ADMINISTRATIVE ACTION
TYPE 2 CATEGORICAL EXCLUSION

Florida Department of Transportation
In cooperation with the US Coast Guard

SR 401 BRIDGE REPLACEMENT

District: FDOT District 5

County: Brevard County

ETDM Number: 14397

Financial Management Number: 444787-1-22-01

Federal-Aid Project Number: N/A

Project Manager: David Graeber

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated May 26, 2022, and executed by the Federal Highway Administration and FDOT.

This action has been determined to be a Categorical Exclusion, which meets the definition contained in 40 CFR 1508.4, and based on past experience with similar actions and supported by this analysis, does not involve significant environmental impacts.

Signature below constitutes Location and Design Concept Acceptance:

Director Office of Environmental Management
Florida Department of Transportation

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Prime Consulting Firm:
Parsons Transportation Group Inc.

Consulting Project Manager:
Odalys Delgado, AICP

This document was prepared in accordance with the FDOT PD&E Manual.

This project has been developed without regard to race, color or national origin, age, sex, religion, disability or family status (Title VI of the Civil Rights Act of 1964, as amended).

On 11/04/2020 the State of Florida determined that this project is consistent with the Florida Coastal Zone Management Program.

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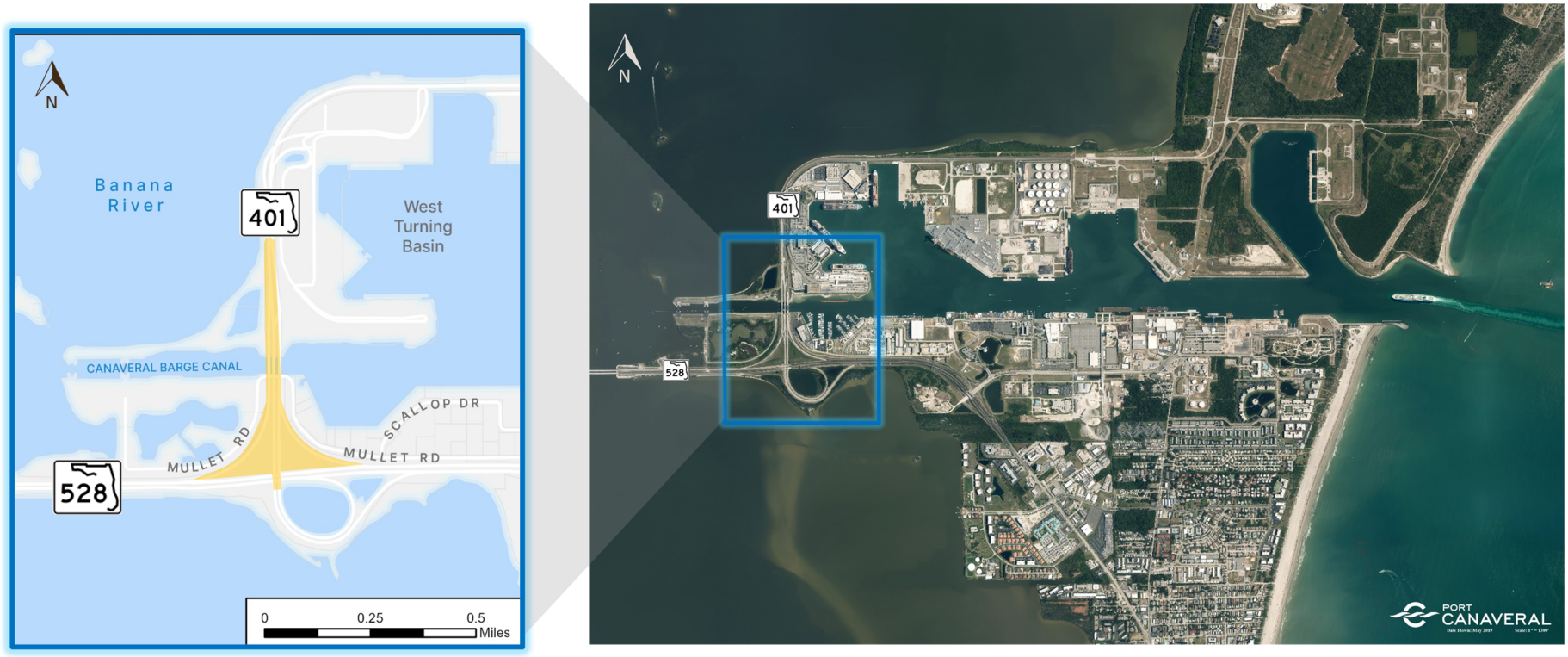
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444787-1 S.R. 401 Bridge Replacement PD&E Study
Brevard County, Florida
Project Location Map

1. Project Information

1.1 Project Description

The project, located in Brevard County, involves the evaluation of the three existing bascule bridges along State Road (S.R.) 401 over the Canaveral Barge Canal for retrofit improvements or replacement with either a medium-level bascule movable bridge or a new high-level fixed span bridge over the canal (see attached Project Location Map).
The study area project limits are approximately 500 feet south of the S.R. 528 bridges to 3,500 feet north of the S.R. 401 bridges to Charles Rowland Drive.

The S.R. 401 bridges over the Canaveral Barge Canal provide a vital connection to Port Canaveral's operations including major cruise and cargo terminals. The bridges also serve as the primary access to Cape Canaveral Air Force Station, Naval Ordinance Test Unit, facilities for the U.S. Coast Guard, and access to Space Florida operations. A no-build alternative was also considered.

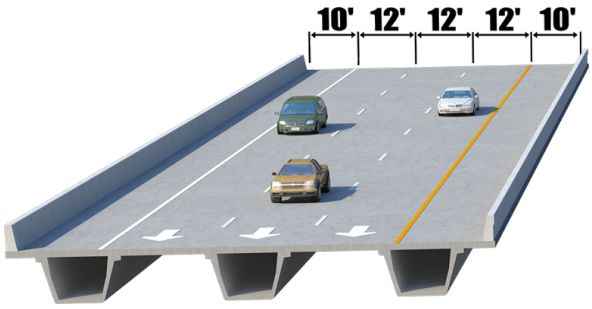
Within the study limits, S.R. 401 is functionally classified as an Urban Minor Arterial (Functional Classification 16). It has a context classification of C3C-Suburban Commercial. As defined by the FDOT Context Classification Guidebook, corridors with a C3C context classification are typically commercial featuring "mostly non-residential land uses with large building footprints and large parking lots within large blocks and a disconnected or sparse roadway network". The access management classification for S.R. 401, within the study area, is Access Classification 4, Non-Restrictive.

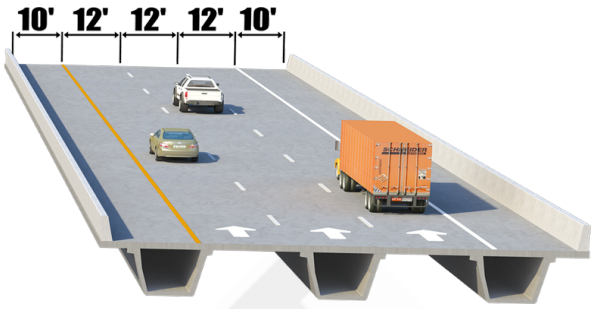
The existing 354-foot single-leaf bascule bridges consist of three separate structures accommodating southbound and northbound traffic with three travel lanes in each direction:
Bridge No. 700030 (southbound), constructed in 1963
Bridge No. 700031 (southbound), constructed in 1963
Bridge No. 700117 (northbound), constructed in 1972

Existing conditions are detailed in the attached *Existing Conditions Memorandum.*

The preferred alternative consists of a High-Level Fixed Bridge replacing the existing three bascule bridges with two separate three-lane high-level, fixed span concrete bridges located on the existing bridge alignment. This improvement would provide a maximum 65-foot vertical clearance above mean high water and a 90-foot horizontal clearance at the main navigational channel. The total bridge length would be 3,210 feet. The maximum grade of 6% and design speed of 45 mph. The following is a description of the preferred alternative:
Northbound
Three 12-foot-wide travel lanes
10-foot-wide inside and outside shoulders
No provisions for sidewalks or bike lanes
Southbound
Three 12-foot-wide travel lanes
10-foot-wide inside and outside shoulders
No provisions for sidewalks or bike lanes

The overall width of the northbound bridge will be 59 feet, and the southbound bridge will be 59 feet. There will be a 62-foot maximum separation between both bridges. The preferred alternative typical section is shown below:





1.2 Purpose and Need

The purpose of the project is to evaluate improvements to, or replacement, of the existing bascules bridges over the Canaveral Barge Canal. The primary need for the project is based on system linkage, and modal interrelationships.

System Linkage | S.R. 401 is designated a Strategic Intermodal System (SIS) as a connector, providing access to Cape Canaveral, a SIS Seaport. Port Canaveral's operations include major cruise terminals, cargo terminals, and substantial tanker truck traffic. Additionally, S.R. 401 is classified as a part of the State Strategic Highway Network (STRAHNET) connector by the Military Surface Deployment and Distribution Command as a connection to an ocean terminal to deploy and sustain U.S. forces on a global basis. The two southbound bridges (700030 and 700031) were constructed in 1963 and the northbound bridge (700117) was constructed in 1972. The bridges are the primary access to Cape Canaveral Space Force Station and Space Florida operations, Naval Ordinance Test Unit (NOTU), facilities for the U.S. Coast Guard, and access to Space Florida operations. The 2011 Spaceport Area Transportation Infrastructure Assessment by the Space Coast Transportation Planning Organization (TPO) identified the weight limit as an impediment to expanding port freight operations and maximizing military uses.

Modal Interrelationships | The 2019-2020 Port Directory shows that Port Canaveral accommodated approximately 4.5 million passengers and approximately 6,400,000 tons of overall cargo in 2018, in addition to outdoor recreation such as fishing and boating. The S.R. 401 bridges provide access to/from Port Canaveral. As the second largest cruise port in the world today, Port Canaveral's 30-year Strategic Vision Plan identifies the Port's successful growth as rooted in the link between Central Florida theme parks and the cruise industry.

The 2017, FDOT S.R. 401 Bridge Alternatives Analysis Study showed 14,900 annual average daily traffic (AADT) with 13% truck traffic. The truck traffic includes fuel transport, which accounts for about 40% of the supply for Central Florida. While the Port Canaveral 30-Year Strategic Vison Plan notes that petroleum cargo may level off as the U.S. transitions to more renewable energy sources, overall cargo is expected to grow to more than three times the current tonnage by 2048. The primary transportation options to distribute cargo is via truck or barge. Minimizing delays for the road and vessel usage will better position Port

Canaveral to provide economic growth. The S.R. 401 bridges opening to marine vessels create traffic delays to the port and cruise terminal. Similarly, marine vessels are delayed based on operation restrictions. Traffic evaluations and a vessel survey has been completed that determined factors to reducing delays. Finally, Port Canaveral's Vision Plan considers the sector north of the S.R. 401 bridges as having more demand for growth than land available, which further adds to the importance of this distribution connectivity.

1.3 Planning Consistency

The project is funded for PD&E and Preliminary Engineering in the July 2022 State Transportation Improvement Program (STIP). The project is also included in the Space Coast TPO Transportation Improvement Program (TIP) for Fiscal Year

2023 - 2027, Adopted July 14, 2022 and amended September 8, 2022 (roll forward amendment), and it is identified in this document as "one of the major projects on the Strategic Intermodal System that extend beyond the timeframe of the TIP that will be implemented with reasonably anticipated revenue."

Currently Adopted LRTP-CFP	COMMENTS
Yes	The S.R. 401 Bridge Replacement Project is identified in Amendment One of the Space Coast Transportation Planning Organization's (TPO's) 2045 Long Range Transportation Plan as one of three projects advanced on February 10, 2022 due to developments in the State Transportation Improvement Plan.

	Currently Approved	$	FY	COMMENTS
PE (Final Design)				
TIP	Y	40,000 4,040,771	2023 2024	SCTPO Transportation Improvement Program 2023-2024 State Bridge Repair Rehabilitation Replacement Project ID No. 4502641 PD&E and PE
STIP	Y	1,869,853 180,147	2022 2023	FDOT State Transportation Improvement Program The Final Design phase was funded in FY 2022 and is expected to begin following the PD&E Study Location & Design Concept Acceptance (LDCA), in early 2023
R/W				
TIP	N			
STIP	N			
Construction				
TIP	N			
STIP	N			

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2. Environmental Analysis Summary

Issues/Resources	Significant Impacts?* Yes	No	Enhance	NoInv
3. Social and Economic				
1. Social	☐	☒	☐	☐
2. Economic	☐	☒	☐	☐
3. Land Use Changes	☐	☒	☐	☐
4. Mobility	☐	☐	☒	☐
5. Aesthetic Effects	☐	☒	☐	☐
6. Relocation Potential	☐	☐	☐	☒
7. Farmland Resources	☐	☐	☐	☒
4. Cultural Resources				
1. Section 106 of the National Historic Preservation Act	☐	☒	☐	☐
2. Section 4(f) of the USDOT Act of 1966	☐	☒	☐	☐
3. Section 6(f) of the Land and Water Conservation Fund	☐	☐	☐	☒
4. Recreational Areas and Protected Lands	☐	☒	☐	☐
5. Natural Resources				
1. Protected Species and Habitat	☐	☒	☐	☐
2. Wetlands and Other Surface Waters	☐	☒	☐	☐
3. Essential Fish Habitat (EFH)	☐	☒	☐	☐
4. Floodplains	☐	☒	☐	☐
5. Sole Source Aquifer	☐	☐	☐	☒
6. Water Resources	☐	☒	☐	☐
7. Aquatic Preserves	☐	☒	☐	☐
8. Outstanding Florida Waters	☐	☒	☐	☐
9. Wild and Scenic Rivers	☐	☐	☐	☒
10. Coastal Barrier Resources	☐	☐	☐	☒
6. Physical Resources				
1. Highway Traffic Noise	☐	☒	☐	☐
2. Air Quality	☐	☒	☐	☐
3. Contamination	☐	☒	☐	☐
4. Utilities and Railroads	☐	☒	☐	☐
5. Construction	☐	☒	☐	☐

USCG Permit

☐ A USCG Permit IS NOT required.

☒ A USCG Permit IS required.

*** Impact Determination:** Yes = Significant; No = No Significant Impact; Enhance = Enhancement; NoInv = Issue absent, no involvement. Basis of decision is documented in the following sections.

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3. Social and Economic

The project will not have significant social and economic impacts. Below is a summary of the evaluation performed.

3.1 Social

This project has fully considered effects to minorities and other groups under the Civil Rights Acts of 1964, Environmental Justice, and other nondiscrimination laws and regulations. This project has been developed without regard to race, color, national origin, age, sex, religion, disability, or family status.

There are no residential land uses within one-quarter mile of the project and no potential for the project to affect neighborhoods. There is also limited potential for the project to affect area community facilities, including the Canaveral Barge Canal and Port Authority's Rodney S. Ketcham Park and boat ramp.

The sociocultural effects evaluation included an analysis of U.S. Census Data. Based on the Efficient Transportation Decision-Making (ETDM) Environmental Screening Tool (EST) Sociocultural Data Report (SDR) (attached), 2010 Census Block Groups 120099800001, 120090686021 were within the study area. These block groups feature less than 4% minority, 7.14% of households living below the poverty level, and 0% of households have Limited English Proficiency (LEP) or "Speak English Not Well or Not At All".

No minority or low-income populations have been identified that would be adversely impacted by the proposed project, as determined above. Therefore, in accordance with the provisions of Executive Order 12898 and FHWA Order 6640.23a, no further Environmental Justice analysis is required.

3.2 Economic

The 2017, FDOT S.R. 401 Bridge Alternatives Analysis Study showed 14,900 annual average daily traffic (AADT) with 13% truck traffic. The truck traffic includes fuel transport, which accounts for about 40% of the supply for Central Florida. While the Port Canaveral 30-Year Strategic Vison Plan notes that petroleum cargo may level off as the U.S. transitions to more renewable energy sources, overall cargo is expected to grow to more than three times the current tonnage by 2048.

Based on the *Economic Contribution of Port Canaveral to Florida in 2018 Report* prepared for the Canaveral Port Authority by Business Research & Economic Advisors (BREA), Port Canaveral's total contribution was evaluated based on three elements: i) the direct economic contribution, ii) the indirect economic contribution and iii) the induced economic contribution. The study found that Port Canaveral generates more than 32,000 jobs (full-time equivalent/FTE) with more than $1.3 billion in wages for the region.

The contributions are led by the cruise segment, which accounts for 67 percent of the total expenditures related to Port Canaveral throughout the state, and 73 percent of the jobs. Cargo is second in its contribution, generating 21 percent of the total expenditures across the state related to the port, and 14 percent of all jobs. The real estate segment contributes about nine percent of all expenditures and 10 percent of all jobs related to the port throughout the state.

The primary transportation options to distribute cargo is via truck or barge. Minimizing delays for the road and vessel usage will better position Port Canaveral to provide economic growth. The S.R. 401 bridges opening to marine vessels create traffic delays to the port and cruise terminal. Similarly, marine vessels are delayed based on operation restrictions. Traffic evaluations and a vessel survey were conducted during the PD&E Study to determine factors to reduce delays. Finally, Port Canaveral's Vision Plan considers the sector north of the S.R. 401 bridges as having more demand for growth than land available, which further adds to the economic importance of this distribution connectivity.

3.3 Land Use Changes

There are no residential uses in the study area. Based on the Brevard County Open Geographic Information System Open Data Hub, data dated April 24, 2020, the existing and future land use within and adjacent to the project corridor has been designated Port Land Use, which includes transportation and Port facilities. (See Land Use Map Attachment). There are no anticipated changes in land use as a result of this project.

3.4 Mobility

S.R. 401 is designated as a Strategic Intermodal System (SIS) connector, providing access to Cape Canaveral, a SIS Seaport. Port Canaveral's operations include major cruise terminals, cargo terminals, and substantial tanker truck traffic. Additionally, S.R. 401 is classified as a part of the State Strategic Highway Network (STRAHNET) connector by the Military Surface Deployment and Distribution Command as a connection to an ocean terminal to deploy and sustain U.S. forces on a global basis. The two southbound bridges (700030 and 700031) were constructed in 1963 and the northbound bridge (700117) was constructed in 1972. The bridges are the primary access to Cape Canaveral Space Force Station and Space Florida operations, Naval Ordinance Test Unit (NOTU), facilities for the U.S. Coast Guard, and access to Space Florida operations. The 2011 Spaceport Area Transportation Infrastructure Assessment by the Space Coast Transportation Planning Organization (TPO) identified the weight limit as an impediment to expanding port freight operations and maximizing military uses.

The 2019-2020 Port Directory shows that Port Canaveral accommodated approximately 4.5 million passengers and approximately 6,400,000 tons of overall cargo in 2018, in addition to outdoor recreation such as fishing and boating. The S.R. 401 bridges provide access to/from Port Canaveral, but do not have pedestrian nor bicycle facilities. As the second largest cruise port in the world today, Port Canaveral's 30-year Strategic Vision Plan identifies the Port's successful growth as rooted in the link between Central Florida theme parks and the cruise industry.

The study team conducted a detailed Marine Navigation and Vessel Survey to determine the number of bridge openings that would be required in the future based on the size and type of marine vessels traveling through the Canaveral Barge Canal. The study found that the S.R. 401 bridge must be opened for marine vessels taller than 25 feet. Traffic projections show that in 2025, the total traffic stop time due to drawbridge openings throughout the year is 138 hours in the no build scenario. The high-level fixed bridge alternative offers the benefit of continuous, free-flowing traffic on S.R. 401.

3.5 Aesthetic Effects

The existing S.R. 401 Bridge aesthetic is purely functional and utilitarian. The existing landscape within the study area consists of sod and volunteer sabal palms. The S.R. 528 interchange has two distinct aesthetic treatments consisting of

the northern portion with regularly spaced date and sabal palms and a bridge treatment accented with clusters of date palms. The southern portion of the interchange includes an infield retention area ringed with sabal palms. A preliminary Landscape Opportunity Plan has been developed for the PD&E Study, and this plan is included in the Preliminary Engineering Report. Coordination between FDOT and the Canaveral Port Authority and project stakeholders with regard to aesthetics and potential landscaping treatments is ongoing.

There is one two-sided FDOT-permitted Outdoor Advertising Sign Structure located northeast of the Canaveral Barge Canal (Tag Ci117 - facing south and Tag Ci118 - facing north). This sign structure is owned by Clear Channel Communications. The preferred alternative may impact potential views of this sign structure. Viewshed impacts are being verified and coordination is ongoing.

3.6 Relocation Potential

The proposed project, as presently conceived, will not displace any residences or businesses within the community. Should this change over the course of the project, a Right of Way and Relocation Assistance Program will be carried out in accordance with Florida Statute 421.55, Relocation of displaced persons, and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646 as amended by Public Law 100-17).

3.7 Farmland Resources

Lands within the project vicinity do not meet the definition of farmland as defined in 7 CFR § 658 and the provisions of the Farmland Protection Policy Act of 1981 do not apply because the entire project area is located in the urbanized area of FDOT District 5 2010 Brevard County with no designated farmlands adjacent to the project corridor.

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4. Cultural Resources

The project will not have significant impacts to cultural resources. Below is a summary of the evaluation performed.

4.1 Section 106 of the National Historic Preservation Act

A Cultural Resource Assessment Survey (CRAS), conducted in accordance with 36 CFR Part 800, was performed for the project, and the resources listed below were identified within the project Area of Potential Effect (APE). FDOT found that some of these resources meet the eligibility criteria for inclusion in the National Register of Historic Places (NRHP), and State Historic Preservation Officer (SHPO) has concurred with this determination. After application of the Criteria of Adverse Effect, and in consultation with SHPO, FDOT has determined that the proposed project will have No Adverse Effect on these resources.

A cultural resource assessment survey (CRAS) was completed for the S.R. 401 Bridge Replacement PD&E Study in January 2022.

To encompass all potential improvements, the area of potential effects (APE) was defined to include the existing right-of-way where improvements are proposed, including the three bridges spanning the Canaveral Barge Canal, as well as the right-of-way along the S.R. 401 (SR A1A) interchange with SR 528 Causeway for a total length of approximately 0.7 miles (1.1 kilometers) of S.R. 401 (SR A1A) and 0.5 miles (0.8 kilometers) of the S.R. 528 Causeway. This APE was extended to the back or side property lines of parcels adjacent to the right-of-way or a distance of no more than 100 meters (330 feet) from the right-of-way line. Given the absence of natural soils within the project right-of-way, no archaeological survey was conducted. The historic structure survey was conducted within the entire APE.

The architectural survey resulted in the identification and evaluation of five previously recorded historic resources within the SR 401 Bridge Replacement APE (8BR03009, 8BR03010, 8BR02936, 8BR03394, and 8BR03395). Resources 8BR03009 (FDOT Bridge No. 700030), 8BR03010 (FDOT Bridge No. 700031), and 8BR03395 (FDOT Bridge No. 700117) are historic bridges and had previously been recommended ineligible for inclusion in the NRHP by the Florida SHPO in 2019. The SR 528 Causeway (8BR03394) was also recommended ineligible for inclusion in the NRHP by the Florida SHPO in 2019. Finally, the Canaveral Lock (8BR02936) resource group had previously been recommended eligible for listing in the NRHP by the Florida SHPO in 2012 and again in 2017.

The vast majority of the Canaveral Lock (8BR02936) is located to the west and outside the SR 401 Bridge Replacement APE. The section of Resource 8BR02936 within the SR 401 Bridge Replacement APE does not contain any buildings or parts of the lock structure. Within the SR 401 Bridge Replacement APE, the Canaveral Lock (8BR02936) contains a section of the waterway with stone-covered earthen embankments and concrete retaining walls. Since much of the resource is located outside the SR 401 Bridge Replacement APE (SEARCH 2017), a full survey of the entire resource was not undertaken as part of the current study. Based on the results of the current and previous surveys, the Canaveral Lock (8BR02936) is significant for listing in the NRHP under Criterion A for its association with the Florida space industry and NASA, as well as its transportation associations. Within the APE, the segment of the overall Canaveral Lock (8BR02936) also retains sufficient historic integrity to convey its significance. The Canaveral Lock retains a high level of integrity of association since it continues to operate in its historic role as a canal lock for guiding boats into and out of the Cape Canaveral area, and it maintains its original location, design, materials, setting, feeling and association. Therefore, FDOT determined that Resource 8BR02936 remains eligible for NRHP listing.

The bridge replacement project is in keeping with the modernized SR 401 corridor. The improvements will not visually affect Resource 8BR02936 such that its NRHP-eligible status would be compromised, as it is the resource's associations with NASA and transportation that has contributed to the development of the area that determines its NRHP-eligible status. FDOT determined that that the project would have no adverse effect on 8BR02936 and recommended no further cultural resources survey or documentation in support of the project.

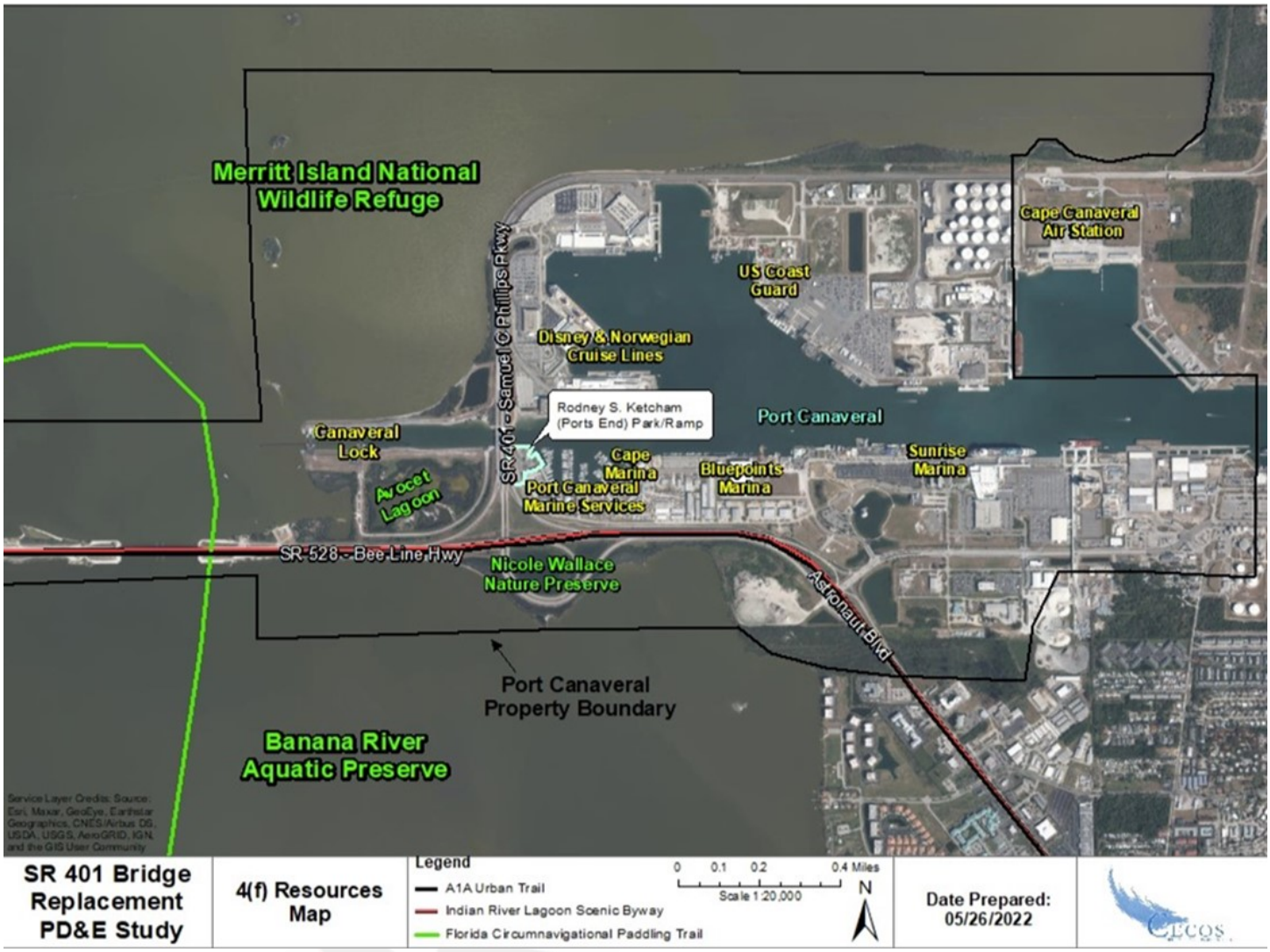
The Florida SHPO concurred with the results and recommendations of the survey. Refer to the attached letter transmitted to the Florida SHPO in February 2022, and returned concurrence on March 1, 2022.

4.2 Section 4(f) of the USDOT Act of 1966, as amended

The following evaluation was conducted pursuant to Section 4(f) of the U.S. Department of Transportation Act of 1966, as amended, and 23 CFR Part 774.

The Rodney S. Ketcham Park is located directly east of S.R. 401 and northeast of Mullet Road. It is a 4-acre park owned by the Canaveral Port Authority. This park includes boat-launch ramps, fish cleaning tables, picnic tables with pavilions, a restroom, and parking. Although the park is located directly adjacent to the proposed construction, no work is proposed within the park. Access will continue to be maintained during construction as the access point is east of the project limits and through A1A, which has no proposed work. It was confirmed and approved through SWEPT that Rodney S. Ketcham Park is considered "No Use" with respect to Section 4(f). The location of the park is shown in the Figure below.

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Note: the A1A Urban Trail and Florida Circumnavigational Paddling Trail shown on this map are 4(f) Resources, but are outside of the study area and were therefore not evaluated.

4.3 Section 6(f) of the Land and Water Conservation Fund Act of 1965

There are no properties in the project area that are protected pursuant to Section 6(f) of the Land and Water Conservation Fund of 1965.

4.4 Recreational Areas and Protected Lands

The project is located adjacent to the Indian River Lagoon. Other major natural features within and adjacent to the project area were mapped using the Florida Natural Areas Inventory (FNAI) Conservation Lands GIS Data Catalog, and the Comprehensive Everglades Restoration Plan (CERP) GIS Data Catalog. There are two natural features within a quarter mile of the project area. These areas are managed for public recreation and wildlife observation and preservation. The sites include the Merritt Island National Wildlife Refuge and the Banana River Aquatic Preserve. These recreational resources are depicted in the Section 4(f) Resources Map above.

Work will be limited to the footprint of the existing bridges and approaches and will not affect the recreational functions of these resources. As described in the previous section, the Rodney S. Ketcham Park is located directly east of SR 401 and northeast of Mullet Road. Although the park is located adjacent to proposed construction, no work is proposed within the park. Access will continue to be maintained during construction as the access point is east of the project limits and through A1A, which has no proposed work. Based on evaluation using the SWEPT Tool, the Rodney S. Ketcham Park is considered "No Use" with respect to Section 4(f).

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5. Natural Resources

The project will not have significant impacts to natural resources. Below is a summary of the evaluation performed:

5.1 Protected Species and Habitat

The following evaluation was conducted pursuant to Section 7 of the Endangered Species Act of 1973 as amended as well as other applicable federal and state laws protecting wildlife and habitat.

The project was evaluated for impacts to wildlife and habitat resources. Eighteen federally listed species and eight state listed species were identified to potentially occur in the project area. Of the federally listed species, eight species had a determination of May Effect, Not Likely to Adversely Effect, and 10 species had a determination of No Effect. For the state listed species, four species had an effect determination of No Effect Anticipated and four species had a determination of No Adverse Effect Anticipated.

No Effect and No Effect Anticipated determinations were made for species with either a lack of habitat/ negligible habitat within the project footprint or if their habitat will not be impacted by the project. Species with MANLAA or No Adverse Effect Anticipated determinations may be affected by project activities. The Wood Stork Determination Key for Central and North Peninsular Florida was used for this project and lead to the determination of No Effect for the wood stork (see attached Key). The Manatee Key was used for the project and lead to a determination of MANLAA for the manatee (see attached Key). See the Federally and State Listed Species Determinations of Effect tables below for more information.

Federally Listed Species Determination of Effect					
Scientific Name	Common Name	Listing Status*	Determination of Effect**	Jurisdictional Agency	Potential of Occurrence
Reptiles					
Chelonia mydas	Green sea turtle	FT	MANLAA	NMFS/ USFWS	High (swimming) None (nesting)
Caretta caretta	Loggerhead sea turtle	FT	MANLAA	NMFS/ USFWS	High (swimming) None (nesting)
Eretmochelys imbricata	Hawksbill sea turtle	FE	MANLAA	NMFS/ USFWS	Low (swimming) None (nesting)
Dermochelys coriacea	Leatherback sea turtle	FE	MANLAA	NMFS/ USFWS	Low (swimming) None (nesting)
Lepidochelys kempii	Kemp's ridley sea turtle	FE	MANLAA	NMFS/ USFWS	Moderate (swimming) None (nesting)
Drymarchon corais couperi	Eastern indigo snake	FT	NE	USFWS	None
Nerodia clarkii taeniata	Atlantic salt marsh snake	FT	NE	USFWS	Low
Birds					
Charadrius melodus	Piping plover	FT	NE	USFWS	Moderate
Calidris canutus rufa	Rufa red knot	FT	NE	USFWS	Moderate
Mycteria americana	Wood stork	FT	NE	USFWS	High
Laterallus jamaicensis spp. Jamaicensis	Eastern black rail	FT	NE	USFWS	None
Aphelocoma coerulescens	Florida scrub-jay	FT	NE	USFWS	None

Mammals					
Trichechus manatus latirostris	West Indian (Florida) Manatee	FT	MANLAA	USFWS	High
Peromyscus polionotus niveiventris	Southeastern beach mouse	FT	NE	USFWS	None
Fish					
Manta birostris	Giant manta ray	FT	MANLAA	NMFS	Moderate
Pristis pectinata	Smalltooth sawfish	FE	MANLAA	NMFS	Moderate
Plants					
Warea carteri	Carter's mustard	FE	NE	USFWS	None
Polygala lewtonii	Lewton's polygala	FE	NE	USFWS	None

Note: *FT = Federally designated Threatened; FE* = Federally designated Endangered
** NE = No Effect; MANLAA = May Effect, Not Likely to Adversely Effect

State Listed Species Determination of Effect					
Scientific Name	Common Name	Listing Status*	Determination of Effect	Jurisdictional Agency	Potential of Occurrence
Reptiles					
Gopherus polyphemus	Gopher tortoise	ST	**No Effect Anticipated**	FWC	None
Birds					
Rynchops niger	Black skimmer	ST	**No Effect Anticipated**	FWC	Low
Haematopus palliatus	American oystercatcher	ST	**No Effect Anticipated**	FWC	Low
Sternula antillarum	Least tern	ST	**No Effect Anticipated**	FWC	Low
Egretta rufescens	Reddish egret	ST	**No Adverse Effect Anticipated**	FWC	Moderate
Egretta caerulea	Little blue heron	ST	**No Adverse Effect Anticipated**	FWC	Moderate
Egretta tricolor	Tricolored heron	ST	**No Adverse Effect Anticipated**	FWC	Moderate
Ajaja ajaja	Roseate spoonbill	ST	**No Adverse Effect Anticipated**	FWC	Moderate

Note: ST* = State designated Threatened

Wetland, estuarine and open water habitats are present within the project and provide potential nesting and foraging habitat for federal and state-listed species. Critical habitat for the manatee exists within the project corridor and the Canaveral Barge Canal also provides potential habitat and access to and from the Indian River Lagoon/Ocean for manatees, sea turtles, giant manta ray, and smalltooth sawfish. It should be noted that no seagrass or corals were found under or adjacent to the bridge. Avoidance and minimization will continue to be incorporated as practical throughout the PD&E and Design processes. The proposed roadway improvements will use BMPs in accordance with the current FDOT's Standard Specifications for Road and Bridge Construction. Additionally, sea turtle and smalltooth sawfish construction conditions will be followed during construction. Standard manatee conditions for in-water work will be followed during construction as well. A Final Draft Natural Resource Evaluation (NRE) report dated 12/14/22 was prepared for the project. The NRE addresses effects of the project on protected species and habitat, wetlands and other

surface waters, and essential fish habitat. The Florida Fish and Wildlife Conservation Commission (FWC) concurred with these effect determinations in a letter dated January 1, 2023 (see attached). During the final design/permitting phase, FDOT commits that the NMFS Vibratory Pile Driving Report Calculator will be prepared to determine potential noise impacts to marine species (sea turtles, smalltooth sawfish, giant manta ray, other fish, and marine mammals), as there is currently insufficient information at this time. FDOT commits to coordinate with NMFS during the design/ permitting phase.

5.2 Wetlands and Other Surface Waters

The following evaluation was conducted pursuant to Presidential Executive Order 11990 of 1977 as amended, Protection of Wetlands and the USDOT Order 5660.1A, Preservation of the Nation's Wetlands.

A Natural Resources Evaluation was completed for this project. There are 14 wetlands and six other surface waters located within the project area. Approximately 1.18 acres of wetlands and 0.09 acres of other surface waters (OSWs) would be directly impacted by the project. The wetlands and OSWs are located directly adjacent to the project area and since the proposed new bridges will span the Canaveral Barge Canal, complete avoidance to these resources is not possible. Additionally, the existing bridges over the Barge Canal have a current shading area of 0.56 acres and the shading area for the proposed bridges is approximately 0.55 acres. Therefore, negligible shading impacts are anticipated. No other secondary impacts are anticipated.

It is anticipated that mitigation for impacts to wetlands will be at a permitted mitigation bank. Impacts to surface waters do not require a functional assessment as mitigation for these impacts is not anticipated. There are three mitigation banks in the project area: Webster Creek, Green Wings, and Neoverde. These banks do not sell mangrove credits and according to the DEP Mitigation Bank Service Area Map, do not serve the entire project area.
Wetland impacts that 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, Chapter 373, F.S. and 33 U.S.C.s. 1344. Mitigation options are limited and at this time there are no mangrove credits available from surrounding mitigation banks as of this report date. The only option currently available is utilizing Section 373.4137 F.S., which provides for mitigation of FDOT wetland impacts through a regional mitigation program implemented by the St. John's River Water Management District (SJRWMD) with funding from the FDOT for specific FDOT project impacts. If the SJRWMD is unable to provide appropriate mitigation, other options will be identified during the design/permitting phase. A Uniform Mitigation Assessment Method (UMAM) analysis was conducted to determine the mitigation credits needed. A total of 0.62 mitigation credits are needed. See the mitigation table below.

Mitigation Credits			
FLUCCS Code	**Description**	**Acres of Impact**	**Number of Mitigation Credits Needed**
612	WL-1 Mangrove Swamps	0.10	0.067
612	WL-9 Mangrove Swamps	0.44	0.23
631	WL-10 Wetland Scrub	0.50	0.25
641	WL-11 Freshwater Marsh	0.14	0.07

The Preferred Alternative has been evaluated in accordance with Federal Executive Order 11990 "Protection of Wetlands". Based on the above considerations, it is determined that there are no practicable measures to minimize harm

to wetlands which may result from such use. As the project advances through subsequent phases, avoidance and minimization of wetland impacts will continue to be considered to the maximum extent practicable. Therefore, with proper mitigation, the proposed project is expected to result in no significant impacts to wetlands.

5.3 Essential Fish Habitat (EFH)

An Essential Fish Habitat (EFH) Assessment has been prepared and consultation has been completed in accordance with the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA). It has been determined that this project will not have adverse effects to EFH.

Therefore, no concurrence is needed.

EFH present in the project area includes mangroves, sand/shell bottom, and seagrass. However, it is anticipated that only about 0.10 acres of mangrove EFH and only about 0.09 acres of sand/shell bottom EFH will be impacted. The mangrove EFH that will be impacted provides little to no foraging habitat due to its location and limited connection to the Indian River Lagoon. These impacts are unavoidable and will be minimized to the greatest extent possible. No seagrass or corals were found under or adjacent to the bridge. No impacts to seagrass EFH or tidal flats EFH are anticipated. Additional temporary impacts to sand /shell bottom will occur due to construction activities. BMP's including placement of erosion control measures will be implemented throughout construction. Mangrove EFH impacts will be mitigated for, as appropriate. Due to the nature of the minor EFH impacts being a total of approximately 0.19 acres and the use of BMPs, FDOT has determined that the project will have a minimal effect on EFH.

5.4 Floodplains

Floodplain impacts resulting from the project were evaluated pursuant to Executive Order 11988 of 1977, Floodplain Management.

Floodplain impacts resulting from the project were evaluated pursuant to Executive Order 11988 of 1977, Floodplain Management. The FEMA Floodplain Flood Hazard Layer FIRMette map (attached) for the Canaveral Barge Canal has a still water 100-yr flood elevation of 7.2 feet (NAVD). In the Banana River the 100-yr flood elevation of 3 feet.

The wave crest elevation is 10 feet (NAVD). With sea level rise, the wave crest elevation is 10.86 feet (NAVD). See Location Hydraulics Report (LHR) for additional information.

Due to potential floodplain impacts from the proposed stormwater management facilities the project improvements are considered a ***Minimal Encroachment.*** The potential floodplain encroachments have a very low probability for potentially causing adverse impacts to adjacent land uses including residential, business and transportation uses based on the Barge Canal's unrestricted hydraulic connection with the Atlantic Ocean.

It was further noted that adhering to applicable permitting and regulatory requirements would provide reasonable assurance that the project would not result in adverse impacts to affected floodplains. The proposed improvements are, therefore, unlikely to have impacts to any floodplains.

5.5 Sole Source Aquifer

There is no Sole Source Aquifer associated with this project.

5.6 Water Resources

A PD&E Pond Siting Report (PSR) and Water Quality Impact Evaluation (WQIE) were prepared for this study. In accordance with state criteria, water quality will be collected and treated prior to discharge to receiving waters including the Indian River Lagoon and the Barge Canal. This will be accomplished by using wet detention stormwater management facilities (SWMFs) in the infield areas south of the barge canal and dry retention/detention SWMFs along the roadway swales north of the barge canal. Therefore, neither direct nor indirect impacts to receiving waters are anticipated. The proposed roadway improvements' SWMFs for the project will meet FDOT drainage criteria, SJWMD permit criteria and use of BMPs in accordance with the current FDOT's Standard Specifications for Road and Bridge Construction. An Individual Environmental Resource Permit will be required from the St. Johns River Water Management District. Additionally, a National Pollutant Discharge Elimination System (NPDES) Construction permit is required from the FDEP. Erosion and sediment control details will be prepared along with the required Stormwater Pollution Prevention Plan to comply with permitting requirements from both agencies.

5.7 Aquatic Preserves

The project is adjacent to the Banana River Aquatic Preserve/OFW or Banana River Lagoon (BRL) located to the south and west of the project and is part of the Indian River Lagoon (see attached map). The proposed improvements' stormwater management facilities for the project will meet FDOT drainage criteria, SJWMD permit criteria and use BMPs in accordance with the current FDOT's Standard Specifications for Road and Bridge Construction. Discharges to the BRL will be required to meet peak requirements for the mean annual storm to reduce freshwater flows. This will be accomplished through discharge rate control in wet detention SWMFs. Avoidance and minimization measures will continue to be incorporated as practical throughout project development and design. Therefore, no impacts to the aquatic preserve are expected.

5.8 Outstanding Florida Waters

The Banana River Lagoon is both and Aquatic Preserve and Outstanding Florida Water (OFW). The project is also adjacent to the Merritt Island National Wildlife Refuge OFW located to the north and west of the project and is also part of the Indian River Lagoon. The proposed roadway improvements' stormwater management facilities for the project will meet FDOT drainage criteria, SJWMD permit criteria and use best management practices in accordance with the current FDOT's Standard Specifications for Road and Bridge Construction. Avoidance and minimization measures will continue to be incorporated as practical throughout the Design processes. Therefore, no impacts are expected.

5.9 Wild and Scenic Rivers

There are no designated Wild and Scenic Rivers or other protected rivers in the project area.

5.10 Coastal Barrier Resources

There are no Coastal Barrier Resources in the project area.

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6. Physical Resources

The project will not have significant impacts to physical resources. Below is a summary of the evaluation performed for these resources.

6.1 Highway Traffic Noise

The following evaluation was conducted pursuant to 23 CFR 772 Procedures for Abatement of Highway Traffic Noise and Construction Noise, and Section 335.17, F.S., State highway construction; means of noise abatement.

A Type 1 Noise Study Report (NSR) dated July 2022 was prepared pursuant to 23 Code of Federal Regulations (CFR) part 772 and Section 335.17, Florida Statutes (F.S.) for the Preferred Alternative (High Level Fixed Bridge) in accordance with of the FDOT PD&E Manual. Twelve noise sensitive receptor locations were evaluated, all of which were located at the Rodney S. Ketcham Park/Boat Ramp area and at an adjacent marina which contains liveaboard tenants. The traffic noise levels predicted at the twelve noise sensitive receptor locations under evaluation approached or exceeded the applicable noise abatement criteria at one single receptor location, an outdoor pavilion sitting area. However, potential noise abatement measures were determined to be not feasible based on the Department's Feasibility Factor (Noise Reduction Factor). Detailed information about the noise analysis can be found in the Noise Report located in the project file.

Temporary noise and vibration may occur from construction activities. Noise control measures will include those contained in FDOT's Standard Specifications for Road and Bridge Construction. Adherence to local construction noise and/or vibration ordinances by the contractor will also be required as applicable. Also see Section 6.5, Construction.

6.2 Air Quality

This project is not expected to create adverse impacts on air quality because the project area is in attainment for all National Ambient Air Quality Standards (NAAQS) and because the project is expected to improve the Level of Service (LOS) and reduce delay and congestion on all facilities within the study area.

The project is in an attainment area, so criteria pollutants under NAAQS are considered to be at an acceptable level. The project is expected to improve the vehicular level of service and reduce delay and congestion, thereby not creating any adverse impacts on air quality. Air quality modeling was, therefore, not conducted for this project.

6.3 Contamination

A Level 1 Contamination Screening Evaluation was conducted for this study in accordance with the FDOT PD&E Manual. The screening is documented in the Contamination Screening Evaluation Report (CSER). As part of this evaluation, a preliminary review of potential contamination sites located within the search distances for the project alignment was conducted (see attached potential contamination sites map). The following listings: five petroleum tank facilities and one hazardous material generator:

1. Cape Marina Services
2. Ocean Club at Port Canaveral
3. New Port Marina
4. Unknown Release
5. Canaveral Port Authority Cruise Terminal 8 Garage
6. Canaveral Landfill

All sites were determined to be low risk due to distance from the proposed construction. Therefore, no impacts due to contamination are anticipated.

6.4 Utilities and Railroads

UTILITIES

A Utility Assessment Report is being completed for this project, and coordination with Utility Agencies/Owners (UAOs) is ongoing. This report is provided in the Project File and summarized in the Preliminary Engineering Report (PER). UAOs with potential involvement include:

- AT&T Distribution
- Charter Communications (Spectrum)
- Crown Castle Fiber
- City of Cocoa, Florida
- City of Cocoa Beach, Florida
- Florida Power & Light (FP&L) Transmission
- FP&L Distribution

It is anticipated that the proposed project will result in utility conflicts and will require adjustments and relocations.

AT&T Florida (telephone)

- A 1-4" PVC BT Duct crossing S.R. 401 approx. 600 feet south of the Canaveral Barge Canal.
- 2-4" PVC Duct running north-south along the east LA R/W to a BT Manhole (P-1) located 10 ft south of Mullet Road
- A 600-pair 2" subaqueous copper BT crossing the Canaveral Barge Canal approximately 100 feet west of S.R. 401 to a BT Manhole (P-2) located approximately 350 feet north of the Canaveral Barge Canal adjacent to northbound S.R. 401

Charter Communication/ Spectrum (CATV)

- Per correspondence from Paul Rymer, Construction Specialist, Spectrum has no facilities within the study limits; however, in February 2022, Charter Communications contacted the study team to inquire about placing a pipe in the head wall on the bridge during the construction of the bridge for future fiber.

City of Cocoa (Water)

- South of the S.R. 401 Bridges, a City of Cocoa 24" water main runs along the western edge of Mullet Road. At about 500 feet North of the bridges, the water main is 60-80 feet east of the S.R. 401 edge of pavement.
- A 6" asbestos concrete water main (out of service) runs along western edge of the S.R. 528 WB on ramp right of way, crossing S.R. 401 approximately 250 feet south of Mullet Road and running along eastern edge of the S.R. 528 EB off ramp.
- 36" Concrete WM that runs along western edge of the R/W for the S.R. 528 WB on ramp (approx. 10-15 ft west of the 6" AC WM), crossing S.R. 401 approx. 675 feet south of Mullet Road and running along the western edge of Mullet Road.

FP&L Power

- The FP&L Transmission pole line has three high-voltage 69kV OE Transmission lines run north-south just west of the LA right of way within an easement. The Transmission lines cross S.R. 401 approximately 175 feet north of the S.R. 528 overpass. FP&L Distribution has three 12.6kV OE Distribution underlines on the existing FP&L Transmission Pole Line within an easement.
- A Transmission Power Pole located just south of Mullet Road on the west side of the S.R. 401 Bridge could potentially conflict with construction of the southbound bridge.
- The FP&L OE Transmission and Distribution (under lines) that cross S.R. 401 on Transmission poles approximately 175 feet north of the S.R. 528 overpass will likely conflict with the new S.R. 401 profile at this location.
- Approximately 650 feet north of the S.R. 401 Bridges, an FP&L distribution service connection crosses the LA R/W and will conflict with the higher S.R. 401 profile.

Coordination with UAOs to identify and minimize conflicts will continue through the design phase.

RAILROADS

There are no existing or planned rail facilities within the study limits.

6.5 Construction

Construction activities may cause short-term air quality impacts in the form of dust from earthwork and unpaved roads. These impacts will be minimized by adherence to applicable state regulations and to applicable FDOT Standard Specifications for Road and Bridge Construction.

Construction activities for the proposed project may have temporary air, noise, vibration, water quality, traffic flow, and visual impacts for those residents and travelers within the immediate vicinity of the project. Air quality impacts will be temporary and will primarily be in the form of emissions from diesel-powered construction equipment and dust from road areas. Air pollution associated with the creation of airborne particles will be effectively controlled through the use of watering or the application of other controlled materials in accordance with FDOT's Standard Specifications for Road and Bridge Construction as directed by the FDOT Project Engineer.

Noise and vibration impacts will be from the heavy equipment movement and construction activities such as pile driving and vibratory compaction of embankments. Noise control measures will include those contained in FDOT's Standard Specifications for Road and Bridge Construction. Adherence to local construction noise and/or construction vibration ordinances by the contractor will also be required where applicable.

Water quality impacts resulting from erosion and sedimentation during construction will be controlled in accordance with FDOT's Standard Specifications for Road and Bridge Construction and through the use of Best Management Practices.

Maintenance of traffic and sequence of construction will be planned and scheduled to minimize traffic delays throughout the project. Access to all businesses and residences will be maintained to the extent practical through controlled construction scheduling. Traffic delays will be controlled to the extent possible where many construction operations are in progress at the same time.

Construction of the project may require excavation of unsuitable material (muck), placement of embankments, and use of materials, such as limerock, asphaltic concrete, and portland cement concrete. Any demucking will be controlled by adherence to Section 120 of FDOT's Standard Specifications for Road and Bridge Construction. Disposal will be on-site in detention areas or offsite.

The removal of structures and debris will be in accordance with local and state regulatory agencies permitting this operation. The contractor is responsible for the methods of controlling pollution on haul roads; in borrow pits, other materials pits, and areas used for disposal of waste materials from the project.

Temporary erosion and sediment control features as specified in the FDOT's Standard Specifications for Road and Bridge Construction, Section 104, will consist of temporary grassing, sodding, mulching, sandbagging, slope drains, sediment basins, sediment checks, artificial coverings, and berms. A National Pollutant Discharge Elimination System (NPDES) Construction permit is required from the FDEP. Also called the FDEP Generic Permit for Stormwater Discharges, erosion and sediment control details will be prepared along with the required Stormwater Pollution Prevention Plan (SWPPP) to comply with permitting requirements. The SWPPP will include a narrative description of the site, controls, maintenance, and inspection requirements.

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7. Engineering Analysis Support

The engineering analysis supporting this environmental document is contained within the Preliminary Engineering Report 22-12-16.

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8. Permits

The following environmental permits are anticipated for this project:

Federal Permit(s)	Status
USACE Section 10 or Section 404 Permit	To be acquired
USACE Section 408 Permit	To be acquired
USCG Bridge Permit	To be acquired

State Permit(s)	Status
DEP or WMD Environmental Resource Permit (ERP)	To be acquired
State 404 Permit	To be acquired

Permits Comments

Regarding the State 404 Permit, determination on the permitting agency will be determined.

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9. Public Involvement

The following is a summary of public involvement activities conducted for this project:

Summary of Activities Other than the Public Hearing

This PD&E Study is being conducted by FDOT in coordination with local agencies and organizations that have a stake in this project, including the Canaveral Port Authority.

PUBLIC INVOLVEMENT PLAN

The S.R. 401 PD&E Study Public Involvement Plan (PIP) was prepared in June of 2021. The purpose of the PIP is to assist in providing information to and obtaining input from concerned citizens, agencies, private groups (residential/business), and governmental entities. The overall goal of the plan was to help ensure that the study reflects the values and needs of the communities it is designed to benefit.

PROJECT KICKOFF NOTICE

A Project Kickoff Notice was sent to project stakeholders on September 3, 2021. This notice included a Project Information Handout and FDOT Project Manager's contact information.

PUBLIC MEETING

Details of the S.R. 401 PD&E Study Alternatives Public Meeting are provided in the Public Meeting Summary Report. The following is a summary:

The Department held a hybrid Public Information Meeting for this PD&E Study on February 23, 2022. Notices of the public meeting were sent to all property owners, business owners, interested persons and organizations to provide the opportunity to offer comments and express their views regarding this project and the proposed improvements. Participants joined the virtual public meeting on GoTo Webinar, and the in-person meeting was held as an open house at the Port Canaveral Maritime Center at 445 Challenger Road, Cape Canaveral. A recording of the public meeting presentation and copies of the meeting exhibits are available on the project website at www.cflroads.com/project/444787-1.

Attendees (not including FDOT/study team members): While 48 stakeholders registered for the virtual public meeting, 16 attended online. A total of 18 stakeholders attended the in-person open house.

Stakeholders in attendance included: Space Coast TPO, Space Florida Brevard County, Canaveral Port Authority Staff and Commission, City of Cape Canaveral, U.S. Coast Guard, Department of State, FAA, and NASA, as well as private entities such as 888 Transportation (cargo), Blue Origin, SpaceX, Kennedy Marina, Charter Communications, and the Radisson Resort at the Port.

Comments/Questions: The public comment period for this public meeting was open until March 9, 2022. Stakeholders expressed the desire for the project to be fast-tracked. We received a comment in support of the Fixed Bridge Alternative, and one stakeholder expressed concern that the 65-foot height of the Fixed Bridge Alternative would limit taller (70-foot) marine vessel travel. The Canaveral Port Authority subsequently provided a letter of support for the High-level Fixed Bridge Alternative.

TECHNICAL ADVISORY COMMITTEE AND AGENCY COORDINATION

At the beginning of this study, a technical advisory committee (TAC) was organized, consisting primarily of members of the Canaveral Port Authority staff. There have been numerous meetings and presentations to engage agency and private organizational stakeholders and garner input (see Table).

Coordination Meetings and Key Talking Points		
Organization	**Meeting Date(s)**	**Purpose/Talking Points**
Canaveral Port Authority Staff	09-13-2021	Introduce the S.R. 401 project and identify TAC members and preliminary meeting schedule.
Brevard County	09-16-2021	Introduce the S.R. 401 project and discuss County-wide ATMS and ITS approaches.
Canaveral Port Authority Staff	10-06-2021	Discuss the S.R. 401 project (FPID 444787-1) and S.R. 528 project (FPID 407402-4)
U.S. Army Corps of Engineers (USACE)	10-07-2021	Identify transportation needs (automotive and marine vessel), determine vertical clearance and permitting requirements and/or restrictions.
National Aeronautics and Space Administration (NASA)	10-18-2021	Identify transportation needs (auto/marine) Determine special loading requirements (none)
SpaceX	10-21-2021	Identify transportation needs (auto/marine)
U.S. Space Force	10-26-2021	Identify transportation needs (auto/marine)
Space Florida	10-28-2021	Project overview. Identify key stakeholders to contact for discussions regarding transportation needs and existing/future routes for space vehicle transport (auto/marine).
U.S. Coast Guard	11-05-2021	Follow-up on Safe Harbor and fixed bridge vertical clearance discussion.
U.S. Naval Ordinance Test Unit (NOTU)	11-09-2021	Identify transportation needs (auto/marine). Determine loading and special vehicle needs. Identify security concerns.
U.S. Space Force 5th SLS and Space Launch Delta 45	11-09-2021	Identify transportation needs and existing/future routes for space vehicle transport (auto/marine). Determine vertical clearance concerns.
Blue Origin	11-10-2022	Identify transportation needs and existing/future routes for space vehicle transport (auto/marine). Determine vertical clearance concerns.
Astrotech	11-16-2022	Identify transportation needs and existing/future routes for space vehicle transport (auto/marine). Determine vertical clearance concerns.
Port Canaveral Cargo Tenants	11-17-2021	Identify cargo volumes and vehicle sizes. Determine loading and vertical clearance needs.
Port Canaveral and Brevard County	11-23-2021	Discuss safety and security concerns. Identified impacts to the Port's emergency access gate on NE quadrant of bridge crossing.
Florida Power & Light (FP&L)	11-30-2021	Identify potential conflicts with FP&L transmission and distribution facilities as a follow-up to the initial utility owner contact.
Port Canaveral Cruise Ground Transportation Providers	2-01-2022	Identify ground transportation volumes / concerns.

Date of Public Hearing: 02/01/2023
Summary of Public Hearing

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10. Commitments Summary

1. The most recent U.S. Fish and Wildlife Service (USFWS) Standard Manatee Conditions for in water-work will be adhered to during construction.
2. The most recent National Marine Fisheries Service (NMFS) Sea Turtle and Small toothed Sawfish Construction Conditions for in water-work will be adhered to during construction.
3. FDOT will follow the sea turtle and small tooth sawfish construction conditions during construction.
4. Impacted wetlands will be finalized in design and mitigated for.

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11. Technical Materials

The following technical materials have been prepared to support this environmental document and are included in the Project File.

Existing Conditions Memorandum
Project Traffic Analysis Report Final
Cultural Resources Assessment Survey Final
SHPO Concurrence Letter
Natural Resources Evaluation 22-12-14
Pond Siting Report (PSR)
Water Quality Impact Evaluation (WQIE)
Noise Study Report (NSR)
Contamination Screening Evaluation Report (CSER)
Utilities Assessment Package
Preliminary Engineering Report 22-12-16
Geotechnical Report - PRELIMINARY
Public Involvement Plan

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Attachments

Planning Consistency

Planning_Consistency_LRTP
Project Plan Consistency SCTPO TIP
Project Plan Consistency STIP

Social and Economic

Land Use Map
Efficient Transportation Decision-Making (ETDM) Sociocultural Data Report (SDR)
FDOT District 5 Urban Boundary Map
Economic Contribution of Port Canaveral to Florida in 2018
Marine Vessel Navigation Survey

Cultural Resources

SHPO Concurrence Letter
Section 4(f) Report

Natural Resources

Aquatic Preserves and Outstanding Florida Waters (OFW) Map
Floodplains Map
Wetlands Surface Waters and Essential Fish Habitat Map
Florida Fish and Wildlife Conservation Commission (FWC) Concurrence Letter

Physical Resources

Noise Receptor Map
Potential Contamination Sites Map

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Planning Consistency Appendix

Contents:

Planning_Consistency_LRTP
Project Plan Consistency SCTPO TIP
Project Plan Consistency STIP

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15.0 LRTP AMENDMENTS

Besides the 5-year update cycle, there are times when the SCTPO may find it necessary to amend the LRTP. An amendment is a major revision that may include adding or deleting a project from the plan. It also includes major changes to project costs, initiation dates, or design concepts and scopes for existing projects. A major amendment resulting in a change in the cost feasibility of the adopted LRTP cost feasible plan requires financial analysis reaffirming the cost feasibility of the amended plan. An amendment requires public review and comment in accordance with the Public Involvement Process for LRTP Amendments, and re-demonstrating fiscal constraint. Florida Statute requires the SCTPO Board adopt any amendments to the LRTP by a recorded roll call vote with a majority of the membership present.

Table 15.1 will be used throughout the timeframe of the 2045 LRTP to record the adoption and any future amendments or modifications that are processed.

Table 15.1: LRTP Amendments

Number	Amendment or Modification	Resolution Number	Approval Date	Reason for Amendment or Modification
1	Amendment	22-13	2/10/22	Project Advancement

From Chapter 4, page 4-29 of the FDOT Metropolitan Planning Organization Program Management Handbook:

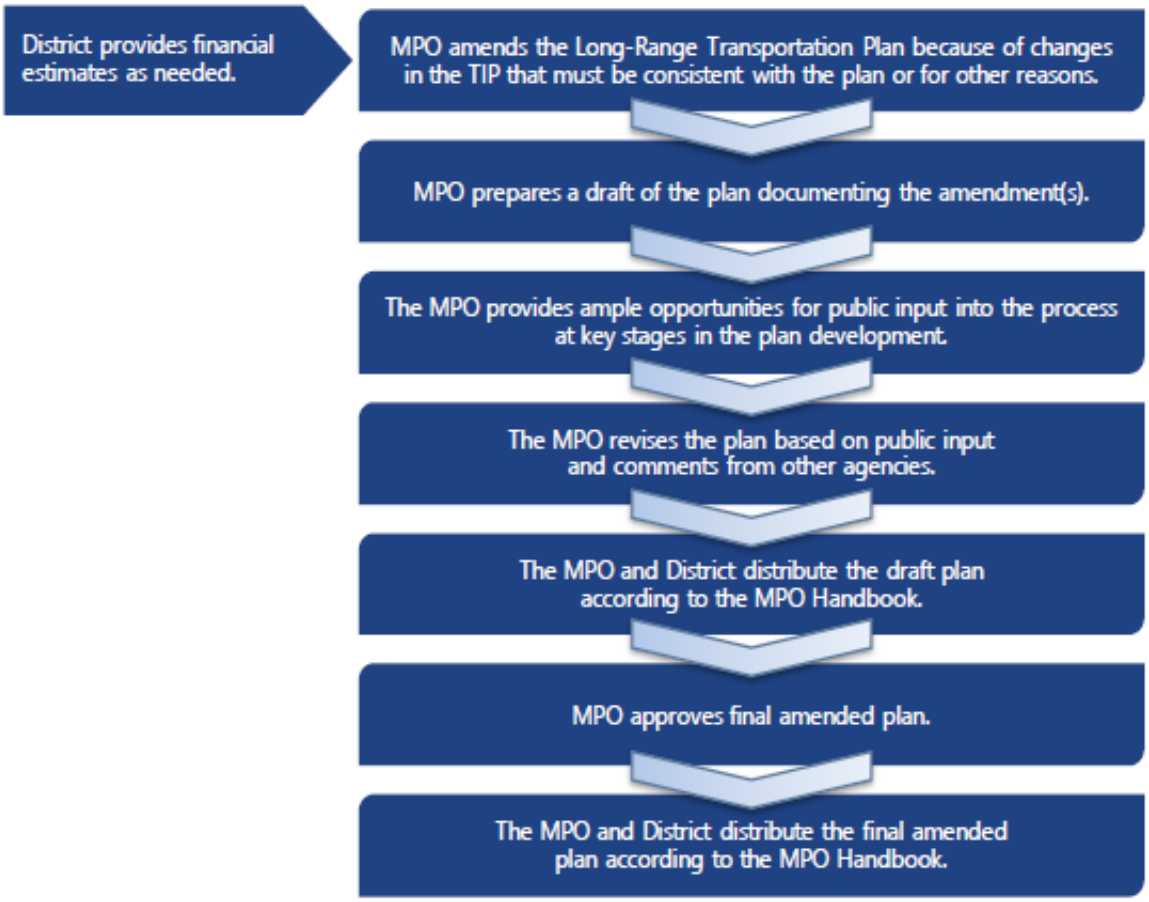
"Besides the five-year update cycle, there are times an MPO may find it necessary to revise the LRTP. FDOT Guidance provides minimum thresholds for project changes that trigger an LRTP Amendment. The Code of Federal Regulations defines two types of revisions:

- An **administrative modification** is a minor revision to the LRTP (or TIP) that includes minor changes to project/project phase costs, minor changes to funding sources of previously included projects, and minor changes to project/project phase initiation dates. An administrative modification is a revision that does not require public review and comment, a redemonstration of fiscal constraint, or a conformity determination (in nonattainment and maintenance areas). [23 C.F.R. 450.104]
- An **amendment** means a revision to a long-range statewide or metropolitan transportation plan, TIP, or STIP, that involves a major change to a project included in a LRTP, TIP, or STIP, including the addition or deletion of a project or a major change in project cost, project/project phase initiation dates, or a major change in design concept or design scope (e.g., changing project termini or the number of through traffic lanes or changing the number of stations in the case of fixed guideway transit projects). Changes to projects that are included only for illustrative purposes do not require an amendment. An amendment is a revision that requires public review and comment and a redemonstration of fiscal constraint. If an amendment involves "nonexempt" projects in nonattainment and maintenance areas, a conformity determination is required. [23 C.F.R. 450.104]

The LRTP can be revised at any time. It is important to note the MPO does not have to extend the LRTP planning horizon out another 20 years for administrative modifications and amendments. That is required only for the periodic (e.g., 5-year) update.

Florida Statute requires the MPO Board adopt any amendments to the LRTP by a recorded roll-call vote or hand-counted vote of the majority of the membership present. This guidance [s.339.175(13), F.S.] Figure 4.3 shows the LRTP amendment process."

Figure 4.3 LRTP Amendment Process



Amendment One

Due to developments in the FDOT Work Program the following projects have moved into the first 5 year time period of the LRTP. The limits of project T1.8b have been updated to be consistent with other planning documents. Cost Feasible Table 11.1 (PDF page 142) has been updated to reflect these changes. The changes below do not impact the cost feasibility of current or future projects.

Cost Feasible Project No.	Facility	From	To	Phase	Year	Amount
T1.8a	NASA Causeway Bridge Replacement			CST	2022	$134,205,657
T1.8b	Space Commerce Way Widening	NASA Parkway West	Kennedy Parkway	CST	2023	$24,810,000
T1.15	SR 401 Bridge Replacement			PE	2022	$2,038,318

TABLE 11.1: STRATEGIC INTERMODAL SYSTEM PROJECTS in millions YOE $s

						2021-2025				2026-2030				2031-2035				2036-2040				2041-2045				2021-2045
Table ID	FACILITY	FROM	TO	PROJECT	SOURCE	PD&E	PE	ROW	CST	PD&E	PE	ROW	CST	PD&E	PE	ROW	CST	PD&E	PE	ROW	CST	PD&E	PE	ROW	CST	TOTAL
T1.1	Ellis Rd.	John Rhodes Blvd.	W of Wickham Rd.	Widen to 4 Lanes	ACCM, ACSA, ACSU, CM, SA, SU			$ 21.51																		$ 21.51
					TMA (SU)			$ 1.60																		$ 1.60
					SIS								$ 37.92													$ 37.92
T1.2	I-95/SR 524 Interchange	N/A	N/A	Operational Improvements	Other Arterial						$ 1.75		$ 12.70													$ 14.45
T1.3	I-95 at SR 524 Interchange Ramps	N/A	N/A	Landscaping	DDR, DIH				$ 0.63																	$ 0.63
T1.4	I-95/Wickham Rd. Ramp Improvements and Mast Arms	N/A	N/A	Add Left Turn Lane(s)	ACFP, DDR				$ 3.23																	$ 3.23
T1.5	I-95	S. of SR 404 Interchange	N. of SR 404 Interchange	Landscaping	DDR, DIH				$ 0.58																	$ 0.58
T1.6	I-95/Ellis Rd. Interchange	N/A	N/A	Interchange (New)	ACNP				$ 0.05																	$ 0.05
T1.7	I-95 Southbound Rest Area			Rest Area	DDR, DIH, DRA		$ 1.00		$ 21.69																	$ 22.69
T1.8	*Cape Canaveral Spaceport Indian River Bridge Replacement & Space Commerce Way Connector*																									
	a. Nasa Causeway Bridge	N/A	N/A	Bridge Replacement	SIS, INFRA, NASA				$ 134.21																	$ 134.21
	b. Space Commerce Way	NASA Parkway West	Kennedy Parkway	Widen to 4 Lanes	SIS, INFRA, NASA, NFPD, LF				$ 24.80																	
	c. NASA Causeway			Resurfacing	SIS, INFRA								$ 32.03													
T1.9	SR 528	SR 520	SR 407	Widen to 6 Lanes	SIS							$ 4.02	$ 92.01													$ 96.03
T1.10	SR 528	E. of Industry Rd.	E. of SR 3	Widen to 6 Lanes	DI, DIH			$ 6.60																		$ 6.60
					SIS											$ 18.54	$ 424.05									$ 442.58
T1.11	SR 528	E. of SR 3	Port Canaveral Interchange (SR 401)	Widen to 6 Lanes	DI, DIH			$ 1.99																		$ 1.99
					SIS											$ 4.89	$ 491.81									$ 496.70
T1.12	SR 528	US 1	SR 401	Resurfacing	DDR, DIH, NHRE		$ 1.36		$ 12.07																	$ 13.43
T1.13	SR 528/US 1			Drainage Improvements	DDR, DIH			$ 0.16	$ 2.14																	$ 2.30
T1.14	SR 528	N/A	N/A	Upgrade Overhead Signing	PKYI				$ 4.14																	$ 4.14
T1.15	SR 401	N/A	N/A	Bridge Replacement	DDR, DIH	$ 1.51	$ 0.03																			$ 1.54
					SIS, ACNP		$ 2.00																			$ 2.00
SUBTOTAL - SIS						**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 4.02**	**$ 129.93**	**$ -**	**$ -**	**$ 23.43**	**$ 915.85**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,073.24**
SUBTOTAL - Other Arterial						**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1.75**	**$ -**	**$ 12.70**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 14.45**
SUBTOTAL - Misc. State/Federal						**$ 1.51**	**$ 4.39**	**$ 30.25**	**$ 203.52**	**$ -**	**$ -**	**$ -**	**$ 32.03**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 271.70**
SUBTOTAL - TMA (SU)						**$ -**	**$ -**	**$ 1.60**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1.60**
TABLE 11.1 SUBTOTAL						**$ 1.51**	**$ 4.39**	**$ 31.85**	**$ 203.52**	**$ -**	**$ 1.75**	**$ 4.02**	**$ 174.66**	**$ -**	**$ -**	**$ 23.43**	**$ 915.85**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,360.99**
TABLE 11.1 TOTAL						**$241.27**				**$180.44**				**$939.28**				**$0.00**				**$0.00**				**$ 1,360.99**

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RESOLUTION # 22-13

2045 Long Range Transportation Plan Amendment #1

A RESOLUTION, adopting the Space Coast Transportation Planning Organization's 2045 Long Range Transportation Plan (LRTP) for the Palm Bay-Melbourne and Titusville Urbanized Areas.

WHEREAS, the Space Coast Transportation Planning Organization is the designated and constituted body responsible for the urban transportation planning and programming process for the Palm Bay-Melbourne and Titusville Urbanized Areas; and

WHEREAS, Federal regulations 23 C.F.R. 450.322, 450.324, 450.306 and FL State Statute 339.175 outline the requirements for MPOs to develop LRTPs through a performance-driven, outcome-based approach to planning for metropolitan areas of the State. The metropolitan transportation planning process shall be continuous, cooperative, and comprehensive; it should also provide for the consideration and implementation of projects, strategies, and services that will address all required factors; and

WHEREAS, the Long Range Transportation Plan (LRTP) was developed with local, regional, state, multi-modal and environmental agencies that depicts an accurate representation of the areas priorities as developed through the planning process carried on cooperatively in accordance with the provisions of 23 U.S.C. 134; and

WHEREAS amending the plan may be necessary from time to time due to major changes to project cost, scope and project limits; the addition of new projects to the Plan; and to ensure planning consistency with other planning studies, programs and production schedules.

WHEREAS, the BOARD'S registered Agent in Florida is Andrea Young, Space Coast TPO Chair. The registered Agent's address is: 2725 Judge Fran Jamieson Way, Building B, Room 105, Melbourne, FL 32940; and

NOW THEREFORE, BE IT RESOLVED The Space Coast Transportation Planning Organization amends the 2045 Long Range Transportation Plan, Amendment No. 1, as detailed in Attachment A.

Space Coast Transportation Planning Organization

Passed and duly adopted at a regular meeting of the Space Coast Transportation Planning Organization Governing Board on the 10th day of February, 2022.

Certificate

The undersigned duly qualified as Chair of the Space Coast Transportation Planning Organization Governing Board certifies that the foregoing is a true and correct copy of a Resolution adopted at a legally convened meeting of the Space Coast Transportation Planning Organization Governing Board.

By: _____
Andrea Young
Space Coast TPO Governing Board Chair

By: _____
Robert L. Jordan, Jr.
Space Coast TPO Governing Board Secretary

Space Coast Transportation Planning Organization
Transportation Improvement Program

Fiscal Year 2023 - 2027 Adopted July 14, 2022,
Amended September 8, 2022 (roll forward amendment)



Space Coast Transportation Planning Organization
2725 Judge Fran Jamieson Way
Building B, Room 105
Melbourne, Florida 32940
Phone: 321-690-6890
Fax: 321-690-6827

The preparation of this report has been financed in part through grant(s) from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 [or Metropolitan Planning Program, Section 104(f)] of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

5-Year Summary of Projects by Funding Category

Project #	Project Name	2023	2024	2025	2026	2027	Total
BNIR - INTRASTATE R/W & BRIDGE BONDS							
Total		**0**	**5,050,000**	**0**	**1,930,000**	**0**	**6,980,000**
BRRP - STATE BRIDGE REPAIR & REHAB							
4471351	US 1 ELBOW CREEK (#700007) & US 1 EAU GALLIE	750,030	0	0	0	0	**750,030**
4494251	I-95 BRIDGE REHAB; 700162 CARTER	1,152,181	0	0	0	0	**1,152,181**
4502641	SR 401 OVER CANAVERAL BARGE CANAL	40,000	4,000,771	0	0	0	**4,040,771**
Total		**1,942,211**	**4,000,771**	**0**	**0**	**0**	**5,942,982**
CIGP - COUNTY INCENTIVE GRANT PROGRAM							
4269052	ST JOHNS HERITAGE PKWY/ELLIS RD	0	0	0	4,100,000	0	**4,100,000**
Total		**0**	**0**	**0**	**4,100,000**	**0**	**4,100,000**
CM - CONGESTION MITIGATION - AQ							
4269054	ST JOHNS HERITAGE PKWY/ELLIS RD FROM JOHN	2,772,804	2,763,453	1,000,000	871,000	0	**7,407,257**
Total		**2,772,804**	**2,763,453**	**1,000,000**	**871,000**	**0**	**7,407,257**
D - UNRESTRICTED STATE PRIMARY							
2439681	MOA - MELBOURNE	80,328	80,328	80,328	80,328	80,328	**401,640**
2440031	COCOA BEACH MOA	0	14,874	14,874	14,874	14,874	**59,496**
2440041	CITY OF PALM BAY MOA	0	99,654	0	0	0	**99,654**
2440071	MOA CTY OF ROCKLEDGE	109,584	0	0	0	0	**109,584**
2441001	MOA TITUSVILLE	0	62,300	62,300	62,300	0	**186,900**
2443481	MOA - CITY OF COCOA	213,390	0	0	0	0	**213,390**
2447062	MOA - BREVARD COUNTY	0	32,340	32,340	32,340	32,340	**129,360**
2447291	MOA - INDIAN HARBOUR BEACH ON SR 513	48,975	0	0	0	0	**48,975**
4064911	MOA - INDIALANTIC	0	0	26,000	0	0	**26,000**
4136154	LIGHTING AGREEMENTS FUNDS	1,047,856	1,079,288	1,111,675	1,145,015	1,179,376	**5,563,210**
4157842	TOWN OF PALM SHORES MOA	12,572	12,572	12,572	0	0	**37,716**

DS	3,271,732	0	0	0	0	0	3,271,732
TOTAL <N/A>	4,003,101	15,964	0	0	0	0	4,019,065
TOTAL 443957 1	4,003,101	15,964	0	0	0	0	4,019,065
TOTAL Project:	4,003,101	15,964	0	0	0	0	4,019,065

ITEM NUMBER:444176 1 PROJECT DESCRIPTION:SR 518 EAU GALLE BLVD FROM W OF MOSSWOOD DR TO E OF STEWARD AVE *NON-SIS*
DISTRICT:05 COUNTY:BREVARD PROJECT LENGTH: .262MI TYPE OF WORK:ADD LEFT TURN LANE(S)

FUND CODE	LESS THAN 2023	2023	2024	2025	2026	GREATER THAN 2026	ALL YEARS
FEDERAL PROJECT NUMBER: <N/A>							
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT							
DIH	24,414	75,586	0	0	0	0	100,000
DS	19,564	0	0	0	0	0	19,564
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT							
DDR	930,994	0	0	0	0	0	930,994
DIH	19,117	883	0	0	0	0	20,000
TOTAL <N/A>	994,089	76,469	0	0	0	0	1,070,558
TOTAL 444176 1	994,089	76,469	0	0	0	0	1,070,558
TOTAL Project:	994,089	76,469	0	0	0	0	1,070,558

ITEM NUMBER:444787 1 PROJECT DESCRIPTION:SR 401 BRIDGE REPLACEMENT *SIS*
DISTRICT:05 COUNTY:BREVARD PROJECT LENGTH: .686MI TYPE OF WORK:PD&E/EMO STUDY

FUND CODE	LESS THAN 2023	2023	2024	2025	2026	GREATER THAN 2026	ALL YEARS
FEDERAL PROJECT NUMBER: <N/A>							
PHASE: P D & E / RESPONSIBLE AGENCY: MANAGED BY FDOT							
DDR	1,915,449	0	0	0	0	0	1,915,449
DIH	139,740	14,045	0	0	0	0	153,785
DS	40	0	0	0	0	0	40
TOTAL <N/A>	2,055,229	14,045	0	0	0	0	2,069,274
FEDERAL PROJECT NUMBER: D522 049 B							
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT							
ACNP	1,859,972	140,028	0	0	0	0	2,000,000
DIH	9,393	10,607	0	0	0	0	20,000

PAGE 79 FLORIDA DEPARTMENT OF TRANSPORTATION DATE RUN: 07/05/2022
AS-OF DATE: 07/01/2022 OFFICE OF WORK PROGRAM TIME RUN: 10.59.23
STIP REPORT MBRSTIP-1
HIGHWAYS

SA	488	29,512	0	0	0	0	30,000
TOTAL D522 049 B	1,869,853	180,147	0	0	0	0	2,050,000
TOTAL 444787 1	3,925,082	194,192	0	0	0	0	4,119,274
TOTAL Project:	3,925,082	194,192	0	0	0	0	4,119,274

ITEM NUMBER:444992 1 PROJECT DESCRIPTION:SR-5/US-1 FROM MILLER COVE ROAD TO THE PINEDA CAUSEWAY *NON-SIS*
DISTRICT:05 COUNTY:BREVARD PROJECT LENGTH: .605MI TYPE OF WORK:DRAINAGE IMPROVEMENTS

FUND CODE	LESS THAN 2023	2023	2024	2025	2026	GREATER THAN 2026	ALL YEARS
FEDERAL PROJECT NUMBER: <N/A>							
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT							
DIH	33,185	17,225	0	0	0	0	50,410
DS	761,530	0	0	0	0	0	761,530
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT							
DDR	0	1,611,746	0	0	0	0	1,611,746
DIH	0	10,270	0	0	0	0	10,270
DS	0	1,718,319	0	0	0	0	1,718,319
TOTAL <N/A>	794,715	3,357,560	0	0	0	0	4,152,275
TOTAL 444992 1	794,715	3,357,560	0	0	0	0	4,152,275

ITEM NUMBER:445215 1 PROJECT DESCRIPTION:SR-5/US-1 FROM POST ROAD TO MILLER COVE ROAD *NON-SIS*
DISTRICT:05 COUNTY:BREVARD PROJECT LENGTH: 1.642MI TYPE OF WORK:RESURFACING

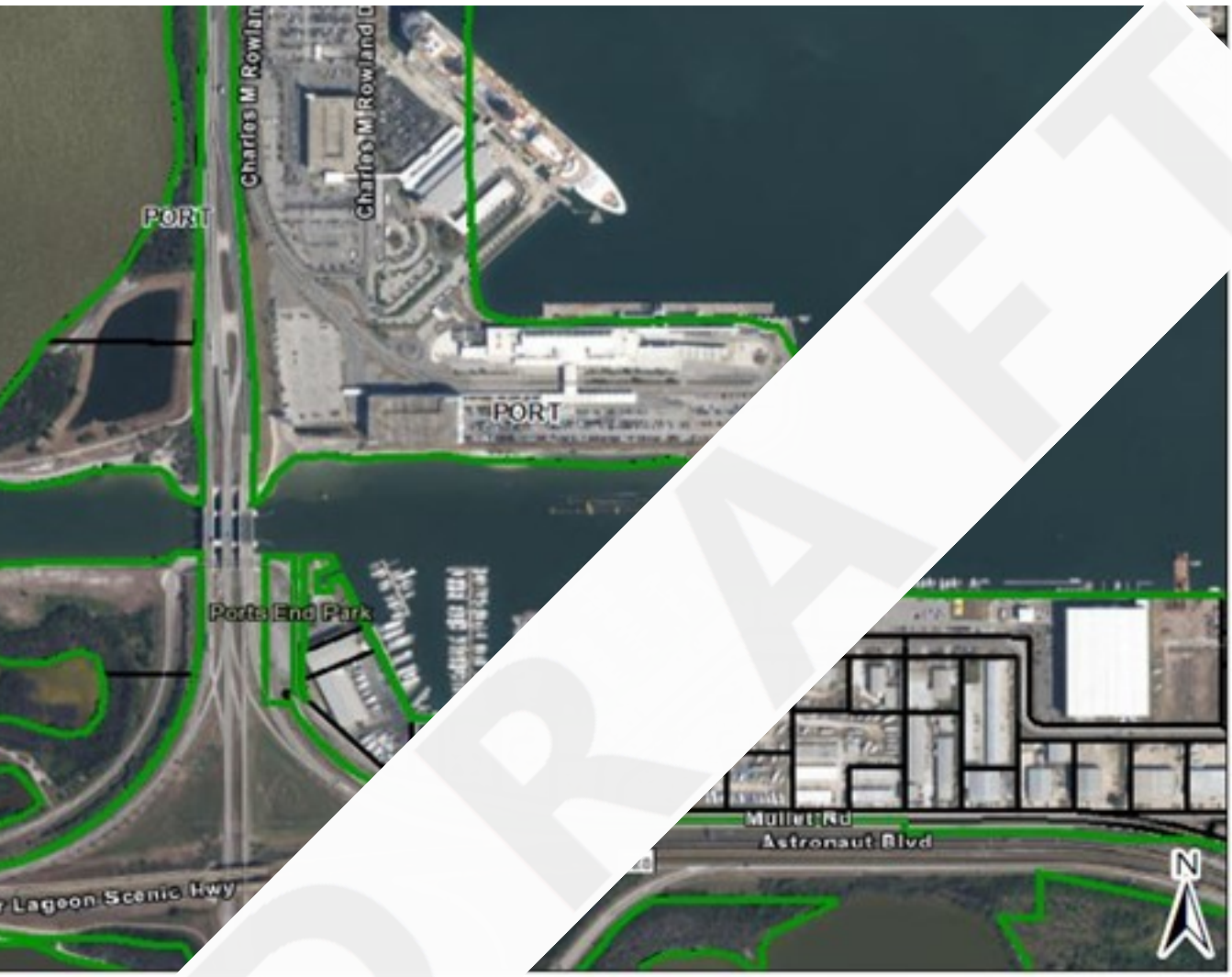
FUND CODE	LESS THAN 2023	2023	2024	2025	2026	GREATER THAN 2026	ALL YEARS
FEDERAL PROJECT NUMBER: <N/A>							
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT							
DDR	634,166	0	0	0	0	0	634,166
DIH	31,666	11,354	0	0	0	0	43,020
DS	3,018	0	0	0	0	0	3,018
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT							
DDR	0	2,612,291	0	0	0	0	2,612,291
DIH	0	10,270	0	0	0	0	10,270

Social and Economic Appendix

Contents:

Land Use Map
Efficient Transportation Decision-Making (ETDM) Sociocultural Data Report (SDR)
FDOT District 5 Urban Boundary Map
Economic Contribution of Port Canaveral to Florida in 2018
Marine Vessel Navigation Survey

DRAFT


PORT
Charles M Rowland
PORT
Ports End Park
Mullet Rd
Astronaut Blvd
N
1:9,028
0 0.075 0.15 0.3 mi
0 0.1 0.2 0.4 km
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

DRAFT

Sociocultural Data Report

401 Bridge - Feature 1

Area: 0.237 square miles

Jurisdiction(s): **Cities:** NA
Counties: Brevard

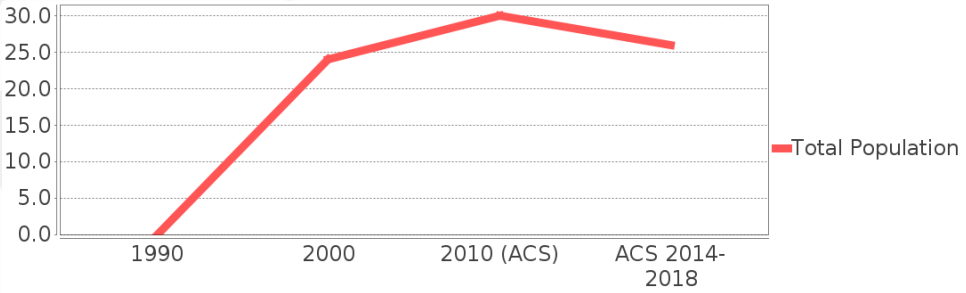
General Population Trends

Description	1990	2000	2010 (ACS)	ACS 2014-2018
Total Population	NA	24	30	26
Total Households	NA	14	17	14
Average Persons per Acre	NA	1.10	1.41	1.23
Average Persons per Household	NA	2.00	1.00	0.94
Average Persons per Family	NA	2.51	1.00	1.31
Males	NA	12	15	11
Females	NA	11	15	14

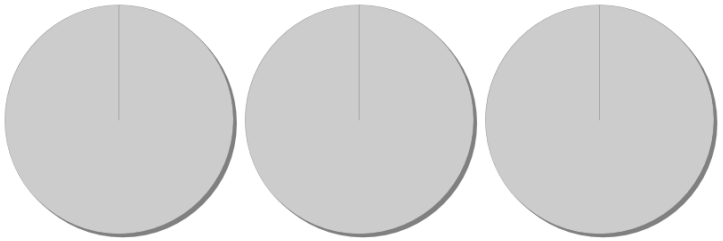
Race and Ethnicity Trends

Description	1990	2000	2010 (ACS)	ACS 2014-2018
White Alone	NA (NA)	22 (91.67%)	29 (96.67%)	25 (96.15%)
Black or African American Alone	NA (NA)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Native Hawaiian and Other Pacific Islander Alone	NA (NA)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Asian Alone	NA (NA)	0 (0.00%)	0 (0.00%)	0 (0.00%)
American Indian or Alaska Native Alone	NA (NA)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Some Other Race Alone	NA (NA)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Claimed 2 or More Races	NA (NA)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Hispanic or Latino of Any Race	NA (NA)	0 (0.00%)	1 (3.33%)	0 (0.00%)
Not Hispanic or Latino	NA (NA)	24 (100.00%)	29 (96.67%)	26 (100.00%)
Minority	NA (NA)	1 (4.17%)	2 (6.67%)	1 (3.85%)

Population

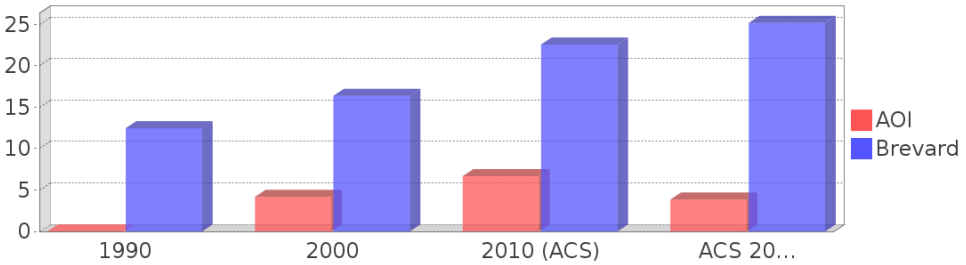


Race



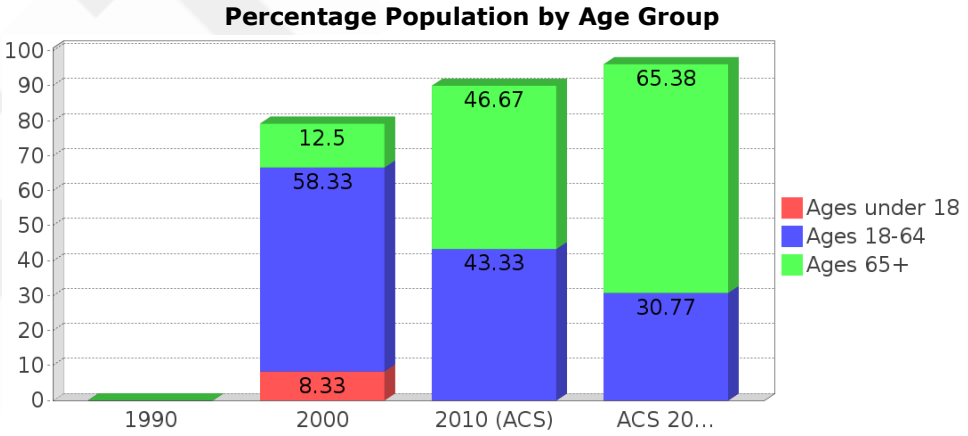
White Alone Black or African American Alone
Native Hawaiian and Other Pacific Islander Alone Asian Alone
American Indian or Alaska Native Alone Some Other Race Alone
Claimed 2 or More Races (after 1990) Hispanic or Latino of Any Race (1990 only)

Minority Percentage Population



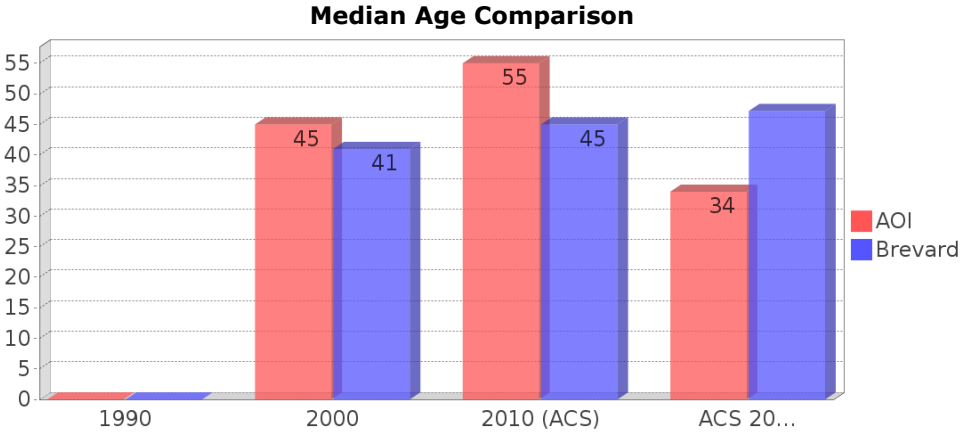
Age Trends

Description	1990	2000	2010 (ACS)	ACS 2014-2018
Under Age 5	NA	0.00%	0.00%	0.00%
Ages 5-17	NA	8.33%	0.00%	0.00%
Ages 18-21	NA	4.17%	0.00%	0.00%
Ages 22-29	NA	4.17%	3.33%	0.00%
Ages 30-39	NA	12.50%	3.33%	0.00%
Ages 40-49	NA	16.67%	6.67%	0.00%
Ages 50-64	NA	20.83%	30.00%	30.77%
Age 65 and Over	NA	12.50%	46.67%	65.38%
-Ages 65-74	NA	8.33%	26.67%	26.92%
-Ages 75-84	NA	4.17%	16.67%	30.77%
-Age 85 and Over	NA	0.00%	0.00%	0.00%
Median Age	NA	45	55	34



Income Trends

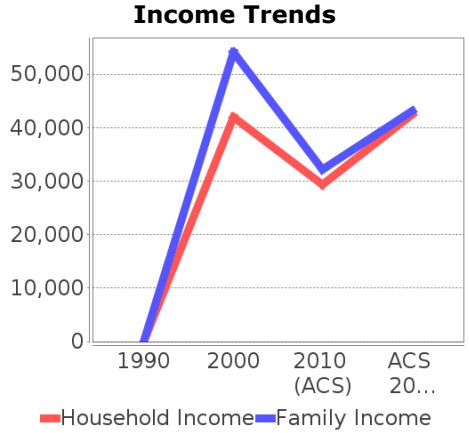
Description	1990	2000	2010 (ACS)	ACS 2014-2018
Median Household Income	NA	$41,971	$29,320	$42,500
Median Family Income	NA	$54,116	$32,120	$43,105
Population below Poverty Level	NA	8.33%	10.00%	3.85%
Households below Poverty Level	NA	7.14%	11.76%	7.14%
Households with Public Assistance Income	NA	0.00%	0.00%	0.00%

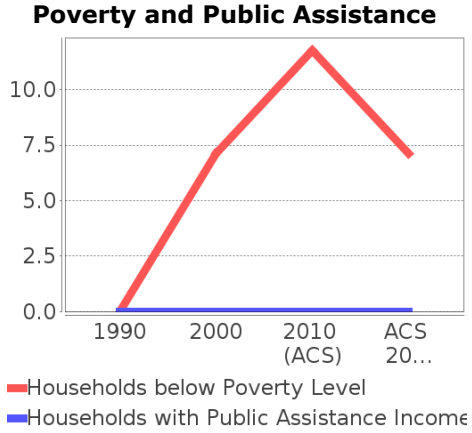


Disability Trends

See the Data Sources section below for an explanation about the differences in disability data among the various years.

Description	1990	2000	2010 (ACS)	ACS 2014-2018
Population 16 To 64 Years with a disability	(NA)	3 (13.04%)	(NA)	(NA)
Population 20 To 64 Years with a disability	(NA)	(NA)	(NA)	0 (0.00%)





Educational Attainment Trends

Age 25 and Over

Description	1990	2000	2010 (ACS)	ACS 2014-2018
Less than 9th Grade	NA (NA)	0 (0.00%)	0 (0.00%)	1 (3.85%)
9th to 12th Grade, No Diploma	NA (NA)	3 (15.79%)	0 (0.00%)	0 (0.00%)
High School Graduate or Higher	NA (NA)	14 (73.68%)	22 (100.00%)	24 (92.31%)
Bachelor's Degree or Higher	NA (NA)	4 (21.05%)	9 (40.91%)	11 (42.31%)

Language Trends

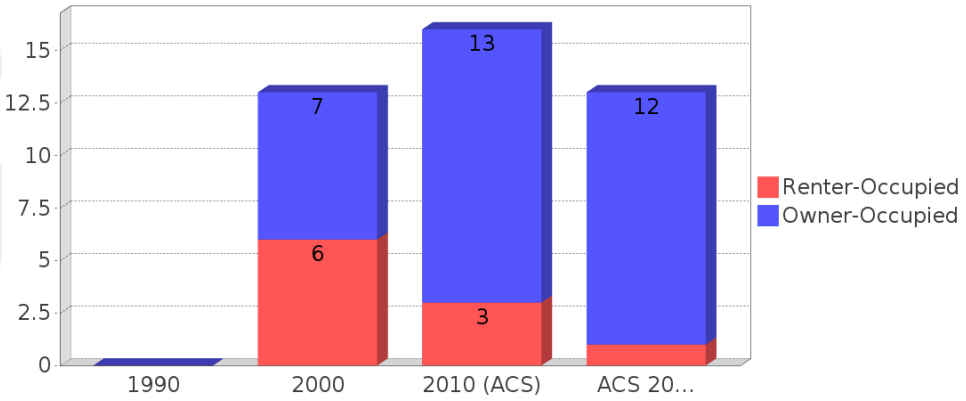
Age 5 and Over

Description	1990	2000	2010 (ACS)	ACS 2014-2018
Speaks English Well	NA (NA)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Speaks English Not Well	NA (NA)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Speaks English Not at All	NA (NA)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Speaks English Not Well or Not at All	NA (NA)	NA (NA)	NA (NA)	NA (NA)
Speaks English Less than Very Well	NA (NA)	0 (0.00%)	0 (0.00%)	1 (3.85%)

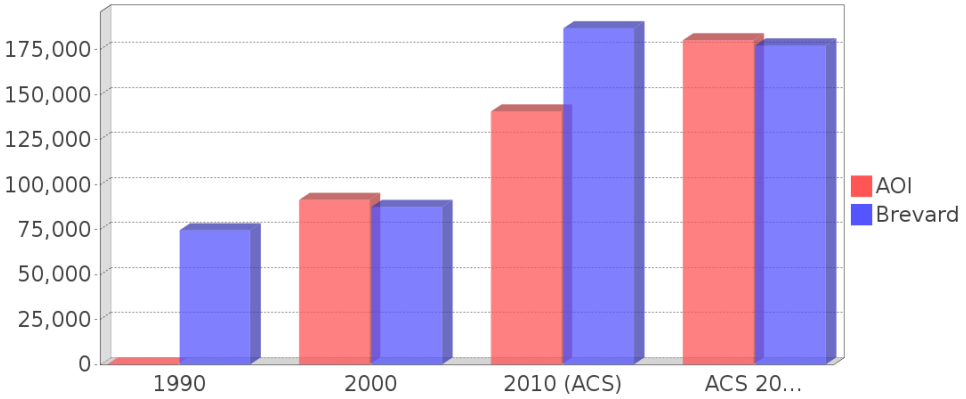
Housing Trends

Description	1990	2000	2010 (ACS)	ACS 2014-2018
Total	NA	18	30	24
Units per Acre	NA	0.72	0.94	0.72
Single-Family Units	NA	2	1	0
Multi-Family Units	NA	9	22	23
Mobile Home Units	NA	5	0	0
Owner-Occupied Units	NA	7	13	12
Renter-Occupied Units	NA	6	3	1
Vacant Units	NA	3	13	10
Median Housing Value	NA	$91,450	$140,650	$180,250
Occupied Housing Units w/No Vehicle	NA (NA)	1 (6.67%)	0 (0.00%)	1 (7.14%)

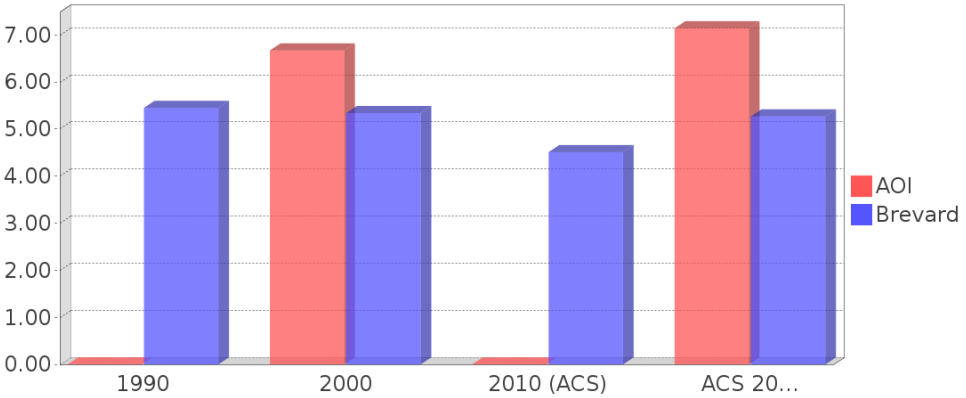
Housing Tenure



Median Housing Value Comparison

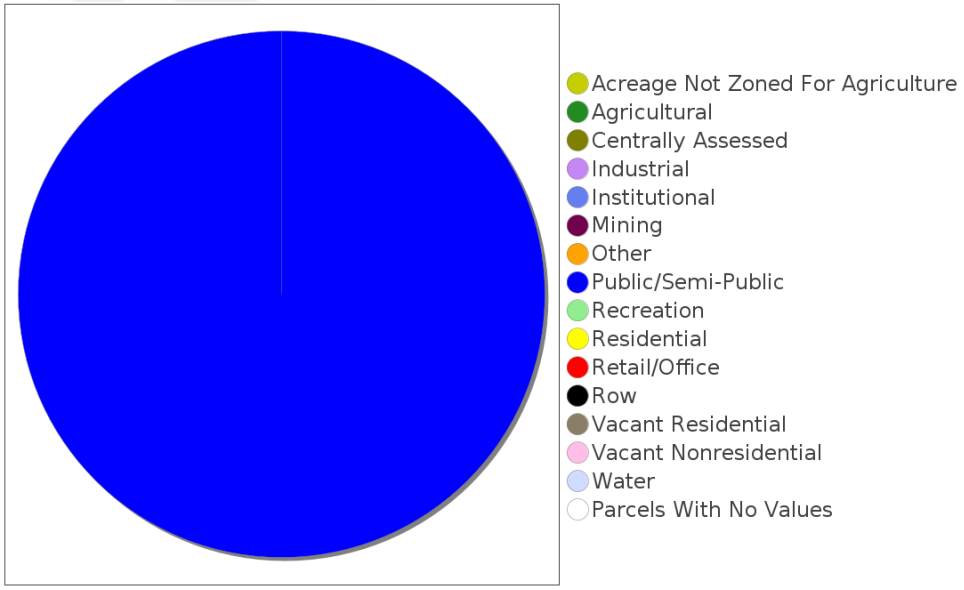


Occupied Units With No Vehicles Available

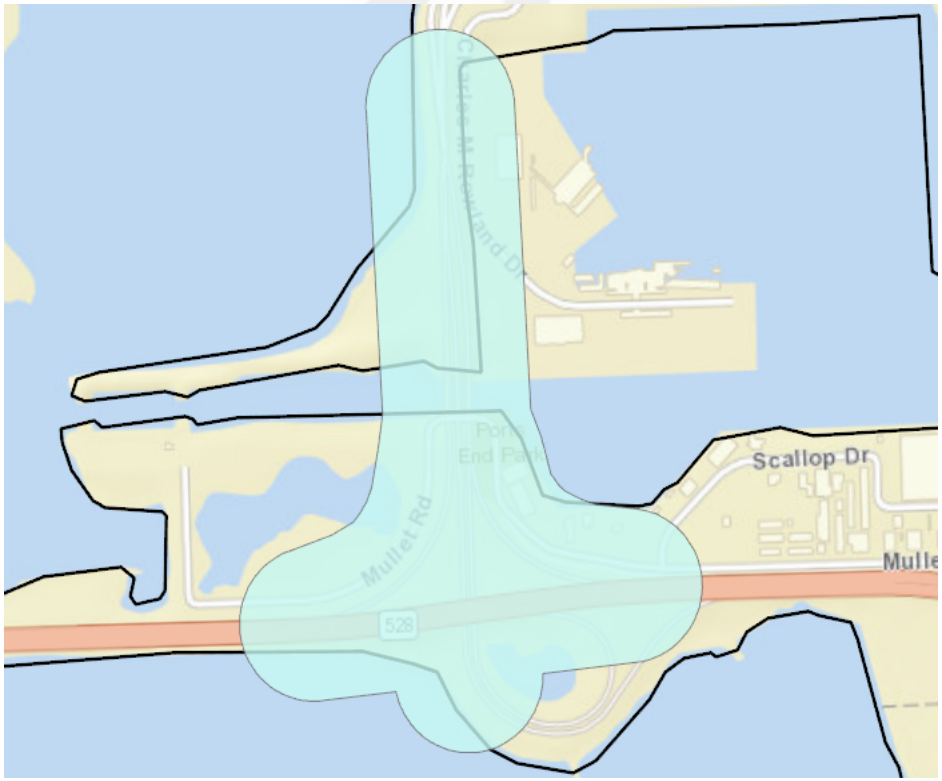


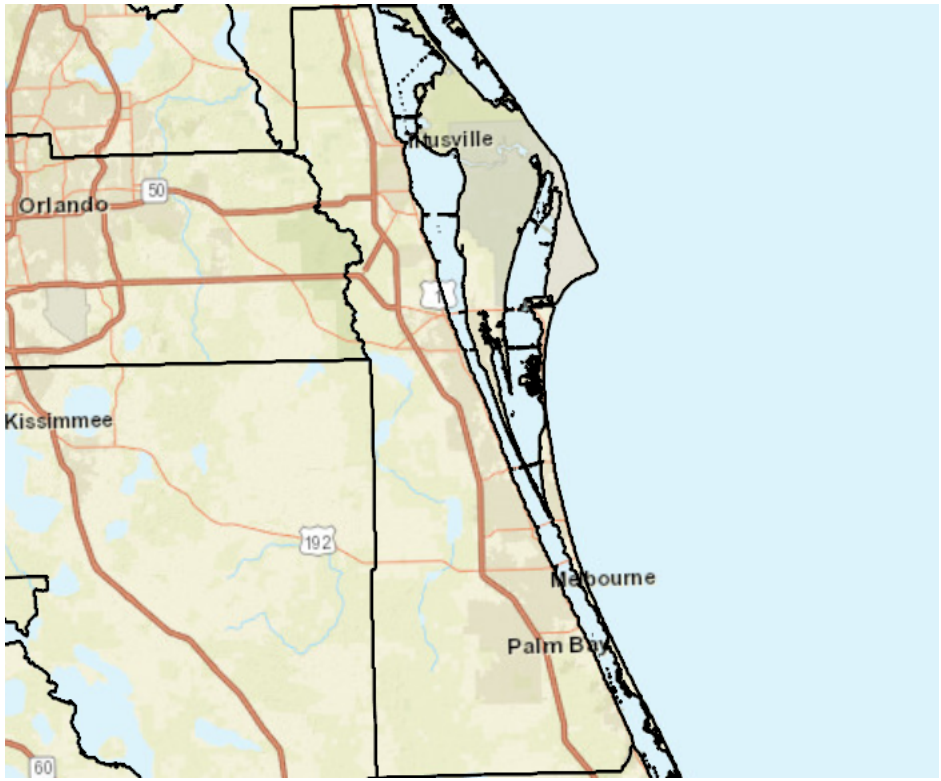
Existing Land Use

Land Use Type	Acres	Percentage
Acreage Not Zoned For Agriculture	0	0.00%
Agricultural	0	0.00%
Centrally Assessed	0	0.00%
Industrial	0	0.00%
Institutional	0	0.00%
Mining	0	0.00%
Other	0	0.00%
Public/Semi-Public	63	41.52%
Recreation	0	0.00%
Residential	0	0.00%
Retail/Office	0	0.00%
Row	0	0.00%
Vacant Residential	0	0.00%
Vacant Nonresidential	0	0.00%
Water	0	0.00%
Parcels With No Values	0	0.00%



Location Maps





Community Facilities

The community facilities information below is useful in a variety of ways for environmental evaluations. These community resources should be evaluated for potential sociocultural effects, such as accessibility and relocation potential. The facility types may indicate the types of population groups present in the project study area. Facility staff and leaders can be sources of community information such as who uses the facility and how it is used. Additionally, community facilities are potential public meeting venues.

Florida Parks and Recreational Facilities

Facility Name	Address	Zip Code
PORTS END PARK BOAT RAMP	998 MULLET RD	32920

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Block Groups

The following Census Block Groups were used to calculate demographics for this report.

2000 Census Block Groups

120090699012, 120090686001

2010 Census Block Groups

120099800001, 120090686021

Census Block Groups

120090686021, 120099800001

Data Sources

Area

The geographic area of the community based on a user-specified community boundary or area of interest (AOI) boundary.

Jurisdiction

Jurisdiction(s) includes local government boundaries that intersect the community or AOI boundary.

Demographic Data

Demographic data reported under the headings General Population Trends, Race and Ethnicity Trends, Age Trends, Income Trends, Educational Attainment Trends, Language Trends, and Housing Trends is from the U.S. Decennial Census (1990, 2000) and the American Community Survey (ACS) 5-year estimates from 2006-2010 and ACS 2014-2018. The data was gathered at the block group level for user-specified community boundaries and AOIs, and at the county level for counties. Depending on the dataset, the data represents 100% counts (Census Summary File 1) or sample-based information (Census Summary File 3 or ACS).

About the Census Data:

User-specified community boundaries and AOIs do not always correspond precisely to block group boundaries. In these instances, adjustment of the geographic area and data for affected block groups is required to estimate the actual population. To improve the accuracy of such estimates in the SDR report, the census block group data was adjusted to exclude all census blocks with a population of two or fewer. These areas were eliminated from the corresponding years' block groups. Next, the portion of the block group that lies outside of the community or AOI boundary was removed. The demographics within each block group were then recalculated, assuming an equal area distribution of the population. Note that there may be areas where there is no population.

Use caution when comparing the 100% count data (Decennial Census) to the sample-based data (ACS). In any given year, about one in 40 or 2.5% of U.S. households will receive the ACS questionnaire. Over any five-year period, about one in eight households will receive the questionnaire, as compared to about one in six that received the long form questionnaire for the Decennial Census 2000. (Source: http://mcdc.missouri.edu/pub/data/acs/Readme.shtml) The U.S. Census Bureau provides help with this process:
https://www.census.gov/programs-surveys/acs/guidance/comparing-acs-data/ACS 2014-2018.html

Use caution when interpreting changes in Race and Ethnicity over time. Starting with the 2000 Decennial Census, respondents were given a new option of selecting one or more race categories. Also in 2000, the placement of the

question about Hispanic origin changed, helping to increase responsiveness to the Hispanic-origin question. Because of these and other changes, the 1990 data on race and ethnicity are not directly comparable with data from later censuses. (Source: http://www.census.gov/prod/2001pubs/c2kbr01-1.pdf; http://www.census.gov/pred/www/rpts/Race%20and%20Ethnicity%20FINAL%20report.pdf)

The "Minority" calculations are derived from Census and ACS data using both the race and ethnicity responses. On this report, "Minority" refers to individuals who list a race other than White and/or list their ethnicity as Hispanic/Latino. In other words, people who are multi-racial, any single race other than White, or Hispanic/Latino of any race are considered minorities.

Disability data is not included in the 2010 Decennial Census, or the 2006-2010 ACS. This data is available in the ACS 2014-2018 ACS.
Because of changes made to the Census and ACS questions between 1990 and ACS 2014-2018, disability variables should not be compared from year to year. For example: 1) With the 1990 data the disabilities are listed as a "work disability" while this distinction is not made with 2000 or ACS 2014-2018 ACS data; 2) The ACS 2014-2018 ACS data includes the institutionalized population (e.g. persons in prisons and group homes), while this population is not included in 1990 or 2000; 3) the age groupings changed over the years.
Please take the following two concerns into account when viewing this data: 1) With the 1990 data the disabilities are listed as a "work disability" while this distinction is not made with 2000 or ACS 2014-2018 ACS data; 2) The ACS 2014-2018 ACS data includes the institutionalized population (e.g. persons in prisons and group homes), while this population is not included in 1990 or 2000.

The category Bachelor's Degree or Higher under the heading Educational Attainment Trends is a subset of the category High School Graduate or Higher.

Income of households. This includes the income of the householder and all other individuals 15 years old and over in the household, whether they are related to the householder or not. Because many households consist of only one person, average household income is usually less than average family income.
Income of families. In compiling statistics on family income, the incomes of all members 15 years old and over related to the householder are summed and treated as a single amount.
Age Trends median age for 1990 is not available.

Land Use Data

The Land Use information Indicates acreages and percentages for the generalized land use types used to group parcel-specific, existing land use assigned by the county property appraiser office according to the Florida Department of Revenue land use codes.

Community Facilities Data

- Assisted Rental Housing Units - Identifies multifamily rental developments that receive funding assistance under federal, state, and local government programs to offer affordable housing as reported by the Shimberg Center for Housing Studies, University of Florida.
- Mobile Home Parks - Identifies approved or acknowledged mobile home parks reported by the Florida Department of Business and Professional Regulation and Florida Department of Health.
- Migrant Camps - Identifies migrant labor camp facilities inspected by the Florida Department of Health.
- Group Care Facilities - Identifies group care facilities inspected by the Florida Department of Health.
- Community Center and Fraternal Association Facilities - Identifies facilities reported by multiple sources.
- Law Enforcement Correctional Facilities - Identifies facilities reported by multiple sources.
- Cultural Centers - Identifies cultural centers including organizations, buildings, or complexes that promote culture and arts (e.g., aquariums and zoological facilities; arboreta and botanical gardens; dinner theaters; drive-ins; historical

places and services; libraries; motion picture theaters; museums and art galleries; performing arts centers; performing arts theaters; planetariums; studios and art galleries; and theater producers stage facilities) reported by multiple sources.

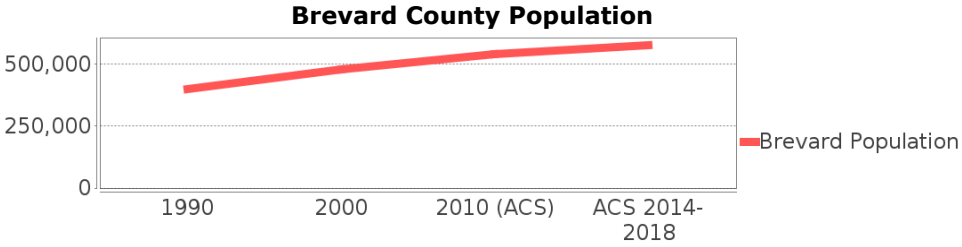
- Fire Department and Rescue Station Facilities - Identifies facilities reported by multiple sources.
- Government Buildings - Identifies local, state, and federal government buildings reported by multiple sources.
- Health Care Facilities - Identifies health care facilities including abortion clinics, dialysis clinics, medical doctors, nursing homes, osteopaths, state laboratories/clinics, and surgicenters/walk-in clinics reported by the Florida Department of Health.
- Hospital Facilities - Identifies hospital facilities reported by multiple sources.
- Law Enforcement Facilities - Identifies law enforcement facilities reported by multiple sources.
- Parks and Recreational Facilities - Identifies parks and recreational facilities reported by multiple sources.
- Religious Center Facilities - Identifies religious centers including churches, temples, synagogues, mosques, chapels, centers, and other types of religious facilities reported by multiple sources.
- Private and Public Schools - Identifies private and public schools reported by multiple sources.
- Social Service Centers - Identifies social service centers reported by multiple sources.
- Veteran Organizations and Facilities

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Brevard County Demographic Profile

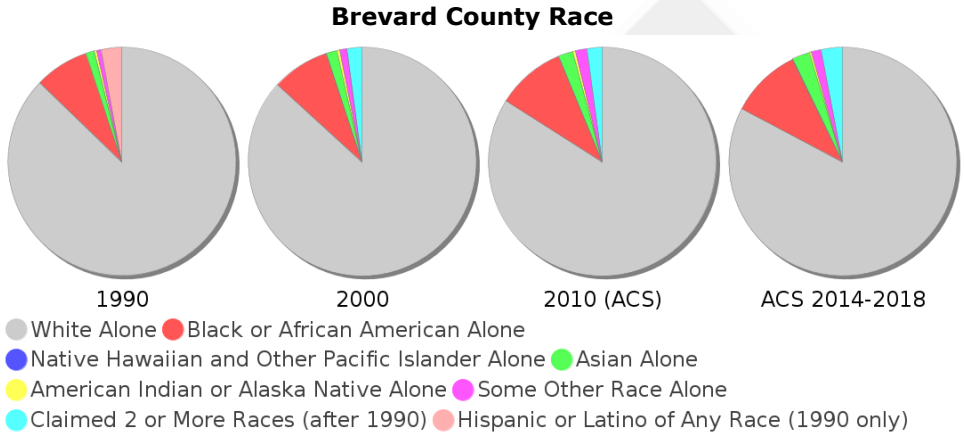
General Population Trends - Brevard

Description	1990	2000	2010 (ACS)	ACS 2014-2018
Total Population	398,978	476,230	540,583	576,808
Total Households	161,365	198,195	220,871	228,888
Average Persons per Acre	0.574	0.705	0.80	0.85
Average Persons per Household	2.473	2.352	2.00	2.49
Average Persons per Family	2.93	2.904	3.025	3.19
Males	197,163	232,983	264,955	282,023
Females	201,815	243,247	275,628	294,785



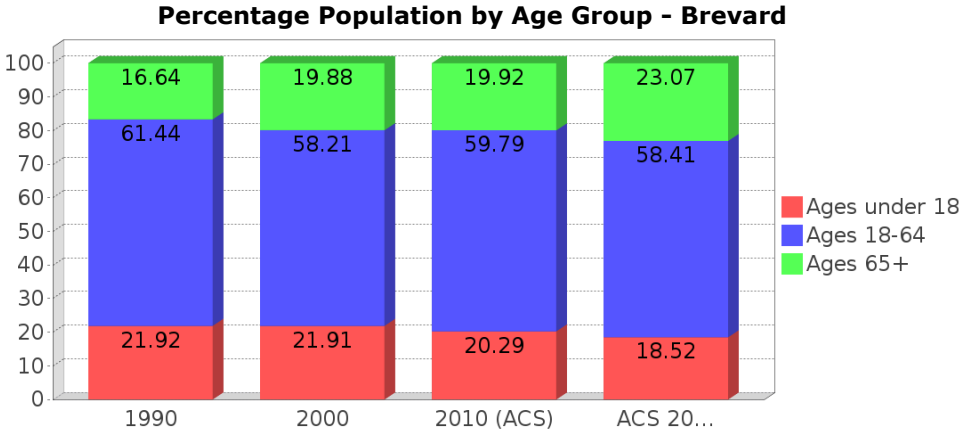
Race and Ethnicity Trends - Brevard

Description	1990	2000	2010 (ACS)	ACS 2014-2018
White Alone	358,391 (89.83%)	413,023 (86.73%)	453,634 (83.92%)	476,767 (82.66%)
Black or African American Alone	31,417 (7.87%)	38,680 (8.12%)	52,758 (9.76%)	58,100 (10.07%)
Native Hawaiian and Other Pacific Islander Alone	(NA)	278 (0.06%)	319 (0.06%)	492 (0.09%)
Asian Alone	5,187 (1.30%)	7,122 (1.50%)	11,035 (2.04%)	14,050 (2.44%)
American Indian or Alaska Native Alone	1,369 (0.34%)	2,070 (0.43%)	1,947 (0.36%)	1,942 (0.34%)
Some Other Race Alone	2,422 (0.61%)	4,964 (1.04%)	8,928 (1.65%)	7,757 (1.34%)
Claimed 2 or More Races	(NA)	10,093 (2.12%)	11,962 (2.21%)	17,700 (3.07%)
Hispanic or Latino of Any Race	12,261 (3.07%)	21,902 (4.60%)	40,925 (7.57%)	57,695 (10.00%)
Not Hispanic or Latino	386,717 (96.93%)	454,328 (95.40%)	499,658 (92.43%)	519,113 (90.00%)
Minority	49,702 (12.46%)	77,898 (16.36%)	121,910 (22.55%)	145,118 (25.16%)



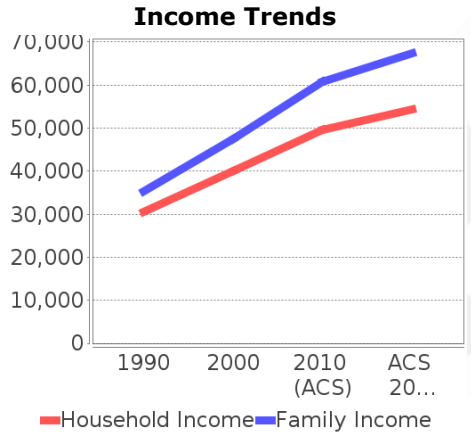
Age Trends - Brevard

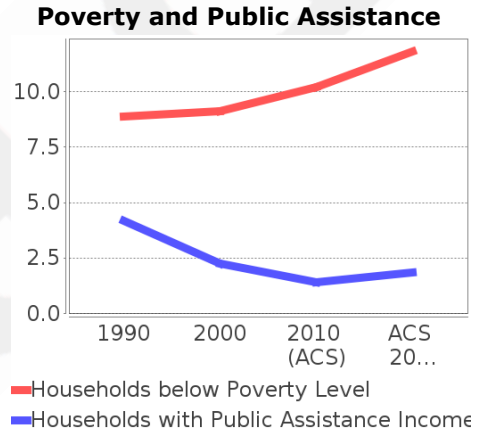
Description	1990	2000	2010 (ACS)	ACS 2014-2018
Under Age 5	6.61%	5.18%	4.99%	4.71%
Ages 5-17	15.31%	16.73%	15.30%	13.80%
Ages 18-21	4.92%	4.23%	4.73%	4.24%
Ages 22-29	12.48%	7.29%	8.25%	8.94%
Ages 30-39	16.19%	13.96%	10.50%	10.52%
Ages 40-49	11.81%	15.55%	15.25%	11.20%
Ages 50-64	16.04%	17.19%	21.07%	23.50%
Age 65 and Over	16.64%	19.88%	19.92%	23.07%
-Ages 65-74	10.82%	10.94%	10.41%	12.41%
-Ages 75-84	4.73%	7.04%	7.17%	7.48%
-Age 85 and Over	1.09%	1.90%	2.34%	3.18%
Median Age	NA	41	45	47.2



Income Trends - Brevard

Description	1990	2000	2010 (ACS)	ACS 2014-2018
Median Household Income	$30,534	$40,099	$49,523	$54,359
Median Family Income	$35,402	$47,571	$60,842	$67,433
Population below Poverty Level	9.13%	9.47%	10.52%	12.72%
Households below Poverty Level	8.89%	9.11%	10.20%	11.82%
Households with Public Assistance Income	4.18%	2.26%	1.38%	1.85%





Disability Trends - Brevard

See the Data Sources section below for an explanation about the differences in disability data among the various years.

Description	1990	2000	2010 (ACS)	ACS 2014-2018
Population 16 To 64 Years with a disability	21,900 (6.99%)	56,763 (12.82%)	NA (NA)	NA (NA)
Population 20 To 64 Years with a disability	NA (NA)	NA (NA)	NA (NA)	39,425 (12.21%)

Educational Attainment Trends - Brevard

Age 25 and Over

Description	1990	2000	2010 (ACS)	ACS 2014-2018
Less than 9th Grade	14,336 (5.17%)	11,314 (3.33%)	9,471 (2.44%)	9,988 (2.34%)
9th to 12th Grade, No Diploma	34,651 (12.49%)	35,102 (10.33%)	27,078 (6.97%)	24,246 (5.68%)
High School Graduate or Higher	228,359 (82.34%)	293,322 (86.34%)	352,024 (90.59%)	392,542 (91.98%)
Bachelor's Degree or Higher	56,574 (20.40%)	80,020 (23.55%)	101,847 (26.21%)	125,088 (29.31%)

Language Trends - Brevard

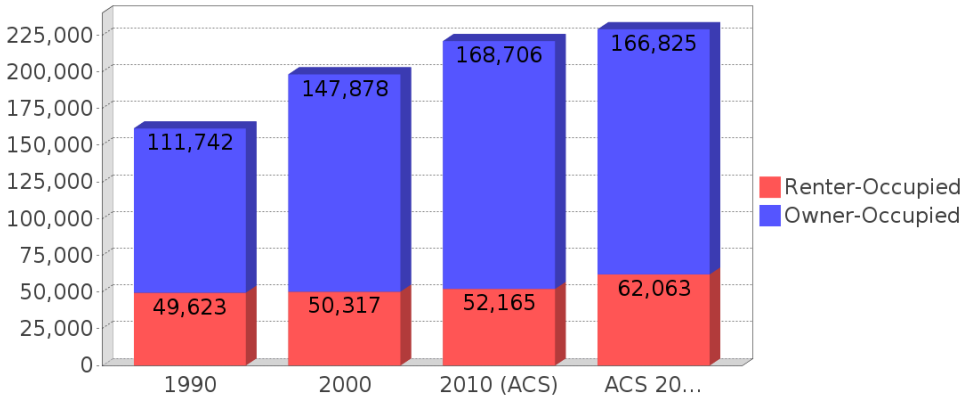
Age 5 and Over

Description	1990	2000	2010 (ACS)	ACS 2014-2018
Speaks English Well	5,377 (1.44%)	7,463 (1.65%)	9,800 (1.91%)	11,539 (2.10%)
Speaks English Not Well	NA (NA)	3,748 (0.83%)	4,813 (0.94%)	5,838 (1.06%)
Speaks English Not at All	NA (NA)	658 (0.15%)	1,126 (0.22%)	1,804 (0.33%)
Speaks English Not Well or Not at All	3,139 (0.84%)	4,406 (0.98%)	5,939 (1.16%)	7,642 (1.39%)
Speaks English Less than Very Well	NA (NA)	11,869 (2.63%)	15,739 (3.06%)	19,181 (3.49%)

Housing Trends - Brevard

Description	1990	2000	2010 (ACS)	ACS 2014-2018
Total	185,150	222,072	267,036	276,294
Units per Acre	0.266	0.329	0.395	0.41
Single-Family Units	107,123	146,810	182,849	190,850
Multi-Family Units	36,002	49,971	60,169	63,757
Mobile Home Units	17,130	24,092	23,310	21,170
Owner-Occupied Units	111,742	147,878	168,706	166,825
Renter-Occupied Units	49,623	50,317	52,165	62,063
Vacant Units	23,785	23,877	46,165	47,406
Median Housing Value	$74,600	$87,600	$186,900	$177,400
Occupied Housing Units w/No Vehicle	8,788 (5.45%)	10,579 (5.34%)	9,967 (4.51%)	12,067 (5.27%)

Housing Tenure - Brevard



County Data Sources

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source:
https://www.census.gov/people/disability/methodology/acs.html
https://www.census.gov/population/www/cen2000/90vs00/index.html

The category Bachelor's Degree or Higher under the heading Educational Attainment Trends is a subset of the category High School Graduate or Higher.

Metadata

- Community and Fraternal Centers https://etdmpub.fla-etat.org/meta/gc_communitycenter.xml
- Correctional Facilities in Florida https://etdmpub.fla-etat.org/meta/gc_correctional.xml
- Cultural Centers in Florida https://etdmpub.fla-etat.org/meta/gc_culturecenter.xml
- Fire Department and Rescue Station Facilities in Florida https://etdmpub.fla-etat.org/meta/gc_firestat.xml
- Local, State, and Federal Government Buildings in Florida https://etdmpub.fla-etat.org/meta/gc_govbuild.xml
- Florida Health Care Facilities https://etdmpub.fla-etat.org/meta/gc_health.xml
- Hospital Facilities in Florida https://etdmpub.fla-etat.org/meta/gc_hospitals.xml
- Law Enforcement Facilities in Florida https://etdmpub.fla-etat.org/meta/gc_lawenforce.xml
- Florida Parks and Recreational Facilities https://etdmpub.fla-etat.org/meta/gc_parks.xml
- Religious Centers https://etdmpub.fla-etat.org/meta/gc_religion.xml
- Florida Public and Private Schools https://etdmpub.fla-etat.org/meta/gc_schools.xml
- Social Service Centers https://etdmpub.fla-etat.org/meta/gc_socialservice.xml
- Assisted Rental Housing Units in Florida https://etdmpub.fla-etat.org/meta/gc_assisted_housing.xml
- Group Care Facilities https://etdmpub.fla-etat.org/meta/groupcare.xml
- Mobile Home Parks in Florida https://etdmpub.fla-etat.org/meta/gc_mobilehomes.xml
- Migrant Camps in Florida https://etdmpub.fla-etat.org/meta/migrant.xml
- Veteran Organizations and Facilities https://etdmpub.fla-etat.org/meta/gc_veterans.xml
- Generalized Land Use - Florida DOT District 5 https://etdmpub.fla-etat.org/meta/d5_lu_gen.xml
- Census Block Groups in Florida https://etdmpub.fla-etat.org/meta/e2_cenacs_cci.xml
- 1990 Census Block Groups in Florida https://etdmpub.fla-etat.org/meta/e2_cenblkgrp_1990_cci.xml
- 2000 Census Block Groups in Florida https://etdmpub.fla-etat.org/meta/e2_cenblkgrp_2000_cci.xml
- 2010 Census Block Groups in Florida https://etdmpub.fla-etat.org/meta/e2_cenblkgrp_2010_cci.xml

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DISTRICT 5
2010 Urban Area Boundary & Federal Functional Classification Brevard County, Florida

Legend

- 01 - Principal Arterial-Interstate RURAL
- 02 - Principal Arterial-Expressway RURAL
- 04 - Principal Arterial-Other RURAL
- 06 - Minor Arterial RURAL
- 07 - Major Collector RURAL
- 08 - Minor Collector RURAL
- 09 - Local RURAL
- 11 - Principal Arterial-Interstate URBAN
- 12 - Principal Arterial-Freeway and Expressway URBAN
- 14 - Principal Arterial-Other URBAN
- 16 - Minor Arterial URBAN
- 17 - Major Collector URBAN
- 18 - Minor Collector (Fed Aid) URBAN
- 19 - Local URBAN
- 2010 Adjusted Urban Area
- Water

Recommended By:

Space Coast TPO Chairman — Date: 8/19/2014

Florida Dept. of Transportation — Date: 8-28-14

Approved By:

Federal Highway Administration — Date: 09/08/2014

N W E S

0 3 6 12 Miles

FDOT

Date Prepared: 8/14/14

Type 2 Categorical Exclusion

The Economic Contribution of Port Canaveral to Florida in 2018

Prepared for:

Canaveral Port Authority

September 2019

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- ii. Cargo Segment 29
  - a. Final Demand Impacts 34
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I. Executive Summary

Introduction

Business Research and Economic Advisors (BREA) was engaged by the Canaveral Port Authority (CPA) to conduct an analysis of the economic contribution of Port Canaveral to the state of Florida during 2018. The objective of the study was to quantify employment, wages, expenditures and taxes that were directly and indirectly related to the movement of cruise passengers and cargo through Port Canaveral, the operational activity of tenants who conduct their business on property owned and maintained by CPA, and patrons of CPA parks, recreational facilities and attractions.

The major findings of this analysis included:

- Port Canaveral welcomed 2.1 million embarking, multi-day cruise passengers in 2018. This was the second-most passenger embarks from a U.S. cruise port and accounted for approximately 16% of total U.S. embarkations. Port Canaveral also welcomed 355,000 port-of-call passengers and 273,000 single-day cruise passengers who boarded the Victory Casino ships that homeport at Port Canaveral. In all, there were total passenger movements (embarking, disembarking, port-of-call, and single day) of 4.8 million cruise passengers during 2018.
- 6.4 million tons of cargo was moved through Port Canaveral, with 4 commodities, Petroleum, Slag/Sand, Granite/Rock and Limestone Aggregate accounting for 87% of the total cargo volume.
- The Canaveral Port Authority owns and maintains a portfolio of retail, commercial and land property. In 2018 there was approximately 379,400 square feet of building space and 11.1 million square feet of land leased to some 250+ tenants and subtenants.
- The Canaveral Port Authority owns and operates Jetty Park and Exploration Tower. In addition to single day visitors, Jetty Park accommodated over 10,000 overnight parties at their camping facilities in 2018. Exploration Tower experienced a revenue growth of approximately 2 percent from 2017 to 2018.

- The activity throughout Port Canaveral resulted in $1.94 billion in direct expenditures in the Central Florida economy. These expenditures in turn contributed to the direct employment of more than 17,200 workers who received $729.4 million in wages.
- As a result of this direct contribution, the spending of businesses and employees in the Central Florida region was responsible for generating a total economic contribution throughout Florida of $3.9 billion in output, 32,650 jobs and $1.3 billion in wage income.
- The contribution of the Canaveral Port Authority is not limited to the administration of the port. Its expenditures and employment also add to the direct contribution of each business line.
- The economic activity attributed to Port Canaveral also generated tax revenues for state and local governments across Florida. Our analysis shows that this economic activity generated an estimated $107.2 million in total state and local tax revenues. These taxes were predominantly sales, use and excise taxes paid across the state.

The total economic contribution of the port is the sum of the direct, indirect and induced impacts[1] of activity at Port Canaveral. The direct economic contribution consists of the estimated expenditures, jobs and wage income that occurred as a result of:

- the local spending of cruise passengers on accommodations, food and beverage service, retail purchases, sightseeing and other tourism related spending;
- the portion of airfare purchases by cruise passengers that are provided to the air transportation industry in Florida;
- local operational and capital expenditures by cruise lines and cargo businesses in providing their services at the port;
- moving, loading, inspecting and warehousing of commodities at the port;
- the transportation of commodities as well as passengers to and from port facilities and other parts of the state;
- the offering of marine services such as steamship agency, husbandry, tug operations, pilotage and others for both the cruise and cargo segments;
- operational expenses of tenant and sub-tenant businesses who lease CPA owned offices, warehouses, and land;

[1] The terms contribution and impact are used interchangeably throughout this report.

- the local spending of patrons of CPA parks, recreational facilities and attractions on food and beverage service, retail purchases, sightseeing and other tourism related spending;
- the operational and capital expenses of CPA in supporting the functions of the port; and
- the local spending due to the operating budgets of various government agencies that operate at the port.

The indirect economic benefits associated with Port Canaveral were generated through the spending by businesses that were directly impacted by port related activities. For example, terminal operators purchased equipment to move and store commodities, electricity and fuel to operate their facilities and equipment, and insurance for their property and employees. Thus, the indirect contribution measures the additional expenditures, jobs and income that were generated elsewhere in the economy in support of those firms and businesses directly related to the port.

The induced impact of the port measures the economic activity that was generated by the spending of the employees whose jobs were directly and indirectly supported by the activity at Port Canaveral. These workers spent their incomes on household and consumer goods, including autos, groceries, education and so forth. This spending generated jobs in transportation, trade, services, government, and local manufacturing. Thus, the induced contribution occurred throughout the economy, but primarily among consumer-based businesses and services.

Business Lines

In all, there are four business lines (segments) that the Canaveral Port Authority has identified under which port activity can be classified and will serve as the basis for this report. There are also numerous local and federal government agencies that have operations at the port, which will also be analyzed separately from the business lines. Each business line contributes to the economic impact of the port in a unique way and will be discussed

in this report within that framework both individually and collectively. The five segments are:

1. **Cruise** – This segment comprises all passenger, crew and cruise line spending related to passenger and crew visits to the Cape Canaveral and Orlando area, and expenditures with local businesses, vendors and contractors that support cruise line operations in the port.
2. **Cargo** – This segment comprises the spending related to the operations of moving and storing cargo through and in the port, and the transportation and/or distribution of goods between the port and locations throughout the state.
3. **Real Estate** – This segment comprises the operational expenses of the non-cruise and cargo related tenant and sub-tenant businesses and/or organizations who lease CPA owned buildings or land.
4. **Recreation** – This segment comprises the local spending related to people visiting CPA parks, recreational facilities and attractions.
5. **Government** –There are numerous local and federal government agencies that have operations at the port. These agencies perform many functions and have local operating budgets that include the payroll of their members. The Brevard County Sheriff's Office provides law enforcement and seaport security services while Canaveral Fire Rescue provides fire and emergency medical services. The U.S. Coast Guard has a station located in the port to safeguard commercial and recreational boating activities in the area. Agencies within the Department of Homeland Security such as the U.S. Customs and Border Patrol, the U.S. Immigration and Naturalization Service, and the U.S. Department of Agriculture ensure that the people and products entering and exiting the country are properly accounted for and inspected. The U.S. Department of Defense has naval support operations at Port Canaveral. The Military Sealift Command provides logistical support to various military installations around the world

and has an office located in the port, and the Navy operates the Naval Ordnance Test Unit which supports the US Fleet Forces Command.

The CPA manages these business lines with internal divisions that perform a variety of operational and support functions. These functions can either be specific to a particular business line, or general. Rather than assign all of CPA's jobs and expenditures to a single business line (e.g., cargo), BREA has allocated these data to each of the four business lines[2]. This was done either as reported in CPA's Comprehensive Annual Financial Report or based on the segment's share of CPA's total revenues. BREA has assigned CPA's revenues, expenses and jobs across the four business lines as shown in **Table ES-1.**

Table ES-1 – CPA Operations Assignment[3]

Business Line	CPA Revenues	CPA Operating Expenses	CPA Capital Expenses	Total CPA Expenses	CPA Jobs
Cruise	$ 79,484,254	$ 27,018,760	$ 14,927,826	$41,946,586	161
Cargo	$ 10,370,147	$ 3,525,082	$ 18,287,917	$21,812,999	21
Real Estate	$ 8,604,326	$ 3,309,915	$ 728,287	$ 4,038,202	18
Recreation	$ 3,249,979	$ 2,924,833	$ 1,455,444	$ 4,380,277	34
Total - 2018	**$ 101,708,706**	**$ 36,778,590**	**$ 35,399,473**	**$72,178,063**	**234**
		As a Share of Total			
Cruise	78%	73%	42%	58%	69%
Cargo	10%	10%	52%	30%	9%
Real Estate	8%	9%	2%	6%	8%
Recreation	3%	8%	4%	6%	15%
Total	100%	100%	100%	100%	100%

*Note – In this table, and tables throughout the report, totals may not add due to rounding

*Note: Operating and Capital Expenses included in this analysis may not sum to CPA's totals. See Appendix C for more detail.

[2] BREA has intentionally not assigned revenues or jobs to the Government segment.
[3] Where CPA's operational expenses were not identified to a specific business segment, BREA assigned it to each business segment based on its respective percent of revenues.

The CPA's operating and capital budgets shown above also contribute to the economic impact of each business segment. Thus, CPA's contribution to the overall local and state economy is greater than its 234 direct employees and $72.2 million in total direct expenditures.

The Direct Economic Contribution of Port Canaveral

As described above, each business line and government agency contribute to the economy with direct expenditures to businesses and organizations that support the activities of the segment. The expenditures with these directly affected businesses require the employment of people to carry out the functions of each business or organization, and in turn those employees are compensated for their labor. Thus, the measures of direct economic activity are summarized by the value of the direct expenditures, the number of employees and their compensation required to fulfill the demands of these businesses and organizations. Additionally, state and local taxing agencies receive revenue from many of the transactions among suppliers and consumers; most notably from sales, use and excise taxes.

As shown in **Table ES-2**, the activity throughout Port Canaveral contributed $1.94 billion in direct industry output[4] to the Central Florida regional economy during 2018. This output generated an estimated 17,237 jobs throughout the Central Florida region paying annual wage income of $729.4 million. The direct expenditures also generated $57.0 million in state and local tax revenues.

[4] The term "output" is used interchangeably with the term "expenditures" throughout this report

Table ES-2 – Direct Economic Contributions, by Business Line

Business Line	Direct Expenditures (Thousands)	Direct Jobs	Direct Wages (Thousands)	Direct Tax Revenue (Thousands)
Cruise	$ 1,295,554	12,964	$ 516,581	$ 42,083
Cargo	$ 412,923	2,092	$ 116,344	$ 9,478
Real Estate	$ 174,431	1,647	$ 61,610	$ 5,019
Recreation	$ 9,378	128	$ 4,569	$ 372
Government Org.	$ 49,568	406	$ 30,293	--
Total - 2018	**$ 1,941,854**	**17,237**	**$ 729,397**	**$ 56,952**
	As a Share of Total			
Cruise	67%	75%	71%	74%
Cargo	21%	12%	16%	17%
Real Estate	9%	10%	8%	9%
Recreation	0.5%	1%	1%	1%
Government Org.	3%	2%	4%	--
	100%	100%	100%	100%

Numerous industries throughout Central Florida were impacted by the activity at Port Canaveral. BREA's proprietary model uses North American Industry Classification System (NAICS) industry definitions to define port-related activity and then assigns all direct expenditures to an industry[5] within the Bureau of Economic Analysis (BEA) RIMS II 64-industry framework. The industries involved in supporting the activities related to Port Canaveral were narrowed to the following 13 sectors within that framework:

- Accommodations
- Administrative & Support Services
- Amusements, Recreation, Arts & Entertainment
- Construction
- Food & Beverage Services
- Government Operations
- Manufacturing

[5] The term Industry and Sector are used interchangeably in this report.

- Professional, Scientific & Technical Services
- Real Estate
- Retail Trade
- Transportation
- Wholesale Trade
- Other Service Sectors

The total of $1.94 billion in direct expenditures are shown in **Table ES-3** with their respective allocation to the above listed sectors. Also shown are the associated employment and wage contributions to those sectors as a result of the direct expenditures in each.

Table ES-3 – Direct Economic Contributions, by Sector

Industry	Direct Expenditures (Thousands)	Direct Jobs (FTE)	Direct Wages (Thousands)
Transportation	$ 659,378	5,751	$ 286,600
Wholesale Trade	$ 410,051	1,833	$ 111,982
Administrative & Support Svcs.	$ 176,734	2,485	$ 80,872
Accommodations	$ 145,822	1,192	$ 41,648
Amusements, Rec., Arts & Ent.	$ 122,783	1,486	$ 39,971
Retail Trade	$ 109,837	1,448	$ 39,022
Food & Beverage Services	$ 107,340	1,580	$ 36,628
Professional, Scientific & Tech Svcs	$ 52,709	426	$ 26,987
Government Operations	$ 49,568	406	$ 30,293
Manufacturing	$ 44,431	214	$ 10,980
Construction	$ 41,749	301	$ 15,704
Other Services	$ 19,918	100	$ 8,139
Real Estate	$ 1,535	16	$ 570
Total - 2018	**$ 1,941,854**	**17,237**	**$ 729,397**

The top three sectors - Transportation, Wholesale Trade, and Administrative & Support Services each had over $175 million in direct spending. They had a combined total of $1.2 billion and accounted for 64 percent of all direct expenditures. They also accounted for

58 percent of the direct employment with 10,069 jobs, and 66 percent of all direct employee wages with $479 million. The next three sectors consisted of Accommodations;

Amusements, Recreation, Arts & Entertainment; and Retail Trade. These ranged from $109 million to $146 million in direct expenditures. They combined for a total of $378 million and accounted for 19 percent of all direct expenditures, 24 percent of direct employment and 17 percent of employee wages. The remaining 7 sectors made up the remaining 16 percent of direct expenditures accounting for $317 million.

The Total Economic Contribution of Port Canaveral

As noted previously, the objective of this analysis is to quantify the contribution of the spending generated from activity at Port Canaveral to the economy of Florida during 2018. The total contribution analysis consists of three elements: i) the direct economic contribution, ii) the indirect economic contribution and iii) the induced economic contribution. The total impact by business line is shown below in **Table ES – 4.**

Table ES-4 – Total Economic Contributions, by Business Line

Business Line	Total Expenditures (Thousands)	Total Jobs (FTE)	Total Wages (Thousands)	Total Tax Revenue (Thousands)
Cruise	$ 2,587,372	23,745	$ 910,451	$ 74,169
Cargo	$ 804,014	4,666	$ 228,835	$ 18,642
Real Estate	$ 346,251	3,134	$ 116,156	$ 9,463
Government Orgs.	$ 95,604	893	$ 53,366	$ 4,347
Recreation	$ 19,274	213	$ 7,550	$ 615
Total - 2018	**$ 3,852,514**	**32,650**	**$ 1,316,358**	**$ 107,236**
As a Share of Total				
Cruise	67%	73%	69%	69%
Cargo	21%	14%	17%	17%
Real Estate	9%	10%	9%	9%
Government Orgs.	2%	3%	4%	4%
Recreation	1%	1%	1%	1%
	100%	100%	100%	100%

The contributions are led by the cruise segment, which accounts for 67 percent of the total expenditures related to Port Canaveral throughout the state, and 73 percent of the jobs.

Cargo is second in its contribution, generating 21 percent of the total expenditures across the state related to the port, and 14 percent of all jobs. The real estate segment contributes about 9 percent of all expenditures and 10 percent of all jobs related to the port throughout the state.

The direct expenditures generated by activity related to Port Canaveral that were discussed in the previous section are the driving force of Port Canaveral's total contribution to the region and the state.

The indirect contribution results from the subsequent demand for goods and services generated by the directly impacted businesses and their employees. For example, a restaurant must purchase wholesale produce and other foodstuff. They also use utility services, such as electricity and water to run their establishment, and payroll and accounting services in the administration of their business. Additionally, they purchase insurance for property and employees. These are just a sample of the various aspects of the economy impacted by local restaurants at Port Canaveral. BREA's model uses input/output data specific to Florida and available from the BEA to estimate the indirect contribution of the port. This enables BREA to estimate the additional economic demand that the direct spending by the five business lines (cruise, cargo, real estate, recreation and government) and their respective suppliers have throughout the economy in Florida. As mentioned earlier, CPA's operations are embedded within the direct expenditures of each business segment. The indirect contribution is concentrated in those sectors that provide intermediate goods and services to those business affected by activity in Port Canaveral. These include industries concentrated in business and financial services, transportation and wholesale trade.

The induced contribution is generated by the spending of the employees within the five segments and the employees of all the affected indirect businesses. The income of these employees is used to purchase a broad range of consumer goods and services including such goods as automobiles, food, clothing, furniture, health care and so forth. Consequently, the induced contribution is concentrated in sectors such as retail trade and personal and other services.

The total economic contribution of Port Canaveral to the State of Florida is shown in **Table ES-5**. The impacts are spread throughout the economy. Due to the wide-spread reach of the port's contribution to Florida's overall economy, several industries with common economic characteristics are grouped together.

Table ES-5 – Total Economic Contributions, by Sector

Sector	Total Expenditures (Thousands)	Total Jobs (FTE)	Total Wages (Thousands)
Financial & Business Services	$ 1,172,245	9,548	$ 363,600
Personal & Other Services	$ 809,346	9,560	$ 320,646
Transportation	$ 791,878	6,870	$ 331,515
Wholesale & Retail Trade	$ 777,008	5,370	$ 232,211
Manufacturing	$ 176,234	652	$ 34,671
Agric., Mining, Utilities & Constr.	$ 125,802	650	$ 33,716
Total - 2018	**$ 3,852,514**	**32,650**	**$ 1,316,358**

The $1.94 billion in direct expenditures related to Port Canaveral generated $3.9 billion in total expenditures throughout the state of Florida. These expenditures required 32,650 jobs paying $1.3 million in wages. The Financial & Business Services sectors led all categories with $1.2 billion in total expenditures. These expenditures accounted for 30 percent of the total and required about 9,500 jobs paying $364 million in wages. This is 29 percent of all employment and 28 percent of wage contributions, respectively. The Personal & Other Services sectors are the second largest industry group supported by Port

Canaveral. They account for $809 million in revenues, or 21 percent of the total and 29 percent of all jobs supported across Florida.

In general, for each $1 million in direct expenditures at Port Canaveral about 17 total jobs paying an annual average salary of about $40,300 were supported.

DRAFT

II. Introduction

A Regional Perspective: Central Florida and the State

The objective of this study was to estimate the economic contribution, or impact Port Canaveral had on the local and state economies during 2018. The information and data included in this report are presented, in part, to provide an understanding of how the port related activity of each the four business lines and government agencies impact the local and state economy and the breadth of industries impacted. This study has been funded by the Canaveral Port Authority.

For the purposes of this study the local economy can be thought of, generally, as Central Florida and includes the Orlando and Cape Canaveral areas. Due to the interconnectivity of various regional industries, the port plays a role in directly connecting much of the economy throughout the Central Florida region.

Additionally, businesses and organizations with operations that are directly affected by the port are interconnected with other industries throughout the state. For example, business and financial services used by those enterprises directly affected by the port could be located in South Florida, and goods consumed by employees of local businesses could be produced around the state. Additionally, commodities imported through or produced at the port are distributed not just to central Florida but other parts of the state as well. Therefore, while the majority of direct expenditures occur in the local economy, those direct expenditures have a state-wide impact.

The economic contribution of Port Canaveral was measured in terms of annual expenditures, employment, wage and salary distributions, and state and local tax collections that resulted from the various activities related to the port.

Activities related to the port are classified by those that occurred as a result of:

- the local spending of cruise passengers on accommodations, food and beverage service, retail purchases, sightseeing and other tourism related spending;
- the portion of airfare purchases by cruise passengers that are provided to the air transportation industry in Florida;
- local operational and capital expenditures by cruise lines and shippers in providing their services at the port;
- transportation of commodities and passengers to and from port facilities and other parts of the state;
- moving, loading, inspecting and warehousing of commodities at the port;
- the offering of marine services such as steamship agency, husbandry, tug operations, pilotage and others;
- operational expenses of tenant and sub-tenant businesses who lease CPA owned offices, warehouses, and land;
- the local spending of patrons of CPA parks, recreational facilities and attractions on food and beverage service, retail purchases, sightseeing and other tourism related spending;
- the operational and capital expenses of CPA in supporting the functions of the port;
- the local spending due to the operating budgets of various government agencies that operate at the port.

Data Sources

This study had two broadly categorized phases; 1) the gathering of the direct expenditures related to each of the business lines, and 2) building an economic model that estimates the demands of those expenditures across both the local and statewide economy for each business line. The sources for the direct expenditure data included:

- financial, employment, and wage data from CPA;
- operational data, such as cruise passenger counts and commodity volume, from CPA;

- interviews with the major cruise lines at the port;
- surveys of multi-day cruise passengers and crew members[6];
- surveys of CPA park visitors;
- surveys of CPA tenants and subtenants, including terminal operators, marine service providers, marinas, etc.;
- interviews with government agencies related to the port;
- U.S. Bureau of Economic Analysis;
- U.S. Bureau of Labor Statistics;
- U.S. Census Bureau.

The above data formed the basis for BREA's modeling of the economic contribution of Port Canaveral. The following sections discuss the methodology underlying this study in more depth.

Methodology and Concepts

BREA' s proprietary model uses input/output data available from The U.S. Bureau of Economic Analysis (BEA) to estimate the number of jobs and wages required to support a given level of industry spending. The model quantifies, by sector, the number of jobs required at the prevailing market wages for a given amount of spending in that sector. It also quantifies the additional indirect and induced spending that will take place with related industries that support that sector.

The total economic contribution is the result of the following categories of impacts:

- direct;
- indirect and induced.

Direct impacts are defined as that spending that occurs directly with businesses at the port. The indirect economic impacts are the result of business-to-business purchases made by the businesses, such as:

[6] See Appendix A and B for examples of surveys used for this study.

- machinery & equipment;
- raw materials;
- utility services;
- financial and insurance products.

The induced economic impacts are derived from the spending by employees of the directly and indirectly impacted firms, for household and consumer goods and services such as:

- groceries;
- furniture;
- housing;
- medical services.

In order to provide a meaningful economic characterization of the contribution that Port Canaveral provides to the regional and state economies, BREA collected direct expenditure data from cruise passengers, crew, and the businesses who operate on port property through a series of interviews and surveys. The second aspect of the study required conversion of this expense data to expenditures within a defined industry classification as described previously. This is done so that the expenses can be tracked in a model that estimates the economic demands of those expenses across the various industries that are affected.

All the various expenses by cruise lines; passengers; cargo businesses; port related suppliers and service providers; consumers of real estate tenant goods and services; consumers using CPA facilities; government agencies; and the CPA itself are converted to direct expenditures for each industry and then used as inputs in BREA's model. In return, the model estimates how many direct jobs, wages, and state and local taxes are supported, as well as how the additional demand in the relative industries contributed to the economy of Florida as a result of the direct contributions.

III. Business Line Analysis

i. Cruise Segment

At the core of the analysis of the economic contribution for the cruise segment were a set of passenger and crew surveys that were conducted both onboard the cruise ships and in the terminals of the four key cruise lines, and surveys conducted with the major cruise lines that homeport at Port Canaveral. The analysis also utilized the spending and contribution of CPA and Victory Cruises for this segment. As highlighted in Tables ES-1 and ES-2 earlier, the cruise segment represents more than three-quarters of CPA's revenues, and two-thirds of the direct economic contribution to the local and state economy.

The passenger and crew surveys were designed to collect data for onshore spending and visit satisfaction. While the crew survey was slightly shorter than the passenger survey, both surveys were designed to collect the following information:

- hours spent ashore;
- expenditures by category, including accommodations, food & beverages, tours, clothing, etc.;
- visit satisfaction, as well as attributes related to the cruise terminal;
- likelihood of returning for a land-based vacation (passengers only);
- demographic characteristics.

Combining the expenditures of CPA and Victory Cruise data with the passenger and crew surveys, data on expenditures by cruise lines for port fees and services, payments to local tour operators for passenger shore excursions purchased

onboard the cruise ships, and other provisions purchased locally by the cruise lines, enabled BREA to develop estimates of the total cruise tourism expenditures.

It should be noted, where duplication of expenditures were reported by the cruise lines and the CPA, (e.g., line handling or dockage fees), BREA only counted entries once. Given the direct spending estimates, the economic contribution of these expenditures, as measured by employment and wage income, were then estimated for the region.

Cruise Tourism Expenditures

Cruise tourism expenditures in Canaveral are composed of a broad range of spending including:

- onshore expenditures by passengers, which were concentrated in accommodations, food & beverages, retail purchases and attractions or tours in both the Cape Canaveral area and in Orlando;
- onshore expenditures by crew, which were generally concentrated in retail purchases; food and beverages; and local transportation;
- expenditures by cruise lines for port services, such as dockage fees and linesmen, utilities such as water and power; marine services like ship cleaning and maintenance; and navigation and towing services;
- purchases of supplies, such as food, fuel and others, by the cruise lines from regional suppliers;
- expenditures by CPA in support of cruise operations;
- spending by Victory Cruises and their passengers.

Based on data collected from the Canaveral Port Authority, 2.1 million cruise passengers embarked on multi-day cruises, 273,000 embarked aboard single-day cruises, and 355,000 arrived aboard port-of-call cruise ships during 2018. BREA

estimated 302,200 transit passengers (85%) disembarked and visited the Port Canaveral area. Based on analysis of the ships calling on the port, BREA estimates 863,700 crew were aboard the cruise ships and 38 percent, or 328,200 disembarked and visited the Port Canaveral area.

These passenger and crew visits, along with the expenditures by the cruise lines generated a total of $1.30 billion in cruise tourism expenditures in Central Florida during 2018. The contribution of expenditures by passengers, crew and cruise lines to this total is discussed below.

Per passenger spending estimates were derived from 800 multi-day passenger surveys. BREA designed the survey sampling to approximate the known percentage of passengers by both cruise line and cruise length (3 or 4 day vs. 5 day+). In addition, BREA weighted the final data set to more closely approximate the actual percentages.

On a per passenger basis, the average total expenditure by embarking passengers was $227.21. This represents the sum of the per party expenditures, $657.77, divided by the average size of the embarking cruise party in Port Canaveral, 2.9 passengers. The weighted average spend by passengers with an overnight stay in the area spent was significantly higher than those who arrived at the port the day of their cruise ($362 vs $73). Passengers taking a cruise of 5 or more days spent more than those taking a 3- or 4-day cruise ($271 vs $208). Port of call passengers spent an average of $79.45 during their visit to the Cape Canaveral area.

A summary of spending by passenger type is listed in **Table 1** below.

Table 1 – Spending by Multi-Day Cruise Passenger Type

Passenger Type	Embarking			Transit
	Day of Cruise	Overnight Stay	Combined	
Share of Embarks	47%	53%	100%	N/A
Number in Party	2.84	2.95	2.90	2.76
Total Spend	$73.33	$362.28	$227.21	$79.45

Among all embarking multi-day cruise passengers, expenditures were concentrated in three categories which accounted for 58 percent of their onshore expenditures: accommodations, food & beverage, and retail purchases. Overall, 53 percent of the embarking survey respondents reported spending an overnight in the Canaveral area. Of those with an overnight stay, 92 percent stayed in paid accommodations, accounting for 49 percent of all passengers. On average, those with an overnight stay spent just over two nights (2.30) in area accommodations. Those parties who stayed in paid accommodations spent an average of $377, or $164 per night. This equates to about $63 per person across all embarking cruise passengers. Spending on food and beverages averaged slightly more than $35 per person when spread across all embarking passengers. Retail purchases, including clothing, watches and jewelry, and personal items averaged about $34 per embarking passenger. Across all embarking passengers, spending on attractions and tours equates to about $26 per passenger.

Additionally, about a third of embarking passengers reported flying into the region for their cruise, and spent an average of $806 per party, or about $280 per person on airfare. For the purpose of this analysis, 50 percent of the average airfare was used as an allocation to Central Florida. This results in a per passenger spend of about $51 when averaged across all embarking passengers.

In all, when factoring in Victory cruise passengers, embarking passengers contributed approximately $460.7 million in direct expenditures to the economy in Central Florida[7].

Transit, or port of call passengers who went ashore spent an average of $219.28 per party. When divided by the average party size (2.8), this equates to an average of $79.45 per person who went ashore.

Transit spending was concentrated in two categories, tours & attractions, and ground transportation. Combined these two categories accounted for about 70 percent of transit spending.

Transit passengers contributed approximately $24.0 million in direct expenditures to the economy in Central Florida.

Combined, the total passenger spending accounts for about 37 percent of the direct cruise industry spending in Central Florida and 25 percent of the direct spending across all business lines.

Crew spending estimates were derived from 366 on-board surveys completed by crew members. The average spending per crew member who went ashore was $103.10.

Crew expenditures were concentrated in three categories which accounted for 83 percent of their onshore expenditures: food and beverages, retail purchases, and ground transportation. Combined, crew spent an average of $85.59 for goods in these three categories.

[7] The total spend by embarking passengers excludes over $18.5 million in parking fees collected by CPA. This was withheld in order to avoid double counting.

The estimated 328,200 crew who visited Cape Canaveral in 2018 spent a total of $33.8 million. Crew spending accounts for about 2.6 percent of the direct cruise industry spending in Central Florida.

Cruise lines made payments to local businesses for a variety of goods and services. Net payments to local vendors for shore excursions have been included with passenger expenditures. However, cruise lines made other local expenditures, including payments for port fees and taxes, navigation services, utilities and provisions and other supplies. Based upon data provided by the cruise lines, we estimated that the cruise lines, including Victory Cruises, spent a total of $735.1 million throughout Central Florida during the 2018 cruise year. Cruise line spending accounts for about 57 percent of the direct cruise industry spending related to Port Canaveral.

A summary of direct expenditures for the cruise industry segment is shown in **Table 2**.

Table 2 –Direct Expenditures* by Cruise Industry Segment

	Direct Expenditures (Thousands)	
Passenger Total	**$**	**484,699**
Embarking	$	460,694
Port of Call	$	24,005
Crew	**$**	**33,839**
Cruise Lines	**$**	**735,069**
CPA	**$**	**41,947**
Total - 2018	**$**	**1,295,554**

*Note – Total for embarking passengers includes spending for Victory passengers and excludes an amount for parking revenue received by CPA. Cruise lines total includes Victory Cruise expenditures

Economic Contribution of Cruise Tourism Expenditures

As noted previously, a set of economic impact models were developed to produce estimates of the economic contribution of cruise tourism. The impact model was designed to reflect the economic structure of the region and the state, including the industrial composition of production, the wage share of production by industry and average employee wages by industry.

As shown in **Table 3**, the $1.3 billion in total cruise tourism expenditures in Port Canaveral supported the direct employment of 12,964 residents of the region paying $516.6 million in annual wages. The direct employment and wage impacts of cruise tourism are concentrated in the transportation, and administrative & support services sectors, which account for about 54 percent of the employment and 60 percent of wage impacts. The remainder of the direct employment and wage impacts was generated by the spending in the other sectors of the economy.

Table 3 –Direct Economic Contribution by Sector - Cruise Segment

Sector	Direct Expenditures (Thousands)	Direct Jobs (FTE)	Direct Wages (Thousands)
Transportation	$ 504,682	4,631	$ 234,344
Administrative & Support Svcs.	$ 172,152	2,423	$ 77,895
Wholesale Trade	$ 135,318	650	$ 43,319
Accommodations	$ 132,090	1,080	$ 37,726
Retail Trade	$ 101,536	1,290	$ 36,067
Food & Beverage Services	$ 82,293	1,280	$ 28,081
Amusements, Recreation, Arts & Ent.	$ 81,615	1,030	$ 25,578
Professional, Scientific & Tech. Svcs.	$ 41,176	333	$ 21,083
Construction	$ 22,595	163	$ 8,493
Manufacturing	$ 22,097	85	$ 3,993
Total - 2018	**$ 1,295,554**	**12,964**	**$ 516,581**

When combined with the indirect and induced contribution that results from the spending of directly affected local businesses and employees, cruise tourism expenditures generated a total employment contribution of 23,745 jobs and $910.5 million in wage income throughout Florida during 2018. The financial & business services, and transportation sectors contribute 55 percent of the total employment, and 58 percent of the total wage impacts (**See Table 4**).

Table 4 –Total Economic Contribution by Sector - Cruise Segment

Sector	Total Expenditures (Thousands)	Total Jobs (FTE)	Total Wages (Thousands)
Financial & Business Services	$ 855,493	7,609	$ 269,392
Transportation	$ 590,117	5,389	$ 262,958
Personal & Other Services	$ 544,217	6,461	$ 200,581
Wholesale & Retail Trade	$ 409,975	3,513	$ 136,505
Manufacturing	$ 111,730	411	$ 22,356
Agric., Mining, Utilities & Constr.	$ 75,840	362	$ 18,659
Total - 2018	**$ 2,587,372**	**23,745**	**$ 910,451**

In total, the Cruise segment was responsible for the payment of $74.2 million in state and local taxes.

Passenger and Crew Satisfaction

The embarking passenger survey also asked multi-day cruise passengers to rate their satisfaction of several attributes regarding their cruise terminal. A 10-point scale was used, with 10 being the highest score, i.e., extremely satisfied, and 1 being the lowest score, i.e., not at all satisfied. As shown in **Table 5,** passengers were 'extremely satisfied' with all attributes other than the availability of food & beverages, which fell into the lower end of the 'very satisfied' category. Customer service had the highest rating with a mean of 9.50. Cleanliness of the terminal was second with a rating of 9.42. The availability of food and beverages scored the lowest, with a mean rating of 7.10. The "Top 2" category in the tables

below represent the percent who rated the attribute a 9 or 10. Conversely, the "Bottom 2" represent the percent rating the attribute a 1 or 2.

In addition, two questions were asked about the general area; how the visit to the Cape Canaveral area met their prior expectations, and the likelihood of returning to the Cape Canaveral area for a land-based vacation. Passengers indicated the visit 'exceeded' their expectations (Mean=8.88) and were 'very likely' to return to the area (Mean=8.26).

Table 5 – Passenger Visit Satisfaction*

Attribute	Mean	Top 2	Bottom 2
Customer Service	9.50	91%	1%
Cleanliness of Terminal	9.42	90%	2%
Security Screening Process	9.41	90%	2%
Passenger Check-In	9.38	88%	1%
Baggage Handling in the Terminal	9.35	87%	2%
Overall Terminal Experience	9.31	88%	2%
Directional Signage	9.29	82%	1%
Ambiance of Terminal	9.26	84%	2%
Disembark Process	9.03	84%	5%
Availability of Food & Beverage	7.10	52%	19%
Visit Met Expectations	8.88	72%	1%
Likelihood of Returning for Land-Based Vacation	8.26	62%	6%

* Scale is 1 to 10 with 10 being the highest score.
The mean scores can be interpreted as follows: Extremely Satisfied: 10-9.0; Very Satisfied: 8.9-7.0; Somewhat Satisfied: 6.9-5.0; Not Too Satisfied: 4.9-3.0; Not at All Satisfied: 2.9-1.0.

Crew were asked to rate a smaller set of satisfaction attributes than were the passengers. Crew scores are significantly below those of the passengers across all measures. Crew were 'very satisfied' with 4 of the 6 attributes, with ease of getting around the area (6.59) and availability of food and beverage (6.38) scoring in the 'somewhat satisfied' range. Cleanliness of the terminal (8.20) and directional signage (7.63) were the two highest rated attributes by crew (**See Table 6**).

Table 6 – Crew Visit Satisfaction*

Attribute	Mean	Top 2	Bottom 2
Cleanliness of Terminal	8.20	48%	1%
Directional Signage	7.63	39%	2%
Ambiance of Terminal	7.50	36%	4%
Overall Terminal Experience	7.25	31%	5%
Ease in Getting Around the Area	6.59	28%	11%
Availability of Food & Beverage	6.38	28%	14%

* Scale is 1 to 10 with 10 being the highest score.
The mean scores can be interpreted as follows: Extremely Satisfied: 10-9.0; Very Satisfied: 8.9-7.0; Somewhat Satisfied: 6.9-5.0; Not Too Satisfied: 4.9-3.0; Not at All Satisfied: 2.9-1.0.

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ii. Cargo Segment

The impacts for the cargo segment are a result of the movement, warehousing and distribution/transportation of the 6.4 million tons of commodities and the requisite local operations and capital expenditures at Port Canaveral.

At the core of the analysis of the economic contribution for the cargo business line were telephone and online surveys conducted with those firms that conduct their cargo-related business on port property or in support of the cargo moving, storage and distribution activities at the port; and economic data from the U.S. Census Bureau and the Bureau of Economic Analysis (BEA). Often, businesses supporting the cargo industry also provide service to the cruise industry (e.g., pilotage, towing or stevedoring). BREA implemented measures to ensure no double counting of these expenditures occurred. The analyses also utilized the appropriate spending and contribution of the CPA for the cargo segment.

Given the direct spending estimates, the economic contribution of these expenditures, as measured by employment and wage income were then estimated for Central Florida. As with the other segments, the process began with the collection of economic data for the regional area and state, as previously described. Utilizing these data, a set of economic impact models were developed to estimate the direct and total employment and wage impacts specific to the Cargo business line.

Cargo business spending accounts for about 21 percent of all direct spending related to Port Canaveral.

Economic Contribution of Cargo Expenditures

As noted previously, a set of economic impact models were developed to produce estimates of the economic contribution for the cargo segment. The impact model was designed to reflect the economic structure of the region and the state,

including the industrial composition of production, the wage share of production by industry and average employee wages by industry.

As seen in **Table 7** below, total cargo tonnage has experienced notable growth since 2009. There was a total of 6.4 million tons of cargo moved through Port Canaveral in 2018 compared to 2.6 million tons in 2009, growth of 144 percent. The total tonnage moved through Port Canaveral is up about 17 percent from 2016 and 7 percent from 2017. As mentioned in the executive summary, the top four commodities accounted for 87 percent of the tonnage in 2018.

Table 7 – Commodity Tonnage, 2009 – 2018

Commodity	2009	…	2016	2017	2018
Petroleum	990,594	…	3,845,853	3,957,363	3,982,524
Slag/Sand	137,169	…	595,697	650,249	609,107
Granite/Rock	292,004	…	318,261	404,229	496,774
Limestone/Aggregate	643,560	…	315,564	344,751	467,564
Salt	210,900	…	220,329	277,976	332,180
Lumber	30,733	…	29,410	111,185	211,911
All Others	321,835	…	171,914	245,010	317,066
Total	**2,626,795**	**…**	**5,497,028**	**5,990,763**	**6,417,126**
			Share of Total		
Petroleum	38%	…	70%	66%	62%
Slag/Sand	5%	…	11%	11%	9%
Granite/Rock	11%	…	6%	7%	8%
Limestone/Aggregate	24%	…	6%	6%	7%
Salt	8%	…	4%	5%	5%
Lumber	1%	…	1%	2%	3%
All Others	12%	…	3%	4%	5%
	100%	…	100%	100%	100%

The majority (62%) of cargo tonnage at Port Canaveral is due to petroleum. However, petroleum products require a relatively small amount of labor to carry out the functions of storage and distribution; therefore, petroleum has a much smaller

set of expected employment and wage impacts than commodities like break bulk, containerized goods, and even other bulk commodities. This will

factor into the overall economic impact of cargo activities attributed to a port and illustrates how the commodity mix seen in different ports can affect their contribution to a regional economy.

U.S. Census and BEA data were used to establish cargo values and the associated margins, or costs, in bringing those goods to market in 2018. These values provide the basis for which the associated direct expenditures are derived. Using survey data from firms that conduct their business directly in, or in support of cargo operations, a set of expenditures by industry were estimated to account for these costs. Fifty-nine percent of the expenditures associated with the cargo segment are concentrated in the wholesale sector. Nearly a third (31%) of the expenditures are within the transportation industry. This is due to the high level of activities associated with moving and storing cargo and the ancillary services that assist with those activities including the distribution of commodities out of the port via truck, pipeline or other means of transportation.

There are bulk commodities like salt and construction material that go through some production process at the port as a result of the import and export activity. These commodities contribute to expenditures in the manufacturing industry, and then to the transportation industry as they are distributed into the state or shipped out of the port to other locations.

Expenditures with various marine service providers such as pilotage and towing, stevedoring, vessel maintenance, marine construction, agents, freight forwarders,

crane operators, and many others that support cargo operations were also estimated using a combination of survey and economic data. Most of the

expenditures with these firms also contribute to the transportation sector as they support the water transportation sector, but some have been classified as construction and manufacturing. Finally, the portion of the CPA's operating budget attributable to the cargo business line was used, and contributes jobs and expenditures for operations, administration and improvements to the port.

As shown in **Table 8**, $412.9 million in direct expenditures within the cargo segment in Port Canaveral supported the direct employment of nearly 2,100 individuals paying $116.3 million in annual wages. The direct employment and wage impacts of the cargo segment are concentrated in the wholesale and transportation sectors, as described previously. These two sectors account for about 86 percent of the direct employment and 87 percent of direct wage impacts. The construction and manufacturing sectors each support 5 or 6 percent of the direct employment and wage impacts generated by Port Canaveral's cargo industry. The remaining impacts are distributed among administrative, support, professional, scientific and technical services. Most of these are due to the CPA's contribution.

Table 8 – Direct Economic Contribution by Sector - Cargo Segment

Sector	Direct Expenditures (Thousands)	Direct Jobs (FTE)	Direct Wages (Thousands)
Wholesale Trade	$ 245,629	885	$ 59,348
Transportation	$ 128,371	924	$ 41,991
Construction	$ 18,097	130	$ 6,803
Manufacturing	$ 17,864	116	$ 6,184
Administrative & Support Svcs.	$ 2,138	29	$ 1,386
Prof., Scientific & Tech. Svcs.	$ 824	8	$ 632
Total - 2018	**$ 412,923**	**2,092**	**$ 116,344**

When combined with the indirect and induced contribution, the cargo segment contributed a total impact of almost 4,700 jobs and $228.8 million in wage income throughout Florida in 2018. The top two categories, wholesale & retail trade and financial & business services accounted for 62 percent of the total expenditures, 50 percent of the total employment, and 56 percent of the total wage impacts (**See Table 9**).

Table 9 – Total Economic Contribution by Sector – Cargo Segment

Sector	Total Expenditures (Thousands)	Total Jobs (FTE)	Total Wages (Thousands)
Wholesale & Retail Trade	$ 297,823	1,321	$ 72,848
Financial & Business Services	$ 196,978	1,024	$ 55,626
Transportation	$ 161,856	1,164	$ 52,830
Personal & Other Services	$ 68,649	789	$ 28,525
Manufacturing	$ 43,739	164	$ 8,064
Agric., Mining, Utilities & Constr.	$ 34,969	204	$ 10,941
Total - 2018	**$ 804,014**	**4,666**	**$ 228,834**

In total, the Cargo segment was responsible for the payment of $18.6 million in state and local taxes.

Final Demand Impacts

There are businesses that are largely involved in the final sale or use of the commodities that flow through Port Canaveral, which are not typically included in the direct economic impact analysis. These include but are not limited to businesses such as retail trade establishments, construction companies, or establishments that require petroleum products. BREA categorizes these businesses and impacts as "final demand impacts". These are independent of the economic impact analysis but are worth noting as they do utilize commodities that flow through the port.

Given these factors for the commodities moved through Port Canaveral, BREA has estimated that the final demand impacts associated with the commodities would lead to the support of an additional 2,017 jobs paying about $70.6 million in annual wages. These are independent of the economic contribution noted in Table 9 above and are not directly attributable to Port Canaveral.

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iii. Real Estate Segment

The impacts for the real estate line of business are a result of the demand for the goods and services produced by the various tenants and sub-tenants of the Canaveral Port Authority. Tenant and subtenant businesses operating on Port Canaveral property vary in size and type, ranging from one or two employees to hundreds of employees; and provide goods and services such as food & beverage, manufacturing, personal services, and professional and business services. The various marinas at Port Canaveral are also included in this section.

At the core of the analysis of the economic contribution for the real estate business line were online, in person, and telephone surveys conducted with the businesses located on port property, excluding those businesses and expenditures associated with the other business lines (e.g., cruise or cargo). The analysis also utilized the spending and contribution of CPA to the real estate segment.

Given the direct spending estimates, the economic contribution of these expenditures, as measured by employment and wage income were then estimated for the Port Canaveral area. As with the other segments, the process began with the collection of economic data for the regional area and state, as previously described. Utilizing these data, BREA developed an economic impact model which estimated the direct and total employment and wage impacts specific to the real estate business line.

The spending with the real estate tenants and sub-tenants accounts for about 9 percent of all direct spending related to Port Canaveral.

A summary of direct expenditures by the real estate segment is shown below in **Table 10**.

Economic Contribution of Real Estate Expenditures

As noted previously, a set of economic impact models were developed to produce estimates of the economic contribution for the real estate segment. The impact

model was designed to reflect the economic structure of the region and the state, including the industrial composition of production, the wage share of production by industry and average employee wages by industry. As shown in **Table 10** below, the variety of goods and services offered by the tenant and subtenant businesses reach across a broad range of sectors.

The $174.4 million in direct expenditures with the real estate tenants and subtenants in Port Canaveral supported the direct employment of 1,647 residents of Central Florida paying $61.6 million in annual wages. The direct employment and wage impacts of the real estate segment are concentrated in the recreation, wholesale trade, and transportation sectors, which account for about 55 percent of the direct employment and 52 percent of direct wage impacts. The remainder of the direct employment and wage impacts was generated by spending in the remaining sectors.

Table 10 –Direct Economic Contribution by Sector – Real Estate Segment

Sector	Direct Expenditures (Thousands)	Direct Jobs (FTE)	Direct Wages (Thousands)
Recreation	$ 37,864	406	$ 12,299
Wholesale Trade	$ 29,075	298	$ 9,306
Transportation	$ 26,270	195	$ 10,246
Food & Beverage Service	$ 23,303	273	$ 7,952
Personal & Other Svcs.	$ 19,267	92	$ 7,873
Accommodations	$ 13,732	112	$ 3,921
Professional, Scientific & Tech. Svcs.	$ 10,451	82	$ 5,074
Retail Trade	$ 6,304	133	$ 2,256
Manufacturing	$ 4,470	13	$ 802
Administrative & Support Svcs.	$ 1,774	24	$ 1,156
Real Estate	$ 1,535	16	$ 570
Construction	$ 386	3	$ 157
Total - 2018	**$ 174,431**	**1,647**	**$ 61,610**

When combined with the indirect and induced contribution that results from the spending of directly affected local businesses and their employees, there was a

total contribution of 3,134 jobs and $116.2 million in wage income during 2018. The personal & other services, and financial & business services sectors accounted for 74 percent of the total employment, and 66 percent of the total wage impacts (**See Table 11**). These sectors consist primarily of businesses that support other business operations and provide goods and services to the household consumer.

Table 11 –Total Economic Contribution by Sector – Real Estate Segment

Sector	Total Expenditures (Thousands)	Total Jobs (FTE)	Total Wages (Thousands)
Personal & Other Svcs.	$ 125,818	1,566	$ 47,339
Financial & Business Svcs.	$ 100,285	755	$ 29,479
Wholesale & Retail Trade	$ 57,327	415	$ 18,899
Transportation	$ 37,421	293	$ 14,668
Manufacturing	$ 16,802	61	$ 3,505
Agric., Mining, Utilities, & Construction	$ 8,598	44	$ 2,267
Total - 2018	**$ 346,251**	**3,134**	**$ 116,156**

In total, the Real Estate segment was responsible for the payment of $9.5 million in state and local taxes.

Marina Operations

Included within the above figures are the impacts from the various marinas currently operating at Port Canaveral. Marinas were included in the Real Estate segment since they contribute to the land lease revenue of CPA and are not listed as a separate entity in CPA's accounting. However, if viewed as a separate line of business, Port Canaveral's marinas, collectively, contributed $22.5 million in direct expenditures and 217 direct jobs. The total contribution for the marinas accounted for $42.9 million in total expenditures, with 431 total jobs paying $15.0 million in wages.

iv. Recreation Segment

The impacts for the recreation line of business were a result of consumer spending while visiting Port Canaveral's Jetty Park and beach, and Exploration Tower. To determine consumer spending at Jetty Park, BREA conducted an online survey with individuals who had spent an overnight at Jetty Park in the prior 6 months. In all, there were 956 completed responses to the survey.

As with the real estate section, BREA took every effort to avoid double counting spending estimates for food and beverage, as well as for park fees.

Given the direct spending estimates, the economic contribution of these expenditures, as measured by employment and wage income were then estimated for the Central Florida area. As with the other segments, the process began with the collection of economic data for the regional area and state, as previously described. Utilizing these data, BREA developed an economic impact model which estimated the direct and total employment and wage impacts specific to the real estate business line. This includes the CPA contribution.

The spending within the recreation business line accounts for less than 1 percent of the direct spending at Port Canaveral.

A summary of direct expenditures by the recreation segment is shown below in **Table 12**.

Jetty Park Analysis

Respondents who spent an overnight at Jetty Park indicated there were an average of 2.7 individuals in their party, and they spent an average of 5.09 nights. Seventy-five percent stayed in an RV, 18 percent in tents, and 8 percent in cabins. Including the cost of the camping fees, respondents indicated they spent a total of just under $700 for the

duration of their stay. Ninety-three percent were from the U.S., 6 percent were from Canada and about 1% were from somewhere else.

The survey also asked about their visits to several area attractions. Forty-four percent visited Cocoa Beach, 25 percent visited the Kennedy Space Center, and 16 percent indicated they visited Exploration Tower.

As with other parts of this study, BREA excluded those expenditures that were accounted for in other segments such as camping fees that were paid to CPA.

Economic Contribution of Recreation Expenditures

Similar to each of the other business lines, BREA developed a set of economic impact models designed to produce estimates of the economic contribution for this segment.

As shown in **Table 12**, the recreation segment generated about $9.4 million in direct expenditures. These expenditures supported the direct employment of 128 residents of the region paying $4.6 million in annual wages. The direct employment and wage impacts of the recreation segment are concentrated in the amusements & recreation, retail trade, and food & beverage sectors. These three sectors account for about 75 percent of the direct expenditures, 80 percent of the direct employment and 74 percent of direct wage impacts. These sectors include establishments like restaurants, recreational equipment rental locations, grocery, and other retail stores. The remainder of the direct employment and wage impacts was generated by the spending in the remaining sectors. The CPA's expenditures contributed approximately 43 percent of the direct expenditures in the recreation segment.

Table 12 –Direct Economic Contribution by Sector – Recreation Segment

Sector	Direct Expenditures (Thousands)	Direct Jobs (FTE)	Direct Wages (Thousands)
Amusements & Recreation	$ 3,304	50	$ 2,094
Retail Trade	$ 1,998	25	$ 699
Food & Beverage Svcs.	$ 1,744	27	$ 595
Construction	$ 670	5	$ 252
Administrative & Support Svcs.	$ 670	9	$ 435
Wholesale Trade	$ 29	0	$ 9
Transportation	$ 54	1	$ 20
Other Svcs.	$ 651	8	$ 266
Professional, Scientific & Tech. Svcs.	$ 258	3	$ 198
Total - 2018	**$ 9,378**	**128**	**$ 4,569**

*Note – Direct FTE jobs in wholesale trade were equal to less than .5

Adding the indirect and induced contribution to these direct expenditures results in a total employment contribution of 213 jobs and $7.6 million in wage income supported by the operations of CPA's recreational facilities during 2018. The personal & other services, and financial & business services sectors contribute 70 percent of the total expenditures, 75 percent of total employment, and 75 percent of the total wage impacts for this segment (**See Table 13**).

Table 13 –Total Economic Contribution by Sector – Recreation Segment

Sector	Total Expenditures (Thousands)	Total Jobs (FTE)	Total Wages (Thousands)
Personal & Other Svcs.	$ 7,696	110	$ 3,865
Financial & Business Svcs.	$ 5,798	49	$ 1,831
Wholesale & Retail Trade	$ 3,407	33	$ 1,000
Manufacturing	$ 792	3	$ 131
Transportation	$ 450	9	$ 404
Agric., Mining, Utilities, & Construction	$ 1,131	9	$ 320
Total - 2018	**$ 19,274**	**213**	**$ 7,550**

In total, the Recreation segment was responsible for the payment of $615,000 in state and local taxes.

v. Government Segment

There are several government organizations that operate in Port Canaveral. Local agencies include the Brevard County Sheriff's Department and Canaveral Fire Rescue, while federal agencies include divisions within the Department of Homeland Security, the U.S. Coast Guard, Military Sealift Command and the Naval Ordinance Test Unit. The local agencies cover more than just Port Canaveral; thus, their contributions represent a share of their total departments. The federal agencies have personnel that are dedicated to stations and units within the port.

At the core of the analysis of the economic contribution for the government segment were interviews and correspondence with representatives from each respective agency, except for the Department of Homeland Security.

Due to operational confidentiality concerns, as well as the varying scale and scope of each agency, the estimates of the economic contribution for these government agencies are reported in aggregate. Separately, part of the Canaveral Port Authority's operating expenses were provided to the local municipalities in charge of funding police and fire protection. To avoid double counting, this amount was deducted from any contribution that would have been attributed to CPA.

Table 14 – Direct Contributions – Government

Sector	Direct Expenditures (Thousands)	Direct Jobs (FTE)	Direct Wages (Thousands)
Government Operations	$ 49,568	406	$ 30,293
Total - 2018	**$ 49,568**	**406**	**$ 30,293**

As can be seen above in **Table 14**, government operations are given their own industry. For the purpose of this study, expenditures for government agencies are limited to the operating costs of the agency and do not include capital expenditures. The $30.3 million in wages paid to 406 local and federal government employees accounts for 61 percent of the direct expenditures. Employees of government agencies operating in Port Canaveral earned average estimated annual compensation of approximately $74,600.

Because the direct expenditures are concentrated in the administration of the agency and in employee income, the indirect effects are concentrated in those industries that primarily support administrative work and household consumption. These would include financial and business services and retail and personal services for household consumption. As shown in **Table 15**, there was $95.6 million in total expenditures due to government operations. These expenditures supported 893 jobs earning $53.4 million in compensation.

Table 15 – Total Contributions – Government

Sector	Total Expenditures (Thousands)	Total Jobs (FTE)	Total Wages (Thousands)
Personal & Other Svcs.	$ 62,967	635	$ 40,336
Financial & Business Svcs.	$ 13,691	111	$ 7,273
Wholesale & Retail Trade	$ 8,477	88	$ 2,958
Agric., Mining, Utilities, & Construction	$ 5,264	31	$ 1,528
Manufacturing	$ 3,171	13	$ 615
Transportation	$ 2,035	15	$ 655
Total - 2018	**$ 95,604**	**893**	**$ 53,366**

Personal and other services accounted for 66 percent of the total expenditures. Government agencies are included in this sector, so its expenditures are included there. The $63.0 million in total expenditures in personal & other services supported 229 jobs in addition to the 406 directly employed by the government agencies, resulting in the 635 total jobs.

Total salaries and benefits for these 635 jobs were $40.3 million. Those industries in financial and business services benefitted from $13.7 million in total expenditures, 14 percent of the total, supporting 111 jobs earning $7.3 million in compensation. The remaining contributions were seen throughout the economy and totaled $18.9 million, supporting 147 jobs paying $5.8 million in compensation.

In total, the Government segment was responsible for the payment of $4.3 million in state and local taxes.

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A. Passenger and Crew Surveys

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CONFIDENTIAL CRUISE PASSENGER SURVEY (EMBARK)

The Canaveral Port Authority is conducting a survey of cruise passengers embarking on their cruise from Port Canaveral. The objective of this survey is to provide information to the port that will allow them to enhance visitors' experiences and quantify the contribution of cruise passengers to the local economy. **The survey should only take a few minutes to complete and your responses will be held in strict confidence.**

Please record the date of your cruise ship's sailing from Port Canaveral: Month (mm) _____Day (dd) _____ (Numbers please)

On which cruise line are you traveling? ❑ Carnival ❑ Disney ❑ Norwegian ❑ Royal Caribbean ❑ Other

Q1. Including yourself, how many people are staying in your cabin/stateroom? ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5+

Q2. What is the length of your cruise? ❑ 1 or 2 Nights ❑ 3 or 4 Nights ❑ 5 or 6 Nights ❑ 7 or More Nights

Q3. Initially, how did you get from your home to the Port Canaveral area to take your cruise? ❑ Car ❑ Airplane ❑ Other Public Transportation

Q4. What form of local transportation did you use to travel to the cruise ship terminal in Port Canaveral today? (Check all that apply)
❑ Private Auto (Parked) ❑ Private Auto (Drop Off) ❑ Taxi/Uber/Lyft ❑ Rental Car
❑ Cruise Line Transfer ❑ Hotel Shuttle ❑ Other Public Transportation

Q5. Are you a resident of Brevard County? ❑ Yes **(If Yes, Go to Q15)** ❑ No

Q6. How many nights both prior to and following your cruise will you spend in the Cape Canaveral/Orlando area?
Pre-cruise stay: ❑ 0 ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5+ nights Post-cruise stay: ❑ 0 ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5+ nights **(If 0 for both, Go to Q8)**

Q7. In what type of accommodations are you staying while in the Canaveral/Orlando area?
❑ Hotel/motel ❑ Air BNB ❑ Campground ❑ Other paid accommodations ❑ With friends or relatives ❑ Other arrangements

Q8. Including overnight accommodations, did you make any purchases in the Cape Canaveral/Orlando area prior to your cruise?
❑ Yes ❑ No **(If No, Go to Q13 on back)**

Q9. Did you purchase a sightseeing tour for the Cape Canaveral/Orlando area prior to your cruise? ❑ Yes ❑ No **(If No, Go to Q11)**

Q10. How did you purchase this tour?
❑ Onboard the cruise ship ❑ From the cruise line over the Internet ❑ Onshore from a tour operator
❑ From a tour operator over the Internet ❑ From a travel agent ❑ Other

Q11. In the space provided on the following page, please estimate the value of all purchases (in U.S. dollars) that **all persons in your cabin** made during your **visit to the Cape Canaveral/ Orlando area** prior to your cruise. **(Enter whole dollars).**

Food and beverages at restaurants and bars:	$ _____	Accommodations (if applicable):	$ _____
Tickets & merchandise at Orlando Theme Parks/Kennedy Space Center/Other Attractions	$ _____	Taxis/Ground Transportation:	$ _____
Sightseeing Tour (if applicable):	$ _____	Entertainment Venues/Nightclubs/Casinos:	$ _____
Retail Purchases of Watches & Jewelry:	$ _____	Parking at the Cruise Terminal:	$ _____
Retail Purchases of Clothing (incl. T-shirts):	$ _____	Airfare to the Area	$ _____
Cultural sites (Museums, Opera, etc.)	$ _____	All Other Purchases:	$ _____

Q12. How much in total did all persons **in your cabin** spend during your visit to the Cape Canaveral/Orlando area prior to your cruise?

$ _____ ($USD Whole dollars only)

(PLEASE GO TO Q13 ON BACK)

Q13. Please record the value of your anticipated purchases that **all persons in your cabin** are likely to make in the Cape Canaveral/ Orlando area immediately following your cruise. **(Whole $USD).**

Food and beverages at restaurants and bars:	$ _____	Accommodations (if applicable):	$ _____
Tickets & merchandise at Orlando Theme Parks/Kennedy Space Center/Other Attractions	$ _____	All Other Purchases:	$ _____

Q14. How much in total do you anticipate all persons **in your cabin** will spend during your visit to the Cape Canaveral/Orlando area following your cruise?

$ _____ **(Whole $USD)**

Q15. On a scale of 1 to 10, how would you rate the following services and facilities at the Port Canaveral cruise ship terminal?

(Extremely satisfied = 10 ……. 1 = Not at all satisfied)

Passenger Check-In:	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable
Baggage Handling in Terminal:	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable
Security Screening Process:	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable
Directional Signage:	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable
Ambiance of the Terminal:	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable
Customer Service:	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable
Cleanliness:	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable
Availability of Food & Beverage:	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable
Disembark Process After Cruise:											
(If Applicable)	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable
Overall Terminal Experience:	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable

Q16. Overall, and on a scale of 1 to 10, how did your visit to the Cape Canaveral area meet your prior expectations?

Greatly Exceeded ❑10 ❑ 9 ❑ 8 ❑ 7 ❑ 6 ❑5 ❑ 4 ❑3 ❑ 2 ❑ 1 Fell far short

Q17. Based upon your experience today, on a scale of 1 to 10 how likely are you to return to the Cape Canaveral area for a land-based or resort vacation within the next three years?

Extremely likely ❑10 ❑ 9 ❑ 8 ❑ 7 ❑ 6 ❑5 ❑ 4 ❑3 ❑ 2 ❑ 1 Not at all likely

The following are to better understand demographic characteristics of Port Canaveral cruise passengers.

Q18. How many persons **in your cabin** are in each age group? **(Leave Blank if "0")**

Under 15: ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 **15 to 24**: ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 **25 to 44**: ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

45 to 64: ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 **65+** ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

Q19. Where is your permanent place of residence? ❑ US ❑ Canada ❑ UK ❑ Germany ❑ Other _____(specify)

If the US/ or Canada, which state or province? _____ (please use 2 letter abbreviation)

Q20. And finally, for analysis purposes only, approximately what is your annual gross (pre-tax) household income (in U.S. dollars)?

❑ Under $50,000	❑ $50,000 to $74,999	❑ $75,000 to $99,999
❑ $100,000 to $149,999	❑ $150,000 to $199,999	❑ $200,000 or more

Thank you very much for taking time to assist us and enjoy the remainder of your cruise.

CONFIDENTIAL CRUISE PASSENGER SURVEY (PoC)

The Canaveral Port Authority is conducting a survey of its cruise passengers. The objective of this survey is to provide information to the port that will allow them to enhance visitors' experiences and quantify the contribution of cruise passengers to the area's economy. **The survey should only take a few minutes to complete and your responses will be held in strict confidence.**

Please record the date of your cruise ship's call at Port Canaveral: Day(dd)____ Month(mm)____ Year (yy)____ (Numbers please)

Q1. Please check the name of the cruise line you are sailing with:

❑ Disney ❑ Holland America ❑ Norwegian ❑ Royal Caribbean ❑ Other

Q2. Including yourself, how many people are staying in **your cabin/stateroom?** ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5+

Q3. How many hours did you spend ashore during your cruise call at Cape Canaveral today?

❑ 0 ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 ❑ 6 ❑ 7 ❑ 8 ❑ 9 ❑ 10 ❑ 11 ❑ 12^{+} (**If 0, Go to Q17 on back)**

Q4. Did you purchase any **tours or transfers** to any of the following attractions in the Cape Canaveral/Orlando area? (Check all that Apply)

❑ Kennedy Space Center ❑ Orlando Theme Park (Disney, Universal, etc.) ❑ Beach (i.e., Cocoa Beach)

❑ Gator Land ❑ Helicopter Tour ❑ Shopping Tour ❑ Dining Tour ❑ Daytona Speedway ❑ Orlando Eye ❑ Other

Q5. How did you purchase this/these tour(s)?

❑ Onboard the cruise ship ❑ From the cruise line over the Internet ❑ Onshore from a tour operator

❑ From a tour operator over the Internet ❑ From a travel agent ❑ Other

Q8. In total, how much did all persons in your cabin spend for this/these tour(s) or transfers? $ _____ (**Whole $USD)**

Q9. Did you make any purchases (excluding the tours or transfers above) during your visit in the Cape Canaveral/Orlando area today?

❑ Yes ❑ No (**If No, Go to Q12 on back**)

Q10. In the space provided, please record the value of all purchases that **all persons in your cabin** made during your **on-shore visit** to the Cape Canaveral/Orlando area today. *** Do not include the cost of tours, or goods and services that were purchased onboard the cruise ship. (Whole $USD).**

Food and Beverages at Restaurants and Bars:	$ _____	Tickets or merchandise at Theme Parks/Kennedy Space Center/etc.	$ _____
Taxis/Ground Transportation: (Do not include cost of sightseeing tours)	$ _____	Local Crafts and Souvenirs:	$ _____
Retail Purchases of Watches & Jewelry:	$ _____	Retail Purchases of Electronics:	$ _____
Retail Purchases of Clothing (incl. T-shirts):	$ _____	Other Retail Purchases	$ _____
Entertainment Venues/Nightclubs/Casinos:	$ _____	Any Other Purchases:	$ _____
Cultural sites (Museums, Opera, etc.)	$ _____		

Q11. How much in total (excluding the tours or transfers in Q4 above) did all persons in your cabin spend in the Cape Canaveral/Orlando area today?

$ _____ **(Whole $USD)**

(PLEASE GO TO Q 12 ON BACK)

Q12. On a scale of 1 to 10, how satisfied were you with each of the following in the Cape Canaveral area?

(Extremely satisfied = 10 ……. 1 = Not at all satisfied)

Initial Shoreside Welcome	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable
Sightseeing Tour	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable
Variety of Things to See and Do	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable
Overall Shopping Experience	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable
Taxis/Local Transportation	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable
Ease in finding transportation	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable
Directional Signage in Terminal	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable
Ambiance of Terminal	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable
Cleanliness of Terminal	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable
Disembark Process	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable
Overall Visit in Port Canaveral:	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1	❑ 0 Not applicable

Q13. Overall, and on a scale of 1 to 10, how did your visit to the Cape Canaveral area meet your prior expectations?

Greatly Exceeded ❑10 ❑ 9 ❑ 8 ❑ 7 ❑ 6 ❑5 ❑ 4 ❑3 ❑ 2 ❑ 1 Fell far short

Q14. Based upon your experience today, on a scale of 1 to 10 how likely are you to return to the Cape Canaveral area for a land-based or resort vacation within the next three years?

Extremely likely ❑10 ❑ 9 ❑ 8 ❑ 7 ❑ 6 ❑5 ❑ 4 ❑3 ❑ 2 ❑ 1 Not at all likely

Q15. Based upon your experience today, on a scale of 1 to 10 how likely are you recommend a land-based or resort vacation in the Cape Canaveral area to family and friends?

Extremely likely ❑10 ❑ 9 ❑ 8 ❑ 7 ❑ 6 ❑5 ❑ 4 ❑3 ❑ 2 ❑ 1 Not at all likely

The following are to better understand demographic characteristics of cruise passenger visitors at Port Canaveral.

Q16. How many **persons in your cabin** are: Male: ❑ 0 ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 Female: ❑ 0 ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

Q17. How many persons in your cabin are in each age group? **(Leave Blank if "0")**

Under 15: ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5+ **15 to 24**: ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5+ **25 to 44**: ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5+

45 to 64: ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5+ **65+** ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5+

Q18. Where is your permanent place of residence? ❑ US ❑ Canada ❑ UK ❑ Germany ❑ Australia ❑ France ❑ Other _____(specify)

If the US/Canada, which state/province? ____ ____ (please use 2 letter abbreviation)

Q19. Approximately, what is your annual gross (pre-tax) household income (in U.S. dollars)? (Income is only used for demographic analysis)

❑ Under $50,000	❑ $50,000 to $74,999	❑ $75,000 to $99,999
❑ $100,000 to $149,999	❑ $150,000 to $199,999	❑ $200,000 or more

Please return the completed survey to the Guest Services Desk or give it to your Stateroom Steward.
Thank you very much for taking time to assist us and enjoy the remainder of your cruise.

CONFIDENTIAL CREW SURVEY

The Canaveral Port Authority is conducting a survey of crew members who have visited the Port Canaveral area so that the port can enhance visitors' experiences and quantify cruise passengers' and crew's impact on the area's economy. **The survey will only take a few minutes to complete, and your responses are confidential.**

Please record the date of your cruise ship's call at Port Canaveral: Month (mm)_____ Day (dd)_____

For which cruise line do you work? ❑ Carnival ❑ Disney ❑ Norwegian Cruise Line ❑ Royal Caribbean ❑ Other

Q1. Did you leave the ship to visit the Cape Canaveral/Orlando area today? ❑ Yes **(If yes, go to Q3)** ❑ No

Q2. Did you leave the ship and visit the Cape Canaveral/Orlando area on any cruise calls in the past month?
❑ Yes ❑ No **(If No to Q1 AND Q2, go to Q7)**

Q3. How many hours did you spend ashore during your visit today or during your most recent visit?

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 ❑ 6 ❑ 7 ❑ 8 ❑ 9 ❑ 10+

Q4. How much did you spend in total in the Cape Canaveral/Orlando area during your most recent visit?

$ _____ **(Whole $USD only)**

Q5. Please record the value of all purchases ($USD) that you made during your most recent on-shore visit to the Cape Canaveral/Orlando area. ***Do not include the cost of tours or goods and services that were purchased onboard the cruise ship. (Enter whole dollars).**

Food and beverages at bars and restaurants:	$ _____	Orlando Theme Parks:	$ _____
Taxis/local transportation:	$ _____	Tours purchased **on shore:**	$ _____
Retail purchases of watches and jewelry:	$ _____	Museums and galleries:	$ _____
Retail purchases of clothing (including T-shirts):	$ _____	Retail purchases of electronics:	$ _____
Entertainment venues/nightclubs/casinos:	$ _____	Telephone, internet or postage:	$ _____
Kennedy Space Center:	$ _____	Retail purchases of personal hygiene products/cabin essentials	$ _____

All other purchases: $ _____

Q6. On a scale of 1 to 10, how would you rate the following services and facilities at the Port Canaveral cruise ship terminal?

(Extremely satisfied = 10 ……. 1 = Not at all satisfied)

Directional Signage:	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1
Ambiance of the Terminal:	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1
Cleanliness:	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1
Availability of Food & Beverage:	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1
Ease in Getting Around Area	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1
Overall Terminal Experience:	❑ 10	❑9	❑8	❑7	❑6	❑5	❑4	❑3	❑ 2	❑ 1

The following are to better understand demographic characteristics of crew visitors at Port Canaveral.

Q7. What is your gender? ❑ Male ❑ Female

Q8. In which age group do you fall? ❑ Under 20 ❑ 21 to 30 ❑ 31 to 50 ❑ 51 to 65 ❑ Over 65

Thank you for your time and assistance.
Please write any comments about your onshore experience on the back of the survey.

B. Jetty Park Survey

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CONFIDENTIAL JETTY PARK VISITOR SURVEY

The Canaveral Port Authority is conducting a survey of its Jetty Park visitors. The objective of this survey is to provide information to the port that will allow them to enhance visitors' experiences and quantify the contribution of visitors to the area's economy. **The survey should only take a few minutes to complete and your responses will be held in strict confidence.**

Q1. During which month did you visit Jetty Park? (Drop Down List)

Q2, In which of the following did you spend an overnight in Jetty Park?

RV
Cabin
Tent
No overnight spent (Skip to Q4)

Q3. How many nights did you spend in Jetty Park? _____

Q4. Including yourself, how many people were in your immediate party (e.g., RV/Cabin/Tent)**?** ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5+

Q5. While at Jetty Park did you visit…?)

❑ Kennedy Space Center ❑ Exploration Tower ❑ Cocoa Beach/Village ❑ Orlando-area Theme Parks

Q6. In total, how much did all persons in your party spend for this/these attractions? $ _____ (**Whole $USD)**

Q7. In the space provided, please estimate the value of all purchases that **all persons** in your party made during your visit to Jetty Park and the Cape Canaveral area.

Camping fees in Jetty Park	$ _____	Retail purchase of supplies/food	$ _____
Food and Beverages at Restaurants and Bars:	$ _____	Local Crafts and Souvenirs:	$ _____
Taxis/Ground Transportation:	$ _____	Retail Purchases of Electronics:	$ _____
Retail Purchases of Clothing (incl. T-shirts):	$ _____	Other Retail Purchases	$ _____
Fishing/Boating Activities:	$ _____	Any Other Purchases:	$ _____

Q8. How much in total did all persons in your party spend during your visit to Jetty Park and the Cape Canaveral area?

$ _____ **(Whole $USD)**

The following are to better understand demographic characteristics of visitors at Port Canaveral's Jetty Park.

Q9. How many **persons in your party** are: Male: ❑ 0 ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 Female: ❑ 0 ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

Q10. Where is your permanent place of residence? ❑ US ❑ Canada ❑ Other

If the US/Canada, which state/province? ____ ____ (please use 2 letter abbreviation)

Q11. Approximately, what is your annual gross (pre-tax) household income (in U.S. dollars)? (Income is only used for demographic analysis)

❑ Under $50,000	❑ $50,000 to $74,999	❑ $75,000 to $99,999
❑ $100,000 to $149,999	❑ $150,000 to $199,999	❑ $200,000 or more

C. Canaveral Port Authority's Operational Expenses

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The basis for the Canaveral Port Authority's contribution to the regional and state economies is built on identifiable cash outlays that paid for activities which supported port operations and administration, or capital improvements that had an actual impact on the economy. These expenditures were identified from the operating expenses and capital improvement projects outlined in the Combined Annual Financial Report for fiscal year 2018.

The allocation of CPA's operational, administrative and capital expenditures were distributed across CPA's five business lines in the following manner. In cases where CPA's line item expenditures made it clear they were made on behalf of a specific business line, the entire amount was allocated to that business line. Where no direct mention of business line was made, BREA used the percent of revenue share of each business line for allocating how these operational, administrative and capital expenditures were distributed across each business line.

Table AC-1 shows total expenses before the allocation across each business line. It is important to remove expenses that do not get injected into local port activities as these do not drive any economic impact. The table shows the exclusion of those values which are assumed to either have no economic impact or are accounted for elsewhere.

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Table AC-1 – Accounting of Operating Expenses to Reach Effective Economic Impact Values

	Jobs	Salaries/ Benefits	Non-Wage Expenses	Total Expenditures
Operating Expenses and Employment	233.5	$18,590,374	$70,362,507	$88,952,881
Non-Operating Expenses	--	--	$11,096,858	$11,096,858
Totals	233.5	$18,590,374	$81,459,365	$100,049,739
Less:				
Depreciation[1]			$43,139,638	$ 43,139,638
Amortization[1]			$ 481,862	$ 481,862
Police Protection[2]			$ 6,275,308	$ 6,275,308
Fire Protection[2]			$ 2,277,483	$ 2,277,483
Hurricane Repairs[3]			$ 533,770	$ 533,770
Balance of Non-Operating Expenses[1]			$10,563,088	$ 10,563,088
Total Effective Values Used for Impact	233.5	$18,590,374	$18,188,216	$ 36,778,590

1 Not included as direct expenditures towards economic contribution
2 Removed to avoid double counting in government segment
3 To be included in capital expenditures

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Table AC-2 shows total capital improvements. As in the previous table, the line items show those expenditures which were removed as non-impact items.

Table AC-2 - Accounting of Capital Expenses to Reach Effective Economic Impact Values

Capital Expenditures in Current Year Total	$	36,982,800
Accounting Adjustment for Unaudited Items	$	642,484
Hurricane Repairs	$	533,770
Total Capital Expenditures	$	38,159,054
Less:		
Accounting Adjustment	$	642,484
Imported Crane, No Regional Impact	$	2,759,581
Total Effective Values Used for Impact	$	35,399,473

Thus, the total expenditures used for the CPA contribution to the regional and state economies are the sum of the effective totals from operating and capital expenses. This amounted to $72,178,063. The allocation across business lines is shown in the Executive Summary.

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VESSEL SURVEY AND NAVIGATION STUDY

SR 401 Bridge Replacement at Port Canaveral

Project Development & Environment (PD&E) Study

Brevard County, Florida

Financial Project Identification (FPID) Number: 444787-1-22-01
ETDM Number: 14397

Prepared For:

Florida Department of Transportation
District Five

Prepared By:

Bermello Ajamil & Partners

October 2021

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1.0. PROJECT SUMMARY

1.1. Project Description

This Project Development and Environment (PD&E) Study involves the evaluation and replacement of the SR 401 bridges (No. 700030, 700031, 700117), north of SR 528 in Brevard County. The SR 401 bridges span over the Canaveral Barge Canal and provide a vital connection to Port Canaveral's operations including major cruise and cargo terminals. The bridges also serve as the primary access to Cape Canaveral Air Force Station, Naval Ordinance Test Unit, facilities for the U.S. Coast Guard, and access to Space Florida operations, as shown in Figure 1. The project begins approximately 500 feet south of the SR 528 bridges over SR 401 and continues approximately 3,500 feet north to account for the various bridge profile touchdown locations expected. Concepts are likely to include the ramps in the northeast and northwest quadrants of the SR 528 at SR 401 interchange. Currently, there are no pedestrian and bicycle accommodations on the bridge.

The existing SR 401 bridges are three parallel double-leaf bascule bridges, that have a vertical clearance of 25 feet at MHW in the closed to navigation position and a horizontal clearance of 90 feet between the fender system. Presently, per 33 CFR 117.273(b), the bridge is closed from 6:30 AM to 8:00 AM and 3:30 PM to 5:15 PM weekdays only, except holidays. Three hours advance notice is required for bridge openings between 10:00 PM and 5:59 AM. Additionally, the bridges are not open to navigation from 11:00 AM to 2:00 PM on Saturdays and Sundays to reduce vehicular traffic congestion and to ensure the safety of roadways while passengers are transiting to and from the cruise ship terminals.

The existing bridges have been classified as functionally obsolete. Bridge improvements will provide additional capacity to address future traffic growth resulting from strategic expansion plans for Port Canaveral and military stakeholders in the immediate area. The PD&E study is commencing with data collection efforts. There will be field reviews, surveys, environmental assessments, soil investigations, and research concerning navigation needs from the surrounding community to determine the appropriate replacement structure for the bridge.

This report focuses on the Vessel Survey and Navigation Study. The study's focus is to assist in the determination of the bridge renovation or replacement option by evaluating the optimal type and height of the bridge based on vessel traffic. The statistics, public involvement engagement, and the overall analysis and forecasting of data will guide the development of the systems, services, and solutions for the SR 401 bridge recommendation.

Figure 1: Project Location Map
Source: Port Canaveral



Figure 2: Aerial View of the Existing SR 401 Bridges & Canaveral Locks
Source: Marinas.com



Figure 3: Existing SR 401 Bridges
Source: ReelEstateBrevard.com



1.2. Project Status

SR 401 is within the jurisdiction of the Space Coast Transportation Planning Organization (TPO). This PD&E study is funded in the FDOT's Statewide Transportation Improvement Program (STIP) as a Strategic Intermodal System (SIS) project. The PD&E is listed in the 2019 Amendment of the Regionally Significant Cost Feasible Plan within the 2040 Long Range Transportation Plan (LRTP) and was approved July 9, 2020, in the Space Coast TPO Transportation Improvement Plan (TIP).

1.3. Project Purpose

The purpose of the project is to evaluate improvements to, or the replacement of, the three existing bascules bridges over the Canaveral Barge Canal. The two southbound bridges (7300030 and 700031) were constructed in 1963 and the northbound bridge (700117) was constructed in 1972 and are considered structurally deficient by FDOT.

More specifically, the purpose of this Vessel Survey and Navigation Study is to assist in the determination of the preferred bridge replacement option from a vessel traffic perspective. These include a new fixed-span bridge with a 65-foot clearance, a retrofit to the existing drawbridge keeping the clearance at 25 feet, or a replacement of the existing drawbridge with a drawbridge that has a 40-foot clearance, reducing the frequency of bridge openings to allow boats to pass underneath. A fourth scenario evaluated a 35-foot bridge clearance. The findings of this scenario can be found in the Appendix. Additional modifications to the SR 528 interchange leading to SR 401 may also be required depending on the bridge replacement option.

1.4. Project Need

1.4.1. System Linkage

SR 401 is designated an SIS connector, providing access to the north sector of Port Canaveral, an SIS Seaport. Port Canaveral's operations include major cruise terminals, cargo terminals, and a fuel and energy center for Central Florida. Additionally, SR 401 is classified as a part of the State Strategic Highway Network (the STRAHNET) connector by the Military Surface Deployment and Distribution Command as a connection to an ocean terminal to deploy and sustain U.S. forces on a global basis.

The bridges are the primary access to Cape Canaveral Air Force Station and Space Florida operations, Naval Ordinance Test Unit, facilities for the U.S. Coast Guard, and access to Space Florida operations. The maximum weight limits of the existing bridges restrict heavy loads. The 2011 Spaceport Area Transportation Infrastructure Assessment by the Space Coast TPO identified the weight limit as an impediment to expanding port freight operations and maximizing military uses.

1.4.2. Modal Interrelationships

Port Canaveral handled approximately 4.9 million passengers and approximately 6,400,000 tons of cargo in 2019, in addition to outdoor recreation such as fishing and boating. The Port is bisected by the Canaveral Barge Canal, with a south sector and a north sector. The SR 401 bridges provide access to/from the north sector of Port Canaveral and do not have pedestrian or bicycle facilities. As the second-largest cruise port in the world today, the Port's Vision Plan identified the Port's successful growth rooted in the cruise, cargo, energy, and space industry sectors. The Port also has a role in the fishing industry albeit, most of those facilities are located in the southern sector of the Port. The surface transportation connecting the sectors of the Port is via the SR 401 bridges.

In 2017, FDOT commissioned the SR 401 Bridge Alternatives Analysis Study which indicated traffic of 14,900 AADT with 13% truck traffic. The truck traffic includes fuel transport, which accounts for about 40% of the supply for Central Florida. While the Port Canaveral 30 Year Vison Plan noted that petroleum cargo may level off as the U.S. switches to more renewable energy sources, cargo is expected to grow to more than three times the current tonnage by 2048.

The primary transportation options to distribute cargo are currently via truck or barge. Minimizing delays for road access will better position Port Canaveral to achieve its goal and meet its intended purpose to fuel economic growth. The bridges opening to marine vessels create traffic delays to the port and cruise terminal, space commercial traffic, and military traffic. Similarly, water vessels are delayed based on operation restrictions that are in place. Finally, the Port's Vision Plan considered the sector north of the SR 401 bridges as the area where most of the future growth will occur as it is where the port has land available. This further adds to the importance of the connectivity provided by the bridge.

2.0. DATA COLLECTION

2.1. Overview

This study provides critical information in the determination of the bridge renovation or replacement option by evaluating the optimal type and height of the bridge. This is a function of the air draft of vessels that will utilize the waterway and their frequency of use today and in the future. The analysis is based on data collected from the market to establish drawbridge utilization as well as the timing of the peak months of marine traffic that may coincide with vehicular traffic. The results of the report will help guide the development of the solutions for the SR 401 bridge recommendation.

Unlike the Intracoastal Waterway (ICWW), where marine traffic and bridge height standards are commonplace, this waterway offers the only connection from the inland waterways with the Atlantic Ocean. As a result, the marine traffic characteristics are unique. This is reflected by the different marine traffic categories that were identified as using the Canaveral Barge Canal. This includes the typical recreational boater, but the canal also serves commercial traffic, boat manufacturers located inland along the canal, and traffic associated with the space program.

As a result, a data collection program was devised to gather information including:

- Recreational traffic
- Commercial traffic
- Boat manufacturing traffic
- Space program traffic, both legacy and new commercial providers

The data provided an understanding of the current marine traffic in the region and allowed the creation of a model that establishes future demand for the Canaveral Barge Canal. More specifically, this information focused on answering the following points for today and into the future:

1. The probability of air drafts of vessels traversing under the bridge.
2. The distribution of traffic patterns under the bridge to account for percentages and demands for openings.
3. The resulting number of hours that the bridge would be open based on vessel demand (air drafts).
4. Seasonal traffic variations.

This information was combined to develop an operational model that forecasts annual vessel traffic demands traversing under the SR 401 bridges and evaluates the different bascule span air drafts versus the probability of openings for different bridge heights. The air draft under the bridge evaluated as part of this study were 25 ft, 40 ft, and 65 ft.

2.2. Methodology

2.2.1. Geographic Data Collection Area of Focus

The data was collected based on the Canaveral Barge Canal East Inlet's transportation links and location. The SR 401 bridge provides access to and from the Atlantic Ocean. The Ponce de Leon Inlet sits 50 miles north, just south of Daytona; to the south about 40 miles is the Sebastian Inlet. The yellow circle shown in Figure *4* depicts a 25-mile radius from the SR 401 bridges.

Due to the transportation links and location of the waterways, the Canaveral Barge Canal offers the most direct connection to and from the Atlantic Ocean from the Central Florida area, with the vast majority from Brevard, Orange, and Seminole Counties. Indian River County to the south is most proximate to the Sebastian Inlet, while Volusia County to the north is served by the Ponce de Leon Inlet. See Figure *5*. As a result, the data collection focused on data specific to Brevard, Orange, and Seminole Counties.

Figure 4: Data Collection Geographic Area of Focus
Source: Google Earth

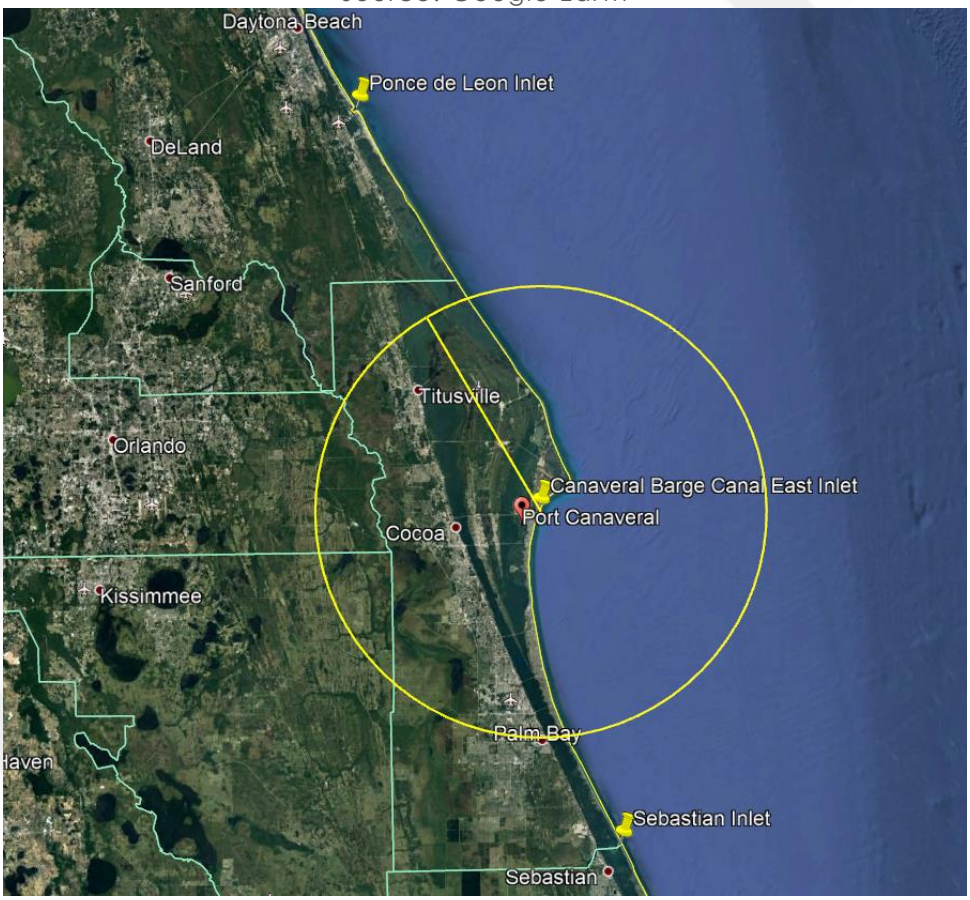


Figure 5: Data Collection Counties of Focus
Source: BA



Specific data collected within these counties focused on the three local markets that utilize the waterway: recreational/commercial boating, boat manufacturing, and Space Florida operations. Data was collected and analyzed from several sources on these markets that impact bridge openings. Additional regional market data was also collected. The data collected for each market is outlined herein.

2.2.2. Regional Data Collection

General data was collected consisting of Brevard, Orange, and Seminole Counties' population data, as well as the historic bascule bridge and the Canaveral lock operations.

Population Data

Historical population data was collected from 2010 to 2019 from the United States Census Bureau. The collected historic population data is shown in Table 1. Anticipated population growth for the same areas from 2020 to 2045 (in five-year increments) was collected from the FDOT's *Projections of Florida Population by County, 2020-2070* report, dated October 2020. The collected population projection data is shown in Table 2. The calculated compound annual growth rates (CAGR) for both datasets are also shown in the tables.

Table 1: Historic Population Data by County, 2010 – 2019
Source: United States Census Bureau

County	2010	2011	2012	2013	2014	2015
Brevard	543,965	544,359	546,966	550,255	555,548	565,746
Orange	1,148,564	1,170,579	1,202,498	1,227,435	1,256,606	1,291,301
Seminole	423,051	426,334	430,537	435,503	441,399	448,318
Total	*2,115,580*	*2,141,272*	*2,180,001*	*2,213,193*	*2,253,553*	*2,305,365*

	2016	2017	2018	2019	CAGR
Brevard	576,874	587,769	595,203	601,942	1.1%
Orange	1,326,516	1,355,921	1,381,540	1,393,452	2.2%
Seminole	455,945	462,801	468,122	471,826	1.2%
Total	*2,359,335*	*2,406,491*	*2,444,865*	*2,467,220*	*1.7%*

Table 2: Projected Population Data by County, 2020 – 2045
Source: FDOT, Projections of Florida Population by County, 2020-2070 Report, 10/20/20

County	2020	2025	2030	2035	2040	2045	CAGR
Brevard	602,700	637,200	666,900	694,200	720,000	746,100	0.9%
Orange	1,419,700	1,575,300	1,714,700	1,835,200	1,953,900	2,074,200	1.5%
Seminole	478,800	510,200	536,500	561,600	585,500	607,300	1.0%
Total	*2,501,200*	*2,722,700*	*2,918,100*	*3,091,000*	*3,259,400*	*3,427,600*	*1.3%*

Bridge Opening Data

The Department of Transportation provided the historical logs of the bascule bridge operations from January 2018 through March 2021. The data included the following level of details:

- Date of Opening
- Time Open
- Time Closed
- Reason for Opening (i.e. Vessel or Maintenance / Training)
- If Vessel, Direction of Vessel
- If Vessel, Type of Vessel

From January 2020 through March 2020, there were no bridge openings due to the Canaveral locks being closed for dewater and repairs as part of an Army Corp of Engineers project. For those months, the 2018 and 2019 average figures were used for analysis purposes. 2021 data was not used as the full-year data was not available. Key metrics are shown in Table 3. A sample of the data provided, inputted, and analyzed is found in Appendix 5.1.

Table 3: Historic Bridge Opening Data Key Metrics, 2018 – 2020
Source: Florida Department of Transportation District 5

Key Metric	2018	2019	2020[1]
Total Bridge Openings (Vessels & Maintenance)	1,191	1,138	1,329
Total Bridge Openings (Vessels Only)	1,136	1,027	1,220
Number of Vessels Requiring Openings	1,252	1,217	1,415
Ratio of Vessels Requiring Openings to Actual Openings	0.91	0.84	0.86
Average Bridge Opening Time (Vessels Only)	0:06:14	0:06:29	0:06:29
% of Bridge Openings - Maintenance	4.6%	9.8%	8.2%
% of Bridge Openings - Vessels	95.4%	90.2%	91.8%
% of Bridge Openings - Powerboats	36.6%	37.4%	37.0%
% of Bridge Openings - Sailboats	63.4%	62.6%	63.0%
Peak Months	March, April, May, November		
Peak Days	Friday, Saturday, Sunday		
Peak Hours – Weekends	10 am – 11 am, 2 pm – 3 pm		
Peak Hours – Weekdays	8 am – 2 pm		

Lock Opening Data

The U.S. Army Corps of Engineers provided the historical logs of the Canaveral lock operations from January 2018 through June 2021. The data included the following level of details:

- Total Vessels Passing through the Lock by Year – Upbound & Downbound
- Total Lockages by Year – Upbound & Downbound

For January 2020 through March 2020, while the locks were closed, the 2018 and 2019 average openings were used for analysis purposes. Key metrics are shown in Table 4. A sample of the data provided, inputted, and analyzed is found in Appendix 5.2.

[1] 2020 data adds average vessels and openings from 2018 and 2019 to account for bridge closure.

Table 4: Historic Lock Opening Data Key Metrics, 2018 – 2020
Source: U.S. Army Corps of Engineers

Key Metrics	2018	2019	2020[2]
Total Vessels - Upbound	7,760	7,776	9,135
Total Vessels - Downbound	7,661	7,630	9,085
Total Vessels	**15,421**	**15,406**	**18,220**
Total Lockages - Upbound	3,966	3,821	4,374
Total Lockages - Downbound	4,085	3,935	4,399
Total Lockages	**8,051**	**7,756**	**8,772**

Additional information provided by the U.S. Army Corps of Engineers for consideration in the study included information that the posted height of the nearby fixed bridges on the ICWW are all 65 ft above mean high water. The posted height of the power lines crossing the canal adjacent to FL HWY-401 are 85 ft above mean high tide.

2.2.3. Recreational & Commercial Boating

Boating, whether it be recreational powerboats, sailboats, or commercial vessels, is a popular activity and the main reason that causes the SR 401 bridges to open. The data collection for recreational and commercial boating incorporated into this report consisted of three primary activities:

- Surveys with marina operators
- Historical boat registrations
- Inventory of recreational powerboats

Marina Surveys

For the marina surveys, a database of marinas in the vicinity of the bridge was collected. A radius of 25 miles from the SR bridges was used to determine which marinas to include in the outreach. This radius was established as the primary hinterland for traffic from these marinas to use the Canaveral Barge Canal. This distance was determined as the mid-point between the SR 401 bridge and the location of the closest inlets to the Canaveral Barge Canal East Inlet providing access to and from the Atlantic Ocean. See Figure 6 for the location of the marinas surveyed.

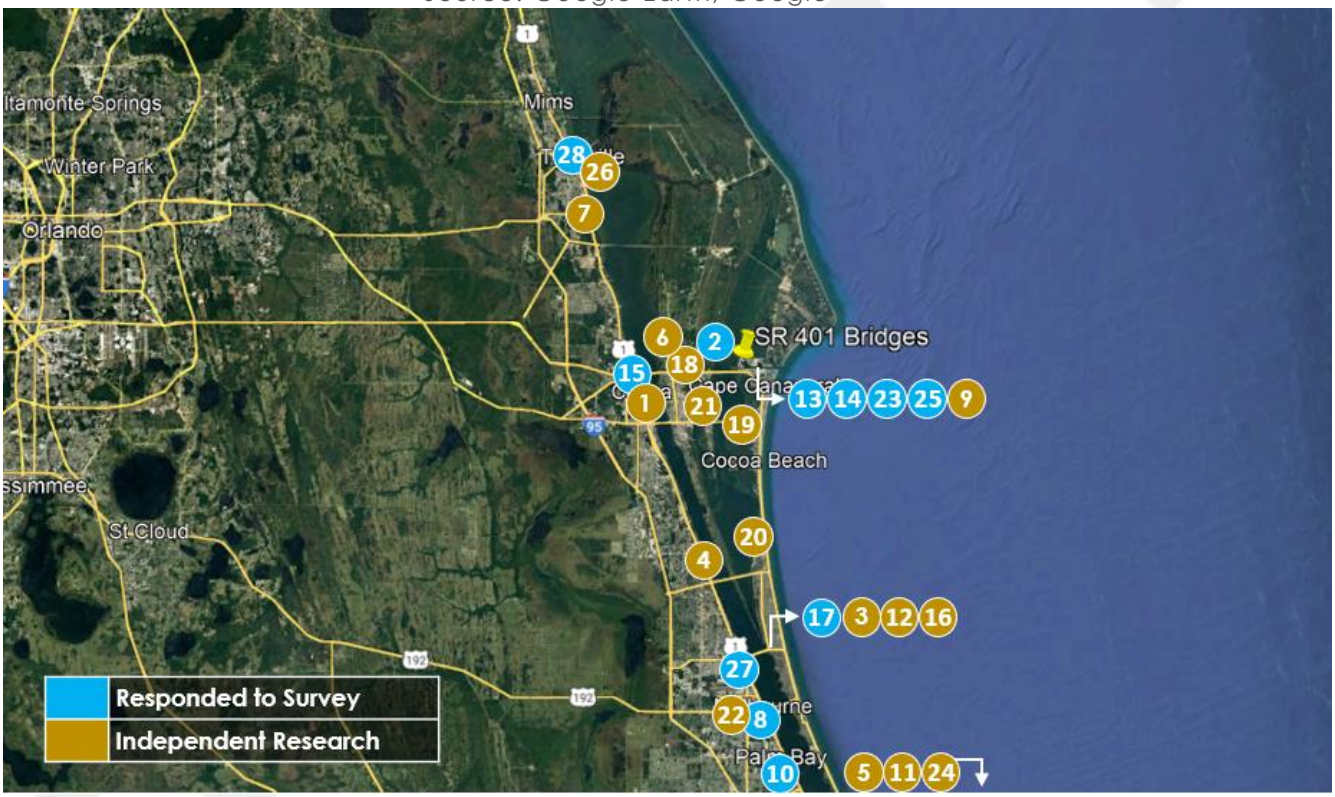
Surveys were sent via email, and marinas had the option to respond to the survey via a link to an online survey, email, phone call, or mail. A total of 28 surveys were sent. 11 marinas responded, with two additional declining to respond. For marinas that did not respond, desktop research was conducted to verify approximate slip inventory to help validate boat registration data.

[2] 2020 data adds average vessels and openings from 2018 and 2019 to account for bridge closure.

Marinas within the service area of the waterway were surveyed to establish current and future inventory levels, the mix of boats (power versus sail), and the importance of access to the ocean/Banana River under the SR 401 bridges and/or through the Canaveral Locks. Boats on the marinas east of the bridges utilize the waterway under the bridge to navigate towards the ICWW and return. Boats from the marinas down the Barge Canal on Merritt Island navigate towards the ocean and return.

Additionally, these community stakeholders were able to provide specific comments or concerns about the SR 401 bridges over the Canaveral Barge Canal. A copy of the marina database, survey, and responses can be found in Appendix 5.3 through 5.5.

Figure 6: Boat Marinas Surveyed
Source: Google Earth, Google



Marina Key

1. Whitley Bay Yacht Club
2. KARS Park
3. Telemar Bay Marina
4. Pineda Point Marina
5. Treasure Coast Marina
6. Cape Crossing Marina
7. Kennedy Point Yacht Club & Marina
8. Melbourne Yacht Club
9. Ocean Club
10. Palm Bay Marina
11. Sebastian River Marina & Boat Yard
12. Anchorage Yacht Basin
13. Blue Points Marina
14. Cape Marina
15. Cocoa Village Marina
16. Eau Gallie Yacht Basin
17. Eau Gallie Yacht Club
18. Harbortown Marina
19. Island Time Marina
20. Manatee Cove Marina
21. Marker 24 Marina
22. Melbourne Harbor Marina
23. Port Canaveral Yacht Club
24. Sebastian Inlet Marina
25. Sunrise Marina
26. Titusville Marina
27. Waterline Marina
28. Westland Boatyard & Marina

Boat Registrations

The historical database review and analysis consisted of collecting and analyzing boat registrations in Brevard, Orange, and Seminole Counties from 2018 to 2020. Registration data was provided from Florida Highway Safety and Motor Vehicles (FLHSMV). The database divided vessels by the following characteristics:

- County
- Vessel length categories
  - Less than 12'
  - 12' to 15'11"
  - 16' to 25'11"
  - 26' to 39'11"
  - 40' to 64'11"
  - 65' to 109'11"
  - More than 110'
- Vessel type
  - Powerboat
  - Sailboat
- Registration type
  - Recreational
  - Commercial
  - Dealer
  - Canoe

High-level metrics are shown in Table *5* for all boat registrations, undifferentiated by vessel type. Table *6* breaks out registrations by sailboat registrations only. Table *7* breaks out registrations by commercial registrations only. Note that dealer boats and canoe registrations were removed from the total figures. Dealership registrations were removed as these boats are not currently utilizing the surrounding waterways; canoes were removed given their size/characteristics.

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Table 5: Vessel Registration by County – All Boat Types, 2018 – 2020
Source: FLHSMV

County	2018	2019	2020	CAGR
All Registrations (Powerboat & Sailboat)				
Brevard	32,806	32,857	33,640	1.3%
Orange	28,120	30,044	33,933	9.9%
Seminole	17,684	17,670	17,556	-0.4%
Total	*78,610*	*80,571*	*85,129*	*4.1%*
All Registrations Greater than 12' in Length (Powerboat & Sailboat)				
Brevard	27,754	27,667	28,199	0.8%
Orange	20,560	21,899	24,433	9.0%
Seminole	14,218	14,224	14,099	-0.4%
Total	*62,532*	*63,790*	*66,731*	*3.3%*
All Registrations Greater than 15'11" in Length (Powerboat & Sailboat)				
Brevard	20,451	20,537	21,159	1.7%
Orange	16,414	17,750	20,160	10.8%
Seminole	10,607	10,696	10,617	0.0%
Total	*47,472*	*48,983*	*51,936*	*4.6%*
All Registrations Greater than 25'11" in Length (Powerboat & Sailboat)				
Brevard	2,936	2,992	3,106	2.9%
Orange	1,438	1,859	2,344	27.7%
Seminole	926	949	915	-0.6%
Total	5,300	5,800	6,365	9.6%
All Registrations Greater than 39'11" in Length (Powerboat & Sailboat)				
Brevard	422	441	446	2.8%
Orange	201	208	210	2.2%
Seminole	166	160	165	-0.3%
Total	789	809	821	2.0%
All Registrations Greater than 64'11" in Length (Powerboat & Sailboat)				
Brevard	20	17	21	2.5%
Orange	15	21	19	12.5%
Seminole	11	14	14	12.8%
Total	46	52	54	8.3%
All Registrations Greater than 110' in Length (Powerboat & Sailboat)				
Brevard	2	2	2	0.0%
Orange	1	4	4	100.0%
Seminole	0	0	0	0.0%!
Total	3	6	6	41.4%

Table 6: Vessel Registration by County – Sailboats Only, 2018 – 2020
Source: FLHSMV

County	2018	2019	2020	CAGR
All Sailboat Registrations Only				
Brevard	377	381	376	-0.13%
Orange	141	143	136	-1.8%
Seminole	90	94	100	5.4%
Total	*608*	*618*	*612*	*0.3%*

Table 7: Vessel Registration by County – Commercial Only, 2018 – 2020
Source: FLHSMV

County	2018	2019	2020	CAGR
All Commercial Registrations Only				
Brevard	738	750	745	0.5%
Orange	295	324	354	9.5%
Seminole	190	180	169	-5.7%
Total	*1,223*	*1,254*	*1,268*	*1.8%*

Inventory of Recreational Boats

The registration dataset provided for vessels only includes vessel length. Given the study's focus on evaluating the optimal type and height of the bridge is a function of the air draft of vessels, data was collected to determine the ratio for length to air draft by vessel type. Bermello Ajamil & Partners (BA) possesses an existing world-class inventory of the majority of recreational powerboats. The inventory database includes boat manufacturer, length, draft, beam, and air draft for over 720 different boat models. A sample of the database is found in Appendix 5.6.

Since the existing database only includes information on powerboats, further desktop research was conducted to understand the length to air draft ratio for sailboats via manufacturer and boat design websites. The necessary information was collected through this research.

2.2.4. Boat Manufacturing

Boat manufacturing in Brevard County is ideal due to its available workforce, access to U.S. and international markets with its easy access to both the Indian and Banana rivers, as well as the inlet into the Atlantic Ocean. The data collection for boat manufacturing consisted of outreach to the boat manufacturers in the vicinity of the bridge. A database was collected. A similar 25-mile radius approach was used as with the recreational and commercial boating segment, where five manufacturers were identified.

Surveys were sent via email, and boat manufacturers had the option to respond to the survey via a link to an online survey or via phone call. Boat manufacturers within the service area of the waterway were surveyed on their current and future inventory concerning current and anticipated new build and repair capacity and demand. Additionally, these community stakeholders were able to provide any specific comments or concerns about the SR 401 bridges over the Canaveral Barge Canal. Surveys were sent to all five manufacturers, with one response received. The manufacturer database can be found in Appendix 5.7, a copy of the survey in Appendix 5.8, and the response in Appendix 5.9.

Given the response rate, further desktop research was conducted to understand boats manufactured locally by each company and the criticality of ocean access for their operations. Subsequently, the necessary information was collected through this research on each of the manufacturers. An overview of the local manufacturers and their local manufacturing needs/capabilities are outlined below.

Brunswick Corporation

Brunswick Corporation is comprised of business segments that include the most notable brand names across all major marine categories: propulsion, parts & accessories, boats, business acceleration. It is the owner of several notable boat brands including Sea Ray and has its Integrated Manufacturing Center on Merritt Island. The Merritt Island facility manufactures the Sea Ray SLX 400 Outboard model, with a length of 39'6" and a beam of 12'1". In the future, Merritt Island may also be used to build other models in the Sea Ray and Boston Whaler lines. The facility produces upholstery, cabinetry, and other boat parts, in addition to the design of hulls and decks. The facility is part of Brunswick's larger plan to integrate manufacturing operations with its Fiberglass Boat Technology Center, which opened in late 2019 in Edgewater, Florida, near Boston Whaler's headquarters. The Edgewater center has the single largest group of engineers in the boating industry.

MasterCraft

MasterCraft is a leading innovator, designer, manufacturer, and marketer of recreational powerboats through its four brands, MasterCraft, NauticStar, Crest, and Aviara. In 2020, MasterCraft purchased a boat manufacturing plant in Merritt Island. The new Merritt Island facility provides more than 140,000 square feet of dedicated manufacturing space. Situated on 38 acres of land, including water access, the new facility provides ample room to grow the Aviara brand and will allow the opportunity for additional vertical integration. Aviara's day boats range from 32 to 40-feet in length. The new Aviara manufacturing facility began production in early 2021. The new plant will support the ramp-up and production of the brand's high-demand models – the AV32, AV36, and AV40.

Merritt Island Boat Works

Merritt Island Boat Works, which builds Ocean Alexander yachts, is a Taiwanese yacht manufacturer with shipyards in Kaohsiung, Taiwan, and the United States, with models

ranging from 45 to 155-feet. Merritt Island Boat Works builds yachts ranging in size from 45 to 70-feet. Due to COVID, the company reduced its total workforce at its Merritt Island factory by 23%. The future of this facility is uncertain.

Falcon USA

Falcon USA is a local company that builds semi-custom fishing boats for each owner based on a boater's style of boating. A symmetrical and asymmetrical hull design like no other catamaran is one of the key factors in Falcon's unique design. Falcon Marine's technology is of the highest standards with vacuum resin infusion on every component throughout the build while eliminating a production backlog. Boats are manufactured in just six to eight weeks. Their largest boat is the Falcon 22, which is 22'6" in length with a beam of 8'6".

Hell's Bay Boatworks

Hell's Bay Boatworks is another local custom manufacturing company, providing all work, tooling, design, repairs, rigging, refurbishing, and remodeling of its skiffs. Hell's Bay Boatworks is led by a team of dedicated fishermen, outdoorsmen, and adventurers. They made sweeping changes in design and construction to revolutionize the shallow water fishing industry with a proven record of creating the finest skiffs available. The skiff builders at Hell's Bay only build to order and put their efforts into quality construction, the finest materials, cutting-edge design, and personal customer service. The largest open water skiff manufactured is the ESTERO model, which has a length of 24'10" and a beam of 8'6".

2.2.5. Space Florida Operations

Florida's Space Coast is the gateway to space, home to NASA and the Kennedy Space Center. Companies like SpaceX, Boeing, United Launch Alliance, and Blue Origin call the Space Coast home and are launching rockets every month. Some companies utilize the Canaveral Barge Canal East Inlet to transfer materials and parts via barge, another reason that causes the SR 401 bridges to open (see Figure 7). Stakeholder outreach was conducted via email to NASA and Space Florida inquiring about their future business needs for access under SR 401.

Figure 7: NASA Space Launch System Towage Under SR 401 – April 27, 2021
Source: Ken Kremer



NASA indicated its essential need for continued usage "a couple of times a year" under the bridge to support its SLS Artemis Program. Vessel characteristics are found in the table below. Space Florida did not respond to inquiries.

Table 8: NASA SLS Artemis Program Vessel Characteristics
Source: NASA

Vessel Characteristics	Pegasus
Type of Vessel	Barge
Length	310 ft
Width	50 ft
Air Draft	55 ft
Annual Trips via Under SR 401	2 roundtrips (4 total trips)

2.3. Data Validation

A review against the marina survey results to the registration was also completed to ensure a general alignment with the overall data set. One comparison included comparing total registrations to the marina survey responses and desktop research about local inventory. Marina responses and desktop research accounted for ~71% of the slip capacity of total 2020 boat registrations for boats greater than 25'11" in length, as seen in Table 9. Additional capacity in the area may come from residential docks or vessels that are stored inland and use ramps to enter the waterways.

Table 9: Data Validation of Boat Registrations vs. Marina Survey Inventory
Source: BA Analysis & Marina Survey

Inventory Type	Marina Responses	Desktop Research	Approximate Total	2020 Registrations
Wet Slips	689	1,822	**2,511**	n/a
Dry Storage	1,167	842	**2,009**	n/a
Total	1,856	2,664	**4,520**	**6,365**

Additionally, it was important to understand if registration in the three counties identified were sufficient, or if transient customers should be considered in the analysis. Based on marina surveys, transient customers account for, on average, just 9% of the total marina customers in the area. Given the small transient population, the model does not explicitly account for these vessels.

Table 10: Marina Survey Customer Demographic
Source: BA Marina Survey

Customer Segment	% of Customers (Average Across Marina Responses)
Local Residents (Brevard)	59%
Regional Residents (Central Florida)	22%
Transient	9%
Charter / Fishing Boats	3%
Commercial	1%
Other	5%

3.0. DATA ANALYSIS

3.0. Forecast Approach

The data collected was used to analyze existing and future vessel traffic demands traversing under the SR 401 bridges. A model was developed to forecast future uses. The model estimates vessel traffic volume, including the frequency and probability of vessels requiring bridge openings given different bridge heights (25 ft, 40 ft, and 65 ft).

The model and forecast consider historical trends, port area stakeholder input, and other regional growth indicators, such as population growth. The forecasts established the annual distribution of traffic patterns under the bridge to account for percentages and demands for openings. Furthermore, seasonal traffic variations were forecast.

3.1. Division & Concentration of Data

A large amount of data was collected from a variety of sources. The data was evaluated to analyze the characteristics of boat registrations that would be useful to isolate for vessels more likely to use the canal, or that their use may cause bridge openings. For example, many of the boat registrations in Central Florida are small boats typically used in the myriad of lakes and waterways with no interconnection to the Canaveral Canal, or likewise may not be seaworthy for operating in the open seas. The data was sifted to provide a focused registration dataset to ensure the data used in the model is representative of those who will most likely be impacted by the SR 401 bridges compared to analyzing all 85,129 boats registered across Brevard, Orange, and Seminole County in 2020.

3.1.1. Vessel Type

Powerboats & Sailboats

Looking at the boat registration database, which is comprised of both recreational and commercial vessels, it was noted that the boat mix in the counties assessed is heavily weighted towards powerboats. Over the three years of data, sailboat registrations averaged just 0.8% of all boat registrations (Table 11). However, sailboats accounted for 63% of the bridge openings over the same period (Table 3). This is because powerboats have limited air draft. Sailboats, on the other hand, due to their mast height, require higher clearances.

Table 11: % of Sailboat Registrations of Total Registrations by County, 2018 – 2020
Source: FLHSMV, BA Analysis

County	2018	2019	2020	3-Year Average
Brevard	1.1%	1.2%	1.1%	1.1%
Orange	0.5%	0.5%	0.4%	0.5%
Seminole	0.5%	0.5%	0.6%	0.5%
Total	*0.8%*	*0.8%*	*0.7%*	*0.8%*

Further analysis revealed that of the total registered sailboats, 66.6% of those sailboats required bridge openings, compared to just 0.3% of their powerboat counterparts (Table 12). These figures assume that boats passing under the bridge utilize the waterway to navigate towards the ICWW or ocean and return.

Table 12: % of All Registered Powerboats & Sailboats Requiring Bridge Openings, 2018 – 2020
Source: FLHSMV, BA Analysis

	2018	2019	2020	3-Year Average
Registered Sailboats Requiring Openings	65.3%	61.6%	72.8%	66.6%
Registered Powerboats Requiring Openings	0.3%	0.3%	0.3%	0.3%

Since the goal of the report is to determine bridge openings, which is a function of the air draft of vessels that will utilize the waterway, and the large discrepancy between boat type and bridge openings by boat type, the data was divided accordingly between powerboat registrations and sailboat registrations for the operational model.

Recreational & Commercial Powerboats

Looking at another categorization within the boat registration database, registrations are divided by recreational and commercial. A recreational vessel is used for private pleasure and activities. A commercial vessel is a vessel that carries goods (i.e. passengers or cargo) that pay in one way or another.

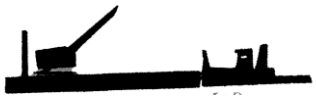
It was noted that over the three years of data, commercial registrations averaged 1.6% of all boat registrations (Table 13). The bridge opening data does not specify recreational versus commercial, though the Department of Transportation provided a vessel identification sheet. Upon review, the same vessel type is identified as both recreational and commercial vessels, indicating the vessel's usage type (and not size characteristics) is the only difference. See Table 14.

Table 13: % of Commercial Registrations of Total Registrations by County, 2018 – 2020
Source: FLHSMV, BA Analysis

County	2018	2019	2020	3-Year Average
Brevard	2.3%	2.2%	2.3%	2.3%
Orange	1.1%	1.0%	1.1%	1.1%
Seminole	1.1%	1.1%	1.0%	1.0%
Total	*1.6%*	*1.6%*	*1.6%*	*1.6%*

Recreational and commercial registrations only indicate a vessel's business and do not vary a vessel's size or air draft. As a result, the data was not divided between recreational and commercial registrations for the operational model. The model assumes all powerboat registrations are aligned with any powerboat assumptions going forward.

Table 14: Recreational & Commercial Identification Sheet
Source: Florida Department of Transportation District 5

Vessel Image	Vessel Type	Vessel Code (Private)	Vessel Code (Commercial)
	Sportfisherman	P-SF	C-SF
	Motor Yacht	P-MVY	C-MVY
	Catamaran	PS-CAT	CP-CAT
	Trimaran	PS-TRI	CP-TRI
	Motor Cruiser	P-MVS	n/a
	Sloop	PS-S	n/a
	Tug & Barge	T + B	n/a

Space Program Operations

Based on discussions to date, NASA's current transport vessel has an air draft of 55 ft. This vessel is estimated to require two roundtrips a year via the Canaveral Barge Canal. Given that the vessel can traverse under all bridge heights in the study, and the anticipated four bridge openings annually, the model does not explicitly account for the NASA vessel. The one caveat is if NASA or other Space Florida operators (who did not respond for comments to inquiries) determines their business requires a taller vessel to transport parts.

Boat Manufacturing

The boats manufactured on Merritt Island were assessed in terms of air draft requirements based on the largest vessel produced at the local facility. The manufacturers and the

specifications of their largest model produced on Merritt Island are shown in Table 15. The table lists boats from largest to smallest.

Table 15: Boat Manufacturers Vessel Characteristics
Source: Various Manufactures' Website

Manufacturer	Model	Length	Beam	Air Draft
Merritt Island Boat Works	Ocean Alexander 70e	70'6"	18'2"	28'0"
MasterCraft	Avaria AV40	40'7"	12'3"	9'9"
Brunswick Corporation	Sea Ray SLX 400	39'6"	12'1"	9'8"
Hell's Bay Boatworks	ESTERO	24'10"	8'6"	n/a
Falcon USA	Falcon 22	22'6"	8'6"	n/a

Additionally, of the one response to the survey sent out, Falcon USA indicated that access to the ocean using the Canaveral Locks and the SR401 is "a great amenity but not essential" to business.

The specifications of the locally manufactured boats, along with the feedback from Falcon USA, indicate that the local boat manufacturers do not produce or transport vessels that are impacted by any of the bridge height scenarios, nor do their businesses rely on a particular height of bridge clearance. As such, no particular adjustments to the model were made for this market.

Figure 8: SeaRay SLX 400
Source: SeaRay

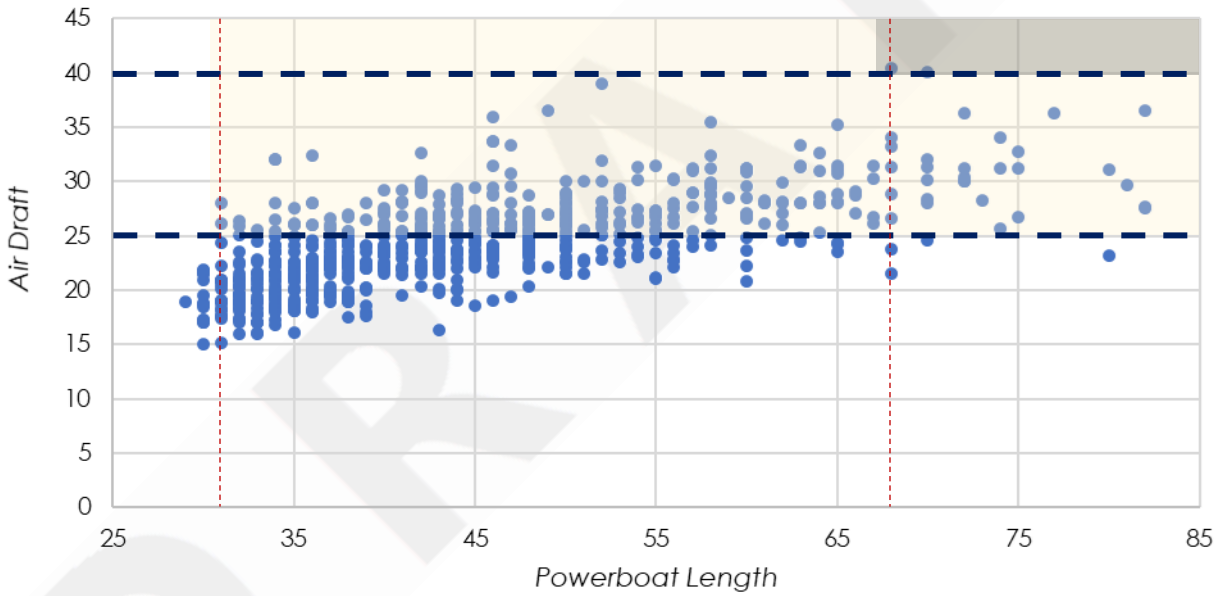


3.1.2. Length to Air Draft Ratio

Powerboats

The registration dataset provided by FLHSMV for vessels only included vessel length. The next step in focusing the dataset involved determining the ratio for length to air draft by vessel type. The existing inventory of BA's recreational boat database was used to determine this ratio of length to air draft for the powerboat segment. Figure 9 depicts the relationship between powerboat air draft and length from the database. The inventory was assessed, and it was determined to add 10 feet to the reported air draft measurements to ensure safe clearance and to account for tidal conditions as well as any additional structures not necessarily reported in air draft measurements (such as towers, antenna, radar, etc.).

Figure 9: Relationship between Powerboat Air Draft & Length (in feet)
Source: BA



The inventory of recreational boats indicates powerboats have limited length to air draft ratios. For the different bridge height scenarios, the inventory database was correlated to the local registration data to determine the distribution by length for powerboats impacted by the different bridge height scenarios (25 ft, 40 ft, and 65 ft).

As shown, air drafts reach above 25 ft with boats greater than 30 ft in length. For the next scenario, air drafts reach above 40 ft in only a few instances with boats greater than 65 ft in length. There are no powerboats in the database that have air drafts above 65 ft.

As a result of this analysis, BA narrowed the focus of all boat registrations to a more specific target market for each bridge scenario. For the 25 ft bridge, powerboat

registrations for both recreational and commercial vessels in Brevard, Orange, and Seminole Counties falling into the "greater than 25'11" in length" category were assessed, as this was the first segment of the overall dataset that began to be impacted by bridge heights of 25 ft or more. This concentration of the data reduces the total 2020 boat registrations (excluding sailboats since those will be assessed independently) from 84,517 to 5,753 for the base scenario. It also increases the three-year average percentage of registered powerboats requiring openings (as previously shown in Table 12) from 0.3% to 4.6%.

For the 40 ft bridge, powerboat registrations in Brevard, Orange, and Seminole Counties falling into the "greater than 65' in length" category were assessed. For the 65 ft bridge, no powerboats will be impacted. This information was further correlated to the local powerboat registration data to establish the distribution of powerboat registrations potentially impacted by the different bridge height scenarios, shown in Table 16.

Table 16: % of Powerboat Registrations Impacted by Bridge Height, 2018 – 2020
Source: BA Analysis

County	2018	2019	2020	3-Year Average
% of Powerboat Registrations Impacted by 25' Bridge (Greater than 25'11" Length)				
Brevard	7.9%	8.0%	8.2%	9.1%
Orange	4.6%	5.7%	6.5%	6.1%
Seminole	4.8%	4.9%	4.7%	5.3%
Total	*6.0%*	*6.5%*	*6.8%*	*7.1%*
% of Powerboat Registrations Impacted by 40' Bridge (Greater than 65' Length)				
Brevard	0.7%	0.6%	0.7%	0.6%
Orange	1.0%	1.1%	0.8%	1.0%
Seminole	1.2%	1.5%	1.5%	1.4%
Total	*0.9%*	*0.9%*	*0.8%*	*0.9%*
% of Powerboat Registrations Impacted by 65' Bridge (n/a)				
Brevard	0.0%	0.0%	0.0%	0.0%
Orange	0.0%	0.0%	0.0%	0.0%
Seminole	0.0%	0.0%	0.0%	0.0%
Total	*0.0%*	*0.0%*	*0.0%*	*0.0%*

Sailboats

Given there is no such database for sailboats, data collected suggested that mast lengths (air draft) for sailboats can vary from 0.7 of the length overall to as much as 1.5 times the sailboat length. The median length to air draft ratio between research findings is 1.1. This was the ratio used to correlate sailboat length to air draft. Again, it was determined to add 10 feet to the calculated air draft measurements to ensure safe

clearance and to account for tidal conditions as well as any additional structures not necessarily reported in air draft measurements. Calculations are shown in Table 17.

Table 17: Relationship between Sailboat Air Draft & Length (in feet)
Source: BA Analysis

Length	Air Draft (1.1 Length)	Air Draft +10 ft Safe Clearance
13 ft	14.3 ft	24.3 ft
27 ft	29.7 ft	39.7 ft
50 ft	55.0 ft	65.0 ft

Given the 13 ft threshold for a 25 ft bridge, and the limited sailboat registrations coupled with the higher air drafts required, all sailboats were included for the initial base model. For the 40 ft bridge height, the length threshold for sailboats was set to greater than 26'11" ft in length. For the 65 ft bridge height, the threshold for sailboats was greater than 49'11" ft in length.

This information was then correlated to the local sailboat registration data to establish the distribution by length for sailboats impacted by the different bridge height scenarios, as shown in Table 18.

Table 18: % of Sailboat Registrations Impacted by Bridge Height, 2018 – 2020
Source: BA Analysis

County	2018	2019	2020	3-Year Average
% of Sailboat Registrations Impacted by 25' Bridge (All)				
Brevard	100%	100%	100%	100%
Orange	100%	100%	100%	100%
Seminole	100%	100%	100%	100%
Total	*100%*	*100%*	*100%*	*100%*
% of Sailboat Registrations Impacted by 40' Bridge (Greater than 26'11" Length)				
Brevard	47.5%	45.7%	45.2%	46.1%
Orange	29.1%	29.4%	28.7%	29.0%
Seminole	33.3%	36.2%	37.0%	35.5%
Total	*41.1%*	*40.5%*	*40.2%*	*40.6%*
% of Sailboat Registrations Impacted by 65' Bridge (Greater than 49'11" Length)				
Brevard	0.3%	0.8%	0.8%	0.6%
Orange	2.8%	2.8%	2.9%	2.9%
Seminole	0.0%	0.0%	0.0%	0.0%
Total	*0.8%*	*1.1%*	*1.1%*	*1.0%*

3.2. Projection Scenarios

3.2.1. Powerboat & Sailboat Registration Forecasts

Once data was concentrated and validated, historical rates of per capita registrations by powerboats and sailboats for Brevard, Orange, and Seminole counties were calculated from the historic population data together with the concentrated registration data for the base scenario. Compound annual growth rates (CAGR) from 2018 to 2020 were established, as well as the three-year average. These figures were used to assess historical trends and were used to project per capita registrations forward throughout the projection period.

Table 19: Per Capita Registration by County, 2018 – 2020
Source: BA Analysis

County	2018	2019	2020	CAGR	3-Year Average
Per Capita Powerboat Registrations Greater than 25'11" in Length					
Brevard	0.4%	0.4%	0.5%	2.6%	0.4%
Orange	0.1%	0.1%	0.2%	28.7%	0.1%
Seminole	0.2%	0.2%	0.2%	-2.4%	0.2%
Total	*0.19%*	*0.21%*	*0.23%*	*9.5%*	*0.2%*
Per Capita Sailboat Registrations (All)					
Brevard	12.8%	12.7%	12.1%	-2.9%	12.6%
Orange	9.8%	7.7%	5.8%	-23.1%	7.8%
Seminole	9.7%	9.9%	10.9%	6.0%	10.2%
Total	*11.5%*	*10.7%*	*9.6%*	*-8.4%*	*10.6%*

Using the three-year average as a base, total powerboat and sailboat registrations were projected forward utilizing historical figures and FDOT's anticipated population growth by county. A 1% growth rate for powerboat registrations was factored in for Brevard and Orange county given the growth experienced over the historical data period exceeded that of the overall population growth in the counties. The model assumes the general population growth rate for Seminole powerboat boat registrations, as well as all sailboat registrations.

Next, the model estimated the total powerboats and sailboats that may require bridge openings over the forecast period, under each scenario. The model works backward from the existing data based on the boat registration forecasts, coupled with the percentage of registrations potentially impacted by the different bridge heights by county, as outlined in Table 16 and Table 18.

Table 20 shows the baseline for total projected powerboat and sailboat registrations that may be limited by the three bridge height scenarios.

Table 20: Projected Registrations Potentially Limited by Bridge Height, 2020 – 2045
Source: BA Analysis

County	2020	2025	2030	2035	2040	2045	CAGR
25 ft Bridge							
Powerboat Registrations							
Brevard	2,730	3,034	3,337	3,651	3,979	4,334	1.8%
Orange	2,208	2,575	2,946	3,314	3,708	4,137	2.4%
Seminole	815	868	913	956	997	1,034	0.9%
Total	*5,753*	*6,477*	*7,196*	*7,920*	*8,684*	*9,505*	*1.9%*
Sailboat Registrations							
Brevard	356	381	419	459	500	544	1.8%
Orange	145	200	229	257	288	321	2.4%
Seminole	95	88	93	97	102	105	0.9%
Total	*612*	*669*	*741*	*813*	*889*	*971*	*1.9%*
40 ft Bridge							
Powerboat Registrations							
Brevard	n/a	19	21	23	26	28	1.8%
Orange	n/a	26	29	33	37	41	2.4%
Seminole	n/a	12	13	13	14	14	0.9%
Total	n/a	*57*	*63*	*70*	*76*	*83*	*1.9%*
Sailboat Registrations							
Brevard	n/a	176	193	211	231	251	1.8%
Orange	n/a	58	66	75	84	93	2.4%
Seminole	n/a	31	33	35	36	37	0.9%
Total	n/a	*265*	*293*	*321*	*350*	*382*	*1.8%*
65 ft Bridge							
Powerboat Registrations							
Brevard	n/a	0	0	0	0	0	0.0%
Orange	n/a	0	0	0	0	0	0.0%
Seminole	n/a	0	0	0	0	0	0.0%
Total	n/a	*0*	*0*	*0*	*0*	*0*	*0.0%*
Sailboat Registrations							
Brevard	n/a	2	3	3	3	3	1.8%
Orange	n/a	6	7	7	8	9	2.4%
Seminole	n/a	0	0	0	0	0	0.0%
Total	n/a	*8*	*9*	*10*	*11*	*13*	*2.2%*

3.2.2. Bridge Opening Forecasts

Table 20 provided the total potential boats in the area that may require bridge openings. However, not all boats in the area traverse under the bridge and require openings – as outlined previously in Table 12. From the total potential boat registrations forecast under each scenario, the percentage of registered power and sailboats requiring openings were calculated based on historic percentages – 4.6% of total powerboat registrations and 66.6% of total sailboat registrations. These percentages assume double passage under the bridge.

Additionally, as historic data indicates, not all vessels that require openings will trigger a unique opening, as multiple vessels can traverse under the bridge in a given opening. Thus annual bridge openings were determined based on the historic ratio of openings to boats. This ratio was 0.87 (Table 3).

Lastly, the average bridge opening time was used to calculate the total time open. The average time open for vessels was six minutes and 24 seconds. These annual figures do not include the number of openings and time open for maintenance and training.

The forecasted vessels traversing, annual bridge openings, and annual bridge opening time for each bridge height are shown in Table 21.

Table 21: 25', 40', & 65' Annual Bridge Opening Forecast Summary, 2020 – 2045
Source: BA

Month	2020	2025	2030	2035	2040	2045
25 ft Bridge						
Vessels Traversing	1,415	1,488	1,650	1,813	1,984	2,169
Bridge Openings	1,220	1,296	1,437	1,579	1,729	1,889
Bridge Opening Time	130:09:24	138:18:24	153:18:23	168:27:36	184:24:48	201:32:43
40 ft Bridge						
Vessels Traversing	1,415	358	396	434	473	516
Bridge Openings	1,220	312	345	378	412	450
Bridge Opening Time	130:09:24	33:18:41	36:46:31	40:17:47	43:59:35	47:57:34
65 ft Bridge						
Vessels Traversing	1,415	11	12	14	15	17
Bridge Openings	1,220	9	11	12	13	15
Bridge Opening Time	130:09:24	0:59:54	1:07:45	1:15:38	1:24:01	1:33:08

3.2.3. Seasonality Forecasts

The final analysis included a review of seasonality under each scenario. Seasonality was calculated based on a review of the historic bridge opening data. The forecasted

monthly and daily seasonality utilized the three-year average from the historical data set. This breakdown by proposed bridge height is shown in Table 22 (monthly) and Table 23 (daily). Historical monthly and daily distribution can be found in Appendix 5.10 and 5.11.

Table 22: Annual Bridge Openings by Month, 2020 – 2045
Source: BA

Month	2020	2025	2030	2035	2040	2045
25 ft Bridge Height						
January	87	100	111	121	133	145
February	82	94	105	115	126	138
March	106	122	136	149	163	178
April	56	117	130	143	157	171
May	131	139	154	170	186	203
June	121	110	121	133	146	160
July	122	101	112	123	135	148
August	112	101	111	123	134	147
September	55	78	86	95	104	113
October	93	93	103	113	123	135
November	135	135	149	164	180	196
December	121	107	119	130	143	156
Total	*1,220*	*1,296*	*1,437*	*1,579*	*1,729*	*1,889*
40 ft Bridge Height						
January	87	24	27	29	32	35
February	82	23	25	27	30	33
March	106	29	33	36	39	42
April	56	28	31	34	37	41
May	131	34	37	41	44	48
June	121	26	29	32	35	38
July	122	24	27	30	32	35
August	112	24	27	29	32	35
September	55	19	21	23	25	27
October	93	22	25	27	29	32
November	135	32	36	39	43	47
December	121	26	28	31	34	37
Total	*1,220*	*312*	*345*	*378*	*412*	*450*
65 ft Bridge Height						
January	87	1	1	1	1	1
February	82	1	1	1	1	1
March	106	1	1	1	1	1
April	56	1	1	1	1	1
May	131	1	1	1	1	2
June	121	1	1	1	1	1
July	122	1	1	1	1	1
August	112	1	1	1	1	1
September	55	1	1	1	1	1
October	93	1	1	1	1	1
November	135	1	1	1	1	2
December	121	1	1	1	1	1
Total	*1,220*	*9*	*11*	*12*	*13*	*15*

Table 23: Annual Bridge Openings by Day, 2020 – 2045
Source: BA

Month	2020	2025	2030	2035	2040	2045
25 ft Bridge Height						
Sunday	185	197	219	240	263	288
Monday	158	168	186	204	224	245
Tuesday	147	151	167	184	201	220
Wednesday	184	177	196	215	236	258
Thursday	147	167	185	203	222	243
Friday	152	193	214	235	258	282
Saturday	249	244	270	297	325	355
Total	*1,220*	*1,297*	*1,437*	*1,579*	*1,729*	*1,889*
40 ft Bridge Height						
Sunday	185	48	52	57	63	68
Monday	158	40	45	49	53	58
Tuesday	147	36	40	44	48	52
Wednesday	184	43	47	52	56	61
Thursday	147	40	44	49	53	58
Friday	152	47	51	56	61	67
Saturday	249	59	65	71	78	85
Total	*1,220*	*312*	*345*	*378*	*412*	*450*
65 ft Bridge Height						
Sunday	185	1	2	2	2	2
Monday	158	1	1	2	2	2
Tuesday	147	1	1	1	2	2
Wednesday	184	1	1	2	2	2
Thursday	147	1	1	2	2	2
Friday	152	1	2	2	2	2
Saturday	249	2	2	2	2	3
Total	*1,220*	*9*	*11*	*12*	*13*	*15*

4.0. FINDINGS & RECOMMENDATIONS

The data analysis established drawbridge utilization as well as the timing of the peak months and days of marine traffic from 2020 through 2045. The utilization was based on forecasts of annual vessel traffic demands traversing under the SR 401 bridges based on 25 ft, 40 ft, and 65 ft bascule span air drafts. These findings are based on an understanding of the current marine traffic in the region and future demand for the Canaveral Barge Canal.

As summarized below, as the bridge increases in height, significantly fewer openings are required. Therefore to decrease both vessel and vehicular traffic interference, increasing the bridge height will have significant positive impacts. However, it is noted that even at the 65 ft bridge height, a few openings are anticipated for some sailboats that have masts beyond 65 ft.

The 65 ft bridge option is a fixed bridge option. However, as per the information provided by the U.S. Army Corps of Engineers, the posted height of all nearby fixed bridges on the ICWW is 65 ft above mean high water. These few sailboats could traverse to the ICWW or ocean by another inlet that does not have a bridge limitation. Conversely, there remains enough marina capacity outside of the Canaveral Barge Canal where transiting under the bridge would not be a requirement for these few sailboats.

A complete summary of the Vessel Survey and Navigation Study is shown in Table 24.

DRAFT

Table 24: Vessel Survey & Navigation Study Summary, 2020 – 2045
Source: BA

Month	2020	2025	2030	2035	2040	2045
Vessels Traversing						
25 ft Clearance	1,415	1,488	1,650	1,813	1,984	2,169
40 ft Clearance	1,415	358	396	434	473	516
65 ft Clearance	1,415	11	12	14	15	17
Bridge Openings						
25 ft Clearance	1,220	1,296	1,437	1,579	1,729	1,889
40 ft Clearance	1,220	312	345	378	412	450
65 ft Clearance	1,220	9	11	12	13	15
Bridge Opening Time						
25 ft Clearance	130:09:24	138:18:24	153:18:23	168:27:36	184:24:48	201:32:43
40 ft Clearance	130:09:24	33:18:41	36:46:31	40:17:47	43:59:35	47:57:34
65 ft Clearance	130:09:24	0:59:54	1:07:45	1:15:38	1:24:01	1:33:08
Bridge Openings (Peak Season)						
25 ft Clearance	670	730	809	889	974	1,064
40 ft Clearance	670	176	194	213	232	253
65 ft Clearance	670	5	6	7	7	8
Bridge Openings (Off Peak Season)						
25 ft Clearance	551	566	628	690	755	825
40 ft Clearance	551	136	151	165	180	196
65 ft Clearance	551	4	5	5	6	6
Bridge Openings (Weekends)						
25 ft Clearance	434	441	489	537	588	643
40 ft Clearance	434	106	117	129	140	153
65 ft Clearance	434	3	4	4	4	5
Bridge Openings (Weekdays)						
25 ft Clearance	786	856	948	1,042	1,141	1,247
40 ft Clearance	786	206	227	249	272	297
65 ft Clearance	786	6	7	8	9	10

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

VESSEL SURVEY AND NAVIGATION STUDY

Project Development & Environment (PD&E) Study

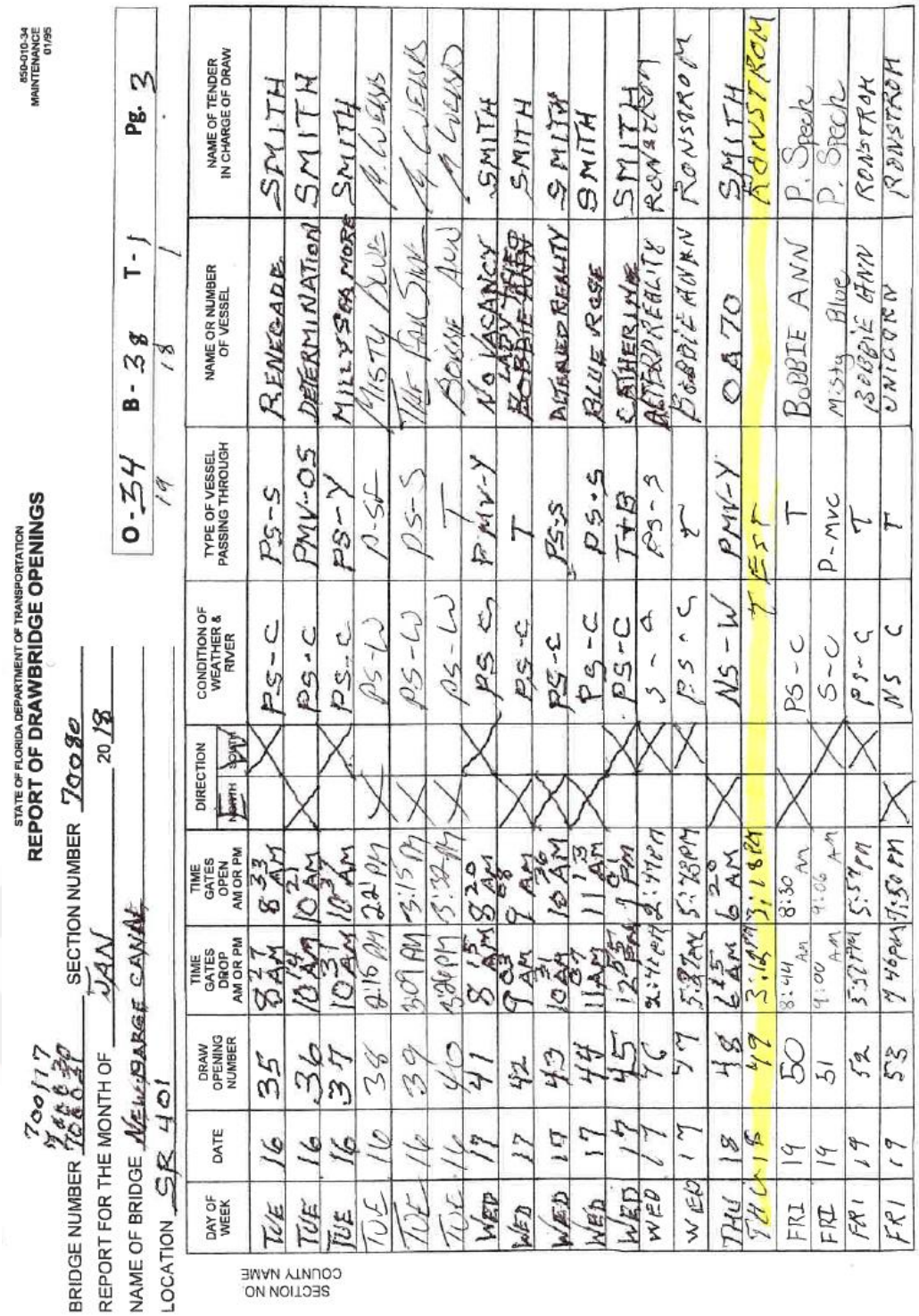
APPENDIX

DRAFT

5.0. APPENDIX

5.1. SR 401 Bridge Opening Log Data – Sample

Source: Florida Department of Transportation District 5



STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
REPORT OF DRAWBRIDGE OPENINGS

700117 700080 700120

BRIDGE NUMBER 700080 SECTION NUMBER 700080
REPORT FOR THE MONTH OF JAN 2018
NAME OF BRIDGE NEW RIVER CANAL
LOCATION SR 401

0-34 B-38 T-1 Pg. 3
19 18 1

DAY OF WEEK	DATE	DRAW OPENING NUMBER	TIME GATES DROP AM OR PM	TIME GATES OPEN AM OR PM	DIRECTION North	DIRECTION South	CONDITION OF WEATHER & RIVER	TYPE OF VESSEL PASSING THROUGH	NAME OR NUMBER OF VESSEL	NAME OF TENDER IN CHARGE OF DRAW
TUE	16	35	8:22 AM	8:33 AM		X	PS-C	PS-S	RENEGADE	SMITH
TUE	16	36	10:14 AM	10:21 AM	X		PS-C	PMV-OS	DETERMINATION	SMITH
TUE	16	37	10:31 AM	10:37 AM		X	PS-C	PS-Y	MILLYSSA MORE	SMITH
TUE	16	38	2:16 PM	2:21 PM	X		PS-C	PS-SF	MISTY BLUE	M. LEWIS
TUE	16	39	3:00 PM	3:15 PM	X		PS-C	PS-S	THE FAMILY SHIP	M. LEWIS
TUE	16	40	5:08 PM	5:22 PM	X		PS-C	T	BONNIE ANN	M. LEWIS
WED	17	41	8:15 AM	8:20 AM		X	PS-C	PMV-Y	NO VACANCY	SMITH
WED	17	42	9:03 AM	9 AM	X		PS-C	T	LADY BOBBIE ANN	SMITH
WED	17	43	10:31 AM	10:36 AM	X		PS-C	PS-S	DETAINED REALITY	SMITH
WED	17	44	11 AM	11:13 AM		X	PS-C	PS-S	BLUE ROSE	SMITH
WED	17	45	12:55 PM	1 PM		X	PS-C	T+B	CATHERINE	RONSTROM
WED	17	46	2:41 PM	2:47 PM	X		S-C	PS-S	ATTITUDE REALITY	RONSTROM
WED	17	47	5:28 PM	5:38 PM	X		PS-C	T	BOBBIE ANN	RONSTROM
THU	18	48	6:25 AM	6 AM		X	NS-W	PMV-Y	OATO	SMITH
THU	18	49	3:14 PM	3:18 PM			T	T		RONSTROM
FRI	19	50	8:44 AM	8:30 AM	X		PS-C	T	BOBBIE ANN	P. Speck
FRI	19	51	4:00 AM	4:06 AM		X	S-C	P-MVC	Misty Blue	P. Speck
FRI	19	52	5:52 PM	5:59 PM		X	PS-C	T	BOBBIE ANN	RONSTROM
FRI	19	53	7:46 PM	7:50 PM	X		NS C	T	UNICORN	RONSTROM

SECTION NO
COUNTY NAME

850-010-34
MAINTENANCE
01/95

5.2. Canaveral Lock Log Data – Sample

Source: U.S. Army Corps of Engineers

EROC K3	VESSEL SUMMARY REPORT	Report: LPMS 5		
LOCK 21	CANAVERAL HARBOR	Run Date: 06/25/2021 12:11		
CHMB 1	CANAVERAL LOCK	01/01/2018 thru 12/31/2018		
Type of Vessel		Upbound	Downbound	Total
Passenger Boat or Ferry (commercial)		0	1	1
Crewboat Vessel (does not include boat crew)		1	1	2
Commercial Non-cargo Vessel (i.e. private yacht & pilot)		0	1	1
Other		441	433	874
Non-federal Government Vessel (i.e. state or local govt)		24	32	56
Fishing Vessel (commercial)		60	69	129
Federal Government Vessel wo/Barges		159	145	304
Recreation Vessel		6989	6885	13874
Cmrcl Towboats w/Barges		22	26	48
Towboats wo/Barges		64	68	132
Total Vessels		**7760**	**7661**	**15421**
Only Vessel Types With Counts Greater Than 0 Appear Above				
Total Non-Vessel Lockages		**N/A**	**N/A**	**0**
Total Assists		**4**	**6**	**10**
Total Lockages		**3966**	**4085**	**8051**

5.3. Marina Survey Database

Source: GoogleMaps, BA

Name	Address	Location (of Bridge)	Phone
1. Whitley Bay Yacht Club	90 Delannoy Ave, Cocoa, FL 32922	West	(321) 632-5445
2. KARS Park	Audobon Rd, Merritt Island, FL 32953	West	(321) 867-7967
3. Telemar Bay Marina	1399 Banana River Dr, Indian Harbour Beach, FL 32937	West	(321) 773-2468
4. Pineda Point Marina	6175 N US Hwy 1, Melbourne, FL 32940	West	(321) 254-4199
5. Treasure Coast Marina	5185 US-1, Grant-Valkaria, FL 32949	West	(321) 733-3390
6. Cape Crossing Marina	290 Marine Harbor Dr suite a, Merritt Island, FL 32953	West	(321) 576-4967
7. Kennedy Point Yacht Club & Marina	4749 S Washington Ave, Titusville, FL 32780	West	(321) 383-0280
8. Melbourne Yacht Club	1202 E River Dr, Melbourne, FL 32901	West	(321) 768-9921
9. Ocean Club	930 Mullet Rd, Cape Canaveral, FL 32920	East	(321) 783-9001
10. Palm Bay Marina	4350 Dixie Hwy NE, Palm Bay, FL 32905	West	(321) 723-0851
11. Sebastian River Marina & Boat Yard	8525 US-1, Sebastian, FL 32976	West	(772) 664-3029
12. Anchorage Yacht Basin	96 East Eau Gallie Causeway, Melbourne, FL 32937	West	(321) 773-3620
13. Blue Points Marina	726 Scallop Dr, Cape Canaveral, FL 32920	East	(321) 799-2860
14. Cape Marina	800 Scallop Dr, Cape Canaveral, FL 32920	East	(321) 783-8410
15. Cocoa Village Marina	90 Delannoy Ave, Cocoa, FL 32922	West	(321) 632-5445
16. Eau Gallie Yacht Basin	587 Young St, Melbourne, FL 32935	West	(321) 242-6577
17. Eau Gallie Yacht Club	100 Datura Dr, Indian Harbour Beach, FL 32937	West	(321) 773-2600
18. Harbortown Marina	2700 Harbortown Dr, Merritt Island, FL 32952	West	(321) 453-0160
19. Island Time Marina	400 W Cocoa Beach Causeway, Cocoa Beach, FL 32941	West	(321) 613-4852
20. Manatee Cove Marina	Patrick Air Force Base, FL 32925	West	(321) 494-7455
21. Marker 24 Marina	1360 S Banana River Dr, Merritt Island, FL 32952	West	(321) 453-7888
22. Melbourne Harbor Marina	2210 Front St # 101, Melbourne, FL 32901	West	(321) 725-9054
23. Port Canaveral Yacht Club	910 Mullet Rd, Cape Canaveral, FL 32920	East	(321) 784-2292
24. Sebastian Inlet Marina	8685 US-1, Micco, FL 32976	West	(772) 664-8500
25. Sunrise Marina	505 Glen Cheek Dr, Cape Canaveral, FL 32920	East	(321) 783-9535
26. Titusville Marina	451 Marina Rd, Titusville, FL 32796	West	(321) 383-5600
27. Waterline Marina	905 FL-5, Melbourne, FL 32935	West	(321) 254-0452
28. Westland Boatyard & Marina	419 N Washington Ave, Titusville, FL 32796	West	(321) 267-1667

5.4. SR 401 Bridge Replacement Marina Survey Questions

Marina Name & Address

Facility Characteristics - Capacity
Please complete the table below

	Currently	Future Demand (5-10 years)
How many wet slips?		
How many dry boat storage capacity on racks?		
How many dry boat storage capacity on the yard?		

Facility Characteristics - Services
Please complete the table below

	Currently	Future Demand (5-10 years)
Do you offer fuel?		
Do you offer repairs?		
Do you offer in and out ramps?		
Do you offer in and out lift capacity?		

Vessel Characteristics - Capacity
Fill in the approximate percentage of ships you have falling within each category below, if known.

	Current Percentage
% Sailboats	
% Powerboats	

Vessel Size - % of Vessels by Length
Fill in the approximate percentage of ships you have falling within each category below, if known.

	% Powerboats	% Sailboats
Under 21 ft		
22 – 30 ft		
31 – 45 ft		
46 – 55 ft		
56 – 65 ft		
Over 65 ft		

Vessel Size - % of Vessels by Mast Height

Fill in the approximate percentage of ships you have falling within each category below, if known.

	% Sailboats
Under 35 ft	
36 – 45 ft	
46 – 55 ft	
56 – 65 ft	
Over 65 ft	

Customer Base

On average, what percentage of your customers come from each segment below?

% of Local Residents (Brevard)	
% of Regional Residents (Central FL)	
% Transient	
% Charter / Fishing Boats	
% Commercial	
% Other	

Occupancy & Seasonality

1. Is your business constant year-round? Please explain.
2. If your marina is seasonal, what are the peak months?
3. What is your average occupancy during the peak season?
4. What is your average occupancy during the non-peak season?

Access Under SR 401 Bridges

1. Is access to the ocean / Banana River important to your customers?
2. % of business that regularly uses the Canaveral locks to access the ocean / Banana River.

Do you have any specific comments/concerns from your own experience or from what your customers have told you about the SR 401 bridges over the Canaveral Barge Canal?

Please leave any additional comments here that you would like us to take into consideration for the bridge assessment, including if you would like to discuss anything in more detail over the phone.

Do you want to be contacted as the project continues? If yes, please provide the best way to contact you moving forward.

5.5. SR 401 Bridge Replacement Marina Survey Responses

Wednesday, June 23, 2021

SR 401 Bridge Marina Questionnaire - East

Would you prefer to fill the survey out online, or do you prefer that someone from BA contacts you via phone?

Online Survey

Contact Information

Your Name
Keith Smith

Marina Name
Bluepoints Marina

Email (for future communications)
keith@bluepointsmarina.com

Do you want to be contacted as the project progresses?
Yes

Contact Information 1

Your Name
Keith Smith

Marina Name
Bluepoints Marina

Email (for future communications)
keith@bluepointsmarina.com

Do you want to be contacted as the project progresses?
Yes

Marina Address

726 Scallop Drive
Cape Canaveral, FL, 32920

Facility Characteristics - Capacity

	Currently	Future Demand (5-10 years)
How many wet slips?	26	uncertain
How many dry boat storage capacity on racks?	566	(Permitted for 924 dry storage
How many dry boat storage capacity on the yard?	N/A	will expand into this in the future

Facility Characteristics - Services

	Currently	Future Demand (5-10 years)
Do you offer fuel?	Yes	Yes
Do you offer repairs?	Yes	Yes
Do you offer in and out ramps?	No	No
Do you offer in and out lift capacity?	Yes	Yes

Vessel Characteristics

	Current Percentage
% of Sailboats	0
% of Powerboats	100

Vessel Size - % of Vessels by Length (6 Categories)

	% Powerboats (Length)	% Sailboats (Length)
Under 21 ft	0	0
22 - 30 ft	25	0
31 - 45 ft	70	
46 - 55 ft	5	0
56 - 65 ft	0	0
Over 65 ft	0	0

Vessel Size - % of Vessels by Mast Height (6 Categories)

	% Sailboats (Mast Height)
Under 21 ft	0
22 - 35 ft	0
36 - 45 ft	0
46 - 55 ft	0
56 - 65 ft	0
Over 65 ft	

Customer Base (6 Categories)

	%
% of Local Residents (Brevard)	49
% of Regional Residents (Central Florida)	49
% Transient	2
% Charter / Fishing Boats	5
% Commercial	0
% Other	0

Occupancy & Seasonality

Is your business constant year round? Please explain.

yes

If your marina is seasonal, what are the peak months?

peak months are March - August

What is your average occupancy during the peak season?

confidential

What is your average occupancy during the non peak season?

confidential

Access Under SR 401 Bridges

Is access to the ocean (east of SR 401) / Banana River (west of SR 401) important to your customers?

yes

% of business that regularly uses the Canaveral locks to access the ocean / Banana River.

25

Do you have any specific comments / concerns from your own experience or from what your customers have told you about the SR 401 bridges over the Canaveral Barge Canal?

No

Thursday, June 24, 2021

SR 401 Bridge Marina Questionnaire - East

Would you prefer to fill the survey out online, or do you prefer that someone from BA contacts you via phone?

Online Survey

Contact Information

Your Name
Colonel Richard Roten

Marina Name
Port Canaveral Yacht Club

Email (for future communications)
dickroten@gmail.com

Do you want to be contacted as the project progresses?
Yes

Contact Information 1

Your Name
Colonel Richard Roten

Marina Name
Port Canaveral Yacht Club

Email (for future communications)
dickroten@gmail.com

Do you want to be contacted as the project progresses?
Yes

Marina Address

910 Mullet Drive
Cape Canaveral , Fl

Facility Characteristics - Capacity

	Currently	Future Demand (5-10 years)
How many wet slips?	5050	30

	Currently	Future Demand (5-10 years)
How many dry boat storage capacity on racks?	0	0
How many dry boat storage capacity on the yard?	0	0

Facility Characteristics - Services

	Currently	Future Demand (5-10 years)
Do you offer fuel?	No	
Do you offer repairs?	No	No
Do you offer in and out ramps?	No	No
Do you offer in and out lift capacity?		

Vessel Characteristics

	Current Percentage
% of Sailboats	75
% of Powerboats	

Vessel Size - % of Vessels by Length (6 Categories)

	% Powerboats (Length)	% Sailboats (Length)
Under 21 ft	0	0
22 - 30 ft	0	0
31 - 45 ft	70	70
46 - 55 ft	25	25
56 - 65 ft	0	0
Over 65 ft		

Vessel Size - % of Vessels by Mast Height (6 Categories)

	% Sailboats (Mast Height)
Under 21 ft	0
22 - 35 ft	0
36 - 45 ft	0
46 - 55 ft	30
56 - 65 ft	40
Over 65 ft	30

Customer Base (6 Categories)

	%
% of Local Residents (Brevard)	80
% of Regional Residents (Central Florida)	
% Transient	
% Charter / Fishing Boats	
% Commercial	
% Other	

Occupancy & Seasonality

Is your business constant year round? Please explain.

Yes

If your marina is seasonal, what are the peak months?

Yes

Access Under SR 401 Bridges

Is access to the ocean (east of SR 401) / Banana River (west of SR 401) important to your customers?

Yes

% of business that regularly uses the Canaveral locks to access the ocean / Banana River.

90

Do you have any specific comments / concerns from your own experience or from what your customers have told you about the SR 401 bridges over the Canaveral Barge Canal?

Hurricane evacuation requires all vessels to leave via SR 401 to ICW

Tuesday, June 29, 2021

SR 401 Bridge Marina Questionnaire - East

Would you prefer to fill the survey out online, or do you prefer that someone from BA contacts you via phone?

Online Survey

Contact Information

Your Name
Dylan Houck

Marina Name
Cape Marina

Email (for future communications)
dylan@capemarina.com

Do you want to be contacted as the project progresses?
Yes

Marina Address

800 Scallop Dr
Cape Canaveral, FL, 32920

Facility Characteristics - Capacity

	Currently	Future Demand (5-10 years)
How many wet slips?	115	125
How many dry boat storage capacity on racks?	80	150
How many dry boat storage capacity on the yard?	100	150

Facility Characteristics - Services

	Currently	Future Demand (5-10 years)
Do you offer fuel?	Yes	Yes
Do you offer repairs?	No	No

	Currently	Future Demand (5-10 years)
Do you offer in and out ramps?	No	No
Do you offer in and out lift capacity?	Yes	Yes

Vessel Characteristics

	Current Percentage
% of Sailboats	25
% of Powerboats	75

Customer Base (6 Categories)

	%
% of Local Residents (Brevard)	60
% of Regional Residents (Central Florida)	25
% Transient	5
% Charter / Fishing Boats	5
% Commercial	5
% Other	

Occupancy & Seasonality

Is your business constant year round? Please explain.

There is no Off Season.

If your marina is seasonal, what are the peak months?

N?A

What is your average occupancy during the peak season?

95%

What is your average occupancy during the non peak season?

92%

Access Under SR 401 Bridges

Is access to the ocean (east of SR 401) / Banana River (west of SR 401) important to your customers?

Absolutely, it 100% essential.

% of business that regularly uses the Canaveral locks to access the ocean / Banana River.

70

Do you have any specific comments / concerns from your own experience or from what your customers have told you about the SR 401 bridges	The largest concern is that any project regarding the 401 Bridge must keep the status quo. A huge percentage of sailboats require the drawbridge capabilities of the 401 to enter and exit Port Canaveral. There is not to my knowledge any improvements to be made to the bridge as the bridge opening satisfy the traffic demands. If the bridge was taller it would decrease the openings required for some sailboats but it still must be a drawbridge as some masts go beyond 75'-100'. The best bet is to increase the height of the bridge and still have the drawbridge thus decreasing the number of openings interfering with traffic while still allowing vessels of almost any size thru.

DRAFT

Tuesday, July 6, 2021

SR 401 Bridge Marina Questionnaire - East

Would you prefer to fill the survey out online, or do you prefer that someone from BA contacts you via phone?

Online Survey

Contact Information

Your Name
Thomas Maliszko

Marina Name
Eau Gallie Yacht Club

Email (for future communications)
tmaliszko@egyachtclub.com

Do you want to be contacted as the project progresses?
No

Marina Address

100 Datura
Indian Harbour Beach, FL, 32937

Facility Characteristics - Capacity

	Currently	Future Demand (5-10 years)
How many wet slips?	64	64
How many dry boat storage capacity on racks?	0	0
How many dry boat storage capacity on the yard?	0	0

Facility Characteristics - Services

	Currently	Future Demand (5-10 years)
Do you offer fuel?	No	No
Do you offer repairs?	No	No

	Currently	Future Demand (5-10 years)
Do you offer in and out ramps?	Yes	Yes
Do you offer in and out lift capacity?	No	No

Vessel Characteristics

	Current Percentage
% of Sailboats	15
% of Powerboats	85

Vessel Size - % of Vessels by Length (6 Categories)

	% Powerboats (Length)	% Sailboats (Length)
Under 21 ft	4	0
22 - 30 ft		
31 - 45 ft		
46 - 55 ft		
56 - 65 ft		
Over 65 ft		

Vessel Size - % of Vessels by Mast Height (6 Categories)

	% Sailboats (Mast Height)
Under 21 ft	0
22 - 35 ft	10
36 - 45 ft	5
46 - 55 ft	0
56 - 65 ft	0
Over 65 ft	0

Customer Base (6 Categories)

	%
% of Local Residents (Brevard)	85
% of Regional Residents (Central Florida)	15
% Transient	0
% Charter / Fishing Boats	0
% Commercial	0

	%
% Other	100

Occupancy & Seasonality

Is your business constant year round? Please explain.

Yes, our boats are in the water all year

Access Under SR 401 Bridges

Is access to the ocean (east of SR 401) / Banana River (west of SR 401) important to your customers?

Yes

% of business that regularly uses the Canaveral locks to access the ocean / Banana River.

50

DRAFT

Tuesday, July 6, 2021

SR 401 Bridge Marina Questionnaire - East

Would you prefer to fill the survey out online, or do you prefer that someone from BA contacts you via phone?

Online Survey

Contact Information

Your Name
Robin Roark

Marina Name
Sunrise Marina

Email (for future communications)
robinroark@sunrisemarina.com

Do you want to be contacted as the project progresses?
Yes

Marina Address

505 Glen Cheek Drive
Cape Canaveral, Florida, 32920

Facility Characteristics - Capacity

	Currently	Future Demand (5-10 years)
How many wet slips?	18	
How many dry boat storage capacity on racks?	110	
How many dry boat storage capacity on the yard?	4	

Facility Characteristics - Services

	Currently	Future Demand (5-10 years)
Do you offer fuel?	Yes	
Do you offer repairs?	No	

	Currently	Future Demand (5-10 years)
Do you offer in and out ramps?	No	
Do you offer in and out lift capacity?	Yes	

Vessel Characteristics

	Current Percentage
% of Sailboats	0
% of Powerboats	112

Vessel Size - % of Vessels by Length (6 Categories)

	% Powerboats (Length)	% Sailboats (Length)
Under 21 ft	10	
22 - 30 ft	50	
31 - 45 ft	52	
46 - 55 ft		
56 - 65 ft		
Over 65 ft		

Customer Base (6 Categories)

	%
% of Local Residents (Brevard)	30
% of Regional Residents (Central Florida)	50
% Transient	0
% Charter / Fishing Boats	20
% Commercial	
% Other	

Occupancy & Seasonality

Is your business constant year round? Please explain.

Yes

What is your average occupancy during the peak season?

90%

What is your average occupancy during the non peak season?

90%

Access Under SR 401 Bridges

Is access to the ocean (east of SR 401) / Banana River (west of SR 401) important to your customers?

Some

% of business that regularly uses the Canaveral locks to access the ocean / Banana River.

10

DRAFT

Wednesday, June 23, 2021

SR 401 Bridge Marina Questionnaire - West

Would you prefer to fill the survey out online, or do you prefer that someone from BA contacts you via phone?

Online Survey

Contact Information

Your Name
Bradley W Keyon

Marina Name
Palm Bay Marina

Email (for future communications)
Bradk@Boatandmotorsuperstores.com

Do you want to be contacted as the project progresses?
Yes

Marina Address

4350 DIXIE HWY NE
PALM BAY, FL, 32905-4332

Facility Characteristics - Capacity

	Currently	Future Demand (5-10 years)
How many wet slips?	80	400
How many dry boat storage capacity on racks?	100	400
How many dry boat storage capacity on the yard?	20	100

Facility Characteristics - Services

	Currently	Future Demand (5-10 years)
Do you offer fuel?	No	Yes
Do you offer repairs?	Yes	Yes
Do you offer in and out ramps?	No	Yes
Do you offer in and out lift capacity?	No	Yes

Vessel Characteristics

	Current Percentage
% of Sailboats	0
% of Powerboats	100

Vessel Size - % of Vessels by Length (6 Categories)

	% Powerboats (Length)	% Sailboats (Length)
Under 21 ft	70	0
22 - 30 ft	25	0
31 - 45 ft	5	0
46 - 55 ft	0	0
56 - 65 ft	0	0
Over 65 ft	0	0

Vessel Size - % of Vessels by Mast Height (6 Categories)

	% Sailboats (Mast Height)
Under 21 ft	0
22 - 35 ft	0
36 - 45 ft	0
46 - 55 ft	0
56 - 65 ft	0
Over 65 ft	0

Customer Base (6 Categories)

	%
% of Local Residents (Brevard)	80
% of Regional Residents (Central Florida)	15
% Transient	5
% Charter / Fishing Boats	0
% Commercial	0
% Other	0

Occupancy & Seasonality

Is your business constant year round? Please explain.

Yes. Mostly Locak

Ocean Access Under SR 401 Bridges

Is access to the ocean important to your customers?

yes

% of business that regularly uses the Canaveral locks to access the ocean.

10

Do you have any specific comments / concerns from your own experience or from what your customers have told you about the SR 401 bridges over the Canaveral Barge Canal?

We have a bridge of 16' so we have no sail boats

Please leave any additional comments here that you would like us to take into consideration for the bridge assessment, including if you would like to discuss anything in more detail over the phone.

No .....

DRAFT

Wednesday, June 23, 2021

SR 401 Bridge Marina Questionnaire - West

Would you prefer to fill the survey out online, or do you prefer that someone from BA contacts you via phone?

Online Survey

Contact Information

Your Name
Chase Falonk

Marina Name
Westland Boatyard & Marina

Email (for future communications)
info@westlandmarina.com

Do you want to be contacted as the project progresses?
Yes

Marina Address

419 N Washington Ave
Titusville, FL, 32796

Facility Characteristics - Capacity

	Currently	Future Demand (5-10 years)
How many wet slips?	65	100
How many dry boat storage capacity on racks?	40	100
How many dry boat storage capacity on the yard?	135	200

Facility Characteristics - Services

	Currently	Future Demand (5-10 years)
Do you offer fuel?	No	
Do you offer repairs?	Yes	

	Currently	Future Demand (5-10 years)
Do you offer in and out ramps?	No	
Do you offer in and out lift capacity?	Yes	

Vessel Characteristics

	Current Percentage
% of Sailboats	85
% of Powerboats	15

Vessel Size - % of Vessels by Length (6 Categories)

	% Powerboats (Length)	% Sailboats (Length)
Under 21 ft	5	1
22 - 30 ft	5	15
31 - 45 ft	73	70
46 - 55 ft	10	8
56 - 65 ft	5	4
Over 65 ft	2	2

Vessel Size - % of Vessels by Mast Height (6 Categories)

	% Sailboats (Mast Height)
Under 21 ft	0
22 - 35 ft	5
36 - 45 ft	20
46 - 55 ft	30
56 - 65 ft	40
Over 65 ft	5

Customer Base (6 Categories)

	%
% of Local Residents (Brevard)	10
% of Regional Residents (Central Florida)	15
% Transient	60
% Charter / Fishing Boats	1
% Commercial	2

	%
% Other	12

Occupancy & Seasonality

Is your business constant year round? Please explain.

Wet slip & dry rack business is constant. Dry yard fluctuates, primarily storage during the summer months, 50/50 storage/service hauls in the winter season

If your marina is seasonal, what are the peak months?

Peak months are November through May

What is your average occupancy during the peak season?

95%

What is your average occupancy during the non peak season?

95%

Ocean Access Under SR 401 Bridges

Is access to the ocean important to your customers?

Yes

% of business that regularly uses the Canaveral locks to access the ocean.

80%

Do you have any specific comments / concerns from your own experience or from what your customers have told you about the SR 401 bridges over the Canaveral Barge Canal?

Given our location vessels transiting the ICW to come to our facility are limited to the fixed heights of the bridges we are between as there is no direct ocean access from our location. If a fixed bridge is to be built it would be great if it is at least as tall as the other fixed bridges in the county crossing the ICW.

Thursday, June 24, 2021

SR 401 Bridge Marina Questionnaire - West

Would you prefer to fill the survey out online, or do you prefer that someone from BA contacts you via phone?

Online Survey

Contact Information

Your Name
Steve Cordell II

Marina Name
Waterline Marina

Email (for future communications)
Steve@WaterlineMarina.com

Do you want to be contacted as the project progresses?
Yes

Marina Address

905 N Harbor City Blvd
Melbourne, Florida, 32935

Facility Characteristics - Capacity

	Currently	Future Demand (5-10 years)
How many wet slips?	102	102
How many dry boat storage capacity on racks?	0	0
How many dry boat storage capacity on the yard?	0	0

Facility Characteristics - Services

	Currently	Future Demand (5-10 years)
Do you offer fuel?	No	No
Do you offer repairs?	No	No

	Currently	Future Demand (5-10 years)
Do you offer in and out ramps?	No	No
Do you offer in and out lift capacity?	No	No

Vessel Characteristics

	Current Percentage
% of Sailboats	80
% of Powerboats	20

Vessel Size - % of Vessels by Length (6 Categories)

	% Powerboats (Length)	% Sailboats (Length)
Under 21 ft	0	0
22 - 30 ft	5	5
31 - 45 ft	90	75
46 - 55 ft	5	20
56 - 65 ft		
Over 65 ft		

Vessel Size - % of Vessels by Mast Height (6 Categories)

	% Sailboats (Mast Height)
Under 21 ft	
22 - 35 ft	5
36 - 45 ft	75
46 - 55 ft	20
56 - 65 ft	
Over 65 ft	

Customer Base (6 Categories)

	%
% of Local Residents (Brevard)	50
% of Regional Residents (Central Florida)	20
% Transient	
% Charter / Fishing Boats	
% Commercial	

	%
% Other	30

Occupancy & Seasonality

Is your business constant year round? Please explain.

Yes our boating season is year round

What is your average occupancy during the peak season?

95%

What is your average occupancy during the non peak season?

95%

Ocean Access Under SR 401 Bridges

Is access to the ocean important to your customers?

Yes

% of business that regularly uses the Canaveral locks to access the ocean.

30%

Do you have any specific comments / concerns from your own experience or from what your customers have told you about the SR 401 bridges over the Canaveral Barge Canal?

No concerns at this time

DRAFT

Monday, June 28, 2021

SR 401 Bridge Marina Questionnaire - West

Would you prefer to fill the survey out online, or do you prefer that someone from BA contacts you via phone?

Online Survey

Contact Information

Your Name

Ken Lunden

Marina Name

Cocoa Village Marina

Email (for future communications)

cvmarina@cfl.rr.com

Do you want to be contacted as the project progresses?

No

Marina Address

Cocoa Village Marina, 90 Delannoy Ave
Cocoa, FL, 32922

Facility Characteristics - Capacity

	Currently	Future Demand (5-10 years)
How many wet slips?	107	0
How many dry boat storage capacity on racks?	0	0
How many dry boat storage capacity on the yard?	0	0

Vessel Characteristics

	Current Percentage
% of Sailboats	40
% of Powerboats	60

Vessel Size - % of Vessels by Length (6 Categories)

	% Powerboats (Length)	% Sailboats (Length)
Under 21 ft	0	
22 - 30 ft		
31 - 45 ft		
46 - 55 ft		
56 - 65 ft		
Over 65 ft		

Vessel Size - % of Vessels by Mast Height (6 Categories)

	% Sailboats (Mast Height)
Under 21 ft	0
22 - 35 ft	2
36 - 45 ft	5
46 - 55 ft	2
56 - 65 ft	12
Over 65 ft	

Customer Base (6 Categories)

	%
% of Local Residents (Brevard)	50
% of Regional Residents (Central Florida)	30
% Transient	15
% Charter / Fishing Boats	0
% Commercial	1
% Other	4

Occupancy & Seasonality

Is your business constant year round? Please explain.

No

If your marina is seasonal, what are the peak months?

November through May

What is your average occupancy during the peak season?

90%

What is your average occupancy during the non peak season?

55%

Ocean Access Under SR 401 Bridges

Is access to the ocean important to your customers?

Yes

% of business that regularly uses the Canaveral locks to access the ocean.

12%

DRAFT

Tuesday, July 6, 2021

SR 401 Bridge Marina Questionnaire - East

Would you prefer to fill the survey out online, or do you prefer that someone from BA contacts you via phone?

Online Survey

Contact Information

Your Name
DAvid Noble

Marina Name
Melbourne Yacht Club

Email (for future communications)
dave@sailawards.com

Do you want to be contacted as the project progresses?
Yes

Marina Address

1202 River Drive
Melbourne , FL, 32901

Facility Characteristics - Capacity

	Currently	Future Demand (5-10 years)
How many wet slips?	42	
How many dry boat storage capacity on racks?	7	
How many dry boat storage capacity on the yard?	n/a	

Facility Characteristics - Services

	Currently	Future Demand (5-10 years)
Do you offer fuel?	No	
Do you offer repairs?	No	

	Currently	Future Demand (5-10 years)
Do you offer in and out ramps?	Yes	
Do you offer in and out lift capacity?	No	

Vessel Characteristics

	Current Percentage
% of Sailboats	95
% of Powerboats	5

Vessel Size - % of Vessels by Length (6 Categories)

	% Powerboats (Length)	% Sailboats (Length)
Under 21 ft		4
22 - 30 ft		36
31 - 45 ft		60
46 - 55 ft		
56 - 65 ft		
Over 65 ft		

Vessel Size - % of Vessels by Mast Height (6 Categories)

	% Sailboats (Mast Height)
Under 21 ft	5
22 - 35 ft	25
36 - 45 ft	60
46 - 55 ft	10
56 - 65 ft	
Over 65 ft	

Customer Base (6 Categories)

	%
% of Local Residents (Brevard)	100
% of Regional Residents (Central Florida)	
% Transient	
% Charter / Fishing Boats	
% Commercial	
% Other	

Occupancy & Seasonality

Is your business constant year round? Please explain.

Yacht club for Brevard residents

If your marina is seasonal, what are the peak months?

year round

What is your average occupancy during the peak season?

100%

What is your average occupancy during the non peak season?

100%

Ocean Access Under SR 401 Bridges

Is access to the ocean important to your customers?

Very much so

% of business that regularly uses the Canaveral locks to access the ocean.

50

Do you have any specific comments / concerns from your own experience or from what your customers have told you about the SR 401 bridges over the Canaveral Barge Canal?

Not a bother, always been timely for me other than at rush hour. so I plan accordingly

Tuesday, July 6, 2021

SR 401 Bridge Marina Questionnaire - East

Would you prefer to fill the survey out online, or do you prefer that someone from BA contacts you via phone?

Online Survey

Contact Information

Your Name
Robert Scott

Marina Name
Melbourne Yacht Club

Email (for future communications)
scottrljr@gmail.com

Do you want to be contacted as the project progresses?
No

Marina Address

1202 E River Dr
Melbourne , Fl, 32937

Facility Characteristics - Capacity

	Currently	Future Demand (5-10 years)
How many wet slips?	42	10
How many dry boat storage capacity on racks?	0	12
How many dry boat storage capacity on the yard?	12	5

Facility Characteristics - Services

	Currently	Future Demand (5-10 years)
Do you offer fuel?	No	No
Do you offer repairs?	No	No

	Currently	Future Demand (5-10 years)
Do you offer in and out ramps?	Yes	No
Do you offer in and out lift capacity?	No	

Vessel Characteristics

	Current Percentage
% of Sailboats	95
% of Powerboats	5

Vessel Size - % of Vessels by Length (6 Categories)

	% Powerboats (Length)	% Sailboats (Length)
Under 21 ft	5	30
22 - 30 ft	2	50
31 - 45 ft	0	18
46 - 55 ft	0	0
56 - 65 ft	0	0
Over 65 ft	0	0

Customer Base (6 Categories)

	%
% of Local Residents (Brevard)	100
% of Regional Residents (Central Florida)	
% Transient	
% Charter / Fishing Boats	
% Commercial	
% Other	

Occupancy & Seasonality	**Is your business constant year round? Please explain.** Yes, local residents belonging to the club only. Dry storage is small dinty and sunfish/laser type sailboats. **If your marina is seasonal, what are the peak months?** No **What is your average occupancy during the peak season?** NA **What is your average occupancy during the non peak season?** NA
Ocean Access Under SR 401 Bridges	**Is access to the ocean important to your customers?** No **% of business that regularly uses the Canaveral locks to access the ocean.** 0%
Do you have any specific comments / concerns from your own experience or from what your customers have told you about the SR 401 bridges over the Canaveral Barge Canal?	We are a private club with mostly sailing boats. Mostly staying in Indian River. Occasionally one or two will venture north.

DRAFT

5.6. Inventory of Recreational Powerboats – Sample

Source: BA

Length (ft)	Draft (ft)	Beam (ft)	air draft (ft)
29	1.1	9.8	8.9
30	3	8	5.1
30	2.1	11.3	7
30	2.1	10.1	7.0
30	2.6	10.6	7.3
30	3.1	11.3	7.3
30	3.0	11.4	8.5
30	3.1	10.6	8.7
30	2.8	10.6	8.8
30	2.2	11.1	9.5
30	2.9	10.3	11.0
30	2.6	10.9	11.6
30	2.6	12.3	11.6
30	2.6	11.9	11.8
30	2.7	11.6	11.8
30	2.1	11.0	11.9
31	2.1	9.8	5.2
31	2.1	10.6	7.4
31	2.9	12.0	7.6
31	2.8	11.1	7.6
31	2.1	11.6	8.1
31	2.6	12.0	8.4
31	3.1	9.6	8.8
31	3.0	10.0	8.9
31	2.9	11.0	9.1
31	2.6	11.6	9.1
31	2.8	10.1	10.1
31	2.2	11.6	10.5
31	3.0	11.8	10.8
31	2.1	11.1	10.8
31	2.1	11.6	11.0
31	3.1	11.2	11.0
31	2.1	12.0	12.2
31	2.1	11.1	14.4
31	2.6	11.1	16.2
31	3.4	11.4	18.0
32	3.2	9.8	6.0

5.7. Boat Manufacturer Survey Database

Source: GoogleMaps, BA

Name	Address	Phone
Sea Ray Boats Inc	350 Sea Ray Dr, Merritt Island, FL 32953	(865) 522-4181
Falcon Boats USA	5225 S Washington Ave, Titusville, FL 32780	(772) 236-8289
Hells Bay Boatworks	1520 Chaffee Dr, Titusville, FL 32780	(321) 383-8223
Aviara Boats Manufacturing	1210 Nautical Way, Merritt Island, FL 32952	
Merritt Island Boat Works	1210 Nautical Way, Merritt Island, FL 32952	(321) 735-7111

DRAFT

5.8. SR 401 Bridge Replacement Boat Manufacturer Survey Questions

Company Name & Address:

Ocean Access Under SR 401 Bridges

1. How important is access to the ocean using the Canaveral Locks and the SR 401 crossing to your business?
   A. Essential
   B. A great amenity but not essential
   C. Not needed

2. % of your boats that regularly use the Canaveral Locks to access the ocean.

3. How often do you use the Canaveral Locks in a year?

Facility Characteristics - Brevard Plant Capacity

Please complete the table below.

	Currently	Future (5-10 years)
On average, how many boats do you manufacture annually in your Brevard Plant?		
On average, how many boats do you repair or overhaul annually in your Brevard Plant?		

Vessel Characteristics - Type of Boat

Fill in the approximate percentage of ships you have falling within each category below.

	Current Percentage	Future (5-10 years)
% Sailboats Manufactured Annually		
% Powerboats Manufactured Annually		

Vessel Size - % of Vessels by Length

Fill in the approximate percentage of ships you have falling within each category below.

	% Powerboats (length)	% Sailboats (length)
Under 21 ft		
22 – 30 ft		
31 – 45 ft		
46 – 55 ft		

56 – 65 ft		
Over 65 ft		

Vessel Size - % of Vessels Air Draft (from the water line to the highest point)

Fill in the approximate percentage of ships you have falling within each category below.

	% Powerboats (air draft)	% Sailboats (air draft)
Under 21 ft		
22 – 35 ft		
36 – 45 ft		
46 – 55 ft		
56 – 65 ft		
Over 65 ft		

Do you have any specific comments about the SR 401 bridges over the Canaveral Barge Canal?

Please leave any additional comments here that you would like us to take into consideration for the bridge assessment, including if you would like to discuss anything in more detail over the phone.

Do you want to be contacted as the project continues? If yes, please provide the best way to contact you moving forward.

DRAFT

5.9. SR 401 Bridge Replacement Boat Manufacturer Survey Responses

Wednesday, July 7, 2021

SR 401 Boat Manufacturer Questionnaire

Would you prefer to fill the survey out online, or do you prefer that someone from BA contacts you via phone?

Online Survey

Contact Information

Your Name
MIKE WERNER

Company Name
FALCON MARINE LLC

Email (for future communications)
MWERNER@FALCONMARINEUSA.COM

Do you want to be contacted as the project progresses?
Yes

Company Address

5225 S WASHINGTON
TITUSVILLE, FL, 32780

Ocean Access Under SR 401 Bridges

A great amenity but not essential

Ocean Access Under SR 401 Bridges

% of your boats that regularly uses the Canaveral Locks to access the ocean
20

How often do you use the Canaveral Locks in a year?
12

Facility Characteristics - Brevard Plant Capacity

	Currently	Future Demand (5-10 years)
On average, how many boats do you manufacture annually in your Brevard plant?	15	52
On average, how many boats do you repair or overhaul annually in your Brevard plant?	0	

Vessel Characteristics - Type of Boat

	Current Percentage	Future Demand (5-10 years)
% of Sailboats Manufactured Annually	0	
% of Powerboats Manufactured Annually	100	100

Vessel Size - % of Vessels by Length (6 Categories)

	% Powerboats (Length)	% Sailboats (Length)
Under 21 ft		
22 - 30 ft	100	
31 - 45 ft		
46 - 55 ft		
56 - 65 ft		
Over 65 ft		

Vessel Size - % of Vessels by Air Draft (6 Categories)

	% Powerboats (Air Draft)	% Sailboats (Air Draft)
Under 21 ft	100	
22 - 35 ft		
36 - 45 ft		
46 - 55 ft		
56 - 65 ft		
Over 65 ft		

Do you have any specific comments about the SR 401 bridges over the Canaveral Barge Canal?

NO

5.10. Bridge Openings, Monthly Seasonality, 2018 – 2020

Source: Florida Department of Transportation District 5, Analysis by BA

Month	2018	2019	2020	3-Year Average
January	92	81	87	7.7%
February	91	73	82	7.3%
March	95	116	106	9.4%
April	127	117	56	9.1%
May	117	115	131	10.7%
June	89	78	121	8.4%
July	93	54	122	7.8%
August	65	86	112	7.8%
September	67	78	55	6.0%
October	88	62	93	7.1%
November	111	106	135	10.4%
December	101	61	121	8.2%
Total	*1,136*	*1,027*	*1,220*	*100%*
Peak Months				
Mar, Apr, May, Jun, Nov, Dec	640	593	670	56.3%
Jan, Feb, Jul, Aug, Sep, Oct	496	434	551	43.7%
Total	*1,136*	*1,027*	*1,220*	*100%*

5.11. Bridge Openings, Daily Seasonality, 2018 – 2020

Source: Florida Department of Transportation District 5, Analysis by BA

Month	2018	2019	2020	3-Year Average
Sunday	181	150	185	15.2%
Monday	153	128	158	12.9%
Tuesday	131	117	147	11.6%
Wednesday	149	131	184	13.6%
Thursday	152	135	147	12.9%
Friday	170	178	152	14.9%
Saturday	201	188	249	18.8%
Total	*1,137*	*1,027*	*1,220*	*100%*
Peak Days				
Weekends (Sat & Sun)	382	338	434	34.0%
Weekdays (Mon – Fri)	755	689	786	66.0%
Total	*1,137*	*1,027*	*1,220*	*100%*

DRAFT

5.12. 35" Bridge Height Scenario – Annual Bridge Opening Summary, 2020 – 2045

Source: BA

Month	2020	2025	2030	2035	2040	2045
35 ft Bridge						
Vessels Traversing	1,415	639	706	774	845	921
Bridge Openings	1,220	557	615	674	736	803
Bridge Opening Time	130:09:24	59:22:18	65:35:32	71:53:53	78:31:13	85:37:18

DRAFT

Cultural Resources Appendix

Contents:

SHPO Concurrence Letter

Section 4(f) Report

DRAFT

Florida Department of Transportation

RON DESANTIS
GOVERNOR

719 South Woodland Boulevard
DeLand, Florida 32720-6834

KEVIN J. THIBAULT, P.E.
SECRETARY

February 16, 2022

Timothy A. Parsons, Ph.D.,
Director and State Historic Preservation Officer
Florida Division of Historical Resources
Florida Department of State
R.A. Gray Building
500 South Bronough Street
Tallahassee, Florida 32399-0250

Attn: Mr. Clete Rooney, Transportation Compliance Review Program

RE: Cultural Resource Assessment Survey
SR 401 Bridge Replacement Project Development and Environment (PD&E) Study
Brevard County, Florida
Financial Management No.: 444787-1

Dear Dr. Parsons,

Enclosed please find one copy of the report titled *Cultural Resource Assessment Survey in Support of the SR 401 Bridge Replacement PD&E Study Brevard County, Florida*. The FDOT District 5 is conducting a PD&E Study for proposed replacement of the three existing State Road (SR) 401 bascule bridges. The study alternatives consist of the No Build and three Build alternatives that would carry traffic northbound and southbound along the existing bridge alignment - Mid-Level Movable Bascule Bridge, Mid-Level Movable Lift Bridge, and High-Level Fixed Bridge. The Mid-Level Movable Bascule Bridge would replace the current three bascule bridges with two bascule bridges, the Mid-Level Movable Lift Bridge would replace the current three bascule bridges with two vertical-lift bridges, and the High-Level Fixed Bridge would replace the current three bascule bridges with two fixed span bridges. Additional improvements include roadway widening and/or realignment of existing ramps. The bridge and associated roadway improvements will take place within the existing right-of-way; no additional right-of-way is proposed.

To encompass all potential improvements, the Area of Potential Effects (APE) was defined to include the existing right-of-way where improvements are proposed, including the three bridges spanning the Canaveral Barge Canal, as well as the right-of-way along the SR 401/SR A1A interchange with SR 528 Causeway for a total length of approximately 0.7 miles of SR 401/SR A1A and 0.5 miles of SR 528 Causeway. The APE was extended from the right-of-way to include adjacent properties up to 100 meters (330 feet). Given the absence of natural soils within the entire

project right-of-way, no archaeological survey was conducted. The historic structure survey was conducted within the entire APE.

The purpose of the survey was to locate, identify, and bound any archaeological resources, historic structures, and potential districts within the project's APE and assess their potential for listing in the National Register of Historic Places (NRHP). This study was conducted to comply with Public Law 113-287 (Title 54 U.S.C.), which incorporates the provisions of the National Historic Preservation Act (NHPA) of 1966, as amended, and the Archeological and Historic Preservation Act of 1974, as amended. The study also meets the regulations for implementing NHPA Section 106 found in 36 CFR Part 800 (*Protection of Historic Properties*). This study also complies with Chapter 267 of the Florida Statutes and Rule Chapter 1A-46, Florida Administrative Code. All work was performed in accordance with Part 2, Chapter 8 of the FDOT's PD&E Manual (revised July 2020) as well as the Florida Division of Historical Resources' (FDHR) recommendations for such projects as stipulated in the FDHR's *Cultural Resource Management Standards & Operations Manual, Module Three: Guidelines for Use by Historic Preservation Professionals*. The Principal Investigator for this project meets the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44716-42).

The architectural survey resulted in the identification of five previously recorded historic resources within the SR 401 Bridge Replacement PD&E Study APE. The previously recorded historic resources include one resource group, one linear resource, and three bridges.

One previously recorded group, the Canaveral Lock (8BR02936), was determined eligible for listing in the National Register of Historic Places (NRHP) on June 5, 2012, under Criterion A for its association with the Florida space industry and the National Aeronautics and Space Administration (NASA), as well as its maritime transportation associations. Based on the results of the current study, 8BR02936 is recommended to remain NRHP-eligible. It is the opinion of the District that the improvements proposed at this location (replacement of bridges) are in keeping with the modernized SR 401 corridor and will not diminish Resource 8BR02936 such that its NRHP-eligible status would be compromised. It is the resource's associations with NASA and maritime transportation that has contributed to its NRHP-eligible status, and as the project poses no alterations to these associations nor the integrity of the resource itself, the proposed project has no potential to adversely affect the NRHP eligibility of the Canaveral Lock (8BR02936).

The remaining four resources within the APE (8BR03009, 8BR03010, 8BR03394, and 8BR03395) are recommended ineligible for listing in the NRHP due to factors such as a lack of engineering and/or architectural distinction and a lack of significant historical associations. The SHPO previously concurred that these four resources are ineligible for inclusion in the NRHP on February 17, 2017, and July 8, 2019. No further architectural history work is recommended.

Based on the results of this study, it is the opinion of the District that the proposed undertaking will have no adverse effect on NRHP-listed or -eligible historic properties. No further work is recommended.

I respectfully request your concurrence with the findings of the enclosed report.

If you have any questions or need further assistance, please contact Catherine Owen, District Cultural Resource Coordinator, at (386) 943-5383 or me at (386) 943-5411.

Sincerely,

William G. Walsh
Environmental Manager
FDOT, District Five

cc. Deena Woodward, Cultural and Historic Resource Specialist, FDOT OEM

DRAFT

The Florida State Historic Preservation Officer finds the attached Cultural Resource Assessment Survey Report complete and sufficient and ☑ concurs / ☐ does not concur with the recommendations and findings provided in this cover letter for SHPO/FDHR Project File Number 2021-5217. Or, the SHPO finds the attached document contains _____ insufficient information.

In accordance with the Programmatic Agreement among the ACHP, SHPO and FDOT Regarding Implementation of the Federal-Aid Highway Program in Florida, if providing concurrence with a finding of No Historic Properties Affected for a project as a whole, or to No Adverse Effect on a specific historic property, SHPO shall presume that FDOT may approve the project as de minimis use under Section 4(f) under 23 CFR 774.

SHPO Comments:

Kelly L Chase
For

Timothy A. Parsons, PhD, Director
Florida Division of Historical Resources

3/1/2022
Date

Section 4(f) Resources

Florida Department of Transportation

SR 401 BRIDGE REPLACEMENT

District: FDOT District 5

County: Brevard County

ETDM Number: 14397

Financial Management Number: 444787-1-22-01

Federal-Aid Project Number: N/A

Project Manager: David Graeber

DRAFT

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated May 26, 2022 and executed by the Federal Highway Administration and FDOT. Submitted pursuant 49 U.S.C. § 303.

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Summary and Approval 1
Rodney S. Ketcham Park 2
Resource Attachments 3

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Summary and Approval

Resource Name	Facility Type	Property Classification	Owner/Official with Jurisdiction	Recommended Outcome	OEM SME Action
Rodney S. Ketcham Park	Public park and boat ramp	Park/Rec Area	Canaveral Port Authority	No Use	Determination 10-27-2022

DRAFT

Rodney S. Ketcham Park

Facility Type: Public park and boat ramp

Property Classification: Park/Rec Area

Address and Coordinates:
Address: 998 Mullet Rd, Cape Canaveral, FL, 32920, USA
Latitude: 28.40839 Longitude: -80.63109

Description of Property:
Rodney S. Ketcham Park, formerly known as Port's End Park, is located in Port Canaveral on the west side of the port near the Canaveral locks. This is a four-acre park offering boat access to the Intracoastal Waterway (Banana & Indian Rivers). Park amenities include a picnic pavilion, observation deck, river access, picnic tables, fishing, boat ramp, benches, fish cleaning stations, free parking, restrooms, non-motorized boat launch, and wildlife viewing. The park is open daily from sunrise to sunset.

Owner/Official with Jurisdiction: Canaveral Port Authority

Relationship Between the Property and the Project
Rodney Ketcham Park is located directly east of SR 401 and northeast of Mullet Road. While the park is located directly adjacent to proposed construction, no work is proposed within the park. Access is currently through Mullet Road, just off of SR 528/A1A. Access will continue to be maintained during construction as the access point is east of the project limits and through A1A, which has no proposed work. Staging or storing of materials is not proposed within park boundaries.

Yes	No	
☐	☒	Will the property be "used" within the meaning of Section 4(f)?

Recommended Outcome: No Use

OEM SME Determination Date: 10-27-2022

DRAFT

Resource Attachments

Rodney S. Ketcham Park

Map of Rodney S. Ketcham Park and Boat Ramp

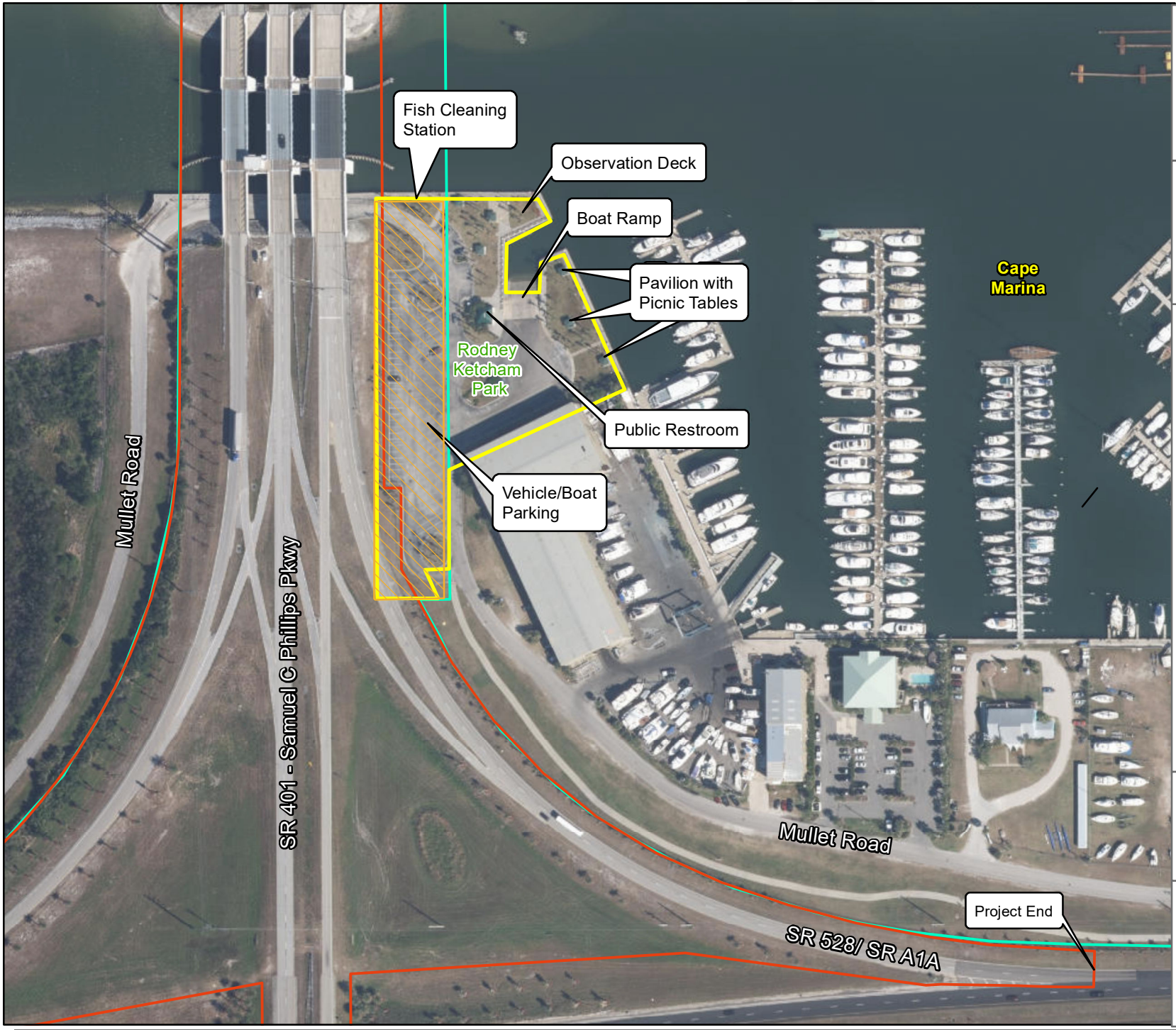
DRAFT

Rodney S. Ketcham Park

Contents:

Map of Rodney S. Ketcham Park and Boat Ramp

DRAFT



SR 401 Bridge Replacement

Rodney Ketcham Park

Legend

- Parcel Boundary
- Impact Footprint Boundary
- Right of Way
- Permanent Road Right of Way Easement

Notes

Rodney Ketcham Park right of way easement granted to FDOT per Exhibit B, Part A of Memorandum Agreement, dated 2/2/70.

Brevard County Property Appraiser

Survey Conducted By CECOS Biologists: August 17/18, 2021

2017 BasemapSource: Esri, Maxar, GeoEye, Earthstar Geographics,

N

0 175'

Date Revised:
February 8, 2022

CECOS
ENVIRONMENTAL CONSULTING SERVICES

Natural Resources Appendix

Contents:

Aquatic Preserves and Outstanding Florida Waters (OFW) Map
Floodplains Map
Wetlands Surface Waters and Essential Fish Habitat Map
Florida Fish and Wildlife Conservation Commission (FWC) Concurrence Letter

DRAFT



SR 401 Bridge Replacement PD&E Study

Project Location Map

Legend

- Impact Footprint Boundary
- Dredged Bays and Estuaries
- Bays and Estuaries
- Atlantic Ocean

2017 BasemapSource: Esri,

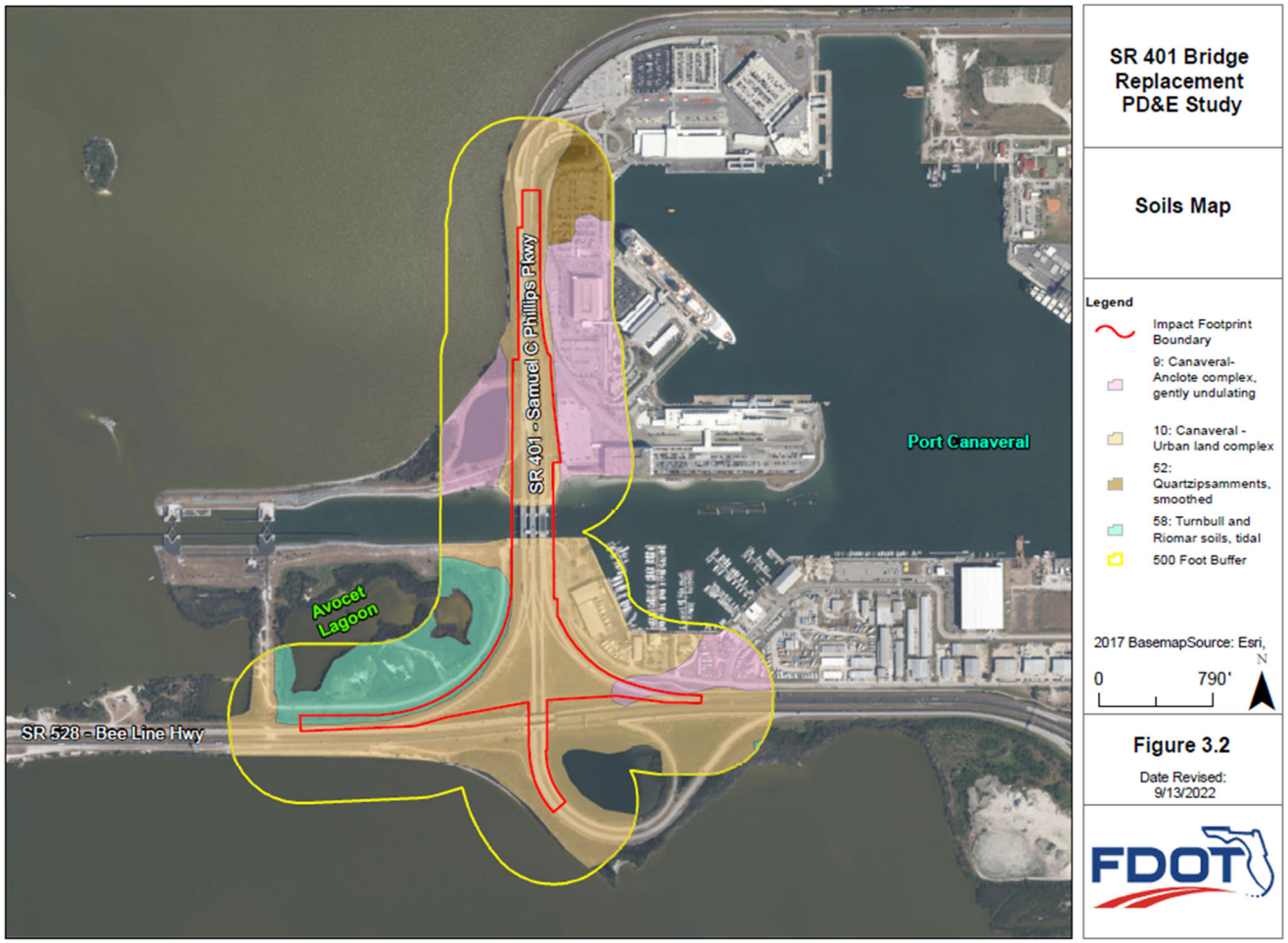
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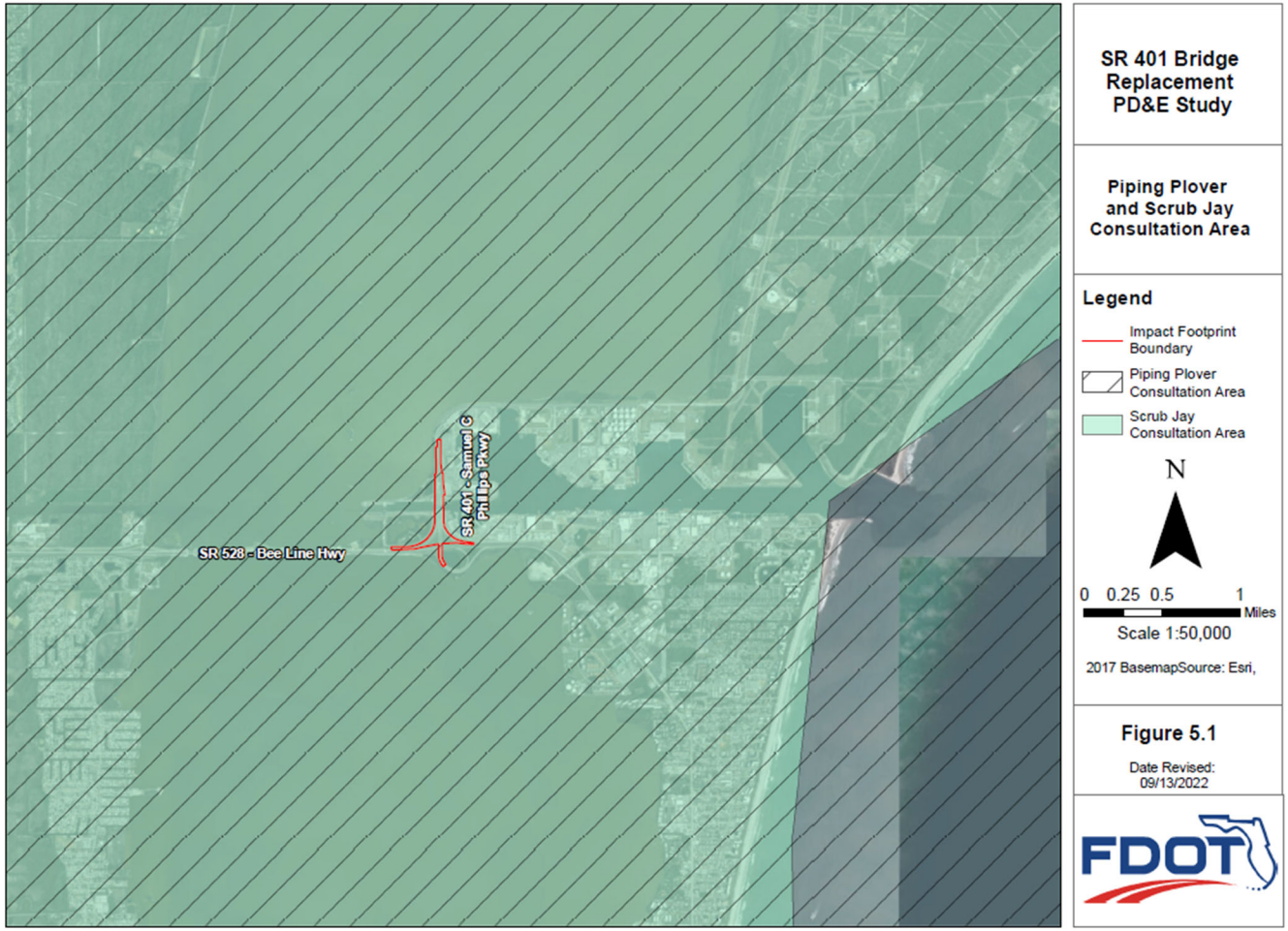
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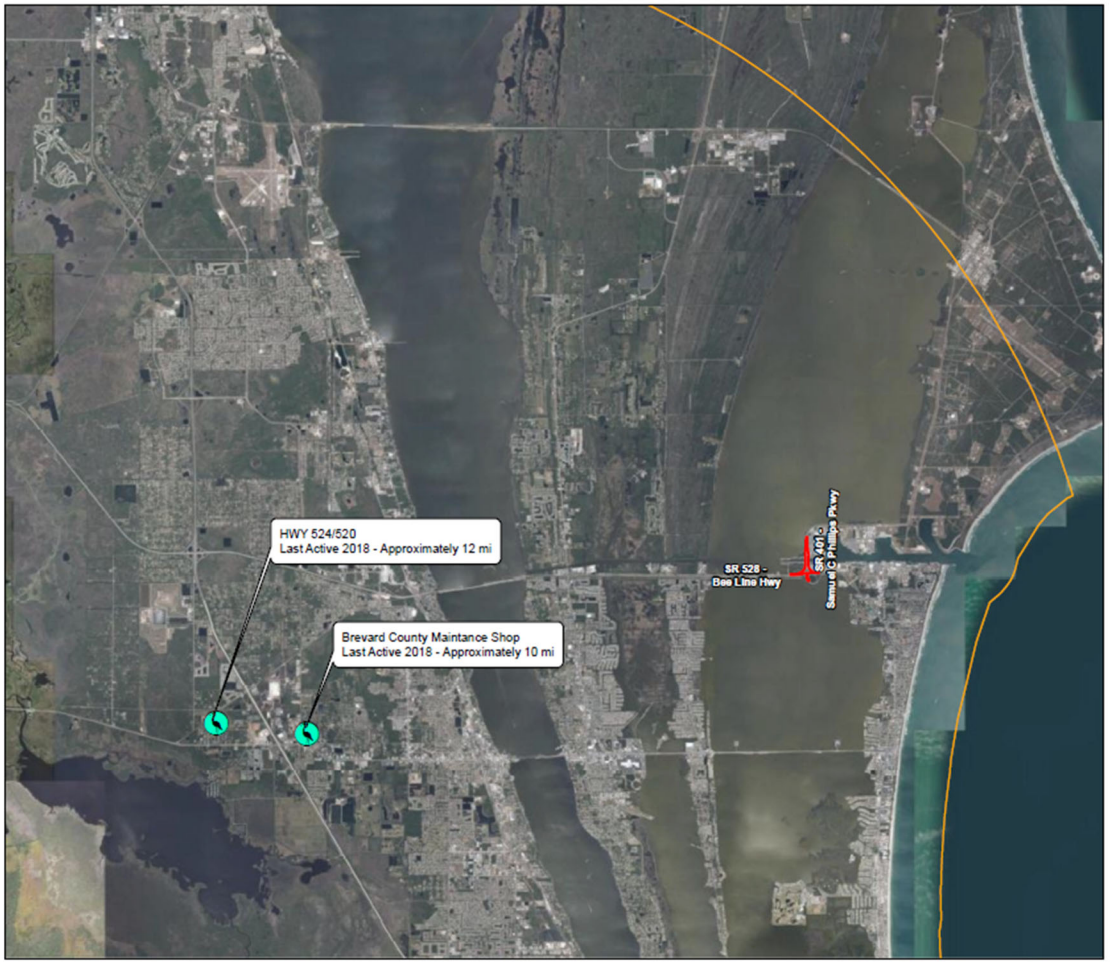
Figure 2.1

Date Revised: 9/13/2022

FDOT


SR 401 - Samuel C Phillips Pkwy
Port Canaveral
Avocet Lagoon
SR 528 - Bee Line Hwy
SR 401 Bridge Replacement PD&E Study
Soils Map
Legend
Impact Footprint Boundary
9: Canaveral-Anclote complex, gently undulating
10: Canaveral - Urban land complex
52: Quartzipsamments, smoothed
58: Turnbull and Riomar soils, tidal
500 Foot Buffer
2017 BasemapSource: Esri,
0
790'
N
Figure 3.2
Date Revised: 9/13/2022
FDOT


SR 401 - Samuel C Phillips Pkwy
SR 528 - Bee Line Hwy
SR 401 Bridge Replacement PD&E Study
Piping Plover and Scrub Jay Consultation Area
Legend
Impact Footprint Boundary
Piping Plover Consultation Area
Scrub Jay Consultation Area
N
0 0.25 0.5 1
Miles
Scale 1:50,000
2017 BasemapSource: Esri,
Figure 5.1
Date Revised: 09/13/2022
FDOT



SR 401 Bridge Replacement

Wood Stork Core Foraging Area

Legend

- Active Wood Stork Colonies
- Wood Stork Core Foraging Area
- Impact Footprint Boundary

2017 BasemapSource: Esri,

N

0 10,000'

Figure 5.2

Date Revised:
09/13/2022

FDOT


Merritt Island National Wildlife Refuge
Port Canaveral
SR 401 - Samuel C Phillips Pkwy
SR 528 - Bee Line Hwy
Banana River Aquatic Preserve
N
0 0.075 0.15 0.3
Miles
Scale: 1:40,000
SR 401 Bridge Replacement PD&E Study
West Indian Manatee Critical Habitat
Legend
Impact Footprint Boundary
West Indian Manatee Critical Habitat
2017 BasemapSource: Esri,
Figure 5.3
Date Revised: 09/13/2022
FDOT



SR 401 Bridge Replacement PD&E Study

Wetlands, Other Surface Waters and Essential Fish Habitat Map

Legend
- Impact Footprint Boundary
- Impact
- Sporatic Discontinuous Seagrass
- Black Mangrove
- Red Mangrove
- White Mangrove
- 651: Tidal Flats
- 642: Saltwater Marsh
- 510: Streams and Waterways
- 534: Stormwater Ponds
- 542: Bays and Estuaries
- 612: Mangrove Swamps

Survey Conducted By CECOS Biologists: August 17/18, 2021 and February 24, 2022
2017 BasemapSource: Esri,

0 300'

Scale 1:4,000

N

Figure 6.1a

Date Revised: 11/14/2022

FDOT



SR 401 Bridge Replacement PD&E Study

Wetlands, Other Surface Waters, and Essential Fish Habitat Map

Legend

- Impact Footprint Boundary
- Impact
- 510: Streams and Waterways
- 524: Enclosed Saltwater Ponds
- 534: Stormwater Ponds
- 612: Mangrove Swamps
- 631: Wetland Scrub
- 641: Freshwater Marsh

Survey Conducted By CECOS Biologists: August 17/18, 2021 and February 24, 2022

2017 BasemapSource: Esri,

0 360'

Scale: 1:4,837

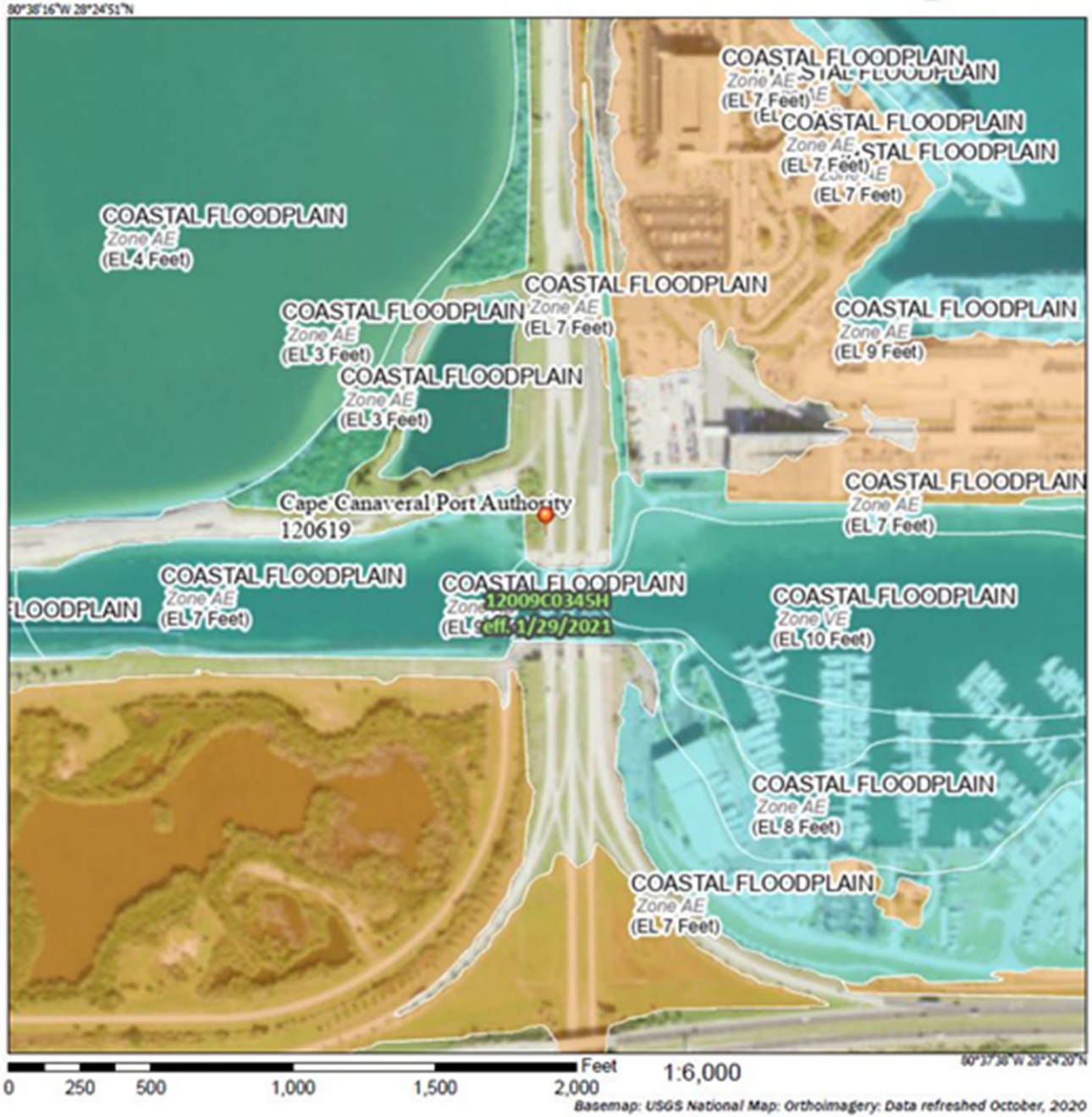
N

Figure 6.1b

Date Revised: 09/13/2022

FDOT

National Flood Hazard Layer FIRMette



FEMA

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

- SPECIAL FLOOD HAZARD AREAS
  - Without Base Flood Elevation (BFE) Zone A, V, A99
  - With BFE or Depth Zone AE, AO, AH, VE, AR
  - Regulatory Floodway
- OTHER AREAS OF FLOOD HAZARD
  - 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
  - Future Conditions 1% Annual Chance Flood Hazard Zone X
  - Area with Reduced Flood Risk due to Levee. See Notes. Zone X
  - Area with Flood Risk due to Levee Zone D
- OTHER AREAS
  - NO SCREEN Area of Minimal Flood Hazard Zone X
  - Effective LOMRs
  - Area of Undetermined Flood Hazard Zone D
- GENERAL STRUCTURES
  - Channel, Culvert, or Storm Sewer
  - Levee, Dike, or Floodwall
- OTHER FEATURES
  - 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
  - Coastal Transect
  - Base Flood Elevation Line (BFE)
  - Limit of Study
  - Jurisdiction Boundary
  - Coastal Transect Baseline
  - Profile Baseline
  - Hydrographic Feature
- MAP PANELS
  - Digital Data Available
  - No Digital Data Available
  - Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/12/2022 at 4:47 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



SR 401 Bridge Replacement PD&E Study

Wetlands, Other Surface Waters and Essential Fish Habitat Map

Legend
- Impact Footprint Boundary
- Impact
- Sporatic Discontinuous Seagrass
- Black Mangrove
- Red Mangrove
- White Mangrove
- 651: Tidal Flats
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- 510: Streams and Waterways
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- 612: Mangrove Swamps

Survey Conducted By CECOS Biologists: August 17/18, 2021 and February 24, 2022
2017 BasemapSource: Esri,

0 300'

Scale 1:4,000

N

Figure 6.1a

Date Revised: 11/14/2022

FDOT



SR 401 Bridge Replacement PD&E Study

Wetlands, Other Surface Waters, and Essential Fish Habitat Map

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Survey Conducted By CECOS Biologists: August 17/18, 2021 and February 24, 2022

2017 BasemapSource: Esri,

0 360'

Scale: 1:4,837

N

Figure 6.1b

Date Revised: 09/13/2022

FDOT

January 6, 2023

Heather Chasez
Environmental Project Manager
Florida Department of Transportation District Five
719 S Woodland Blvd.
Deland, Florida 32720
Heather.Chasez@dot.state.fl.us

Re: SR 401 Bridge Replacement Natural Resources Evaluation, Brevard County

Dear Ms. Chasez:

Florida Fish and Wildlife Conservation Commission (FWC) staff reviewed the above-referenced Natural Resources Evaluation (NRE) in accordance with FWC's authorities under Chapter 379, Florida Statutes, and Chapter 68A-27, Florida Administrative Code.

The Florida Department of Transportation District Five (FDOT D5) is conducting a Project Development and Environment (PD&E) Study to evaluate the replacement of the three existing low-level bascule bridges with a new high-level fixed span bridge over the Canaveral Barge Canal, a navigable channel, in Brevard County. The project limits begin approximately 100 feet south of the SR 528 overpass bridges over SR 401 and continue approximately 3,550 feet north to Charles M. Rowland Drive (Cruise Terminal Exit), which includes 315-foot-long barge canal bridges. In addition to SR 401, the project also includes eastbound and northbound ramps from SR 528 to SR 401.

The NRE was prepared as part of the PD&E Study (ETDM Number 14397) to document the natural resources analysis and to summarize potential impacts to wetlands, federal and state protected species, and protected habitats within existing and new proposed right-of-way for the proposed bridge replacement project. FWC staff agrees with the determinations of effect and supports the project implementation measures and commitments for protected species.

For specific technical questions regarding the content of this letter, please contact Kristee Booth at (850) 363-6298 or KristeeBooth@MyFWC.com. All other inquiries may be directed to ConservationPlanningServices@MyFWC.com.

Sincerely,

For Jason Hight, Director
Office of Conservation Planning Services

jh/kb
SR 401 Bridge Replacement _NRE_52774_01052023

Florida Fish and Wildlife Conservation Commission

Commissioners

Rodney Barreto
Chairman
Coral Gables

Steven Hudson
Vice Chairman
Fort Lauderdale

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Office of the Executive Director

Thomas H. Eason, Ph.D.
Acting Executive Director

Jessica Crawford
Chief of Staff

Division of Habitat and Species Conservation
Melissa Tucker
Director

850-488-3831

Managing fish and wildlife resources for their long-term well-being and the benefit of people.

620 South Meridian Street
Tallahassee, Florida
32399-1600
Voice: 850-488-4676

Hearing/speech-impaired:
800-955-8771 (T)
800 955-8770 (V)

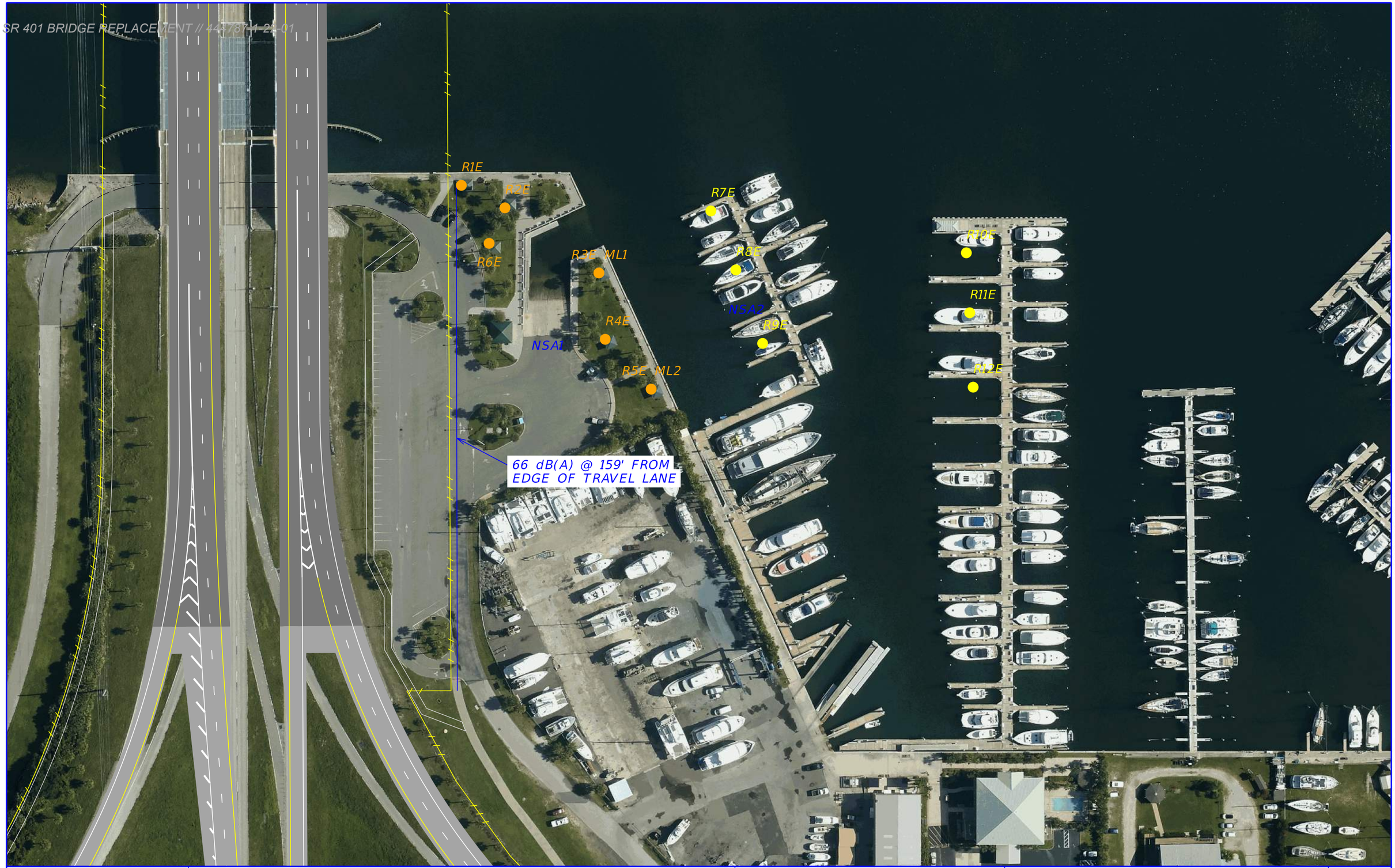
MyFWC.com

Physical Resources Appendix

Contents:

Noise Receptor Map
Potential Contamination Sites Map

DRAFT



FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT FIVE

LEGEND

B - MARINA LIVE-A-BOARD 66.0 dB(A) — ML# - MONITORING LOCATION

C - OTHER SENTIVE LAND USES 66.0 dB(A) — NSA# - NOISE SENITIVE AREA

NOISE CONTOUR LINE 66.0 dB(A)

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 401	BREVARD	444787-1

NOISE ANALYSIS MAP
PREFERRED ALTERNATIVE

SHEET NO.

Type 2 Categorical Exclusion



FIGURE 4

SITE WITH HIGH RISK RATING
SITE WITH MEDIUM RISK RATING
SITE WITH LOW RISK RATING
SITE WITH NO RISK RATING

N

0 250 500
Feet

RICHARD P. McCORMICK, P.G.
P.G. LICENSE NUMBER 2096
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.
919 LAKE BALDWIN LANE
ORLANDO, FL 32814

STATE OF FLORIDA
DEPARTMENT OF TRANSPORATATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 401	BREVARD	444787-1-22-01

POTENTIAL CONTAMINATION SITE MAP

SHEET NO.

W:\Projects\J4808GE SR 401 Bridge PD&E_Parsons\7 CADD Files\Environmental\4808E contam.mxd 12/21/2021