

One Charlotte, One Water Plan Development Guidance:

Priorities and Topics for Consideration

This document is an addendum to RLI XXX-XXXXX designed to provide information on the background, goals, and expectations for the One Charlotte, One Water Plan. The overall goals of the Plan are:

- Describe measures to monitor and track water quality trends and sources of impairments to Charlotte Harbor, The Gulf of Mexico, Caloosahatchee River, and their contributing tributaries.
- Propose mechanisms for reducing pollutant concentrations through measures such as infrastructure enhancements, green design strategies, and public outreach.
- Recommend strategies for continued collaboration in monitoring, assessment, and abatement of pollution in the county's waters.
- Examine measures that assure equitable access to the services and amenities provided by healthy waters.

Ultimately, the plan should serve as a blueprint for the expenditure of funds and resources to complete projects that will bring us closer to accomplishing the overarching goals described herein. Each project recommended in the plan must provide a description of the need it fulfills and estimated cost. For those projects that cannot be immediately initiated due to lack of information or resources, it is expected that those needs will be identified, and if necessary projects will be proposed to address those needs.

In order to assist prospective plan development partners in understanding the county's perceived needs relative to this Plan, this document provides a background of water quality-related issues and concerns facing Charlotte County, as well as describing a suite of proposed goals and associated concepts. It is not the intent that Plan recommendations be limited to these concepts, but rather that the information contained herein provides a greater depth of understanding as to what the county hopes to achieve through development of the Plan. The Plan development partner may also recommend breaking some of these goals into their own planning processes separate (and supplementary) to the One Charlotte, One Water Plan.

I. Background

As a designated Outstanding Florida Water and principal driver of economic activity for the region, the protection of Charlotte Harbor and all waters that feed it is of paramount concern to the county Commissioners and citizens. Tourism is the primary economic draw to our area, with charter fishing and recreation activities especially popular within our waters. In fact, the harbor and its surrounding natural environs is estimated to bring upwards of \$1.49 billion dollars in economic benefits and \$1.1 billion in recreational spending to Charlotte County per year (please see Exhibit C, attached).

Thanks in part to the county's competitive cost of living in relation to other coastal counties in the region, the proximity to Charlotte Harbor has been shown to be a major attractant for residents and businesses alike. Like much of southwest Florida, Charlotte County has experienced a recent boom in residential development (Figures 1 and 2). From 2016-2021, the jobs market in Charlotte County increased by 6.1%, outpacing the national growth rate. In sum, maintaining the ecological viability of Charlotte Harbor is essential to maintaining the economic viability of Charlotte County.

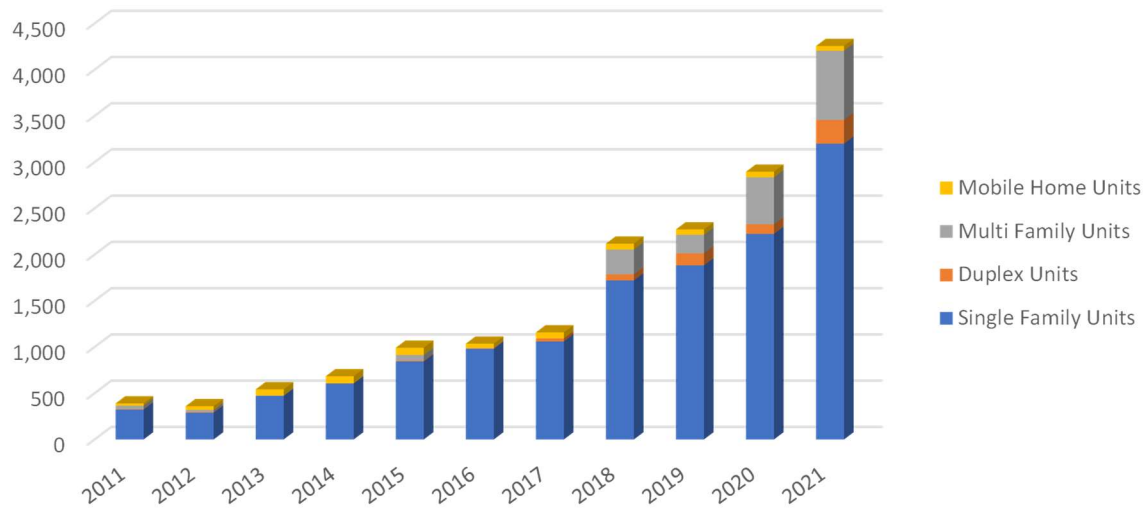


Figure 1. Total annual volume of residential permit applications submitted to Charlotte County, 2011-2021.

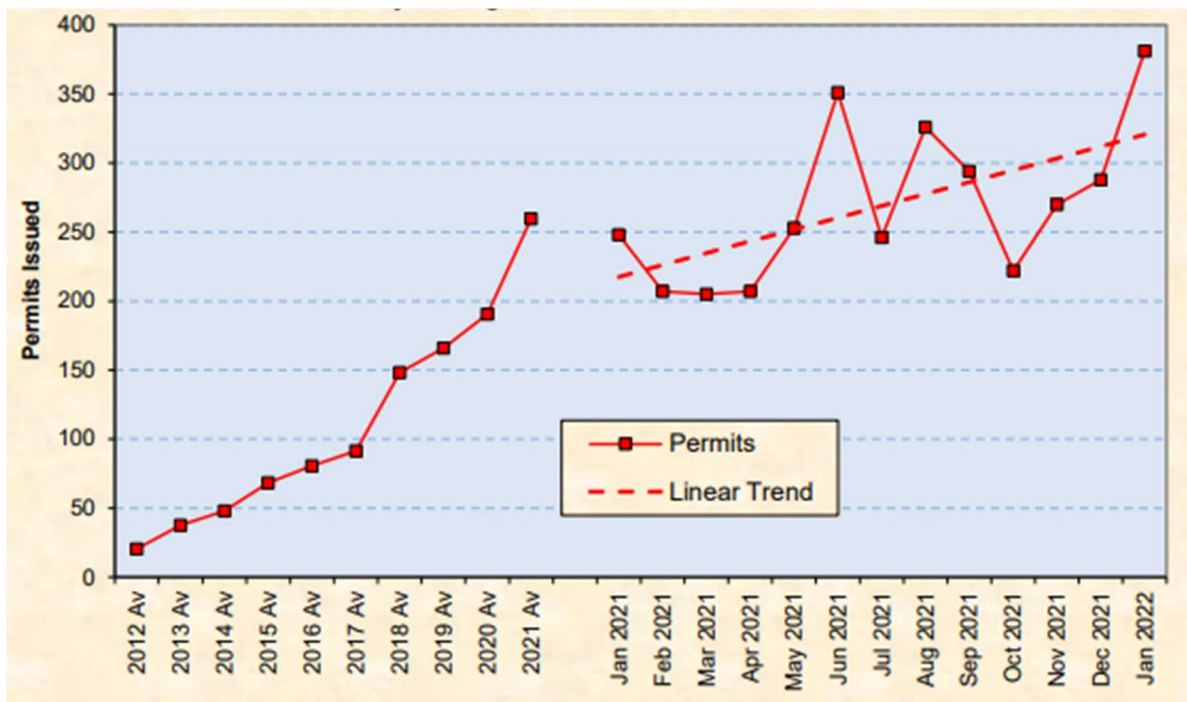


Figure 2. Single family building permits issued in Charlotte County. The left trend line describes annual average of permits issued per year; the right trend line displays total permits issued per month from January 2021-January 2022.

Like many coastal communities in Florida, Charlotte Harbor is facing multiple environmental challenges. The Florida Environmental Protection Division’s water quality assessment of Charlotte Harbor has found

that much of the harbor proper are impaired for Total Nitrogen and Total Phosphorus (Figure 3). Additionally, in 2021 the Southwest Florida Water Management District released their biannual seagrass survey maps for the harbor; their efforts show that from 2018-2020 seagrass acreage declined by 23% harbor-wide, marking the lowest mapped acreage since the District began mapping seagrasses in 1988 (Figure 4).

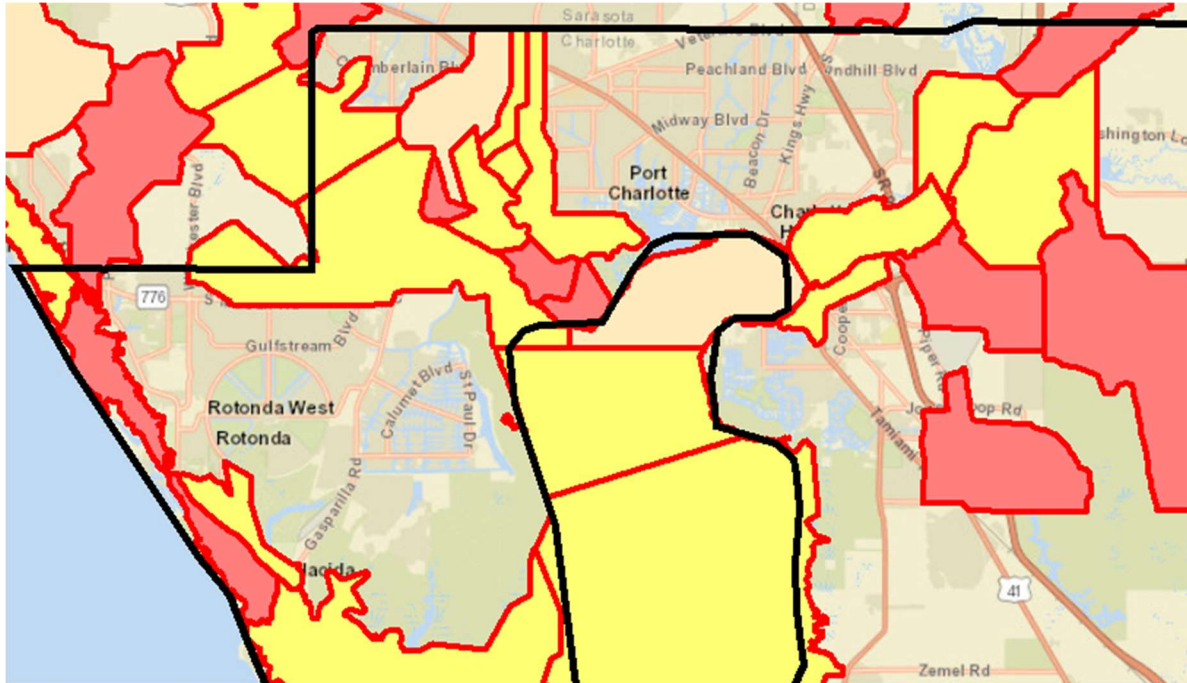


Figure 3. Current and proposed Verified Impaired Water Bodies (WBIDs) within the Tidal Peace, Tidal Myakka, and northern Charlotte Harbor. Yellow regions are verified impaired for one or more nutrient parameters, red are impaired for bacteria, and tan are impaired for parameters other than nutrients/bacteria.

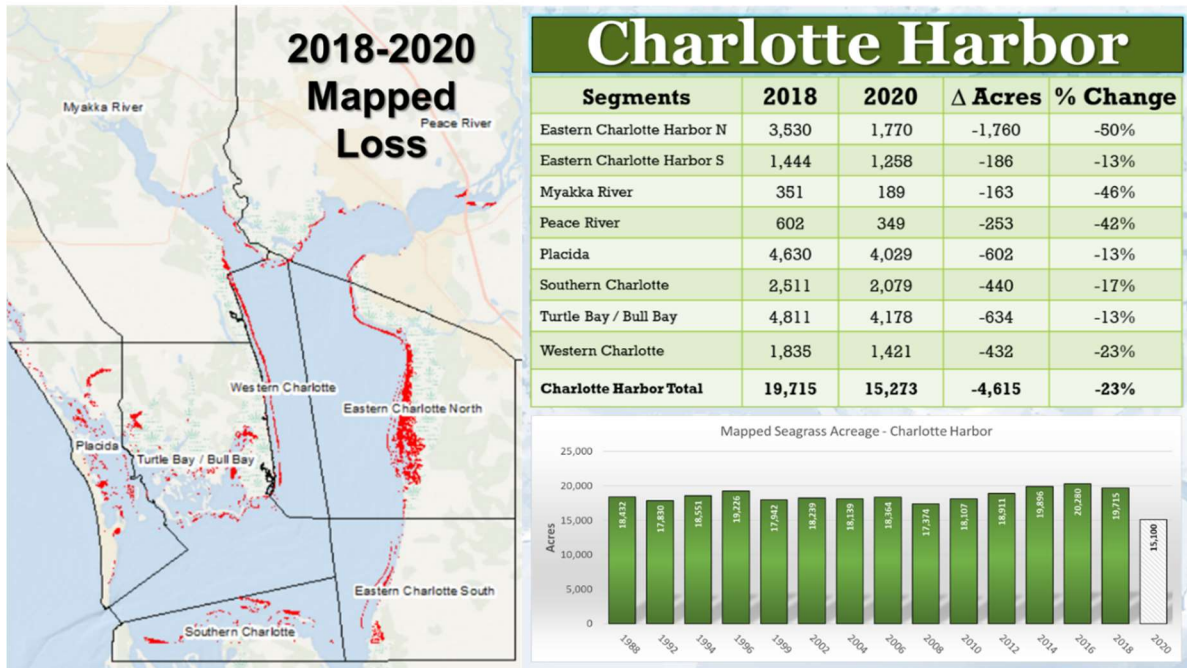


Figure 4. Seagrass losses in Charlotte Harbor from 2018-2020.

As of January 2020, less than 50% of residential land around the Harbor has been improved (Figure 5); many of these lots thus served as stormwater attenuation features, allowing for collection and percolation of rain into the surficial aquifer. Much of these undeveloped areas of the county were originally platted as part of the lot sales boom of the 1950s-1960s. Per stormwater management requirements of that era, drainage ditch and canal systems were established for flood control purposes, but little to no infrastructure is present in these areas to attenuate the content of stormwater prior to their discharging into canals and Charlotte Harbor. As increasing development in the county will result in greater coverage of impervious surface (and thus heightened stormwater runoff rates and nonpoint discharges), there is concern that environmental degradation pressures felt by the harbor may increase significantly. Due to the manner in which habitable land was platted and sold, retroactively implementing modern management features such as stormwater retention areas will be challenging at best as such projects may rely on obtaining land from willing private sellers (Figure 6). In addition to our need to account for the environmental impacts of development in Charlotte County, so too must we consider the influence of activities outside of the county’s boundaries. In Sarasota County, the city of North Port’s stormwater management system is designed such that most of their drainage is directed west towards the Myakka River via Myakahatchee Creek. That said, Charlotte County’s stormwater management system is linked to North Port’s such that drainage from North Port can directly discharge into Charlotte County’s canal systems if North Port canal levels exceed certain elevations. In all, there are 16 potential discharge points from North Port into Charlotte County (separate from the Myakka River). This illustrates how imperative it is for Charlotte County to maintain strong relationships with our upstream neighbors to assure all are doing their part to protect Charlotte Harbor.

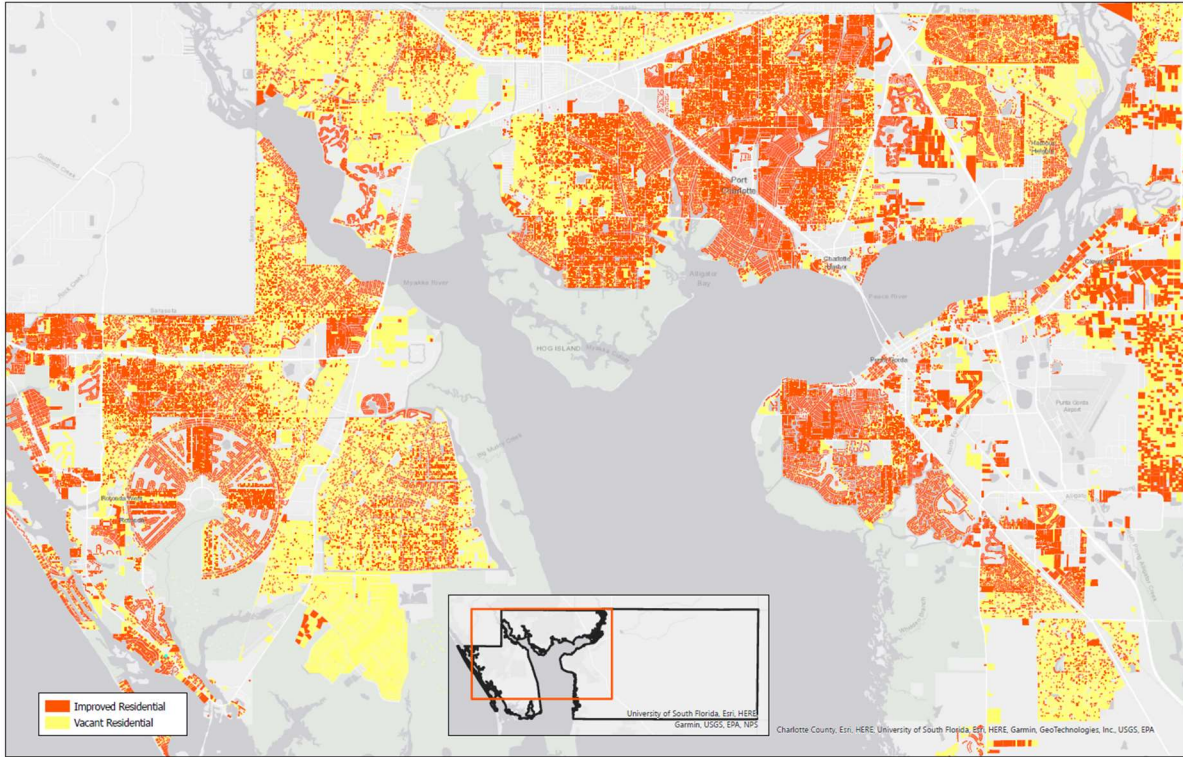


Figure 5. Residential parcels in western Charlotte County. Yellow regions are vacant, orange are improved as of January 2022.



Figure 6. Residential parcels near Port Charlotte. Most of these properties are unimproved; stormwater volume is expected to increase in this area as these lots are developed.

II. One Water Planning- Topics of Interest

The following describes questions and topics of interest that the county would like to see evaluated during development of the One Charlotte, One Water Plan. Note this is not intended to be an exhaustive list of concepts to be explored, but rather a means to provide insight into concerns and priorities expressed by county staff and partner agencies.

A. Monitoring, Modeling, and Knowledge Advancement

Current Activities:

In June 2022, the county initiated its ambient monitoring program, collecting samples monthly at approximately 60 freshwater and tidal locations. Funding is provided by each of the three stormwater MSBUs (Figure 7). The amount of funding provided by MSBUs year-over-year is dependent upon budgetary needs for other projects within each MSBU.

Funding provided by MSBUs must be expended on activities within that MSBU only. As such, the county supports monitoring efforts within Peace/Myakka Rivers, Charlotte Harbor, and the Gulf Coast via funding for lab analyses associated with CHNEP's Coastal and Charlotte Harbor Monitoring Network. The county also provides \$50,000 per year for water quality monitoring and assessment activities that can be used without restriction within any MSBU, Charlotte Harbor, Gulf Coast, and the Peace/Myakka.

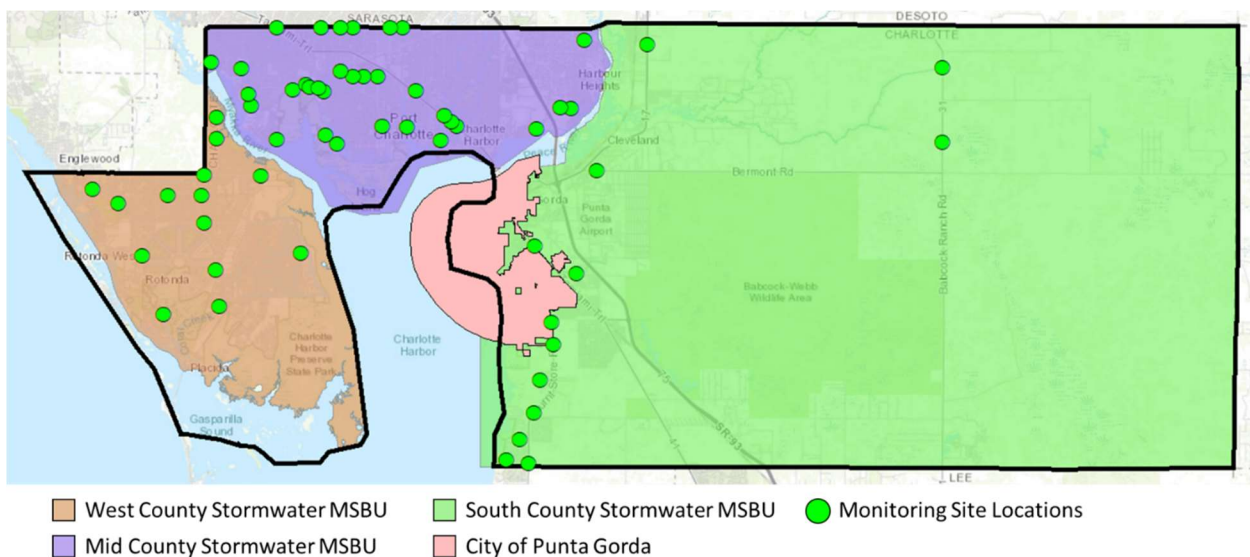


Figure 7. Charlotte County Ambient Monitoring Funding Regions and Monitoring Locations. Note Punta Gorda does not currently fund monitoring under this project, nor are monitoring activities conducted within the city limits.

Topics and Activities for Consideration:

Mitigation strategies for impaired water bodies- As described in the previous section, The Florida Department of Environmental Protection (FDEP) has verified impairments within multiple water bodies (WBIDs) in the county and throughout much of Charlotte Harbor. As of this writing, FDEP is determining

prioritization for Total Maximum Daily Load (TMDL) development in impaired WBIDs throughout the state. It is currently unclear if Charlotte Harbor or any WBIDs within Charlotte County will be included on DEP's priority list. In addition, since TMDL development schedules largely hinge on DEP's timeline and resource availability, interest has continued to build towards development of FDEP-approved Alternative Restoration Plans (RAPs) in lieu of the traditional TMDL/Basin Management Action Plan development processes. Some level of information on resource needs for development of RAPs would be welcome. Bear in mind that, depending on the WBID to be addressed, varying levels of collaborative effort are needed for RAP development in Charlotte County; certain impaired WBIDs encompass waters influenced entirely by activities within the county, while others (such as Charlotte Harbor proper) are influenced by activities well outside of county boundaries. Recommendations concerning estimated budgets and coordination for each type of WBID would be beneficial.

Monitoring Recommendations- While evaluating the efficacy of the current monitoring strategy is beyond the scope of the One Charlotte, One Water plan, some evaluation of the county's resource allocations vs other counties might be insightful. How do other counties envision a comprehensive monitoring strategy for their citizens, and how does Charlotte County compare? Are there monitoring partnership opportunities with other agencies that we are not leveraging?

Modeling Recommendations- Monitoring is just one critical facet of identifying potential sources of pollution into the Harbor and Gulf Coast. We are also exploring the possible need for development of pollutant loading models to better understand the impacts of certain activities on pollution influx rates into the Harbor. These might be critical components of RAP development processes (if this is pursued by the county).

Research Initiatives- There are multiple agencies and institutions in our region better suited to engaging in research activities than Charlotte County. However, the county can benefit from working closely with these entities to help determine how best to direct resources towards water restoration and improvement. Specific recommendations on cooperative activities would be welcome. This could be in the form of recommending development of interlocal partnerships, coalitions, or specific projects to aid in our understanding of the dynamics of the system. Examples of the types of projects that should be led by other organizations, but would benefit the county:

- Comprehensive Algae Identification Guide for Citizens
- Data collection and analysis to resolve concerns expressed by SWFWMD over NNC criteria in Charlotte Harbor
- Augmenting monitoring to support load estimates entering the Harbor from the Peace and Myakka Rivers
- Nutrient budget determinations
- Algae/red tide mitigation technologies
- Updates to paleolimnological studies to determine changes in nutrient accumulation in the Harbor

B. Infrastructure and County-Driven Improvements

Current Activities:

As discussed in Section I, much of Charlotte County west of the Peace River was designed and platted such that opportunities for stormwater treatment are limited to swale systems present within neighborhoods. In certain areas, planned communities may also include stormwater ponds as part of the water management system, providing some level of potential pollutant attenuation prior to discharge into county canals. As population, development, and impervious surface area continue to increase within the county, both local government and the public will have to work together to mitigate the impacts of increased stormwater flow into the natural environment.

The county is in the process of developing a stormwater master plan designed to identify measures for identifying and addressing flood risk in the county; as part of this effort, a county-wide stormwater model is being developed. When viewed in conjunction with data collected as part of the county's water quality monitoring activities, we hope to be able to target and prioritize drainage areas of highest concern with respect to stormwater flow volume and pollutant concentration.

Currently, the county is engaged in a few major infrastructure-related initiatives to reduce pollutant discharges:

- Septic to Sewer Conversion- As directed in the county Sewer Master Plan, the county has been actively engaged in expanding sewer service to residential areas whose septic drainage have the greatest potential negative impact on the environment.
- Advanced Wastewater Treatment- In order to assure wastewater treatment infrastructure can accommodate the county's population growth, all of Charlotte County's Water Reclamation Facilities are in the planning phases for capacity expansion. Advanced wastewater treatment processes are proposed components for each expansion, the implementation of which will dramatically cut down the volume of nutrients present within treated water (which is utilized as reuse water by commercial and residential entities throughout the county).
- Canal Sediment Removal Program- Many of the canal systems in the county west of the Peace River were established as far back as the 1950s-1960s. Few, if any, of these systems have been dredged since their creation. The county is currently working with a consultant to evaluate the nutrient content of benthic sediment to determine the cost/benefit of removing the upper layers of sediment from these canals. So far, funding has been allocated towards dredging two of the canals, if investigations into the sediment samples demonstrate a benefit to doing so.

Topics and Activities for Consideration:

Development of runoff abatement strategies- Compile and examine available information pertaining to the direction and volume of stormwater inflows from residential and commercial regions of Charlotte County. Recommendations could be provided concerning:

- Prioritization of regions for installation of stormwater abatement measures;
- Menu of options for infrastructure best suited for installation in high-priority areas (subject to availability of accessible property to the county), and;
- Discussion of additional data needs for monitoring and refinement of the initial prioritization recommendations.
- Specific consideration should be paid to:
 - Infrastructure capable of attenuating storm water pollutants within very small footprints (e.g. in-ground basins at the point of discharge from swale to canal);

- Any opportunities for attenuation/improvement in the canal systems that will not negatively impact flow/discharge rates. Such measures could be infrastructure or management based (e.g. review and revision of canal and swale management practices to reduce nutrient discharges).

Implementation of green infrastructure- Incorporate green infrastructure design in order to reduce the volume and impact of runoff discharges. Examples of such efforts include:

- Installation of measures such as permeable substrates and bioswales on county properties (where practicable) to reduce runoff and pollutant transport;
- Partnering with willing developers to integrate green infrastructure into their design and construction;
- Construct living shoreline features in portions of the tidal Peace/Charlotte Harbor with seawalls.

Enhancement/Revision of current county environmental improvement/conservation activities- Examples could include:

- Conserve Charlotte Program- adjust program to allow for funding availability for short-notice acquisition opportunities.
- Establishment of a formal habitat restoration and protection program in support of conservation and county resiliency enhancement.

C. Citizen Outreach and Community-Driven Improvements

Current Activities:

Charlotte County has no shortage of citizens looking to do their part to protect our waters. Currently, they have opportunities to do work alongside external entities via programs such as Charlotte Harbor Aquatic Preserve’s volunteer water quality monitoring program, UF’s Lake Watch, Sea Grant’s Eyes on Seagrass, and initiatives organized by local NGOs. In addition, many residents are looking to enhance stormwater ponds in their neighborhoods, and have asked for guidance in best practices for doing so. This enthusiasm and desire to contribute to monitoring and protection of our waters is a resource untapped by Charlotte County.

While the county lacks a “centralized” community monitoring program, it does support multiple activities related to environmental outreach and education:

- The Charlotte Harbor Environmental Center receives funding to provide environmental education opportunities to our citizenry, in accordance with NPDES and Caloosahatchee BMAP requirements;
- The county funds a position within Sea Grant to assist in environmental outreach;
- The county manages a Keep Charlotte Beautiful program, which includes activities geared towards minimizing litter in county waters and beautification/enhancement of neighborhood pond aesthetics.

Topics and Activities for Consideration:

Citizen Monitoring- Current citizen monitoring efforts in the county are limited by resource constraints within the host organization. In addition, methodology and reporting processes differ from one group to the next. Having a single entity manage citizen monitoring within the county should provide consistency and uniformity needed to assure the data can be utilized as needed by the county. Alternatively, the county could consider organizing a consortium consisting of the existing monitoring programs to standardize methods.

School Research Partnerships and Environmental/Ecological Education- While the county greatly values the previously-described services our partner agencies provide to our citizens, an evaluation of additional outreach opportunities that could evolve or enhance these efforts might be beneficial. For example, demand has been increasing for guidance on management of neighborhood stormwater ponds to reduce algal bloom occurrence and increase ecosystem services provided by that system. UF-IFAS provides general information on this topic to our citizens, but providing site-specific consultation may provide additional value to interested parties.

Mandate and/or Incentivize Best Practices Implementation- An exploration or suite of recommendations concerning mechanisms for reducing contributions of stormwater and nutrients from residential areas would be beneficial. Potential topics that could be investigated include:

- Impervious surface reduction incentivization (for example, provide property tax breaks for homeowners who maintain a minimum percentage pervious surface on their property);
- Incentivizations for fertilizer usage reduction via mechanisms like Florida-Friendly Landscaping;
- Extended fertilizer ban season and/or evaluating measures that could bolster enforceability of current restrictions.

D. Commercial/Industrial- Driven Improvements

Current Activities:

Construction and operation of commercial enterprises are governed by requirements set forth in the county's Code of Ordinances. Current ordinances require stormwater management design to meet or exceed SWFWMD requirements. The county does not require any specific actions above and beyond SWFWMD's requirements.

The county has also codified water protection mandates and guidelines as part of certain land use designations, and within the Comprehensive Plan, for example:

"1. The discharge of runoff, wastewater, or other potential sources of contamination into surface waters resulting in a degradation of the quality is prohibited and shall be enforced.

2. The most current Best Management Practices which control erosion and limit the amount of sediment reaching surface waters shall be applied to all activities.

3. Removal or control of submerged, emergent, or floating vegetation through non-chemical means shall be prioritized. Removal shall be limited to that necessary to allow reasonable access to water resources except for the removal of invasive, exotic species such as hydrilla, water hyacinth, or water lettuce.

4. Non-chemical means, where feasible, and Best Management Practices shall be used as alternatives to insecticides and herbicides for the control of mosquitoes."

Topics and Activities for Consideration

Revision of Ordinances and incentivizations to enhance stormwater mitigation design and provide additional protections to our natural resources- Other jurisdictions have codified specific requirements that exceed SWFWMD's; for example, the city of North Port requires treatment of a minimum of 1" of runoff from the project area. Recommendations concerning evaluation and revision of current ordinances would be beneficial.

Implementation of green infrastructure- develop mechanisms to encourage and/or incentivize incorporating green infrastructure into commercial design and construction. As part of this effort, an examination of materials and O&M cost of green vs "traditional" construction (e.g. utilization of pervious pavers vs asphalt) might be needed.

Development of Public/Private partnerships to enhance environmental restoration, outreach, and education efforts- Many members of the business sector have contributed positive impacts to our community beyond the economic benefits they bring to our county. An exploration into possible avenues for partnering with private entities in the region to enhance and protect our natural resources would be a valuable exercise.

E. Coordination and Plan Integration

Current Activities:

The One Charlotte, One Water plan is expected to include recommendations related to infrastructure improvements, process enhancements, policy adjustments, environmental assessment/management options, and communications strategies. As such, the goals and measures described within this plan are expected to be used to inform revisions to applicable components of community development plans and the county's Comprehensive Plan, as well as align with the goals and requirements of existing regional watershed management plans.

Topics and Activities for Consideration:

Alignment with state and regional agency initiatives and management plans:

- CHNEP Management Plan
- SWFWMD CH SWIM Plan
- CHAP Management Plan

Where possible, integrate and build upon projects and priorities established in other county plans:

- CC Sewer Master Plan
- CC Flood Master Plan
- Charlotte County Comprehensive Plan

References

Charlotte County Sewer Master Plan:

<https://www.charlottecountyfl.gov/core/fileparse.php/523/urlt/charlotte-county-sewer-master-plan.pdf>

Charlotte 2050 Comprehensive Plan (Full Text):

<https://www.charlottecountyfl.gov/departments/community-development/planning-zoning/comprehensive-planning/charlotte-2050/index.stml>

Charlotte 2050 Comprehensive Plan- Natural Resources Goals, Objectives, and Policies:

<https://www.charlottecountyfl.gov/core/fileparse.php/376/urlt/02-ENV-GOP.pdf>

Hillsborough County Comprehensive Plan- One Water: <https://planhillsborough.org/wp-content/uploads/2021/08/Hillsborough-County-Comprehensive-Plan.pdf>

Lee County Hyacinth Control District Pond Watch: <https://lchcd.org/pond-watch-program/>

Sarasota County NEST: <https://www.sarasota.wateratlas.usf.edu/nest/#nest-home>

Charlotte Harbor SWIM Plan 2020 Update, Southwest Florida Water Management District:

<https://www.swfwmd.state.fl.us/sites/default/files/medias/documents/CHSWIMPlanNov2020GBapprovedFinal.pdf>

FDEP Charlotte Harbor Aquatic Preserves Management Plan:

<http://publicfiles.dep.state.fl.us/CAMA/plans/aquatic/Charlotte-Harbor-AP-Management-Plan.pdf>

CHNEP Comprehensive Conservation and Management Plan: <http://anyflip.com/wqnz/qrvn/>