

Planning for Sea Level Rise in the Matanzas Basin

Appendix H3:

Review of Local Comprehensive Plans and Other Documents Relevant to Sea Level Rise Adaptation Planning in the Matanzas Basin

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Review of the comprehensive plans for St. Johns County, Flagler County, St. Augustine, and Palm Coast as well as review of the St. Johns County Local Mitigation Strategy (LMS) revealed numerous policies within each that support many of the built-environment and habitat/ecosystem adaptation options for sea-level rise contained in recommendations of the project “Planning for Sea Level Rise: A Pilot Study to Evaluate and Improve the Development and Delivery of Habitat Vulnerability Assessments and Adaptive Conservation Designs to Coastal Decision-Makers.” Before moving into the detail for the review of each document, it is worth giving a summary of some of the general themes that emerged from the overall review.

First, the documents clearly focus on the Coastal High Hazard Area as a way to promote safety and resilience and sometimes even for goals related to ecosystem and habitat protection. While this is good, it could be much better. In 2006 Florida changed the definition of the Coastal High Hazard Area (CHHA). However, the CHHA designation has some weaknesses. First, it is based only on the modeled storm surge from a category 1 hurricane according to the SLOSH model.¹ It has been argued that the surge from a category 1 storm is an insufficiently protective standard to be appropriate for the CHHA.² Second, in 2006 Florida changed the definition of the CHHA. In some jurisdictions this resulted in dramatic *decreases* of the number of parcels affected by the CHHA designation,³ especially parcels on barrier islands.⁴ Analysis contained in the report “” indicates that 2006 changes to the CHHA may run counter to broader coastal resiliency goals by allowing increased investment and density to occur on barrier islands.

Improved resilience and better adaptation to SLR in the GTMNERR study area could be achieved by the local governments in the study area revisiting the goals and purposes of how they have included the CHHA in their local plans and critically examining, especially in light of the analysis in the report “Assessment of Redefining Florida’s Coastal High Hazard Area,” whether the newer definition of the CHHA still accomplishes and promotes the goals that they sought to achieve. A model for how to address the even greater shortcomings of the CHHA that arose after the 2006 change in definition is presented by Pinellas County and its distinction between the CHHA and a “Coastal Storms Area.” A potentially similar tool might be the “Coastal Planning Area” that appears in St. Augustine’s comp plan, but further research would be required to see how the Coastal Planning Area is utilized.

1.3.1. Policy: The **coastal high-hazard area (CHHA)** shall be the area defined by the *Sea, Lake and Overland Surges from Hurricanes (SLOSH)* model to be inundated from a category one hurricane, as reflected

¹ Fla. Stat. § 163.3178(2)(h) (2014).

² See, e.g. James F. Murley; Puszkin-Chevlin, A.; Esnard, A.; & Kalin, R., Assessment of Redefining Florida’s Coastal High Hazard Area 45-48 (January 2008).

³ See, *id.* at vi (“... the New CHHA boundaries and policies, which may encourage additional asset accumulation at the coast, may not be supportive of planners’ and policymakers’ desire to proactively address adaptation to climate change, particularly sea level rise.”) and p. 20, Figure 4.

⁴ *Id.* at 37.

in the most recent *Regional Evacuation Study, Storm Tide Atlas*.

1.3.2. Policy: The ***Coastal Storm Area*** shall be the area delineated in Figure 2 of the Coastal Management Element, which encompasses all of the following:

- (1) the Coastal High Hazard Area (CHHA),
- (2) all land connected to the mainland of Pinellas County by bridges or causeways,
- (3) those isolated areas that are defined by the SLOSH model to be inundated by a category two hurricane or above and that are surrounded by the CHHA or by the CHHA and a body of water, and
- (4) all land located within the Velocity Zone as designated by the Federal Emergency Management Agency.

Second, all the documents had an excellent focus on floodplain management and protection from flooding. This is likely due in large part to FEMA and the minimum standards required for participating in the National Flood Insurance Program. At the same time, the focus on floodplains and protection only looked either backward or to current flood risk and floodplains. One way to address this would be to focus on a word that Palm Coast used when describing the CHHA: “predicted.”⁵ Focusing on the “predicted” CHHA or other future states of hazards directly allows inclusion of likely changes due to SLR on coastal hazards and promotes analysis of and planning for future hazards. In addition, while Flagler County requires new construction to be at least one foot above current requirements in the latest floodplain maps, many local governments have moved to a far more protective of 2 or even 3 feet above the 100-year flood elevation; in addition to adding safety and protecting against sea-level rise and future map changes, this will also save flood insurance policy holders money beginning immediately.

Third, the documents demonstrate some protections for habitats, ecosystems, and floodplains, but these lack any forward-looking element that directly supports including SLR as a factor to consider.

Overall, many of these documents already clearly promote use of many of the same tools recommended for consideration for sea-level rise planning, including examples such as limiting density and land use intensity, downzoning, overlay zones, conservation easements, acquisition, density transfers, transfer of development rights, purchase of development rights, and rebuilding limitations. While this is positive for adaptation, there plans lack explicit direction to utilize these tools in a framework that clearly acknowledges how sea-level rise will likely affect the future.

⁵ Flagler County Comprehensive Plan, Coastal Management Element, Objective 2.3 (“Flagler county shall direct population concentrations away from known or *predicted* high-hazard areas via acquisition of property within these areas and implementation of local and state regulatory measures including Coastal Construction Setback line rules, Flagler County land development regulations, and Flagler county land use map.” [emphasis added]) and Palm Coast Comprehensive Plan, Conservation and Coastal Management Element, Objective 6.2.2 (“Direct population concentrations away from known or *predicted* Coastal High Hazard Area.” [emphasis added]).

St. Johns County

Many policies that offer support SLR adaptation options are included in the St. Johns County Comprehensive Land Use Plan and Local Mitigation Strategy. These include: downzoning, development limitations, rezoning and non-conforming uses, transfer of developmental rights, set back requirements, accounting for existing and projected vulnerabilities when planning infrastructure projects, tax incentives, and education tools to warn those building in flood prone areas. However, at this time, none of these policies explicitly address SLR or the potential need for migratory paths for habitats or ecosystems or built infrastructure in response to SLR.

To improve the ability to adapt to SLR and increase resiliency in the county, some possible activities would be:

- Increase floodplain management requirements.
- Establish more specific minimum standards for protective structures (armoring structures) and instruction on how to build in storm surge areas, additional tax incentives, and strengthened floodplain management rules.
- Add language to the County's Coastal High Hazard Area language to include future conditions associated with SLR; this would be one way to increase resilience and adaptation to SLR through the existing comprehensive plan without having to greatly alter the plan's overall structure.
- The plan already includes, in Policy A.1.7.7., land development regulations for areas subject to seasonal and periodic flooding. The County might consider the utility of more stringent regulation to also include "limiting development within the flood prone areas to... ensure that there will not be any adverse impacts either upstream or downstream which will afford protection of life and property within flood prone areas and/or floodplains." (D.3.1.5).
- Sea-level rise is likely to expand flood prone and affect life and property in a similar way. Altering the comprehensive plan does not necessarily require altering the regulation itself, but expanding the area the regulation covers.
- The comprehensive plan already includes routing of new infrastructure and public services within the Coastal Area shall be designed to direct growth away from Environmentally Sensitive Lands (ESL) and the Coastal High Hazard Area (CHHA) and to limit public expenditures within the CHHA." (E.1.7). The plan requires environmental surveys in order to develop in these areas. (E.2.2.6). Suggestions may include conducting an overall survey to map all areas subject to potential sea-level rise and further plan to direct growth away from these lands as well. As noted in the introduction, the County might also consider whether the CHHA sufficiently advances the resilience and adaptation goals of the County.

Specific Policies included in the St. Johns County Comprehensive Plan:

The overall goal for St. Johns County is "To effectively manage growth and development by designating areas of anticipated future development which satisfy demand where feasible, in a cost-efficient and environmentally acceptable manner" (Goal A.1). This can be achieved by protecting natural resources (A.1.1.2), and controlling urban sprawl through more stringent

zoning regulations. “The county shall promote infill of residential development (A.1.2.2), limit commercial development that will have adverse environmental impacts. Rezoning will be considered to ensure compatibility of adjacent and surrounding land uses.” “Mitigation in the form of roads, setbacks, buffers, fences, walls, landscaping, parks and open spaces, wetlands, conservation areas, drainage ponds, lakes, and other similar characteristics.”(A.1.3.11).

With respect to coastal areas many recommended tools for adaptation are already included in the comprehensive plan; while existing mention and use of such tools is excellent, the current comp plan language fails to specifically indicate that they should also specifically be used to adapt to climate change. Among tools included are development limitations and more stringent coastal zoning requirements. “The County shall limit increases in population density within the Coastal High Hazard Area” (A.1.5). “The County shall not approve Comprehensive Plan amendments that increase the residential density on the Future Land Use Map within the CHHA.”(A.1.5.6). “The County shall prohibit new development of adult congregate living facilities, nursing homes for the aged, total care facilities, and similar developments within the CHHA.” (A.1.5.7). “Development controls include open space requirements to promote clustering of development” (A.1.6.2). “The County shall also continue to enforce its land development regulations, which at a minimum, contains provisions for the following: (a) protection of environmentally sensitive lands; (f) regulations for areas subject to seasonal and periodic flooding; (g) drainage and stormwater management; and (h) provision of open space and landscaping; (i) regulations of roads, water and sewer infrastructure” (A.1.7.7).

Natural resource protection is emphasized. (A.1.10). “The County shall continue to implement its land development regulations, providing for Optional Density Factors established in Policy A.1.11.1 which are intended to protect natural resources.” The county will permit only very low intensity uses within wetlands and tidal marsh along with adjacent uplands islands and other areas as designated on the FLUM. “Due to sensitive environmental qualities only very low intensity uses shall be permitted subject to all regulatory permitting requirements. All development within the Coastal Area shall connect to central sewer as provided by Florida Statutes and County Land Development Code.” (A.1.11.1). The County intends to offer certain incentives to conserve natural environmental resources including residential density bonus for protection of uplands adjacent to wetlands under the provisions of the Optional Density Factor bonus system. (A1.10.3). “The county may also consider a Transfer of Development Rights (TDR) program, Rural Land Stewardship (RLS) program or similar land preservation program to protect and preserve natural areas (A.1.10.4), transfer-of-development rights, impact fee credits, park and open space credits and tree credits for new developments that set-aside land within a greenway and blueway current development.” (A.1.20.6)

To combat flooding St. Johns County’s goal within its Stormwater Management Sub-element is “to provide an efficient and environmentally sound system of Stormwater Management. This system shall increase the efficiency of the existing system, afford reasonable protection from flooding, and protect the quality of surface water and groundwater in St. Johns County.” (Goal D.3). The County also intends to “seek funding in order to implement the recommendations of the Countywide Master Drainage Study that includes inventories of existing drainage facilities, geographic locations, land uses, operating entities, design capacities, existing capacity usage, general performance, impacts of the facilities on the natural environment, problems and

opportunities for solutions to the deficiencies. To address deficiencies, the County will continue to update its inventory of all private and public drainage facilities, easements and rights of way and shall continue to map these facilities as well as land uses, soil types and topographical information and continue to update maps which identify where major drainage problems have occurred and which drainage problems the County has corrected.” (D.3.1.3). This drainage master plan would provide still further benefit for the long-term infrastructure of drainage by adding consideration of rising sea levels and how these impact drainage systems.

“New construction will be prohibited that is within a designated regulatory floodway that will result in any increase in flood levels.” (D.3.1.4). More stringent regulation includes “limiting development within the flood prone areas to minimize flood storage capacity reduction, so that the post-development conditions does not exceed pre-development conditions and ensure that there will not be any adverse impacts either upstream or downstream which will afford protection of life and property within flood prone areas and/or floodplains.” (D.3.1.5). “The County shall continue to manage and regulate development within the 100-year floodplain through enforcement of the County floodplain management regulations.” (D.3.2.2). “Drainage systems should be submitted for review that plan to be incorporated into the Countywide Stormwater Model to ensure that areas downstream or upstream of a proposed development have the capacity, or hydraulic gradient to accept the proposed developments discharge, or that the proposed development improves the downstream or upstream drainage system.” (D.3.2.7). “First priority will be given to those existing problems that are most severe.” (D.3.4.2).

St. Johns County’s overall goal within its Coastal/Conservation Management Element is to “manage, use, conserve, protect and enhance coastal resources, along with protecting human life from natural disasters.” (Goal E.1). Among the main objectives is “dune preservation through the continued enforcement of construction standards for coastal building zones and revisions to the County’s Beach Code to protect the County’s dune systems.” (E.1.2). The plan also calls for “coordination with DEP on applications for development seaward of the established Coastal Construction Control Line (CCCL), in order to monitor and comment on DEP applications for variances to the CCCL requirements and to allow variances to County setback requirements where possible or appropriate to avoid or minimize development seaward of the CCCL.” (E.1.2.2). “The County shall prohibit new development of adult congregate living facilities, nursing homes for the aged, total care facilities, hospitals, correctional facilities and similar developments within the CHHA” (E.1.3.8) and “will not approve Comprehensive Plan Amendments that increase the residential density on the Future Land Use Map within the CHHA.” (E.1.3.10). While this last, like most sections in this and other plans that mention the CHHA, is good policy, as noted in the introduction, the CHHA is really not designed for resilience purposes or for adaptation to SLR. In fact, the 2006 CHHA changes may actually allow *additional* development in higher areas along the coast that could still be isolated from the mainland by flooding.

“Routing of new infrastructure and public services within the Coastal Area shall be designed to direct growth away from Environmentally Sensitive Lands (ESL) and the Coastal High Hazard Area (CHHA) as defined in Section 163.3178(2)(h), Florida Statutes, and to limit public expenditures within the CHHA.” (E.1.7). “Environmental surveys shall be required for all development.” (E.2.2.6). “The County shall require a buffer zone adjacent to the wetlands and

open water habitats on all new development sites as specified in the LDRs and policy E.2.2.4.” (E.2.2.12). The County plans to “contribute local funding, funds for shoreline stabilization and beach renourishment projects.” (G.1.10.6). “The County shall investigate alternatives to funding sources for projects in the Coastal Management Area to fund shoreline stabilization for the areas of critical erosion, improve and protect water quality, preservation of marine, estuarine and beach dune communities and manage coastal waterfront community revitalization, redevelopment and hazard mitigation.” (G.1.10.7).

“The county shall limit public capital investment that subsidizes development in coastal high hazard areas to those improvements included in the Coastal/Conservation element, and to those expenditures necessary for the health and safety, hurricane evacuation, and which will facilitate the use of the open areas and recreation areas.” (H.1.4). The last portion of this—“which will facilitate the use of the open areas and recreation areas”—is a policy specifically recommended as a potential tool to consider, especially in conjunction with potential increases in development restrictions as part of sea-level rise adaptation.

St. Johns County Local Mitigation Strategy (Includes St. Augustine)⁶

The Local Mitigation Strategy provides an overall summary of specific and proactive options, reiterating many requirements already mentioned within the comprehensive plan. It calls for the County to “reduce the quantity and improve the quality of storm water runoff to surface water bodies by increasing the amount of green permeable open space and the use of more permeable surfaces through the following policy program.” (City of St. Augustine Comprehensive Plan - Future Land Use Element - Objective 4).

“The County should establish development guidelines for the remaining undisturbed areas of the 100 year flood plain so that the flood-carrying and flood-storage capacity of those lands is maintained.” (City of St. Augustine Comprehensive Plan - Conservation Element Objective 9). As incentive, “The City of St. Augustine will limit capital expenditures that subsidize development in coastal high hazard areas, but will place no limitation on expenditures in those areas that enhance or restore natural resources.” (City of St. Augustine Comprehensive Plan - Capital Improvements Element Objective 2). “The County should work to ensure that potential home buyers are notified that property is in a flood area.” (City of St. Augustine --Chapter 13 Flood Control of the St. Augustine Code).

To further control flooding, “all subdivisions will require a drainage design plan show existing and proposed features. The plan shall equal or exceed design standards set forth hereinafter and the policies and procedures established in the Drainage Manual of the FDOT.” (City of St. Augustine Subdivision Regulations Division 3 Section 23-96). “Developments should adhere to the DEP's Coastal Setback Requirements and their permitted variances regardless of the size of the developable parcel.” (City of St. Augustine Beach Comprehensive Plan Future Land Use Element Policy L.1.5.6).

⁶ The St. Johns County Local Mitigation Strategy largely consists of a compilation of local documents within a single chart on p. 16-38, available at <http://www.staugustinegovernment.com/the-city/featured-stories-archive/documents/LocalMitigationStrategy.pdf>.

The County itself plans for be proactive by “purchasing areas subject to seasonal or periodic flooding including flood-prone areas adjacent to the Atlantic Ocean to be used for public and beach-access parking and enforcing requirements of the Federal Flood Insurance Program by continuing to participate in the program, specifically designating coastal high hazard areas and limiting development in such areas along with relocating any infrastructure.”

(City of St. Augustine Beach Comprehensive Plan Conservation/Coastal Element Policy CC.1.2.7). “To prevent road maintenance disputes, all roadways in the coastal zone shall be constructed to City specifications using salinity tolerant construction techniques and materials.”

(City of St. Augustine Beach Comprehensive Plan Conservation/Coastal Element Policy CC.1.5.2). In addition, “review existing development in low-lying areas subject to flooding and modify drainage systems by five percent in these areas in 3 years to minimize potential damage to property and natural systems.” (City of St. Augustine Beach Comprehensive Plan Conservation/Coastal Element Policy CC.2.5.1).

“The City shall establish as its standard for inclusion in the Land Development Regulations that any structure damaged beyond fifty percent of value more than once during storms, hurricanes or northeasters will be determined to be a non-conforming use if located in a coastal high hazard area.” (City of St. Augustine Beach Comprehensive Plan Conservation/Coastal Element Policy CC.4.1.3). “The city shall designate the Coastal High Hazard Area as those areas which are within the FEMA V (Velocity) Zones and areas seaward of the Coastal Construction Control Line and within those areas which may be repeatedly damaged, redevelopment will be limited to conservation and recreational land uses.” (City of St. Augustine Beach Comprehensive Plan Conservation/Coastal Element Policy CC.4.2.1). “There shall be requirements for Stormwater management, including minimum design standards and finished floor elevations and lot grading plans.” (St. Johns County Paving and Drainage Standards Ordinance 96-40).

St. Augustine

There is excellent potential support for adapting to sea-level rise within the St. Augustine comprehensive plan. The city’s plan already intends to educate the public about the permitting process and various city ordinances. (H Policy 1.6). This could include educating the public about land likely to be affected by sea-level rise through similar brochures and pamphlets. Potential purchasers of coastal and low-lying property could also be educated about the potential effects of sea-level rise on property.

The city states encroachments shall be prohibited within designated regulatory floodways including but not limited to fill, new construction and development improvements that would result in any increase in flood levels.” (1.1.5). These types of precautionary regulations should be integrated into existing plans in other areas. For example, the base floor elevation should be regulated to consistently rise above the standards set by FEMA to account for future sea level rise. Throughout the city plan, many accommodations are made for areas prone to flooding and ways to reduce this flooding. Focus should not be limited to just how to build in hazardous flood areas, but might also place additional restrictions on where to build. The city encourages growth away from coastal high hazard areas and could further achieve this goal by providing incentives

to build outside areas subject to sea-level rise. Additional suggestions might include increased floodplain requirements, building moratoria, plans for armoring and protection tools and more detailed tax strategy.

Specific Policies included in the St. Augustine Comprehensive Plan:

St. Augustine encourages responsible growth and development. The plan contains detailed regulations for maximum dwellings per acre for low, medium, and high density mixed use as well as Commercial. (Policy 1.3). It also encourages the “redevelopment and renewal of blighted areas (FLU Objective 2) as well as reducing uses which are inconsistent with the Future Land Use plan. The measurable target for this objective is the number of nonconforming uses citywide as measured by the land use and building condition survey. Nonconforming uses should be phased out. The city intends to identify existing nonconforming land uses in all areas of the city, including the coastal high hazard area and coastal planning area, during the land use and building condition survey conducted every five years and continue to enforce the existing provisions of the City Code related to discouraging and phasing out existing nonconforming uses.”⁷ (FLU policy 3.1).

“The City shall ensure the protection of natural resources as indicated in detail in the Goals, Objectives and Policies section of the Conservation and Coastal Management Element. The measurable target for this objective is the number of development proposals for development in a conservation overlay zone reviewed as required by the City's development regulations.” (FLU Objective 5). “The City shall continue to educate the public on the permitting process and the various City ordinances and codes with the ongoing creation of brochures and pamphlets.” (H Policy 1.6).

To specifically address flooding, “The City states that stormwater management facilities shall be provided to control discharges necessitated by rainfall events to support continued protection of water quality, water quantity, and enhancement to the natural to the natural environment for both existing and future development at the adopted level of service. The measurable target for this objective is the provision of stormwater management facilities at the adopted level of service standard. These systems may incorporate methods to collect, convey, store, absorb, inhibit, treat, use or reuse water to prevent or reduce flooding, environmental degradation and pollution, or

⁷ Some sections on nonconforming use in the City's code include: § 28-117 “Whenever a nonconforming use a building or a portion thereof has been discontinued, as evidenced by the lack of use or vacancy for a period of at least twelve (12) months, or by substituting a conforming use, such nonconforming use shall not thereafter be reestablished; and the future use shall be in conformity with the provisions of the district in which it is located.”
And:

§ 28-118 “A building which has been damaged by any means may be repaired or reconstructed and used as before the time of damage, provided that such repair or reconstruction is substantially completed within twelve (12) months of the date of such damage, unless the building on the property is demolished after approval by the historic architectural review board and the property is leased or used by the City of St. Augustine for a public purpose, in which case the period for repair or reconstruction may be extended for up to five (5) years upon approval of the city commission. This section does not apply to buildings listed on the Florida Master Site File and which have been denied a certificate of demolition by the historic architectural review board. If a building is demolished after denial of a certificate of demolition, any new construction on the property must be in conformity with the regulations of the district in which it is located at the time any application for building permit is made”

otherwise affect the quality and quantity of discharges.” (SWM Objective 1.1). “The City shall develop and adopt a Citywide Master Stormwater Plan including a detailed review of current practices in Stormwater Management, develop strategies for compliance with regulatory requirements and complete an update to the May 1995 Stormwater Facilities Master Plan. The City shall implement the recommendations of the Citywide Master Stormwater Plan by continuing to fund and establish priorities as the studies for each watershed or sub-basin are completed.” (SWM Policy 1.1.1). “The City establishes priorities for Stormwater Management System improvements including projects which serve to protect essential services, projects which serve to protect residential areas with an emphasis on residences in the historic district, and projects which serve to protect against repetitive flooding.” (SWM Policy 1.1.3).

The city claims there “shall be no reduction in the flood storage capacity or the natural functions and values of the floodplain in the City in areas designated as regulatory floodways as updated by FEMA Flood Insurance studies. Encroachments shall be prohibited within designated regulatory floodways including, but not limited to, fill, new construction and development improvements that would result in any increase in flood levels.” (1.1.5). Almost identical to St. Johns County’s plan, St. Augustine plans to “regulate development within flood prone areas to minimize flood storage capacity reduction, so that the post-development conditions do not exceed pre-development conditions and ensure that there will not be any adverse impacts either upstream or downstream which will afford protection of life and property within flood prone areas and/or floodplains.” (1.1.6). For the future, “new development shall be required to construct adequate Stormwater Management facilities according to State, Regional and City standards.” (1.2.1).

“The City shall continue to manage and regulate development within the 100-year floodplain through enforcement of the City floodplain management regulations.” (1.2.2). The plan also encourages the “incorporation of natural features into the construction of new Stormwater Management facilities which provide vegetation and buffers which promote wildlife habitat.” (1.2.6).

The Conservation Goal in the city’s Conservation and Coastal Management Element is to “Protect and conserve natural areas, environmentally sensitive areas, natural vegetative communities, wildlife habitats, marine resources, federal and state listed species, and other renewable and non-renewable natural resources.” The Coastal Management Goal is “To prevent loss of life and damage to property in the coastal areas from the effects of natural disasters, while encouraging appropriate public access to and use of coastal areas.”

Contained within CCM Policy 1.1, the City maintains three (3) “Conservation Overlay Zones. The boundaries of the Conservation Overlay Zones, generally indicated on the Conservation Overlay Zone Map adopted as part of the Future Land Use Map series, shall be determined on a site specific basis during site plan review of each development proposal. The policy describes in detail what is permitted and prohibited within each overlay zone. The City shall continue to maintain three (3) conservation overlay zones: Conservation Overlay Zone 1 for the protection of habitat waterward of the most restrictive jurisdictional line; Conservation Overlay Zone 2 for the protection of natural habitat one hundred feet (100’) landward of the most restrictive jurisdictional line; and Conservation Overlay Zone 3 for the protection of natural habitat beyond

one hundred feet (100') landward of the most restrictive jurisdictional line. Development in Conservation Overlay Zones shall conform to all requirements of the Federal Emergency Management Agency (FEMA) relating to flood control and prevention. Finish floors must be constructed at or above the base flood elevation established by FEMA."

"To prevent erosion and sedimentation of area waterways, the plan requires the use of silt curtains, grass swales and other techniques during construction." (CCM Policy 1.8). "The City shall continue to implement the Future Land Use Plan and enforce the City Code which prohibits all mining activities." (CCM Policy 3.1).

The plan protects "coastal wetlands, coastal barriers, estuaries, tidal marshes, wildlife habitat, marine habitat and living marine resources in order to maintain natural barriers. The measurable target for this objective is the continued enforcement of all City development regulations related to development in or adjacent to environmentally sensitive areas." (CCM Objective 4) "The City shall protect wetlands, as defined in Rule 9J-5.002(149), Florida Administrative Code (1999), by adopting land development regulations which establish minimum setbacks, identify minimum buffers in which no development would be permitted, and eliminate direct discharges. The city pursues no net loss of wetlands." (4.1). "The City will continue to encourage the retention and installation of native vegetation through the incentives and credits outlined in the City Code." (4.5).

As an additional means of protection, "The City shall consider public acquisition of lands that contain significant natural resources including environmentally sensitive areas, natural vegetative communities, and wildlife habitats. Such lands, should they be acquired, shall be managed as open space and for passive outdoor recreation in a manner that furthers the protection of the resources occurring on site." (4.8).

"In the event that public or private property in the City is damaged by a natural disaster, the post-disaster redevelopment will reduce or eliminate the risk of human life and property damage by natural hazards. The measurable target for this objective is that, in the event property is damaged or destroyed by a natural disaster, post-disaster redevelopment will be in accordance with: (1) the densities and intensities of land use established by the Future Land Use Plan; (2) the criteria for developing in the Conservation Overlay Zones implemented by the City Code; and (3) requirements of the Building Code." (CCM Objective 10). This policy could combine with both a pro-active approach to mapping of sea-level rise and downzoning and alteration of the FLUM to reflect this new knowledge, thus resulting in real change after a disaster that would move more people and property out of harm's way, which often automatically makes a positive contribution towards protecting coastal habitats by opening up space close to the water.

"To bring development into current regulation, new development, alterations to existing structures and repairs to existing structures that sustain damage greater than 50% of their structural value located in the coastal high hazard areas as depicted in the Coastal High Hazard Area Map adopted as part of the Future Land Use Map series shall be constructed or repaired to comply with the current building code of the City, as required by the State of Florida. Seawalls located in the coastal high hazard areas as depicted in the Coastal High Hazard Area Map that sustain damage greater than 50% of the seawall area due to a tropical storm or hurricane shall be

rebuilt as revetments or rip-rap, or be replaced with native vegetation.” (CCM Policy 10.1). This policy helps somewhat to protect coastal environments, or at least decrease the damage caused by coastal armoring. Implementing a ban on armoring—potentially exempting important public infrastructure—would indicate an even greater focus on coastal habitat protection.

“To assist in post-disaster development and repair, the City shall continue to enforce and adopt land development regulations that incorporate: building practices, to include structural integrity requirements and use of hazard protection devices; floodplain management, to assure maximum drainage of floodwaters; beach and dune preservation, to maintain protection from velocity waters; stormwater management; sanitary sewer construction and location, including backflow prevention and minimum elevations; and land use, including location of institutions, docks, and buildings and distribution of densities and intensities.” (CCM Policy 10.1). The references to flood hazards and “minimum elevations” represent policies that could be relatively easily altered to include a measure of safety against sea-level rise.

“The City shall limit population densities in coastal high hazard areas as depicted in the Coastal High Hazard Areas Map adopted as part of the Future Land Use Map series.” (Objective 11). “The City will limit capital expenditures for public facilities in Coastal High Hazard Areas as indicated on the Coastal High Hazard Area Map adopted as part of the Future Land Use Map series, but will place no limitation on expenditures in those areas that enhance or restore natural resources. The measurable target for this objective is the location and purpose of capital expenditures.” (Objective 2).

“The City will not expend public funds on capital improvements to subsidize development in Coastal High Hazard Areas as indicated on the Coastal High Hazard Area Map adopted as part of the Future Land Use Map series. The City will expend public funds on capital improvements to correct existing facility deficiencies. For the purpose of this policy, capital improvement means physical assets constructed or purchased to provide, improve or replace a public facility and which are large scale and high in cost. The City will place no limit on expenditures in those areas intended to enhance or restore natural resources.” (CI Policy 2.1)

Flagler County

While Flagler County’s plan, like all the others, discusses the CHHA, Flagler County is unique in that it includes not only known high hazard areas when implementing regulation, but also “predicted high-hazard areas.” (2.03). While no specific criteria are given on which to make predictions, this language more easily allows for sea-level rise adaptation options within the plan itself. A definition of Coastal High Hazard areas to include “predicted high hazard areas” would support adding sea level rise as a predictive factor when considering further regulation.

Flagler County has implemented multiple methods to encourage growth away from the Coastal High Hazard Area. This includes relocation of structures (2.3.01) as well as prohibiting replacement of erosion control structures more than 75% destroyed. (2.2.09). Regulation is already in place for construction seaward of the coastal control line. Increased setbacks from the

water for any allowed development or redevelopment could be supported with research identifying predicted high hazard areas.

To account for future sea-level rise, strict regulation on nonconforming uses should continue to be applied. The plan calls for recognition of non-conforming land uses and non-conforming lots of record and to provide for their legal status and the conversion of such situations to conforming land uses, where possible. (2.4). Enforcement limiting non-conforming uses provides a strong tool for adapting to sea level rise and changing coastal hazards and should remain stringent.

The same limitations on development in coastal high hazard areas could be extended to those areas likely to be affected by sea level rise or likely to become part of the CHHA due to SLR. For example, Objective 2.2 states, “Public funding for new facilities within coastal high-hazard areas shall be limited to public access, resource restoration and passive recreation facilities.” Limitations on public funding are one way to avoid subsidizing new development in areas subject to sea level rise.

Specific Policies included in the Flagler County Comprehensive Plan:

“The natural and historic resources of the coastal area shall be preserved, protected, or enhanced as the development proposed in the Future Land Use Element occurs.” (Goal 1).

Flagler County’s Comprehensive Plan requires “no new subdivision will be approved unless all the lots proposed for the development meet the requirements for Control of Floodplain Areas and unsafe land as included in the Land Development Code of Flagler County (Section 4.04.10). All of the lots in any newly platted subdivision shall be large enough to contain the proposed activity and all required buffers and preservation areas. Minimum floor elevations for habitable areas are established at 1 foot above the projected 100-year flood elevation. A building restriction line shall be established to prohibit the construction within floodplains or unsafe building areas, and a minimum 50-foot buffer shall be maintained separating the floodplain from the building area.” (1.1.03). In order to offset development, “mitigation for a coastal area must be performed in coastal area. To reduce flooding, vegetation shall be planted in order to minimize potential flood damage, stabilize the shoreline.” (1.1.06).

“In balancing growth and coastal resources, selected applications of a variety of mechanisms shall be used including but not limited to: buffer zones, restoration, limiting density and land use intensity, conservation easements, acquisition, density transfers, transfer of development rights, purchase of development rights or land exchanges.” (1.1.08). “The County shall continue to require a periodic inspection program for stormwater control structures to insure their proper functioning and maintenance.” (1.4.05).

“To protect beaches and dunes, efforts will be made to maintain the natural integrity of the Atlantic shoreline by continuing to enforce Flagler County ordinances pertaining to construction seaward of the CCCL.” (1.6). “Construction within CHHA is highly regulated. Construction seaward of the CCCL shall be reviewed on a case by case basis.” (1.6.01). “Except approved DRI developments, areas with less than 100 feet between CCCL and Florida Highway A1A shall

be zoned either low density residential or “conservation areas.” (1.6.02). “Land use plan amendments that have the effect of increasing allowable residential density in the CHHA shall not be approved.” (2.1.01). “Public funding for new facilities within coastal high-hazard areas shall be limited to public access, resource restoration and passive recreation facilities.” (Objective 2.2). Note that this series of goals, objectives, policies focuses on protecting beaches and dunes, yet it seeks to use the CHHA as part of this; this represents a real weakness as the delineation of the CHHA is not designed for use as a tool to protect the environment. Thus, the county might wish to consider revisiting this section and/or redefining the CHHA to ensure that they achieve the goals sought.

“To encourage growth away from the CHHA, the county shall encourage the relocation or threatened and/or damaged structures and infrastructure landward of the CHH zone.” (2.3.01). This language was probably drafted prior to the 2006 redefinition of the CHHA since, in some cases now, the CHHA has pockets of land that are not within the CHHA even though land further inland may be; this is another example of the need for Flagler County to revisit how today’s definition of the CHHA impacts its planning and the goals that planning seeks to achieve. “Reconstruction or replacement of existing hard erosion control structures along the oceanfront which are more than 75% destroyed shall be prohibited except for maintenance and care of structures which are needed to protect evacuation routes, public facilities and utilities.” (2.2.09). Despite the quite high threshold for implementation (75%), this section represents direct implementation of one of the potential sea-level rise adaptations considered in this project. “Flagler County shall direct population concentrations away from known or predicted high-hazard areas via acquisition of property within these areas and implementation of local and state regulatory measures.” (2.03).

“For the purpose of continued funding of environmental lands program with the intent of expanding purchases of flood prone natural areas, the county may hold a referendum election.” (2.3.02). The county states that “land within the CHHA shall have a high priority when the county undertakes land acquisition programs for the preservation of natural areas, flood plains, or endangered lands.” (2.3.03).

With respect to future land use, “Expansion and replacement of existing land uses which are incompatible with the future land use plan shall be prohibited.” (2.3). “The Land development code continue to recognize non-conforming land uses and non-conforming lots of record, provide for their legal status and provide for the conversion of such situation to conforming land uses, where possible.” (2.4).

To prevent flooding, “Flagler County shall continue acquisition and preservation activities for the protection of environmentally sensitive features and implement specific measures to protect environmentally sensitive features. The harvesting of trees shall be prohibited within 75 feet of the water course bank of included “conservation areas.” (4.2). While it is very positive that the County seeks to protect “environmentally sensitive features,” improved protection of such resources requires looking at how the location of such features and the threats to them will change with sea-level rise. “New rural communities and subdivisions are required to manage run-off from the 25 year frequency, 24 hour duration storm event on-site so that post development run-off rates, volumes, and pollutant loads do not exceed pre-development

conditions and 50% of lot area shall remain open space.” (7.2(c)) “The county shall also encourage the use of best management practices for soil conservation which minimize erosion and protect those attributes which make the soil productive.” (11.2).

“Through the year 2010, the County shall protect the natural functions of the 100-year floodplain so that the flood-carrying and flood storage capacity are maintained by continuing to implement and enforce floodplain ordinances and reviewing development proposals for the presence of impacts on floodplains.” (Objective 3 Conservation Element). “Among the policies included in this element, proposed developments must identify wetlands on site plans and provide measures to assure that the normal flow and quality of water will be maintained after development, submit a wetland management plan for staff to evaluate the criteria for a variance, the environmental characteristics of the wetlands, the potential and predicted impacts of the proposed activities on wetlands and the effectiveness and acceptability of those measures proposed by the applicant for reducing adverse impacts, and if determined acceptable, provide mitigation if it takes place on site, in close proximity to the site or in areas designated by the county.” (3-1).

“The County shall identify and recommend to the State and the St. Johns River Water Management District environmentally sensitive lands (i.e.: floodplains) that would warrant acquisition under the Conservation and Recreation Lands (CARL) Program, the Save Our Rivers (SOR) Program and the Preservation 2000 (P2000) Program or its successor, ‘Forever Florida.’ The County shall also make every effort to secure funds, as available, through the above programs for fixed capital outlay for development and management of facilities associated with such acquisitions.” (3-2).

The County emphasizes conservation of wetlands. “Flagler County shall assure compliance with the state’s dredge and fill permitting process by assuring compliance with all current federal, state, regional regulations, and Flagler County Ordinances.” (Policy 4-2). “The County shall prohibit the permitting of water management and development projects that adversely impact the natural wet and dry cycles or cause functional disruption of wetlands. Violators or responsible parties will be liable for any functional degradation, loss or damages that may occur to the wetlands, and for the restoration thereof. In the event that any state or regional agency takes any action contrary to this ordinance, the County shall appeal or take other approximate legal action to protect the integrity of the County’s wetlands.” (Policy 4-3).

“The County shall promote the protection of natural reservations to lessen the adverse effects which adjacent developments might have on the managed conservation areas through implementation of various land development regulations including transfer of development rights, permitting and wetlands protection.” (Objective 11).

Palm Coast

As with many of the other plans, the Palm Coast comp plan makes extensive use of the Coastal High Hazard Area in many places. However, Palm Coast, like Flagler County, has one of the most interesting provisions found among the plans reviewed related to the CHHA: the plan refers

to the “known *or predicted* CHHA” (emphasis added). The text “known or predicted” appears to offer current comprehensive plan support for considering science-based predictions of SLR when delineating the CHHA in the City.

Specific Policies included in the Flagler County Comprehensive Plan:

“Impacts to low quality, isolated wetland systems shall be permitted only if it can be demonstrated that this will promote infill development, discourage urban sprawl, and improve or enhance the City’s overall wetland function.” (Policy 1.2.1.10).

“At a minimum, the following environmental factors shall be evaluated each time FLUM amendments are proposed: Topography and soil conditions including the presence of hydric soils, location and extent of floodplains and the Coastal Planning Area, including areas subject to seasonal or periodic flooding, location and extent of wetlands, certain vegetative communities, and protected wildlife species, and location and extent of other environmentally sensitive features.” (Policy 1.1.3.1).

One of the Future Land Use Element goals is to “Preserve the character of residential communities, prevent urban sprawl and protect open space and environmental resources, while providing a mix of land uses, housing types, services, and job opportunities in mixed use centers and corridors.”(Goal 1.1).

The plan accounts for a “wetlands “W” overlay zone, which is intended to designate parcels or lots containing a combination of developable uplands and significant wetland areas. The “W” designation prevents the need for split lot or split parcel zoning. It shall be affixed to any of the City’s zoning districts permitted within any of the FLUM designations. The “W” designation is used to indicate that a parcel or lot may have substantial wetlands located on it and thus, may be restricted for future development. At the same time, the “W” designation may not affect development rights granted by the zoning district.” (1.1.1.6). “The City shall assess and modify its current wetland protection regulations to ensure effective protection of high quality, functional, and integrated systems. Land development wetland regulations shall consider type, value, function, size, condition and location of wetland systems.” (Policy 1.2.1.9). “Impacts to low quality, isolated wetland systems shall be permitted only if it can be demonstrated that this will promote infill development, discourage urban sprawl, and improve or enhance the City’s overall wetland function.” (Policy 1.2.1.10).

“At a minimum, the following environmental factors shall be evaluated each time FLUM amendments are proposed: Topography and soil conditions including the presence of hydric soils, location and extent of floodplains and the Coastal Planning Area, including areas subject to seasonal or periodic flooding, location and extent of wetlands, certain vegetative communities, and protected wildlife species, and location and extent of other environmentally sensitive features.” (Policy 1.1.3.1).

Palm Coast requires minimum regulations and standards in all applicable zoning districts in Policy 1.1.5.1. These include “uses permitted outright and by Special Exception, including standards for home occupations in residential zoning districts; setback standards for primary and

accessory structures, including setbacks from water lines, wetlands, seawalls, and wellheads; maximum density and intensity standards; maximum building height; provisions for open space.”

Like in St. Johns County, Palm Coast plans to “discourage urban sprawl and Promote compact and contiguous development.” (1.1.4). “Within the Master Planned Development (MPD) zoning the district shall allow residential housing types to be mixed with retail, service, office, commercial, and other land uses. Potential areas for MPD’s are strategically located throughout the City to promote infill development and to maximize vehicular and pedestrian accessibility.” (Policy 1.1.4.2). “Compact urban development will be encouraged in areas suitable for development.” (1.1.4.4).

“Various incentives shall be considered to encourage assembly, consolidation and development of existing platted lands to create different sized lots. This shall include, but not be limited to the following incentives: Transfer of development rights; full or partial waiver of selected development fees; potential application of zoning overlays that encourage or require larger minimum lot sizes in areas determined appropriate; use financial incentives permitted under Florida law such as graduated impact fees, Municipal Service Benefit Units (Chapter 166, Florida Statutes), Municipal Service Taxing Units (Chapter 166, Florida Statutes), and/or Community Redevelopment Agencies (Chapter 163, Florida Statutes).” (Policy 1.1.7.3).

Objective 1.2.1 promotes “reservation of Natural Resources and Open Space. The city plans to identify, protect, promote, and preserve greenways, open spaces and other identified natural resources through a variety of mechanisms. These mechanisms include, but are not limited to, public acquisition, obtaining easements, and land development regulations, which shall be addressed through on-going amendments to the LDC. The city also plans to pursue Federal, State, and County funding sources and partnerships to purchase environmentally sensitive areas for greenways and open space. Potential funding sources are identified in Chapter 4 Public Recreation and Open Space.” (Policy 1.2.1.1). This objective and policy could support use of many of the tools discussed as options for the GTMNERR study area in this project.

“Through the LDC, the City will prohibit the reconstruction of certain non-conforming structures or which are deemed to be hazardous structures in the event that they are destroyed to an extent more than 50% of their replacement value at the time of destruction.” (Policy 1.6.2.1).

“To serve as a showcase community for some of the objectives and policies listed, the City established the Northwest Corridor Overlay Area (NCOA) based on a coordinated policy framework to properly plan for long term potential growth in an area that contains sensitive natural habitats. The development should be composed of mixed-use neighborhoods served by a regionally significant interconnected transportation network and public facilities, a community that provides energy efficient and diverse housing opportunities, promotes enhanced opportunities for further economic growth in the City, and establishes a template for preservation, conservation, and protection of the natural environment to provide a high quality of life for residents.” (GOAL 1.8: Northwest Corridor Overlay Area (NCOA)). “Within the NCOA, residential uses shall be part of a compact, mixed-use development, rather than single-use subdivisions that promote urban sprawl.” (Policy 1.8.13). “Any new urban development within the NCOA that proposes to increase density and intensity shall necessitate a land use amendment

to the Comprehensive Plan. Parcels over five (5) acres in size will require DRI, Mixed Use, Institutional, or Conservation land use categories.” (Policy 1.8.1.1). Use of *increased* density and mixed-use planning can be an excellent option for development/redevelopment in the GTMNERR study area provided that it: 1. Occurs either in areas safest from coastal hazards or, if not, in an area reasonably determined realistic to protect from coastal hazards—including SLR—over the long term; 2. Continues to protect important habitat types and linkages, including under sea-level rise scenarios; and 3. Includes building and design standards to minimize potential impact from future hazards such as SLR.

Within the Conservation and Coastal Management Element, Palm Coast recognizes “The City is susceptible to a variety of natural hazards, including flooding and high winds associated with hurricanes and tropical storms.” This could be improved by adding “SLR” to the list.

To combat flooding, “The City shall develop a Stormwater Master Plan within five (5) years of adoption of the Comprehensive Plan. The Stormwater Master Plan shall identify needed improvements that will maintain or improve the quality of water flowing into receiving water bodies such as creeks, rivers, wetlands, ponds, canals, and estuarine systems.” (Policy 6.1.6.1). “The City will, when practicable and feasible, seek to preserve and protect wetland areas, lakes, lands abutting the Intracoastal Waterway, canals and other lands, water bodies and natural resource areas by endeavoring, as appropriate in each case, to obtain the legal right to use such land and water resources and to obtain public ownership interests in such land and water resources by means of dedication, purchase, the granting of easements, leases, cooperative private/public agreements and other legal mechanisms serving the public interest.” (Policy 6.1.7.5).

“Where appropriate, the City shall require proposed developments located on parcels which wetlands are located to retain and protect such wetland resources through clustering, setbacks, and other innovative planning techniques. The City may grant relief to applicants who demonstrate an ability to protect on-site wetlands by approving requests for relief from LDC requirements in the nature of variances (i.e., setbacks, required buffers, landscape areas, etc.). The City shall consider utilizing density credits, transfers or other incentives.” (Policy 6.1.9.6). Note that the tools that the City “shall consider” here may also be useful in adaptation to SLR.

“To minimize erosion and the impacts of mineral and sand extraction activities while allowing appropriate utilization of mineral and soil resources; reduce the rate of soil erosion on natural systems and shorelines.” (Objective 6.1.14). “To prevent future soil erosion the City shall enforce LDC regulations to require developers to indicate on a site plan, areas of highly erodible soils, as defined by the U.S. Department of Agriculture Natural Resources Conservation Service or the Florida Department of Agriculture, and require appropriate measures, including, but not limited to, the use of adequate BMPs, to be implemented to ensure that soil erosion is avoided.” (Policy 6.1.14.5).

“The City shall evaluate the impacts of shoreline construction on natural resources, and take all necessary and reasonable actions and amend the LDC, as applicable to protect the environment and the natural functions and appearance of shorelines.” (Policy 6.1.14.6). Protecting the

environment appears here as a goal, but improved protection of the environment would consider how SLR will work with shoreline construction to impact natural resources.

“The City shall continue to enforce, at a minimum, the Florida Building Code to limit the potential damage of structures from hurricanes and high winds. Enforcement of the Florida Building Code shall include, but not limited to, wind-resistance commensurate with the risk of coastal environment and building elevations requirements that conform with applicable Federal laws, and related City regulations.” (Policy 6.2.1.1). “The City shall also ensure that design standards, for any building permitted after April 1, 2002, shall be engineered for 120 mph wind to prevent future damage.” (Policy 6.2.1.2). “The City shall continue to participate in the FEMA Community Rating Systems (CRS) program, which involves meeting higher than minimum FEMA standards.” (Policy 6.2.1.3).

When addressing Coastal High Hazard Areas, Objective 6.2.2 calls for population concentrations to be directed away from known or predicted CHHA. “The City shall continue enforcement of LDC regulations to limit and/or prohibit the reconstruction of certain non-conforming structures or non-conforming portions of structures in the event that they are destroyed to an extent more than fifty percent of their replacement value at the time of destruction.” (Policy 6.2.2.2). “The City shall consider measures including, but not limited to, the acquisition of property within coastal land and land within the Coastal High Hazard Area.” (Policy 6.2.2.3). “County funded public facilities shall not be built on the Coastal High Hazard area, unless the facility is for public access or resource restoration.” (Policy 1.3.8).

“The City shall also encourage the relocation of threatened and/or damaged structures and infrastructure landward of the coastal high hazard area.” (Policy 6.2.2.4). “The LDC shall continue to enforce flood damage protection regulations within V Zones located within the Coastal High Hazard Area. Regulations will continue to meet or exceed the Federal Emergency Management Agency (FEMA) requirements.” (Policy 6.2.2.5).

Note that in these discussions of the Coastal High Hazard area, the first one refers to “known or predicted CHHA.” The word “predicted” provides support for currently implementing SLR predictions and how these will impact the CHHA in the City. As discussed elsewhere, Palm Coast might want to consider whether the CHHA as currently described by state law sufficiently fulfills the property, protection, and natural resource goals for which it is being used in the comprehensive plan.