

CHAPTER 6

CUMULATIVE EFFECTS

A cumulative impact is the additive or interactive effect on the environment that could result from the incremental impact of the alternatives when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Interactive effects may be either countervailing (where the net adverse cumulative effect is less than the sum of individual effects) or synergistic (where the net adverse cumulative effect is greater than the sum of the individual effects). Cumulative impacts can result from individually minor but collectively significant actions that take place over time. Accordingly, a cumulative impact analysis identifies and defines the scope of other actions and their interrelationship with the alternatives (or grouping of alternatives) if there is an overlap in space and time. Cumulative impacts are most likely to occur when there is an overlapping geographic location and a coincident or sequential timing of events. Because the environmental analysis required under NEPA is forward-looking, the aggregate effect of past actions is analyzed to the extent relevant and useful in analyzing whether the reasonably foreseeable effects of the alternatives (or grouping of alternatives) may have a continuing, additive and significant relationship to those effects.

For this EIS, an approach to analyzing cumulative impact analysis was developed to be consistent with guidance documents issued by CEQ, *Considering Cumulative Effects Under the National Environmental Policy Act* (CEQ 1997), and USEPA, *Consideration Of Cumulative Impacts In USEPA Review of NEPA Documents*, (USEPA 1999c) as well as CEQ's additional *Guidance on the Consideration of Past Actions in Cumulative Effects Analysis* (CEQ 2005). The following approach was used:

1. For each resource area addressed in Chapters 3 and 4, the potential for cumulative effects to these resources from the action alternatives in combination with other past, present, or reasonably foreseeable future actions was assessed.
2. For those resource areas that were determined to have potential for cumulative effects, an appropriate geographic scope (or geographic study area) for the cumulative impacts analysis for that resource was determined.
3. Within the geographic study area for each resource, past, present, or future actions having the potential for additive and/or interactive effects were identified.
4. The cumulative impacts of the past, present, and future actions in combination with the impacts assessed for the alternative sets (i.e., Chapter 4) was then assessed. This assessment considered

synergistic and countervailing impacts and identified whether the cumulative impacts on resources was adverse or beneficial and minor, moderate, or significant.

6.1 EARTH RESOURCES

6.1.1 Description of Geographic Study Area

The geographic study area for earth resources includes NAVSTA Mayport where development would occur as well as the NAVSTA Mayport turning basin and entrance channel, Jacksonville Harbor Bar Cut 3 federal navigation channel, Jacksonville ODMDS, and Fernandina ODMDS.

6.1.2 Relevant Past and Present Actions

Past and present actions at NAVSTA Mayport have had the effect of disrupting and compacting soils and topography from their natural states. The effect does not meaningfully contribute to continuing and/or reasonably foreseeable significant impacts to soil resources or topography. Past and present actions have had no discernible impact to the underlying geological condition of the study area.

As first noted in Section 2.3.1, the Navy currently removes approximately 900,000 cy of sediment from the NAVSTA Mayport turning basin and entrance channel every two years as part of its maintenance dredging program. Most of this material has been disposed of in the Jacksonville ODMDS. Jacksonville ODMDS has been in use since 1952 and NAVSTA Mayport has used the ODMDS regularly since 1954. Fernandina ODMDS was designated by USEPA in March 1987 and is primarily used for disposal of dredged material from the Submarine Base Kings Bay Entrance Channel.

JAXPORT has deepened the St. Johns River shipping channel, which extends from the inlet to Talleyrand Marine Terminal to a maintained depth of -40 ft MLLW. Dredged material from this portion of the federal channel is currently disposed of at West Bartram Island or East Bartram Island upland disposal sites, Buck Island where material is recycled for beneficial use, along the shoreline for beach nourishment (starting at the jetties and working south), or in Jacksonville ODMDS.

Table 6.1-1 summarizes the volume of dredge material placed in the Jacksonville ODMDS through 2008; material disposed prior to the early 1970s was disposed in an area 0.5 nm east of the Jacksonville ODMDS. In the late 1970's material was disposed south of the site (USEPA and USACE 2007). Table 6.1-2 summarizes the volume of dredge material placed in the Fernandina ODMDS through 2006.

Table 6.1-1 Volume of Dredged Material Placed in the Jacksonville ODMDS

Year	Dredged Material Quantity – Cubic Yards (paid <i>in situ</i> volume)			
	Jacksonville Federal Navigation Channel	NAVSTA Mayport (permit)	Jacksonville Shipyards (permit)	Total
1952-1970 ¹	4,461,594	3,992,997	0	8,454,591
1971-1980 ¹	2,652,407	3,048,844	0	5,707,851
1985 ²	15,800	0	0	15,800
1986 ²	0	0	109,700	109,700
1987 ²	82,200	0	26,500	108,700
1988 ²	210,500	0	0	210,500
1996 ³	0	659,623	0	659,623
1997 ³	0	439,748	0	439,748
2000 ³	0	887,284	0	887,284
2001 ⁴	0	174,832	0	174,832
2002 ³	0	225,200	0	225,200
2003 ³	560,446*	905,328	0	1,465,774
2005 ³	0	59,667	0	59,667
2006 ³	0	888,134	0	888,134
2007	510,000	0	0	510,000
2008	0	635,000	0	635,000
Total 1996-2008	1,070,446	4,874,816	136,200	5,945,262

Source: USEPA and USACE 2007

¹Data from Jacksonville ODMDS EIS (USEPA 1983), in USEPA and USACE 2007

²Data from the USACE Ocean Disposal Database, in USEPA and USACE 2007

³Data from the Jacksonville District Dredge Information System –paid *in situ* volumes, in USEPA and USACE 2007

⁴Data from the Jacksonville District Post Disposal Monitoring Reports, in USEPA and USACE 2007

*Previously identified as 910,001 cy “permitted”(vice “paid *in situ*”) for disposal, which resulted in a total 2003 volume of 1,815,329 cy instead of 1,465,774 cy and a total 1996-2006 volume of 5,149,817cy instead of 4,800,262 cy as identified in the table.

Table 6.1-2 Volume of Dredged Material Placed in the Fernandina ODMDS

Year	Dredged Material Quantity – Cubic Yards		
	Fernandina Harbor Inner Channel & Turning Basin	Kings Bay Entrance Channel	Year Total
1987	0	0	0
1988	0	6,320,029	6,320,029
1989	0	156,425	156,425
1990	0	886,786	886,786
1991	0	297,497	297,497
1992	0	33,037	33,037
1993	0	495,875	495,875
1994	943,183	222,538	1,165,721
1995	0	215,349	215,349
1996	0	606,097	606,097
1997	0	162,667	162,667
1998	0	225,853	225,853
Total	943,193	9,622,153	10,565,336

Source: USEPA and USACE 1998

6.1.3 Relevant Future Actions

NAVSTA Mayport Future Development. Future development that may occur at NAVSTA Mayport as a result of other ongoing development and/or recapitalization efforts would continue to disturb the soils and topography. Specifics of future projects are not foreseeable at this time; however, NAVSTA Mayport is essentially developed to its capacity. That is, land that is developable and not constrained by airfield, explosive safety, and natural or cultural resource conservation, has been fully developed. Therefore, additional development would not be expected to result in meaningfully greater conversion of soils and topography. Because of environmental management controls, such as stormwater management, soils would be stabilized following construction activities and no long-term accelerated erosion of topsoil would be expected.

Project XL/ENVVEST. NAVSTA Mayport, under a USEPA Project XL/ENVVEST initiative, is evaluating the potential to remove, to the greatest extent possible, 8 million cy of dewatered dredge material located within the existing 200-acre upland disposal sites at NAVSTA Mayport. Potential beneficial reuse applications include parks and recreation (golf course applications); agriculture, horticulture, and forestry; strip mine reclamation and landfill cover for solid waste; industrial/commercial development; and material transfer for fill and engineered products (NAVSTA Mayport 2007a). If this were to occur, there would be localized impacts to soils and topography at the upland disposal sites. Project XL/ENVVEST seeks innovative methods to reuse the existing dredged material in an effort to empty the current holding cells so that future maintenance dredging material can be placed in the cells thereby minimizing offshore disposal. A self-sustaining program would be implemented that would alternate use of the two holding cells between mining the dewatered material and filling the other cell with dredged material.

With or without implementation of the dredging associated with the Group 2 and Group 3 alternatives, the Navy requires maintenance dredging of the NAVSTA Mayport turning basin and entrance channel on an ongoing basis. With or without the Jacksonville Harbor deepening project detailed below, there is also ongoing maintenance dredging requirements for the Jacksonville Harbor. In addition, there is ongoing dredging in the Submarine Base Kings Bay Entrance Channel and Turning Basin. All projects would generate ongoing requirements for dredge material disposal, most of which is currently disposed of in either the Jacksonville or Fernandina ODMDS. Due to increased depth of the proposed dredging, the Navy's maintenance dredging requirements would be expected to increase by approximately 27,500 cy per year, based on sediment transport modeling to predict future maintenance dredge requirements.

Port of Jacksonville Deepening. The USACE Jacksonville District and JAXPORT are cooperating in studying the feasibility of further deepening the Port of Jacksonville. A Supplemental EIS for the Jacksonville Harbor Navigation Study, General Re-Evaluation Report is being prepared to supplement the Jacksonville Harbor Navigation Improvements EIS completed in November 1998. The objectives of the study are to:

- determine if light loading of ships, tidal delay, or other commercial navigation benefits exist to justify additional deepening below the existing -40 ft project depth from the entrance channel to river mile 20 and for Cuts F and G of the West Blount Island Channel;
- evaluate measures including widening along the Trout River Cut Range, and Quarantine (Bartram) Island Upper Range which would reduce navigation concerns and improve ship traffic safety; examine the impact of channel deepening on the capacity of existing upland confined disposal facilities and the offshore dredge material disposal site; evaluate new upland confined disposal facilities, if required;
- determine if beneficial uses of dredged material such as manufactured soils, recycling of dredged material for construction fill, development of artificial reefs, or use of beach quality material for placement along adjacent beaches would provide appropriate alternatives for disposal of dredged material;
- evaluate the impact of deepening and widening measures on shoaling rates for existing and advanced harbor maintenance needs;
- examine the hydrodynamic and environmental effects of the deepening and widening measures on Chicopit Bay, White Shells Bay, Mill Cove, and adjacent harbor shorelines; identify environmental and cultural resources in the study area and potential impacts from deepening or widening to those resources; and
- identify, from the National Economic Development plan for Jacksonville Harbor, which recommendations most efficiently and safely accommodate existing and larger commercial ship and barge traffic while avoiding or minimizing impacts to environmental resources.

The Draft Supplemental EIS will consider the possible effects of blasting on aquatic resources, loss of wetlands from expansion of upland disposal areas at Bartram Island, as well as other project-related impacts on protected species, water quality, fish and wildlife resources, cultural resources, essential fish

habitat, socioeconomic resources, coastal processes, aesthetics and recreation, and other impacts identified through scoping, public involvement, and agency coordination. It is estimated that the Draft Supplemental EIS will be available to the public in the fall 2010 (DoD 2007a). The Jacksonville Harbor deepening project includes proposed rebuilding and relocating the Mile Point training wall and construction of a short-cut widener and Trout River widener.

6.1.4 Cumulative Impact Analysis

The combined impact of any of the action alternatives or the No Action Alternative and the actions identified above would not result in additive adverse cumulative impacts to soils, topography, geology, or beaches. The deepening project associated with the Group 2 and 3 alternatives does not extend inward to the Jacksonville Harbor beyond the NAVSTA Mayport entrance channel. Interactive impacts to bathymetry would occur at the confluence of the two projects.

There are potential significant cumulative impacts with regard to dredge material capacity at the offshore disposal sites. Past and ongoing dredging and disposal of maintenance dredged material has resulted in permanent decreases in capacity at the ODMDSs. Ongoing and future dredging projects at NAVSTA Mayport and in the Jacksonville region would have additive impacts with the dredging that would occur under the Group 2 and 3 alternatives. As assessed in Section 4.1, the deepening of the NAVSTA Mayport turning basin, entrance channel, and Jacksonville Harbor Bar Cut 3 federal navigation channel, would result in siltation rates similar but slightly higher than to that which occurs during the regular maintenance dredging. The initial round of maintenance dredging after this proposal's dredging may involve a larger amount of shoal material before stabilization of the area occurs. Continued maintenance dredging material disposal will decrease available capacity at the offshore disposal sites, and the possible deepening of the USACE Federal Navigation Project would further reduce available capacity at the offshore disposal sites.

As first noted in Section 2.3.1, both the Jacksonville and Fernandina ODMDS currently have capacity limitations. The Jacksonville ODMDS, being one fourth the size of Fernandina ODMDS, is the most capacity constrained. Given the continuing need for dredge material disposal and the shortfall in upland disposal options for NAVSTA Mayport and other marine users of the St. Johns River, additional capacity for the ocean disposal of dredged material is likely necessary. Concerns about the limitation of capacity at these ODMDSs are reflected in the ongoing need to have an annual restriction of 2 million cy for Jacksonville ODMDS and informal goal not to exceed 1 million cy for Fernandina ODMDS, pending re-evaluation of each site's capacity. Assessing the feasibility of expanding existing ODMDS or creating a

new ocean disposal site is warranted given the cumulative impacts of ongoing dredging and dredged material disposal in the region.

Negative consequences on dredged material disposal and site capacity may occur when Group 2 and 3 alternatives are considered in conjunction with other past, present, and foreseeable future regional dredging projects. The Navy has been working with USACE, USEPA, and local agencies in establishing sufficient dredged material disposal sites for long-term disposal of dredged materials in the Mayport area and this is expected to offset the cumulative impact. To minimize these adverse cumulative impacts the following are recommended: expanding existing ODMDSs; identifying new off-shore and/or inland disposal sites; expanding renourishment activities; and researching beneficial reuse under Project XL/ENVVEST in order to minimize use of the ocean disposal sites.

6.2 LAND AND OFFSHORE USE

6.2.1 Description of Geographic Study Area

The geographic study area of land and natural resource management and use is the same study area described in Section 3.2, but is expanded to include all of the Mayport Road corridor to Atlantic Boulevard, Kathryn Abbey Hanna Park, and City of Atlantic Beach to the South, Huguenot Park and all of Fanning Island and the Heckscher Drive commercial and mixed use development to the north, and City of Jacksonville westward to San Pablo Road.

6.2.2 Relevant Past and Present Actions

Village of Mayport Community and Economic Development. As detailed in Section 3.7, NAVSTA Mayport is important in the history of Jacksonville. The Village of Mayport is the oldest, continually occupied community in Duval County. In the mid-1800s, it was home to fishermen, harbor bar pilots, and the largest sawmill in Duval County. Towards the end of the 19th century, Mayport was a village of 600 people and consisted of some Minorcan descendants and beaches lined with cottages. Until recent decades, it remained a fishing village with few city services. Tourists visited the Village of Mayport for sport fishing, boating, sightseeing, and access to the nightlife in nearby resort communities of Atlantic Beach and St. Augustine. In 1967, the Village of Mayport became part of the consolidated Jacksonville-Duval County government (Hardy Heck Moore Inc. 2001). Today, the Village of Mayport continues to support commercial fishing, provides service industries for those who live and work at NAVSTA Mayport, and has developed some sport fishing and casino boat tourism industries.

Two revitalization efforts are underway in the area: (1) Mayport Waterfront Partnership and (2) Mayport Community Redevelopment Area. The Mayport Waterfront Partnership was created by the cities of Atlantic Beach and Jacksonville in 1997 to bring economic revitalizing to the eastern shore of Duval County. The Partnership's zone of interest includes the North Jacksonville barrier islands, the Village of Mayport, and Ft. George and Fanning Islands. In 1998, the State of Florida designated the Village of Mayport as one of the first three waterfront communities in need of revitalization. In recent years, the Partnership oversaw the installation of a \$4.2 million sanitary sewer line and the upgrading of water lines in the commercial section of the Village of Mayport. Also, the Waterfront Partnership wrote and sponsored the Mayport Village Overlay Zone Regulations, which provide protection for characteristics unique to the village (City of Jacksonville 2007g). The Mayport Community Redevelopment Area is also being considered for redevelopment of the Mayport Road Corridor. Florida State Statute, Chapter 163, allows municipalities to designate areas for redevelopment and provides for a source of funds and tools for this redevelopment. The area must meet certain standards to be considered for designation and must create a Redevelopment Plan to guide redevelopment. The Mayport Road Corridor Study (City of Jacksonville and City of Atlantic Beach 2006) was undertaken in order to prepare a new redevelopment strategy for the commercial parcels which front on Mayport Road. The study documents the current condition of the area and makes suggestions on how redevelopment could create a new development pattern, which is both functional and visually enhanced. The redevelopment opportunities for the Mayport Road Corridor are focused on access management, landscaping/streetscape, redevelopment potential, and new development pattern.

The goal for housing in the region is to preserve the existing housing stock while encouraging affordable new development that is consistent with the overall mixed use, medium density character of the neighborhoods. Objectives are to improve building and zoning code enforcement, encourage quality multi-family development, increase homeownership, decrease investor ownership of single-family and mobile homes, and encourage the renovation of existing single-family homes. The housing strategy recommends use of either an existing non-profit developer or creating a new non-profit developer for acquisition, rehabilitation, and resale of vacant and abandoned homes. The cities can also target and acquire slum rental property for rehabilitation and resale or demolition and redevelopment by this non-profit developer. Incentives also allow the properties to be affordable to a range of income levels to ensure an income mix.

The goal for transportation is to develop a more pedestrian- and cyclist-friendly environment while ensuring a traffic flow that is both constant and safe. The recreation goal is to preserve existing and encourage new recreation opportunities in the Mayport Road area. The economic development goal is to

encourage more small- and large-scale retail oriented commercial uses along Mayport Road that would increase employment opportunities for local residents. The aesthetics and urban design goal suggest a more aesthetically pleasing atmosphere that capitalizes on the unique character of the Village of Mayport community. The land use and development/redevelopment goal preserves the existing residential areas that are above dilapidated condition, while encouraging the development of a wide range of uses that contribute to the overall health of the Mayport community.

NAVSTA Mayport Recapitalization. Existing land uses at NAVSTA Mayport are the result of planned development of facilities and activities to support the military mission during the course of the last 70 years (refer to Section 3.7 for a detailed history of NAVSTA Mayport development). Recent construction completed at NAVSTA Mayport (in federal fiscal years 2005 and 2006) has included a security fence with towers, a new medical/dental clinic, a new 260-room bachelor enlisted quarters, runway resurfacing, and an air traffic control tower (NAVSTA Mayport 2006a). Completion of the medical/dental clinic created available space in the old medical/dental clinic, which was occupied by various administrative functions. NAVSTA Mayport is now constructing the new bachelors enlisted quarters that will have 78 modules, each module has two sleeping rooms, supporting two personnel per room. The total capacity of the new bachelor enlisted quarters will be 312 personnel (McVann 2007a).

Encroachment and NAVSTA Mayport Encroachment Action Plan. NAVSTA Mayport has developed an Encroachment Action Plan to address installation encroachment issues on an ongoing basis. Among the issues of concern is the potential development of condominiums and associated services in the Village of Mayport (see “Village of Mayport Redevelopment” under Section 6.2.3). High rise buildings could pose threats to air navigation and safety, and overall development could conflict with the noise generated by operations at the air station. Another potential encroachment concern is that NAVSTA Mayport does not have a non-development agreement with the city that would help ensure that compatible surrounding land uses and consistency with the City of Jacksonville Huguenot Park and the Navy AICUZ. Aircraft fly directly over the park when approaching NAVSTA Mayport from the Atlantic. New housing developments are encroaching on the southern border of the installation west of Hanna Park and State Route A1A; and the Queens Harbor and Yacht Club is a high-priced gated community located southwest of the installation on the western side of the Intracoastal Waterway (DoN 2007b).

Navy Fleet Training in the Jacksonville Range Complex. An EIS/Overseas Environmental Impact Statement (OEIS) is being prepared to evaluate the potential environmental effects associated with U.S. Fleet Forces naval training in the Jacksonville Range Complex as part of the Navy TAP. The Navy

proposes to support current and emerging training operations and research, development, testing, and evaluation activities at the range complex by: (1) maintaining baseline operations at current levels; (2) increasing training operations from current levels as necessary to support the Fleet Readiness Training Plan; (3) accommodating mission requirements associated with force structure changes; and (4) implementing enhanced range complex capabilities. The EIS/OEIS study area is the Jacksonville Range Complex which consists of sea-based targets and instrumented areas, airspace, surface and subsurface operations, and land range facilities. Together the range complex encompasses: 27 square miles of land; 62,596 square nm (about 72,000 square miles) of special use airspace; and 50,090 square nm (about 58,000 square miles) of sea space. Three alternatives are being evaluated in the EIS/OEIS including: (1) the No Action Alternative comprising baseline operations and support of existing range capabilities; (2) Alternative 1 composed of the No Action Alternative plus additional operations, expanded warfare missions, accommodating force structure changes including training resulting from the introduction of new vessels, aircraft, and weapons systems, and implementing enhancements to range infrastructure; and (3) Alternative 2, comprising Alternative 1 plus additional increases in training, and implementation of enhancements that optimize training throughput in support of future contingencies. No decision will be made to implement any alternative until the EIS process is completed and a Record of Decision is signed by the Assistant Secretary of the Navy (Installations and Environment). The Notice of Intent for the EIS appeared in the *Federal Register* on 26 January 2007 (DoD 2007b) and the DEIS was released for public comment on 27 June 2008.

6.2.3 Relevant Future Actions

NAVSTA Mayport Planned Development. NAVSTA Mayport has plans for an addition to the physical fitness center, additional parking, recapitalization of Wharfs B and C, an addition to the SERMC facility, and aircraft refueling facilities. The NAVSTA Mayport master plan establishes a plan for continued orderly growth and development of NAVSTA Mayport. When land use constraints are taken into account, the installation is nearly completely built-out. Therefore, the master plan focuses on recapitalization efforts. Future mission activities at NAVSTA Mayport could include the homeporting of the new littoral combat ship (LCS). The HSV2, a Navy-leased ship that may serve as a potential platform for the LCS, has recently been used by U.S. Navy Southern Command operations out of NAVSTA Mayport (Clark 2007).

DDG-1000 Homeporting. NAVSTA Mayport is being considered by the Navy as the potential homeport for three of the new Zumwalt class destroyers (commonly referred to as DDG-1000) scheduled for delivery to the fleet beginning in 2012. NAVSTA Mayport is an alternative location, the Preferred

Alternative is to homeport the DDG-1000 at NAVSTA Norfolk on the East Coast (3 ships) and NAVSTA San Diego on the West Coast (3 ships). As one of five Navy installations currently homeporting destroyers, NAVSTA Mayport provides similar infrastructure and support capabilities required for the new class of ship. If selected as the homeport, minor construction would be required to upgrade two additional berths to provide 4,160V shore power.

Navy Undersea Warfare Training Range (USWTR). The Navy is proposing to establish an instrumented undersea warfare training range off the East Coast of the United States for anti-submarine warfare training. A notice of availability of the Draft EIS/OEIS (USEPA 2008d) and notice of public hearings (DoN 2008c) was published in the *Federal Register* on 12 September 2008. The USWTR would cover 500 square nm of the ocean and would enable the Navy to train effectively in a shallow-water environment at a suitable location for Atlantic Fleet units. The range would be equipped with undersea cables and sensor nodes, and would be connected by a single trunk cable to a landside cable termination facility. Siting of the USWTR offshore of northeastern Florida is the Navy's Preferred Alternative. This USWTR site includes a small portion of the Jacksonville Operating Area, much further offshore than the Jacksonville ODMDS. The western edge of the range would be located approximately 50 nm off the coast of Jacksonville. The USWTR would allow ships, submarines, and aircraft to perform anti-submarine warfare training in littoral, or near shore, waters. Installation of the USWTR at this site would entail the placement of approximately 300 transducer nodes in water depths ranging from approximately 120 to 1,200 ft, over an approximate 500-square nm area. The interconnect cable between each node may be buried in the shallower depths due to potential entanglement concerns with bottom-trawling fishing gear. In deeper waters, the interconnect cable would not be buried. A trunk cable connecting the range to the shore facilities would be buried (including within U.S. territory) to a depth of approximately 3 ft. There would be two segments to the buried-trunk cable. One segment would run from the shore to a junction box offshore (the cable would be buried; the junction box would not be buried). From this junction box a second buried-cable segment would run to another junction box located at the edge of the underwater sea range. Ocean-bottom burial equipment would be used to cut (hard bottom) or plow (soft sediment) a furrow approximately 4 inches wide in which the 2.3-inch cable would be placed, starting from the undersea exit point of the conduit. Cable installation would be accomplished using a tracked, remotely operated cable burial vehicle. The cable would run approximately 50 nm from the edge of the range to land at NAVSTA Mayport. Commercial power and telecommunications connections would be made to the NAVSTA Mayport infrastructure (DoN 2008d).

Atlantic Fleet Active Sonar Training (AFAST). The Navy has prepared an EIS to analyze the potential impacts of designating areas along the East Coast and within the Gulf of Mexico where the majority of

Atlantic Fleet active sonar training would be conducted, including areas where mid- and high-frequency active sonar and explosive source sonobuoy training, maintenance, and research, development, testing, and evaluation activities would occur. A notice of availability of the DEIS and public hearings was published in the *Federal Register* on 15 February 2008 (DoN 2008e). Training exercises would include Independent Unit Level Training, Coordinated Unit Level Training, and Strike Group Training exercises. During these events, surface ships, submarines, and aircraft would utilize a number of active and passive sonar systems, as well as other training devices for Anti-submarine Warfare, Mine Warfare, and related active sonar training. The EIS evaluates the No Action Alternative and three action Alternatives. The No Action Alternative is the Navy's Preferred Alternative. Under the No Action Alternative, the Navy would continue sonobuoy training within and adjacent to Operating Areas along the East Coast and the Gulf of Mexico rather than designate active sonar areas. Active sonar activities currently occur in areas that maximize active sonar opportunities and meet operational requirements. Critical habitat for the NRW and National Marine Sanctuaries are avoided during training. Alternative 1 would designate fixed active sonar areas along the East Coast and the Gulf of Mexico based on operational requirements and a surrogate environmental analysis. The environmental analysis identified areas with a relatively higher potential for marine mammal exposure to sonar. Alternative 2 would designate seasonal active sonar training areas based on operational requirements and qualitative and geographical environmental analysis. The seasonal marine mammal exposure data was compared to Alternative 1 active sonar areas resulting in reduction of some training areas during the spring and winter and the addition of some training areas during fall and summer. Under Alternative 3, active sonar activities would not be conducted in environmentally sensitive areas (those areas with specific features which would indicate a higher concentration of marine species) offshore of the East Coast and the Gulf of Mexico to the extent possible while still meeting operational requirements. The Jacksonville Operating Area is currently utilized for active sonar training and would continue to be utilized under all the action alternatives. The designated active sonar area immediately surrounding NAVSTA Mayport would not change appreciably under any of the action alternatives (DoN 2008f). The Navy's schedule is to release the FEIS/OEIS in December 2008 and issue a Record of Decision in January 2009 (DoN 2008g).

MHPI at NAVSTA Mayport. The MHPI enacted on 10 February 1996 as part of the National Defense Authorization Act for FY 1996, allows the DoD and DoN to work with the private sector to upgrade the quality of family housing and operate and maintain that housing (CNIC 2008). The housing assets are typically leveraged with private investment to accomplish housing construction and renovation goals faster and at a lower cost than military construction. GMH Communities Trust has entered into a 50-year agreement for the design, construction, management, and maintenance of 11 Navy bases located in five

states throughout the Southeastern U.S. (GMH Communities Trust 2007). This includes the 1,165 family housing units at NAVSTA Mayport (GMH Communities Trust 2007 and 2008).

The Defense Authorization Bill in FY 2003, authorized DoN to pursue no more than three unaccompanied housing (i.e., bachelor) privatization pilot projects (CNIC 2008) and NAVSTA Mayport is the site of one of these projects (Grone 2007). The bachelor housing privatization project is currently under evaluation.

Community Residential Development. There are plans to convert land near NAVSTA Mayport that was formerly occupied by mobile home parks into condominiums. At the Lakeside site (located approximately 0.5 miles west of the State Route A1A/ Mayport Road intersection) plans call for 534 two- and three-bedroom condominiums. At Fiddler's Reef (located on an approximately 30-acre site on the east side of Mayport Road, bordering Hanna Park) approximately 500 two- and three-bedroom condominiums have been planned. The developer estimates prices for these condominiums would range between \$140,000 and \$190,000 (Florida Times Union 2007a). At the Ocean Village site (located approximately 1.5 miles north of the Atlantic Boulevard and State Route A1A/Mayport Road), a 312-unit market-rate apartment complex is planned. Additionally, at the Broadstone site (located further south in Jacksonville Beach south of Beach Boulevard near Penman Road), a 228-unit market-rate apartment complex is being planned (Burmeister 2008). Finally, The Palms (a seven-acre site of former apartments located at the intersection of Atlantic Boulevard and State Route A1A/Mayport Road) has been slated for redevelopment into market-rate apartments or condominiums (Dixon 2007).

Community Affordable Housing Initiatives. Despite the recent downturn in the housing market, there is a shortfall in affordable housing in Duval County, particularly in the Beaches area (local term for Atlantic Beach, Neptune Beach, and Jacksonville Beach areas). Numerous apartment complexes and mobile home parks have been sold due to soaring property values, redevelopment, and condominium conversions. An estimated 800 affordable housing units, particularly in the Mayport Road area, have been lost in recent years creating a deficit of affordable housing (in the monthly rent range of approximately \$550 to \$750) (Dixon 2008, Funkhauser 2008). Various initiatives are underway to address the lack of affordable housing in the Village of Mayport and the Duval County Beaches area.

Habitat for Humanity is constructing 32 affordable housing units on a four-acre site located at the southwest corner of Florida State Route A1A and Mayport Road. Ground was broken for this project in March 2008 (Dixon 2008). Helping Hands Ministry, a faith-based organization, has an option on two plus acres west of Mayport Road where they estimate sufficient space to build 18 townhomes on this

property. Helping Hands Ministries is partnering with Beaches Habitat for Humanity to build the townhomes (Helping Hands Ministries of Atlantic Beach 2008).

An approximately nine-acre land area that belonged to the Jacksonville Parks and Recreation Department, but was never used as a park, has been declared surplus by the City so that it can be used for affordable homes. The land is located about three blocks north of where Florida State Route A1A turns west toward the Village of Mayport, near Hanna Park, and south of NAVSTA Mayport. Jacksonville housing department began soliciting development proposals for a workforce housing complex in December 2006 for families that are struggling to find affordable homes in the Beaches area. The target for the housing is families with household incomes of 50 to 120 percent of the area median income. Developers are being given creative latitude on the site plan's design and density as long as the proposal involves high-quality affordable housing compatible with the surrounding area, maintains as much green space as possible, and does not exceed seven units per acre. However, preliminary surveys show about half the nine acres contain wetlands, which will limit the number of units (Burmeister 2006).

New JAXPORT Cruise Terminal. JAXPORT constructed a temporary cruise terminal at an existing cargo berth located at the northwestern end of the Dames Point Marine Terminal (see Figure 3.8-1) as a short-term measure to quickly accommodate Celebrity Cruises' decision in March 2003 to homeport a vessel in Jacksonville as a market test beginning in October 2003. The facility was designed as a temporary fix until a site for a permanent terminal location could be identified. For the permanent terminal, JAXPORT is seeking sites east of the Dames Point Bridge (State Route 9A over the St. Johns River, see Figure 1.1-1) in order to accommodate newer and larger cruise ships. Cruise ships must pass beneath JEA electric power lines at Blount Island and the Dames Point Bridge, which limits the height of ships that can sail to the temporary cruise terminal. The clearance for the power lines and the bridge is 175 ft. According to JAXPORT, the trend in the cruise industry is to build larger cruise ships, some exceeding 190 ft in height. JAXPORT anticipates the smaller cruise ships which do meet the height restrictions will eventually be phased out, possibly resulting in Jacksonville losing the cruise business. Once a permanent terminal is established, JAXPORT plans to convert the temporary cruise terminal into a cargo-handling facility, a strategy planned when the temporary facility was designed in 2003 (JAXPORT 2008).

In fall 2004, potential locations for a permanent cruise terminal were evaluated along the entire length of the St. Johns River from Mayport to the JEA power lines. Currently, JAXPORT is reviewing the results of the recent studies of potential cruise terminal sites and economic impacts of the cruise industry in Jacksonville. One possibility is locating a cruise terminal at Mayport, but JAXPORT is still compiling all

the information needed to make a decision on whether or not to proceed with a project. Recently, private property owners in Mayport approached JAXPORT, indicating their willingness to sell riverfront property adjacent to the St. Johns River Ferry operations, and JAXPORT subsequently acquired these properties (JAXPORT 2008). These include a property that had been slated for high-end condominium development and a local shrimper's property. JAXPORT also recently acquired property in the area as a result of assuming the operation of the St. John's Ferry (see Section 6.8.3).

After JAXPORT acquired these properties, they began studying the feasibility of locating a new cruise terminal at Mayport. The concept under evaluation would occupy approximately 8 acres (about 10 percent of the Village of Mayport's 80 acres) and consist of a terminal area, single ship's berth, and parking garages. If JAXPORT moves forward with plans for a cruise terminal at Mayport, JAXPORT has stated that the history and flavor of the area will play a major role in the architecture chosen and in the preservation of a working waterfront. JAXPORT has stated that a Cruise Terminal at Mayport would require 24-hour security which would be heightened while a ship is in port, but this security would not require local residents to pass through any security checkpoints during the regular course of their day. Besides the area occupied by the terminal and ship's berth, there is no intention to restrict public access to the waterfront, unless security issues must be addressed while a ship is actually docked at the terminal. JAXPORT is evaluating environmental issues, including any need for environmental remediation, waste management, and protection of the St. Johns River (JAXPORT 2008).

JAXPORT's Board of Directors will ultimately make the decision on how to proceed, but no timetable for a decision has been established. JAXPORT staff will continue to research the feasibility issues noted above as well as the ability to obtain a concrete cruise industry commitment to Jacksonville as a home port (JAXPORT 2008).

6.2.4 Cumulative Impact Analysis

NAVSTA Mayport recapitalization, in combination with the alternatives that proposed new construction (particularly the Group 3 alternatives that propose the CVN nuclear propulsion plant maintenance facilities) would be expected to have the combined effect of higher utilization rates for buildable lands and facilities at NAVSTA Mayport. For those alternatives that do not result in new construction and would result in a loss of net daily population at NAVSTA Mayport (Alternatives 2, 3, and 9), there would likely be lower utilization rates of lands and facilities throughout the installation. Additional facilities may be demolished, as personnel are consolidated into common facilities, as practicable. Ongoing and additional mission requirements as a result of the possible LCS homeporting or Jacksonville Range

Complex training could affect land uses supporting mission activities at NAVSTA Mayport. The impacts of the USWTR to NAVSTA Mayport, if the site offshore at Jacksonville is chosen, would be highly localized to the cable connection site. Offshore use changes resulting from training operations within the Jacksonville Range Complex including those associated with AFAST and USWTR would be minimal, as US Fleet Forces currently conduct training exercises in the complex. The specifics of LCS or DDG-1000 homeporting are not identifiable at this time, but they would not be likely to result in large-scale changes in the pattern of land use at NAVSTA Mayport. Overall, regardless of alternative and in consideration of cumulative effects, the cumulative impacts would not be adverse nor change land use in such a way that mission-essential operations are degraded and, therefore, would not be significant.

As assessed in Section 4.2, changes to off-Station land use could occur as an indirect effect resulting from the gain or losses in personnel and associated dependents under the Group 1, 2, and 3 action alternatives and No Action Alternative. The land use transitions that are occurring due to the projects listed in Section 6.2.3, including conversion of mobile home communities to market-priced apartments and condominiums, potential cruise terminal development, and various efforts to address the lack of affordable housing in the area would have interactive impacts with the homeporting alternatives. With those alternatives that would result in a loss in personnel and dependent populations (all Group 1 and 2 alternatives, Alternatives 4 and 8 from Group 3, and the No Action Alternative), the Navy's influence on local land use patterns would be expected to diminish. That is, the businesses that specifically cater to the Navy population and Navy families would be affected because this population would live in fewer local neighborhoods. Therefore, the land use transitions would be expected to be further influenced by the economic influences of the Beaches-area real estate market and businesses that cater to the immigration of Beaches residents. For those alternatives that would result in the greatest reductions in NAVSTA Mayport's population by 2014 (Alternatives 3 and 7 and the No Action Alternative), there would be no deficit in on-Station bachelor housing. This could contribute to a reduction in overall demand for off-Station housing and corresponding demand effects (i.e., rental rates). For those alternatives that would result in an increase in the net daily population and associated dependent population (Alternative 12 from Group 3), the Navy would continue its ongoing influence on local land use. There would be additive impacts associated with the immigration of Beaches residents to the area and additional Navy personnel working at NAVSTA Mayport and residing in the neighborhoods. Although bachelor enlisted quarters would be provided to house most low-ranking enlisted personnel, the lack of affordable housing in the area likely would be exacerbated by the increased Navy population which would have an income level unable to afford much of the housing in the Village of Mayport and Beaches area. The development of additional bachelor housing through the MHPI would offset the impact. The parks and conservation areas

in the vicinity of NAVSTA Mayport, detailed in Section 3.2, would continue to provide for open space and outdoor recreation opportunity in the area.

Potential encroachment issues for NAVSTA Mayport would be expected to change with development and be more pronounced with Alternatives 12, which results in growth in NAVSTA Mayport population. The completion and implementation of the Encroachment Action Plan for NAVSTA Mayport; however, would be expected to address these issues and ensure that development in the adjacent community is compatible with the military mission.

The development of a cruise terminal at NAVSTA Mayport would potentially result in direct and indirect land use changes in terms of land use and land use density from development of the approximately 8-acre site for a terminal, plus any transportation improvements and service-type businesses that might develop near the terminal site. The land use of this area is currently Community/General Commercial, as is much of Village of Mayport. Changes in land use would be in accordance with the City of Jacksonville's Village of Mayport Overlay District, which as noted in Section 3.2.1, was established to recognize the Village of Mayport area as a unique residential and commercial community within Duval County.

In addition, the various transportation projects listed in Section 6.8.3 have a cumulative impact with land use changes. The completion of the Mayport flyover ramp included with it some local changes to businesses and housing areas in the immediate vicinity of the ramp. The Wonderwood Connector opens a new thoroughfare used routinely by various Duval County residents and visitors to the area. Such transportation developments are often associated with the influx of new businesses that cater to the new commuting population. If the St. Johns River_Ferry service was discontinued, this could result in the closure of local business that rely on ferry traffic (see also, Section 6.9.3). All of these transitions would have additive and interactive effects with the alternatives analyzed in this FEIS similar to, and in combination with, the land use effects described in the preceding paragraph.

Regardless of alternative, the cumulative impact to land use would not be significant. All new development would be subject to the land use and development regulations of the City of Jacksonville and City of Atlantic Beach. Although localized rezoning would be expected with some of the larger actions, the overall result would not be expected to be inconsistent or in conflict with the environmental goals, objectives, or guidelines of the City of Jacksonville or City of Atlantic Beach. The potential exception is affordable housing and the alternatives that would increase the Navy population in the area under Alternative 12. Alternative 12, in combination with other actions in the area that have reduced the affordable housing stock, could hinder attainment of affordable housing goals stated in the City of

Jacksonville 2010 Comprehensive Plan (City of Jacksonville 2004/2005) and City of Atlantic Beach 2015 Comprehensive Plan (City of Atlantic Beach 2004). Implementation of MHPI bachelor housing would have a countervailing impact.

6.3 WATER RESOURCES

6.3.1 Description of Geographic Study Area

The geographic study area for cumulative impacts to water resources includes the NAVSTA Mayport turning basin and entrance channel and the federal navigation channel, Jacksonville Harbor Bar Cut 3 federal navigation channel, Jacksonville ODMDS, Fernandina ODMDS, upland surface waters, and FEMA floodplain at NAVSTA Mayport. Because there is no impact to groundwater or wetlands associated with any of the alternatives in this FEIS, no cumulative effects to these resources are assessed.

6.3.2 Relevant Past and Present Actions

Past Development at NAVSTA Mayport. The dredging of Ribault Bay to create the NAVSTA Mayport turning basin and development at the installation over the years have localized effects to the water resources. The history of this development is detailed in Section 3.7. A limited amount of past development at NAVSTA Mayport has occurred within the 100-year FEMA floodplain (see Figure 3.3-2).

St. Johns River Water Quality. Within the study area, past and present actions have affected the St. Johns River water quality. Studies have identified either high nutrient concentrations or eutrophic conditions in the lower St. Johns River. A combination of point and nonpoint source pollution has increased the within-basin nutrient load to the Lower St. Johns River to 2.4 times over natural background levels for total nitrogen and 6 times for total phosphorous. Areal nutrient loading, at 9.7 and 2.1 kilograms of nitrogen and phosphorus per hectare of watershed contributing area per year within the Lower St. Johns River Basin is one of the highest reported from studies in the southeastern United States. Point sources are the greatest contributor of the man-made nutrient load from within the river basin. However, due to the entry of this load nearer to the mouth of the river, its incremental effect is presumed to be less than that caused by nonpoint sources and upper and middle St. Johns River loads which enter upstream. Changes in the amounts of river algae appear to correlate significantly with changes in inorganic nitrogen and dissolved oxygen, suggesting that algae use much of the nitrogen supplied to them for growth. During this cycle of growth and ultimate death, the algae exert a dominant influence over river oxygen content.

New TMDL Regulations for the Lower St. Johns River. A TMDL is the maximum amount of a given pollutant that a water body can absorb and still maintain its designated uses. Under Section 303(d) of the federal Clean Water Act and the Florida Watershed Restoration Act, TMDLs must be developed for all waters that are not meeting their designated uses and, consequently, are defined as “impaired waters” (FDEP 2003). The Lower St. Johns River was included on the 1998 303(d) list as impaired waters for nutrients based on elevated chlorophyll-a levels (algal blooms) (FDEP 2006). FDEP established the new TMDL regulations for the Lower St. Johns River Basin in December 2007. The next step is to approve the Basin Management Action Plan, which describes how the stakeholders will achieve the required TMDL. NAVSTA Mayport will have a specific allocation for both stormwater and wastewater. Nitrogen is the pollutant of concern in the Lower St. Johns River Basin for NAVSTA Mayport (Dombrosky 2007).

Dredging. As first discussed in Section 6.1.2, the Navy currently dredges the NAVSTA Mayport turning basin and entrance channel every two years as part of its maintenance dredging program. Most of this material has been disposed of in the Jacksonville ODMDS; the Fernandina ODMDS is primarily used for dredged material from the Submarine Base Kings Bay Entrance Channel.

The River Accord. The River Accord is a 10-year partnership initiative designed to repair the health of the lower basin of the St. Johns River. The City of Jacksonville, SJRWMD, JEA, Water Sewer Expansion Authority, and FDEP are members of The River Accord. Together, these partners are committing \$700 million to reduce the amount of nitrogen discharged into the river by closing wastewater treatment plants; improving other wastewater treatment plants; building pipelines necessary to reuse treated wastewater for irrigation of lawns, parks, and golf courses; eliminating failing septic tanks; and capturing and treating stormwater before it enters the river.

JEA is contributing \$200 million toward the River Accord; the St. Johns River Water Management District up to \$150 million; the city, \$150 million; and the remaining \$200 million is being sought from various federal and state sources. The River Accord has four major components: improving water quality, tracking the river’s sedimentation, improving access, and program accountability (City of Jacksonville 2007h).

6.3.3 Relevant Future Actions

The River Accord. Restoring the water quality of the St. Johns River is the key component of The River Accord. The River Accord focuses on eliminating high levels of nitrogen that contribute to summer algal blooms occasionally experienced in the river and eliminating fecal coliform bacteria in the river tributaries, which is largely attributed to failing septic tanks. In partnership with the University of North

Florida Environmental Center, The River Accord proposes a program to daily track and analyze river sedimentation levels in real time and then to use these data to enforce existing regulations regarding siltation (City of Jacksonville 2007g).

Port of Jacksonville Deepening. As discussed in Section 6.1.2, the USACE Jacksonville District and JAXPORT are cooperating to study the feasibility of further deepening the Port of Jacksonville. A Supplemental EIS for the Jacksonville Harbor Navigation Study, General Re-Evaluation Report is being prepared to supplement the Jacksonville Harbor Navigation Improvements EIS completed in November 1998.

Potential Freshwater Withdrawal from the St. Johns River. SJRWMD estimates that 262 mg/d could be withdrawn from the St. Johns River and Ocklawaha River (a tributary to the St. Johns River) without causing environmental harm to the water resources or ecology. Utilities in central Florida are interested in pursuing these withdrawals to meet drinking water demands. The estimate of theoretically allowable withdraw from the St. Johns River from the headwaters to DeLand, Florida is 155 mg/d. This value represents the quantity estimated by the SJRWMD that could be withdrawn on a continuous basis without causing water levels or flows to fall below established minimum flows and levels (MFLs). The estimate for the lower Ocklawaha River is 107 mg/d. This estimate is based on an allocation study, but SJRWMD expects that this value will be refined based on establishment of MFLs, which is scheduled for 2009. Adopted MFLs limit both the quantity and timing of water withdrawals. According to the SJRWMD, the quantity of water available for withdrawal is a small portion of the river flow. The 155 mg/d MFLs for the St. Johns River from the headwaters to DeLand, Florida is about 7.8 percent of the average flow of the St. Johns River near DeLand and 2.9 percent of the average flow near Jacksonville. Timing restrictions consider lower flowing periods (SJRWMD 2008).

SJRWMD's consumptive use permitting program regulates use of large amounts of water from the St. Johns River. When issuing a consumptive use permit, the SJRWMD limits the withdrawal of surface water to periods when it is available and protective of MFLs. Water supply withdrawal schedules proposed by an individual utility are tested for MFLs compliance considering not only the individual proposed withdrawal but also for all other permitted withdrawals. MFLs compliance must be demonstrated before a proposed withdrawal schedule is approved (SJRWMD 2008).

In developing MFLs for the St. Johns River, SJRWMD investigated potential downstream impacts of allowing surface water withdrawals from the river's upper and middle basins, those areas between Sanford and Indian River County. The investigation concluded that a maximum cumulative withdrawal

of 155 mg/d would not harm estuarine resources. Small increases in salinity in the river's lower basin (between Welaka and Mayport) would be expected as a result of surface water withdrawals, but are not expected to adversely impact plants and animals of the river or adversely impact dissolved oxygen concentrations in the river. SJRWMD is conducting additional detailed river flow models to further assess potential cumulative impacts and analyze a wide range of factors, including salinity changes that could result from water withdrawals and related impacts to the river water quality and habitat. The results of this work will be used in both setting new MFLs and updating current MFLs (SJRWMD 2008).

6.3.4 Cumulative Impacts Analysis

Cumulative surface water impacts resulting from increased impervious surfaces and disturbance associated with on-land construction would potentially have additive and interactive impacts with other actions affecting stormwater runoff at NAVSTA Mayport and other sources of stormwater runoff impacts to the St. Johns River. Each new construction activity involving new impervious surface would need to be evaluated to determine mitigation requirements to implement the December 2007 TMDL regulations. NAVSTA Mayport is currently attempting to reduce nutrient loading to the river by 63 percent and they are ensuring that all control measures relative to permitting noted in Sections 4.3 and 4.11, are implemented (Racine 2007b). These control measures would treat and remove nutrients in stormwater before it enters nearby receiving waters or prevent it from entering receiving waters to ensure no impact from the new impervious surface. The application of the December 2007 Lower St. Johns River TMDL regulations for activities throughout the area and the River Accord should have beneficial countervailing impacts on the river's water quality. Therefore, the resultant cumulative impact to surface water quality is not expected to be significant.

Although implementation of the Group 3 alternatives would minimally contribute to the construction footprint within the floodplain, the facilities would be elevated above the base flood level to minimize risk of flood loss and minimize the impact of floods on human safety, health, and welfare. Although the ecological function of the floodplain in the developed waterfront of NAVSTA Mayport has long since been modified by development, the cumulative impact would not be significant as the area affected is highly localized and remaining nearby floodplains, such as the marshlands in the western portion of NAVSTA Mayport, are not anticipated to be modified.

Past and ongoing dredging and disposal of maintenance dredged material have and will continue to have resulted in temporary increases in turbidity in dredged areas. Ongoing and future dredging projects at NAVSTA Mayport and in the Jacksonville region would have additive impacts when considered with

Group 2 and 3 proposed dredging. As assessed in Section 4.1 and 4.3, the deepening of the NAVSTA Mayport turning basin and entrance channel, and federal navigation channel (Jacksonville Harbor Bar Cut 3), would result in siltation rates similar to that which occur during the regular maintenance dredging of those areas. The initial round of maintenance dredging after the Navy's proposed dredging may involve a larger amount of material before stabilization of the area occurs. These periodic maintenance events, similar to the deepening project, will create short-term suspended sediment and turbidity in the vicinity of the dredging. The potential future deepening of the USACE Federal Navigation Project would generate short-term effects on water quality at the offshore disposal sites.

The dredge project proposed under Group 2 and 3 alternatives would have interactive impacts with the proposed Jacksonville Harbor deepening in terms of changes to hydrodynamics, currents, salinity, sedimentation, etc. These impacts will be evaluated in detail in USACE's Supplemental EIS for the Jacksonville Harbor Navigation Study, General Re-Evaluation Report. Although the specifics of impacts cannot be predicted at this time, the extent of the cumulative impacts within the proposed action would largely be localized in the area of confluence between proposed project dredge area within the NAVSTA Mayport entrance channel and federal navigation channel. Overall, the cumulative impact on water quality in the Lower St. Johns River would be localized and minor.

Freshwater withdrawals of the St. Johns River would also have the potential for cumulative impact with the dredging project proposed under the Group 2 and 3 alternatives and the Jacksonville Harbor deepening project, particularly with regard to salinity. The increase in salinity from the implementation of Group 2 or 3 alternatives just east of mile zero and upriver beyond mile seven (see Table 4.3-3) would be additive to other increases in salinity. The projected average increase in salinity as a result of the surface water withdrawals indicate the average 5-ppt isohaline would be shifted upstream by 0.8 mile at the 320-cubic feet per second withdrawal limit and the absolute change in mean salinity within the impacted area would be about 0.4 ppt (SJRWMD 2002). As noted in Section 6.3.3, the SJRWMD is further evaluating the impacts of these freshwater withdrawals, including cumulative impacts.

6.4 AIR QUALITY

6.4.1 Description of Geographic Study Area

The geographic study area for air quality is Duval County and Nassau County.

6.4.2 Relevant Past and Present Actions

Past and ongoing activities that generate air emissions from manmade (e.g., power plants, vehicle engines) and natural (e.g., forest fires) sources affect air quality. As noted in Section 3.4, Duval County and Nassau County are currently in attainment with all criteria pollutant standards.

6.4.3 Relevant Future Actions

Future development in the area will contribute to manmade air emissions. However, current air quality regulations ensure that air emissions from any new sources will be protective of human health.

6.4.4 Cumulative Impact Analysis

The emissions generated during the implementation of any of the action alternatives involving construction and/or dredging would be additive to other emissions generated coincidentally within the region. Compliance with the SIP will ensure that implementation of any of the action alternatives, in combination with past, present, and future actions, would not result in a new violation of existing NAAQS, nor contribute to an increase in the frequency or severity of violations of existing NAAQS, or delay the timely attainment of any NAAQS, interim milestones, or other milestones to achieve attainment.

6.5 NOISE

6.5.1 Description of Geographic Study Area

The geographic study area for cumulative noise impacts includes NAVSTA Mayport and the dredge area associated with Group 2 and 3 alternatives.

6.5.2 Relevant Past and Present Actions

The main sources of noise at NAVSTA Mayport are aircraft operations, including takeoffs, landings, touch-and-go operations, and engine maintenance run-ups. These noise sources impact land use on the Station as well as surrounding developed areas that are potentially incompatible with flight operations, such as residential developments, schools, and churches. Helicopters comprise the vast majority of the flight operations at NAVSTA Mayport; fixed-wing aircraft are transient.

Ongoing maintenance dredging in the dredge area has affected the noise environment in these areas.

6.5.3 Relevant Future Actions

The deepening of the Jacksonville Harbor, detailed in Section 6.1.2, would potentially involve blasting. The location of this blasting would be upriver from the location of the dredging proposed under the Group 2 and 3 alternatives. Furthermore, the timeframe for Jacksonville Harbor deepening action, although yet to be determined, would not likely occur coincident with the implementation of the Navy dredging project included in the Group 2 and 3 alternatives.

6.5.4 Cumulative Impact Analysis

The noise resulting from the construction activities associated with all alternatives except for Alternatives 2, 3, and 9 and dredging associated with all Group 2 and 3 alternatives would have minor additive impacts with the existing noise environment at NAVSTA Mayport, which is predominated by aircraft noise. Given the relatively small footprint of the average noise levels associated with air operations NAVSTA Mayport and the minor noise associated with implementation of the action alternatives, the resultant cumulative impact would not be significant. The Jacksonville Harbor deepening project would occur in a different time and place, and therefore would not have additive and/or interactive impact with the alternatives. Blasting is not expected as part of the Navy's proposed dredging operations.

6.6 BIOLOGICAL RESOURCES

6.6.1 Description of Geographic Study Area

The geographic study area for the biological resource cumulative impact analysis includes the NAVSTA Mayport turning basin, entrance channel, federal navigation channel within the St. Johns River, and the Atlantic Ocean extending out to Fernandina ODMDS and Jacksonville ODMDS.

6.6.2 Relevant Past and Present Actions

Relevant past and present actions include past and continued dredging projects in the Jacksonville Harbor and at NAVSTA Mayport and associated vessel trips to the USEPA-approved ODMDSs as well as Navy fleet training in the Jacksonville Range Complex (including those associated with AFAST and USWTR proposals) if fleet training operations are increased from current levels (see Section 6.2.2). As detailed in Section 6.1.2, past offshore disposal from Jacksonville Harbor dredging projects has been to the Jacksonville ODMDS and disposal in the Fernandina ODMDS has been from Submarine Base Kings Bay and Fernandina Harbor.

6.6.3 Relevant Future Actions

Relevant future actions include proposed USACE Jacksonville Harbor deepening (see Section 6.2.3), proposed JAXPORT cruise terminal (see Section 6.2.3), Dames Point Terminal development and increased containerized cargo throughput (see Section 6.8.3), and potential freshwater withdrawals of the St. Johns River (see Section 6.3.3).

6.6.4 Cumulative Impact Analysis

6.6.4.1 Marine Communities (Marine Flora, Invertebrates, Fish, and EFH)

Implementation of any Group 1 alternative would involve only minor terrestrial construction activities and there would be no new in-water construction or dredging activities. Therefore, there would be no impacts cumulatively to marine flora, invertebrates, and marine fish and no effects to EFH with implementation of any Group 1 alternative.

Implementation of any Groups 2 or 3 alternative, when considered cumulatively with the projects listed in Section 6.6.2 and 6.6.3, would have no significant cumulative effects on marine flora, invertebrates, fish, and EFH. A majority of the actions currently occur or are proposed to occur significantly upriver of NAVSTA Mayport and are neither dependent nor interdependent with the deepening project that is included with the Group 2 and 3 alternatives. Some of the projects (e.g., dredging of St. Johns River and Jacksonville Harbor) would likely have temporary direct and indirect cumulative impacts on marine flora and invertebrates primarily due to the suspension of sediments and short-term increases in turbidity within the water column in the nearshore environments of the proposed project locations and at the USEPA-approved ODMDs. In addition, these projects would likely have temporary direct and indirect impacts on marine fish primarily due to the temporary displacement of fish species and their prey (e.g., marine fish and invertebrates) from suitable habitat within the vicinity of the project areas and ODMDs. SJRWMD has concluded that the projected average increase in salinity as a result of the potential surface water withdrawals of the St. Johns River at a rate of 320-cubic feet per second may have a minor effect on the distribution of some aquatic species in the Lower St. Johns River. The 5-ppt isohaline may be shifted upstream by 0.8 mile. The absolute change in mean salinity within the impacted area is only about 0.4 ppt. This upstream translation of the saline water may impose stress or impacts to freshwater plant habitat in a 1,130-acre area. The species composition of the river, however, is not expected to change. It was concluded that this level of withdrawal would provide protection of the estuarine resources, but noted that this conclusion should be re-evaluated based on pending eel grass study results (SJRWMD 2002 and SJRWMD 2003). Further evaluations by SJRWMD are

underway. Long-term, permanent impacts to populations of marine flora, invertebrates, fish or adverse effects to EFH; however, are not expected, either as a result of each project or cumulatively when combined with other past, present, and reasonably foreseeable actions including implementation of any alternative in Groups 2 or 3. Therefore, no cumulative impacts to marine fish and EFH are foreseeable at this time.

6.6.4.2 Terrestrial Communities (Vegetation and Wildlife)

Implementation of any the 12 action alternatives or No Action Alternative would have no significant cumulative effects on terrestrial communities when considered in conjunction with the identified cumulative projects. The cumulative projects that include construction and renovation activities would occur in landscaped and previously disturbed areas and would remove landscaped vegetation and temporarily displace terrestrial wildlife (e.g., green anole, raccoon, gray squirrel, and migratory birds such as common ground dove, mourning dove, song sparrow, red-winged blackbird, house finch, northern mockingbird, and boat-tailed grackle). However, long-term, permanent impacts to terrestrial biological resources are not expected from implementing any alternative individually or in combination with other past, present, and reasonably foreseeable actions. Therefore, no cumulative impacts to terrestrial biological resources would occur.

6.6.4.3 Federally Threatened and Endangered Species

The main potential cumulative impact concerns the increase in marine vessel traffic within the St. Johns River and the nearby Atlantic Ocean and the associated potential increase in ship strikes to NRW. As detailed in Section 6.8.4.2, in the long-term, there would be an increase in total marine traffic primarily due to commercial/Harbor development, but the Navy's incremental contribution to the overall marine traffic under all alternatives would be insignificant. All alternatives would result in a net decrease in the number of ships homeported at NAVSTA Mayport and, therefore, a long-term decrease in the Navy vessel transit activities in the area. Therefore, there would be no cumulative impacts related to ship strikes and NRW with implementation of any of the proposed NAVSTA Mayport homeporting alternatives and Navy vessel transit activities associated with NAVSTA Mayport. Navy vessel transit activities are addressed in the Navy's 1997 Regional BO with NMFS for Navy Activities off the Southeastern United States along the Atlantic Coast (NMFS 1997b) and the Navy is currently in consultation with NMFS for Navy vessel transit activities, to include all those associated with ships homeported at NAVSTA Mayport, under the East Coast Navy Tactical Training Theater Assessment Planning Program consultation. NRW Early Warning System would continue to minimize impacts to

NRW by ensuring the widest possible exchange and timely dissemination of sightings of NRW and other listed whale species (e.g., sperm whale, sei whale, etc.) to not only DoD, but also civilian shipping through coordination with the FWC, Georgia Department of Natural Resources, New England Aquarium Early Warning System, and others.

Under the Group 2 and 3 alternatives, the marine traffic associated with dredging and transits to the ODMDs would result in short-term additive increases in marine traffic. The incremental impact would be minimized by the mitigation measures for potentially affected species protected by the ESA outlined in Section 4.6.5. In addition, ongoing dredging activities for the Navy, the Federal Navigation Project, and other users as described in Section 6.1.3 are expected to continue in the future resulting in additive short-term/transitory increases in vessel transits in the area. In particular, the possible deepening of the Jacksonville Harbor would increase the dredging activities beyond the historic maintenance dredging activities experienced in the past.

6.6.4.4 Marine Mammals

As discussed above in Section 6.6.4.3, some of the cumulative projects (e.g., dredging of St. Johns River and Jacksonville Harbor) would likely have temporary direct and indirect impacts on marine mammals primarily due to the temporary displacement of marine species and their prey (e.g., marine fish and invertebrates) from suitable habitat within the vicinity of the Group 2 and 3 project areas and associated USEPA-approved ODMDs. In addition, the cumulative marine vessel movement (see Section 4.8.4) would have additive potential for impact to marine species with that associated with dredging and transport of dredged material to USEPA-approved ODMDs. The protective measures for the Group 2 and 3 alternatives for vessels (e.g., NRW Early Warning System and a 24-hr/day lookout who has completed NMFS-approved marine mammal awareness training, use extreme caution and safe speed to avoid a collision with a marine mammal) during ODMDs transit (see Section 4.6.5) would significantly reduce the potential incremental impact of marine traffic associated with these alternatives. No long-term, permanent impacts to populations of marine species, however, are expected, either as a result of each project or cumulatively when combined with other past, present, and reasonably foreseeable actions including Group 2 or 3 alternatives. Therefore, no cumulative adverse effects to marine mammals would occur.

6.7 CULTURAL RESOURCES

6.7.1 Description of Geographic Study Area

The affected environment for cultural resources includes NAVSTA Mayport and the proposed dredge areas.

6.7.2 Relevant Past and Present Actions

Past use at NAVSTA Mayport described in Section 3.7 has influenced the cultural resources present within the study area. Present and continued development (as described in previous sections) within the Station could disturb unknown cultural resources.

6.7.3 Relevant Future Actions

Any development of NAVSTA Mayport, as described in Section 6.2.3, has potential to affect cultural resource sites known to occur at NAVSTA Mayport. However, existing management and planning tools including base master planning and the ICRMP, identify such sites, allowing for avoidance and proper resource management.

6.7.4 Cumulative Impact Analysis

Implementation of any of the alternatives, when considered in conjunction with other projects described in Section 6.7.3, would have no significant cumulative effects on cultural resources. Although there are six NRHP-eligible sites and a NRHP-listed structure at NAVSTA Mayport, current or future projects are not expected to disturb those historic properties as future projects would be coordinated with the SHPO per Section 106 of the NHPA. Whenever effects to historic properties could not be avoided, the effects would be addressed in accordance with the requirements of 36 CFR 800, in consultation with the SHPO, which would reduce effects to less than significant levels. Therefore, no cumulative impacts to cultural resources would occur.

6.8 TRAFFIC

6.8.1 Description of Geographic Study Area

The geographic study area for traffic and parking encompasses the entire developed portion of NAVSTA Mayport, as well as the local and regional areas and their ability to accommodate the additional traffic

that would be generated by NAVSTA Mayport development, in combination with all other present and future projects on the Station or in the immediate community vicinity surrounding NAVSTA Mayport.

The geographic study area for marine vessel movement extends from the Jacksonville Harbor Bar Cut 3 federal navigation channel and up the St. Johns River approximately 21 miles to Tallyrand terminal and encompasses commercial, port facilities, military, and recreational marine vessel movements.

6.8.2 Relevant Past and Present Actions

City of Jacksonville Transportation Improvement Projects. Jacksonville Transportation Authority constructed the Wonderwood Connector, a four-lane, divided roadway from Hanna Park in the Village of Mayport to Monument Road in Arlington, which includes a new bridge over the Intracoastal Waterway. The first two phases were completed in 2005. The final segment of this project, connecting Monument Road with State Route 9A, is projected for mid-2008 (Jacksonville Transportation Authority 2005).

A flyover ramp was constructed from Atlantic Boulevard (State Route 10) to Mayport Road (State Route A1A) in order to relieve traffic congestion at this intersection caused by NAVSTA Mayport traffic. This project includes the flyover and additional turning lanes from eastbound on Atlantic Boulevard to northbound on Mayport Road and from southbound on Mayport Road to westbound on Atlantic Boulevard. This action reduced congestion in both directions on Atlantic Boulevard during morning and evening peak travel. This project interfaced with the recent widening of the Intracoastal Waterway Bridge on Atlantic Boulevard by the Florida Department of Transportation. It also included elevating and widening a portion of Atlantic Boulevard to provide more capacity as a hurricane evacuation route. Construction was completed in 2002. Daily traffic on Atlantic Boulevard in 2000 was 62,000 and Mayport Road 46,500 (Jacksonville Transportation Authority 2002). In 2005, traffic along Atlantic Boulevard was 50,500 (an 18.5 percent decrease) and Mayport Road 44,000 (a 5.4 percent decrease) (FCMPO 2007).

Jacksonville Harbor. For many years the Jacksonville Harbor has been used by commercial, military and recreational marine vessels. As noted in Section 3.8.4, there were more than 80,961 commercial vessel movements in Jacksonville Harbor in 2005 (USACE 2007).

New JAXPORT Cruise Terminal. See description at Section 6.2.3.

Navy Fleet Training in the Jacksonville Range Complex, USWTR, and AFAST. See descriptions at Section 6.2.3.

Recreational Boat Traffic. Few studies have been completed which provide a quantitative, comprehensive view of recreational boat activity in the study area; however, it is known that the area does support substantial marine traffic.

6.8.3 Relevant Future Actions

NAVSTA Mayport Non-Homeported Vessel Transits. As detailed in Table 4.8-4, U.S. Navy ships visiting NAVSTA Mayport and other visiting ships (e.g., foreign navy, special units, contractors) are expected to increase by approximately 20 percent between the 2006 baseline and 2014 end state. These marine vessel movements are tracked in terms of annual transits between the Sea Buoy (approximately 7 miles offshore) and the NAVSTA Mayport turning basin. The annual transits for U.S. Navy visiting ships would be approximately 100, comprising approximately 10 percent of the total annual NAVSTA Mayport vessel transits. Annual NAVSTA Mayport vessel transits by other visiting ships would increase to approximately 310, comprising approximately 31 percent of the total annual NAVSTA Mayport vessel transits. As presented in Table 3.8-6, the U.S. Coast Guard (a tenant at NAVSTA Mayport) comprises approximately 16 percent of the total vessel transits at NAVSTA Mayport and these transits could, dependent on mission changes, increase over time and are not reasonably foreseeable at this time.

St. Johns River Ferry Potential Closure. The St. Johns Ferry has provided service across the St. Johns River from the Village of Mayport to Fort Gorge Island for 58 years. Navy personnel commuting from the north to the Village of Mayport and Beaches residents who take the ferry to jobs in Amelia Island or Fernandina Beach comprise most of the riders. Tourists also use the boat to reach destinations such as the Kingsley Plantation or state parks on Big Talbot and Little Talbot islands. As noted in Section 3.8, ridership was 346,400 in 2005, down from 404,516 the previous year and 450,551 in 2003. The decline in use is partially attributed to the Wonderwood Expressway, which opened in 2004. Although there is a fee for ferry use (from \$1 to \$10 each way), operational costs were supplemented by the state and City of Jacksonville until this supplemental funding was cut in 2007. JAXPORT has committed to operating the ferry for the immediate future, but the long-term viability of the ferry through the 2014 end state is unknown. Closure of the St. Johns Ferry would result in traffic diverted west on State Routes 105 (Heckscher Drive) to 9A south then State Route 10 east to the Village of Mayport or the Wonderwood Connector from State Route 9A.

Dames Point Marine Terminal Development and Increased Containerized Cargo Throughput. As noted in Section 3.8, Dames Point Marine Terminal is one of three major JAXPORT terminals located on the St. Johns River. It includes a site that handles bulk or aggregate (sand, gravel, etc.), a cruise ship

terminal (which began homeporting ships in 2004), and the TraPac Container Terminal that is under construction. In March 2007, JAXPORT issued a construction contract to build the terminal's "horizontal" port infrastructure, to include the container storage paving area, two 1,200 ft berths and associated dredging along the terminal's waterfront. This 130 acre facility will be used by a Tokyo-based shipping line, Mitsui O.S.K. Lines, and its terminal operating partner, TraPac, to load and unload container ships sailing to and from ports in Asia. Mitsui O.S.K. Lines plans to move these containers on and off the terminal by truck. A second contract has become available for bid to complete the "vertical" construction at the site, to include terminal buildings, lighting, and related port equipment. The facility is scheduled to open for container ship service in late 2008 (JAXPORT 2007b). It is expected that the facility will increase marine vessel movements in the St. Johns River.

JAXPORT, the City of Jacksonville, and the South Korea-based ocean carrier, Hanjin Shipping Co. Ltd., signed a memorandum of understanding in October 2007 for the development of a new 170-acre container terminal facility at the Dames Point Terminal (see Figure 3.8-2) to begin operations in 2011 (JAXPORT 2007d). The terminal facility may be located at the site of the existing temporary JAXPORT cruise port facility or at a new plot of land. It could have the capacity to handle the equivalent of 1 million twenty-foot-equivalent units (TEUs), or 7.5 million tons of cargo, a year (Gibbons 2008). A TEU is an inexact unit of cargo capacity often used to describe the capacity of container ships and container terminals based on the volume of a 20-foot long shipping container. Vessels vary in capacity for TEUs, but there is a trend within the shipping industry towards vessels with 5,000-TEU and greater capacity.

In 2006, JAXPORT's throughput of TEUs was 0.77 million (JAXPORT 2007a). Once both the new Mitsui O.S.K. Lines and Hanjin Shipping Co. Ltd. terminal facilities are operational, and additional services are provided at Blount Island to increase annual container throughput, it is estimated that throughput would increase to between 2.4 and 2.8 million TEUs (JAXPORT 2007d). One longer-term projection is that by 2020, the Dames Point and Blount Island Terminals together could accommodate an annual container throughput of 3.5 million TEUs. Under these projections, Jacksonville would be the third-largest container port on the entire Eastern Seaboard, with only New York/New Jersey and Virginia's Hampton Roads handling more containerized cargo (JAXPORT 2007d).

New JAXPORT Cruise Terminal. See description at Section 6.2.3.

6.8.4 Cumulative Impacts Analysis

6.8.4.1 Traffic and Parking

There has been a 14.5 percent reduction in active personnel stationed at NAVSTA Mayport from a 1987 high of 18,726 personnel to the 2006 baseline population of 16,010 personnel. These changes in personnel to a base population lower than the historic high would reflect a decrease in traffic, both on- and off-Station. However, it is noted that off-Station, additional development and population influx since 1987 have affected traffic in the area, although the recent local roadway construction projects have helped to alleviate congestion. The recent City of Jacksonville Transportation projects noted in Section 6.9.2 have resulted in decreased travel delays and a consequential decline in congestion along local roadways. Daily traffic on Atlantic Boulevard in 2000 was 62,000 AADT count, and for Mayport Road 46,500 AADT. In 2005, traffic along Atlantic Boulevard was 50,500 AADT and Mayport Road 44,000 AADT, an 18.5 percent decrease and 5.4 percent decrease, respectively (FCMPO 2007).

Local efforts for new development around NAVSTA Mayport, detailed in Section 6.2.3, could contribute to increased traffic in the vicinity of NAVSTA Mayport. While condominium development would add to AADT counts in the area; the establishment of a cruise terminal in the Village of Mayport could also result in periodic LOS impacts in the area associated with cruise ship arrivals and departures. The Mayport Community Redevelopment Area could have countervailing impacts in that it includes efforts to address traffic and congestion by promoting access management initiatives and a more pedestrian- and cyclist-friendly environment.

The potential closure of the St. Johns Ferry, which operates between the Village of Mayport (via State Route A1A) and Fort George Island, would result in traffic being diverted on State Route 105 (Heckscher Drive), State Route 9A, and Atlantic Boulevard to the Village of Mayport or the Wonderwood Drive Connector from State Route 9A.

Additional growth throughout the area, including Dames Point Terminal development, would have impacts on area traffic. The First Coast Metropolitan Planning Organization Long Range Transportation Plan proposes various improvements for highways and transit projects that, if implemented, would have countervailing impacts.

Establishment of a cruise terminal at Mayport would result in increased traffic primarily when passengers get off and on the ship, which normally occurs during non-peak traffic hours. JAXPORT will study road

usage and, in partnership with the Florida Department of Transportation, make plans to address traffic impacts (JAXPORT 2008).

The cumulative effects which might result from the relevant past, present, and reasonably foreseeable future actions, both on the Station in any of the alternatives, or off Station as discussed above, do not appear to be collectively significant. Even under Alternative 12, which proposes to add the greatest working population to NAVSTA Mayport, there would be no significant impacts from NAVSTA Mayport development and local and regional development actions as foreseen at this time.

6.8.4.2 Marine Vessel Transit

The proposed dredging project included in the Group 2 and 3 alternatives would not affect general marine vessel movement in Jacksonville Harbor as the deepening does not extend beyond the NAVSTA Mayport entrance channel and would not support access to JAXPORT by deeper draft vessels. There is no interdependence between the dredge project associated with the Group 2 and 3 alternatives and other JAXPORT development. The cumulative effect of the other actions that are independent of the homeporting alternatives, however, would be expected to increase in the amount of marine traffic on the St. Johns River from commercial vessels, in particular. Increasing the depth of the shipping channel by the USACE would potentially increase the amount of commercial vessel traffic that calls on JAXPORT and other private ports. The increased depth would allow for larger ships to call on the port and accommodate existing ships that need a deeper water depth (draft) in order to call on the port fully loaded. This is cumulative with the increased marine vessel movements expected with the Mitsui O.S.K. Line and Hanjin Shipping Co. Ltd. container cargo ports development and operation. Cruise terminal operations should not affect normal river traffic. Although each cruise ship will need some time to turn as it arrives at the berth, this usually occurs in the early morning hours and normally takes no more than 10 minutes (JAXPORT 2008). Recreational boating would also be expected to continue its increasing trend independent of the homeporting of additional surface ships at NAVSTA Mayport.

Redevelopment of the Village of Mayport area may increase the amount of commercial and recreational vessel traffic in and out of the Village of Mayport, which may create more congestion around the NAVSTA Mayport entrance channel. In addition, widening the Trout River Cut Range and Quarantine Island Upper Range may increase recreational fishing and boating traffic on the St. Johns River. These projects may have cumulative impacts of causing congestion of marine traffic movement to a significant level if cargo berths are occupied and vessels waiting to call on the port are forced to wait in anchorage offshore.

The decrease in annual vessel transits between the Sea Buoy and the NAVSTA Mayport turning basin that would occur under all alternatives, estimated at a 9 percent decrease for Group 3 Alternative 12 (which involves the homeporting of the highest number of ships), would be offset by the expected increases in U.S. Navy, visiting ships, and U.S. Coast Guard transits associated with NAVSTA Mayport (tracked in terms of transits between the Sea Buoy and the turning basin). The incremental contribution of Navy traffic; however, to the overall marine traffic under all alternatives would be insignificant. In 2005, there were a total 80,961 vessel movements within the Jacksonville Harbor (including the St. Johns River Ferry) (USACE 2007). The 2006 baseline of all vessel transits at NAVSTA Mayport (1,170, see Table 3.8-6) are approximately 1 percent of this total vessel movements. Although there could be an increase in Navy marine vessel movement in the Jacksonville Range as part of Navy U.S. Fleet Forces Training, the impact of such increases on the study area cannot be foreseen at this time and are subject to the evaluation in the EIS for the Jacksonville Range Complex (see Section 6.2.3). The dredging associated with the Group 2 and 3 alternatives would result in a short-term and minimal increase in marine vessel movement.

An additional cumulative impact is that the deepening of the Harbor Bar Cut 3 of the federal navigation channel may provide incentive for JAXPORT to move forward with deepening the shipping channel since there would be less area to dredge, reducing the time and cost needed for the project. However, the Harbor Bar Cut 3 deepening associated with the Group 2 and 3 alternatives represents only a small portion of the 21-mile Jacksonville Harbor channel.

6.9 SOCIOECONOMICS

6.9.1 Description of Geographic Study Area

The geographic study area for the cumulative effects analysis for socioeconomics is the same as that described in Section 3.9, Duval County, City of Jacksonville, Atlantic Beach, Neptune Beach, Jacksonville Beach, and the census tracts surrounding the developed portions of NAVSTA Mayport.

6.9.2 Relevant Past and Present Actions

Past and present actions with potential socioeconomic cumulative impacts are the same as those described for land use in Section 6.2.2, with the additional consideration noted below.

KENNEDY Decommissioning. As stated in Section 1.3, the baseline year of 2006 used in this EIS is most representative of recent operations at NAVSTA Mayport because 2006 was the final full year of operations of the KENNEDY prior to its decommissioning in March 2007.

6.9.3 Relevant Future Actions

Relevant future actions with potential socioeconomic cumulative impacts are the same as those described for land use in Section 6.2.3, with the additional consideration noted below.

Potential Closure of the St. Johns Ferry. Restaurant owners near the ferry state that ferry passengers account for up to 40 percent of their business. Dozens of other businesses say they depend on the ferry to provide a steady customer base. The developer that is constructing the condominium and mixed-use development at the Village of Mayport has said that an end to ferry service would severely impact the project (Karkaria 2007 and Florida Times Union 2007b).

6.9.4 Cumulative Impact Analysis

The loss in net daily population associated with Group 1 and Group 2 alternatives and Alternative 4 of Group 3 would be offset by the economic growth in the area fueled by redevelopment. Because the baseline of 2006 includes the manning associated with the KENNEDY, some businesses are already affected by the losses associated with its decommissioning and the corresponding decrease in Navy personnel in the area. Loss in ferry service could have an additive negative impact on businesses in the area. With Alternative 12, there would be an additive and interactive gain with regard to the increase in net daily population and dependent population and associated businesses. Together with other revitalization initiatives, the combined cumulative impact would be greater economic gains in terms of employment, expenditures, and earnings in the local economy.

6.10 GENERAL SERVICES

6.10.1 Description of Geographic Study Area

The study area for general services includes the locations where service providers exist, such as schools, emergency services, law enforcement, health services, recreation, family services, and childcare. For the most part, these services are centered at NAVSTA Mayport, but provide service to off-Station military housing areas (Ribault Bay Village and Johnson Family Housing). Ribault Bay Village Housing is located approximately 1.5 miles south of the main gate, west of Mayport Road. Johnson Family Housing is located approximately 10 miles from NAVSTA Mayport, near the Atlantic Boulevard/9A interchange

south of Craig Municipal Field. The focus is on government-provided services to the NAVSTA Mayport population, which includes the 2006 baseline of approximately 13,300 net daily population of the Station, plus an estimated 24,400 dependents of military personnel (adapted from DoN 2006a and NAVFAC 2005).

6.10.2 Relevant Past and Present Actions

The same actions described for land use have the potential for cumulative effect to general services. See Section 6.2.2.

6.10.3 Relevant Future Actions

The same actions described for land use have the potential for cumulative effect to general services. See Section 6.2.3.

Duval County Public Schools Redistricting. Duval County Public Schools is currently conducting community meetings to address their process for redistricting. Community input regarding status of facilities, school utilization, and school boundaries is being gathered for their Academic and Community Excellence Plan. They have divided the county into the four main planning areas of Central, North, Southeast, and Southwest, as well as eight smaller Concurrency Management Areas within those zones. NAVSTA Mayport is in the Southeast Planning Area, where issues to be addressed include whether or not underutilized schools is a bigger issue than overcrowded schools and if boundary adjustments are an acceptable means to ease overcrowding and balance enrollment. There are numerous federal and state rules, regulations, and policies that must be adhered to in this process. Working groups consisting of community leaders and citizens met in July – October 2008 and presented recommendations to the school board in November 2008. The School District's Long-Range Facilities Plan prioritizes projects to address underutilized schools, shifting demographics, declining enrollment, aging facilities, and excess capacity (Duval County School District 2008).

6.10.4 Cumulative Impact Analysis

Change in demand on general services, particularly schools, law enforcement and fire/emergency services, recreation, health services, childcare, and family services as a result of the homeporting alternatives would be compounded by growth and development of the community surrounding NAVSTA Mayport. It is not anticipated there would be adverse impacts, as the community would be prepared to meet the demands. As the community grows, general services would also be expanded as needed. Also, even with increases in population under Alternative 12, much of the demand for general services would

be relatively dispersed throughout the community surrounding NAVSTA Mayport. Gains and losses of school age children associated with the alternatives could have interactive impacts with the Duval County Schools Redistricting process. Duval County School District consider factors such as shifts in demographics in planning for future construction and the Navy would provide demographic information to the school district so that they could account for such changes associated in school age population in combination with other changes in area demographics. As Group 3 alternatives would not be fully implemented until 2014 at the earliest, at least three years of advance planning could occur and, therefore, not impose significant cumulative impacts to general services.

The continued implementation of the MHPI at NAVSTA Mayport, particularly the bachelor housing component, would be expected to offset impacts of the homeporting alternatives. Future planning for housing requirements would be parallel with the decision-making process for this EIS so that housing requirements associated with homeporting of additional ships at NAVSTA Mayport are incorporated into plans for future military family and bachelor personnel.

6.11 UTILITIES

6.11.1 Description of Geographic Study Area

The geographic study area for utilities encompasses the entire developed portion of the NAVSTA Mayport and wherever improved parcels exist with utilities. It also includes the source locations and disposal or treatment sites of existing utility systems that may occur off Station.

6.11.2 Relevant Past and Present Actions

NAVSTA Mayport Development. See descriptions in Section 6.2.2.

6.11.3 Relevant Future Actions

Planned Development at NAVSTA Mayport and USWTR. See descriptions in Section 6.2.2.

6.11.4 Cumulative Impacts Analysis

Group 1 and 2 alternatives and Group 3 Alternatives 4 and 8 would result in a net decrease in ship loading and personnel loading at NAVSTA Mayport; resulting in an overall decrease in utilities requirements from the 2006 baseline. Group 3 Alternatives 10 and 12 would result in varying degrees of utilities needs compared to 2006 levels.

The construction of a 260-room bachelor enlisted quarters in FY 2005/2006 and the current construction of 78 new modules bachelor enlisted quarters are actions that increase loading on existing NAVSTA Mayport utility services. This recent increase in demand would contribute to the utility loading experienced during the period of development for the alternatives. Utilities impacted from bachelor enlisted quarters construction include sanitary sewer, electricity, stormwater, solid waste, and steam.

Planned development at NAVSTA Mayport that is relevant to the existing utilities loading includes an additional parking area and additions to the physical fitness center. These future actions would require the further creation of stormwater infrastructure, which would be in addition to the stormwater collection and diversion systems addressed in the alternatives involving construction (all alternatives except for Alternatives 2, 3, and 9). In addition, potential new mission activities (including possible homeporting of the LCS or DDG-1000) would require utilities upgrades. Cumulatively, it is anticipated that there would be no adverse impact to NAVSTA Mayport's or key offsite utility service providers' ability to supply the increased demand for utility services, given the relevant past, present, and future actions planned.

6.12 ENVIRONMENTAL HEALTH AND SAFETY

6.12.1 Description of Geographic Study Area

The geographic study area for environmental health and safety encompasses all of NAVSTA Mayport as well as the regional area and its ability to absorb the additional materials, substances, and waste that would be generated in combination with all the other past, present, and foreseeable future projects. In addition, consideration of the cumulative impact of the nuclear aspects of the project are discussed.

6.12.2 Relevant Past and Present Actions

NAVSTA Mayport Development. See description at Section 6.2.2. The existing NAVSTA Mayport security and AT/FP infrastructure limits NAVSTA Mayport access to only authorized personnel through the use of physical barriers and administrative practices and procedures (e.g., visual surveillance, issuing and checking identification cards and installation access documentation) thus reducing the risk of incidents.

6.12.3 Relevant Future Actions

Planned Development at NAVSTA Mayport. See description at Section 6.2.3.

6.12.4 Cumulative Impacts Analysis

The existing security measures at NAVSTA Mayport beneficially contribute to the health and safety environment that would exist with implementation any of the alternatives in a positive cumulative manner. Security and safety measures already in place will be continued or enhanced where/when possible during the course of implementation of the alternatives. With regard to redevelopment at NAVSTA Mayport, land use constraints are considered in future planning and LUCs associated with SWMUs are taken into account. In some areas, the disturbance of land in preparation for or during development could release contaminants to the environment or provide a conduit for subsurface contaminants to enter the groundwater or to contaminate surface waters. If the current practice of conducting investigations and cleanup efforts in accordance with relevant federal, state, local, and DoD regulations is continued, the potential for release or contamination of additional media will be minimized.

Cumulatively, it is anticipated that there would be no adverse impact to the region's ability to supply the increased demand for petroleum products or hazardous materials or to absorb disposal of wastes. As NAVSTA Mayport has historically supported operations and maintenance of Navy ships, there would not be significant introduction of new hazardous materials or toxic substances beyond those already present, with the exception of materials associated with the CVN.

Regarding the nuclear aspects of the project, nuclear-powered submarines are homeported in Kings Bay Naval Submarine Base, in southeastern Georgia, 35 to 40 miles north of Jacksonville. Since the CVN addressed in this EIS would establish the presence of a nuclear-powered aircraft carrier in the northern Florida area, the cumulative radiological impacts were analyzed. The analyses conservatively assume that all the nuclear-powered ships in the Kings Bay area were ported at NAVSTA Mayport along with the CVN. The analyses results show that the maximally exposed member of the public would receive less than 1 millirem of radiation exposure each year due to the presence of all nuclear powered vessels in the area. This exposure is so small that it is indistinguishable from naturally occurring background radiation.

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