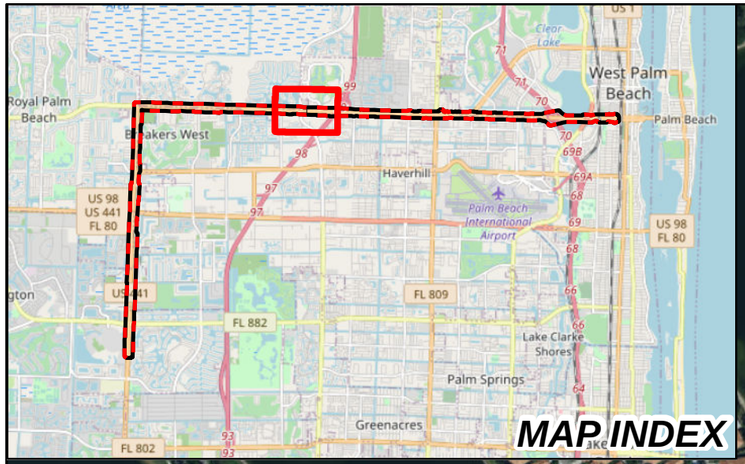
1 inch = 400 feet

Wetlands and Surface Waters Map

Okeechobee Mobility Study
Palm Beach County, FL

PROJECT NUMBER: 040416206

MAY 2021



Legend

Study Area

Wetlands and Surface Waters

Surface Waters

Source: Aerials courtesy of NearMap

K:\TAM_GIS\Okeechobee Mobility Study\MXD\WLSW Map.mxd

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1 inch = 400 feet

Wetlands and Surface Waters Map

Okeechobee Mobility Study
Palm Beach County, FL

PROJECT NUMBER: 040416206

MAY 2021

FIGURE 3 - PAGE 9 OF 15

Legend

- Study Area

Wetlands and Surface Waters

- Wetlands
- Surface Waters

Source: Aerials courtesy of NearMap

K:\TAM_GIS\Okeechobee Mobility Study\MXD\WLSW Map.mxd

Wetlands and Surface Waters Map

Okeechobee Mobility Study
Palm Beach County, FL

1 inch = 400 feet

PROJECT NUMBER: 040416206

MAY 2021

FIGURE 3 - PAGE 10 OF 15

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Feet
0
400

Fairway St
Southampton
Breezy Ln
N Haverhill Rd
Okeechobee Blvd
N Military Trl

Legend
Study Area

Source: Aerials courtesy of NearMap

K:\TAM_GIS\Okeechobee Mobility Study\MXD\WLSW Map.mxd

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1 inch = 400 feet

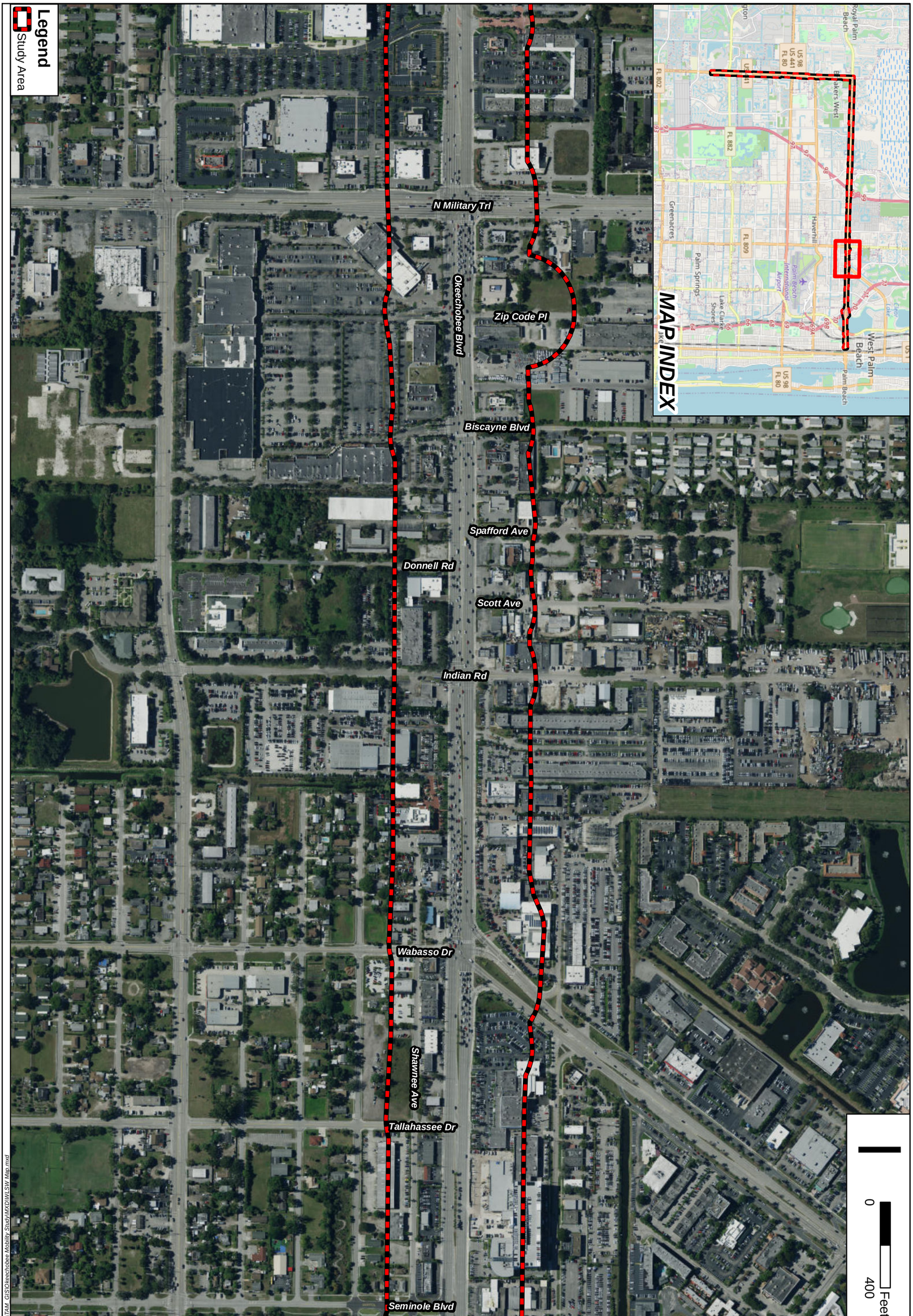
Wetlands and Surface Waters Map

Okeechobee Mobility Study
Palm Beach County, FL

FIGURE 3 - PAGE 11 OF 15

PROJECT NUMBER: 040416206

MAY 2021



Source: Aerials courtesy of NearMap

K:\TAM_GIS\Okeechobee Mobility Study\MXD\WLSW Map.mxd

Wetlands and Surface Waters Map

Okeechobee Mobility Study
Palm Beach County, FL

FIGURE 3 - PAGE 12 OF 15	**PROJECT NUMBER: 040416206**	**MAY 2021**	**1 inch = 400 feet**

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Source: Aerials courtesy of NearMap

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Wetlands and Surface Waters Map

Okeechobee Mobility Study
Palm Beach County, FL

1 inch = 400 feet

PROJECT NUMBER: 040416206

MAY 2021

FIGURE 3 - PAGE 13 OF 15

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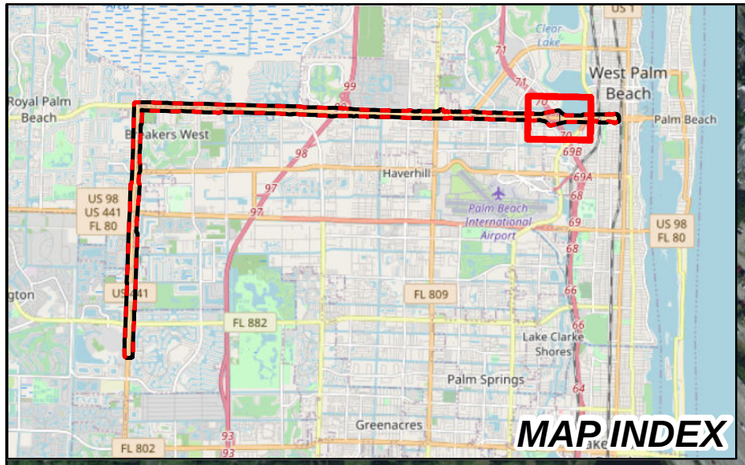

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Wetlands and Surface Waters Map

Okeechobee Mobility Study
Palm Beach County, FL

1 inch = 400 feet

PROJECT NUMBER: 040416206

MAY 2021

FIGURE 3 - PAGE 14 OF 15

Source: Aerials courtesy of NearMap

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1 inch = 400 feet

Wetlands and Surface Waters Map

Okeechobee Mobility Study
Palm Beach County, FL

PROJECT NUMBER: 040416206

MAY 2021

FIGURE 3 - PAGE 15 OF 15

APPENDIX C: FNAI AND IPAC REPORTS

1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
850-224-8207
850-681-9364 fax
www.fnai.org

Florida Natural Areas Inventory

Biodiversity Matrix Query Results

UNOFFICIAL REPORT

Created 5/20/2021

(Contact the FNAI Data Services Coordinator at 850.224.8207 or kbrinegar@fnai.fsu.edu for information on an official Standard Data Report)

NOTE: The Biodiversity Matrix includes only rare species and natural communities tracked by FNAI.

Report for 9 Matrix Units: 68245 , 68397 , 68540 , 68681 , 68820 , 68956 , 69090 , 69218 , 69336

Study Area too Large to Display Map.

Descriptions

DOCUMENTED - There is a documented occurrence in the FNAI database of the species or community within this Matrix Unit.

DOCUMENTED-HISTORIC - There is a documented occurrence in the FNAI database of the species or community within this Matrix Unit; however the occurrence has not been observed/reported within the last twenty years.

LIKELY - The species or community is *known* to occur in this vicinity, and is considered likely within this Matrix Unit because:

1. documented occurrence overlaps this and adjacent Matrix Units, but the documentation isn't precise enough to indicate which of those Units the species or community is actually located in; *or*
2. there is a documented occurrence in the vicinity and there is suitable habitat for that species or community within this Matrix Unit.

POTENTIAL - This Matrix Unit lies within the known or predicted range of the species or community based on expert knowledge and environmental variables such as climate, soils, topography, and landcover.

Matrix Unit ID: 68245

0 **Documented** Elements Found

0 **Documented-Historic** Elements Found

3 **Likely** Elements Found

Scientific and Common Names	Global Rank	State Rank	Federal Status	State Listing
Mesic flatwoods	G4	S4	N	N
Mycteria americana Wood Stork	G4	S2	LT	FT
Rostrhamus sociabilis Snail Kite	G4G5	S2	LE	N

Matrix Unit ID: 68397

0 **Documented** Elements Found

0 **Documented-Historic** Elements Found

2 **Likely** Elements Found

Scientific and Common Names	Global Rank	State Rank	Federal Status	State Listing

Mycteria americana Wood Stork	G4	S2	LT	FT
Rostrhamus sociabilis Snail Kite	G4G5	S2	LE	N

Matrix Unit ID: 68540

0 **Documented** Elements Found

0 **Documented-Historic** Elements Found

3 **Likely** Elements Found

Scientific and Common Names	Global Rank	State Rank	Federal Status	State Listing
Mesic flatwoods	G4	S4	N	N
Mycteria americana Wood Stork	G4	S2	LT	FT
Rostrhamus sociabilis Snail Kite	G4G5	S2	LE	N

Matrix Unit ID: 68681

0 **Documented** Elements Found

0 **Documented-Historic** Elements Found

1 **Likely** Element Found

Scientific and Common Names	Global Rank	State Rank	Federal Status	State Listing
Mycteria americana Wood Stork	G4	S2	LT	FT

Matrix Unit ID: 68820

0 **Documented** Elements Found

0 **Documented-Historic** Elements Found

0 **Likely** Elements Found

Matrix Unit ID: 68956

0 **Documented** Elements Found

0 **Documented-Historic** Elements Found

0 **Likely** Elements Found

Matrix Unit ID: 69090

0 **Documented** Elements Found

0 **Documented-Historic** Elements Found

0 **Likely** Elements Found

Matrix Unit ID: 69218

0 **Documented** Elements Found

0 **Documented-Historic** Elements Found

1 **Likely** Element Found

Scientific and Common Names	Global	State	Federal	State

	Rank	Rank	Status	Listing
Mycteria americana Wood Stork	G4	S2	LT	FT

Matrix Unit ID: 69336

0 **Documented** Elements Found

0 **Documented-Historic** Elements Found

1 **Likely** Element Found

Scientific and Common Names	Global Rank	State Rank	Federal Status	State Listing
Trichechus manatus West Indian Manatee	G2	S2	LE	FE

Matrix Unit IDs: 68245 , 68397 , 68540 , 68681 , 68820 , 68956 , 69090 , 69218 , 69336

27 **Potential** Elements Common to Any of the 9 Matrix Units

Scientific and Common Names	Global Rank	State Rank	Federal Status	State Listing
Athene cunicularia floridana Florida Burrowing Owl	G4T3	S3	N	SSC
Bolbocerosoma hamatum Bicolored Burrowing Scarab Beetle	G3G4	S3	N	N
Conradina grandiflora Large-flowered Rosemary	G3	S3	N	T
Ctenogobius stigmaturus Spottail Goby	G2	S2	N	N
Drymarchon couperi Eastern Indigo Snake	G3	S3	LT	FT
Elytraria caroliniensis var. angustifolia Narrow-leaved Carolina Scalystem	G4T2	S2	N	N
Encyclia cochleata var. triandra Clamshell Orchid	G4G5T2	S2	N	E
Eretmochelys imbricata Hawksbill Sea Turtle	G3	S1	LE	FE
Forestiera segregata var. pinetorum Florida Pinewood Privet	G4T2	S2	N	N
Glandularia maritima Coastal Vervain	G3	S3	N	E
Gopherus polyphemus Gopher Tortoise	G3	S3	C	ST
Halophila johnsonii Johnson's Seagrass	G2	S2	LT	E
Lechea cernua Nodding Pinweed	G3	S3	N	T
Linum carteri var. smallii Small's Flax	G2T2	S2	N	E
Lithobates capito Gopher Frog	G3	S3	N	SSC
Nemastylis floridana Celestial Lily	G2	S2	N	E
Panicum abscissum Cutthroat Grass	G3	S3	N	E
Phyllophaga elongata Elongate June Beetle	G3	S3	N	N
Picoides borealis Red-cockaded Woodpecker	G3	S2	LE	FE
Podomys floridanus Florida Mouse	G3	S3	N	SSC
Polygala smallii Tiny Polygala	G1	S1	LE	E

Rallus longirostris scottii Florida Clapper Rail	G5T3?	S3?	N	N
Rivulus marmoratus Mangrove Rivulus	G4G5	S3	SC	SSC
Roystonea elata Florida Royal Palm	G2G3	S2	N	E
Sceloporus woodi Florida Scrub Lizard	G2G3	S2S3	N	N
Setophaga discolor paludicola Florida Prairie Warbler	G5T3	S3	N	N
Trichomanes punctatum ssp. floridanum Florida Filmy Fern	G4G5T1	S1	E	E

Disclaimer

The data maintained by the Florida Natural Areas Inventory represent the single most comprehensive source of information available on the locations of rare species and other significant ecological resources statewide. However, the data are not always based on comprehensive or site-specific field surveys. Therefore, this information should not be regarded as a final statement on the biological resources of the site being considered, nor should it be substituted for on-site surveys. FNAI shall not be held liable for the accuracy and completeness of these data, or opinions or conclusions drawn from these data. FNAI is not inviting reliance on these data. Inventory data are designed for the purposes of conservation planning and scientific research and are not intended for use as the primary criteria for regulatory decisions.

Unofficial Report

These results are considered unofficial. FNAI offers a Standard Data Request option for those needing certifiable data.

1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
850-224-8207
850-681-9364 fax
www.fnai.org

Florida Natural Areas Inventory

Biodiversity Matrix Query Results

UNOFFICIAL REPORT

Created 5/20/2021

(Contact the FNAI Data Services Coordinator at 850.224.8207 or kbrinegar@fnai.fsu.edu for information on an official Standard Data Report)

NOTE: The Biodiversity Matrix includes only rare species and natural communities tracked by FNAI.

Report for 7 Matrix Units: 68083 , 68084 , 68085 , 68086 , 68087 , 68088 , 68089

Study Area too Large to Display Map.

Descriptions

DOCUMENTED - There is a documented occurrence in the FNAI database of the species or community within this Matrix Unit.

DOCUMENTED-HISTORIC - There is a documented occurrence in the FNAI database of the species or community within this Matrix Unit; however the occurrence has not been observed/reported within the last twenty years.

LIKELY - The species or community is *known* to occur in this vicinity, and is considered likely within this Matrix Unit because:

1. documented occurrence overlaps this and adjacent Matrix Units, but the documentation isn't precise enough to indicate which of those Units the species or community is actually located in; *or*
2. there is a documented occurrence in the vicinity and there is suitable habitat for that species or community within this Matrix Unit.

POTENTIAL - This Matrix Unit lies within the known or predicted range of the species or community based on expert knowledge and environmental variables such as climate, soils, topography, and landcover.

Matrix Unit ID: 68083

0 **Documented** Elements Found

0 **Documented-Historic** Elements Found

1 **Likely** Element Found

Scientific and Common Names	Global Rank	State Rank	Federal Status	State Listing
Mycteria americana Wood Stork	G4	S2	LT	FT

Matrix Unit ID: 68084

0 **Documented** Elements Found

0 **Documented-Historic** Elements Found

1 **Likely** Element Found

Scientific and Common Names	Global Rank	State Rank	Federal Status	State Listing
Mycteria americana Wood Stork	G4	S2	LT	FT

Matrix Unit ID: 68085
0 **Documented** Elements Found

0 **Documented-Historic** Elements Found

1 **Likely** Element Found

Scientific and Common Names	Global Rank	State Rank	Federal Status	State Listing
Mycteria americana Wood Stork	G4	S2	LT	FT

Matrix Unit ID: 68086
0 **Documented** Elements Found

0 **Documented-Historic** Elements Found

1 **Likely** Element Found

Scientific and Common Names	Global Rank	State Rank	Federal Status	State Listing
Mycteria americana Wood Stork	G4	S2	LT	FT

Matrix Unit ID: 68087
0 **Documented** Elements Found

0 **Documented-Historic** Elements Found

0 **Likely** Elements Found

Matrix Unit ID: 68088
0 **Documented** Elements Found

0 **Documented-Historic** Elements Found

1 **Likely** Element Found

Scientific and Common Names	Global Rank	State Rank	Federal Status	State Listing
Mesic flatwoods	G4	S4	N	N

Matrix Unit ID: 68089
0 **Documented** Elements Found

0 **Documented-Historic** Elements Found

3 **Likely** Elements Found

Scientific and Common Names	Global Rank	State Rank	Federal Status	State Listing
Mesic flatwoods	G4	S4	N	N
Mycteria americana Wood Stork	G4	S2	LT	FT
Rostrhamus sociabilis Snail Kite	G4G5	S2	LE	N

Matrix Unit IDs: 68083 , 68084 , 68085 , 68086 , 68087 , 68088 , 68089

15 **Potential** Elements Common to Any of the 7 Matrix Units

Scientific and Common Names	Global Rank	State Rank	Federal Status	State Listing
Athene cunicularia floridana Florida Burrowing Owl	G4T3	S3	N	SSC
Bolbocerosoma hamatum Bicolored Burrowing Scarab Beetle	G3G4	S3	N	N
Drymarchon couperi Eastern Indigo Snake	G3	S3	LT	FT
Elytraria caroliniensis var. angustifolia Narrow-leaved Carolina Scalystem	G4T2	S2	N	N
Encyclia cochleata var. triandra Clamshell Orchid	G4G5T2	S2	N	E
Forestiera segregata var. pinetorum Florida Pinewood Privet	G4T2	S2	N	N
Gopherus polyphemus Gopher Tortoise	G3	S3	C	ST
Linum carteri var. smallii Small's Flax	G2T2	S2	N	E
Lithobates capito Gopher Frog	G3	S3	N	SSC
Nemastylis floridana Celestial Lily	G2	S2	N	E
Phyllophaga elongata Elongate June Beetle	G3	S3	N	N
Picoides borealis Red-cockaded Woodpecker	G3	S2	LE	FE
Polygala smallii Tiny Polygala	G1	S1	LE	E
Roystonea elata Florida Royal Palm	G2G3	S2	N	E
Trichomanes punctatum ssp. floridanum Florida Filmy Fern	G4G5T1	S1	E	E

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Palm Beach County, Florida

Local office

South Florida Ecological Services Field Office

(772) 562-3909
(772) 562-4288

1339 20th Street
Vero Beach, FL 32960-3559

http://fws.gov/verobeach

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Florida Bonneted Bat Eumops floridanus — Endangered
Wherever found
There is **proposed** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/8630

Florida Panther Puma (=Felis) concolor coryi — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/1763

Puma (=mountain Lion) Puma (=Felis) concolor (all subsp. except coryi) — SAT
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/6049

Southeastern Beach Mouse Peromyscus polionotus niveiventris — Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/3951

West Indian Manatee Trichechus manatus — Threatened
Wherever found
Marine mammal
There is **final** critical habitat for this species. Your location overlaps the critical habitat.
https://ecos.fws.gov/ecp/species/4469

Birds

NAME	STATUS

Everglade Snail Kite Rostrhamus sociabilis plumbeus — Endangered
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/7713

Whooping Crane Grus americana — EXPN
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/758

Wood Stork Mycteria americana — Threatened
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/8477

Reptiles

NAME	STATUS

American Alligator Alligator mississippiensis — SAT
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/776

Eastern Indigo Snake Drymarchon corais couperi — Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/646

Hawksbill Sea Turtle Eretmochelys imbricata — Endangered
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/3656

Leatherback Sea Turtle Dermochelys coriacea — Endangered
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/1493

Loggerhead Sea Turtle Caretta caretta — Threatened
There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/1110

Insects

NAME	STATUS

Bartram's Hairstreak Butterfly Strymon acis bartrami — Endangered
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/4837

Florida Leafwing Butterfly Anaea troglodyta floridalis — Endangered
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/6652

Miami Blue Butterfly Cyclargus (=Hemiargus) thomasi bethunebakeri — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/3797

Flowering Plants

NAME	STATUS
Beach Jacquemontia Jacquemontia reclinata Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1277	Endangered
Florida Prairie-clover Dalea carthagenensis floridana Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2300	Endangered
Four-petal Pawpaw Asimina tetramera Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3461	Endangered
Tiny Polygala Polygala smallii Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/996	Endangered

Lichens

NAME	STATUS
Florida Perforate Cladonia Cladonia perforata Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7516	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
West Indian Manatee Trichechus manatus https://ecos.fws.gov/ecp/species/4469#crithab	Final

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES

THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

American Kestrel Falco sparverius paulus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9587	Breeds Apr 1 to Aug 31
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31
Black Skimmer Rynchops niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5234	Breeds May 20 to Sep 15
Common Ground-dove Columbina passerina exigua This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Feb 1 to Dec 31
Dunlin Calidris alpina arcticola This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
King Rail Rallus elegans This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936	Breeds May 1 to Sep 5
Least Tern Sterna antillarum This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 20 to Sep 10
Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Limpkin Aramus guarauna This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 15 to Aug 31

Magnificent Frigatebird Fregata magnificens This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Oct 1 to Apr 30
Prairie Warbler Dendroica discolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Ruddy Turnstone Arenaria interpres morinella This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Semipalmated Sandpiper Calidris pusilla This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Short-billed Dowitcher Limnodromus griseus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Short-tailed Hawk Buteo brachyurus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8742	Breeds Mar 1 to Jun 30
Swallow-tailed Kite Elanoides forficatus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8938	Breeds Mar 10 to Jun 30
Willet Tringa semipalmata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

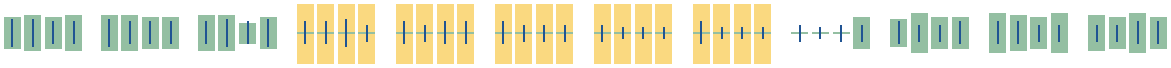
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

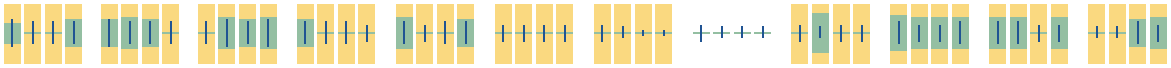
■ probability of presence ■ breeding season | survey effort – no data

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

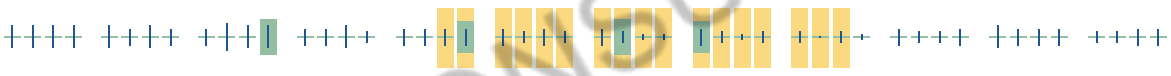
American Kestrel BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



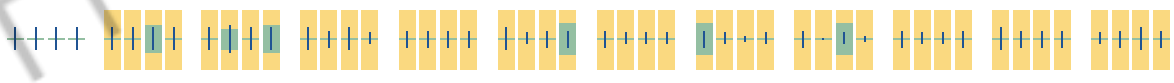
Bald Eagle Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Black Skimmer BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

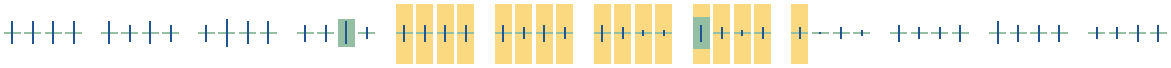


Common Ground-dove BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

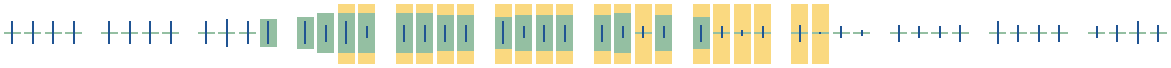


Dunlin BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

King Rail BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

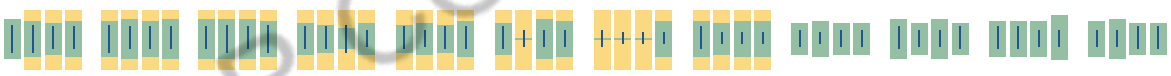


Least Tern BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



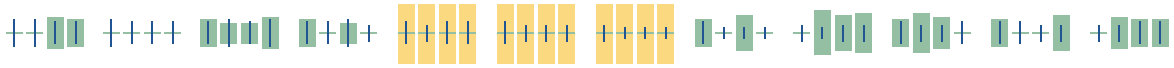
Lesser Yellowlegs BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Limpkin BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

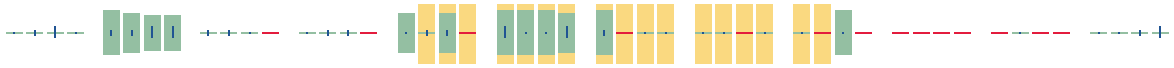


Magnificent Frigatebird BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Prairie Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Red-headed Woodpecker BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

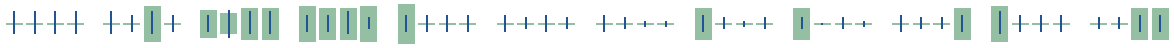


SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Ruddy Turnstone BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Semipalmated Sandpiper BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

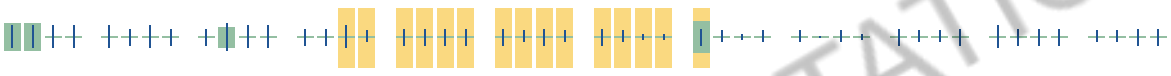
Short-billed Dowitcher BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Short-tailed Hawk BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Swallow-tailed Kite BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Willet BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Marine mammals

Marine mammals are protected under the Marine Mammal Protection Act. Some are also protected under the Endangered Species Act[1] and the Convention on International Trade in Endangered Species of Wild Fauna and Flora[2].

The responsibilities for the protection, conservation, and management of marine mammals are shared by the U.S. Fish and Wildlife Service [responsible for otters, walruses, polar bears, manatees, and dugongs] and NOAA Fisheries[3] [responsible for seals, sea lions, whales, dolphins, and porpoises]. Marine mammals under the responsibility of NOAA Fisheries are **not** shown on this list; for additional information on those species please visit the Marine Mammals page of the NOAA Fisheries website.

The Marine Mammal Protection Act prohibits the take (to harass, hunt, capture, kill, or attempt to harass, hunt, capture or kill) of marine mammals and further coordination may be necessary for project evaluation. Please contact the U.S. Fish and Wildlife Service Field Office shown.

1. The Endangered Species Act (ESA) of 1973.
2. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is a treaty to ensure that international trade in plants and animals does not threaten their survival in the wild.
3. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following marine mammals under the responsibility of the U.S. Fish and Wildlife Service are potentially affected by activities in this location:

NAME

West Indian Manatee Trichechus manatus
https://ecos.fws.gov/ecp/species/4469

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1Fx
- PEM1Ax
- PEM1C

FRESHWATER FORESTED/SHRUB WETLAND

- PFO1/SS1B
- PSS1C
- PFO1C
- PFO1B

FRESHWATER POND

- PUBHx

LAKE

- L1UBHx

RIVERINE

- R2UBHx
- R5UBFx
- R5UBH
- R2AB4Hx

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error

is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

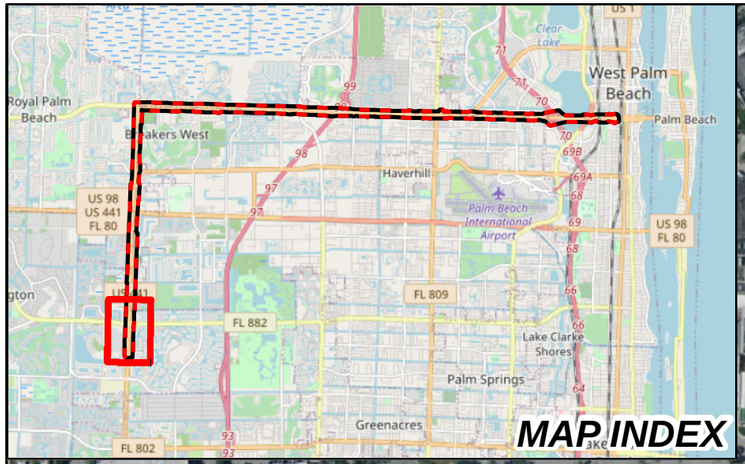
Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX D: FEMA MAP



K:\TAM_GIS\Okeechobee Mobility Study\MXD\FEMA Map.mxd

Source: Aerials courtesy of NearMap

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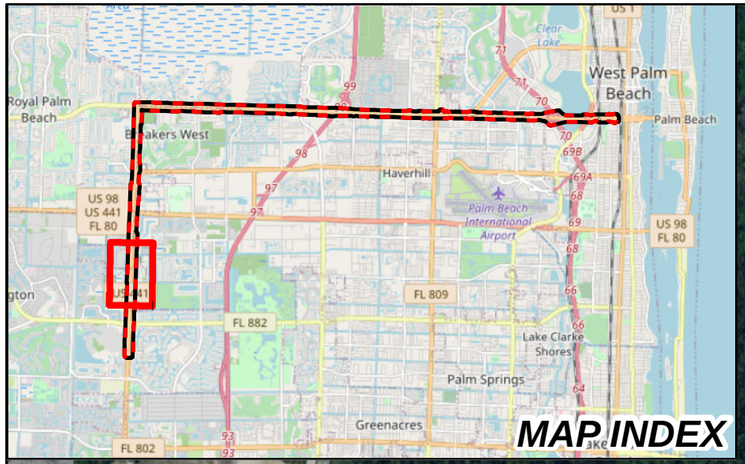
FEMA FIRM Map

Okeechobee Mobility Study
Palm Beach County, FL

1 inch = 400 feet

PROJECT NUMBER: 040416206

MAY 2021



Feet
0
400

AE
X
S State Road 7
Old Hammock Way
Isla Verde Dr
Christina Dr
Pioneer Rd
Westwood Cir W
Stonehaven Estates Dr

Legend

Study Area

FEMA Flood Zones within Study Area

AE: INSIDE SPECIAL FLOOD HAZARD AREA

X: OUTSIDE SPECIAL FLOOD HAZARD AREA

K:\TAM_GIS\Okeechobee Mobility Study\MXD\FEMA Map.mxd

Source: Aerials courtesy of NearMap

FEMA FIRM Map

Okeechobee Mobility Study
Palm Beach County, FL

1 inch = 400 feet

PROJECT NUMBER: 040416206

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FIGURE 3 - PAGE 2 OF 15

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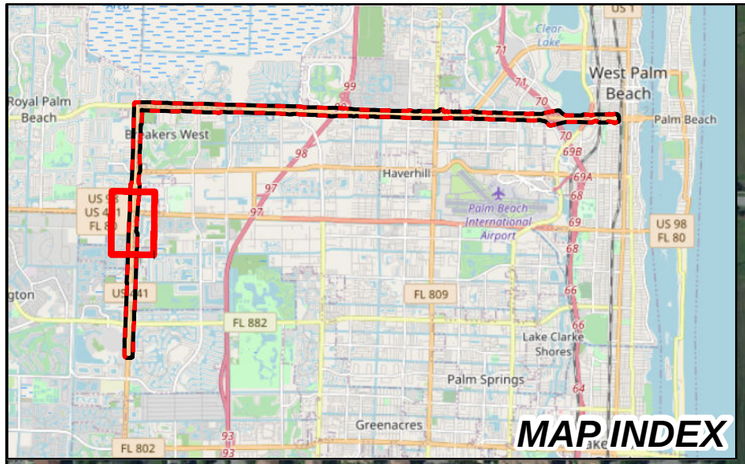

Source: Aerials courtesy of NearMap

K:\TAM_GIS\Okeechobee Mobility Study\MXD\FEMA Map.mxd

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FEMA FIRM Map

Okeechobee Mobility Study
Palm Beach County, FL

PROJECT NUMBER: 040416206

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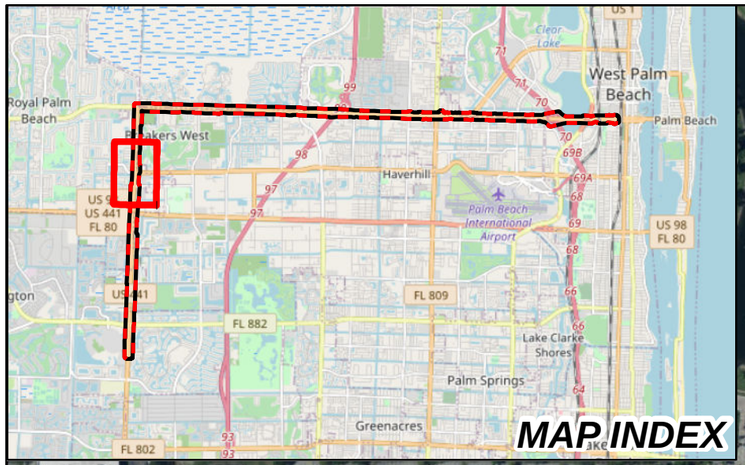
FIGURE 3 - PAGE 3 OF 15



Legend

Study Area

FEMA Flood Zones within Study Area

AE: INSIDE SPECIAL FLOOD HAZARD AREA

X: OUTSIDE SPECIAL FLOOD HAZARD AREA

Source: Aerials courtesy of NearMap

K:\TAM_GIS\Okeechobee Mobility Study\MXD\FEMA Map.mxd

FEMA FIRM Map

Okeechobee Mobility Study
Palm Beach County, FL

1 inch = 400 feet

PROJECT NUMBER: 040416206

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FIGURE 3 - PAGE 4 OF 15

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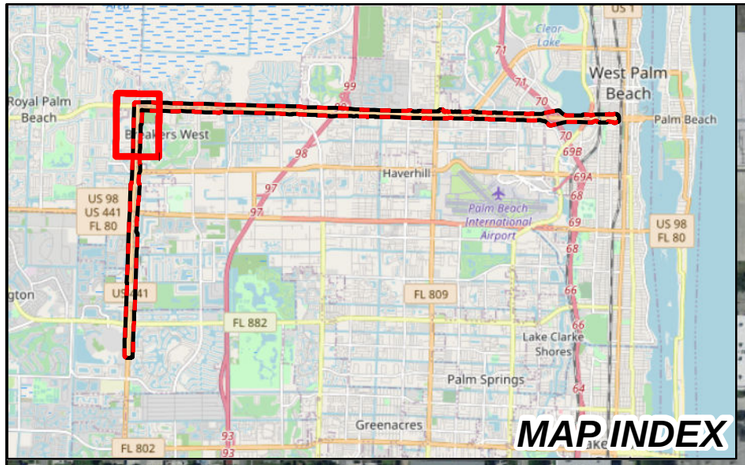

Legend

Study Area

FEMA Flood Zones within Study Area

AE: INSIDE SPECIAL FLOOD HAZARD AREA

X: OUTSIDE SPECIAL FLOOD HAZARD AREA

Source: Aerials courtesy of NearMap

K:\TAM_GIS\Okeechobee Mobility Study\MXD\FEMA Map.mxd

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FEMA FIRM Map

Okeechobee Mobility Study
Palm Beach County, FL

1 inch = 400 feet

PROJECT NUMBER: 040416206

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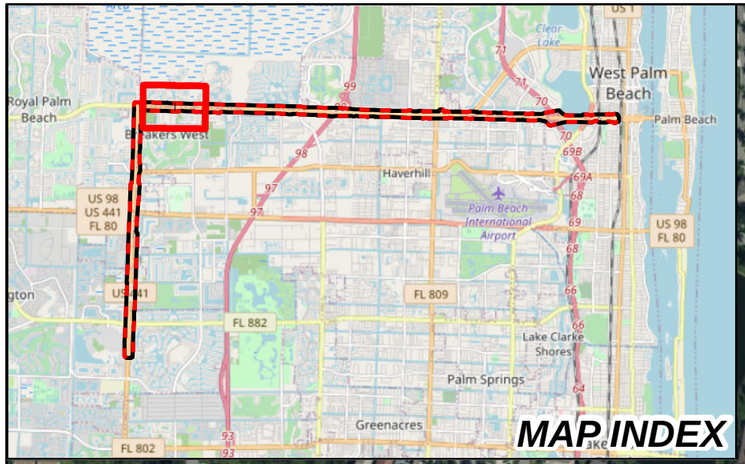
FIGURE 3 - PAGE 5 OF 15



Source: Aerials courtesy of NearMap

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1 inch = 400 feet

FEMA FIRM Map

Okeechobee Mobility Study
Palm Beach County, FL

PROJECT NUMBER: 040416206

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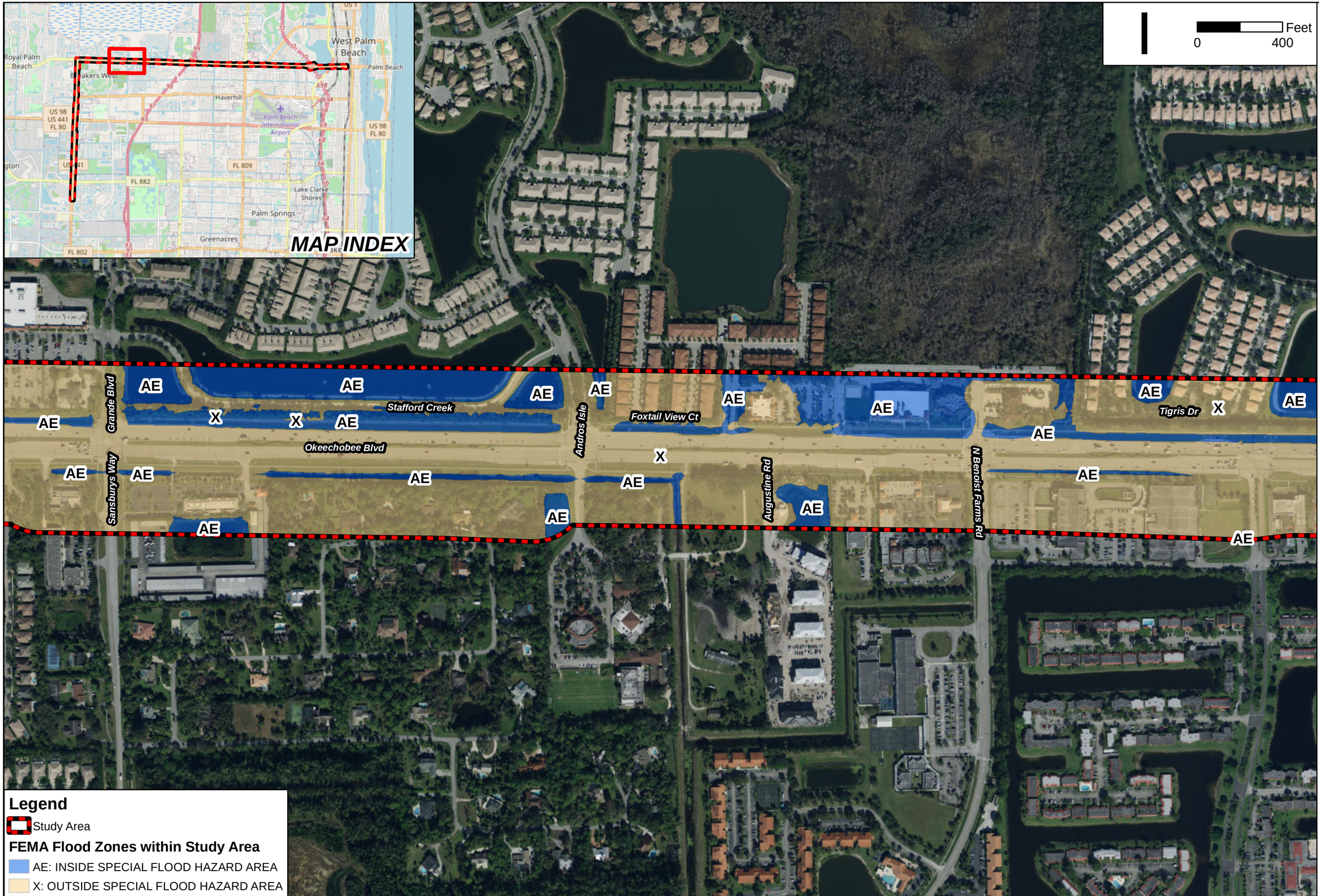

Source: Aerials courtesy of NearMap

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FEMA FIRM Map

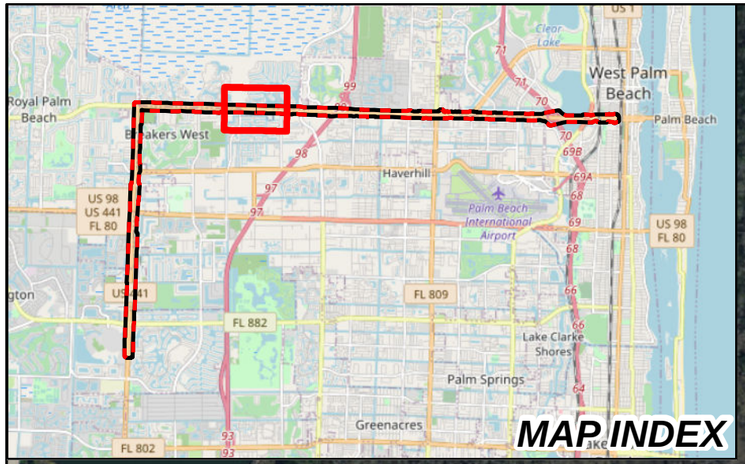
Okeechobee Mobility Study
Palm Beach County, FL

1 inch = 400 feet

PROJECT NUMBER: 040416206

MAY 2021

FIGURE 3 - PAGE 7 OF 15



Legend

Study Area

FEMA Flood Zones within Study Area

AE: INSIDE SPECIAL FLOOD HAZARD AREA

X: OUTSIDE SPECIAL FLOOD HAZARD AREA

Source: Aerials courtesy of NearMap

K:\TAM_GIS\Okeechobee Mobility Study\MXD\FEMA Map.mxd

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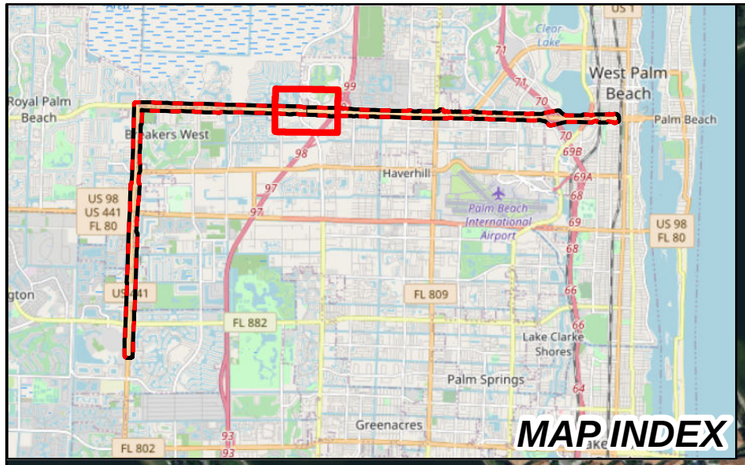
FEMA FIRM Map

Okeechobee Mobility Study
Palm Beach County, FL

1 inch = 400 feet

PROJECT NUMBER: 040416206

MAY 2021



Legend

Study Area

FEMA Flood Zones within Study Area

AE: INSIDE SPECIAL FLOOD HAZARD AREA

X: OUTSIDE SPECIAL FLOOD HAZARD AREA

Source: Aerials courtesy of NearMap

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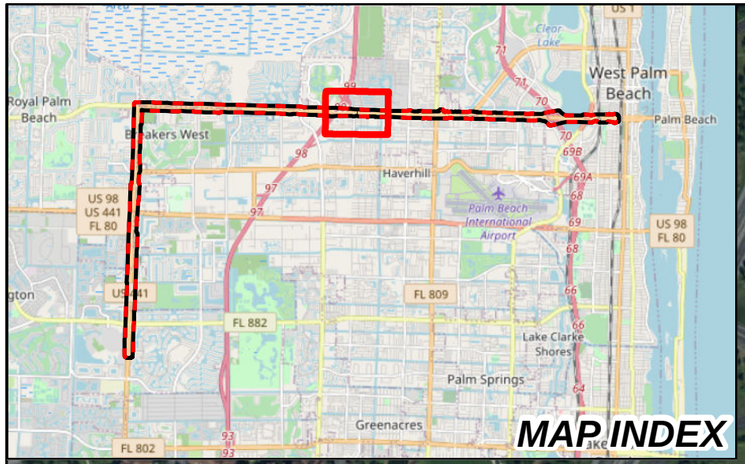
FEMA FIRM Map

Okeechobee Mobility Study
Palm Beach County, FL

PROJECT NUMBER: 040416206

MAY 2021

FIGURE 3 - PAGE 9 OF 15



Legend

Study Area

FEMA Flood Zones within Study Area

AE: INSIDE SPECIAL FLOOD HAZARD AREA

X: OUTSIDE SPECIAL FLOOD HAZARD AREA

Source: Aerials courtesy of NearMap

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FEMA FIRM Map

Okeechobee Mobility Study
Palm Beach County, FL

PROJECT NUMBER: 040416206

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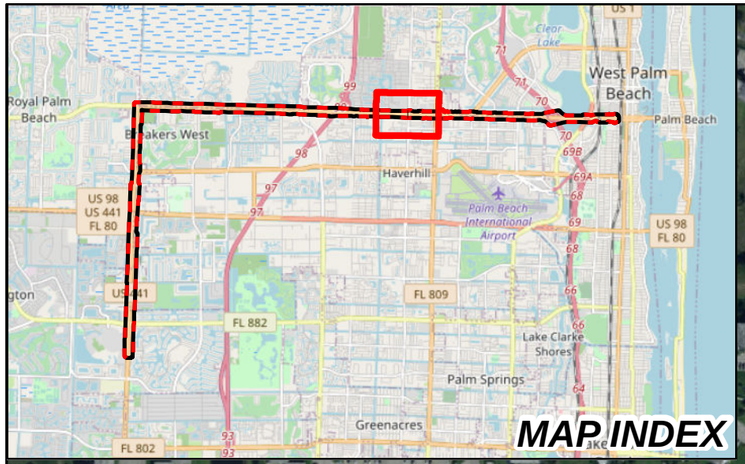
FIGURE 3 - PAGE 10 OF 15



Feet
0
400

AE
Fairway St
Southampton
X
N Haverhill Rd
Okeechobee Blvd
N Military Trl
Breezy Ln

Legend

Study Area

FEMA Flood Zones within Study Area

AE: INSIDE SPECIAL FLOOD HAZARD AREA

X: OUTSIDE SPECIAL FLOOD HAZARD AREA

Source: Aerials courtesy of NearMap

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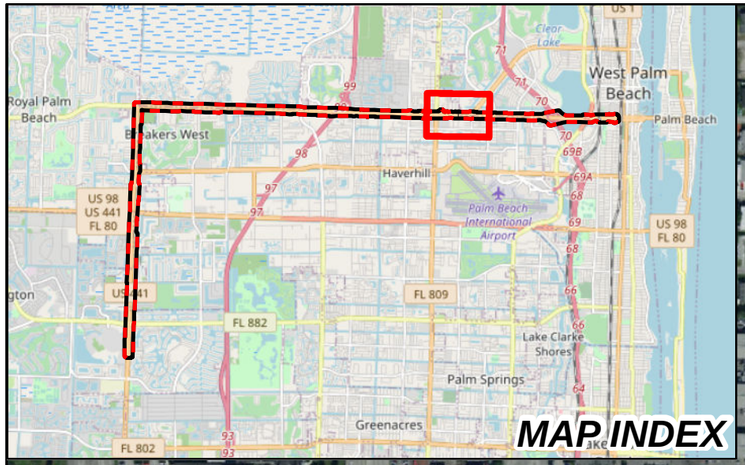
FIGURE 3 - PAGE 11 OF 15

FEMA FIRM Map

Okeechobee Mobility Study
Palm Beach County, FL



Source: Aerials courtesy of NearMap

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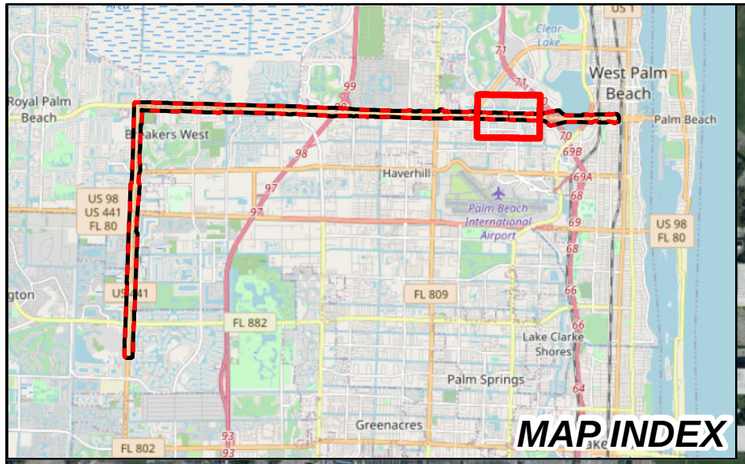
FEMA FIRM Map

Okeechobee Mobility Study
Palm Beach County, FL

PROJECT NUMBER: 040416206

MAY 2021

FIGURE 3 - PAGE 12 OF 15



Source: Aerials courtesy of NearMap

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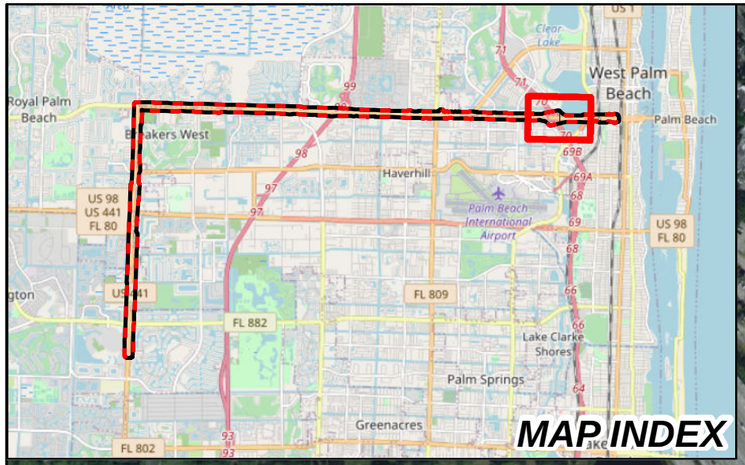
FEMA FIRM Map

Okeechobee Mobility Study
Palm Beach County, FL

PROJECT NUMBER: 040416206

MAY 2021

FIGURE 3 - PAGE 13 OF 15



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Source: Aerials courtesy of NearMap

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Okeechobee Mobility Study
Palm Beach County, FL

1 inch = 400 feet

PROJECT NUMBER: 040416206

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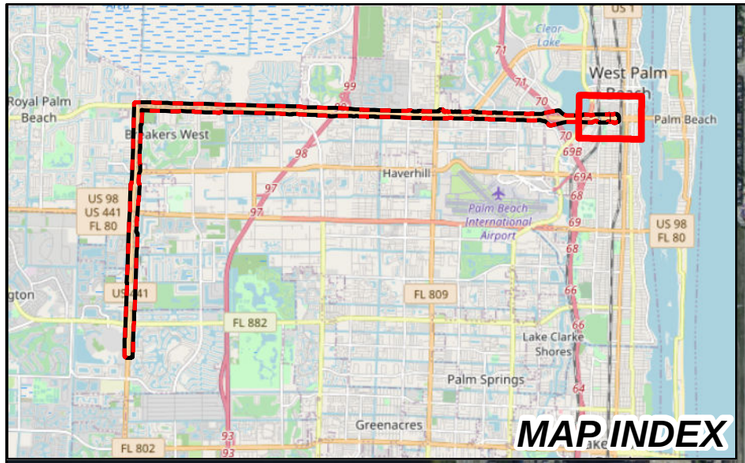
FIGURE 3 - PAGE 14 OF 15



Legend

Study Area

FEMA Flood Zones within Study Area

- A: INSIDE SPECIAL FLOOD HAZARD AREA
- AE: INSIDE SPECIAL FLOOD HAZARD AREA
- X: OUTSIDE SPECIAL FLOOD HAZARD AREA

Source: Aerials courtesy of NearMap

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FEMA FIRM Map

Okeechobee Mobility Study
Palm Beach County, FL

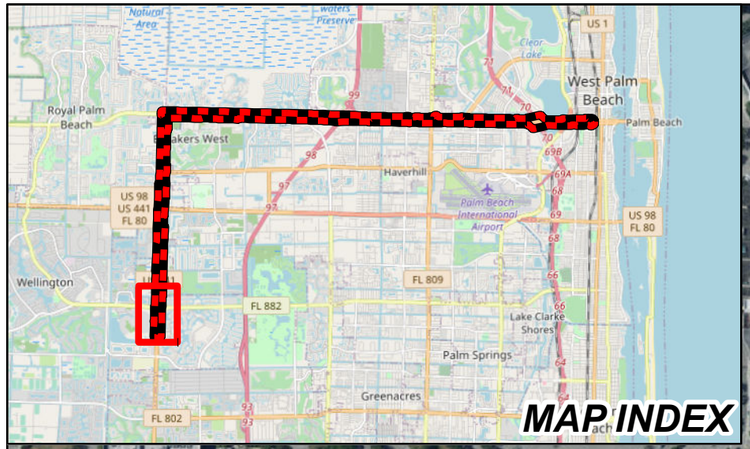
1 inch = 400 feet

PROJECT NUMBER: 040416206

MAY 2021

FIGURE 3 - PAGE 15 OF 15

APPENDIX E: CONTAMINATION SITES MAP



MAP INDEX

Source: 2019 Aerial Imagery

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Contamination Sites Map

Okeechobee Boulevard Mobility Study
Palm Beach County, Florida

1 inch = 400 feet

PROJECT NUMBER: 040416206

MAY 2021

APPENDIX - PAGE 1 OF 15

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Source: 2019 Aerial Imagry

Contamination Sites Map

Okeechobee Boulevard Mobility Study
Palm Beach County, Florida

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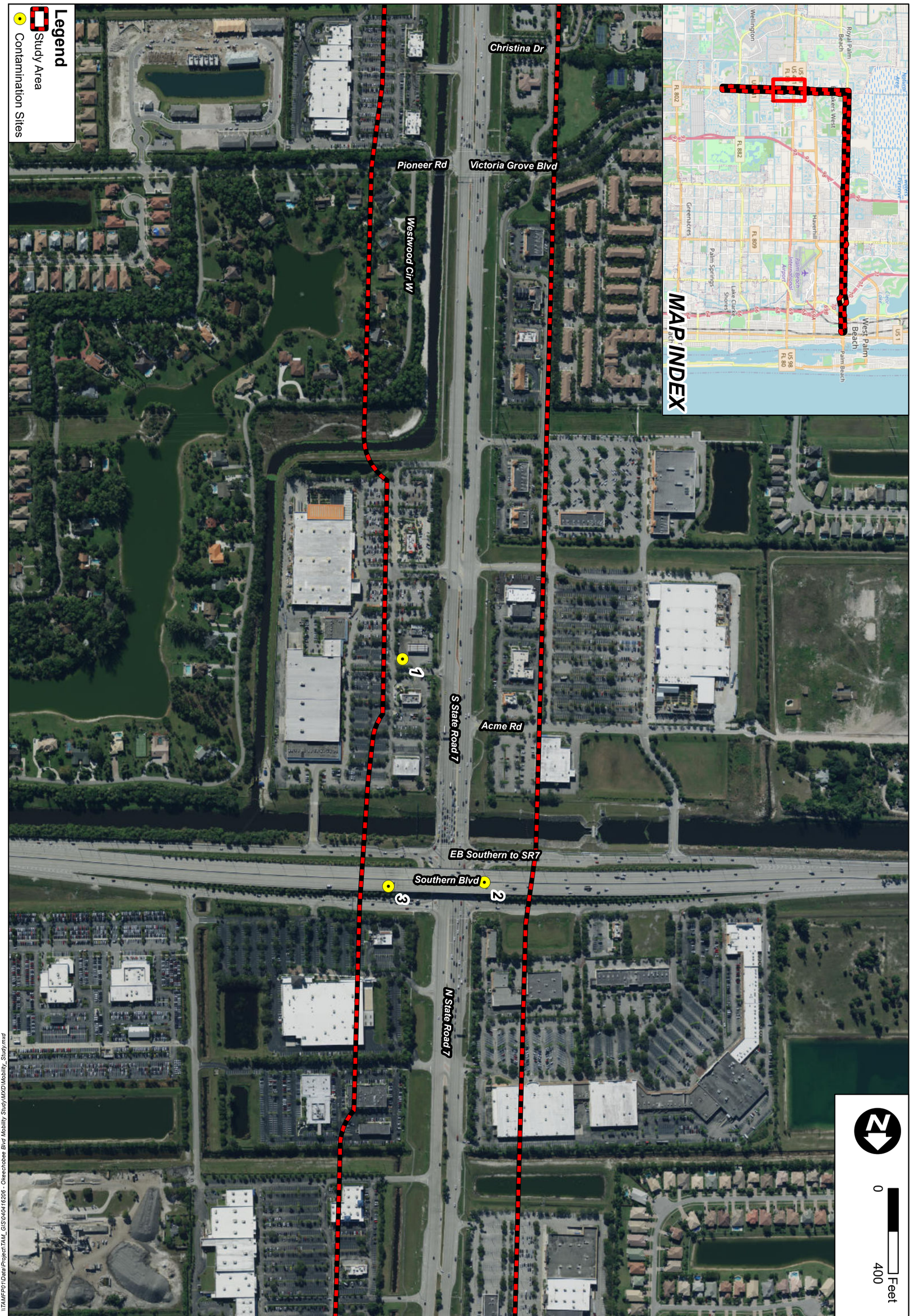
PROJECT NUMBER: 040416206	MAY 2021	1 inch = 400 feet



Source: 2019 Aerial Imagry

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Contamination Sites Map

Okeechobee Boulevard Mobility Study
Palm Beach County, Florida

APPENDIX - PAGE 3 OF 15	PROJECT NUMBER: 040416206	MAY 2021	1 inch = 400 feet

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Source: 2019 Aerial Imagery

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Contamination Sites Map

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Palm Beach County, Florida

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MAY 2021

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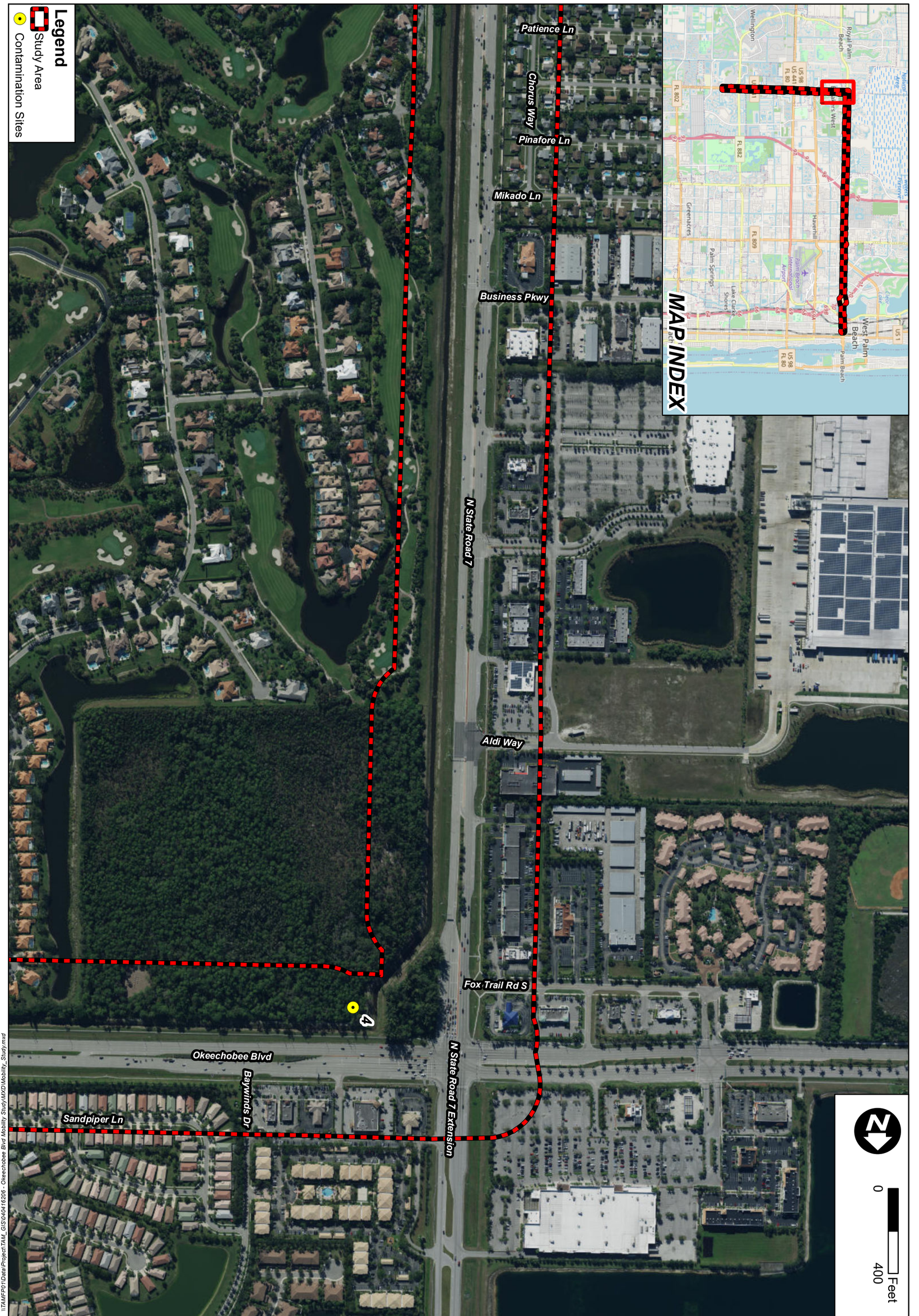

Source: 2019 Aerial Imagry

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Contamination Sites Map

Okeechobee Boulevard Mobility Study
Palm Beach County, Florida

APPENDIX - PAGE 5 OF 15	PROJECT NUMBER: 040416206	MAY 2021	1 inch = 400 feet

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Source: 2019 Aerial Imagry

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Contamination Sites Map

Okeechobee Boulevard Mobility Study
Palm Beach County, Florida

APPENDIX - PAGE 6 OF 15	PROJECT NUMBER: 040416206	MAY 2021	1 inch = 400 feet

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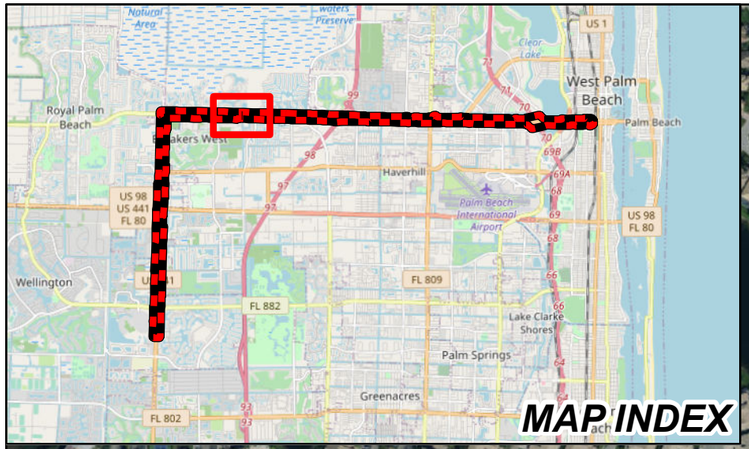

Source: 2019 Aerial Imagery

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Contamination Sites Map

Okeechobee Boulevard Mobility Study
Palm Beach County, Florida

1 inch = 400 feet

PROJECT NUMBER: 040416206

MAY 2021

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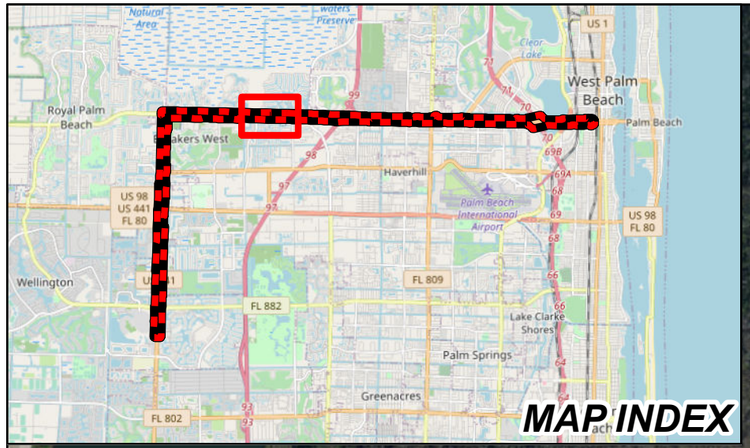

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Contamination Sites Map

Okeechobee Boulevard Mobility Study
Palm Beach County, Florida

PROJECT NUMBER: 040416206

MAY 2021

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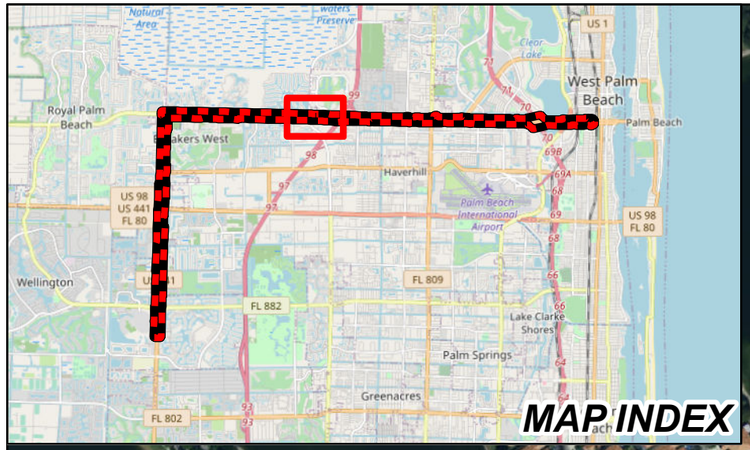

MAP INDEX

Feet
0
400

Riverwalk Blvd
Skees Rd
N Jog Rd
Okeechobee Blvd
Vista Pkwy
S Floridas Tpke
N Floridas Tpke
5

Legend

- Study Area
- Contamination Sites

Source: 2019 Aerial Imagery

Contamination Sites Map

Okeechobee Boulevard Mobility Study
Palm Beach County, Florida

PROJECT NUMBER: 040416206

MAY 2021

1 inch = 400 feet

APPENDIX - PAGE 9 OF 15

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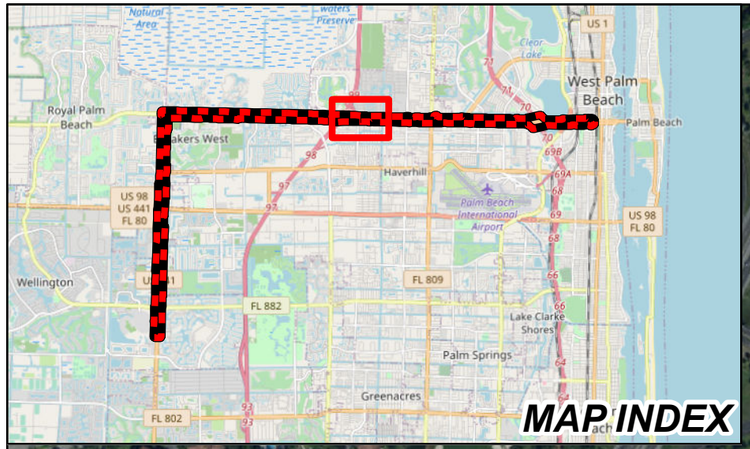

MAP INDEX

N

0 Feet 400

Legend

- Study Area
- Contamination Sites

Source: 2019 Aerial Imagery

Contamination Sites Map

Okeechobee Boulevard Mobility Study
Palm Beach County, Florida

APPENDIX - PAGE 10 OF 15 | ***PROJECT NUMBER: 040416206*** | ***MAY 2021***

1 inch = 400 feet

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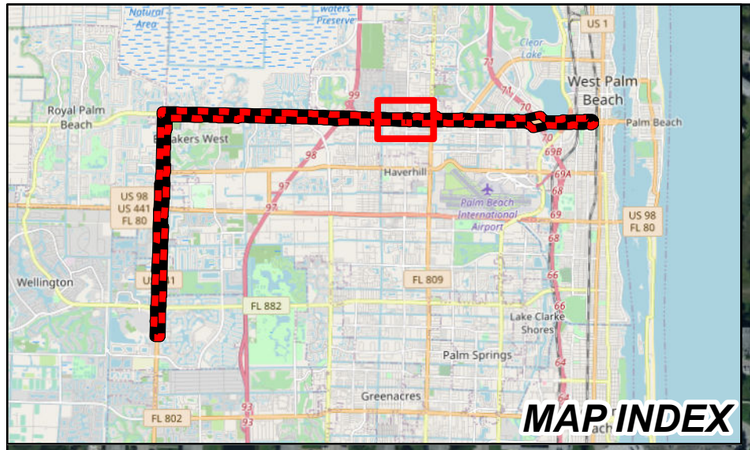

MAP INDEX

Feet
0
400

Fairway St
Southampton
N Haverhill Rd
Okeechobee Blvd
N Military Trl
Breezy Ln
6

Legend
- Study Area
- Contamination Sites

Source: 2019 Aerial Imagery

Contamination Sites Map

Okeechobee Boulevard Mobility Study
Palm Beach County, Florida

PROJECT NUMBER: 040416206

MAY 2021

APPENDIX - PAGE 11 OF 15

1 inch = 400 feet

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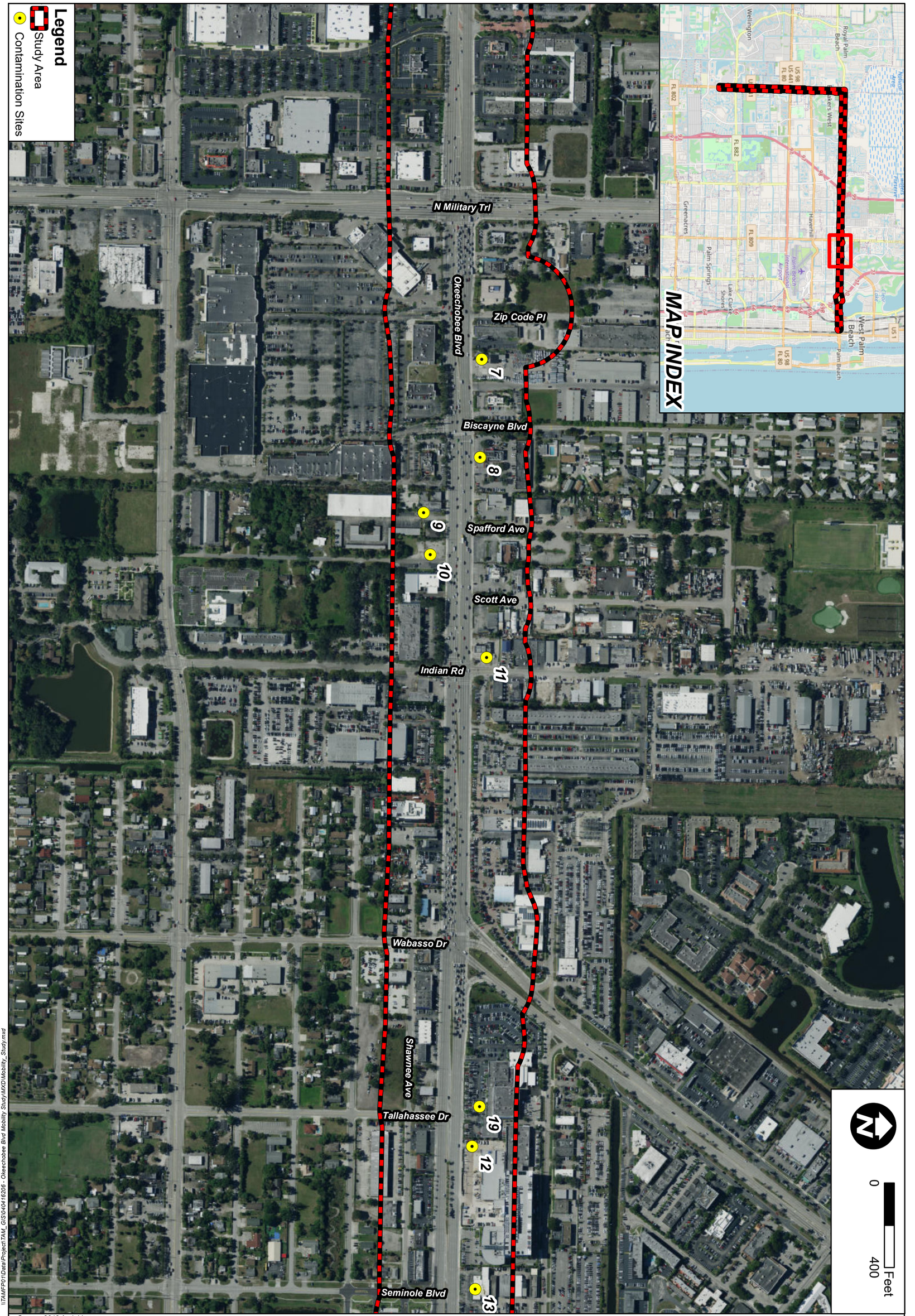

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Contamination Sites Map

Okeechobee Boulevard Mobility Study
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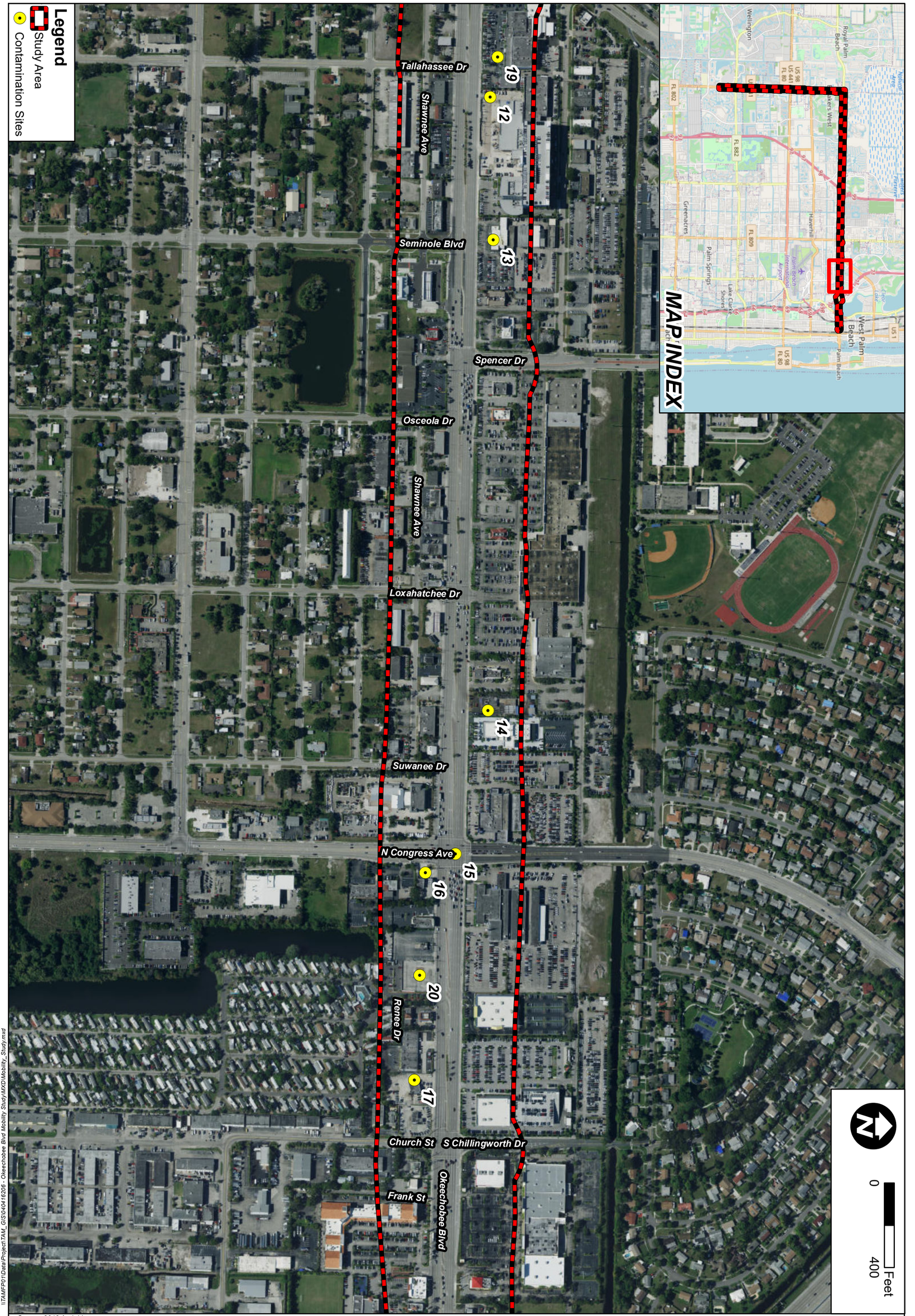

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Contamination Sites Map

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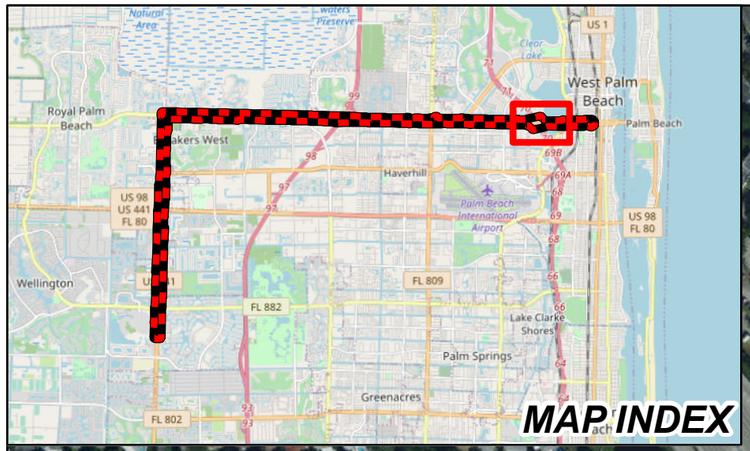

Source: 2019 Aerial Imagery

Contamination Sites Map

Okeechobee Boulevard Mobility Study
Palm Beach County, Florida

PROJECT NUMBER: 040416206 | *MAY 2021*

APPENDIX - PAGE 14 OF 15 | *1 inch = 400 feet*

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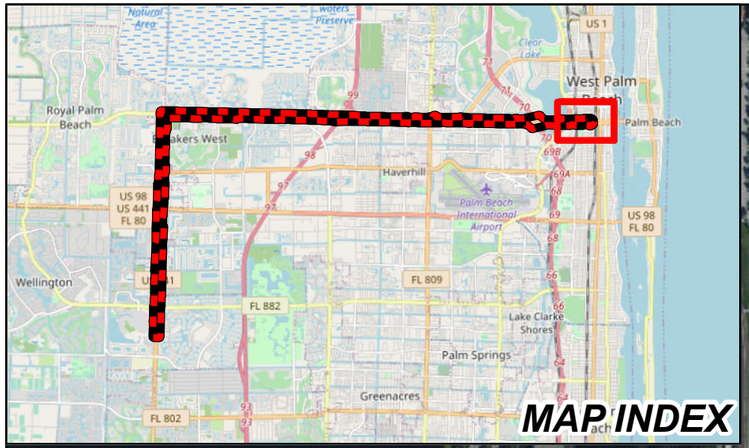

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Contamination Sites Map

Okeechobee Boulevard Mobility Study
Palm Beach County, Florida

1 inch = 400 feet

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MAY 2021

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EVALUATION METHODOLOGY

This document describes the evaluation of alternatives methodology identified for the Okeechobee Blvd. & SR 7 Multimodal Corridor Study (MCS). The evaluation of alternatives is a critical part of the alternatives analysis in which the information regarding each project alternative is presented, and key differences between alternatives are highlighted.

It is important to understand that the evaluation and planning phases of transit projects is a comprehensive process within which the technical analysis of alternatives and decisions proceeds. The process is continuous, such that a series of decisions are made throughout the analysis – modal options, alignment variations, design standards, operating policies, etc. – that together shape the definition and performance of each project alternative. Consistent with the Transit Concept and Alternative Review (TCAR) study process, various transit technologies and alignments are examined to provide technical analyses that are sufficient to understand trade-offs between alternatives to support an informed decision.

Six (6) enhanced transit alternatives will be evaluated, as well as one (1) No-Build / No-Action alternative. The evaluation criteria for this analysis will include both qualitative and quantitative measures. The intent of this evaluation is to facilitate a decision-making process for the selection of a Desired Transit Concept.

PROJECT DESCRIPTION

The Okeechobee Blvd. & SR 7 MCS evaluates transportation alternatives and transit supportive land uses to move people in a safe, efficient, and connected way, regardless of income, age, ability, or mode of travel across approximately 13.8 miles of Okeechobee Blvd./SR 704 and SR 7 as shown in Figure 1.

Okeechobee Blvd. provides a direct connection from western suburban areas to downtown West Palm Beach and regional transit connections. SR 7 is a regional north-south corridor that connects to Okeechobee Blvd. just before its northern terminus. In terms of the importance to the local transit network, Okeechobee Blvd. & SR 7 MCS intersect with 16 of Palm Tran's 32 local fixed-routes and account for approximately 15% of system ridership.

There are dedicated bicycle and pedestrian facilities along a majority of the study corridors. However, the existing non-motorized facilities do not support the land use in promoting alternate use of transportation.

The Okeechobee Blvd. & SR 7 MCS will develop a comprehensive plan to implement multimodal facilities that connect communities along the corridor through the development of a desired transit concept strategy.

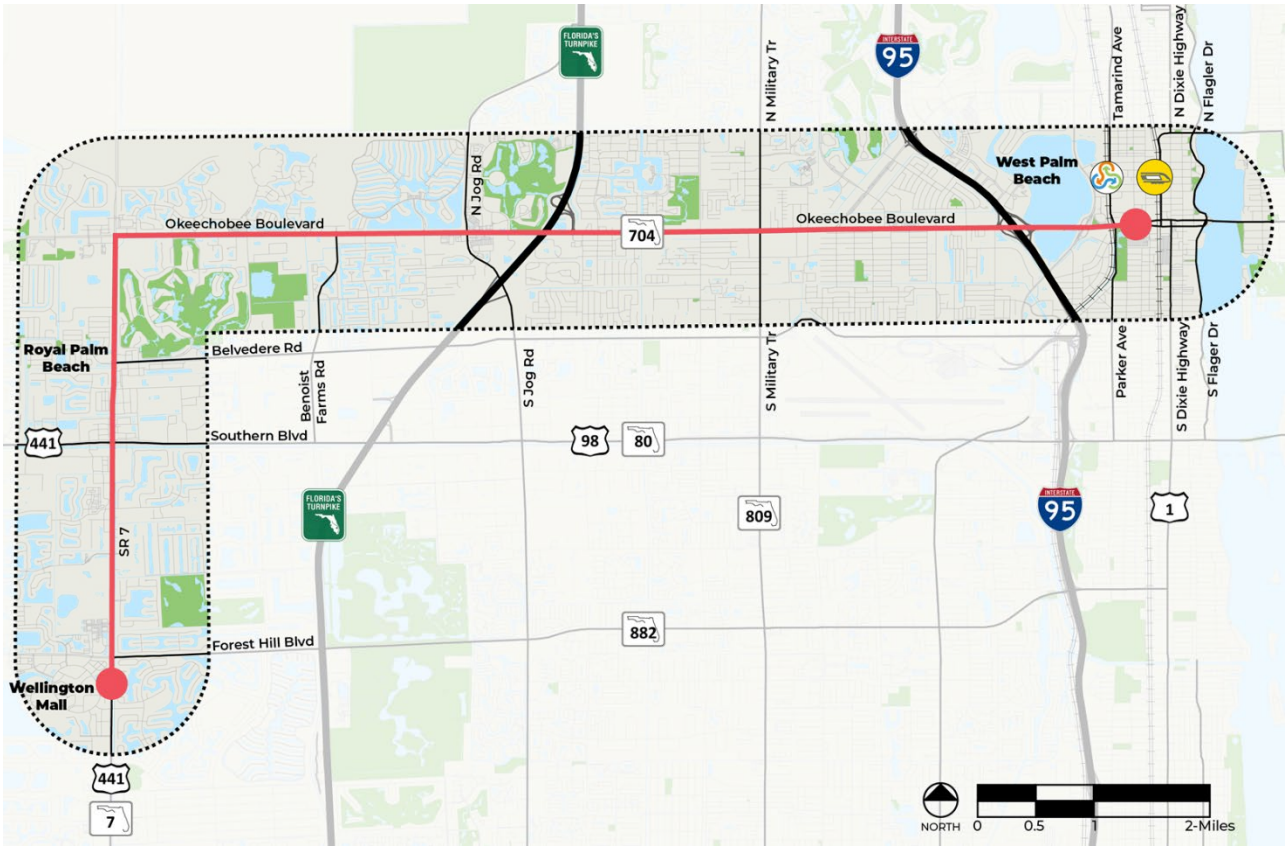


Figure 1. Okeechobee Blvd. & SR 7 MCS

EVALUATION METHODOLOGY

The purpose of the evaluation process is to identify criteria that align with the goals and objectives for the Okeechobee Blvd. & SR 7 MCS and facilitate decision making for the selection of a desired transit concept. The study's goals and objectives are based upon the adopted mission and vision of the Palm Beach Transportation Planning Agency (TPA).

Palm Beach TPA Mission

To collaboratively plan, prioritize, and fund the transportation system.

Palm Beach TPA Vision

A safe, efficient, and connected multimodal transportation system.

Project specific goals and objectives focus on multimodal access and connectivity while maximizing the value of transit service investments throughout the corridor.

These goals and associated objectives reflect the various needs and outcomes that the Okeechobee Blvd. & SR 7 MCS seeks to achieve.

Table 1 presents those project goals, objectives, and evaluation criteria for the evaluation of alternatives. The evaluation criteria may be refined through agency coordination and stakeholder outreach. Specific measures, scoring mechanisms and screening thresholds will be further defined as the project advances.

Table 1: Okeechobee Blvd. & SR 7 MCS Evaluation of Alternatives

Project Goals	Project Objectives	Evaluation Criteria
Allocate roadway space appropriately for non-motorized users, transit, and single occupancy vehicles.	A. Provide safe facilities for the most vulnerable users to create a comfortable environment. B. Maximize the corridor throughput with emphasis on shared mobility. C. Minimize travel time and delay for all users. D. Increase access to education, health care, and economic opportunity to improve community health.	• Equitable access to transit, bicycle, and pedestrian for underserved populations (low income, minority, senior citizens and/or is a zero-car household) • Transit Frequency and Service Span • Weekday Ridership • Transit Travel time
Maximize return on any investment in enhanced transit service area.	A. Locate transit stops at major existing and/or projected trip activity centers. B. Provide enhanced amenities at enhanced transit areas. C. Provide walkable and bikeable environments for first and last mile connection to improve access to transit. D. Provide capital investments that promote redevelopment/infill development that is supportive of transit.	• Station area population and employment densities • Minimizes environmental impacts • Potential for premium passenger amenities • Accommodates non-motorized modes (pedestrians, bicyclists) • Supportive land use policies • Characteristics of the transit mode that encourages redevelopment

EVALUATION CRITERIA

The type of criterion identified are those that, when applied, seek to inform a comparative analysis that distinguishes an alternative against an assessment of all project alternatives being proposed. Furthermore, these criteria were identified based upon the available information and data being prepared for this project phase of the Okeechobee Blvd. & SR 7 MCS. The evaluation criteria are aligned with the goals and objectives as previously presented (Table 2).

A ½ mile buffer will be applied along the corridor to include station stops for purposes of the analysis of the proposed alternatives.

An overview of the evaluation process is illustrated in Figure 2.

Scoring

The evaluation criteria listed in the previous section will be evaluated and assigned a score based upon available information and applicable date for each alternative. A numeric scale is proposed to conduct alternative comparison results to include the following:

- 3 – High or positive score
- 2 – Middle of moderate score
- 1 – Low score

For each criteria, a maximum score of three (3) points can be achieved as well as the lowest score being one (1). The results of each evaluation measure will be comparatively scored on a three (3) point scale by alternative

Evaluation measures with qualitative results are to be scored by assessing the relative difference between the qualitative ratings. For example, endangered species impacts the project alternatives may range from 'medium potential' to 'low potential'. An alternative with medium potential impacts receives two (2) points and alternatives with 'low impacts would receive three (3) points.

For evaluation measures where all alternatives result in exactly the same quantitative or qualitative results, all alternatives would be assigned a score of three (3).

Table 2: Okeechobee Blvd. & SR 7 MCS Alternatives Evaluation Criteria

Evaluation Criteria	
Goal: Allocate roadway space appropriately for non-motorized users, transit, and single occupancy vehicles.	
1	Minority Population (Title VI) within 1/2 mile
2	Transit Dependent Trips (zero car, under 16, over 65, low income) within 1/2 mile
3	Transit Service Frequency
	a) Peak (AM/PM)
	b) Off-Peak (Mid-day, evenings)
4	Span of Transit Service (New Service)
5	Number of Transit Stations
6	Station Accessibility
7	Estimated Average Weekday Ridership
	a) Total linked trips on project
	b) Number of new weekday linked transit trips
8	Transit Travel Time
	a) Transit vs average car commute time
9	Number of Median Opening Modifications and Closures
Goal Maximize return on any investment in enhanced transit service area.	
10	Population within 1/2 mile
11	Employment within 1/2 mile
12	Right-of-Way Impacts
13	Visual Impacts
14	Construction Impacts
15	Redevelopment / Transit Oriented Development Potential
16	Estimated Capital Cost ($000s)
17	Estimated Operating Cost ($000s)
18	No. of Peak Transit Vehicles Required to Operate Proposed Service

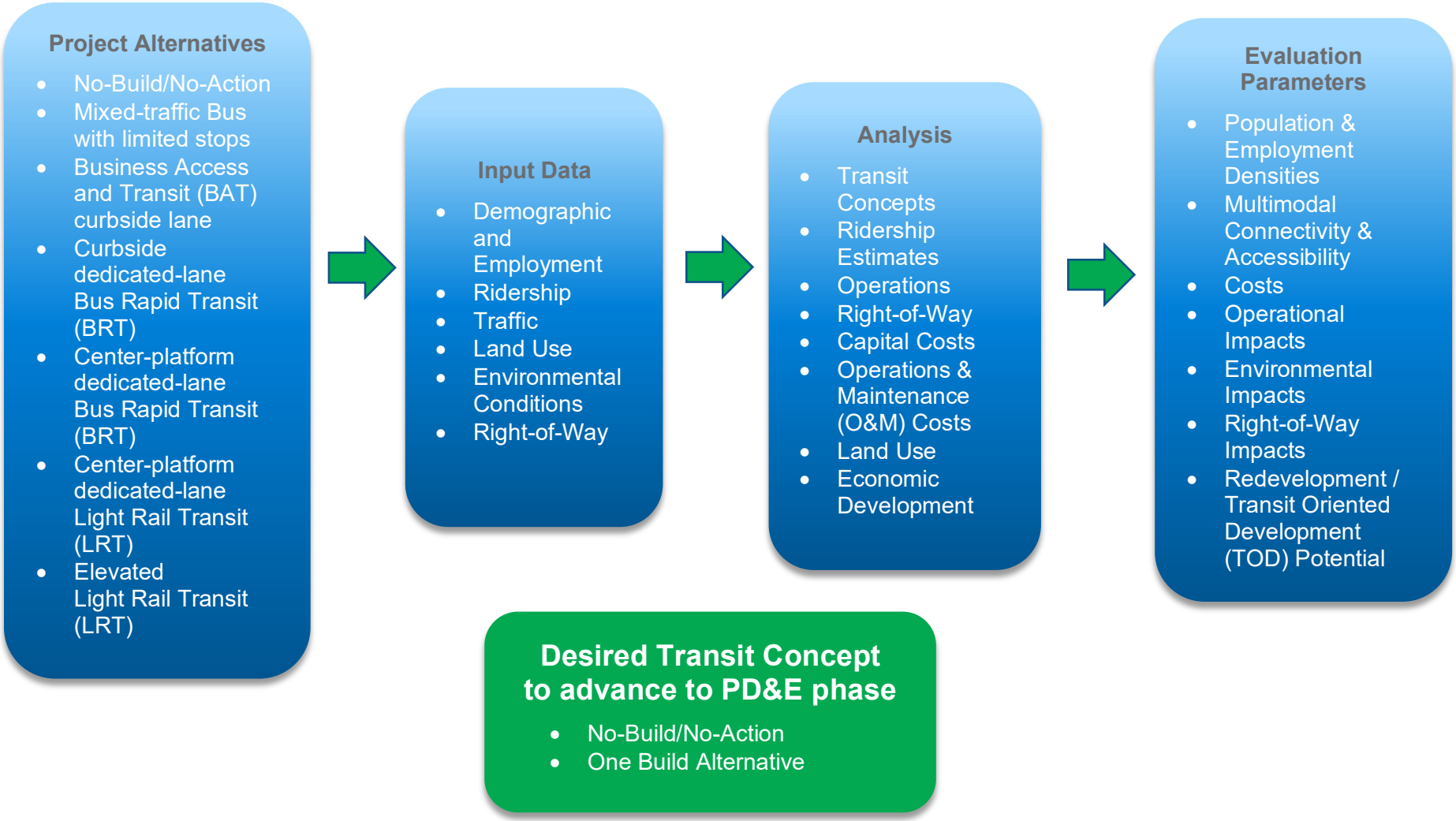


Figure 2. Evaluation of Conceptual Alternatives Process

ALTERNATIVES FOR EVALUATION

Preliminary planning efforts have identified a total of seven (7) Project corridor alternatives for evaluation that includes a No-Build / No-Action option and six (6) build options.

A detailed description of each alternative is presented in this section.

- No-Build/No-Action
- Mixed traffic bus with limited stops
- Business Access and Transit (BAT) curbside lanes
- Curbside dedicated-lane Bus Rapid Transit (BRT)
- Center-platform dedicated-lane BRT
- Center-platform dedicated-lane Light Rail Transit (LRT)
- Elevated grade-separated LRT

Each alternative traverses Okeechobee Blvd/SR 704 and SR 7 to connect with two (2) transit hubs as termini while serving numerous residential communities and commercial developments across three (3) municipalities.

- The Mall at Wellington Green
- Downtown West Palm Beach

The primary differences between each of the build alternatives involves the specific alignment placement within the existing right-of-way on Okeechobee Blvd. & SR 7 as well as the designated transit mode (bus, BRT, or LRT) and corresponding infrastructure improvements.

No-Build / No-Action Alternative

A No-Build / No-Action is provided as a means for a comparison with proposed build alternatives throughout the evaluation of the planning phase. The No-Build / No-Action Alternative includes all currently programmed and funded projects that will be implemented within the project corridor. These typically include both capital investments and planned service improvements that will occur without the construction of any one of the build alternatives proposed for implementation.

For the Okeechobee Blvd. & SR 7 MCS, these include improvements that are listed in the Palm Beach County Transportation Improvement Plan (TIP) FY 2021 – FY 2025. Transit service improvements are presented in the in the latest adopted Palm Tran Transit Development Plan (TDP) Annual Update (FY 2020 – FY 2029) which provides a 10-year strategic plan for transit service improvements and capital investments. The improvements programmed for the Okeechobee Blvd. & SR 7 MCS project limits include the following:

- Palm Beach TPA TIP (FY 2021 – FY 2025)
  - FM 44004561 – SR-7 at Weisman Way; Intersection Improvement
  - FM 2023991 – Belvedere Road at SR-7; Intersection Improvement
  - FM 4461771 – SR-7 from north of Southern Blvd. to Okeechobee Blvd.; Resurfacing

- FM 20239910 – Okeechobee Blvd. at Jog Road; Intersection Improvement
- FM 4415711 – Palm Tran bus shelters, various locations; Public Transportation Shelter
- FM 20219917 – Okeechobee Blvd. at Haverhill Road; Intersection Improvement
- FM 4397551 – I-95 at Okeechobee Blvd.; Interchange – Add Lanes
- 4461791 – Okeechobee Blvd. from Tamarind Avenue to West of Lakeview Avenue; Resurfacing

- Palm Tran Transit Development Plan (FY 2020 – FY 2029) includes the following service improvements for Route 43:

I. Increase Saturday morning span by two (2) hours.
II. Improve Weekday service frequency from 30 to 20 minutes.
III. Improve Saturday and Sunday service frequency from 60 minutes to 30 minutes.
IV. Extend weekday span of service one (1) AM hour and one (1) PM hour.
V. Extend weekend span of service one (1) AM hour and one (1) PM hour

Bus Rapid Transit Alternatives

Bus Rapid Transit (BRT) is a high-quality bus-based transit application that delivers fast and efficient service that may include a combination of dedicated exclusive bus lanes, traffic signal priority, off-board fare collection, level boarding platforms, and stations with higher level of amenities than a typical bus stop. BRT is often considered more reliable, convenient, and faster than regular local bus services.

The Federal Transit Administration (FTA) defines BRT as either corridor based or fixed guideway with investment features that are to emulate rail transit. Corridor based BRT operates in mixed traffic and includes capital investments to improve travel time. Fixed guideway BRT operates within an exclusive dedicated travel lane for greater than 50 percent of the alignment length during AM/PM peak travel periods. Both corridor based and fixed guideway BRT include substantial capital investment in transit signal technology, station amenities and service branding.

Mixed Traffic Bus Alternative

The Mixed Traffic Bus Alternative is a corridor based BRT project within the MCS project limits to include operational investments that will improve transit travel time and frequency. Mixed traffic bus is a common type of transit service which uses an existing outside or curbside general purpose travel lane that is shared with all other vehicular traffic (Figure 3). To load and unload passengers, buses remain in the outside traffic lane at transit stations or access a roadside bus bay if at a timed service point or layover. Currently, Palm Tran Route 43 operates along segments of Okeechobee Blvd. & SR 7 within the MCS limits as mixed bus transit service.

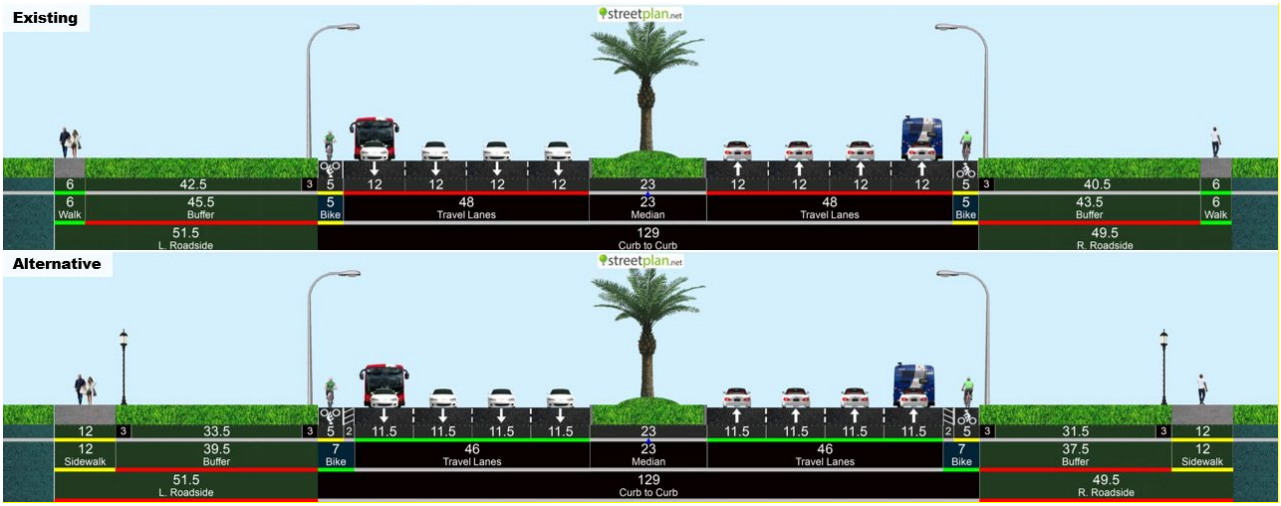


Figure 3. MCS Mixed Traffic Bus Alternative Concept

Business Access and Transit (BAT) Lanes Alternative

Business Access and Transit lanes are expressly reserved for buses with limited access for non-transit vehicles. BAT lanes are often created by converting an existing curbside general purpose travel lane for transit use only. A BAT lane is typically distinguished with additional pavement markings identifying travel lanes as bus only and, in some cases, by also applying colored pavement along the running way to visually separate the BAT lane from general purpose travel lanes. However, non-transit vehicles are allowed to access a BAT lane only when making a right-turn into a driveway or side street. Non-transit vehicles exiting a driveway or side street should turn into the nearest general purpose travel lane and only use the BAT to make this transition. Otherwise use of a BAT lane by non-transit vehicles is prohibited. Bicycles can be permitted to use BAT lanes if a dedicated bicycle lane is not provided on the street.

The MCS proposed BAT lane alternative would repurpose the existing outside or curbside travel lane on both Okeechobee Blvd. & SR 7. Since this alternative would include more than 50 percent of the alignment as a BAT lane the project meets the FTA definition of a fixed guideway BRT project. Additional investment in operation improvements such as transit signal prioritization, off-board fare collection, as well as transit stops with enhance passenger amenities are typically associated with a BAT lane option (Figure 4).

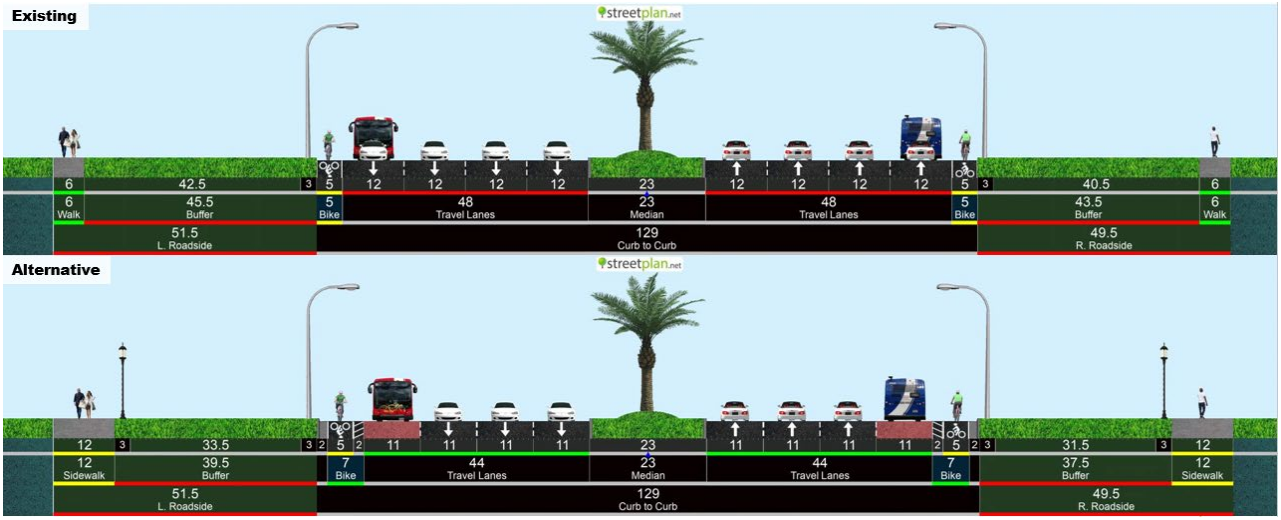


Figure 4. MCS BAT Lane Alternative Concept

Curbside Dedicated Lane BRT Alternative

The dedicated lane BRT alternative proposed for the Okeechobee Blvd. & SR 7 MCS would operate in the outside or curbside lane. This would involve the repurposing of a general use travel lane to an exclusive dedicated travel lane for bus (Figure 5). Although similar to the BAT Lanes Alternative, the dedicated BRT Lane Alternative will include an exclusive BRT lane over more than 50% along the entire length of the alignment to meet the definition of FTA Fixed Guideway BRT as well as additional investment at transit stations. However, there may also be locations along corridor segments that would allow access to adjacent driveways and side streets same as the previously described BAT Lane Alternative.

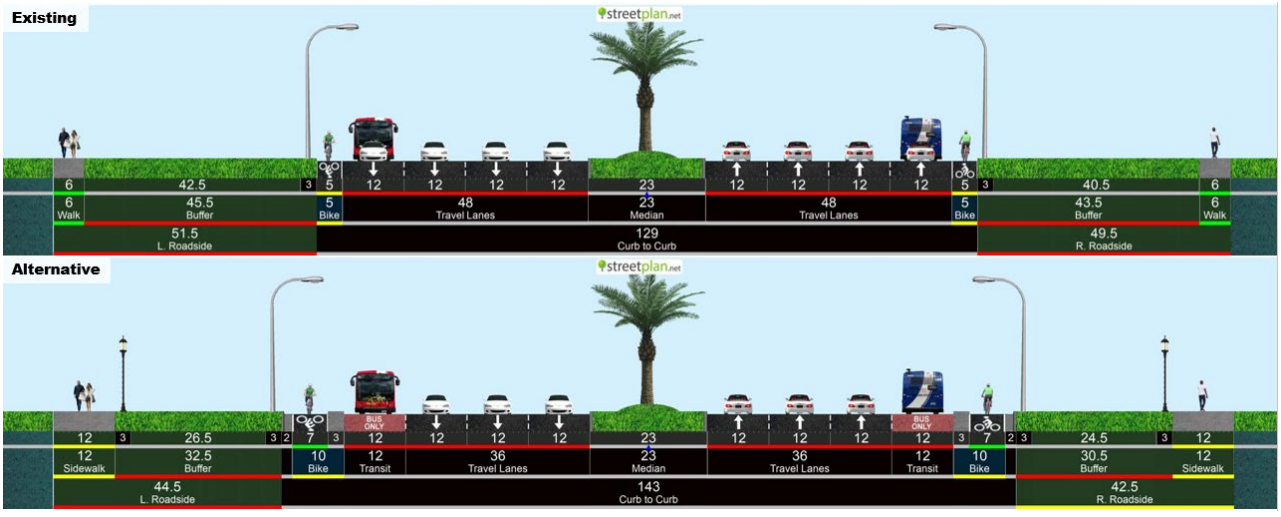


Figure 5. Dedicated BRT Lane Alternative Concept

Center Platform Dedicated Lane BRT Alternative

This alternative is a fixed guideway BRT option that would operate within a dedicated exclusive travel lane. The BRT guideway would be located in the median to include center station platforms that are accessible from both sides of a street while also creating a refuge area for pedestrian crossings. The proposed alternative would repurpose an existing inside general-purpose travel lane in each direction along the entire length of the MCS alignment for exclusive use by BRT buses (Figure 6). Stations would be located in the median at major intersections throughout the corridor.

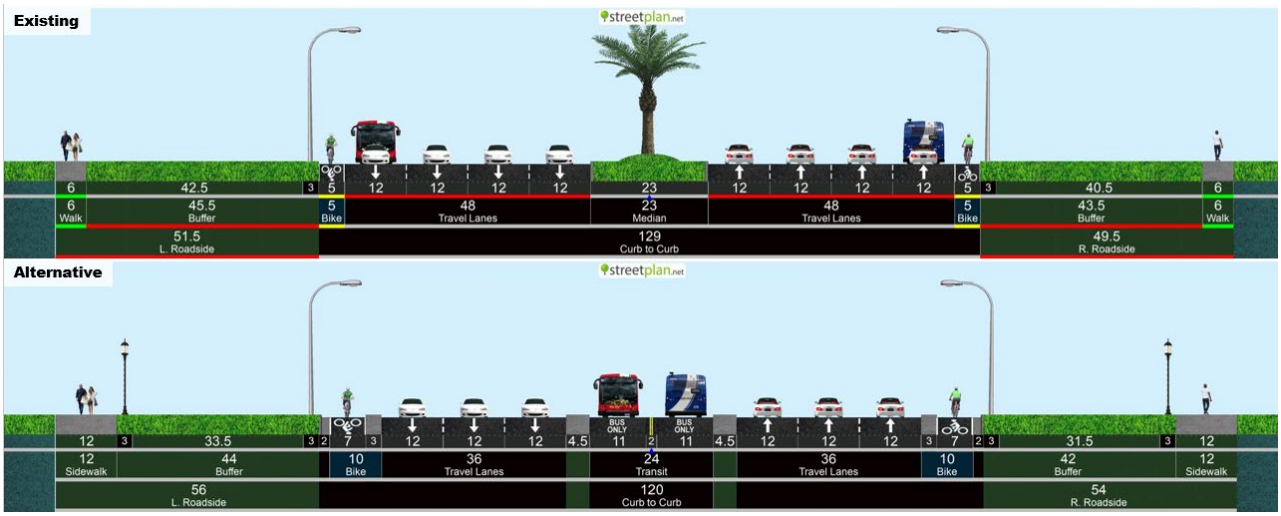


Figure 6. MCS Center Platform Dedicated Lane BRT Alternative Concept

Light Rail Transit

Light Rail Transit (LRT) is an electric powered, high-capacity rail technology capable of operating in a wide range of physical configurations. LRT typically operates in a one to two vehicle train configuration in a mostly or fully dedicated transit guideway. The two (2) primary types of light rail vehicles are streetcar and LRT. Streetcars are typically applied to a highly urbanized environment due to their smaller turning radius while also providing service more as a distributor system. LRT provides more passenger capacity and is more of a line haul service for longer distances which is more appropriate for the Okeechobee Blvd. & SR 7 MCS.

LRT systems that operate within an exclusive guideway typically operate within the roadway median. However, LRT alignments can be configured to operate in a curbside travel lane within an exclusive guideway or mixed traffic lane. Whether in dedicated or mixed-traffic lanes, the guideway must be kept clear from all but the briefest obstructions. Light Rail Vehicles (LRVs) have their own geometric needs that may differ from buses as well as being electrically powered by an overhead catenary system. LRT stations are substantial investments throughout a corridor and offer various passenger amenities such as level boarding platforms, ticket vending machines, wayfinding, station canopies and seating.

A new vehicle and maintenance and storage facility will be required for the new LRT vehicle fleet for the LRT alternatives being proposed as part of the Okeechobee Blvd. & SR 7 MCS.

Dedicated Lane Light Rail Transit (LRT) Alternative

The proposed dedicated lane LRT alternative would operate within the median of Okeechobee Blvd. & SR 7 (Figure 7). The alternative would repurpose the existing median to include a fixed guideway that would consist of tracks formed of continuously welded rails embedded at-grade in a concrete slab. An overhead catenary system that distributes electricity to LRVs would run along the entire length of the guideway. Stations would be configured as center platform stations that would be located at or near major intersections.

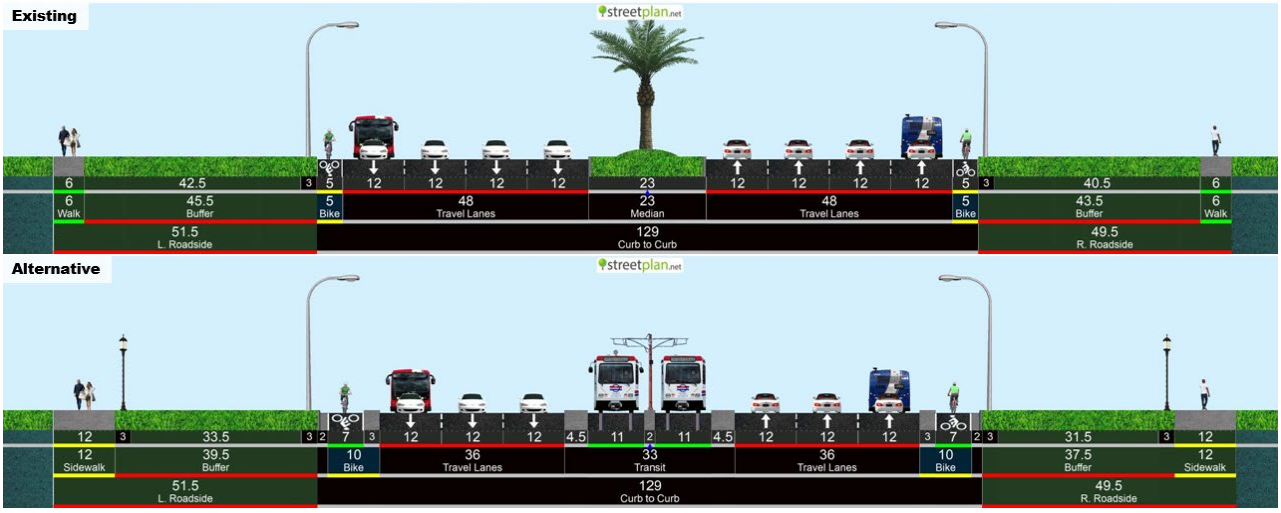


Figure 7. Dedicated Lane LRT Alternative Concept

Elevated LRT Alternative

Elevated LRT operates within an above street level exclusive guideway which eliminates any potential conflicts and therefore provides quick travel times for passengers. LRT may also follow street alignments but allows for tracing a different alignment, if necessary, crossing above streets, canals, and other rail lines. While being elevated the placement of support columns is required along the entire alignment and requires lengthy segments to span over major intersections.

Elevated LRT involves a substantial capital investment due to elevating both the guideway and station platforms along an entire alignment. The elevated LRT alternative proposed for the Okeechobee Blvd. & SR 7 MCS project would be placed along the median of each roadway (Figure 8). Stations also being elevated, would require vertical circulation for passenger access either within the median of the roadway itself or spanning to each side of the roadway.

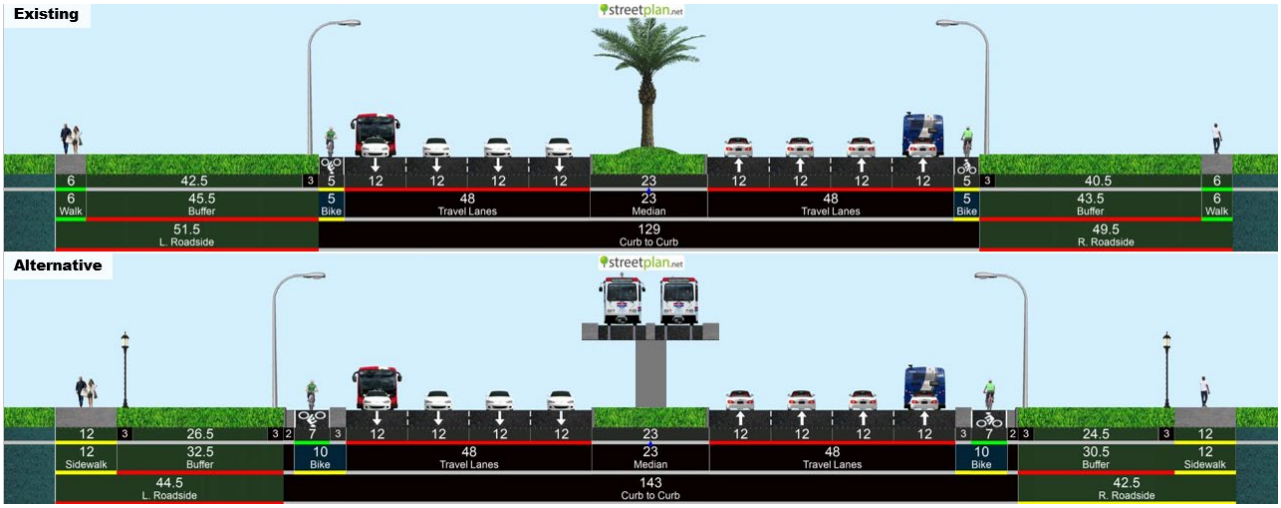


Figure 8. Elevated LRT Alternative Concept

ALTERNATIVES EVALUATION

The alternatives evaluation will be coordinated with public and stakeholder outreach for this project. Throughout the alternative evaluation, the study team, will involve various advisory committees that have been established for the Okeechobee Blvd. & SR 7 MCS.

TRANSIT SERVICE PLAN

The Okeechobee Blvd. & SR 7 Multimodal Corridor Study (MCS) will evaluate six (6) enhanced transit alternatives for purposes of improving mobility and connectivity along the corridors from the Mall at Wellington Green to Rosemary Ave in downtown West Palm Beach. This document specifies the service characteristics for each of the proposed alternative to include various modes and running way characteristics. Furthermore, the Federal Transit Administration (FTA) has established service characteristic thresholds that define Bus Rapid Transit (BRT) eligibility for Capital Investment Grant (CIG) funding – New Starts and Small Starts projects.

The Okeechobee Blvd. & SR 7 MCS transit alternatives service characteristics are defined by existing transit operations and the proposed transit mode, each of which provides a varying level of investment based upon infrastructure, technology, and passenger amenities.

A No-Build / No-Action alternative is also being evaluated for the Okeechobee Blvd. & SR 7 MCS.

- No-Build / No-Action
- Mixed traffic bus with limited stops
- Business Access and Transit (BAT) curbside lanes
- Curbside dedicated-lane BRT
- Center-platform dedicated-lane Bus Rapid Transit (BRT)
- Center-platform dedicated-lane Light Rail Transit (LRT)
- Elevated grade-separated LRT

EXISTING TRANSIT SERVICES

Service characteristics were compiled for all Palm Tran roues that operate within or on a portion of the Okeechobee Blvd. & SR 7 MCS. Data sources for route services characteristics include information that was obtained from Palm Tran. The Okeechobee Blvd. & SR 7 corridor is primarily served by Palm Tran Route 43. While Routes 40 and 52 provide service within the Okeechobee Blvd. & SR 7 Corridor on limited segments. A number of other Palm Tran routes also intersect Okeechobee & SR 7 to serve as transfer locations throughout the corridor.

Route 43

Palm Tran Route 43 provides local service in the Okeechobee Blvd. & SR 7 corridors that operates a bi-directional service between two main termini, the Mall at Wellington Green and the Intermodal Transit Center which is adjacent to the West Palm Beach Tri-Rail station. The route alignment includes segments on SR 7, Belvedere Rd, Benoist Farms Rd, Okeechobee Blvd., and Australian Avenue (Figure 1).

On weekdays, Route 43 operates at a 30-minute service frequency throughout its entire service span of 16.5 hours. On Weekends Route 43 provides 30-minute frequency on Saturdays and hourly frequency on Sunday's (Table 1). Along the SR 7 and Okeechobee Blvd. segments there are 76 stops on the Route 43 alignment.

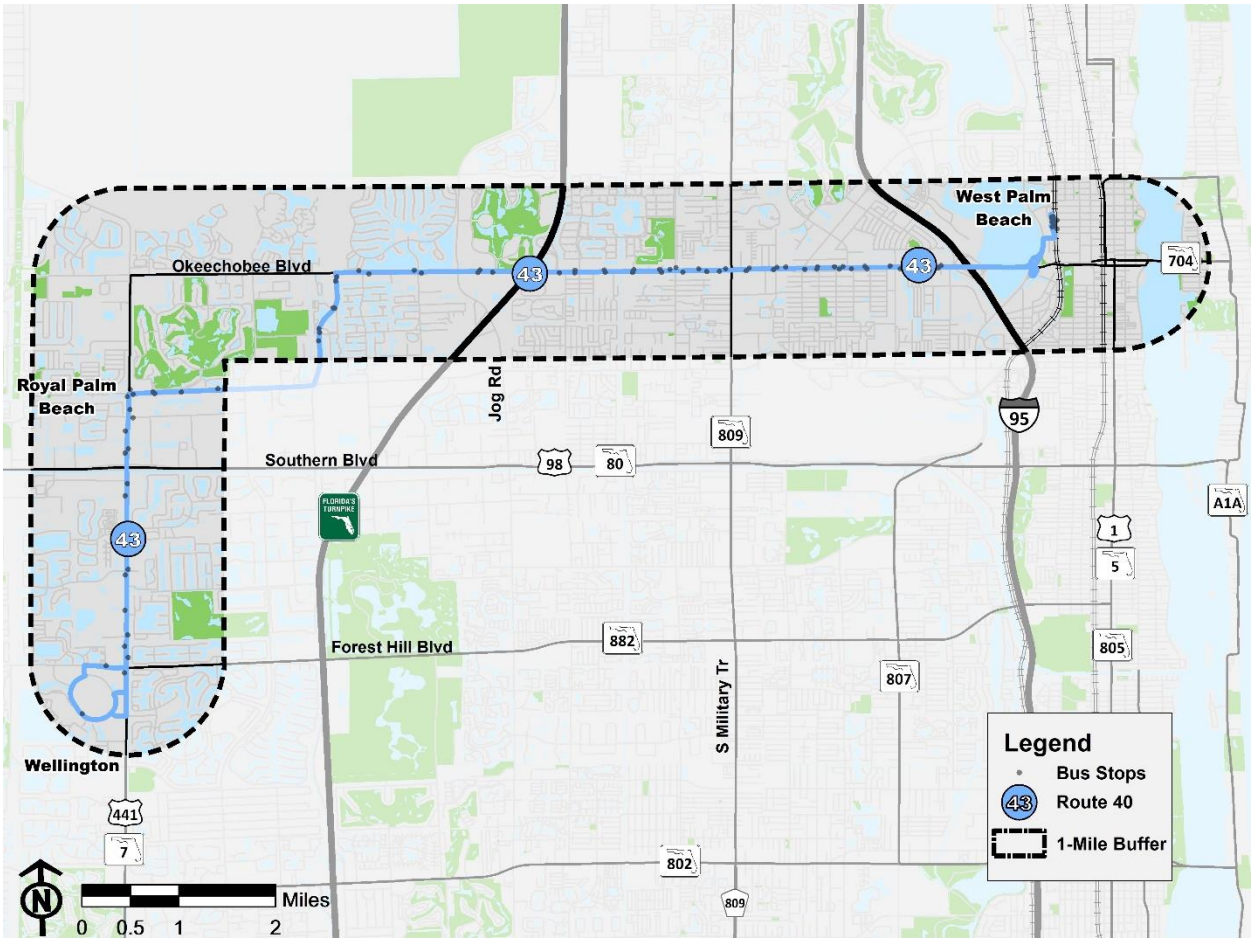


Figure 1. Palm Tran Route 43 Alignment and Station Stops

Table 1: Palm Tran Route 43 Existing Service Characteristics

Route 43	Headway (mins)	Total Service Span (Hours)	Service Span Hours AM - PM	Roundtrip Route Length (miles)	Roundtrip Travel Time (mins)	Scheduled Speed (mph)	Ridership
Weekday	30	16.5	5:38 AM – 10:06 PM	32	98.5	19.5	
Saturday	30	15.0	7:10 AM – 10:12 PM	32	90	21.3	
Sunday	60	11.0	8:10 AM – 7:12 PM	32	90	21.3	

Source: https://tripplan.palmtran.org/img/pdf/43.pdf

Route 40 and Route 52

Two (2) other Palm Tran routes operate on segments of the Okeechobee Blvd. and SR 7 corridors – Route 40 and Route 52. Route 40 is a limited stop service that operates on a segment of SR 7 between Southern Blvd. and the Mall at Wellington Green. On weekdays, Route 40 provides 30-minute service between 8:00 AM and 9:00 AM, and 60-minute frequency for all other times. For weekends, 60-minute frequency are provided on Saturday and Sunday with operations between 7:10 AM and 9:56 PM and 10:10 AM and 6:56 PM, respectively.

Route 52 operates service on SR 7 between Okeechobee Blvd. and the Mall at Wellington Green. On weekdays, Route 52 operates on 60-minute frequency between 5:43 AM and 7:22 PM. For weekends, Route 52 operates on Saturdays only with 60-minute frequency with service between 7:40 AM and 7:27 PM.

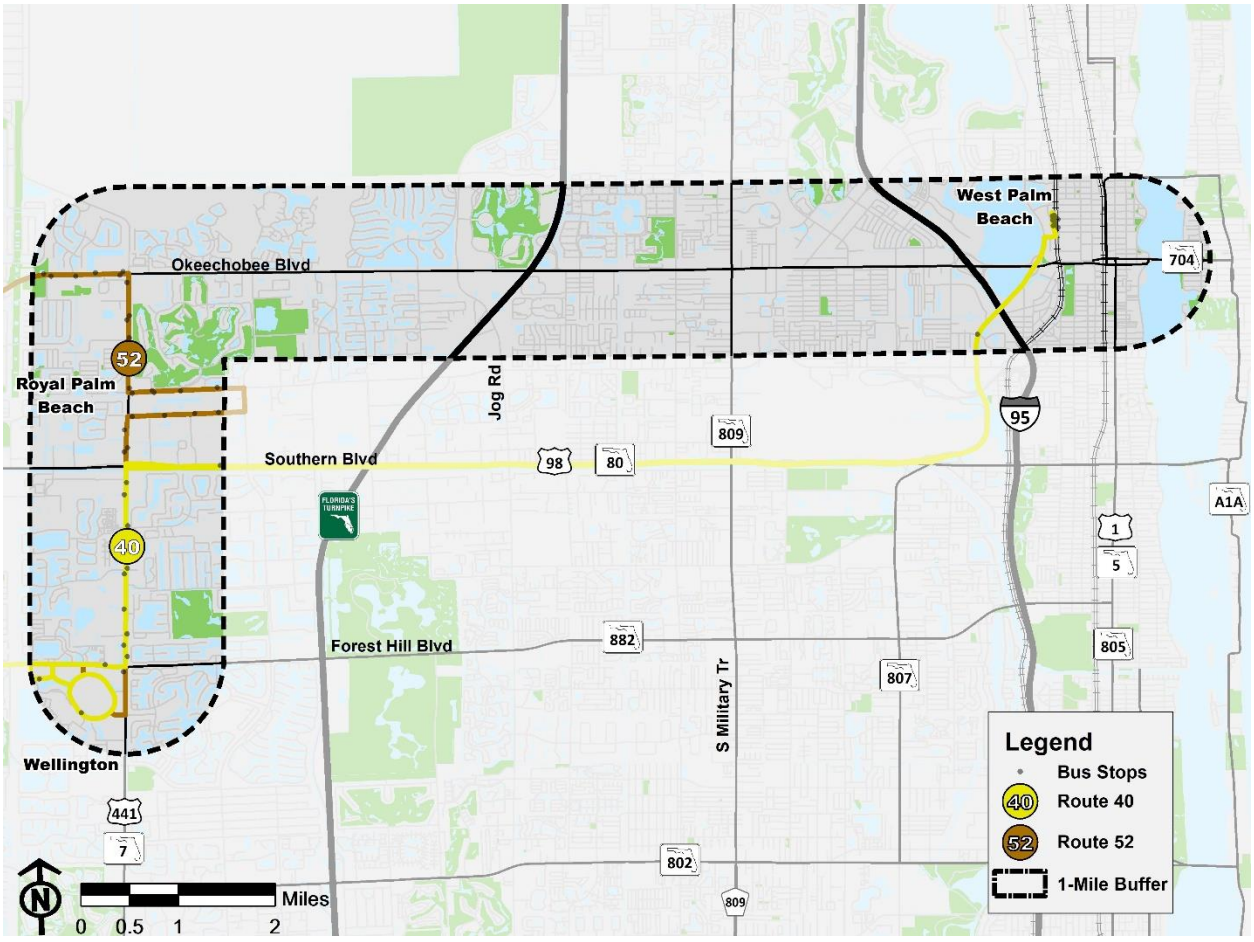


Figure 2. Palm Route 40 and 52 Alignment and Station Stops

Table 2: Palm Tran Route 40 and Route 52 Existing Service Characteristics

Route	Service Day	Headway (mins)	Total Service Span (Hours)	Service Span Hours AM - PM	Roundtrip Route Length (miles)	Roundtrip Travel Time (mins)	Scheduled Speed (mph)	Ridership
40	Weekday	60	16.5	5:35 AM – 10:40 PM	99	169	35.1	
	Saturday	60	14.75	7:10 AM – 9:56 PM	70	92	45.7	
	Sunday	60	8.75	10:10 AM – 6:56 PM	70	92	45.7	
52	Weekday	60	13.5	5:43 AM – 7:22 PM	36	90	24	
	Saturday	60	11.75	7:40 AM – 7:27 PM	36	93	23.2	

Source: https://tripplan.palmtran.org/Schedule/index

Intersecting Palm Tran Route Service

Ten (10) Palm Tran routes intersect the Okeechobee Blvd. & SR 7 corridor at various points which provide opportunities for passenger transfers and connecting service options through Palm Beach County. A map illustrating each of these route alignments is presented in Figure 3 and existing service characteristics are listed in Table 3.

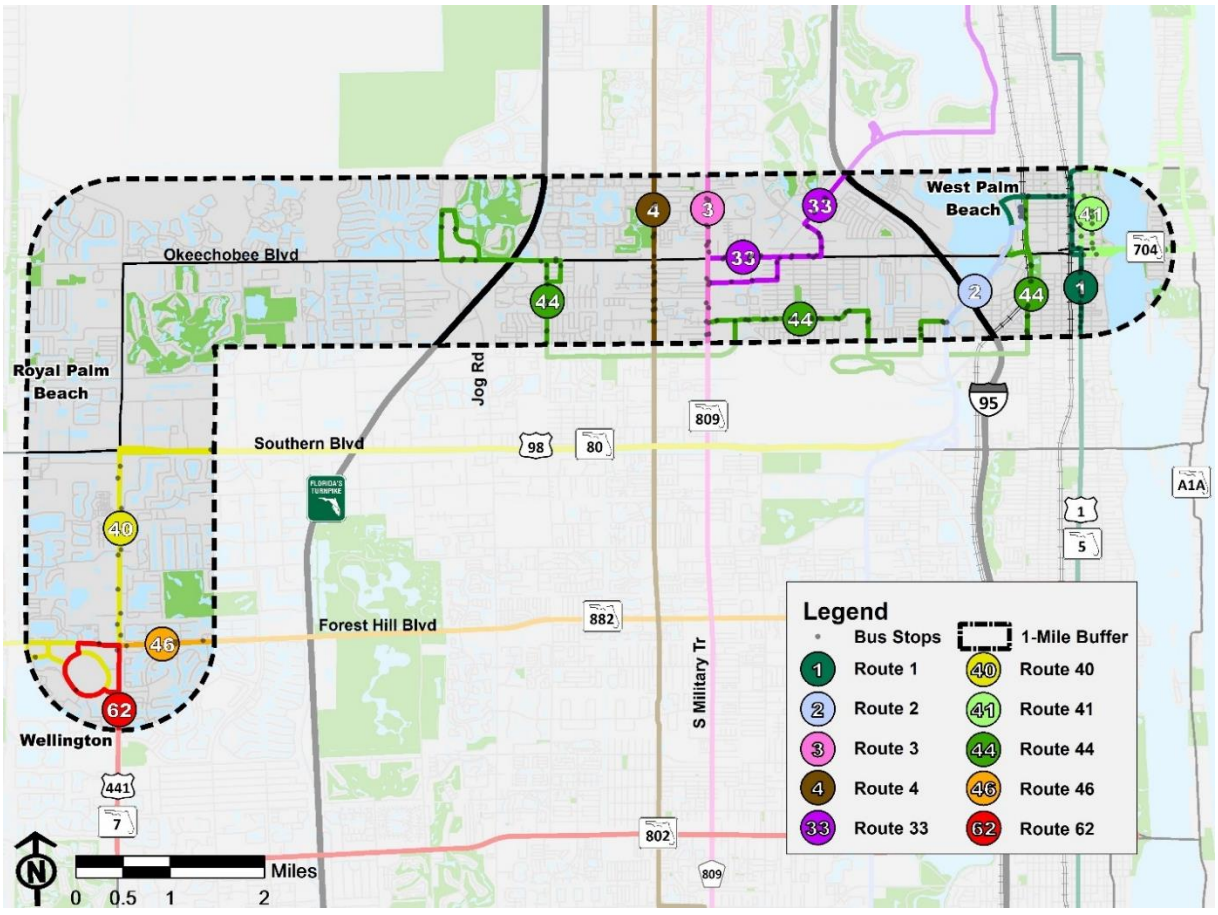


Figure 3. Existing Palm Tran Routes that intersect Okeechobee Blvd. & SR 7 MCS

Table 3. Palm Tran Routes that Intersect Okeechobee Blvd. & SR 7 Existing Service Characteristics

Route	Service Day	Headway (mins)	Total Service Span (Hours)	Service Span Hours AM - PM	Roundtrip Route Length (miles)	Roundtrip Travel Time (mins)	Scheduled Speed (mph)
1	Weekday	20	17	5:26 AM – 10:37 PM	88	325	16.2
	Saturday	30	16	6:14 AM – 10:17 PM	88	298.5	17.7
	Sunday	30	11.5	8:14 AM – 7:38 PM	88	298	17.7
2	Weekday	30	17.5	5:16 AM – 10:55 PM	62	221	16.8
	Saturday	45	15.25	7:00 AM – 10:13 PM	62	212	17.5
	Sunday	60	12.25	7:44 AM – 8:03 PM	62	196	19.0
3	Weekday	30	17.5	5:06 AM – 10:30 PM	76	275	16.6
	Saturday	30	16.5	6:00 AM – 10:35 PM	76	233	19.6
	Sunday	60	11.5	8:20 AM – 7:53 PM	76	219.5	20.8
4	Weekday	60	13.75	6:10 AM – 7:52 PM	28	92.5	18.2
	Saturday	60	12	7:30 AM – 7:21 PM	28	84	20.0
	Sunday	60	8.75	9:30 AM – 6:13 PM	28	78	21.5
33	Weekday	40	15	5:55 AM – 8:47 PM	34	131.5	15.5
	Saturday	60	13.5	7:18 AM – 8:46 PM	34	130	15.7
	Sunday	60	9.75	8:40 AM – 6:25 PM	34	130	15.7
40	Saturday	60	14.75	7:10 AM – 9:56 PM	70	92	45.7
	Sunday	60	8.75	10:10 AM – 6:56 PM	70	92	45.7
	Weekday	60	13.5	5:43 AM – 7:22 PM	36	90	24
41	Weekday	20	10.75	6:35 AM – 5:21 PM	22	60.5	21.8
	Saturday	60	9	7:35 AM – 4:30 PM	22	55	24.0
	Sunday	-	-	-	-	-	-
44	Weekday	60	13.75	5:45 AM – 7:30 PM	30	106	17.0
	Saturday	60	11.75	6:44 AM – 6:30 PM	30	96	18.8
	Sunday	60	8.75	8:40 AM – 5:28 PM	30	96	18.8
46	Weekday	30	16	5:55 AM – 9:59 PM	24	82	17.6
	Saturday	45	15	7:10 AM – 10:03 PM	24	74	19.5
	Sunday	45	10.5	8:40 AM – 7:03 PM	24	74	19.5
62	Weekday	20	16.5	5:40 AM – 10:15 PM	30	100	18
	Saturday	30	15	7:12 AM – 10:15 PM	30	100	18
	Sunday	30	10.75	8:55 AM – 7:37 PM	30	100	18

Source: https://tripplan.palmtran.org/Schedule/index

PROJECT ALTERNATIVES

For the Okeechobee Blvd. & SR 7 MCS a No-Build / No-Action alternative will be evaluated as well as six (6) enhanced transit alternatives.

No-Build / No-Action Alternative

The No-Build / No Action alternative includes the existing transit services that are in operation within the Okeechobee Blvd. & SR 7 Corridor. These include Palm Tran Routes 40, 43, and Route 52 to include their existing peak headways, service span and stop locations. Note that the Palm Tran FY 2020- 2029 Transit Development Plan (TDP) Annual Update identified improving Route 43 weekday headways from 30-minutes to 20-minutes as well as adding one hour to the AM and PM service span. Although service changes were identified in the most recent TDP, these modifications have yet to be implemented and will undergo further evaluation by Palm Tran.

Enhanced Transit Alternatives

All six (6) enhanced transit alternative alignments will operate within the existing right-of-way of the Okeechobee Blvd. & SR 7 MCS limits. These six transit alternatives include both BRT and LRT options. Fixed guideway and corridor-based transit are two (2) types of transit projects as defined by the FTA.

Fixed-guideway projects operate within an exclusive right-of-way that is dedicated for transit use only. Examples of fixed guideway projects are rail projects, such as LRT that typically operate within the median, and BRT which can operate within the median or curbside travel lanes. For a BRT project to meet FTA's definition of fixed guideway, over 50% of the BRT route must operate in a dedicated right-of-way during peak travel periods. Other traffic is allowed to make turning movements through the separated right-of-way. Business Access Transit (BAT) lanes are an example of a type of BRT option. A curbside lane is dedicated for transit use during peak travel periods but also maintains access to neighboring businesses and residential neighborhoods.

Corridor-Based alternatives are typically BRT projects that operate within mixed traffic and include capital investments that improve travel time. Both corridor based and fixed guideway BRT include substantial capital investment in transit signal technology, station amenities, and service branding.

The FTA requires that fixed guideway and corridor-based projects provide short headway, bidirectional service for a minimum of 14 hours on weekdays. Short headway service is defined as 15-minute headways throughout the entire weekday, or 10-minute headways during peak periods and no greater than 20-minute maximum headways at all other times.

A description of service characteristics for each proposed transit alternative is presented for Okeechobee Blvd. & SR 7 MCS.

Mixed Traffic Bus with Limited Stops

The mixed traffic limited stop bus Alternative will include a new service route between the Mall at Wellington Green and Intermodal Transit Center with an alignment on SR 7 and Okeechobee Blvd. The limited stop service will operate with mixed traffic in the curbside lane. This alternative would meet the FTA definition of a corridor-based BRT project. The proposed service plan will include headways of 15-minutes during the peak travel periods and a service span between 4:30 AM and 11:00 PM on weekdays.

Since this is a Limited Stop service, station stops spacing will not occur as frequent as existing fixed route bus service that operates along segment of Okeechobee Blvd. and SR 7. Transit signal priority investments will also occur to improve transit travel time which will also benefit traffic flow throughout the project limits.

Palm Tran routes (40 and 52) will remain in operation on segments of SR 7 and Okeechobee Blvd. with the same headways and stop locations as existing service.

Business Access and Transit (BAT) Curbside Lanes

Business Access and Transit lanes are expressly reserved for buses an allow limited access for non-transit vehicles. BAT lanes are often created by converting an existing curbside general purpose travel lane for transit use only. A BAT lane is typically distinguished with additional pavement markings identifying travel lanes as bus only. However, non-transit vehicles are allowed to access a BAT lane only when making a right-turn into or exiting from a driveway or side street.

According to FTA's definition, a BAT curbside lane is a form of fixed guideway BRT. The minimum peak hour service frequency for BRT is 10-minutes during the AM/PM peak and 15-minutes all other times. A minimum service span of 14 hours on weekdays and ten hours on weekends is also required by the FTA to be designated as BRT service. For the MCS evaluation, BRT service will have a service span of 18.5 hours.

Additionally, BRT service warrants a major capital investment in transit signal technology and passenger station amenities. For those guideway segments that are not exclusive, queue jumps, or signal priority are additional improvements for implementation to assure competitive transit travel times.

Curbside Dedicated-Lane BRT

The curbside dedicated lane provides for a fixed guideway BRT lane along the entire alignment as compared to the BAT lane alternative which may provide an exclusive lane separation for just over 50% of the alignment. Transit stops would be located on the adjacent curb in each direction.

The minimum peak hour service frequency for this BRT alternative is 10-minutes during the AM/PM peak travel periods and 15-minutes all other times. A minimum service span of 14 hours on weekdays and ten hours on weekends is also required. For the Okeechobee Blvd. & SR 7 MCS evaluation, Curbside Dedicated-Lane BRT would operate with a service span of 18.5 hours on weekdays.

Center-Platform Dedicated-Lane BRT

Center Platform Dedicated Lane BRT provides for a fully dedicated fixed guideway BRT along the entire alignment within the Okeechobee Blvd. & SR 7 MCS limits. Station locations would be located in the median with access provided by high emphasis crosswalks. The service frequency for this alternative will include 10-minutes during the AM/PM peak travel periods and 15-minutes all other times. For the Okeechobee Blvd. & SR 7 MCS evaluation, BRT service will have a service span of 18.5 hours.

Center-Platform Dedicated-Lane Light Rail Transit (LRT)

The proposed alternative would operate within an exclusive double tracked fixed guideway in the roadway median for the entire length of the alignment. Transit stations would also be located in the median with a center platform and with access provided by high emphasis crosswalks. The minimum peak hour service frequency for the LRT alternative is 10-minutes during the AM/PM peak travel periods and 15-minutes all other times. The LRT alternative will operate with an 18.5 hour service span.

Elevated Grade-Separated LRT

The elevated LRT alternative proposed for the Okeechobee Blvd. & SR 7 MCS project would be placed along the median for the entire alignment. The elevated exclusive fixed guideway would be double tracked. Stations also being elevated, would require vertical circulation for passenger access which could occur from each side of the roadway via an elevated walkway or from the median upon using a street level pedestrian crossing. The minimum peak hour service frequency for the elevated LRT alternative is 10-minute headways during the AM/PM peak travel periods and 15-minutes all other times. The LRT alternative will operate with an 18.5 hour service span.

Table 4: Okeechobee Blvd. & SR 7 MCS Project Alternative Service Plan Summary

Proposed Alternative	Peak Hour Headway (mins)	Off Peak Headway (mins)	Service Span (hours)	Service Span	Alignment Configuration
No Build	20	20	16.5	4:30AM – 9:00PM	Existing Service alignment in mixed traffic
Mixed Traffic bus w/Limited Stops	15	15	18.5	4:30AM – 11:00PM	Mixed Traffic
BAT Curbside Lane	10	15	18.5	4:30AM – 11:00PM	Exclusive Guideway that allows turning vehicles
Curbside Dedicated-lane BRT	10	15	18.5	4:30AM – 11:00PM	Exclusive Guideway that allows turning vehicles
Center Platform Dedicated BRT	10	15	18.5	4:30AM – 11:00PM	Dedicated Exclusive Guideway
Center Platform Dedicated-lane LRT	10	15	18.5	4:30AM – 11:00PM	Dedicated Exclusive Guideway
Elevated Grade Separated LRT	10	15	18.5	4:30AM – 11:00PM	Dedicated Exclusive Guideway

TRANSIT STATIONS

Three (3) types of transit stops are considered for the Okeechobee Blvd. & SR 7 MCS to include near-side, far-side, and median. It should be noted that roadway configuration, physical conditions, and availability of right-of-way may restrict the type of transit stop that can be feasibly implemented.

Near-Side Transit Stations

Near-side stations are located immediately before entering an intersection which allows passenger boarding and alighting to occur while a transit vehicle is stopped at a red light. A transit vehicle re-enters traffic during a green traffic light phase, once the intersection is clear of traffic. Near-side station stops allow passengers to board transit adjacent to a crosswalk, minimizing walk distances. During peak travel periods, transit vehicles that stop at near-side station may block the through lane approach to an intersection, potentially disrupting traffic flow.

Far-Side Transit Stations

Far-side stops are located immediately after an intersection, allowing transit to pass through an intersection and then stop to load and unload passengers. Far-side stops eliminate the potential for a bus to block and delay traffic on the approach to an intersection. Peak travel periods and congested conditions may cause buses and autos to queue into an intersection while waiting to access a bus stop.

Median Transit Stations

Median stations are located in the median adjacent to an intersection. Stations can be center platform or separate platforms for each direction. Since passengers must cross travel lanes to access a median station, intersection improvements are necessary to improve pedestrian safety and prioritize pedestrian movement while eliminating turn conflicts. Furthermore, each alternative will serve the same station stop location. However, the configuration of a station stop will differ according to mode and whether an alternative is operating in the median. Median or center running alignments would serve a center platform station that provides access to both directions of service. While curbside alignments will provide two (2) stations for each location identified – one (1) station for each direction of travel.

Proposed Transit Station Locations

The following intersection have been identified for potential station locations and are listed beginning in the western portion of the Okeechobee Blvd. & SR 7 MCS project limits. These stations are illustrated in Figure 4:

- Mall at Wellington Green
- Wellington Regional Medical Center
- Old Hammock Way
- Victoria Groves Blvd.
- Southern Blvd.
- Belvedere Road
- SR 7 at Okeechobee Blvd.
- Sansburys Way
- Benoist Farms Road
- Jog Road
- Meridian Road
- Haverhill Road
- Military Trail
- Palm Beach Lakes Blvd.
- Congress Ave.
- Tamarind Ave.
- Rosemary Ave.

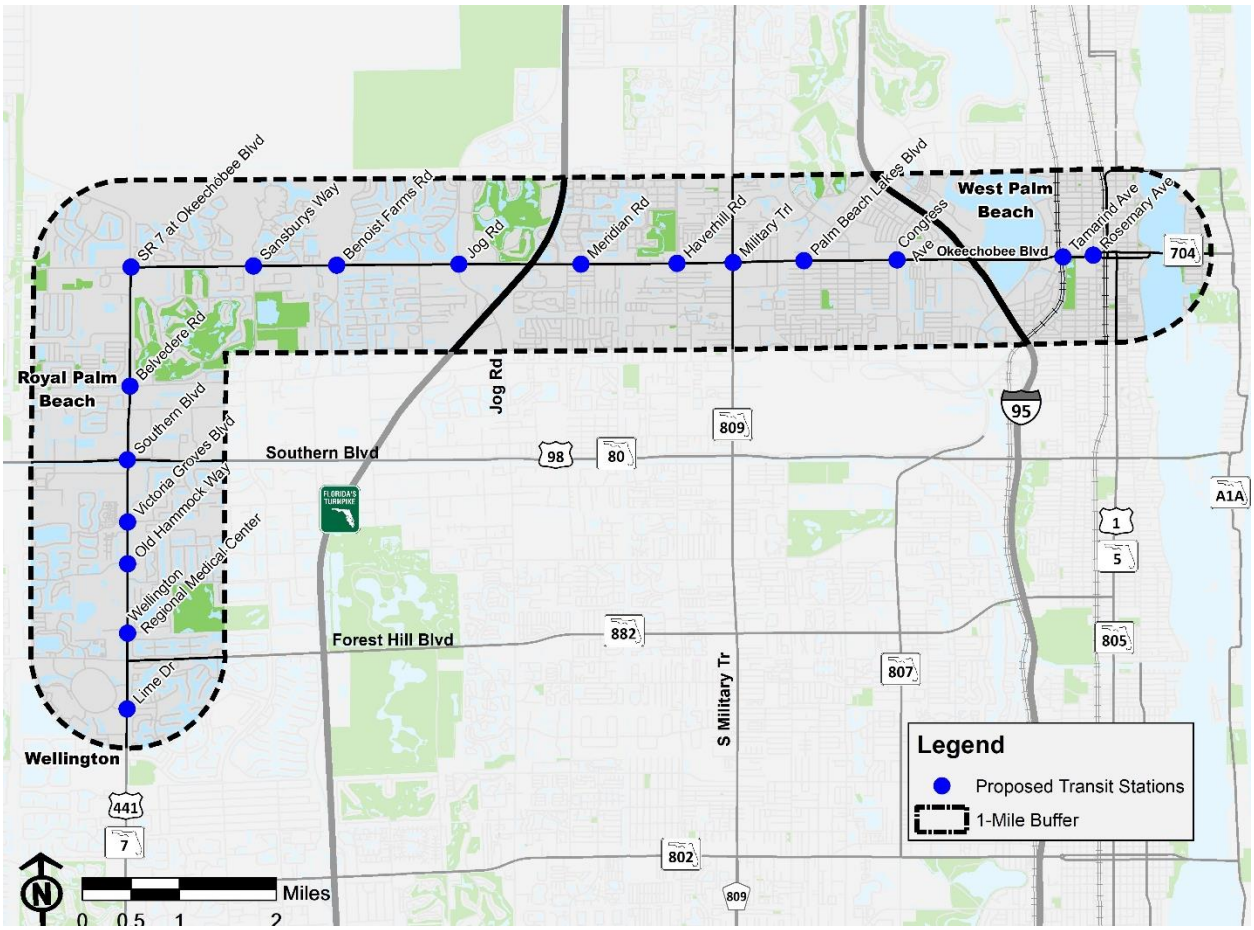


Figure 4. Proposed Transit Stations along Okeechobee Blvd. & SR 7 MCS

Table 5: Okeechobee Blvd. & SR 7 MCS Project Alternative Station Location Summary

		Proposed Station Stop Location	No Build (Existing Service)	Bus Limited Stop	Curbside BAT Lane	Curbside Dedicated-lane BRT	Center Platform Dedicated BRT	Center Platform Dedicated-lane LRT	Elevated Grade Separated LRT
1	SR 7	Lime Drive / Mall at Wellington Green	N/A						
2	SR 7	Regional Medical Center	N/A	NB – Far-side SB -- Far-side	NB – Far-side SB -- Far-side	NB – Far-side SB – Far-side	Median	Median	Median
3	SR 7	Old Hammock Way	N/A	NB – Far-side SB -- Far-side	NB – Far-side SB -- Far-side	NB – Far-side SB – Far-side	Median	Median	Median
4	SR 7	Victoria Groves Blvd.	N/A	NB – Far-side SB -- Far-side	NB – Far-side SB -- Far-side	NB – Far-side SB – Far-side	Median	Median	Median
5	SR 7	Southern Blvd.	N/A	NB – Far-side SB – Near-side	NB – Far-side SB – Near-side	NB – Far-side SB – Near-side	Median	Median	Median
6	SR 7	Belvedere Road	N/A	NB – Far-side SB – Near-side	NB – Far-side SB – Near-side	NB – Far-side SB – Near-side	Median	Median	Median
7	SR 7	Okeechobee Blvd.	N/A	EB – Far-side SB – Far-side	EB – Far-side SB – Far-side	EB – Far-side SB – Far-side	Median	Median	Median
8	Okeechobee Blvd.	Sansburys Way	N/A	EB – Far-side WB – Far-side	EB – Far-side WB – Far-side	EB – Far-side WB – Far-side	Median	Median	Median
9	Okeechobee Blvd.	Benoist Farms Rd	N/A	EB – Far-side WB – Far-side	EB – Far-side WB – Far-side	EB – Far-side WB – Far-side	Median	Median	Median
10	Okeechobee Blvd.	Jog Road	N/A	EB – Far-side WB – Far-side	EB – Far-side WB – Far-side	EB – Far-side WB – Far-side	Median	Median	Median
11	Okeechobee Blvd.	Meridian Road	N/A	EB – Far-side WB – Near-side	EB – Far-side WB – Near-side	EB – Far-side WB – Near-side	Median	Median	Median
12	Okeechobee Blvd.	Haverhill Road	N/A	EB – Far-side WB – Far-side	EB – Far-side WB – Far-side	EB – Far-side WB – Far-side	Median	Median	Median
13	Okeechobee Blvd.	Military Trail	N/A	EB – Far-side WB – Far-side	EB – Far-side WB – Far-side	EB – Far-side WB – Far-side	Median	Median	Median
14	Okeechobee Blvd.	Congress Avenue	N/A	EB – Far-side WB – Far-side	EB – Far-side WB – Far-side	EB – Far-side WB – Far-side	Median	Median	Median
15	Okeechobee Blvd.	Palm Beach Lakes Blvd.	N/A	EB – Far-side WB – Far-side	EB – Far-side WB – Far-side	EB – Far-side WB – Far-side	Median	Median	Median
16	Okeechobee Blvd.	Tamarind Ave.	N/A	EB – Far-side WB – Far-side	EB – Far-side WB – Far-side	EB – Far-side WB – Far-side	Median	Median	Median
17	Okeechobee Blvd.	Rosemary Ave.	N/A	EB – Far-side WB – Far-side	EB – Far-side WB – Far-side	EB – Far-side WB – Far-side	Median	Median	Median

RUNNING TIME / FLEET REQUIREMENTS

The Palm Beach Transportation Planning Agency (TPA) is the designated Metropolitan Planning Organization (MPO) serving all of Palm Beach County, Florida, and is comprised of a 21-member governing board and associated staff that maintains a long-range forecast of population, employment, and transportation projects and services that advance the regional vision. The TPA often coordinates and collectively works with Palm Tran, Palm Beach County's public transit operator. Palm Tran operates over 30 fixed routes, "Connection" paratransit service, and "GoGlades" demand response across the county.

The TPA has engaged a consultant team to conduct a planning study of the Okeechobee Blvd & SR 7 Multimodal Corridor Study (MCS). The study aims to review several transit alternatives, develop a ridership forecast, and ultimately recommend an alternative that provides safe, efficient, and connected facilities for all modes of travel along these corridors. The purpose of this memorandum is to document the methodology and develop running times utilized to forecast ridership for each transit alternative. Estimated peak vehicle requirements for each transit alternative are also provided.

TRANSIT ALTERNATIVE DEFINITIONS

A total of six (6) enhanced transit alternatives were evaluated for this effort. Palm Tran Route 43 currently operates along most of the corridor and serves as the No-Build/No Action alternative (Alternative 1). In addition to the no-build, four (4) bus alternatives and two (2) light rail transit (LRT) alternatives were investigated and are detailed below.

- Alternative 1: No Build/No Action (Palm Tran Route 43)
- Alternative 2: Mixed traffic bus with limited stops
- Alternative 3: Business access and transit (BAT) curbside lanes
- Alternative 4: Curbside dedicated-lane BRT
- Alternative 5: Center-platform dedicated-lane bus rapid transit (BRT)
- Alternative 6: Center-platform dedicated-lane LRT
- Alternative 7: Elevated grade-separated LRT

The no build (Alternative 1) follows the existing Palm Tran route 43 alignment. Alternatives 2 through 6 all follow a streamlined version of Palm Tran Route 43's alignment, via SR 7 and Okeechobee Blvd. Alternative 7 (Elevated grade-separated LRT) is not constrained to the street network. All alternatives are expected to serve the same station locations. The following describes each alternative's proposed operations. Maps of the no build and the proposed alternatives are shown in Figure 1 and additional details of operating assumptions for each alternative can be found in Appendix A.

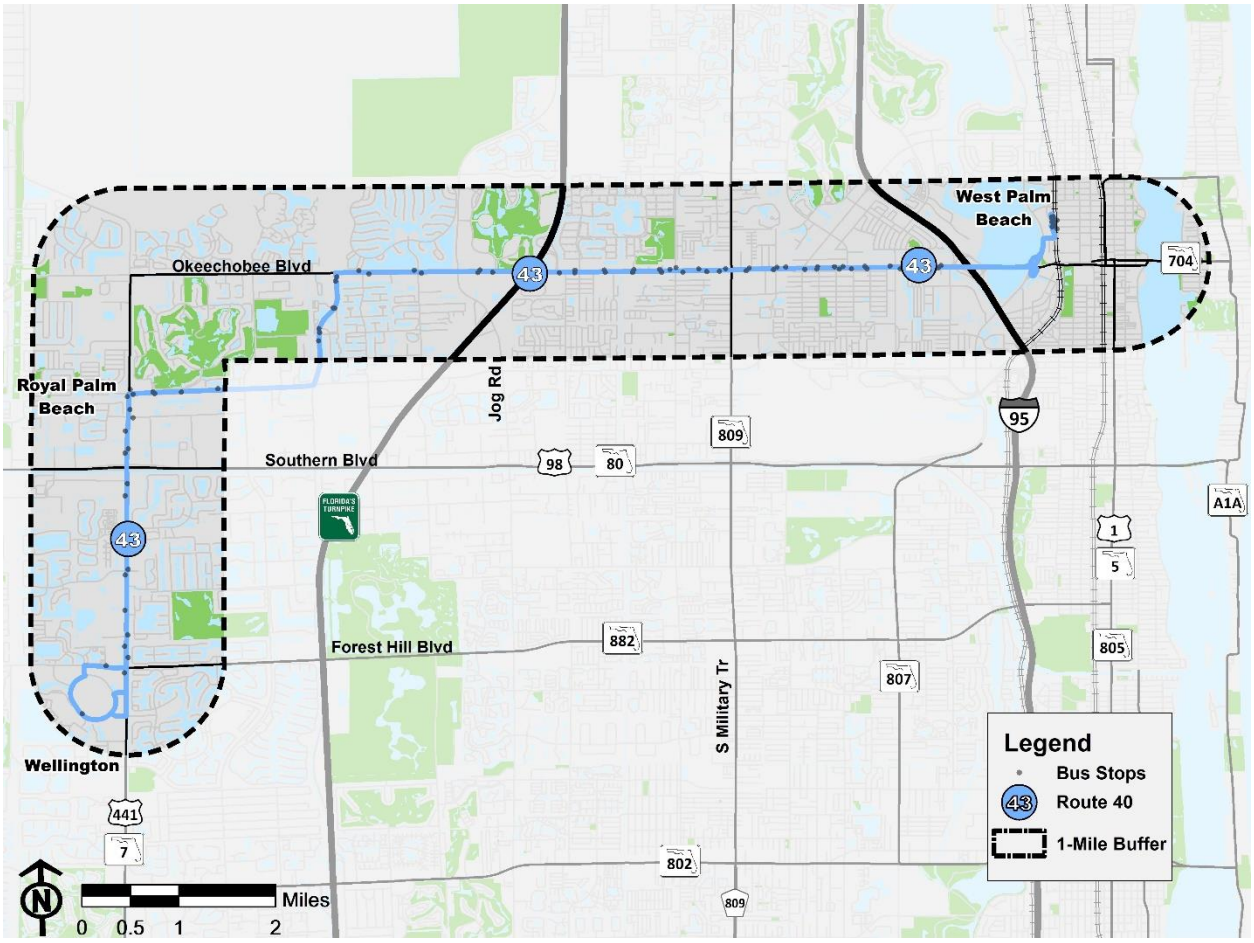


Figure 1. Existing Palm Tran Route 43

Alternative 1: No-Build/No Action (Existing Palm Tran Route 43)

Existing Palm Tran Route 43 serves as the no-build alternative. This route operates seven (7) days a week with 30-to-60-minute frequencies on weekdays and Saturdays, and 60-minute frequencies on Sundays between the Mall at Wellington Green in Wellington and the Intermodal Transit Center in the West Palm Beach. The weekday span of service is from 4:30 AM to 9:00 PM. This existing service operates in mixed traffic and achieves an average speed of approximately 16.5 mph. Palm Tran's Route Performance Maximization (RPM) study recommended an enhanced frequency for this service (20-minute frequency throughout most of the day) that was ultimately utilized in the ridership forecast model. The alignment for this alternative is shown in Figure 1.

Alternative 2: Mixed Traffic Bus with Limited Stops

Alternative 2 operates over the entire length of the study corridor, following the alignment shown in Figure 2. It is proposed to operate from 4:30 AM to 11:00 PM with 15-minute frequencies throughout the day. Alternative 2 operates a limited stop pattern in mixed traffic, only stopping at the stations identified on the map. No special treatments are applied to this alternative, and it achieves an average speed of 17.9 mph.

Alternative 3: Business Access and Transit (BAT) curbside lanes

Alternative 3 operates over the entire length of the study corridor, following the alignment shown in Figure 2. It is proposed to operate from 4:30 AM to 11:00 PM with 10-minute frequencies in the peaks and 15-minute frequencies in the off peak. Alternative 3 operates a limited stop pattern, only stopping at the stations identified on the map. Most of the alternative operates in curbside, business access and transit (BAT) lanes that are reserved for transit vehicles and right turning vehicles. In addition, transit signal priority (TSP) is applied to the entire corridor, and it achieves an average speed of 19.3 mph.

Alternative 4: Curbside dedicated-lane BRT

Alternative 4 operates over the entire length of the study corridor, following the alignment shown in Figure 2. It is proposed to operate from 4:30 AM to 11:00 PM with 10-minute frequencies in the peaks and 15-minute frequencies in the off peak. Alternative 4 operates a limited stop pattern, only stopping at the stations identified on the map. Most of the alternative operates in curbside, dedicated bus only lanes. TSP is applied to the entire corridor and queue jumps are anticipated at multiple intersections along the alignment. It achieves an average speed of 20.5 mph, which is slightly slower than the center-running alternative (Alternative 5) due to the greater opportunity for conflict in a curbside lane.

Alternative 5: Center-platform dedicated-lane Bus Rapid Transit (BRT)

Alternative 5 operates over the entire length of the study corridor, following the alignment shown in Figure 2. It is proposed to operate from 4:30 AM to 11:00 PM with 10-minute frequencies in the peaks and 15-minute frequencies in the off peak. Alternative 5 operates a limited stop pattern, only stopping at the stations identified on the map. Most of the alternative operates in center-running, dedicated bus only lanes. TSP is applied to the entire corridor, and it achieves an average speed of 20.8 mph.

Alternative 6: Center-platform dedicated-lane Light Rail Transit (LRT)

Alternative 6 operates a single consist, light rail vehicle over the entire length of the study corridor, following the alignment shown in Figure 2. It is proposed to operate from 4:30 AM to 11:00 PM with 10-minute frequencies in the peaks and 15-minute frequencies in the off peak. Alternative 6 operates a limited stop pattern, only stopping at the stations identified on the map.

Most of the alternative operates at grade, in center-running lane dedicated right of way. TSP is applied to the entire corridor, and it achieves an average speed of 22.1 mph.

Alternative 7: Elevated grade-separated LRT

Alternative 7 operates a single consist, light rail vehicle in elevated right of way over the entire length of the study corridor, following the alignment shown in Figure 2. It is proposed to operate from 4:30 AM to 11:00 PM with 10-minute frequencies in the peaks and 15-minute frequencies in the off peak. Alternative 7 operates a limited stop pattern, only stopping at the stations identified on the map. The alternative operates exclusively in its own, above grade, dedicated right of way, and achieves an average speed of 30.8 mph.

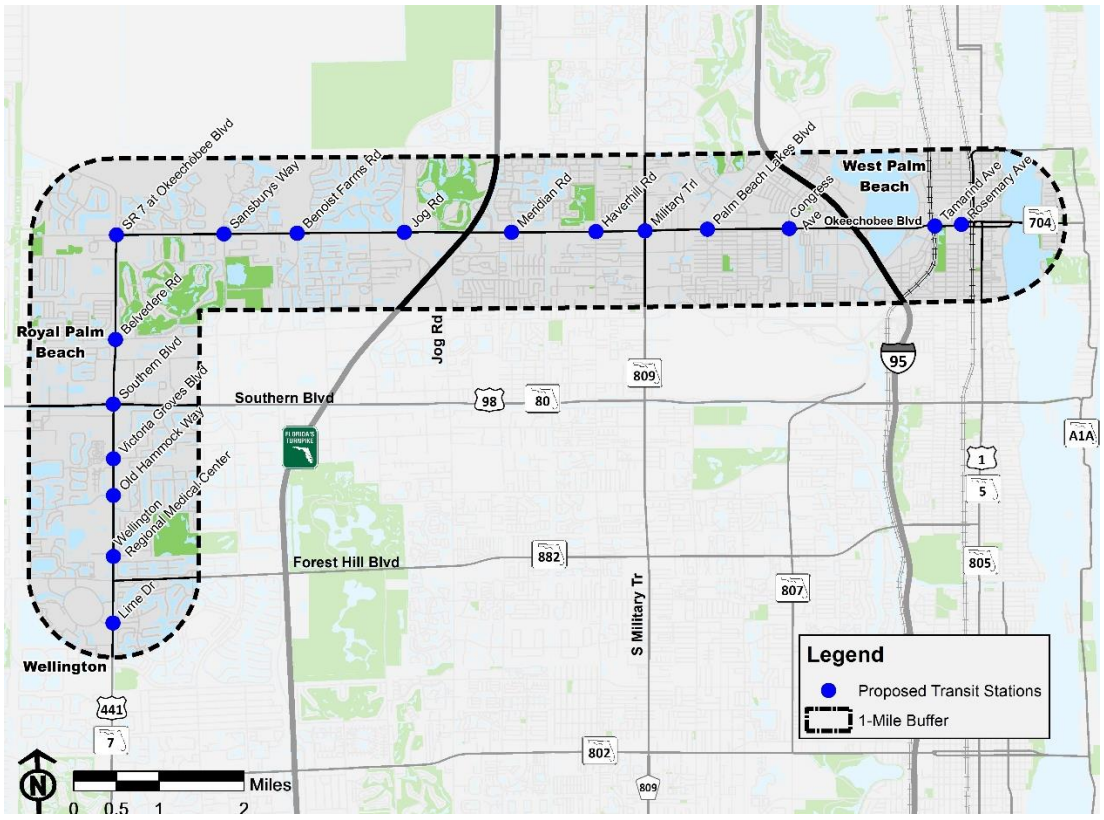


Figure 2. Proposed Alignment and General Station Locations

RUNNING TIME METHODOLOGY

Peak and off-peak running times were developed using CTG's detailed running time models. CTG's model develops station to station running times by direction for each transit alternative. Many data inputs are utilized in the model including industry standard acceleration and deceleration factors by mode, variations and adjustments for roadway and operational treatments (e.g., TSP, queue jumps, dedicated right-of-way, etc.), segment and intersection level of service (LOS), and delay and dwell assumptions. Roadway speeds and LOS data were obtained from the Florida Department of Transportation (FDOT) and Palm Beach County resources. For the elevated LRT alternative (Alternative 7), a conservative maximum speed of 55 mph was assumed. Intersection delay was assumed based on intersection class, intersection LOS, and roadway treatments.

Dwell time assumptions were based on anticipated station volumes related to existing Palm Tran ridership, land use potential, and the presence of off board fare collection. Additional details on assumptions can be found in Appendix C and Appendix D.

RUNNING TIME METHODOLOGY

All alternatives result in travel time savings over the No Build alternative during the peak period, with alternative 7 (Elevated LRT) showing the largest average one-way peak travel time savings of 23.8 min. Of the bus alternatives, alternative 5 (BRT – Center) showed the largest savings at 11.0 minutes. Alternative 4 (BRT – Curbside) is slightly slower than Alternative 5 and saves 10.5 minutes. A high-level overview of end to end running times for each alternative can be found in Table 1. Detailed, station to station running times can be found in Appendix E.

Table 1. End to end running times and peak vehicle requirements

	Alt 1: No Build	Alt 2: Limited Stop	Alt 3: BAT - Curbside	Alt 4: BRT- Curbside	Alt 5: BRT - Center	Alt 6: LRT - Center	Alt 7: Elevated LRT
EB Runtime (Peak)	52.0 min	46.6 min	43.2 min	40.6 min	40.1 min	37.7 min	27.2 min
WB Runtime (Peak)	50.0 min	46.5 min	43.1 min	40.5 min	39.9 min	37.6 min	27.2 min
Avg One Way Runtime (Peak)	51.0 min	46.5 min	43.1 min	40.5 min	40.0 min	37.7 min	27.2 min
Peak Vehicle Requirement	4	8	10	10	10	10	8
Total Vehicle Requirement (20% spare ratio)	5	10	12	12	12	12	10
Avg. One-Way Savings (Peak)	-	4.5 min	7.9 min	10.5 min	11.0 min	13.3 min	23.8 min
EB Runtime (Off-Peak)	47.0 min	42.5 min	38.7 min	38.3 min	37.6 min	35.3 min	26.2 min
WB Runtime (Off-Peak)	48.0 min	42.3 min	38.6 min	38.2 min	37.4 min	35.1 min	26.2 min
Avg One Way Runtime (Off-Peak)	47.5 min	42.4 min	38.7 min	38.2 min	37.5 min	35.2 min	26.2 min
Avg One-Way Savings (Off Peak)	-	5.1 min	8.8 min	10.0 min	9.3 min	12.3 min	21.3 min

Appendix A: Okeechobee Boulevard MCS Project Alternative Service Plan Summary

	Proposed Alternative	Peak Hour Headway (mins)	Off Peak Headway (mins)	Service Span (hours)	Service Span	Notes
Alt. 1	No Build/No Action (Palm Tran 43)	30	30	16.5	4:30AM – 9:00PM	Existing Service alignment in mixed traffic
Alt. 2	Mixed Traffic bus w/Limited Stops	15	15	18.5	4:30AM – 11:00PM	Mixed Traffic
Alt. 3	BAT Curbside Lane	10	15	18.5	4:30AM – 11:00PM	Exclusive Guideway that allows turning vehicles
Alt. 4	Curbside Dedicated-lane BRT	10	15	18.5	4:30AM – 11:00PM	Exclusive Guideway that allows turning vehicles
Alt. 5	Center Platform Dedicated BRT	10	15	18.5	4:30AM – 11:00PM	Dedicated Excusive Guideway
Alt. 6	Center Platform Dedicated-lane LRT	10	15	18.5	4:30AM – 11:00PM	Dedicated Excusive Guideway
Alt. 7	Elevated Grade Separated LRT	10	15	18.5	4:30AM – 11:00PM	Dedicated Exclusive Guideway

Appendix B: Okeechobee Boulevard MCS Project Alternative Station Location Summary

Proposed Station Stop Location	Alt 1: No Build	Alt 2: Limited Stop	Alt 3: BAT - Curbside	Alt 4: BRT- Curbside	Alt 5: BRT - Center	Alt 6: LRT - Center	Alt 7: Elevated LRT
Mall at Wellington Green	N/A	-	-	-	-	-	-
Wellington Regional Medical Center	N/A	SR 7 NB – Farside SR 7 SB -- Farside	SR 7 NB – Farside SR 7 SB -- Farside	SR 7 NB – Farside SR 7 SB – Farside	Median	Median	Median
Old Hammock Way / SR 7	N/A	SR 7 NB – Farside SR 7 SB -- Farside	SR 7 NB – Farside SR 7 SB -- Farside	SR 7 NB – Farside SR 7 SB – Farside	Median	Median	Median
Victoria Groves Boulevard / SR 7	N/A	SR 7 NB – Farside SR 7 SB -- Farside	SR 7 NB – Farside SR 7 SB -- Farside	SR 7 NB – Farside SR 7 SB – Farside	Median	Median	Median
Southern Boulevard / SR 7	N/A	SR 7 NB – Farside SR 7 SB -- Farside	SR 7 NB – Farside SR 7 SB -- Farside	SR 7 NB – Farside SR 7 SB -- Farside	Median	Median	Median
Belvedere Road / SR 7	N/A	SR 7 NB – Farside SR 7 SB – Nearside	SR 7 NB – Farside SR 7 SB – Nearside	SR 7 NB – Farside SR 7 SB – Nearside	Median	Median	Median
SR 7 / Okeechobee	N/A	Ok Blvd EB – Farside of SR 7/Ok Blvd SR 7 SB – Farside of Ok Blvd /SR 7	Ok Blvd EB – Farside of SR 7/Ok Blvd SR 7 SB – Farside of Ok Blvd /SR 7	Ok Blvd EB – Farside of SR 7/Ok Blvd SR 7 SB – Farside of Ok Blvd /SR 7	Median	Median	Median
Sansburys Way / Okeechobee	N/A	Ok Blvd EB – Farside Ok Blvd WB – Farside	Ok Blvd EB – Farside Ok Blvd WB – Farside	Ok Blvd EB – Farside Ok Blvd WB – Farside	Median	Median	Median

Proposed Station Stop Location	Alt 1: No Build	Alt 2: Limited Stop	Alt 3: BAT - Curbside	Alt 4: BRT- Curbside	Alt 5: BRT - Center	Alt 6: LRT - Center	Alt 7: Elevated LRT
Benoist Farms Rd / Okeechobee	N/A	Ok Blvd EB – Farside Ok Blvd WB – Farside	Ok Blvd EB – Farside Ok Blvd WB – Farside	Ok Blvd EB – Farside Ok Blvd WB – Farside	Median	Median	Median
Jog Road / Okeechobee	N/A	Ok Blvd EB – Farside Ok Blvd WB – Farside	Ok Blvd EB – Farside Ok Blvd WB – Farside	Ok Blvd EB – Farside Ok Blvd WB – Farside	Median	Median	Median
Meridian Road / Okeechobee	N/A	Ok Blvd EB – Farside Ok Blvd WB – Nearside	Ok Blvd EB – Farside Ok Blvd WB – Nearside	Ok Blvd EB – Farside Ok Blvd WB – Nearside	Median	Median	Median
Haverhill Road / Okeechobee	N/A	Ok Blvd EB – Farside Ok Blvd WB – Farside	Ok Blvd EB – Farside Ok Blvd WB – Farside	Ok Blvd EB – Farside Ok Blvd WB – Farside	Median	Median	Median
Military Trail / Okeechobee	N/A	Ok Blvd EB – Farside Ok Blvd WB – Farside	Ok Blvd EB – Farside Ok Blvd WB – Farside	Ok Blvd EB – Farside Ok Blvd WB – Farside	Median	Median	Median
Palm Beach Lakes Blvd	N/A	Ok Blvd EB – Farside Ok Blvd WB – Farside	Ok Blvd EB – Farside Ok Blvd WB – Farside	Ok Blvd EB – Farside Ok Blvd WB – Farside	Median	Median	Median
Congress Avenue / Okeechobee	N/A	Ok Blvd EB – Farside Ok Blvd WB – Farside	Ok Blvd EB – Farside Ok Blvd WB – Farside	Ok Blvd EB – Farside Ok Blvd WB – Farside	Median	Median	Median
Tamarind Ave / Okeechobee	N/A	Ok Blvd EB – Farside Ok Blvd WB – Farside	Ok Blvd EB – Farside Ok Blvd WB – Farside	Ok Blvd EB – Farside Ok Blvd WB – Farside	Median	Median	Median
Rosemary Ave / Okeechobee	N/A	Ok Blvd EB – Farside Ok Blvd WB – Farside	Ok Blvd EB – Farside Ok Blvd WB – Farside	Ok Blvd EB – Farside Ok Blvd WB – Farside	Median	Median	Median

Appendix C: Table of Assumptions: Alternatives

Alternatives		TSP	Queue Jumps		BAT Lanes	Dedicated ROW
			Eastbound	Westbound		
Alt 1	No Build/No Action - Existing Route 43	No	No	No	No	No
Alt 2	Mixed traffic with limited stops	No	No	No	No	No
Alt 3	BAT Curbside Lane	Yes. Entire Corridor	No	No	Yes. SR7/Lime to Okeechobee/ Tamarind (exc. WB from Baywinds to SR7)	No
Alt 4	Curbside dedicated-lane BRT	Yes. Entire Corridor	Yes. Okeechobee/ Sansburys Way, Okeechobee/Jog, Okeechobee/ Military Trail, SR7/Forest Hill, SR7/Belvedere	Yes. Okeechobee/ Tamarind, Okeechobee/ Military Trail, Okeechobee/Toll Plaza, Okeechobee/ Baywinds, SR7/Belvedere, SR7/Forest Hill	No	Yes
Alt 5	Center dedicated-lane BRT	Yes. Entire Corridor	No	No	No	Yes
Alt 6	Center dedicated-lane LRT	Yes. Entire Corridor	No	No	No	Yes
Alt 7	Elevated grade separated LRT	N/A	No	No	No	Yes*

**A conservative maximum speed of 55 mph was assumed*

Appendix D: Table of Assumptions: Intersections and Station

Intersections			
Name	Main Street	Cross Street	Class
SR 7 & Lime Drive	SR 7	Lime Drive Station (Mall at Wellington Green)	Class 2
SR 7 & Forest Hill Blvd	SR 7	Forest Hill Blvd	Class 1
SR 7 & Old Hammock Way	SR 7	Old Hammock Way Station	Class 2
SR 7 & Victoria Groves Blvd	SR 7	Victoria Groves Blvd Station	Class 2
SR 7 & Southern Blvd	SR 7	Southern Blvd Station	Class 1
SR 7 & Weisman Way	SR 7	Weisman Way	Class 2
SR 7 & Belvedere	SR 7	Belvedere Station	Class 2
SR 7 & Business Park Way	SR 7	Business Park Way	Class 3
SR 7 @ Regal Cinemas 18	SR 7	Regal Cinemas 18 @ SR 7	Class 3
SR 7 & Okeechobee	SR 7	Okeechobee Station	Class 1
Okeechobee & Flagler Pkwy	Okeechobee	Flagler Pkwy	Class 3
Okeechobee & Sansburys Way	Okeechobee	Sansburys Way Station	Class 2
Okeechobee & Andros Isle	Okeechobee	Andros Isle	Class 3
Okeechobee & Benoist Farms Rd	Okeechobee	Benoist Farms Rd Station	Class 2

Intersections			
Name	Main Street	Cross Street	Class
Okeechobee & Golden Lakes Blvd	Okeechobee	Golden Lakes Blvd	Class 3
Okeechobee & Skees Rd	Okeechobee	Skees Rd	Class 2
Okeechobee & Jog Rd	Okeechobee	Jog Rd Station	Class 1
Okeechobee & Vista Pkwy	Okeechobee	Vista Pkwy	Class 2
Okeechobee & Okeechobee Toll Plaza	Okeechobee	Okeechobee Toll Plaza	Class 1
Okeechobee & Meridian Rd	Okeechobee	Meridian Rd Station	Class 2
Okeechobee @ Palm Beach County Fire Station Signal	Okeechobee	Palm Beach County Fire Station Signal	Class 3
Okeechobee & Haverhill Rd	Okeechobee	Haverhill Rd Station	Class 1
Okeechobee & Military Trail	Okeechobee	Military Trail Station	Class 1
Okeechobee & Biscayne Blvd	Okeechobee	Biscayne Blvd	Class 3
Okeechobee & Indian Rd	Okeechobee	Indian Rd	Class 2
Okeechobee & Palm Beach Lakes Blvd	Okeechobee	Palm Beach Lakes Blvd Station	Class 2
Okeechobee & Spencer Dr	Okeechobee	Spencer Dr	Class 2
Okeechobee & Loxahatchee Dr	Okeechobee	Loxahatchee Dr	Class 3
Okeechobee & Congress Ave	Okeechobee	Congress Ave Station	Class 1

Intersections			
Name	Main Street	Cross Street	Class
Okeechobee & Church St	Okeechobee	Church St	Class 2
Okeechobee (West Side) & I-95	Okeechobee (West Side)	I-95	Class 2
Okeechobee (East Side) & I-95	Okeechobee (East Side)	I-95	Class 2
Okeechobee RRX @ Tamarind		Okeechobee RRX @ Tamarind	RRX
Okeechobee & Tamarind Ave	Okeechobee	Tamarind Ave	Class 2
Okeechobee & Sapodilla Ave	Okeechobee	Sapodilla Ave	Class 2
Okeechobee & Rosemary Square	Okeechobee	Rosemary Square Station	Class 2

**Road class assumptions were estimated to assist in projecting intersection delay.*

Stations			
Station Name	Main Road	Cross Street	Assumed Passenger Volume
Mall at Wellington Green	SR 7	Lime Drive	High
Wellington Regional Medical Center Station	SR 7	17th Street	Moderate
Old Hammock Way Station	SR 7	Old Hammock Way	Low
Victoria Groves Blvd Station	SR 7	Victoria Groves Blvd	Low

Stations			
Station Name	Main Road	Cross Street	Assumed Passenger Volume
Southern Blvd Station	SR 7	Southern Blvd	Moderate
Belvedere Station	SR 7	Belvedere	Moderate
Okeechobee Station	SR 7	Okeechobee	Moderate
Sansburys Way Station	Okeechobee	Sansburys Way	Low
Benoist Farms Rd Station	Okeechobee	Benoist Farms Rd	Low
Jog Rd Station	Okeechobee	Jog Rd	Moderate
Meridian Rd Station	Okeechobee	Meridian Rd	Moderate
Haverhill Rd Station	Okeechobee	Haverhill Rd	Moderate
Military Trail Station	Okeechobee	Military Trail	High
Palm Beach Lakes Blvd Station	Okeechobee	Palm Beach Lakes Blvd	Moderate
Congress Ave Station	Okeechobee	Congress Ave	Moderate
Tamarind Ave Station	Okeechobee	Tamarind Ave	Moderate
Okeechobee & Rosemary Square Station	Okeechobee	Rosemary Square	Moderate

**Estimates utilized to assist in determining dwell times only and are not reflective of ridership forecasting.*

Appendix E: Station to Station Running Times by Direction

Eastbound												
	Alt 2: Limited Stop		Alt 3: BAT - Curbside		Alt 4: BRT - Curbside		Alt 5: BRT - Center		Alt 6: LRT – At Grade		Alt 7: Elevated LRT	
Station	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak
Mall at Wellington Green Station	-	-	-	-	-	-	-	-	-	-	-	-
Wellington Regional Medical Center Station Station	0:04:46	0:04:19	0:04:33	0:04:04	0:04:15	0:04:01	0:04:19	0:04:02	0:04:24	0:04:07	0:02:21	0:02:16
Old Hammock Way Station	0:02:02	0:01:57	0:01:54	0:01:51	0:01:54	0:01:51	0:01:51	0:01:48	0:01:40	0:01:38	0:01:56	0:01:56
Victoria Groves Blvd Station	0:01:32	0:01:30	0:01:28	0:01:25	0:01:28	0:01:25	0:01:28	0:01:25	0:01:18	0:01:15	0:01:02	0:01:02
Southern Blvd Station	0:02:20	0:02:01	0:02:11	0:01:52	0:02:00	0:01:52	0:01:58	0:01:50	0:01:48	0:01:40	0:01:20	0:01:15
Belvedere Station	0:02:35	0:02:15	0:02:25	0:02:03	0:02:08	0:02:00	0:02:12	0:02:02	0:02:01	0:01:51	0:01:29	0:01:24
Okeechobee Station	0:03:41	0:03:16	0:03:22	0:02:56	0:03:08	0:02:56	0:03:02	0:02:50	0:02:51	0:02:39	0:02:22	0:02:17
Sansburys Way Station	0:02:52	0:02:43	0:02:38	0:02:30	0:02:30	0:02:28	0:02:29	0:02:25	0:02:19	0:02:14	0:02:25	0:02:25
Benoist Farms Rd Station	0:02:17	0:02:12	0:02:07	0:02:01	0:02:06	0:02:01	0:02:03	0:01:59	0:01:53	0:01:49	0:01:25	0:01:25

Eastbound												
	Alt 2: Limited Stop		Alt 3: BAT - Curbside		Alt 4: BRT - Curbside		Alt 5: BRT - Center		Alt 6: LRT – At Grade		Alt 7: Elevated LRT	
Station	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak
Jog Rd Station	0:03:38	0:03:13	0:03:19	0:02:53	0:03:00	0:02:50	0:03:00	0:02:48	0:02:51	0:02:38	0:01:52	0:01:47
Meridian Rd Station	0:03:43	0:03:20	0:03:23	0:02:57	0:03:10	0:02:57	0:03:05	0:02:52	0:02:54	0:02:41	0:01:53	0:01:48
Haverhill Rd Station	0:03:01	0:02:41	0:02:46	0:02:26	0:02:36	0:02:26	0:02:31	0:02:21	0:02:22	0:02:12	0:01:36	0:01:31
Military Trail Station	0:02:19	0:02:07	0:02:11	0:01:58	0:01:50	0:01:45	0:01:54	0:01:46	0:01:46	0:01:38	0:01:19	0:01:14
Palm Beach Lakes Blvd Station	0:02:33	0:02:24	0:02:21	0:02:09	0:02:21	0:02:09	0:02:17	0:02:05	0:02:09	0:01:57	0:01:22	0:01:17
Congress Ave Station	0:03:16	0:02:56	0:03:00	0:02:37	0:02:50	0:02:37	0:02:45	0:02:32	0:02:35	0:02:22	0:01:34	0:01:29
Tamarind Ave Station	0:04:52	0:04:28	0:04:24	0:03:59	0:04:14	0:03:59	0:04:03	0:03:48	0:03:53	0:03:38	0:02:19	0:02:14
Okeechobee & Rosemary Square Station	0:01:10	0:01:08	0:01:08	0:01:03	0:01:08	0:01:03	0:01:08	0:01:03	0:01:02	0:00:56	0:00:56	0:00:51
Total:	0:46:37	0:42:30	0:43:10	0:38:44	0:40:35	0:38:20	0:40:05	0:37:36	0:37:44	0:35:15	0:27:11	0:26:11
Savings:	0:05:23	0:07:30	0:08:50	0:11:16	0:11:25	0:11:40	0:11:55	0:12:24	0:14:16	0:14:45	0:24:49	0:23:49

Westbound												
	Alt 2: Limited Stop		Alt 3: BAT - Curbside		Alt 4: BRT-Curbside		Alt 5: BRT - Center		Alt 6: LRT – At Grade		Alt 7: Elevated LRT	
Station/Location	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak
Okeechobee & Rosemary Square Station	-	-	-	-	-	-	-	-	-	-	-	-
Tamarind Ave Station	0:01:52	0:01:36	0:01:47	0:01:26	0:01:32	0:01:23	0:01:37	0:01:26	0:01:32	0:01:19	0:00:56	0:00:51
Congress Ave Station	0:05:04	0:04:40	0:04:34	0:04:09	0:04:25	0:04:09	0:04:15	0:03:59	0:04:04	0:03:48	0:02:19	0:02:14
Palm Beach Lakes Blvd Station	0:02:54	0:02:44	0:02:39	0:02:27	0:02:39	0:02:27	0:02:34	0:02:22	0:02:25	0:02:13	0:01:34	0:01:29
Military Trail Station	0:03:07	0:02:54	0:02:53	0:02:35	0:02:31	0:02:22	0:02:33	0:02:21	0:02:25	0:02:13	0:00:00	0:00:00
Haverhill Rd Station	0:02:09	0:01:52	0:02:01	0:01:43	0:01:51	0:01:43	0:01:49	0:01:41	0:01:41	0:01:33	0:01:27	0:01:22
Meridian Rd Station	0:02:48	0:02:29	0:02:35	0:02:16	0:02:25	0:02:16	0:02:21	0:02:11	0:02:11	0:02:02	0:01:14	0:01:09
Jog Rd Station	0:03:56	0:03:31	0:03:32	0:03:06	0:03:14	0:03:03	0:03:16	0:03:02	0:03:05	0:02:52	0:01:36	0:01:31
Benoist Farms Rd Station	0:03:09	0:03:00	0:02:53	0:02:43	0:02:50	0:02:43	0:02:45	0:02:38	0:02:35	0:02:28	0:01:53	0:01:48
Sansburys Way Station	0:02:18	0:02:12	0:02:07	0:02:01	0:02:06	0:02:01	0:02:04	0:01:59	0:01:53	0:01:48	0:03:12	0:03:12

Westbound												
	Alt 2: Limited Stop		Alt 3: BAT - Curbside		Alt 4: BRT-Curbside		Alt 5: BRT - Center		Alt 6: LRT – At Grade		Alt 7: Elevated LRT	
Station/Location	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak
Okeechobee Station	0:03:21	0:02:56	0:03:11	0:02:43	0:02:57	0:02:41	0:02:45	0:02:35	0:02:36	0:02:26	0:02:30	0:02:25
Belvedere Station	0:03:29	0:03:04	0:03:13	0:02:47	0:02:53	0:02:45	0:02:53	0:02:41	0:02:43	0:02:31	0:02:22	0:02:17
Southern Blvd Station	0:02:48	0:02:28	0:02:35	0:02:13	0:02:23	0:02:13	0:02:21	0:02:11	0:02:12	0:02:02	0:01:29	0:01:24
Victoria Groves Blvd Station	0:01:52	0:01:48	0:01:45	0:01:42	0:01:44	0:01:42	0:01:43	0:01:40	0:01:32	0:01:30	0:01:15	0:01:15
Old Hammock Way Station	0:01:32	0:01:30	0:01:28	0:01:25	0:01:28	0:01:25	0:01:28	0:01:25	0:01:17	0:01:15	0:01:02	0:01:02
Wellington Regional Medical Center Station	0:01:59	0:01:39	0:01:54	0:01:38	0:01:43	0:01:38	0:01:40	0:01:35	0:01:30	0:01:25	0:02:01	0:01:56
Mall at Wellington Green Station	0:04:09	0:03:57	0:03:55	0:03:42	0:03:48	0:03:39	0:03:53	0:03:40	0:03:55	0:03:42	0:02:21	0:02:16
Total:	0:46:27	0:42:20	0:43:04	0:38:36	0:40:29	0:38:10	0:39:54	0:37:26	0:37:38	0:35:07	0:27:11	0:26:11
Savings:	0:03:33	0:06:40	0:06:56	0:10:24	0:09:31	0:10:50	0:10:06	0:11:34	0:12:22	0:13:53	0:22:49	0:22:49

RIDERSHIP FORECAST

The Palm Beach Transportation Planning Agency (TPA) is the designated Metropolitan Planning Organization (MPO) serving all of Palm Beach County, Florida, and is comprised of a 21-member governing board and associated staff that maintains a long-range forecast of population, employment, and transportation projects and services that advance the regional vision. The TPA often coordinates and collectively works with Palm Tran, Palm Beach County's public transit operator. Palm Tran operates over 30 fixed routes, "Connection" paratransit service, and "GoGlades" demand response across the county.

The TPA has engaged a consultant team to conduct a planning study of the Okeechobee Blvd & SR 7 Multimodal Corridor Study (MCS). The study aims to review several transit alternatives, develop a ridership forecast, and ultimately recommend an alternative that provides safe, efficient, and connected facilities for all modes of travel along these corridors. The purpose of this memorandum is to document the methodology and estimated forecast ridership for each transit alternative.

TRANSIT ALTERNATIVES DEFINITION

A total of seven (7) enhanced transit alternatives were evaluated for this effort. Palm Tran Route 43 currently operates along most of the corridor and serves as the No-Build/No Action alternative (Alternative 1). In addition to the no-build, four (4) bus alternatives and two (2) light rail transit (LRT) alternatives were investigated and are detailed below.

- Alternative 1: No Build/No Action (Palm Tran Route 43)
- Alternative 2: Mixed traffic bus with limited stops
- Alternative 3: Business access and transit (BAT) curbside lanes
- Alternative 4: Curbside dedicated-lane bus rapid transit (BRT)
- Alternative 5: Center-platform dedicated-lane BRT
- Alternative 6: Center-platform dedicated-lane LRT
- Alternative 7: Elevated grade-separated LRT

The no build (Alternative 1) follows the existing Palm Tran route 43 alignment. Alternatives 2 through 6 all follow a streamlined version of Palm Tran Route 43's alignment, via SR 7 and Okeechobee Blvd. Alternative 7 (Elevated grade-separated LRT) is not constrained to the street network.

All alternatives are expected to serve the same 17 station locations (Figure 1). Two park-and ride lots are assumed for the project to be located in the vicinity of Okeechobee Blvd & SR 7 and near the Wellington Mall.

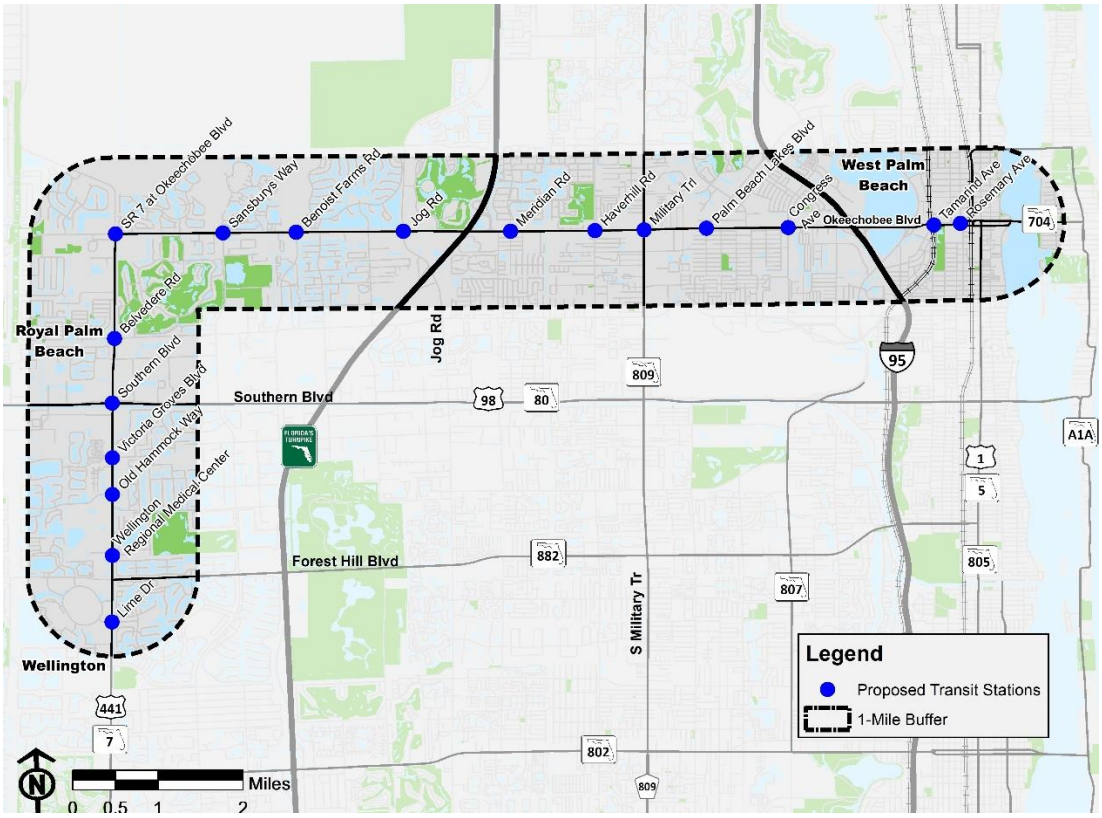


Figure 1. Proposed Station Locations

ESTIMATED RIDERSHIP RESULTS

The Federal Transit Administration (FTA) Simplified Trips-on-Project Software (STOPS) was applied to estimate potential ridership for the Okeechobee Blvd & SR 7 MCS transit alternatives. The STOPS model calibration year was 2015 to include the 2015 transit on-board survey and ridership levels. January 2020 transit network service levels (pre-COVID) were applied as the basis for evaluating the No-Build and Build Alternatives.

The No Build Network includes the existing Route 43 alignment to include a headway of 20 minutes.

The Build Network includes Route 43 with a 60-minute headway included for each build alternative. The mixed traffic bus alternative would operate at a 15-minute headway for peak and off-peak. While all other build alternatives operate on a 10-minute peak and 15-minute off-peak headway.

Table 1 presents the estimated ridership for each of the proposed build alternatives. The LRT alternatives attract the highest level of estimated ridership due to their exclusive guideway running time.

Table 1. Proposed Alternative Estimated Ridership

Proposed Alternative	Project Headway (peak/mid-day)	Route 43 Headway (peak/mid-day)	Total Corridor Boardings
No Build	N/A	20/20	3,200
Mixed Traffic bus w/Limited Stops	15/15	60/60	2,800-3,400
BAT Curbside Lane	10/15	60/60	3,200-3,800
Curbside Dedicated-lane BRT	10/15	60/60	3,900-5,400
Center Platform Dedicated BRT	10/15	60/60	4,300-6,000
Center Platform Dedicated-lane LRT	10/15	60/60	6,300-8,600
Elevated Grade Separated LRT	10/15	60/60	8,600-10,300

Station Level Activities

The proposed station locations with the highest passenger boarding/alighting activity include Military Trail, Rosemary Avenue, Congress Avenue, Meridian Road and Jog Road. Additionally, high transfer stations are identified at Rosemary Avenue, Military Trail and Plam Beach Lakes Boulevard.

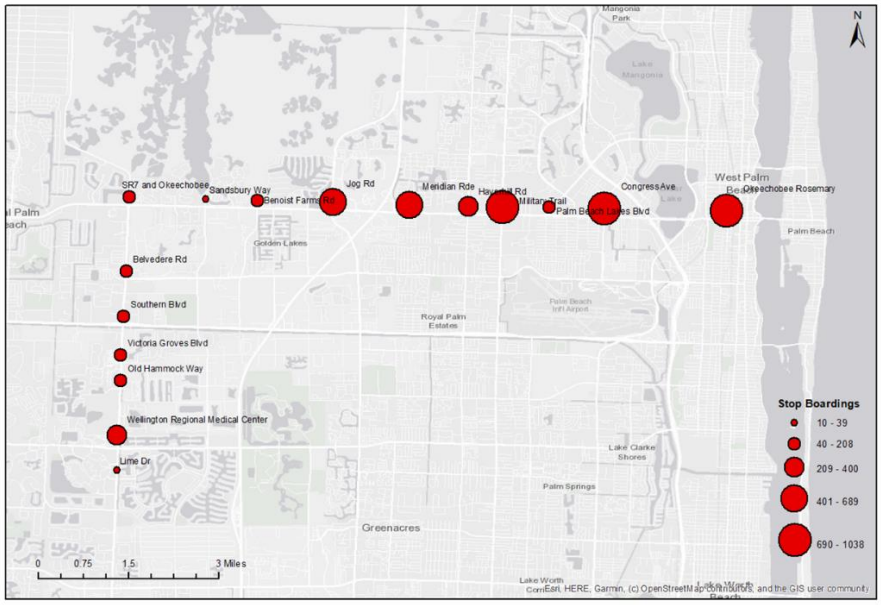


Figure 2. 2045 Station Boardings

OPERATIONS & MAINTENANCE COSTS

This methodology report describes the process developed to estimate operating and maintenance (O&M) cost estimates for two (2) transit technology alternatives evaluated for the Okeechobee Blvd. & SR 7 Multimodal Corridor Study (MCS): Bus and Light Rail Transit (LRT). The preparation of O&M estimates for the Okeechobee Blvd. & SR 7 MCS is based upon the resource build-up approach which is consistent with Federal Transit Administration (FTA) guidance for O&M cost estimation for projects seeking Capital Investment Grant (New Starts/Small Starts) funding.

The document provides an overview of the cost estimating process and describes the data needs and processes that are applied to develop O&M cost estimates for each transit technology.

O&M Estimate Methodology

The development of O&M cost estimates for the Okeechobee Blvd. & SR 7 MCS project alternatives is based upon available O&M cost data as reported to the FTA for inclusion in the National Transit Database (NTD). From this data, four (4) unit cost factors are determined which include cost per vehicle revenue hour, cost per vehicle mile, cost per vehicle required in maximum service (peak vehicles), and cost per guideway or track mile.

The O&M cost for each alternative is then calculated by multiplying each cost factor by the estimated future values of that variable for each alternative and adding the result for each variable together to generate the total future O&M cost, as shown in Figure 1.

Estimated Future Revenue Vehicle Hours	X	Revenue Vehicle Hour Cost Factor	=	Estimated O&M Costs associated with Revenue Vehicle Hours
Estimated Future Revenue Vehicle Miles	X	Revenue Vehicle Mile Cost Miles	=	Estimated O&M Costs associated with Revenue Vehicle Miles
Estimated Future Vehicles Required in Maximum Service	X	Vehicles Required in Maximum Service Cost Factor	=	Estimated O&M Costs associated with Vehicles Required in Maximum Service
Estimated Future Guideway Miles	X	Guideway Miles Cost Factor	=	Estimated O&M Costs associated with Guideway Miles
				Total Estimated O&M Costs

Figure 1. O&M Cost Estimation Calculation

O&M Unit Cost Factors

The most recent NTD submissions (2019) were used to develop unit cost factors to estimate the O&M costs for each of the two (2) transit technologies. The four-unit cost factors help estimate the proposed total O&M costs for each of the proposed transit technologies for the Okeechobee Blvd. & SR 7 MCS.

Unit Cost Factors – Bus/BRT Alternatives

Costs estimates for the each of the proposed bus alternatives were derived from Palm Tran's most recently available O&M cost data from the FTA NTD. Unit costs are calculated by dividing the line-item expense by the value of the supply variable. The supply variables correspond to the number of revenue vehicle hours and revenue vehicle miles of service and the number of peak vehicles operated in maximum service. *Table 1* presents the line-item assignments and cost drivers for bus. Table 2 provides the line-item unit costs as determined from the specific supply variable as reported to the FTA NTD for 2019.

Table 1: Assignment of O&M Expenses / Key Variable for Bus

	Revenue Hours	Revenue Miles	Peak Vehicles
Vehicle Operations Labor			
Operator Salaries and Wages	X		
Other Salaries and Wages	X		
Fringe Benefits	X		
Services	X		
Vehicle Operations Materials and Supplies			
Fuel and Lubricants		X	
Tires and Tubes		X	
Other Materials/Supplies		X	
Utilities		X	
Casualty and Liability		X	
Taxes			X
Miscellaneous			X
Expense Transfers			X
Vehicle Maintenance Labor			
Other Salaries and Wages		X	
Fringe Benefits		X	
Services		X	
Vehicle Maintenance Materials and Supplies			
Fuel and Lubricants		X	
Tires and Tubes		X	
Other Materials/Supplies		X	
Utilities		X	

	Revenue Hours	Revenue Miles	Peak Vehicles
Casualty and Liability		X	
Taxes			X
Miscellaneous		X	
Expense Transfers			X
Non-Vehicle Maintenance Labor			
Other Salaries and Wages			X
Fringe Benefits			X
Services			X
Non-Vehicle Maintenance Materials and Supplies			
Fuel and Lubricants			
Tires and Tubes			
Other Materials/Supplies			X
Utilities			
Casualty and Liability		X	
Taxes			
Miscellaneous			
Expense Transfers			
General Administration			
Other Salaries and Wages			X
Fringe Benefits			X
Services			X
Fuel and Lubricants			X
Tires and Tubes			X
Other Materials/Supplies			X
Utilities			X
Casualty and Liability		X	
Taxes			X
Miscellaneous			X
Expense Transfers			X

Table 2: Assignment of O&M Expenses for Bus (Palm Tran 2019 NTD)

	Annual Expense (2019)	Revenue Hours Unit Cost	Revenue Miles Unit Cost	Peak Vehicles Unit Cost	Supply Value	Variable
Vehicle Operations Labor						
Operator Salaries and Wages	$14,918,848	$29.38			507,726	Revenue Hours
Other Salaries and Wages	$4,618,134	$9.10			507,726	Revenue Hours
Fringe Benefits	$10,456,832	$20.60			507,726	Revenue Hours
Services	$737,340	$1.45			507,726	Revenue Hours
Vehicle Operations Materials and Supplies						
Fuel and Lubricants	$5,063,190		$0.70		7,207,289	Revenue Miles
Tires and Tubes	$749,038		$0.10		7,207,289	Revenue Miles
Other Materials/Supplies	$13,260		$0.00		7,207,289	Revenue Miles
Utilities	$0		$0.00		Kw/hr	
Casualty and Liability	$0		$0.00		7,207,289	Revenue Miles
Taxes	$0				118	Peak Vehicles
Miscellaneous	$25,275			$214.19	118	Peak Vehicles
Expense Transfers	$0			$0.00	118	Peak Vehicles
Vehicle Maintenance Labor						
Other Salaries and Wages	$5,621,892		$0.78		7,207,289	Revenue Miles
Fringe Benefits	$2,630,552		$0.36		7,207,289	Revenue Miles
Services	$973,009		$0.14		7,207,289	Revenue Miles
Vehicle Maintenance Materials and Supplies						
Fuel and Lubricants	$106,268		$0.01		7,207,289	Revenue Miles
Tires and Tubes	$15,286		$0.00		7,207,289	Revenue Miles
Other Materials and Supplies	$3,429,295		$0.48		7,207,289	Revenue Miles
Utilities	$0				7,207,289	Revenue Miles

	Annual Expense (2019)	Revenue Hours Unit Cost	Revenue Miles Unit Cost	Peak Vehicles Unit Cost	Supply Value	Variable
Casualty & Liability	$0				7,207,289	Revenue Miles
Taxes	$0				118	Peak Vehicles
Miscellaneous	$9,358		$0.00		7,207,289	Revenue Miles
Expense Transfer	$0				118	Peak Vehicles
Non-Vehicle Maintenance Labor						
Other Salaries and Wages	$251,612			$2,132.31	118	Peak Vehicles
Fringe Benefits	$120,585			$1,021.91	118	Peak Vehicles
Services	$606,359			$5,138.64	118	Peak Vehicles
Non-Vehicle Maintenance Materials & Supplies						
Fuel and Lubricants	$0.00					Guideway Miles
Tires and Tubes	$0.00					Guideway Miles
Other Materials and Supplies	$12,677			$107.43	118	Peak Vehicles
Utilities	$0.00					Guideway Miles
Casualty & Liability	$0.00				7,207,289	Revenue Miles
Taxes	$0.00					Guideway Miles
Miscellaneous	$0.00					Guideway Miles
Expense Transfer	$0.00					Guideway Miles
General Administration						
Other Salaries and Wages	$5,513,025			$46,720.55	118	Peak Vehicles
Fringe Benefits	$2,892,266			$24,510.73	118	Peak Vehicles
Services	$2,262,278			$19,171.85	118	Peak Vehicles
Fuel and Lubricants	$0.00				118	Peak Vehicles
Tires and Tubes	$0.00				118	Peak Vehicles
Other Materials and Supplies	$300,251			$2,544.50	118	Peak Vehicles

	Annual Expense (2019)	Revenue Hours Unit Cost	Revenue Miles Unit Cost	Peak Vehicles Unit Cost	Supply Value	Variable
Utilities	$529,335			$4,485.89	118	Peak Vehicles
Casualty and Liability	$565,002		$0.08		7,207,289	Revenue Miles
Taxes	$0.00				118	Peak Vehicles
Miscellaneous Expense	$261,705			$2,217.84	118	Peak Vehicles
Expense Transfers	$0.00				118	Peak Vehicles

The unit costs are the sum of the line-item costs listed for each of the three (3) columns as presented in Table 2 – revenue hours, revenue miles and peak vehicles. The total unit cost values are applied against an adjustment factor to escalate to 2021 dollars based on the Bureau of Labor Statistics Consumer Price Index using the Inflation calculator on https://www.bls.gov/bls/inflation site. At present, the model illustrates an adjustment of 9 percent; the actual index at the time of the O&M cost calculation is being applied.

The calculated unit costs for bus are presented in *Table 3*.

Table 3: O&M Unit Costs for Bus

Cost per Revenue Hour	Cost per Revenue Mile	Cost per Peak Vehicle
$65.97	$2.90	$118,009.76

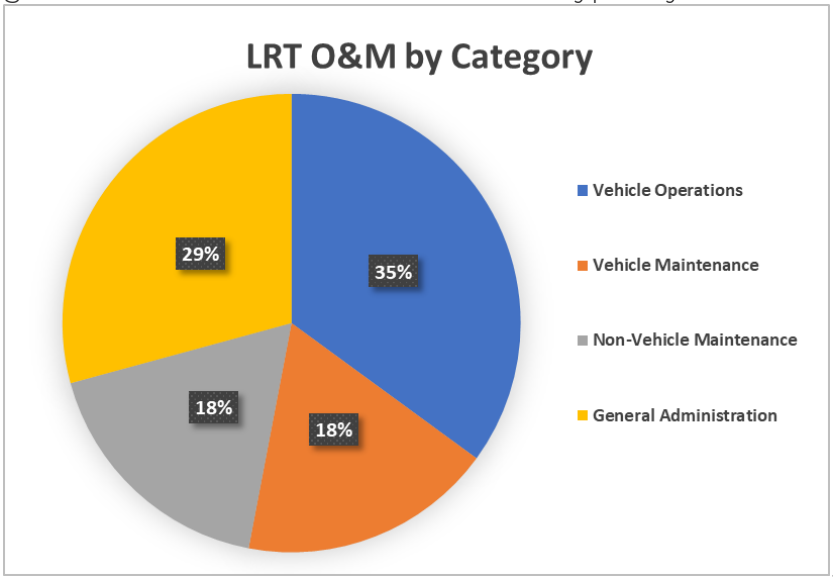
Unit Cost Factors – Light Rail Transit Alternatives

As LRT technology is not currently operated by Palm Tran an alternate approach to estimate O&M costs was applied. Substitute O&M cost factors were used and based upon expense data from a number of existing LRT operations throughout the U.S. The FTA data maintained in the NTD was used to determine cost and efficiency characteristics for the LRT mode. Cost characteristics for seven (7) LRT operations were analyzed to establish the cost by category for the Okeechobee Blvd. & SR 7 MCS LRT alternatives.

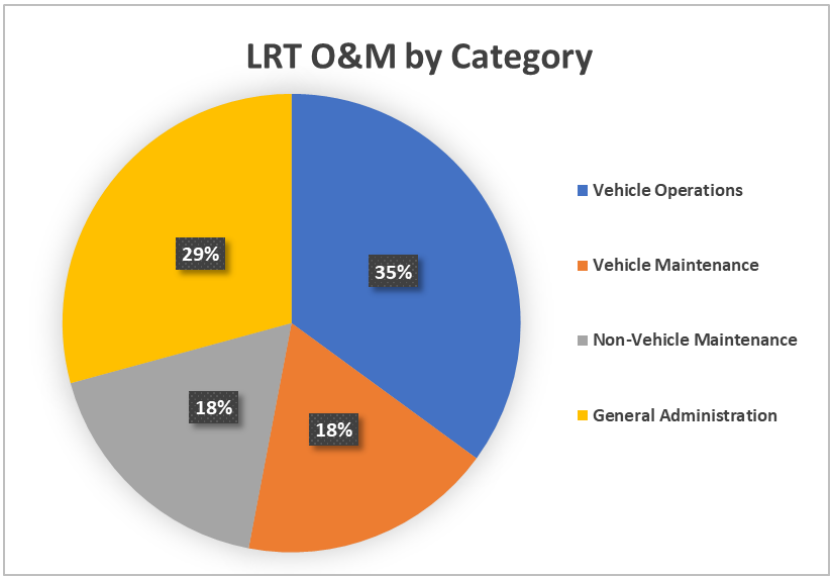
The LRT systems referenced in the analysis include:

- Valley Metro Rail, Inc, (AZ)
- Metro Transit (MN)
- San Diego Metropolitan Transit System (CA)
- Denver Regional Transportation District (CO)
- Massachusetts Bay Transportation Authority (MA)
- Charlotte Area Transit (NC)
- Metropolitan Transit Authority Harris County (TX)

O&M costs for vehicle operations, vehicle maintenance, non-vehicle maintenance and general administration are typically distributed as shown in



. Approximately 35 percent of the O&M costs are attributable to transit operations, which represents the largest part of annual O&M expenditures. This is followed by general administration at 23 percent, and vehicle maintenance and non-vehicle maintenance at approximately 18 percent each.



Source: National Transit Database, 2019

Figure 2. O&M Cost Distribution – Selected U.S. LRT Systems

The LRT cost model uses the resource build-up approach favored by FTA. *Table 4* lists the line-item assignments and cost drivers for LRT.

Table 4: O&M Expenses / Key Variables for LRT

	Revenue Hours	Revenue Miles	Peak Vehicles	Guideway Miles
Vehicle Operations Labor				
Operator Salaries and Wages	X			
Other Salaries and Wages	X			
Fringe Benefits	X			
Services	X			
Vehicle Operations Materials and Supplies				
Fuel and Lubricants		X		
Tires and Tubes		X		
Other Materials/Supplies		X		
Utilities		X		
Casualty and Liability		X		
Taxes			X	
Miscellaneous			X	
Expense Transfers			X	
Vehicle Maintenance Labor				
Other Salaries and Wages		X		
Fringe Benefits		X		
Services		X		
Vehicle Maintenance Materials and Supplies				

	Revenue Hours	Revenue Miles	Peak Vehicles	Guideway Miles
Fuel and Lubricants		X		
Tires and Tubes		X		
Other Materials/Supplies		X		
Utilities		X		
Casualty and Liability		X		
Taxes			X	
Miscellaneous		X		
Expense Transfers			X	
Non-Vehicle Maintenance Labor				
Other Salaries and Wages				X
Fringe Benefits				X
Services				X
Non-Vehicle Maintenance Materials and Supplies				
Fuel and Lubricants				X
Tires and Tubes				X
Other Materials/Supplies				X
Utilities				X
Casualty and Liability		X		
Taxes				X
Miscellaneous				X
Expense Transfers				X
General Administration				
Other Salaries and Wages			X	
Fringe Benefits			X	
Services			X	
Fuel and Lubricants			X	
Tires and Tubes			X	
Other Materials/Supplies			X	
Utilities			X	
Casualty and Liability		X		
Taxes			X	
Miscellaneous			X	
Expense Transfers			X	

The development of LRT unit cost factors was determined from line item assignment costs calculated from an average of line item individual costs for each of the seven (7) LRT systems as previously identified (*Table 5*).

Table 5: Assignment of O&M Expenses for LRT

	Revenue Hours Unit Cost	Revenue Miles Unit Cost	Peak Vehicles Unit Cost	Guideway Unit Cost
Vehicle Operations Labor				
Operator Salaries and Wages	$22.18			
Other Salaries and Wages	$14.51			
Fringe Benefits	$15.40			
Services	$6.77			
Vehicle Operations Materials and Supplies				
Fuel and Lubricants		$0.00		
Tires and Tubes		$0.00		
Other Materials/Supplies		$0.08		
Utilities		$0.12		
Casualty and Liability		$0.00		
Taxes			$846.38	
Miscellaneous			$41,054.87	
Expense Transfers			$0.00	
Vehicle Maintenance Labor				
Other Salaries and Wages		$1.66		
Fringe Benefits		$0.71		
Services		$0.15		
Vehicle Maintenance Materials and Supplies				
Fuel and Lubricants		$0.04		
Tires and Tubes		$0.01		
Other Materials and Supplies		$0.74		
Utilities		$0.00		
Casualty & Liability		$0.00		
Taxes			$79.58	
Miscellaneous		$0.02		
Expense Transfer			$0.00	
Non-Vehicle Maintenance Labor				
Other Salaries and Wages				$111,780.66
Fringe Benefits				$46,134.10
Services				$46,516.58
Non-Vehicle Maintenance Materials and Supplies				

	Revenue Hours Unit Cost	Revenue Miles Unit Cost	Peak Vehicles Unit Cost	Guideway Unit Cost
Fuel and Lubricants				$0.00
Tires and Tubes				$0.00
Other Materials and Supplies				$20,231.14
Utilities				$0.00
Casualty & Liability			$0.00	
Taxes				$0.04
Miscellaneous				$1,008.98
Expense Transfer				$0.00
General Administration				
Other Salaries and Wages			$95,376.51	
Fringe Benefits			$44,457.03	
Services			$110,847.58	
Fuel and Lubricants			$0.00	
Tires and Tubes			$0.00	
Other Materials and Supplies			$11,758.22	
Utilities			$19,838.71	
Casualty and Liability		$0.35		
Taxes			$49.76	
Miscellaneous Expense			$5,259.35	
Expense Transfers			$0.00	

The unit costs are the sum of the line-item costs listed for each of the four (4) columns as presented in Table 5 – revenue miles, revenue hours, peak vehicles, and guideway. These total unit cost values are applied against an adjustment factor to escalate to 2021 dollars based on the Bureau of Labor Statistics Consumer Price Index using the Inflation calculator on https://www.bls.gov/bls/inflation site. At present, the model illustrates an adjustment of 9 percent; the actual index at the time of the O&M cost calculation is being applied.

The calculated unit costs for LRT are presented in *Table 6*.

Table 6: O&M Unit Costs for LRT

Cost per Revenue Hour	Cost per Revenue Mile	Cost per Peak Vehicle	Cost Pre-Guideway Mile
$64.15	$4.24	$359,229.12	$245,981.92

Development of Service Statistics

The model cost drivers are the service statistics and proposed units of service to be provided, for each Okeechobee Blvd. & SR 7 MCS alternative. These are the estimated number of revenue vehicle hours, revenue vehicle miles, peak vehicles, and guideway miles that would be required to operate each proposed alternative. The estimates for each of these statistics is based on a proposed service plan for each transit technology and project alternative.

The operating plan includes inputs that differ among the seven (7) alternatives, such as travel speed, acceleration-deceleration rates, as well as inputs that are the same among the alternative modes, such as the miles of alignment, the number and location of stations, and the desired service frequency by time of day (peak and off-peak).

Peak and off-peak running times were developed using detailed running time models (*Table 7*). Many data inputs are utilized in the model including industry standard acceleration and deceleration factors by mode, variations and adjustments for roadway and operational treatments (e.g., TSP, queue jumps, dedicated right-of-way, etc.), segment and intersection level of service (LOS), and delay and dwell assumptions. Roadway speeds and LOS data was obtained from the Florida Department of Transportation (FDOT) and Palm Beach County resources. Station dwell time assumptions were based on anticipated station volumes related to existing Palm Tran ridership, land use potential, and the presence of off board fare collection at transit stations.

Table 7. End to End Running Times and Peak Vehicle Requirements

	Alt 1: No Build	Alt 2: Limited Stop	Alt 3: BAT - Curbside	Alt 4: BRT- Curbside	Alt 5: BRT - Center	Alt 6: LRT - Center	Alt 7: Elevated LRT
Avg One Way Runtime (Peak)	51.0 min	46.5 min	43.1 min	40.5 min	40.0 min	37.7 min	27.2 min
Avg One Way Runtime (Off-Peak)	47.5 min	42.4 min	38.7 min	38.2 min	37.5 min	35.2 min	26.2 min

Proposed Transit Service Plan

The proposed transit alignment operates along Okeechobee Blvd. & SR 7 between downtown West Plam Beach and the Mall at Wellington Green. The Okeechobee Blvd. & SR 7 MCS corridor is approximately 13.8 miles long in each direction and would serve 17 stations.

The No Build / No Action Alternative would operate 16.5 hours between 4:30AM and 9:00PM. Service would be provided on a 20-minute headway for the entire service span.

The proposed service plan is identical among the five (5) of the (6) transit alternatives. Service would operate an 18.5-hour service span for both weekdays and weekends. Service would begin at 4:30 AM and run until 11:00 PM every day including weekends.

For the mixed traffic limited stop bus alternative, headways would be 15-minutes for the entire 18.5 hours service span. The BAT Lane, BRT and LRT alternatives all have identical service headways. The AM and PM peak service headway would be 10-minutes, with midday, evening, and weekend service operating every 15-minutes (*Table 8*).

Table 8: Okeechobee Blvd. & SR 7 MCS Project Alternative Service Plan Summary

Proposed Alternative	Peak Hour Headway (mins)	Off Peak Headway (mins)	Service Span (hours)	Service Span
No Build / No Action	20	20	16.5	4:30AM – 9:00PM
Mixed Traffic bus w/Limited Stops	15	15	18.5	4:30AM – 11:00PM
BAT Curbside Lane	10	15	18.5	4:30AM – 11:00PM
Curbside Dedicated-lane BRT	10	15	18.5	4:30AM – 11:00PM
Center Platform Dedicated BRT	10	15	18.5	4:30AM – 11:00PM
Center Platform Dedicated-lane LRT	10	15	18.5	4:30AM – 11:00PM
Elevated Grade Separated LRT	10	15	18.5	4:30AM – 11:00PM

The statistics for the service plan for each of the Okeechobee Blvd. & SR 7 MCS alternatives is presented in *Table 9*.

Table 9: Proposed Okeechobee Blvd. & SR 7 MCS Service Plan Statistics

	No Build	Bus Limited Stop	Curbside BAT Lane	Curbside Dedicated -lane BRT	Center Platform Dedicated -lane BRT	Center Platform Dedicated -lane LRT	Elevated Grade Separated LRT
Annual Revenue Hours	24,376	38,972	38,630	37,594	36,969	34,742	21,468
Annual Revenue Miles	241,680	364,635	392,175	392,175	392,175	392,175	392,175
Peak Vehicle Requirements	4	8	10	10	10	10	8

Operation and Maintenance Estimates Results

The operation and maintenance cost estimates developed for each of the Okeechobee Blvd. & SR 7 MCS alternatives is summarized in *Table 10* in 2021 US Dollars for the service plan as previously described.

Table 10: Operation & Cost Estimates for Okeechobee Blvd. & SR 7 MCS Alternatives

Proposed Alternative	Annual O&M Expense
No Build / No Action	$2,790,000
Mixed Traffic bus w/Limited Stops	$4,580,000
BAT Curbside Lane	$4,870,000
Curbside Dedicated-lane BRT	$4,800,000
Center Platform Dedicated BRT	$4,760,000
Center Platform Dedicated-lane LRT	$13,410,000
Elevated Grade Separated LRT	$16,820,000

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APPENDIX – NTD LINE-ITEM EXPENSES GLOSSARY

Casualty and Liability: The cost elements covering protection of the transit agency from loss through insurance programs, compensation of others for their losses due to acts for which the transit agency is liable, and recognition of the cost of corporate losses.

Fringe Benefits: The payments or accruals to others (insurance companies, governments, etc.) on behalf of an employee and payments and accruals direct to an employee arising from something other than a piece of work. These payments are transit agency costs over and above labor costs, but still arising from the employment relationship.

Fuels and Lubricants: The costs of gasoline, diesel fuel, propane, lubricating oil, transmission fluid, grease, etc., for use in vehicles.

General Administration: All activities associated with the general administration of the transit agency, including: Transit service development; Injuries and damages; Safety; Personnel administration; Legal services; Insurance; Data processing; Finance and accounting; Purchasing and stores; Engineering; Real estate management; Office management and services; Customer services; Promotion; Market research; and Planning.

Miscellaneous [Expenses]: The expenses that cannot be attributed to any of the other major expense categories, fringe benefits, services, materials and supplies, utilities, casualty and liability costs, taxes and purchased transportation.

Non-Vehicle Maintenance: All activities associated with facility maintenance, including: Administration; Repair of buildings, grounds and equipment as a result of accidents or vandalism; Operation of electric power facilities; Maintenance of: Vehicle movement control systems; Fare collection and counting equipment; Structures, tunnels and subways; Roadway and track; Passenger stations, operating station buildings, grounds and equipment; Communication systems; General administration buildings, grounds and equipment; and Electric power facilities.

Operators Salaries and Wages: The labor of employees of the transit agency who are classified as revenue vehicle operators or crew.

Other Materials and Supplies: The costs of materials and supplies not specifically identified in object classes fuel and lubricants and tires and tubes issued from inventory or purchased for immediate consumption.

Other Salaries and Wages: The labor of employees of the transit agency who are not classified as revenue vehicle operators or crew.

Taxes: The taxes levied against the transit agency by Federal, state, and local governments.

Tires and Tubes: The lease payments for tires and tubes rented on a time period or mileage basis, or the cost of tires and tubes for replacement of tires and tubes on vehicles.

Utilities: The payments made to various utilities for utilization of their resources (e.g., electric, gas, water, telephone, etc.). Utilities include: Propulsion power purchased from an outside utility company and used for propelling electrically driven vehicles; and Other utilities such as electrical power for purposes other than for electrically driven vehicles, water and sewer, gas, garbage collection and telephone.

Vehicle Maintenance: All activities associated with revenue and non-revenue (service) vehicle maintenance, including: Administration; Inspection and maintenance; and Servicing (cleaning, fueling, etc.) vehicles. In addition, vehicle maintenance includes repairs due to vandalism and accident repairs of revenue vehicles.

Vehicle Operations: All activities associated with vehicle operations, including: Transportation.

CAPITAL COSTS

This document provides a framework for the presentation of methods, cost data and assumptions applied to develop planning level conceptual capital costs estimates for the Okeechobee Blvd. & SR 7 Multimodal Corridor Study (MCS). The Okeechobee Blvd. & SR 7 MCS is evaluating seven (7) alternatives to include a No-Build / No-Action Alternative. Since there is not sufficient detail to prepare detailed construction costs, capital cost estimates were prepared for each alternative according to representative unit costs or allowances on a per unit cost basis that is consistent with the current level of project definition. These capital cost estimates will be further refined as a capital expansion project advances into future phases of project evaluation and development.

PROJECT DESCRIPTION

The Okeechobee Blvd. & SR 7 MCS evaluates transportation alternatives and transit supportive land uses to move people in a safe, efficient, and connected way, regardless of income, age, ability, or mode of travel across approximately 13.8 miles of Okeechobee Blvd./SR 704 and SR 7 as shown in Figure 1.

Okeechobee Blvd. provides a direct connection from western suburban areas to downtown West Palm Beach and regional transit connections. SR 7 is a regional north-south corridor that connects to Okeechobee Blvd. just before its northern terminus. In terms of the importance to the local transit network, Okeechobee Blvd. & SR 7 MCS intersect with 16 of Palm Tran's 32 local fixed-routes and account for approximately 15% of system ridership.

There are dedicated bicycle and pedestrian facilities along a majority of the study corridors. However, the existing non-motorized facilities do not support the land use in promoting alternate use of transportation. The Okeechobee Blvd. & SR 7 MCS will develop a comprehensive plan to implement multimodal facilities that connect communities along the corridor through the development of a recommended enhanced transit strategy.

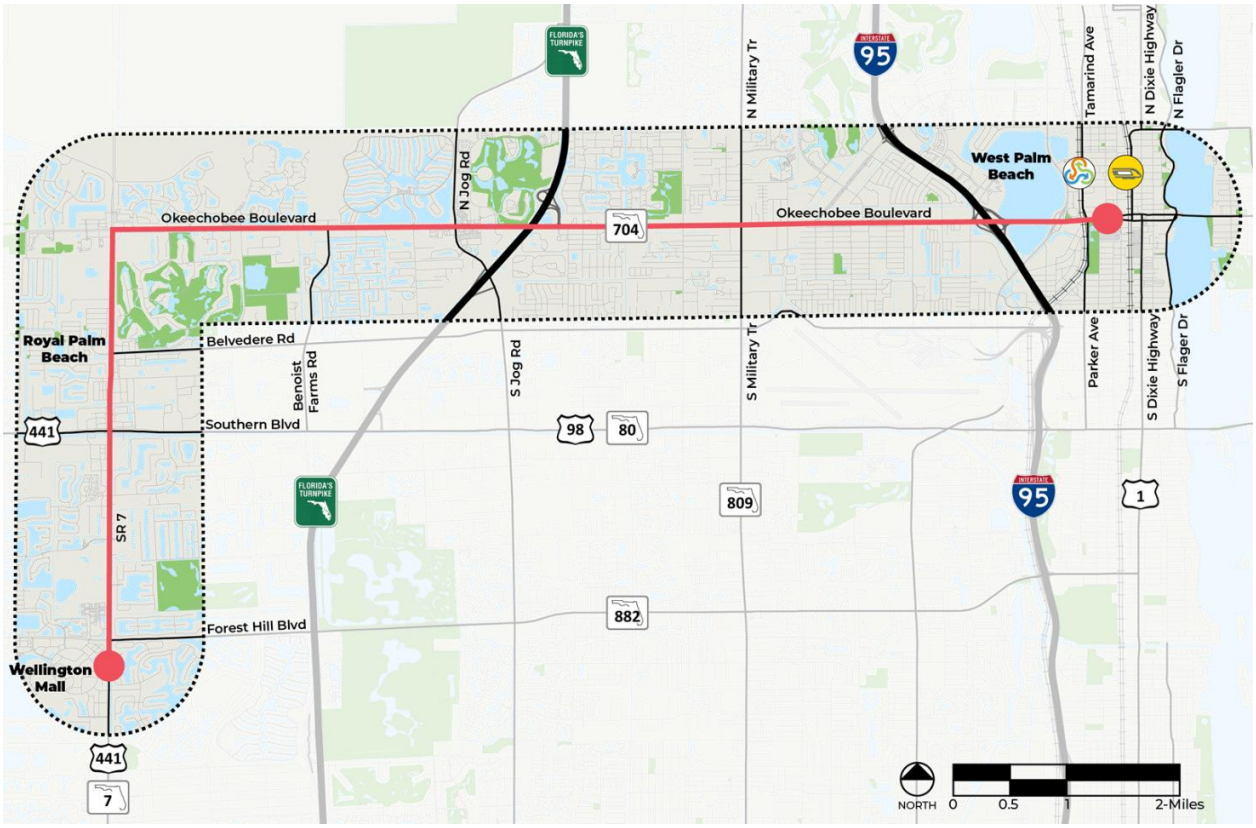

Figure 1: Okeechobee Blvd. & SR 7 MCS Study Limits

METHODOLOGY

The methodology to be used in preparing capital cost estimates has been developed in general accordance with Federal Transit Administration (FTA) guidelines for estimating capital costs. Part of the FTA guidelines call for cost estimates to be prepared and reported using the latest revision of the FTA's Standard Cost Categories (SCC). In the estimates, cost components for the capital expansion projects will be developed and summarized into the SCC.

These cost categories form the basis for the format and structure that will be used for the conceptual capital costs developed for the Okeechobee Blvd. & SR 7 MCS project alternatives.

Capital Cost Categories

In accordance with the latest version of the FTA's SCC, the capital cost components for each proposed Okeechobee Blvd. & SR 7 MCS project alternative will be classified into the following cost categories.

- 10 Guideway and Track Elements
- 20 Station, Stops, Terminals, Intermodal
- 30 Support Facilities: Yards, Shops, and Administration Buildings
- 40 Sitework and Special Conditions
- 50 Systems
- 60 Right-of-Way (ROW), Land, Existing Improvements
- 70 Vehicles
- 80 Professional Services
- 90 Unallocated Contingency
- 100 Finance Charges

The following provides some brief descriptions of these cost categories and their constituent elements.

Cost Category 10 – Guideway and Track Elements

Guideway and track elements are portions of a transit system that can be assigned costs at a fairly aggregate level with an acceptable level of accuracy. Guideway and track elements are subdivided into a number of sub-categories. These categories can be described by three primary types of construction, at-grade construction, aerial structure construction, and retained cut or fill/underground construction. This cost category is typically used for bus and rail-based transit modes such Bus Rapid Transit (BRT) and Light Rail Transit (LRT).

Cost Category 20 – Station, Stops, Terminals, Intermodal

Category 20 consists of any cost associated with the passenger stations including: grading, excavation, ventilation structures and equipment, station power and lighting, platforms, canopies, finishes, equipment, landscaping, mechanical and electrical components, access control, security, artwork, station furnishings (benches, trash receptacles, etc.) and signage.

Cost Category 30 – Support Facilities: Yards, Shops, and Administrative

Category 30 is comprised of vehicle storage and maintenance buildings; track for storage of vehicles; office support areas; major shop equipment and bus maintenance facilities; costs associated with clearing and grubbing, rough grading, excavation, construction of building structures, drainage facilities, roadways, asphalt pathways, lighting, mechanical and electrical components, landscaping, access control, safety

and security, fueling stations; and other items necessary for construction and operation of a storage and maintenance facility.

Cost Category 40 – Sitework and Special Conditions

The development of a functional transit system often requires that a number of ancillary infrastructure and mitigation requirements related to the proposed transit service be addressed. These sitework and special conditions often include items that cannot be adequately represented by a typical cross-section because of complexity, uncertain alignment, special site conditions, or other unique circumstances. The sitework and special condition cost category is sub-divided into the following.

Demolition

This cost category generally includes costs for the demolition of special features such as buildings (if not included as part of right-of-way), large structures (bridges or retaining walls), or other existing features that fall outside of the guideway construction envelope.

Utility Relocations

Generally, one of the largest cost elements within cost category 40 is the relocation of existing utilities from within the guideway construction envelope. These relocations can include both public and private utilities, subject to any agreements that may apply to franchised utilities that exist within public right-of-way. Typically, utility relocation information is not available during the planning phase of project development, therefore, several levels of utility relocation allowances with average costs based on historical experience and professional judgement are applied.

Hazardous Material and Environmental Mitigation

Any special hazardous material or environmental mitigation costs, such as contaminated soil or ground water, wetlands mitigation, etc. would be included under this category. Typically engineering and design information is not available during the planning phase of a project on which to develop a quantity-based cost estimate. Therefore, an allowance is applied based upon best professional judgement.

Site Structures

This cost category typically includes structures such as retaining walls, sound walls, etc., that are outside of the guideway construction envelope. Structures such as retaining walls for retained cut or fill guideway and bridge or aerial structure used for aerial guideway are included in cost category 10 Guideway and Track Elements. For projects in the planning phase of development, site structures costs are typically applied on a cost per square foot basis.

Pedestrian Access, Landscaping

Typically, pedestrian access and landscaping information is not well developed during the planning phase of project development; therefore, several levels of pedestrian

access and landscaping allowances with average unit costs based on historical experience and professional judgement will be utilized. Landscaping costs associated with park-and-ride facilities are included in the composite cost developed for those particular items and included in other cost categories.

Automobile Accessways, Parking Lots

This cost category can include new and reconstructed roadways, streets, surface parking areas, sidewalks, curbs and gutters, and related roadway facilities associated with construction of the rail guideway. Roadway and parking area cost estimates will be based on parametric unit costs.

Temporary Facilities

This cost category can include costs for mobilization, demobilization, project phasing; temporary construction associated with weather, construction easements, or temporary site access and to mitigate construction impacts. For the planning phase of project development, these costs are typically included as a percentage allowance mark-up based upon professional judgement.

Cost Category 50 – Systems

The systems cost category includes capital costs for many elements, including train control signals; traffic signals and crossing protection, communication systems; central control hardware and software; traction power substations; overhead catenary systems; underground duct banks; fare collection; grade crossing protection; and roadway traffic signal systems. For projects in the planning phase of development, limited detail on the various system components for a proposed transit project is provided. Therefore, systems costs are based upon historical experience and professional judgement.

Traffic Signals and Crossing Protection

For transit systems that are constructed to operate either within existing streets or with at-grade crossing of existing roadways, there is often a need for modifying existing traffic signals or constructing new traffic signals or other crossing protection. This cost category includes the signaling and control systems required for items such as vehicle and pedestrian signals, traffic signal pre-emption, and protection at hazardous guideway/highway at-grade crossings (flashing lights, bells, and signs).

Communications

The communications system provides the necessary subsystems to support the total operational requirements of the transit technology. The communications system costs provide for subsystems such as two-way radios, public address systems, telephone systems, variable message signs, interfaces to the fare collection and ticket vending equipment and equipment for the hearing impaired, etc.

Fare Collection

Costs for elements in this category are based upon a self-service, barrier-free, proof of payment fare collection system. Ticket vending machines (TVM) costs shall be based on a microprocessor-controlled coin or bill accepting machine capable of optionally accepting credit, debit, and stored value cards. The unit cost for fare collection includes all equipment costs and installation costs. The hardware includes provisions for fare vending facilities.

Central Control

The cost category includes all of the civil, structural, architectural, mechanical, electrical, and systems costs for providing for the remote monitoring of train operations, track conditions, substations, and station support facilities. The need for a central control facility is dependent on the operational analysis and assumptions that will be made for the given transit technology. Central control costs are typically associated with rail systems.

Cost Category 60 – ROW, Land, Existing Improvements

This cost category covers all land acquisition and acquisition related costs required to obtain various real property needed for the construction, operation, and maintenance of the proposed alignments. Costs include the fee acquisition of permanent and temporary easements, relocation costs, business damages and other miscellaneous costs. During the planning phase of a project, right-of-way (ROW) costs are not typically available due to the level of conceptual development of a project to accurately determine the acquisition of property (full or partial take). An allowance based upon historical experience is one method for estimation. However, the recent volatility of the real estate market requires specific market information for purposes of ROW valuation for acquisition.

Cost Category 70 – Vehicles

This cost category is generally subdivided into revenue (identified by transit mode) and non-revenue vehicles (where non-revenue vehicles include maintenance-of-way vehicles, and agency trucks and automobiles). During the planning phase of project development, the unit costs for vehicles will typically include costs for engineering, procurement, spare parts, etc. and is based on historical data from recent transit projects and available industry information.

Cost Category 80 – Professional Services

This cost category includes allowances for preliminary engineering, final design, project and construction management, agency program management, project insurance, surveys and testing, and start-up costs. These allowances are computed by applying a percentage to the total construction cost estimated for each cost category (excluding right-of-way and vehicle costs). Right-of-way and vehicle costs typically are calculated

to include the management and administration costs associated with these activities and are therefore excluded from the calculation of professional services.

Cost Category 90 – Unallocated Contingency

Unallocated contingency is similar to allocated contingency in that it is primarily applied as an allowance for unknowns and uncertainties due to the level of project development completed. These contingencies are typically broader and address changes in project scope and schedule.

Cost Category 100 – Finance Charges

Finance charges are those costs that are anticipated to be paid prior to the completion of a project or the fulfillment of the New Starts funding commitment, whichever occurs first. Typically, finance charges are determined from a project's financial plan that is based upon an analyses of funding sources and funding use.

Since the project costs presented are for conceptual planning purposes, finance charges will not be included for conceptual capital costs estimates.

COST DATA

Cost data for the Okeechobee Blvd. & SR 7 MCS will be developed using several sources and will be comparable to those in the Southeast Florida region for similar types of construction. Planning level cost data has been developed based upon the level of conceptual planning which provides a beginning point for the development of a Unit Cost Library (UCL).

Unit Cost Library

For those unit costs that are principally found on a transit construction project, capital cost data specific to Palm Beach County or recent construction of other transit systems throughout the United States will be compared and adjusted to specific project needs based upon professional judgement. Unit cost associated with civil and structural construction elements that are generally common to both transit and highway construction projects will use cost data found in the Florida Department of Transportation (FDOT) Long Range Estimate (LRE) Average Unit Costs.

For transit specific costs items serval BRT and PRT projects were identified to assist in the preparation of conceptual cost estimates. For BRT, the METRO Gold Line, Cleveland Health Line, and IndyGo Red Line were referenced. LRT projects that were referenced include the Valley Metro LRT, METRO Blue Line LRT Extension (Bottineau, LRT) and Salt Lake City LRT.

Unit costs the Okeechobee Blvd. & SR 7 MCS will be developed as described in the following sections. This cost data will be compiled into a database format to form a UCL. The key elements of the UCL are typically an Item Code, Item Description, Unit of Measure, and Unit Cost.

The unit costs do not include items such as engineering, construction management, owner's administrative costs and allowances for contingencies. These costs will be included as percentage add-ons to the cost estimate under other cost categories.

Cost Development for Cost Category 10 – Guideway and Track Elements

The guideway cost estimates are based on parametric unit cost information on a per mile unit cost basis. For all BRT options other than median running, there are no guideway costs since the services will operate within an existing travel lane. Median running BRT guideway costs are based on widening six (6) lane urban divided arterial to eight (8) lane urban divided arterial costs from the FDOT Cost Per Mile Models for Long Range Estimating.

Both of the LRT options are based off of the 90 percent engineering costs estimates obtained from the FTA SCC workbook for the METRO Blue Line LRT Extension. These estimates include at-grade and elevated guideway and track on a per mile basis.

Cost Development for Cost Category 20 – Station, Stops, Terminals, Intermodal

The station costs estimates are based on varying levels of station investment for the BRT project alternatives according to reference projects as well as based on professional judgement. All BRT stations are at-grade and based on a per station cost to capture passenger shelter, off-board fare collection, level boarding and other passenger amenities. Median running BRT station costs are estimated using reference information from both Cleveland Euclid Ave BRT and IndyGo Red Line BRT capital costs.

The at-grade LRT stations referenced ValleyMetro LRT station costs that informed the estimate for the Okeechobee Blvd & SR 7 MCS. Elevated LRT stations are based upon professional opinion that factors in a vertical circulation component passenger access.

A park-and-ride facility is captured in the conceptual cost estimates to include a surface lot with a 100-car parking capacity. The conceptual cost estimate is based upon recent available local information and professional opinion.

Cost Development for Cost Category 30 – Support Facilities, Yards, Shops, and Administrative Buildings

There are no support facilities for the BRT alternatives identified since the assumption is that BRT vehicles would be maintained and stored at an existing Palm Tran facility. A new vehicle maintenance and storage facility will be required for any of the LRT project alternatives. An estimated capital cost is determined based upon the number

of light rail vehicles and informed by the METRO Blue Line LRT maintenance and storage facility costs and professional engineering judgement.

When potential site options for the maintenance facility and layover facility are identified include sufficient engineering data is available, these costs will be updated. At the current level of project definition, no cost for land acquisition is included in the estimate for the vehicle maintenance and storage facility.

Cost Development for Cost Category 40 – Sitework and Special Conditions

Sitework costs for all Okeechobee Blvd & SR 7 MCS alternatives are based on the FDOT LRE costs and applied various assumptions according to an alternative. For utility relocation and environmental mitigation an allowance was applied based upon professional judgement to capture an estimated cost for each project alternative.

Cost Development for Cost Category 50 – Systems

Assumed quantities for the various category items were determined at the conceptual level for each of the proposed corridor expansion projects. Unit costs and allowances were applied to various items based upon professional engineering opinion that is appropriate for the scope of conceptual level plans.

Cost Development for Cost Category 60 – ROW, Land, Existing Improvements

Right-of-Way costs are not included in any of the project alternative capital cost estimates due to a lack of sufficient engineering information and data currently available. However, for the LRT alternatives, property will need to be acquired for the construction of a vehicle maintenance and storage facility. A preliminary conceptual cost estimate was provided as a placeholder. The cost is based upon the appraised market value as obtained from the latest available Palm Beach County property appraisers office.

Cost Development for Cost Category 70 – Vehicles

The BRT vehicle costs applied to the conceptual cost estimates are based on the historical costs for Cleveland Euclid Ave BRT, IndyGo Red Line BRT, as well as factoring in professional engineering judgment. The LRT vehicle costs are based upon information received from Kinkisharyo International, the vehicle manufacturer for ValleyMetro LRV.

The total vehicle costs include the required number of peak vehicles that are required to operate a proposed service as well as an applied 20 percent spare ratio.

Cost Development for Cost Category 80 – Professional Services

The following list of the professional services or soft costs percentage multipliers are being applied to the total construction costs for the proposed Okeechobee & SR 7 MCS alternatives. These total 32% of construction costs. Transit construction costs have historically incurred professional service costs of approximately 31% of construction costs[1]:

80.01	Preliminary Engineering	4.0%
80.02	Final Design	10.0%
80.03	Project Management for Design and Construction	8.0%
80.04	Construction Administration & Management	5.0%
80.05	Insurance	1.0%
80.06	Legal; Permits; Review Fees, etc.	2.0%
80.07	Surveys, Testing, Investigation, Inspection	1.0%
80.08	Start up	1.0%
		32.0%

Cost Development for Cost Category 90 – Unallocated Contingency

Unallocated contingency is added to the base price as an allowance for overall project unknowns and uncertainties associated with the level of project development not yet completed. For the BRT project alternatives, a 25 percent contingency was applied to capture the cost of uncertainty of the estimated costs for the project. A 30 percent contingency was applied to the LRT alternatives due to the added complexity and lack of engineering that has been completed in the early planning phase of the Okeechobee Blvd. & SR 7 MCS study.

Cost Development for Cost Category 100 – Finance Charges

An estimate of finance charges was not included since this information is not available. For finance charges to be determined, a specific financial instrument and mechanism needs to be identified to fund and deliver the project. At this point of conceptual development, it is too early to identify these specifics and therefore an amount is not included in the cost estimate study.

[1] TCRP Report 138: Estimated Soft Costs for Major Public Transportation Fixed Guideway Projects

ESTIMATED CAPITAL COSTS

An estimate of conceptual capital costs for each of the Okeechobee Blvd. & SR 7 MCS project alternatives are presented in the following table.

Table 1: Okeechobee Blvd & SR 7 MCS Conceptual Cost Estimates (2021$)

	Mixed	BAT	BRT - Curbside	BRT Median	LRT - At-Grade	LRT - Elevated
Guideway & Track Elements	-	-	-	$4,175,000	$50,406,000	$625,505,000
Stations, Stops, Terminal, Intermodal	$4,040,000	$8,840,000	$12,040,000	$15,240,000	$37,640,000	$66,440,000
Support Facilities: Yards, Shops, Admin. Bldgs	-	-	-	-	$37,800,000	$37,800,000
Sitework & Special Conditions	$31,144,000	$34,870,000	$61,832,000	$118,866,000	$80,679,000	$95,827,000
Systems	$190,000	$4,579,000	$7,452,000	$15,458,000	$220,725,000	$209,483,000
ROW, Land, Existing Improvements	-	-	-	-	$25,000,000 – $35,000,000*	$25,000,000 – $35,000,000*
Vehicles	$15,000,000	$18,000,000	$18,000,000	$18,000,000	$60,000,000	$60,000,000
Professional Services	$11,320,000	$15,453,000	$26,024,000	$49,196,000	$136,720,000	$331,218,000
Total:	$77,118,000	$102,178,000	$156,684,000	$276,168,000	$856,661,000	$1,899,655,000
Cost Per Mile:	$5,241,000	$6,944,000	$10,648,000	$18,768,000	$58,217,000	$129,096,000

*Preliminary ROW estimate for maintenance and storage facility site

MAINTENANCE AND STORAGE FACILITY

The Okeechobee Blvd. & SR 7 Multimodal Corridor Study (MCS) is evaluating six (6) enhanced transit alternatives of various modes to include Light Rail Transit (LRT). Since the existing Palm Tran system does not currently operate LRT as a transit mode, a designated facility and associated infrastructure will be necessary for Light Rail Vehicle (LRV) storage and maintenance activities. A subtask of the Okeechobee Blvd. & SR 7 MCS is to perform a site assessment to identify potential Maintenance and Storage Facility (M&SF) locations that could accommodate an LRT fleet. The area limits for this assessment are the same as for the Okeechobee Blvd. & SR 7 MCS study which extends from the Mall at Wellington Green on SR 7 to Rosemary Ave. in Downtown West Palm Beach via Okeechobee Blvd.

This memorandum defines specific criteria for identifying potential M&SF site locations for consideration followed by a preliminary evaluation and recommendation of site(s) for further study if an LRT alternative is selected as the recommended alternative for the Okeechobee Blvd. & SR 7 MCS.

MAINTENANCE AND STORAGE FACILITY CRITERIA

As part of the Okeechobee Blvd. & SR 7 MCS, a preliminary analysis is being conducted to define M&SF site requirements for purposes of identifying potential locations for consideration. A site must be large enough to accommodate fleet requirements of the specific transit operating plan to include spare vehicles. Based upon preliminary estimates a vehicle fleet of up to 12 LRVs is anticipated when assuming a 15-minute service frequency with two-car train sets.

Key parameters for the Okeechobee Blvd. & SR 7 MCS LRT M&SF assessment include:

- Location near an endpoint of the LRT alignment
- A site that is rectangular
- Minimum practical site size, approximately six (6) acres to accommodate up to12 vehicles.
- Site must be level across long dimension; up to two (2) percent grade difference acceptable across narrow dimension.
- Site that is as close to the LRT alignment as possible
- Site should be west of the South Florida Rail Corridor (SFRC) and Florida East Coast Railroad (FECR)

Site Configuration

An LRT M&SF site should be large enough to accommodate vehicle maintenance, vehicle storage, a LRV washing facility, a substation for traction power, stormwater retention, central control, maintenance of way and structures facility, storage and employee and visitor parking. Storage space for an initial fleet size of 12 vehicles would be desirable plus additional capacity to handle fleet storage and maintenance needs

of potential future extensions. Typically, the M&SF site should be oblong or rectangular in shape.

Land Use Compatibility

The M&SF site ideally would be in an area with compatible surrounding land uses due to potential noise and lighting impacts from related activities at the facility. The M&SF typically involves a 24-hour operation with vehicle maintenance that occurs primarily throughout the night (1:00 a.m. to 5:00 a.m.) when the LRV fleet is out of service.

Rail Access

The M&SF should be located either adjacent to the Okeechobee Blvd. & SR 7 MCS main line alignment, or close enough to the main line alignment, to require as short a non-revenue (dead-head) connection as possible to the main line. If future phases or extensions are planned, the location of the facility can be assessed to include these considerations. Placing the facility adjacent to the main line alignment also minimizes the length of non-revenue track to be built.

The site should be located west of the SFRC and FEC Railroad due to associated difficulty to reach an acceptable agreement to cross an active railroad. Therefore, all MCS trains entering and exiting the M&SF would occur west of these existing railroads in the project limits.

Roadway Access

The site should be easily accessible from major streets for employees and delivery trucks. Access to the M&SF should not require employees and delivery trucks to traverse a residential area.

Acquisition Considerations

The evaluation of suitable M&SF locations should also consider the following as related to property acquisition.

- Reasonable cost in a relative sense.
- To extent possible, minimize business and residential displacements.
- If there are perceived impacts on any adjacent properties, an assessment of the possibility for mitigation should be addressed; some assessment of the cost should be addressed in the acquisition assessment.
- Some assessment, consistent with location should be made of the potential of the facility for joint use (i.e., facility on first floor with parking, commercial or industrial office needs above facility).
- Consideration of joint development at M&SF
- Consideration of sharing M&SF site with propose park and ride location

Assessment Approach

This is a preliminary assessment for the purpose of identifying potential site locations during an initial phase of the planning process. If an LRT alternative is identified as the recommended alternative, detailed technical analysis, environmental documentation and extensive public outreach and stakeholder involvement would be required far in advance of any property acquisition activities.

Based upon the parameters as previously identified, candidate sites were initially identified through a desktop analysis. Due to the urbanized environment of the Okeechobee Blvd. & SR 7 MCS corridor, a site may often an assemblage of property to meet the minimum acreage necessary to locate a M&SF of an appropriate size for the Okeechobee Blvd. & SR 7 MCS.

The first step of this assessment involved a search of vacant parcels that were within a close proximity (less than 1,000 feet) from the study corridor. Each location identified was further evaluated based upon the parameters previously identified – proximity to proposed LRT alignment, land use, parcel size and configuration, site accessibility.

POTENTIAL M&SF SITES

The following sites have been identified as potential M&SF locations and are listed beginning in the eastern portion of the Okeechobee Blvd. & SR 7 MCS project limits. These stations are illustrated in Figure 1:

- Site A – 1310 Mercer Ave.
- Site B – 5976 Okeechobee Blvd.
- Site C – 6255 Okeechobee Blvd.
- Site D – 6350 Okeechobee Blvd.
- Site E – 6500 Okeechobee Blvd.
- Site F – Okeechobee Blvd. & SR 7
- Site G – 1131 SR 7
- Site H – S SR 7
- Site I – 1381 SR 7

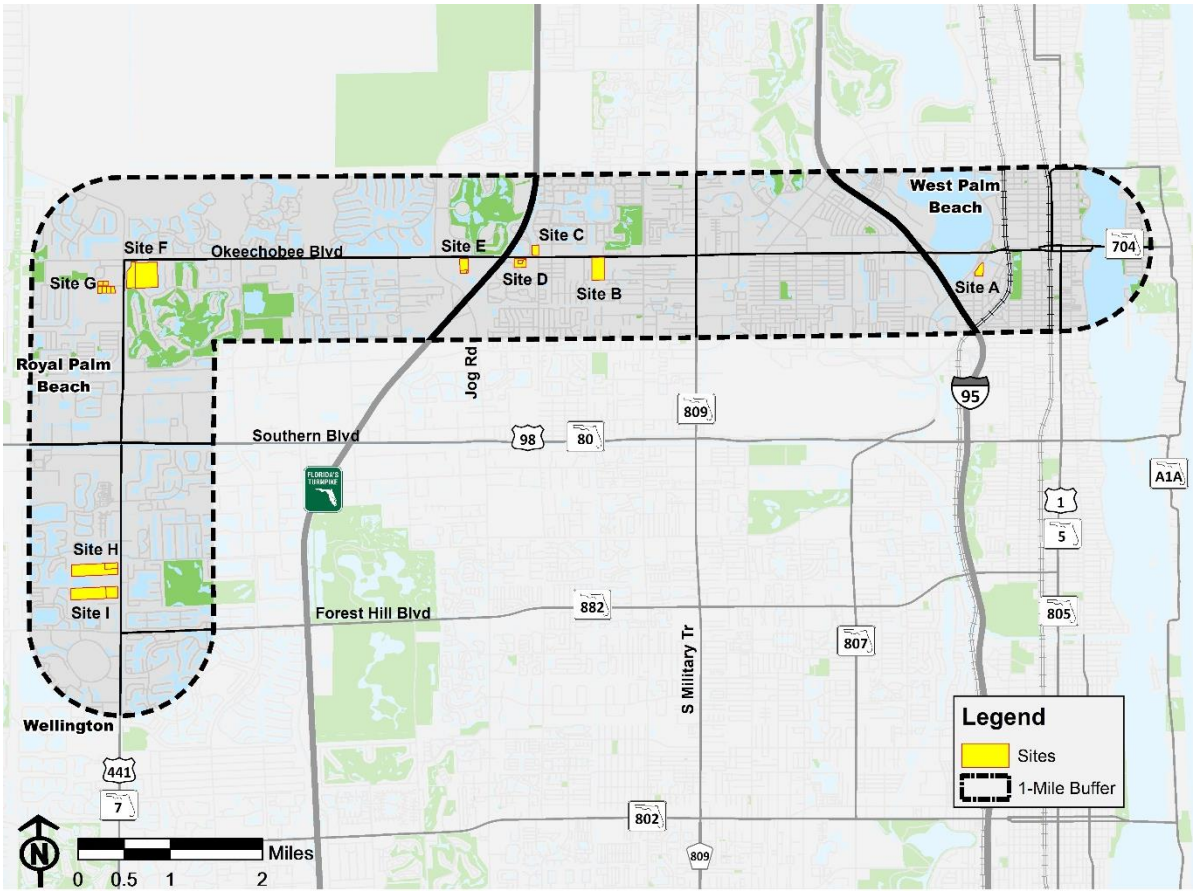

Figure 1. Sites Map

Site A (1310 Mercer Ave.):

The site is located near the eastern terminus point of the Okeechobee Blvd. & SR 7 MCS alignment and is publicly owned by the City of West Palm Beach. The site is zoned for industrial use and is approximately 5.5 acres. The surrounding land use is a mixture of industrial and institutional lots. An aerial of the parcel can be found in Figure 2 and maps detailing existing land use and zoning can be found in Appendix A.

Table 1. Site A Details

Parcel Size (Acres)	5.46
Configuration	Polygon
Land Use Designation	Institutional
Surrounding Land Use	Industrial and Institutional
Assemblage	Single Property
Accessibility	750ft from LRT Alignment
Ownership	Public

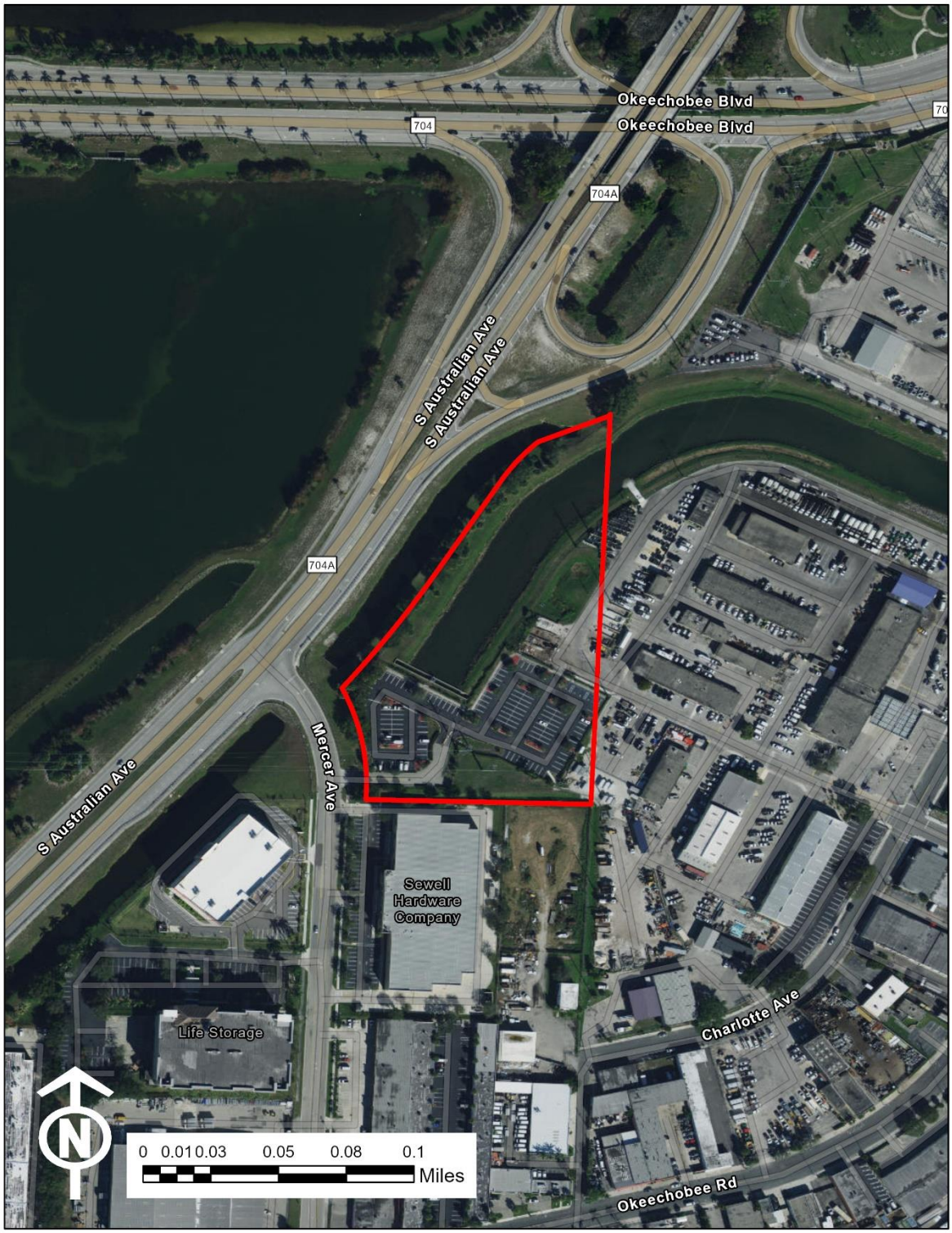

Figure 2. Aerial View of Site A

Site B (5976 Okeechobee Blvd.):

The site is located near the midpoint of the Okeechobee Blvd. & SR 7 MCS alignment, east of Haverhill Road, and is publicly owned by the City of West Palm Beach. The site is zoned for residential use and is approximately 18.7 acres. The surrounding land use is primarily a mixture of commercial and residential. An aerial of the parcel can be found in Figure 3 and maps detailing existing land use and zoning can be found in Appendix A.

Table 2. Site B Details

Parcel Size (Acres)	18.68
Configuration	Rectangle
Land Use Designation	Institutional
Surrounding Land Use	Commercial and Residential
Assemblage	Single Property
Accessibility	On LRT Alignment
Ownership	Public

Figure 3. Aerial View of Site B

Site C (6255 Okeechobee Blvd.):

The site is located near the midpoint of the Okeechobee Blvd. segment of the Okeechobee Blvd. & SR 7 MCS alignment and is privately owned by DS Investments 1 LLC. The site is zoned for commercial use and is approximately 4.6 acres. The surrounding land use is a mixture of commercial, residential, and other/vacant. An aerial of the parcel can be found in Figure 4 and maps detailing existing land use and zoning can be found in Appendix A.

Table 3. Site C Details

Parcel Size (Acres)	4.60
Configuration	Rectangle
Land Use Designation	Other/Vacant
Surrounding Land Use	Commercial, Residential, and Other/Vacant
Assemblage	Single Property
Accessibility	On LRT Alignment
Ownership	Private

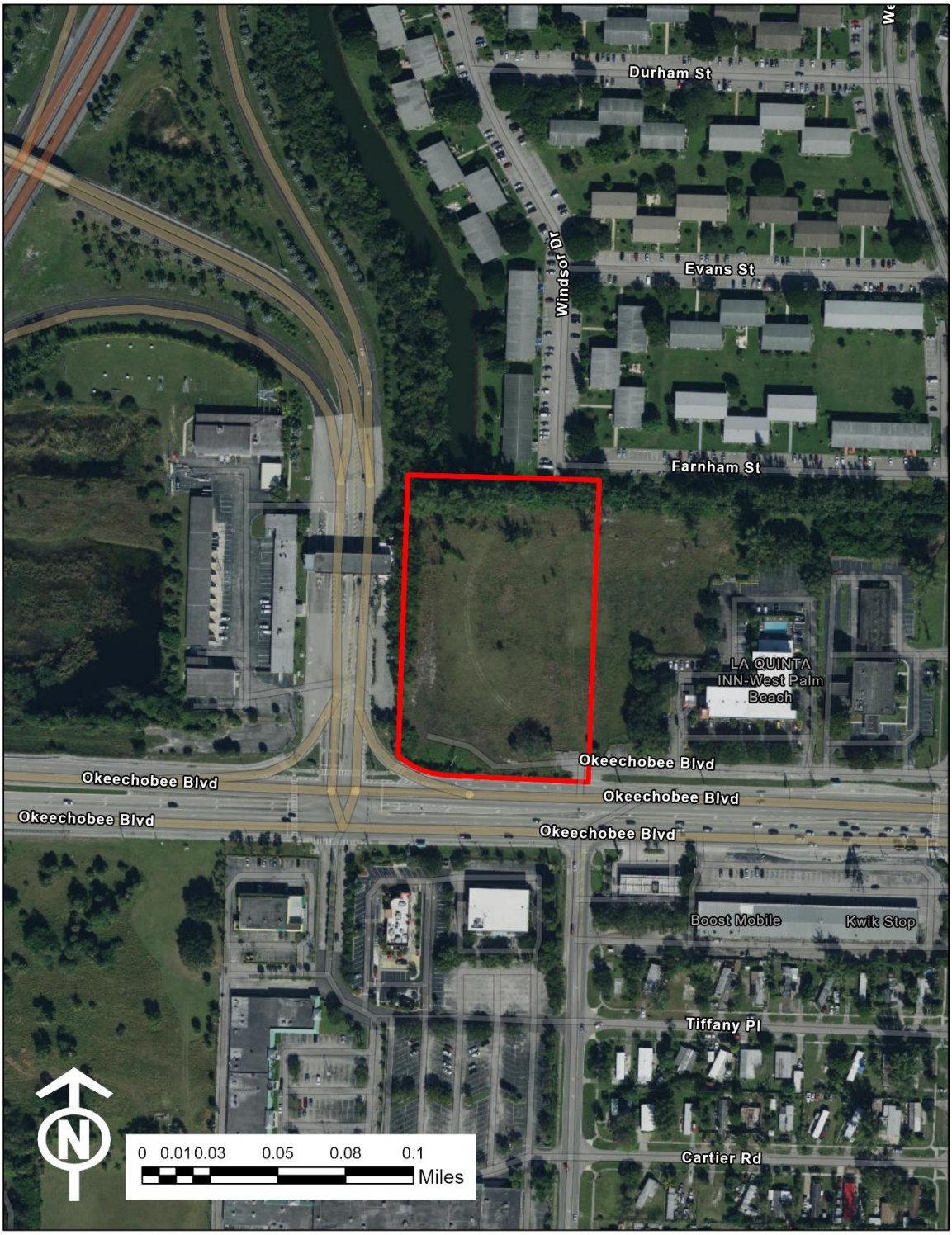

Figure 4. Aerial View of Site C

Site D (6350 Okeechobee Blvd.):

The site is located near the midpoint of the Okeechobee Blvd. segment of the Okeechobee Blvd. & SR 7 MCS alignment and is privately owned by Gold Coast Premier Properties VI LLC. The site is zoned for commercial use and is approximately 7.2 acres. The surrounding land use is a mixture of commercial and residential. An aerial of the parcel can be found in Figure 5 and maps detailing existing land use and zoning can be found in Appendix A.

Table 4. Site D Details

Parcel Size (Acres)	7.22
Configuration	Rectangle
Land Use Designation	Other/Vacant
Surrounding Land Use	Commercial and Residential
Assemblage	Multi-Property (Single Owner)
Accessibility	On LRT Alignment
Ownership	Private

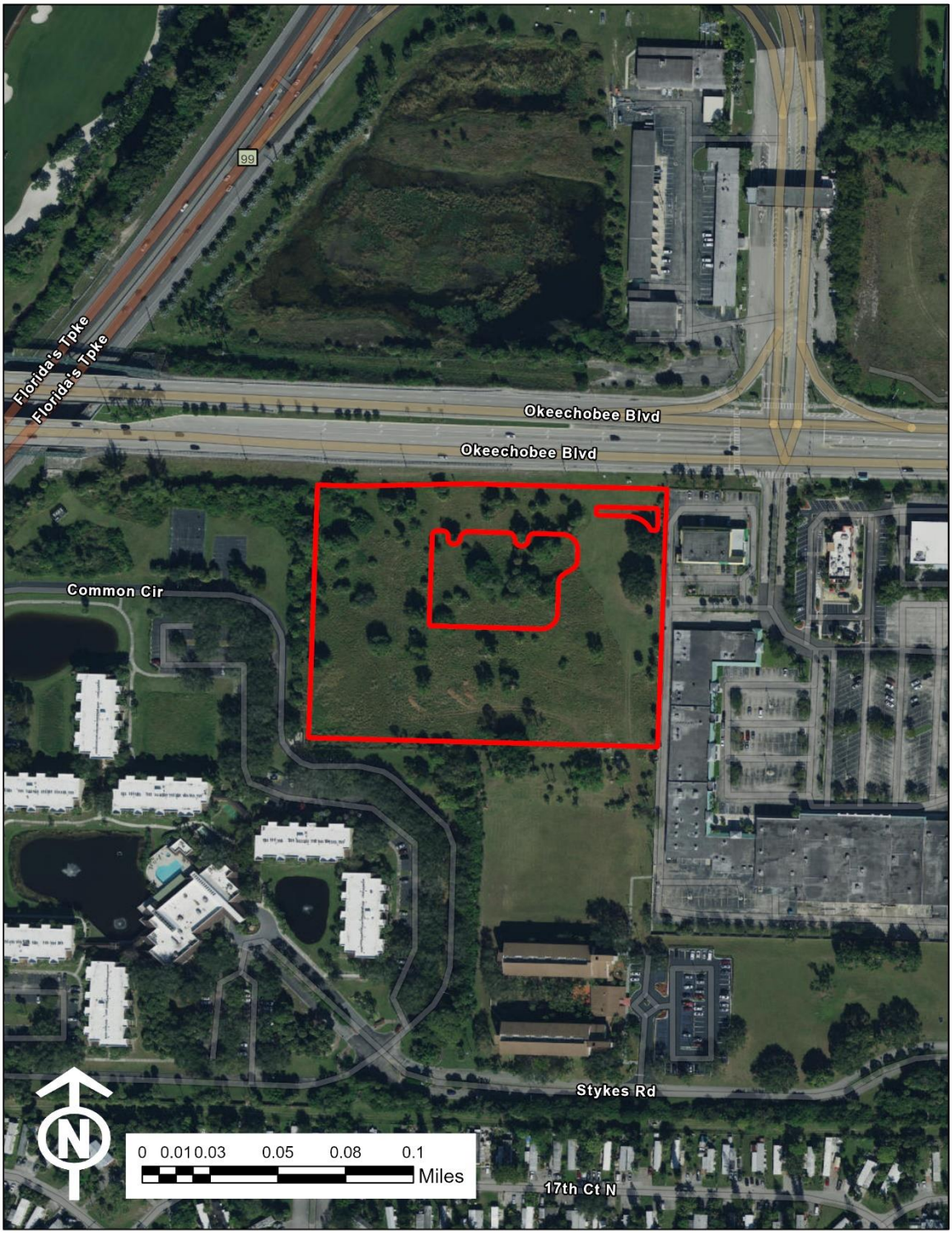

Figure 5. Aerial View of Site D

Site E (6500 Okeechobee Blvd.):

The site is located near the midpoint of the Okeechobee Blvd. segment of the Okeechobee Blvd. & SR 7 MCS alignment and is privately owned by Arrigo Enterprises. The site is zoned for commercial use and is approximately 8.2 acres. The surrounding land use is commercial. An aerial of the parcel can be found in Figure 6 and maps detailing existing land use and zoning can be found in Appendix A.

Table 5. Site E Details

Parcel Size (Acres)	8.23
Configuration	Rectangle
Land Use Designation	Commercial
Surrounding Land Use	Commercial
Assemblage	Multi-Property (Single Owner)
Accessibility	On LRT Alignment
Ownership	Private

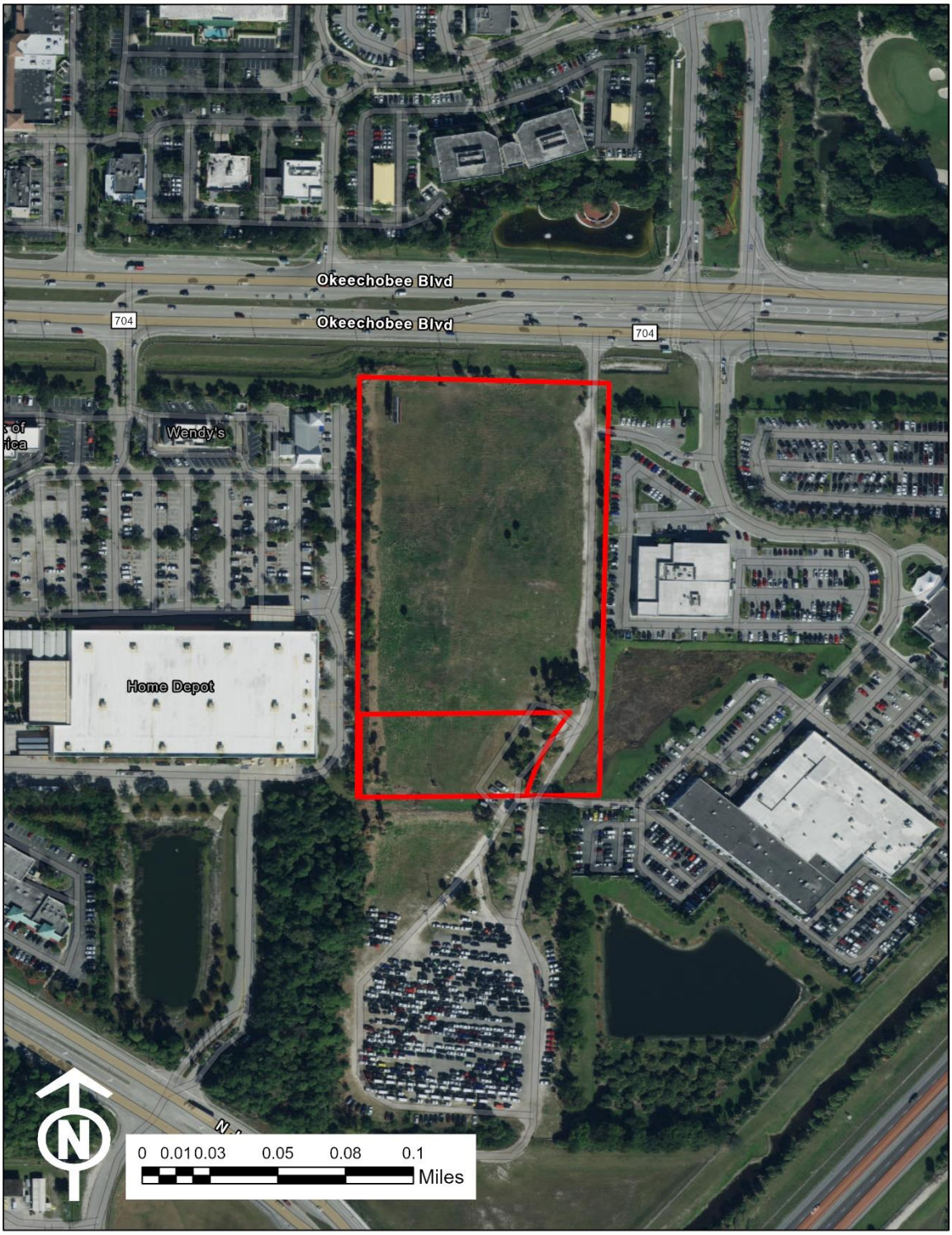

Figure 6. Aerial View of Site E

Site F (Okeechobee Boulevard & SR 7):

The site is located at the intersection of Okeechobee Blvd. and SR 7 of the MCS alignment and is privately owned by Atlas Royal Palm LLC. The site is zoned for commercial use and is approximately 50.7 acres. The surrounding land use is a mixture of commercial, residential, and open space. An aerial of the parcel can be found in Figure 7 and maps detailing existing land use and zoning can be found in Appendix A.

Table 6. Site F Details

Parcel Size (Acres)	50.77
Configuration	Rectangle
Land Use Designation	Other/Vacant
Surrounding Land Use	Commercial, Residential, and Open Space
Assemblage	Multi-Property (Single Owner)
Accessibility	On LRT Alignment
Ownership	Private

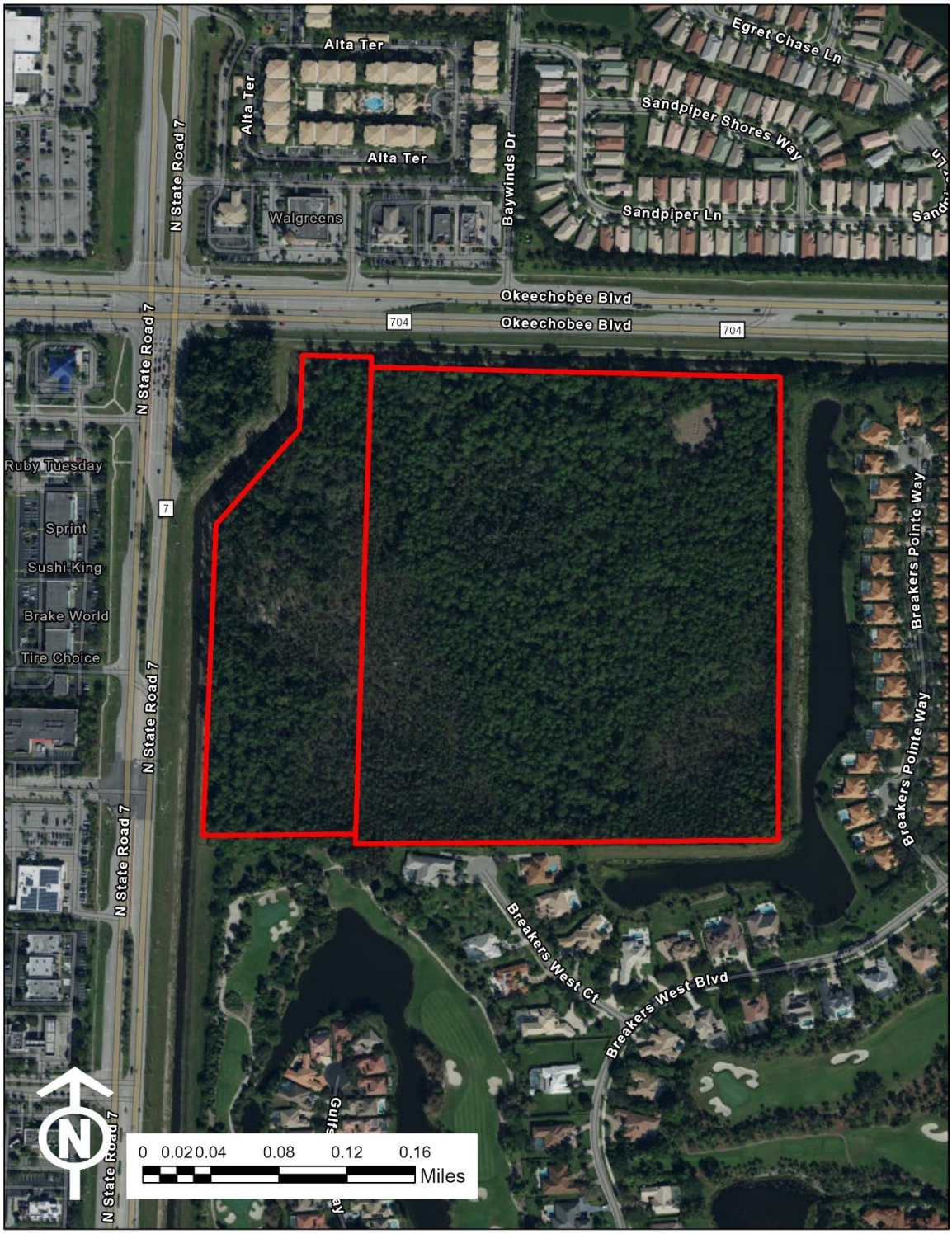

Figure 7. Aerial View of Site F

Site G (1131 SR 7):

The site is located near the intersection of Okeechobee Blvd. and SR 7 of the MCS alignment and is privately owned by Absolute Holdings of S FL LLC. The site is zoned for industrial use and is approximately 10.8 acres. The surrounding land use is a mixture of commercial, industrial, and residential. An aerial of the parcel can be found in Figure 8 and maps detailing existing land use and zoning can be found in Appendix A.

Table 7. Site G Details

Parcel Size (Acres)	10.80
Configuration	Rectangle
Land Use Designation	Other/Vacant
Surrounding Land Use	Commercial, Industrial, and Residential
Assemblage	Multi-Property (Single Owner)
Accessibility	450ft from LRT Alignment
Ownership	Private

Figure 8. Aerial View of Site G

Site H (South SR 7):

The site is located near the southern terminus point of the Okeechobee Blvd. & SR 7 MCS alignment and is privately owned by 441 Partners Inc. The site is zoned for residential use and is approximately 35.9 acres. The surrounding land use is a mixture of commercial, industrial, residential, and other/vacant. An aerial of the parcel can be found in Figure 9 and maps detailing existing land use and zoning can be found in Appendix A.

Table 8. Site H Details

Parcel Size (Acres)	35.92
Configuration	Rectangle
Land Use Designation	Other/Vacant
Surrounding Land Use	Commercial, Industrial, Residential, and Other/Vacant
Assemblage	Multi-Property (Single Owner)
Accessibility	On LRT Alignment
Ownership	Private

Figure 9. Aerial View of Site H

Site I (1381 SR 7):

The site is located near the southern terminus point of the Okeechobee Blvd. & SR 7 MCS alignment and is privately owned by Lotis Wellington LLC. The site is zoned for commercial use and is approximately 36.2 acres. The surrounding land use is a mixture of commercial, industrial, institutional, and other/vacant. An aerial of the parcel can be found in Figure 10 and maps detailing existing land use and zoning can be found in Appendix A.

Table 9. Site I Details

Parcel Size (Acres)	36.15
Configuration	Rectangle
Land Use Designation	Other/Vacant
Surrounding Land Use	Commercial, Industrial, Institutional, and Other/Vacant
Assemblage	Multi-Property (Single Owner)
Accessibility	On LRT Alignment
Ownership	Private

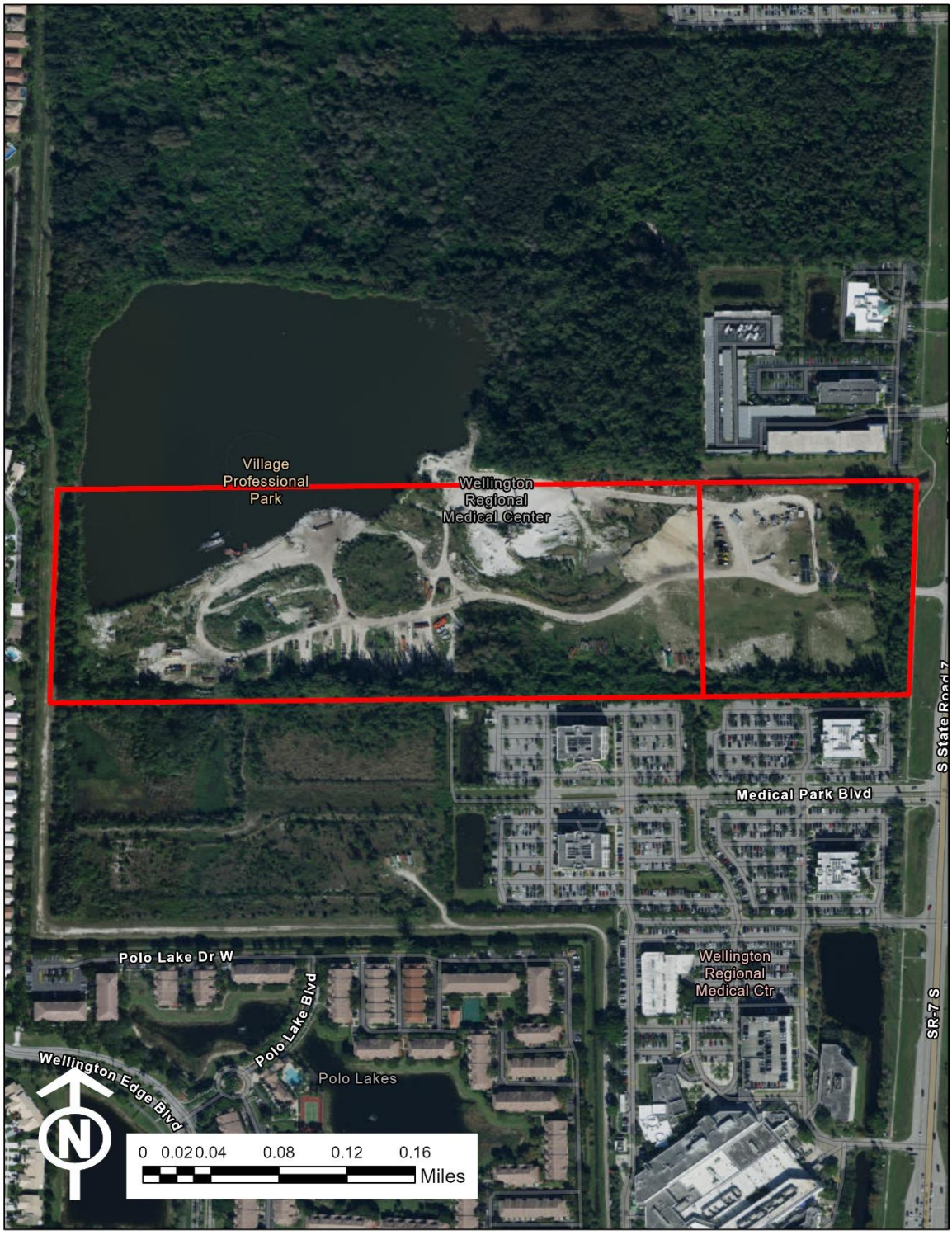

Figure 10. Aerial View of Site I

Table 10. Site Details

Details	Site A 1310 Mercer Ave.	Site B 5976 Okeechobee Blvd.	Site C 6255 Okeechobee Blvd.	Site D 6350 Okeechobee Blvd.	Site E 6500 Okeechobee Blvd.	Site F Okeechobee Blvd. & SR 7	Site G 1131 SR 7	Site H S SR 7	Site I 1381 SR 7
Parcel Size (Acres)	5.46	18.68	4.60	7.22	8.23	50.77	10.80	35.92	36.15
Configuration	Polygon	Rectangle	Rectangle	Rectangle	Rectangle	Rectangle	Rectangle	Rectangle	Rectangle
Land Use Designation	Institutional	Institutional	Other/ Vacant	Other/ Vacant	Commercial	Other/ Vacant	Other/ Vacant	Other/ Vacant	Other/ Vacant
Surrounding Land Use	Industrial and Institutional	Commercial and Residential	Commercial Residential and Other/ Vacant	Commercial and Residential	Commercial	Commercial Residential and Open Space	Commercial Industrial and Residential	Commercial Industrial Residential and Other/ Vacant	Commercial Industrial Institutional and Other/ Vacant
Assemblage	Single Property	Single Property	Single Property	Multi-Property (Single Owner)	Multi-Property (Single Owner)	Multi-Property (Single Owner)	Multi-Property (Single Owner)	Multi-Property (Single Owner)	Multi-Property (Single Owner)
Accessibility	750ft from LRT Alignment	On LRT Alignment	On LRT Alignment	On LRT Alignment	On LRT Alignment	On LRT Alignment	450ft from LRT Alignment	On LRT Alignment	On LRT Alignment
Ownership	Public	Public	Private	Private	Private	Private	Private	Private	Private

SITE(S) SELECTION RECOMMENDATIONS

The nine (9) M&SF locations generally meet the criteria established to perform an initial assessment of identifying a MS&F site(s) for the two (2) LRT alternatives being evaluated for Okeechobee Blvd. & SR 7 MCS. All sites have one (1) owner which will facilitate an assemblage of multiple properties if necessary and is often a primary challenge with locating a site when having to deal with multiple owners when proceeding through property acquisition. Two (2) locations are public owned while the remaining seven (7) sites are on privately owned land.

A listing of each site location below includes a brief conclusion and indicates whether the location should be advanced for further analysis pending whether one of the LRT project alternatives are identified as a recommended alternative for the Okeechobee Blvd. & SR 7 MCS.

Three (3) locations have been recommended to be advanced into the next project phase to include Site B, Site E and Site F.

Site A – 1310 Mercer Ave. (Not Recommended)

The land parcel is publicly owned to include compatible surrounding land use. However, parcel size is below minimum lot size to accommodate a M&SF facility with limited opportunity for expansion. Also, would need to mitigate for any displacement of existing canal.

Site B – 5976 Okeechobee Blvd. (Recommended)

Since parcel is publicly owned this site should be kept for further analysis. Compatible land use and the parcel size is more than the minimum lot size required to accommodate a M&SF facility.

Site C – 6255 Okeechobee Blvd. (Not Recommended)

Parcel size is too small with residential development as a neighboring land use.

Site D – 6350 Okeechobee Blvd. (Not Recommended)

Site D exceeds the parcel size requirement and is adjacent to the project corridor however, medium density residential development is a neighboring land use.

Site E – 6500 Okeechobee Blvd. (Recommended)

Site E provides an adequately sized parcel with compatible surrounding land use and is adjacent to the corridor. The parcels of land are privately owned and future development plans for this location are unknown and would require additional due diligence to further advance this location into the next phase of the Okeechobee Blvd. & SR 7 MCS.

Site F – Okeechobee Blvd. & SR 7 (Recommended)

This is a large parcel with a portion that could be utilized to locate a M&SF. Furthermore, this location is being considered as a designated park-and-ride lot for the Okeechobee Blvd. & SR 7 MCS. Exact location of the M&SF site could be configured to mitigate impacts on neighboring residential development.

Site G – 1131 SR 7 (Not Recommended)

Multiple parcels (six (6) in total) would need to be acquired from the single private landowner. Two (2) parcels are physically separated by an existing roadway which limits the amount of available land for a MS&F site as well as restricts facility configuration options. All land parcels are privately owned and future development plans for this location are unknown.

Site H – S SR 7 (Not Recommended)

Multi-family residential and mixed-use development have been identified for this privately owned land.

Site I – 1381 SR 7 (Not Recommended)

Multi-family residential and mixed-use development have been identified for this privately owned land.

NO BUILD/NO-ACTION

DECEMBER 2021

OKEECHOBEE BLVD. & SR 7
MULTIMODAL STUDY

PALM BEACH
Transportation
Planning Agency

MIXED TRAFFIC BUS WITH LIMITED STOPS

DECEMBER 2021

OKEECHOBEE BLVD. & SR 7
MULTIMODAL STUDY

PALM BEACH
Transportation
Planning Agency

BUSINESS ACCESS AND TRANSIT (BAT) CURBSIDE LANES

DECEMBER 2021

OKEECHOBEE BLVD. & SR 7
MULTIMODAL STUDY

PALM BEACH
Transportation
Planning Agency

CURBSIDE DEDICATED-LANE BRT

DECEMBER 2021

OKEECHOBEE BLVD. & SR 7 MULTIMODAL STUDY

PALM BEACH Transportation Planning Agency

CENTER-PLATFORM DEDICATED-LANE BUS RAPID TRANSIT (BRT)

DECEMBER 2021

OKEECHOBEE BLVD. & SR 7 MULTIMODAL STUDY

PALM BEACH Transportation Planning Agency

CENTER-PLATFORM DEDICATED-LANE LIGHT RAIL TRANSIT (LRT)

DECEMBER 2021

OKEECHOBEE BLVD. & SR 7 MULTIMODAL STUDY

PALM BEACH Transportation Planning Agency