

## 4.9 LAND USE AND INFRASTRUCTURE

### 4.9.1 Methods and Impact Definitions

Impacts to land use and infrastructure in the study area were evaluated using literature review, impact analysis from other potential resources (such as noise and visual resources), local comprehensive plan and land development ordinance requirements, design plans, technical reports and best professional judgment.

With respect to land use, the analysis focused on the potential for conflicts in and between land use districts as a result of construction and/or operation activities of Alternative 1 (Proposed Project). The Project site is within an urbanized area under the control of local governments with planning and zoning regulations in place. Conflicts could include incompatibility with existing zoning and the adopted Comprehensive Plan, restricted access, and incompatible visual and/or noise impacts. If potential conflicts were present between existing zoning and the comprehensive plan, measures could be employed to bring zoning and land use into compliance. The proposed action is not intended to stimulate growth and is planned to accommodate future demands for the movement of goods through the region and improve operational efficiency in the transport system. As a result, there is low potential for induced growth and the project would not result in indirect effects to land use. Any development that would occur in the area in relation to the ICTF facility would be regulated under existing land use and zoning controls.

With respect to infrastructure, the analysis focused on a review of the existing utility services, capacities within the study area, and the ability of these utilities to meet the new demand requirements resulting from the construction and operation of Alternative 1 (Proposed Project). A Preliminary Utility Report for the Navy Base Intermodal Facility was prepared in April 2016 (Appendix B - CDM Smith/TransSystems 2016). This report serves as a planning and feasibility guide for utilities needed to serve Alternative 1 (Proposed Project) and is based on previous Subsurface Utility Engineering investigations at the Project site, as well as input from utility owners. The report identifies utility owners within the limits of the Project site, recommends relocations, details potential conflicts, and proposes remediation.

Table 4.9-1 summarizes the impact definitions for land use and infrastructure impacts used in this analysis. Temporary impacts are considered to be those that would occur intermittently or less than 1 month; short-term impacts are considered to last between one to six months; long-term impacts last the duration of construction activities (anticipated to be two to three years); and permanent impacts are considered to continue indefinitely after construction and during the operation of the facility.

Table 4.9-1  
Impact Definitions, Land Use and Infrastructure

Level of Impact	Definition
<b>Negligible</b>	Compatible land uses (no change in designation required); no demolition of non-Palmetto Railways owned structures; interruption(s) of service due to construction and/or operation of the Project for a duration of less than 12 hours.
<b>Minor</b>	Compatible land uses (no change in designation required); demolition of less than 10 non-Palmetto Railways owned structures, or no structures of special designation; interruption(s) of service due to construction and/or operation of the Project for a duration of more than 12 hours but less than 24 hours.
<b>Major</b>	Incompatible land uses (e.g., change in land use designation is required); demolition of more than 10 non-Palmetto Railways owned structures or of any structures of special designation required; construction and/or operation activities of the proposed ICTF exceed capacities of utilities to serve the Project, and/or routinely cause disruptions of service to residents and businesses within the study area for more than 24 hours.

## 4.9.2 No-Action Alternative

Under the No-Action Alternative, because these sites are primarily owned by Palmetto Railways, it is assumed that the Project site and the River Center Project site would eventually include mixed use and industrial land use, including rail-served warehousing and distribution. These uses would be consistent with the existing land uses (M-2, Heavy Industrial District, and Planned Development District), and would likely not require demolition of non-Palmetto Railways owned structures.

Future development activities would likely be of a smaller scale and intensity than Alternative 1 (Proposed Project), such that the existing design capacities of the serving utilities would be sufficient. There would not be a need to expand and/or improve the existing utilities infrastructure to the area.

For these reasons, the Corps anticipates that impacts to land use and infrastructure under the No-Action Alternative will be negligible.

## 4.9.3 Alternative 1: Applicant's Proposed Project (South via Milford / North via Hospital District)

### 4.9.3.1 Land Use and Zoning

#### ICTF Site

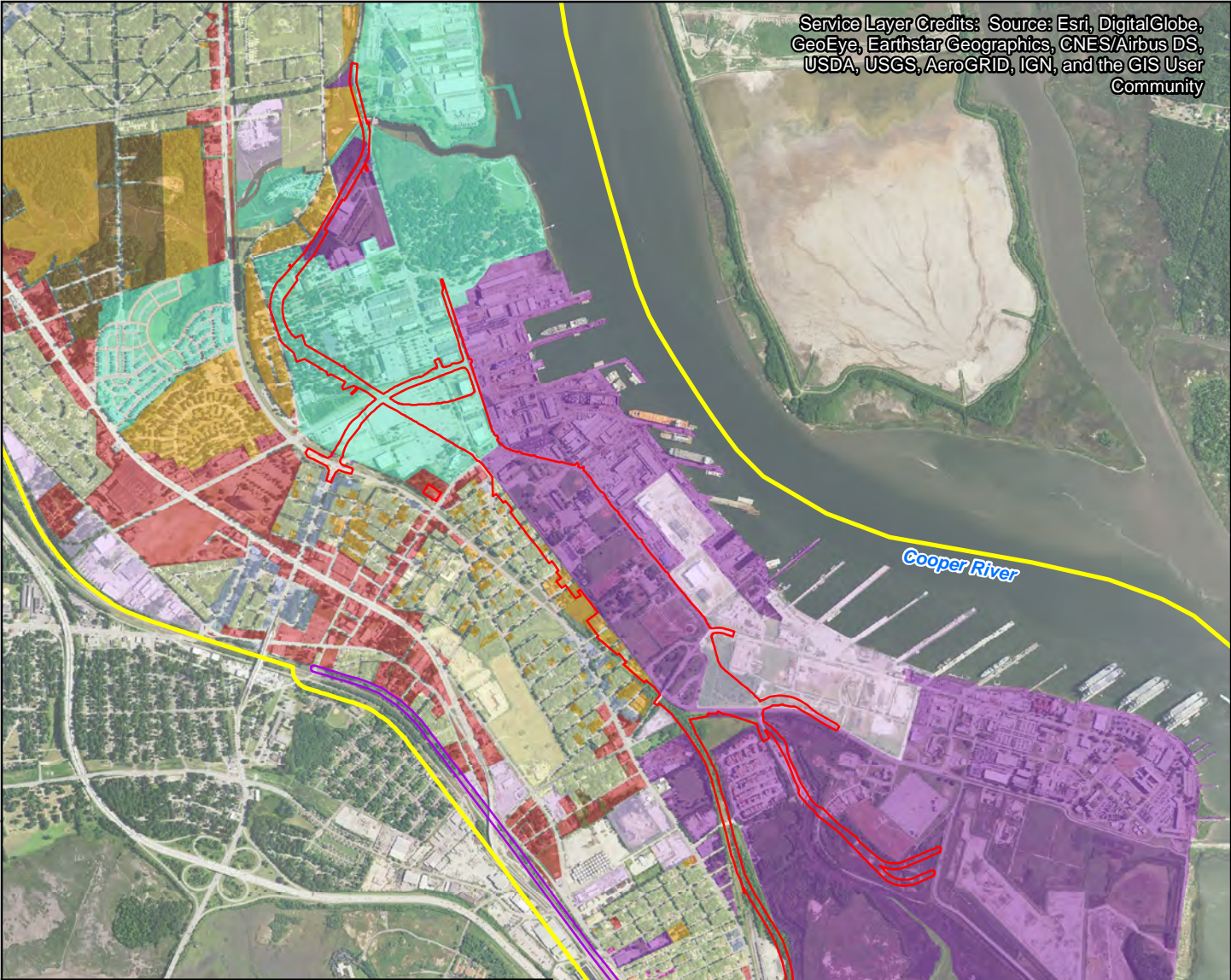
During the former Charleston Naval Base operations, the Chicora-Cherokee community was exposed to the heavy marine industrial activities conducted by the U.S. Navy within the base and along the Cooper River. After the base closure, the zoning classifications of M-1 (Light Industrial District) and M-2 (Heavy Industrial District) adjacent to the community remained in place (Figure 4.9-1).

Consequently, the Chicora-Cherokee community has historically interfaced with the industrial activities on its eastern boundary.

The construction and operation of Alternative 1 (Proposed Project) would be consistent with the current zoning designation of M-2 for the ICTF site. Container storage facilities are generally addressed as a conditional use under the M-2 classification. However, the Future Land Use element of the adopted Comprehensive Plan for the City of North Charleston identifies portions of the Project site as an Institutional future land use. Deviation from this future land use would require a Comprehensive Plan Amendment which would be a major impact to land use. The northern portion of the Project site is zoned (PD) Planned Development District, which has the flexibility for the industrial uses associated with Alternative 1 (Proposed Project) (Figure 4.9-1).

A berm and sound walls would be constructed within a 100-foot buffer along the western boundary of the ICTF site as mitigation to minimize noise impacts to the adjacent residents. See Figure 4.12-15 for additional details and location of these mitigation measures. The western boundary of the ICTF site and the buffer/berm and walls would extend into the adjacent Chicora-Cherokee residential neighborhood, which is currently zoned R-1 (Single Family Residential District) and R-2 (Multi-Family Residential District). The Corps anticipates that this action would require a zoning change and Comprehensive Plan amendment due to the conversion of the current residential zoning classification to an industrial classification and to bring the adopted Comprehensive Plan and accompanying Future Land Use Map (FLUM) into compliance, which would be a major impact to land use. For any proposed construction that is not consistent with the existing zoning codes and adopted Comprehensive Plan, it would be incumbent upon Palmetto Railways to work with each municipality to go through the necessary processes to gain all administrative approvals related to land use to ensure compliance with all municipal land use regulations. In December 2012, the City of North Charleston and the South Carolina Division of Public Railways (now Palmetto Railways) entered into a Settlement Agreement and Release. Under the provisions of the Agreement, "City staff will support all reasonable rezoning, permitting and other administrative approvals necessary for implementation of the ICTF and associated railroad lines as well as any other activities required to facilitate the movement of cargo to and from the Port of Charleston" (Section II(C)(2), Case No. 2011-CP-10-491 through 494, 2011-CP-10-5550, and 2011-CP-10-3147). Because of this agreement, the Corps anticipates that this conditional use will be successfully negotiated and approved.

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



- Study Area
- Alternative 1 (Proposed Project)
- Related Activities
- SINGLE FAMILY RESIDENTIAL, R-1
- LOW TO MEDIUM DENSITY RESIDENTIAL DISTRICT, R-1A
- MULTI-FAMILY RESIDENTIAL DISTRICT, R-2
- MOBILE HOME RESIDENTIAL DISTRICT, R-3
- LIGHT INDUSTRIAL DISTRICT, M-1
- HEAVY INDUSTRIAL DISTRICT, M-2
- LIMITED BUSINESS DISTRICT, B-1
- GENERAL BUSINESS DISTRICT, B-2
- OFFICE NEIGHBORHOOD DISTRICT, ON
- PLANNED DEVELOPMENT DISTRICT, PD
- OFFICE DISTRICT, OD
- DIVERSE RESIDENTIAL DISTRICT, DR-3
- BUSINESS PARK DISTRICT, BP
- MIXED USE DISTRICT, MU-2

Sources: City of Charleston 2015, City of North Charleston 2015 and Atkins 2016


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Land Use Impacts  
Alternative 1 (Proposed Project)

Figure 4.9-1



## Roadway/Rail Improvements

Proposed roadway and rail improvements within the City of North Charleston (Figure 4.9-1) would occur on lands currently classified as M-1 (Light Industrial District) and M-2 (Heavy Industrial District). These infrastructure improvements would be consistent with the respective zoning district use classifications. Near the vicinity of Pittsburgh Avenue, zoning jurisdiction changes to the City of Charleston and is thus subject to the zoning regulations of the City of Charleston. The new track connection in the vicinity of Milford Street would traverse land currently zoned as GB (General Business District), HI (Heavy Industrial District), LI (Light Industrial District) and BP (Business Park District) (Figure 4.9-1). Since the development of the Draft EIS, the City of Charleston has designated some portions of land within the southern part of the study area (along Meeting Street Rd.) as mixed-use to support redevelopment with a variety of urban uses. A new zoning District was developed called the UP (Upper Peninsula Zoning District) and was enacted in October 2015 to protect the existing neighborhoods, encourage responsible development, and allow for mixed use and increased density. The Corps anticipates that improvements associated with Alternative 1 (Proposed Project) will not require re-zoning within the City of Charleston. Palmetto Railways will work with the local municipalities to go through the necessary processes to gain all approvals related to land use to ensure compliance with all municipal land use regulations.

## Demolition of Structures

Construction of Alternative 1 (Proposed Project) would occur on land owned by Palmetto Railways, on land within an existing CSX ROW, and on parcels of private property. Within the ICTF site, this construction would cause the demolition of approximately 88 structures. Additional off-site roadway and rail improvements would cause the demolition of approximately 23 structures. The demolition of more than 10 non-Palmetto Railways owned structures would result in a major impact to land use. The community resources and structures of special designation that would be lost as a result of Alternative 1 (Proposed Project) are detailed in Section 4.16 (Socioeconomics and Environmental Justice) and Section 4.10 (Cultural Resources), respectively.

According to the Applicant, Alternative 1 (Proposed Project) would require ROW acquisitions that would result in the relocation of approximately 134 residential units from the Chicora-Cherokee neighborhood. The exact number of relocations will be determined at final design. Any person(s) whose property needs to be acquired as a result of Alternative 1 (Proposed Project) would be compensated in accordance with the U.S. Constitution and the Uniform Relocation Assistance and Real Properties Act of 1970<sup>71</sup> (The Uniform Act) (see Chapter 8 Relevant Laws, Regulations, and Executive Orders).

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<sup>71</sup> 42 U.S.C.A. §§ 4601 et seq., as amended

### 4.9.3.2 Infrastructure and Utilities

Utility infrastructure and services are currently available in the vicinity of the Project site; however, utilities would have to be relocated and extended to serve Alternative 1 (Proposed Project). Existing utility systems, such as potable water, electricity, sanitary sewer, solid waste, and telecommunications, would provide services to the Project site. Demand for potable water and sanitary/solid waste collection would be generated by ICTF employees and occasional visitors during operation of the proposed ICTF. The operation of the facility would not require industrial water usage, nor would it generate sanitary or solid waste other than the amount relating to employees. Provision of services to the Project site would be subject to contract agreements with the respective utilities, and, in some cases (e.g., electrical), relocation and improvements to existing infrastructure. The Preliminary Utility Report for the Navy Base Intermodal Facility was prepared in April 2016 (Appendix B) and is based on analysis of 60 percent design plans (with the exception of the Drayage Road plans which are based on 30 percent). Efforts were made during the design phase to locate new facilities in ways to avoid and/or minimize impacts to significant utility facilities. Some utilities have been abandoned and removed to allow for demolition at the site. The report identifies abandonment and removal of existing utilities, makes recommendations for relocations, identifies prior rights, and address conflicts and potential remediation. In general, the majority of the utilities within the eastern portion of the Project site can remain in place, with some adjustments. Relocations will be required in the north, south, and western portions of the Project site. Utility relocations may change with evolving project design (including track and roadway modifications and construction) and needs of utility owners; however, changes to utility design are not expected to change the level of impacts to infrastructure and utilities. The Preliminary Utility Report (Appendix B) indicates that the Applicant will work with utility providers to minimize interruptions of service to local area residents and businesses.

#### 4.9.3.2.1 Electricity

Estimated usage of electricity for Alternative 1 (Proposed Project) is 18 million kilowatt hours/year. Electricity to the Project site is to be provided by a partnership between the South Carolina Electric and Gas Company (SCE&G), a primary subsidiary of SCANA, and Santee-Cooper. Both electrical utilities have the capacity to serve the Project site. Peak service demands from the five electrical cranes on the Project site would require upgrades to the local infrastructure. SCE&G would serve the startup and future electrical demands for the ICTF from their onsite substation, which is located north of the truck gate on North Hobson Avenue. In addition, SCE&G built a 115 kilovolt (kV) transmission line in 2015 to meet the needs of the Clemson Wind Turbine Facility. Alternative 1 (Proposed Project) will benefit from this line by relocating their distribution lines to this pole. Santee-Cooper also has a 115-kV transmission line that enters the Project site from the west. Utility relocation plans call for the Santee-Cooper line to be relocated to the buffer/berm area along the western portion of the Project area. Additional electrical utilities within the Project site that cannot be used would be removed, altered, or relocated. Relocation of electrical infrastructure during

construction efforts could result in an interruption of service to local area residents and businesses for less than 12 hours.

#### **4.9.3.2.2**      *Natural Gas*

SCE&G also provides natural gas to retail customers through its extended transportation network in the Charleston area. Some gas lines at the site have been relocated, abandoned, and/or removed and the Preliminary Utility Report (Appendix B) makes additional recommendations for relocations. No natural gas service is anticipated to be required for Alternative 1 (Proposed Project).

#### **4.9.3.2.3**      *Communications*

SCANA Communications provides fiber optic telecommunications, Ethernet, and data center facilities to the Project site. Construction and operation of the ICTF would require relocation or removal of communication infrastructure from SCANA Communication as well as AT&T, EarthLink, Spirit and Comcast within the Project area. The provision of telecommunications and other services such as Internet would be accomplished with local connections to the SCANA communication network. The Preliminary Utility Report (Appendix B) makes recommendations on relocation requirements for communication providers and the Applicant is working with providers on developing individual relocation routes. The report also recommends the relocation of AT&T lines in the Kephart Services Corridor and reconnection to North Carolina Avenue facilities (if required). Relocation of communication infrastructure during construction efforts could result in an interruption of service to local area residents and businesses for less than 12 hours.

#### **4.9.3.2.4**      *Potable Water*

The estimated usage for water for Alternative 1 (Proposed Project) is 264,625 gallons/year, however there would be no impact on Charleston Water System (CWS) capacity or infrastructure to provide potable water and fire protection water flow for construction and operation of Alternative 1 (Proposed Project). The Project site is currently served by a 12-inch ductile iron potable water and fire serve pipeline that runs along the eastern ROW of North Hobson Avenue. This pipeline is adequate to provide the requirements of the Project at build-out and full employment (2038). External water use would be limited to landscape irrigation during dry months of the year. Fire protection is currently provided from hydrants spaced at 300 to 600 feet intervals along North Hobson Avenue. CWS maintains reserves for fire flow capacity and water pressure to serve the fire protection needs within their service area, which includes the location of Alternative 1 (Proposed Project).

There is currently a network of smaller potable water lines, ranging in size from 4 to 8 inches, within the Project site. These lines would be adapted to serve the respective project, abandoned in place, and/or relocated to continue service to the surrounding area. In addition, certain pipelines may be impacted by realignment of roads and the extension of rail lines within the study area, both north

and south of the Project site. The Preliminary Utility Report (Appendix B) makes recommendations on relocation requirements, and the Applicant is working with CWS on developing individual relocation routes and necessary improvements. Relocation of these water lines during construction efforts could result in an interruption of service to local area residents and businesses for less than 12 hours.

#### **4.9.3.2.5 Wastewater**

Wastewater collection and treatment services to the study area are provided by the North Charleston Sewer District. Treatment is performed at the Felix Davis Waste Water Treatment Plant (WWTP), which is designed to accommodate 27 million gallons per day (MGD) in capacity. The plant currently operates at an average of 15 MGD, leaving 12 MGD capacity for peak day loads and growth. As a result, the plant capacity is more than sufficient to accommodate the estimated 725 gallons per day (GPD) flow from Alternative 1 (Proposed Project), and there would be no impact to the North Charleston Sewer District from operation of Alternative 1 (Proposed Project).

Two wastewater pump stations are located on the Project site. Wastewater flow from these stations is accommodated by an existing 30-inch gravity and 20-inch force main. The North Charleston Sewer District is coordinating with Palmetto Railways to relocate the existing on-site pump station to accommodate Alternative 1 (Proposed Project). Sanitary sewer lines currently extend throughout the Project site. Lines of various sizes also extend along roads slated for removal and/or improvements, as well as under proposed railroad ROW. These lines may be rerouted and/or abandoned in place to accommodate the construction of Alternative 1 (Proposed Project). Realignment of these sanitary sewer lines during construction efforts could result in an interruption of service to local area residents and businesses for less than 12 hours.

#### **4.9.3.2.6 Solid Waste**

Daily/weekly solid waste collection is provided along an established route in the vicinity of the Project site by private waste management firms. Thus, there are sufficient private collection and disposal services available to serve the ICTF. Disposal of domestic solid waste in the region is accommodated at the Spring View landfill, which projects a 125-year remaining capacity based on current disposal rates. Spring View landfill currently follows all state and local standards for sanitary landfills. Commercial and industrial businesses must arrange for private collection and disposal of solid waste at the Spring View landfill, as well as hazardous and/or non-hazardous solid waste that would require special handling and disposal. Approximately 66,400 cubic yards of solid waste would be generated during the construction of the ICTF, all of which would be disposed of at the Spring View landfill. All state and local standards for solid waste disposal would be followed during construction and operation. As a result, there would be no impact from the collection and disposal of solid wastes from Alternative 1 (Proposed Project).



For the reasons discussed above, Alternative 1 (Proposed Project) would have major impacts to land use and demolition of structures, and negligible impacts to infrastructure.

#### **4.9.4 Alternative 2: Proposed Project Site (South via Milford / North via S-line)**

##### **4.9.4.1 Land Use and Zoning**

###### **ICTF Site**

Under Alternative 2, land use and zoning impacts related to the Project site (Figure 4.9-2) would be similar to those described for Alternative 1 (Proposed Project). This action would require zoning changes and a Comprehensive Plan amendment.

###### **Roadway/Rail Improvements**

Under Alternative 2, land use and zoning impacts related to roadway and rail improvements (Figure 4.9-2) would be similar to those described for the Alternative 1 (Proposed Project).

###### **Demolition of Structures**

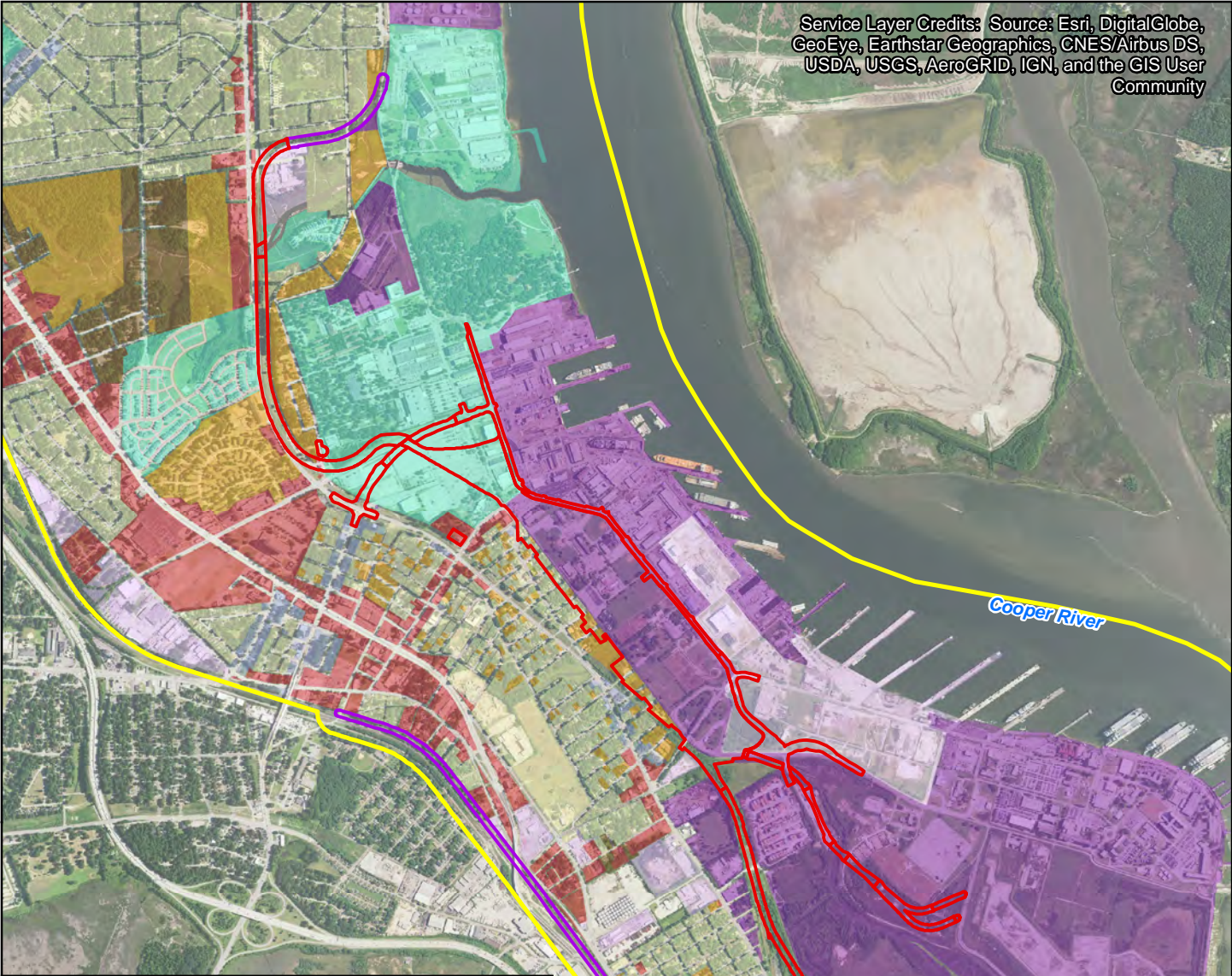
Construction of Alternative 2 would occur on land owned by Palmetto Railways, on land within an existing CSX ROW, and on parcels of private property. Within the Project site, this construction would cause the demolition of approximately 88 structures. Additional off-site roadway and rail improvements would cause the demolition of approximately 26 structures.

##### **4.9.4.2 Infrastructure and Utilities**

Infrastructure and utility requirements and impacts under Alternative 2 would be similar to those described for Alternative 1 (Proposed Project). Any interruption of service to local area residents and businesses could be less than 12 hours.

For the reasons discussed above, Alternative 2 would have major impacts to land use and demolition of structures, and negligible impacts to infrastructure.

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



- Study Area
- Alternative 2
- Related Activities
- SINGLE FAMILY RESIDENTIAL, R-1
- LOW TO MEDIUM DENSITY RESIDENTIAL DISTRICT, R-1A
- MULTI-FAMILY RESIDENTIAL DISTRICT, R-2
- MOBILE HOME RESIDENTIAL DISTRICT, R-3
- LIGHT INDUSTRIAL DISTRICT, M-1
- HEAVY INDUSTRIAL DISTRICT, M-2
- LIMITED BUSINESS DISTRICT, B-1
- GENERAL BUSINESS DISTRICT, B-2
- OFFICE NEIGHBORHOOD DISTRICT, ON
- PLANNED DEVELOPMENT DISTRICT, PD
- OFFICE DISTRICT, OD
- DIVERSE RESIDENTIAL DISTRICT, DR-3
- BUSINESS PARK DISTRICT, BP
- MIXED USE DISTRICT, MU-2

Sources: City of Charleston 2015, City of North Charleston 2015 and Atkins 2016

0 0.5 1 Miles

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NAVY BASE ICTF EIS

Land Use Impacts  
Alternative 2  
Figure 4.9-2



## 4.9.5 Alternative 3: Proposed Project Site (South via Kingsworth / North via Hospital)

### 4.9.5.1 Land Use and Zoning

#### ICTF Site

Under Alternative 3, land use and zoning impacts related to the Project site (Figure 4.9-3) would be similar to those described for the Alternative 1 (Proposed Project). This action would require zoning changes and a Comprehensive Plan amendment.

#### Roadway/Rail Improvements

Under Alternative 3, land use and zoning impacts related to roadway and rail improvements (Figure 4.9-3) would be similar to those described for the Alternative 1 (Proposed Project).

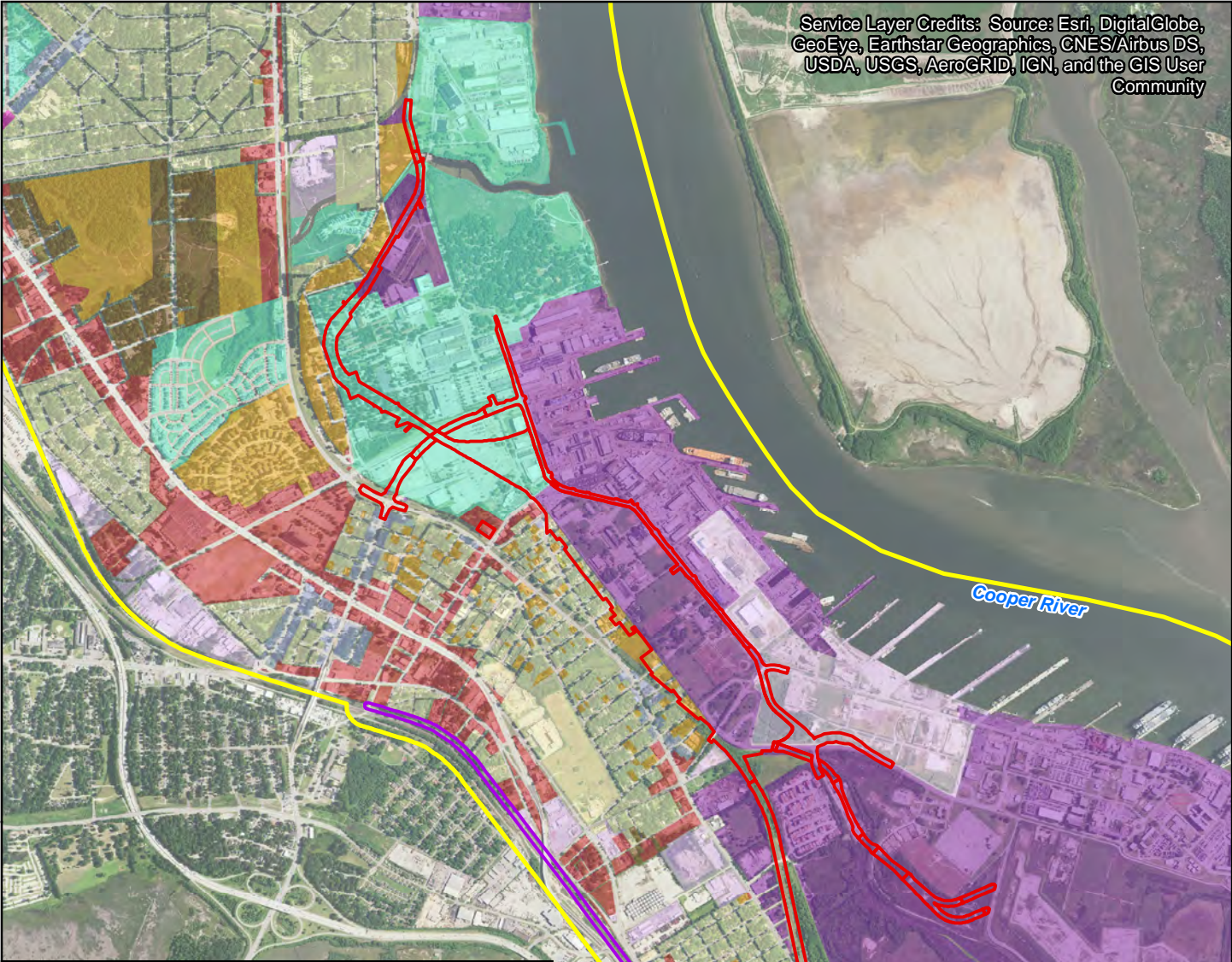
#### Demolition of Structures

Construction of Alternative 3 would occur on land owned by Palmetto Railways, on land within an existing CSX ROW, and on parcels of private property. Within the ICTF site, this construction would cause the demolition of approximately 88 structures. Additional off-site roadway and rail improvements would cause the demolition of approximately 21 structures.

### 4.9.5.2 Infrastructure and Utilities

Infrastructure and utility requirements and impacts under Alternative 3 would be similar to those described for Alternative 1 (Proposed Project). Any interruption of service to local area residents and businesses could be less than 12 hours.

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



- Study Area
- Alternative 3
- Related Activities
- SINGLE FAMILY RESIDENTIAL, R-1
- LOW TO MEDIUM DENSITY RESIDENTIAL DISTRICT, R-1A
- MULTI-FAMILY RESIDENTIAL DISTRICT, R-2
- MOBILE HOME RESIDENTIAL DISTRICT, R-3
- LIGHT INDUSTRIAL DISTRICT, M-1
- HEAVY INDUSTRIAL DISTRICT, M-2
- LIMITED BUSINESS DISTRICT, B-1
- GENERAL BUSINESS DISTRICT, B-2
- OFFICE NEIGHBORHOOD DISTRICT, ON
- PLANNED DEVELOPMENT DISTRICT, PD
- OFFICE DISTRICT, OD
- DIVERSE RESIDENTIAL DISTRICT, DR-3
- BUSINESS PARK DISTRICT, BP
- MIXED USE DISTRICT, MU-2

Sources: City of Charleston 2016, City of North Charleston 2016 and Atkins 2016

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Land Use Impacts Alternative 3	 <b>US Army Corps Of Engineers</b> Charleston District
Figure 4.9-3	

For the reasons discussed above, Alternative 3 would have major impacts to land use and demolition of structures, and negligible impacts to infrastructure.

## **4.9.6 Alternative 4: Proposed Project Site (South via Milford)**

### **4.9.6.1 Land Use and Zoning**

#### **ICTF Site**

Under Alternative 4, land use and zoning impacts related to the Project site (Figure 4.9-4) would be similar to those described for the Alternative 1 (Proposed Project). This action would require zoning changes and a Comprehensive Plan amendment.

#### **Roadway/Rail Improvements**

Under Alternative 4, land use and zoning impacts related to roadway and rail improvements (Figure 4.9-4) would be similar to those described for the Proposed Project.

#### **Demolition of Structures**

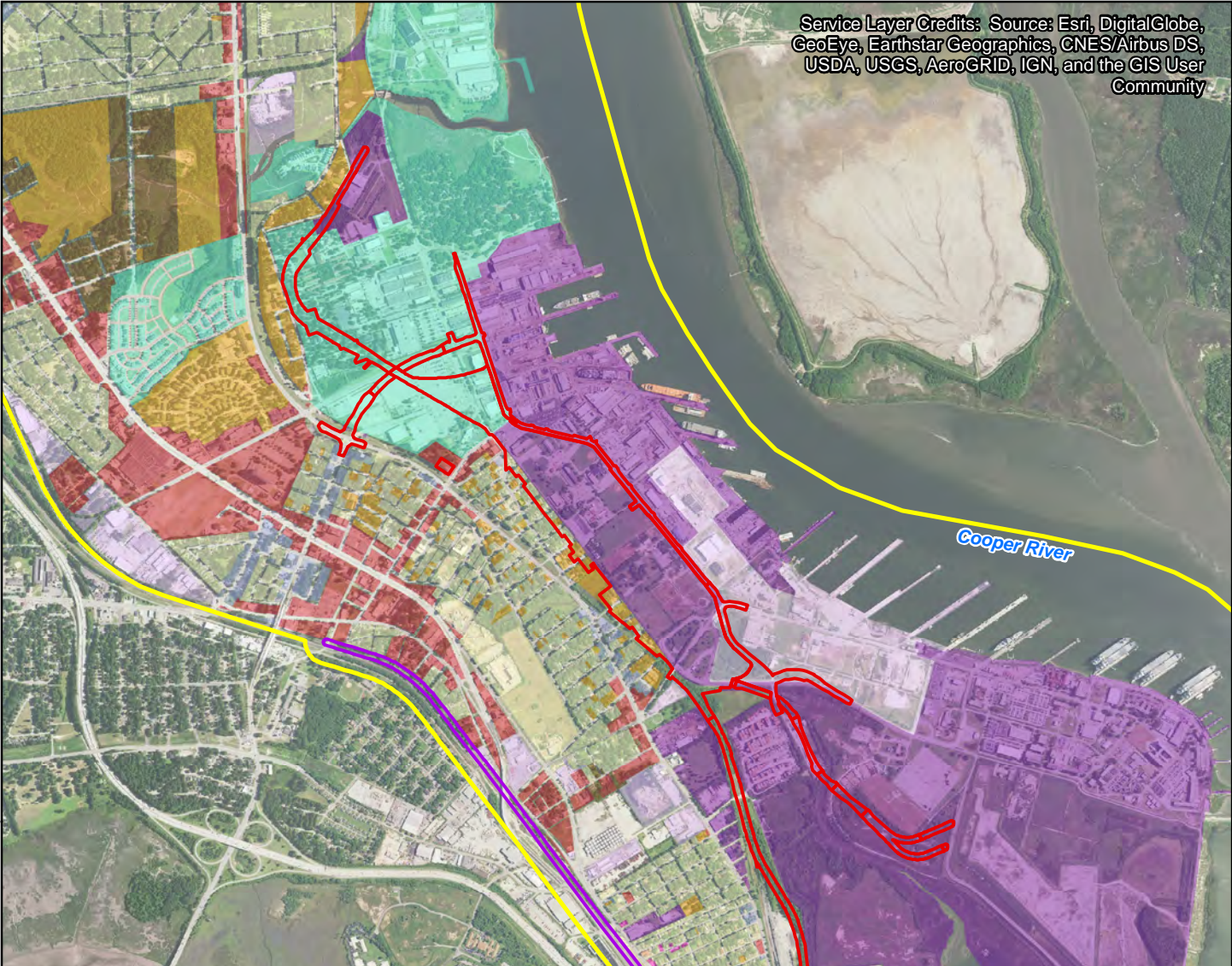
Construction of Alternative 4 would occur on land owned by Palmetto Railways, on land within an existing CSX right of way, and on parcels of private property. Within the ICTF site, this construction would cause the demolition of approximately 88 structures. Additional off-site roadway and rail improvements would cause the demolition of approximately 19 structures.

### **4.9.6.2 Infrastructure and Utilities**

Infrastructure and utility requirements and impacts under Alternative 4 would be similar to those described for Alternative 1 (Proposed Project). Any interruption of service to local area residents and businesses could be less than 12 hours.

For the reasons discussed above, Alternative 4 would have major impacts to land use and demolition of structures, and negligible impacts to infrastructure.

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



- Study Area
- Alternative 4
- Related Activities
- SINGLE FAMILY RESIDENTIAL, R-1
- LOW TO MEDIUM DENSITY RESIDENTIAL DISTRICT, R-1A
- MULTI-FAMILY RESIDENTIAL DISTRICT, R-2
- MOBILE HOME RESIDENTIAL DISTRICT, R-3
- LIGHT INDUSTRIAL DISTRICT, M-1
- HEAVY INDUSTRIAL DISTRICT, M-2
- LIMITED BUSINESS DISTRICT, B-1
- GENERAL BUSINESS DISTRICT, B-2
- OFFICE NEIGHBORHOOD DISTRICT, ON
- PLANNED DEVELOPMENT DISTRICT, PD
- OFFICE DISTRICT, OD
- DIVERSE RESIDENTIAL DISTRICT, DR-3
- BUSINESS PARK DISTRICT, BP
- MIXED USE DISTRICT, MU-2

Sources: City of Charleston 2016, City of North Charleston 2016 and Atkins 2016

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NAVY BASE ICTF EIS

Land Use Impacts  
Alternative 4  
Figure 4.9-4



## **4.9.7 Alternative 5: River Center Project Site (South via Milford / North via Hospital District)**

### **4.9.7.1 Land Use and Zoning**

#### **River Center Project Site**

Under Alternative 5, the construction and operation of the River Center project site (Figure 4.9-5) would be consistent with the current zoning classifications of PD (Planned Development District) and M-2 (Heavy Industrial District).

#### **Roadway/Rail Improvements**

Under Alternative 5, land use and zoning impacts related to roadway and rail improvements (Figure 4.9-5) would be similar to those described for the Alternative 1 (Proposed Project).

#### **Demolition of Structures**

Construction of Alternative 5 would occur on land owned by Palmetto Railways, on land within an existing CSX ROW, and on parcels of private property. Within the River Center project site, this construction would cause the demolition of approximately 33 structures. Additional off-site roadway and rail improvements would cause the demolition of approximately 14 structures.

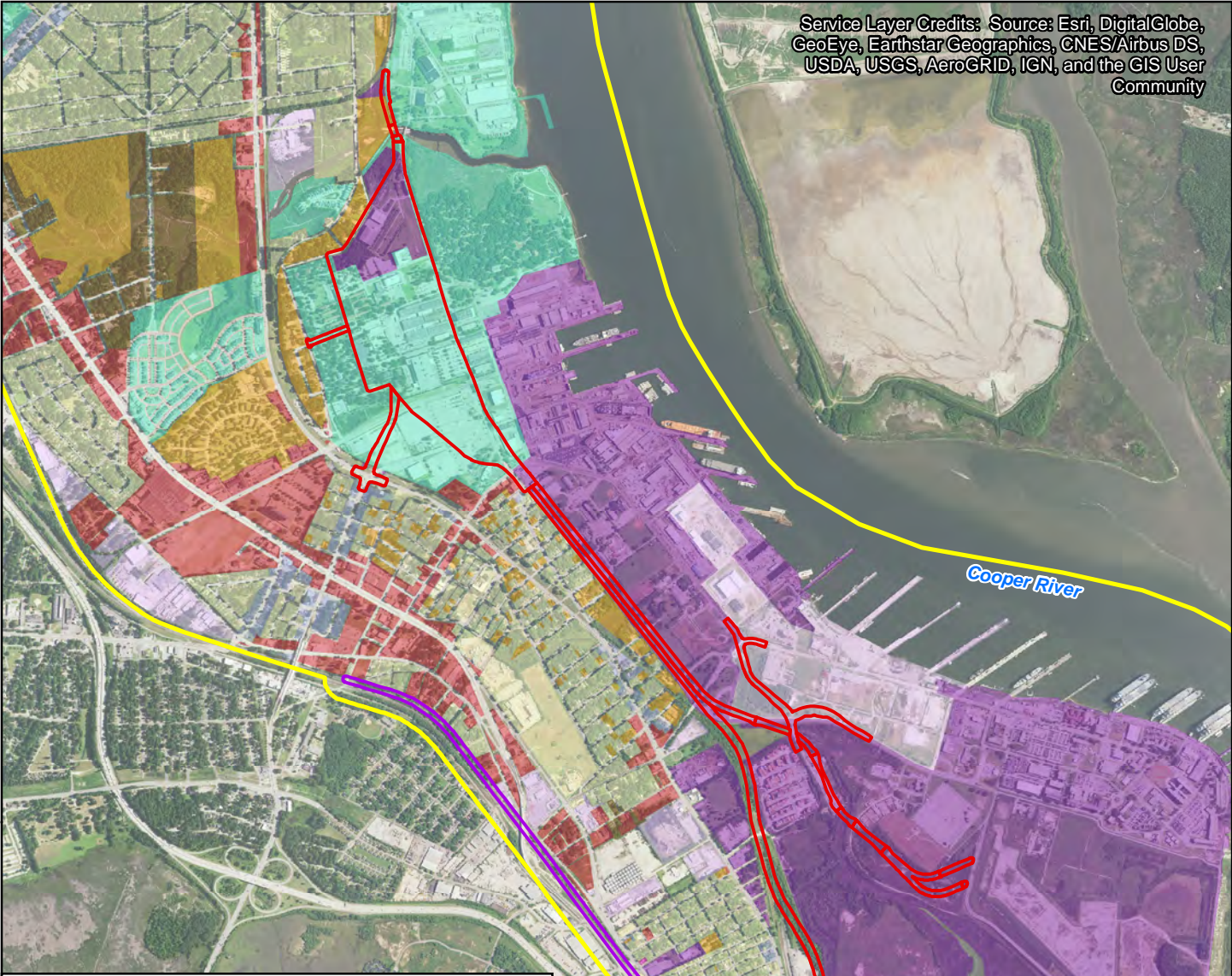
Alternative 5 would result in the relocation of 62 residences and 18 commercial properties, including 60 units from the West Yard Lofts low-income housing complex and the Lowcountry Innovation Center, which houses more than 15 companies. Any person(s) whose property needs to be acquired as a result of the project would be compensated in accordance with the U.S. Constitution and the Uniform Act of 1970, as amended (see Chapter 8, Relevant Laws, Regulations, and Executive Orders).

### **4.9.7.2 Infrastructure and Utilities**

Infrastructure and utility requirements and impacts under Alternative 5 would be similar to those described for the Alternative 1 (Proposed Project), with the exception that potable water, sanitary sewer, and natural gas pipelines within the River Center project site may be relocated and or temporarily turned off during construction activities. Any interruption of service to local area residents and businesses could be less than 12 hours.

For the reasons discussed above, Alternative 5 would have negligible impacts to land use, major impacts to demolition of structures, and negligible impacts to infrastructure.

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



- Study Area
- Alternative 5
- Related Activities
- SINGLE FAMILY RESIDENTIAL, R-1
- LOW TO MEDIUM DENSITY RESIDENTIAL DISTRICT, R-1A
- MULTI-FAMILY RESIDENTIAL DISTRICT, R-2
- MOBILE HOME RESIDENTIAL DISTRICT, R-3
- LIGHT INDUSTRIAL DISTRICT, M-1
- HEAVY INDUSTRIAL DISTRICT, M-2
- LIMITED BUSINESS DISTRICT, B-1
- GENERAL BUSINESS DISTRICT, B-2
- OFFICE NEIGHBORHOOD DISTRICT, ON
- PLANNED DEVELOPMENT DISTRICT, PD
- OFFICE DISTRICT, OD
- DIVERSE RESIDENTIAL DISTRICT, DR-3
- BUSINESS PARK DISTRICT, BP
- MIXED USE DISTRICT, MU-2

Sources: City of Charleston 2016, City of North Charleston 2016 and Atkins 2016

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Land Use Impacts  
Alternative 5  
Figure 4.9-5





## **4.9.8 Alternative 6: River Center Project Site (South via Kingsworth / North via Hospital)**

### **4.9.8.1 Land Use and Zoning**

#### **River Center Project Site**

Under Alternative 6, land use and zoning impacts related to the River Center project site (Figure 4.9-6) would be similar to those described for Alternative 5.

#### **Roadway/Rail Improvements**

Under Alternative 6, land use and zoning impacts related to roadway and rail improvements (Figure 4.9-6) would be similar to those described for Alternative 5.

#### **Demolition of Structures**

Construction of Alternative 6 would occur on land owned by Palmetto Railways, on land within an existing CSX ROW, and on parcels of private property. Within the River Center project site, this construction would cause the demolition of approximately 33 structures. Additional off-site roadway and rail improvements would cause the displacement of approximately 16 structures.

#### **Infrastructure and Utilities**

Infrastructure and utility requirements and impacts under Alternative 6 would be similar to those described for Alternative 5. Any interruption of service to local area residents and businesses could be less than 12 hours.

For the reasons discussed above, Alternative 6 would have negligible impacts to land use, major impacts to demolition of structures, and negligible impacts to infrastructure.

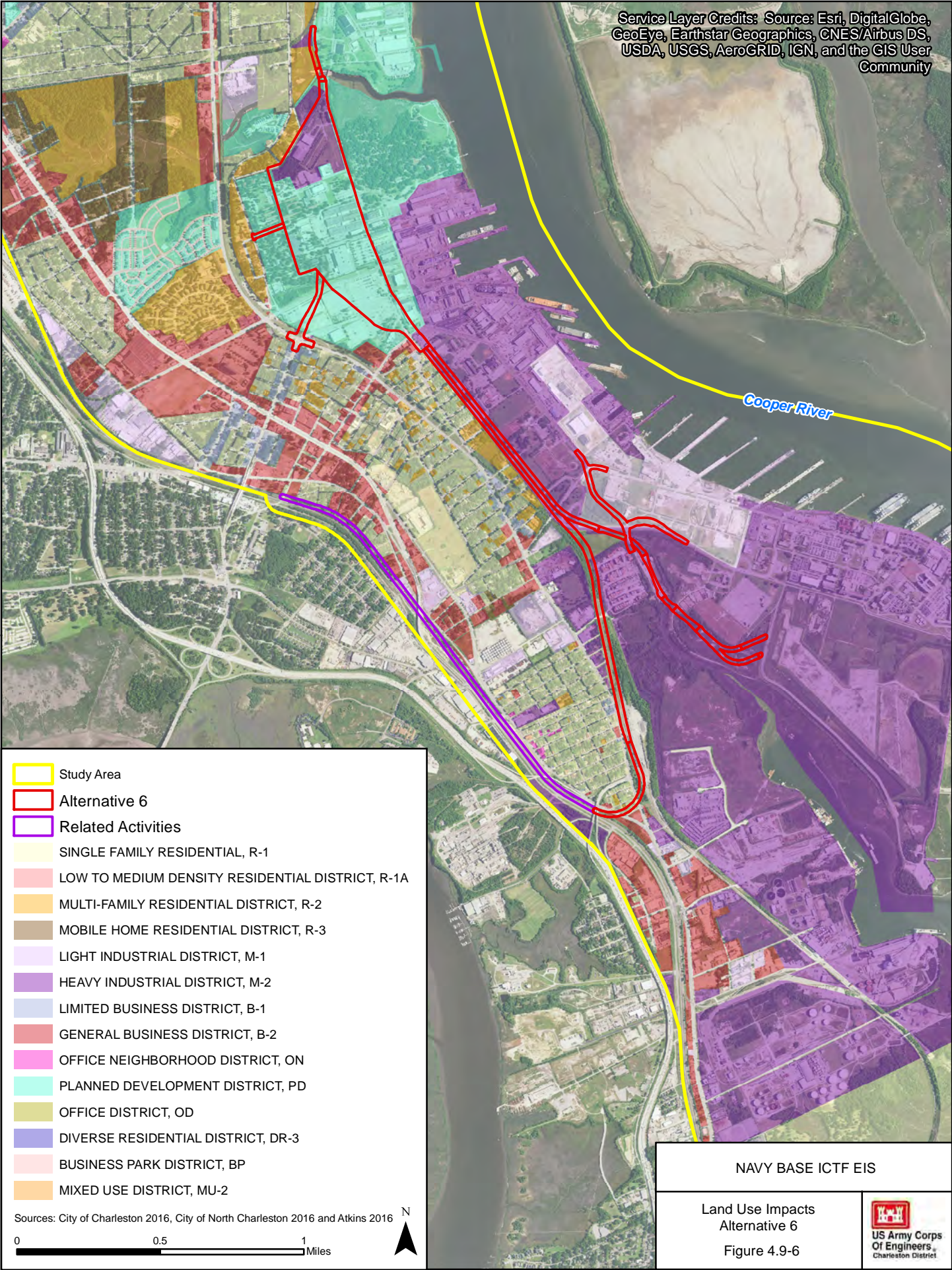
## **4.9.9 Alternative 7: River Center Project Site (South via Milford)**

### **4.9.9.1 Land Use and Zoning**

#### **River Center Project Site**

Under Alternative 7, land use and zoning impacts related to the River Center project site (Figure 4.9-7) would be similar to those described for Alternative 5.

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



- Study Area
- Alternative 6
- Related Activities
- SINGLE FAMILY RESIDENTIAL, R-1
- LOW TO MEDIUM DENSITY RESIDENTIAL DISTRICT, R-1A
- MULTI-FAMILY RESIDENTIAL DISTRICT, R-2
- MOBILE HOME RESIDENTIAL DISTRICT, R-3
- LIGHT INDUSTRIAL DISTRICT, M-1
- HEAVY INDUSTRIAL DISTRICT, M-2
- LIMITED BUSINESS DISTRICT, B-1
- GENERAL BUSINESS DISTRICT, B-2
- OFFICE NEIGHBORHOOD DISTRICT, ON
- PLANNED DEVELOPMENT DISTRICT, PD
- OFFICE DISTRICT, OD
- DIVERSE RESIDENTIAL DISTRICT, DR-3
- BUSINESS PARK DISTRICT, BP
- MIXED USE DISTRICT, MU-2

Sources: City of Charleston 2016, City of North Charleston 2016 and Atkins 2016

0 0.5 1 Miles

N

NAVY BASE ICTF EIS	
Land Use Impacts Alternative 6  Figure 4.9-6	<p style="font-size: 8px; margin: 0;">US Army Corps Of Engineers Charleston District</p>

## Roadway/Rail Improvements

Under Alternative 7, land use and zoning impacts related to roadway and rail improvements (Figure 4.9-7) would be similar to those described for Alternative 5.

## Demolition of Structures

Construction of Alternative 7 would occur on land owned by Palmetto Railways, on land within an existing CSX ROW, and on parcels of private property. Within the River Center project site, this construction would cause the demolition of approximately 33 structures. Additional off-site roadway and rail improvements would cause the demolition of approximately 14 structures.

## Infrastructure and Utilities

Infrastructure and utility requirements and impacts under Alternative 7 would be similar to those described for Alternative 5. Any interruption of service to local area residents and businesses could be less than 12 hours.

For the reasons discussed above, Alternative 7 would have negligible impacts to land use and zoning, major impacts to demolition of structures, and negligible impacts to infrastructure.

### 4.9.10 Related Activities

#### 4.9.10.1 Land Use and Zoning

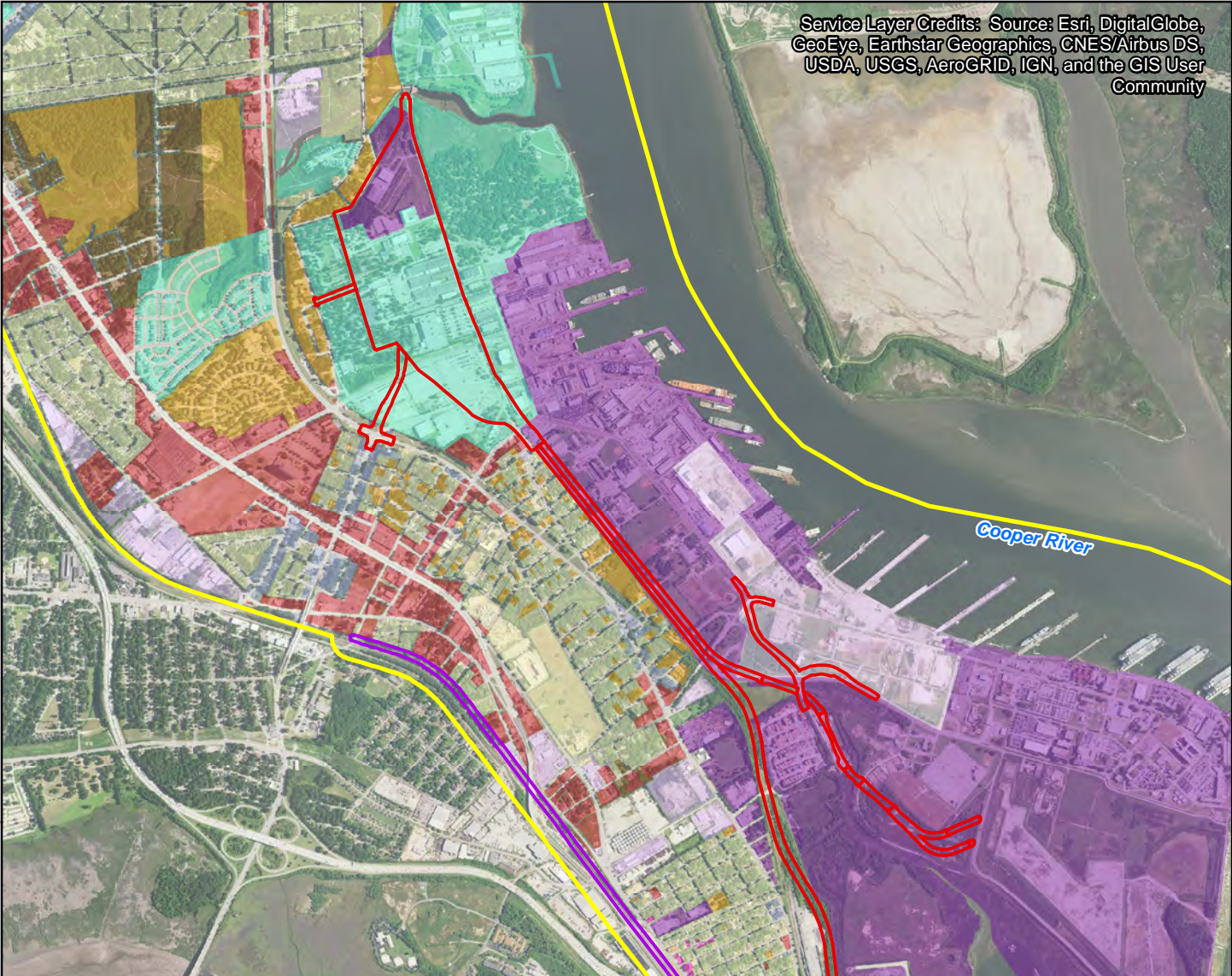
Land use and zoning requirements and impacts under the related activity would be negligible.

#### 4.9.10.2 Infrastructure and Utilities

There would be no infrastructure or utility requirements or relocations as a result of the related activities.

For the reasons discussed above, the related activity would have negligible impacts to land use and zoning, demolition of structures, and infrastructure.

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



- Study Area
- Alternative 7
- Related Activities
- SINGLE FAMILY RESIDENTIAL, R-1
- LOW TO MEDIUM DENSITY RESIDENTIAL DISTRICT, R-1A
- MULTI-FAMILY RESIDENTIAL DISTRICT, R-2
- MOBILE HOME RESIDENTIAL DISTRICT, R-3
- LIGHT INDUSTRIAL DISTRICT, M-1
- HEAVY INDUSTRIAL DISTRICT, M-2
- LIMITED BUSINESS DISTRICT, B-1
- GENERAL BUSINESS DISTRICT, B-2
- OFFICE NEIGHBORHOOD DISTRICT, ON
- PLANNED DEVELOPMENT DISTRICT, PD
- OFFICE DISTRICT, OD
- DIVERSE RESIDENTIAL DISTRICT, DR-3
- BUSINESS PARK DISTRICT, BP
- MIXED USE DISTRICT, MU-2

Sources: City of Charleston 2016, City of North Charleston 2016 and Atkins 2016

0 0.5 1 Miles

N

NAVY BASE ICTF EIS

Land Use Impacts  
Alternative 7  
Figure 4.9-7



### 4.9.11 Summary of Impacts Table

Table 4.7-2 summarizes the environmental consequences to land use and infrastructure from Alternative 1 (Proposed Project) and all the alternatives.

Table 4.9-2  
Summary of Impacts, Land Use and Infrastructure

Alternative	Land Use Change	Demolition of Structures	Infrastructure and Utilities
<b>No-Action</b>	Negligible. No change in land use designation required.	Negligible. No non-Palmetto Railways owned or specially designated structures would have to be displaced or demolished.	Negligible. No impacts as upgrades to service are not anticipated.
<b>1: Applicant's Proposed Project: Milford / North via Hospital District</b>	Major. Rezoning of the residential area along the western boundary of the ICTF and rezoning of portions of the Project site from Institutional future land use. Comprehensive Plan amendment required.	Major. Approximately 88 non-Palmetto Railways owned or specially designated structures would have to be displaced or demolished. Additional off-site roadway and rail improvements would cause the demolition of approximately 23 structures.	Negligible short-term impacts as any interruption of service to local area residents and businesses could be less than 12 hours.
<b>2: Proposed Project Site: South via Milford / North via S-line</b>	Similar to Alternative 1 (Proposed Project)	Similar to Alternative 1 (Proposed Project), except additional off-site roadway and rail improvements would cause the demolition of approximately 26 structures.	Similar to Alternative 1 (Proposed Project)
<b>3: Proposed Project Site: South via Kingsworth / North via Hospital District</b>	Similar to Alternative 1 (Proposed Project)	Similar to Alternative 1 (Proposed Project) except additional off-site roadway and rail improvements would cause the demolition of approximately 25 structures.	Similar to Alternative 1 (Proposed Project)
<b>4: Proposed Project Site: South via Milford</b>	Similar to Alternative 1 (Proposed Project)	Similar to Alternative 1 (Proposed Project)	Similar to Alternative 1 (Proposed Project)

Alternative	Land Use Change	Demolition of Structures	Infrastructure and Utilities
<b>5: River Center Project Site: South via Milford / North via Hospital District</b>	Negligible. No change in land use designation required	Major. Approximately 33 non-Palmetto Railways owned or specially designated structures would have to be displaced or demolished. Additional off-site roadway and rail improvements would cause the demolition of approximately 14 structures.	Negligible short-term impacts as any interruption of service to local area residents and businesses could be less than 12 hours.
<b>6: River Center Project Site: South via Kingsworth / North via Hospital District</b>	Similar to Alternative 5	Similar to Alternative 5 except additional off-site roadway and rail improvements would cause the demolition of approximately 16 structures.	Similar to Alternative 5
<b>7: River Center Project Site: South via Milford</b>	Similar to Alternative 5	Similar to Alternative 5	Similar to Alternative 5

## 4.9.12 Mitigation

### 4.9.12.1 Applicant's Proposed Avoidance and Minimization Measures

The Applicant has committed to several measures that avoid and/or minimize potential impacts of Alternative 1 (Proposed Project). These measures are taken from Palmetto Railways Mitigation Plan provided in Appendix N. Some of these measures are required under federal, state, and local permits; others are measures that Palmetto Railways has incorporated into the design and operations of Alternative 1 (Proposed Project). Each mitigation measure is also designated as one that either helps to avoid an impact or one that minimizes an impact.

- Ensure the Project and its operations are consistent with zoning codes and the Comprehensive Plan. (Avoidance)
- Support direction of the Historical Trust for land use and landscaping surrounding the Charleston Naval Hospital. (Minimization)
- Construction of a raised overpass with a pedestrian and multiuse path from Spruill Avenue to Riverfront Park to provide safe and uninterrupted access to existing and future development on the former CNC. (Minimization)
- Support the City of North Charleston and the Community Mitigation Group in the establishment of Quitman's marsh as a recreational area. (Minimization)

- Continue efforts to locate new utilities in ways to avoid/minimize impacts to significant utility facilities and minimize disruptions to service. (Avoidance and Minimization)
- Continue coordination efforts with utility providers and their design consultants to ensure capacity is available at the Project site, conflicts have been identified, and relocation plans are feasible. (Minimization)

These avoidance and minimization measures, except the items noted with an asterisk (\*), have been considered in the preceding impact analysis. The complete list of Applicant-proposed avoidance and minimization measures related to land use and infrastructure is also provided in Chapter 6.

#### 4.9.12.2 Additional Potential Mitigation Measures

No additional mitigation measures have been identified by the Corps for Land Use and Infrastructure. Additional avoidance, minimization, and mitigation may be considered by the Corps in its decision-making process. Final mitigation measures may be adopted as conditions of the DA permit and documented in the Record of Decision (ROD).

## 4.10 CULTURAL RESOURCES

### 4.10.1 Methods and Impact Definitions

Impacts to cultural resources were evaluated using literature review, GIS, best professional judgment, and proximity to construction and operation activities that could result in demolition, noise, vibration, and/or visual resource impacts. After all historic properties within the Cultural Resources study area (equivalent to the Area of Potential Effects) were identified through literature review and investigations conducted in support of this EIS, their locations were overlaid (using GIS) with the footprints of the alternatives to determine the proximity of the historic properties to the proposed facilities and the activities that would occur during their operation. For example, for impacts to historic districts, potential effects to the specific characteristics of the historic properties that create their historical significance (i.e., make them eligible for the NRHP) were reviewed to determine whether the alternatives would alter these characteristics in such a way that the NRHP eligibility of a specific historic property would be degraded or compromised. These characteristics were extracted from the information presented in the previous investigations that resulted in the determinations of eligibility from the NRHP nomination forms for the Charleston Navy Yard (CNY), Charleston Naval Hospital (CNH), and Charleston Navy Yard Officers' Quarters (CNYOQ) Historic Districts that were all prepared in 2006 (Appendix G).

The impact evaluation considers both construction and operation activities within the Cultural Resources study area. Impacts to historic properties were characterized as adverse, not adverse, or no effect as defined under Section 106 of NHPA<sup>72</sup> (Table 4.10-1). In addition, an evaluation was

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<sup>72</sup> 36 C.F.R. 800