



Town of Colonial Beach

Playground of the Potomac since 1892

Recommendations for Incorporating Resilience into the Comprehensive Plan

October 23, 2020

Virginia Coastal Policy Center

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Why should your community incorporate resilience into your comprehensive plan?

Comprehensive plans provide communities with an opportunity to envision where they want to see their community develop and what values they want to carry with them into the future. By incorporating resilience language into your comprehensive plan you are able to show in concrete steps how community leaders and members are planning and preparing for future changes in the economy and the environment.

- Virginia encourages localities to integrate the Hazard Mitigation Plan into their Comprehensive Plans.
- Communities that are unprepared for climate change and sea level rise can see their long-term [municipal bonds](#) become more [costly](#).

RAFT: Goals and Objectives for Working with Colonial Beach

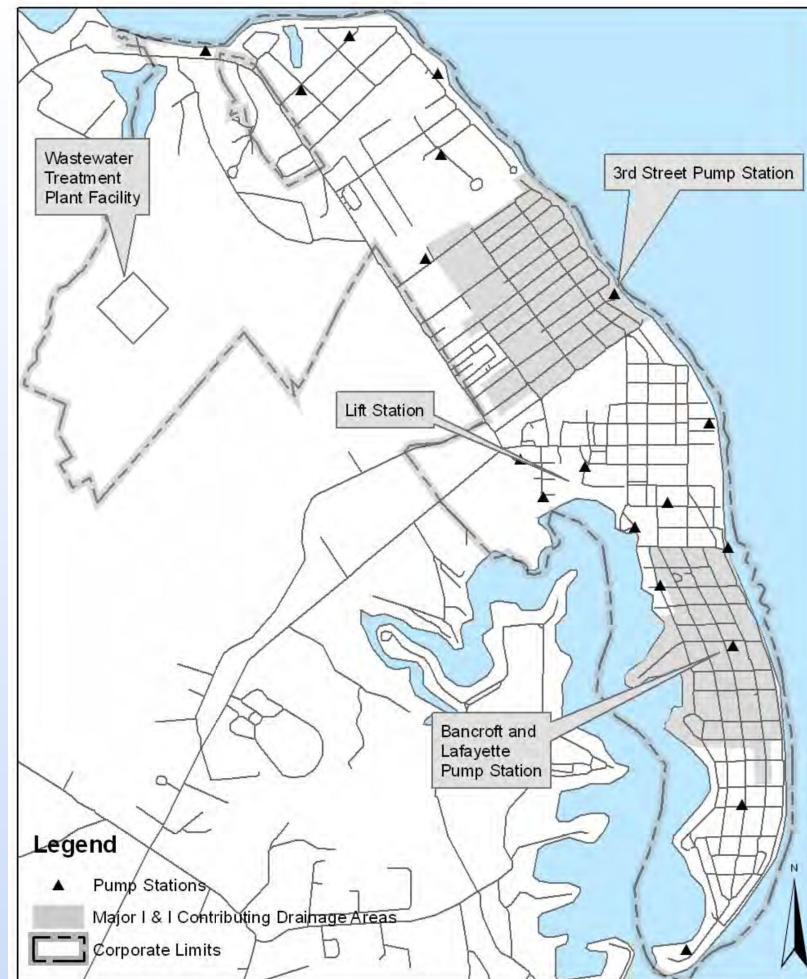
- Objective for the RAFT Team:
 - Review current locality comprehensive plans, identify methods for incorporation of resilience, and draft model language and other recommendations for the locality to consider.
- Methods used to evaluate comprehensive plans for resiliency language:
 - Comprehensive plans should have broad goals and with achievable objectives. By setting criteria for your community to track progress on these goals you are able to evaluate the implementation of your policies.
 - Resilience model language can be incorporated into each section and/or have a broad stand alone resiliency section within the comprehensive plan.

Wastewater Management



Wastewater Management

- Current draft of comprehensive plan describes the system as inadequate.
- Improperly installed or maintained septic tanks release nutrients into groundwater
 - [Mandatory sewer connection ordinance](#)
- Treatment facilities may not remove all nutrients prior to discharge
 - [Wastewater facility failures](#) can impact the local aquaculture industry and recreational activities.



**Wastewater
Treatment Facilities**

Wastewater Management

- Initial infiltration and inflow issues were addressed, but increased rain events are causing the system to near capacity limits.
- Adequate wastewater management is necessary for the town to grow and expand tourism
- Hazard Mitigation Plan suggests inclusion of wastewater management projects in capital improvement program.
- Develop town-wide wastewater master plan
 - Suggested in previous comprehensive plan

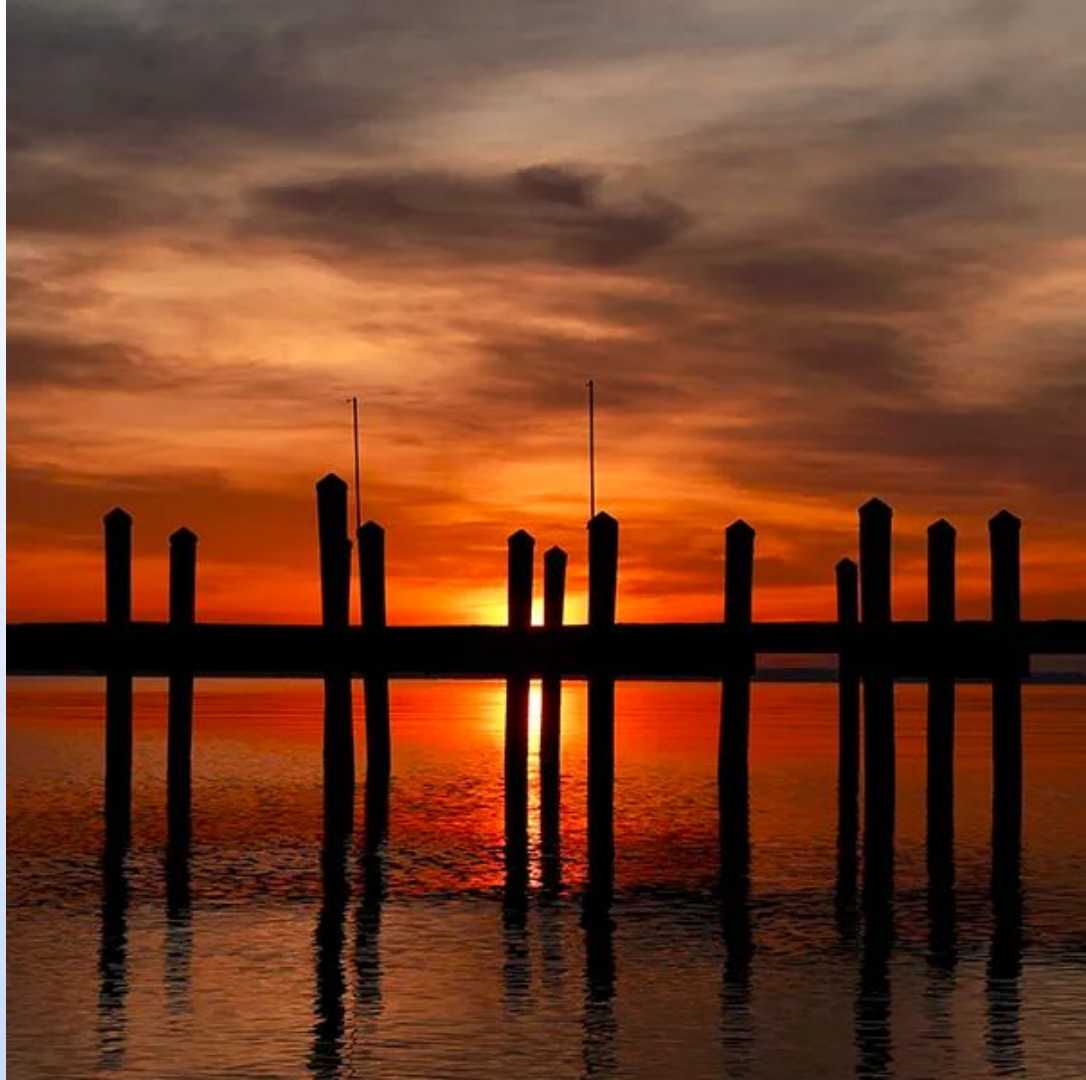
Wastewater Management

- 2009 Plan v. 2020 Draft Plan
- The [2009 plan](#) provided significantly more metrics for the wastewater facilities and infrastructure of Colonial Beach.
 - If updated data is available consider including it in the new comprehensive plan.
- The 2009 Plan made specific recommended improvements
 - The updated Comprehensive Plan can address any changes to wastewater within Colonial Beach since 2009, as well as work on a master wastewater plan for the Town.
- If this is a suggestion the town is interested in pursuing further, over the next couple of weeks we would further develop this recommendation to provide sample language that outlines a structure for completion of such plan.

Wastewater Management

Your Thoughts?

Stormwater Management



Stormwater Management - Current Language

- Capital Improvement Project: develop a stormwater management plan for each neighborhood (p 8)
- **Growth of the town will require a stormwater management system (p 36)**
- Infiltration due to large storms causes stormwater to combine with sewage and overflow directly into the waterways (p 72)
 - Evaluation of stormwater systems adequacy given medium priority in HMP & included in HRPDC
- Limit impervious surfaces, or use retention basins, porous pavement or created wetlands or ponds (p 79)
- Stormwater drainage pipes empty onto the beach exacerbating erosion (p 83)

Stormwater Management - Suggestions

- Map 5-, 10-, 50-, & 100-year flood plains, and areas with drainage issues
 - Increase vegetation/landscaping, ponding areas/depressions in high-risk areas
- Develop a town stormwater management plan
- Utilize Low-Impact Development for new projects
 - Include a LID plan in permitting process
 - Ex: Warsaw, VA: Neither total volume of runoff nor peak runoff rate from 2-yr 24 hr storm can be higher than pre-development levels
 - Cost-effective methods: retention, bioretention, infiltration trenches, soil amendments, increased vegetation density
- Minimize impervious surfaces
 - Use alternative surfaces or incentivize fewer parking spaces per new development

Stormwater Management - Suggestions

Green Infrastructure is a sustainable option for stormwater management

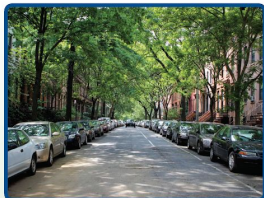
- Strategically planned and managed network of green open spaces
- Uses natural means to capture, store, and filter stormwater runoff
- Provides a range of functions to the community and ecosystem

[Low Impact Development Center](#) worked with Warsaw on their stormwater management system



Soak Up the Rain with Green Infrastructure

www.epa.gov/soakuptherain



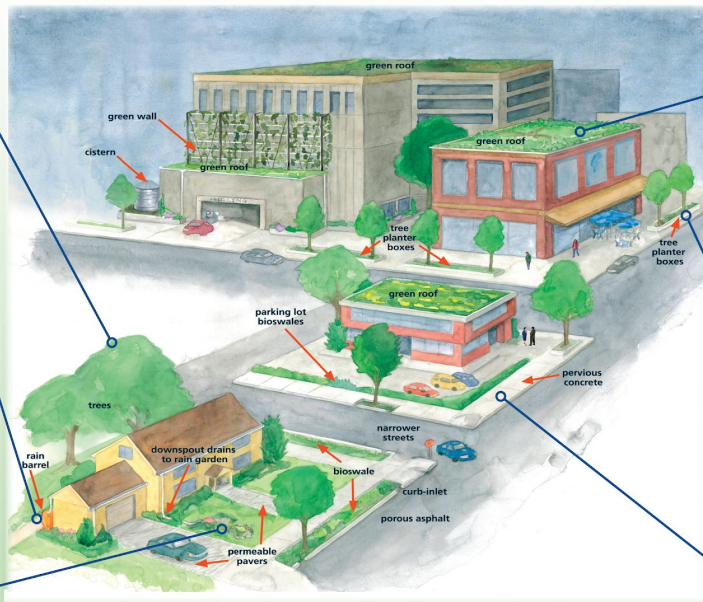
Tree Canopy



Rain Barrel



Rain Garden



Green Roof



Tree Planter Box



Pervious Concrete

Learn more. Take Action.



Poster created by U.S. EPA Office of Wetlands, Oceans and Watersheds.

Stormwater Management - HRPDC Suggestions

- Evaluate influence of sea level rise on infiltration rates and inflow
- Develop Level of Service Standards for stormwater management
 - Ex. protection from the degree of flooding persisting for one day that would result from a ten-year storm
 - Previous comprehensive plan included Level of Service Standards

Stormwater Management

Your Thoughts?

Shoreline Stabilization



Shoreline Stabilization

- Living shorelines are default, according to state law
- Educate citizens about cost-sharing
- Encourage multi-parcel/coordinated management
- Many resources through [VIMS Center for Coastal Resources Management](#)
 - Maps, model language, decision trees, interactive shoreline decision support tool
- VIMS conducted several studies within Colonial Beach almost 10 years ago, a similar study may be beneficial
 - Including sea level rise projections
 - Specific shoreline protection measures were described

Shoreline Stabilization



Non-Living Shoreline BMPs

- Groin Field with Beach Nourishment
- Revetment
- Revetment/B... Toe Revetment

Special Considerations


- Ecological Conflicts. Seek regulatory advice.
- Highly Modified Area. Seek expert advice.
- No Action Needed

Living Shoreline BMPs

- Maintain Beach or Offshore
- Breakwater with Beach Nourishment
- Non-Structural Living Shoreline
- Plant Marsh with Sill

Comprehensive Coastal Resource Management Portal
www.ccrm.vims.edu

Shoreline Stabilization



Shoreline Decision Support Tool

Answer a series of questions and follow the prompts below to arrive at a recommended shoreline erosion control strategy.

[< Back to Introduction and How To](#)

Is the shoreline currently defended with an erosion control structure?

☐ yes, with bulkhead or seawall
☒ yes, with revetment (riprap) against the upland
☐ no

Is the shoreline part of a residential canal?

☐ yes
☒ no

Is the shoreline part of any of the following?

☐ marina
☐ defended shoreline along commercial or industrial area
☐ next to road, parking area, or railroad track
☒ no

Is there submerged aquatic vegetation (SAV) or mangroves within 30 feet of the shoreline, or is the shoreline part of a sand spit?

☐ sav present
☐ mangroves present
☐ sand spit present
☒ no

The height of the bank at the interface between the shoreline and the upland can limit the type of management solutions that would be effective at countering erosion. Erosion on very high banks (those greater than 30 feet) may not be driven by wave energy, and therefore shoreline management strategies would not be appropriate.

☐ yes
☒ no

Is your bank height greater than 30 feet?





☐ yes
☒ no

[Reset](#) The shoreline bank be graded, if necessary?

☒ yes
☐ no

The height of the bank at the interface between the shoreline and the upland can limit the type of management solutions that would be effective at countering erosion. Erosion on very high banks (those greater than 30 feet) may not be driven by wave energy, and therefore shoreline management strategies would not be appropriate.

☐ yes
☒ no

Recommendation for Defended (Revetment) shoreline with Moderate Exposure, Shallow Nearshore Depth, and Bank can or can not be Graded

Plant Marsh with Sill

If the bank can not be graded, repair existing shoreline structure with a minimal footprint and consider incorporating a marsh with a sill or some other shoreline enhancement (e.g. oyster castles). If it is possible to grade the bank, remove existing failing or failed structure. Stabilize bank with riparian vegetation and plant a marsh with a sill or a shoreline enhancement option appropriate for your setting (e.g. oyster castles).

For a list of wetland plants, consult the [Lady Bird Johnson Wildflower Center](#) or the NRCS [Plant Materials Program](#) websites.

This recommendation is derived from basic shoreline conditions. Additional factors to consider include land and water uses, adjacent shoreline conditions, construction access, and sensitive cultural and natural resources.

[Show/hide pictures](#)

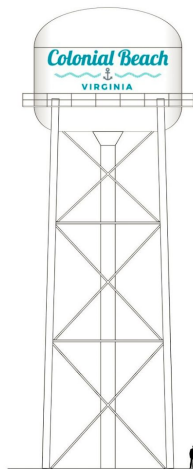
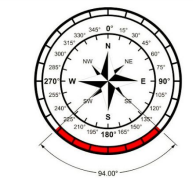
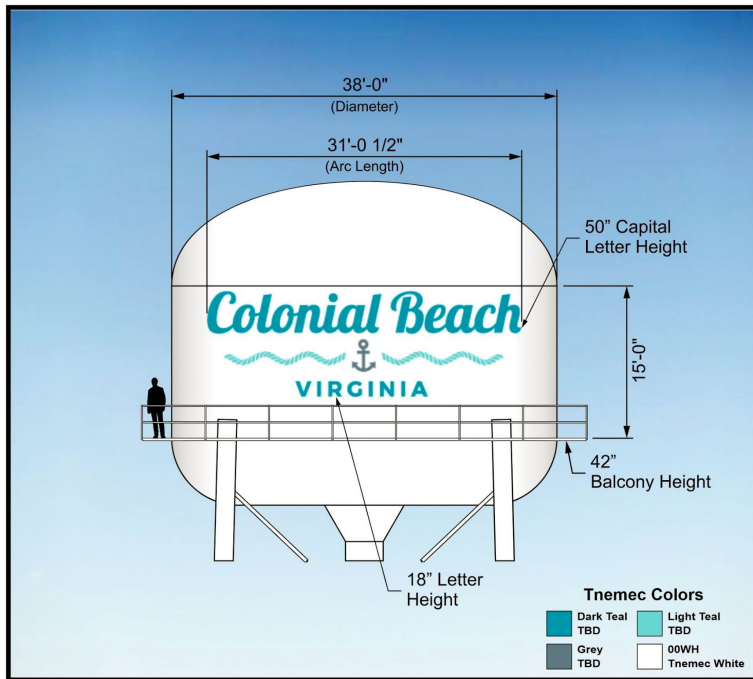
Decision Support Tool Questions with Your Answers

Questions	Your Answers
Shoreline Defended?	yes, with revetment (riprap)
Residential Canal?	no
Highly Modified Area?	no

[Reset](#) Center for Coastal Resources Management (CCRM)

Shoreline Stabilization

Your Thoughts?



Water Supply



Danny McKinney / Owner
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(337) 794-1564
dannymc@lakeareasignco.com

Client: Utility Services NC
Design: Colonial Beach, VA
(Draft 1)
Designer: Timothy Goodeaux

Date: _____

Signature: _____

☐ Approved ☐ Resubmit

Notice:

Colors shown are close approximations.
Printer and media variations may distort
colors from actual paint colors slightly.
Renderings are approximations and are
provided for a visual aid.
Field verify tank sheet before
installing patterns.

Water Supply - Current Issues

- Projects included in previous comprehensive plan were completed
 - Additional groundwater well by 2020 and two storage tanks by 2025
- Evaluate future water supply demands and current capacity
 - Steady population growth projected
 - 2,160 residential connections in 2009, there were 2,441 in 2018
 - Increased water demand during the pandemic
 - Interest in increasing tourism

Water Supply - Best Practices

- Address stormwater and wastewater problems first
- Regional cooperation
- Consider the long-term water supply need
- Education on water conservation
- Surface water is better than groundwater, when possible

Water Supply - Regional Water Supply Plan

- Insert public education materials in the billing statements
- Develop a pricing strategy to encourage conservation
- Include water conservation information on the Town's website
- Host a water conservation booth at a community event

Water Supply - Suggestions

- Use surface water instead of groundwater on public projects when possible
- Offer rebates to water customers for increasing their efficiency
 - Ex: replacing older toilets with high efficiency toilets that use 75-80% less water
- Offer home water use audits
- Update local plumbing code to focus on high efficiency fixtures
- Amend ordinances to restrict outdoor water use for landscapes
- Partnership: [Virginia Water Well Association](#)

Water Supply

Your Thoughts?

FEMA's Community Rating System

- A scoring scheme that incentivizes more stringent floodplain management by providing discounted flood insurance premiums through NFIP
 - Increase Freeboard requirement
 - Outreach including flood brochures and pages on the town's website
 - Define substantial damage and substantial improvements, which are tracked cumulatively
- 206 NFIP Policies In-Force, \$141,451 in premiums; 81 total losses with a payout of \$3,585,030.95
- Virginia has 27 communities participating in the CRS program with classes between 9-5 saving between 5%-25% on their policies.
 - James City County has achieved the highest class in Virginia by reaching class 5, saving the locality 25% on their policies.
 - Colonial Beach is not a participant in the CRS program at this time.

Funding Options

- National Fish and Wildlife Foundation Chesapeake Bay Stewardship Fund
 - Granted \$200,000 to NNPC for the Low Impact Stormwater Retrofit in Warsaw
- FEMA's Building Resilient Infrastructure and Communities & Hazard Mitigation Grant Program
 - [BRIC](#) application currently open, closing January 29, 2021
 - HMGP requires the incorporation of the Hazard Mitigation Plan in the comprehensive plan
- [Virginia Coastal Zone Management Program](#)
 - Managed by the DEQ, receives approximately \$3 million annually from NOAA
- [VDH Drinking Water Funding Program](#) & [VA Clean Water Revolving Loan Fund](#)
 - Provides low interest loans and grants
- [EPA Water Finance Clearing House](#) provides a list of many funding opportunities

Sustainability Partnerships and Programs

Certifications and partnerships with outside groups can increase the attractiveness of your community based on sustainability and resilience goals.

- U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) green building certification program
 - <https://www.usgbc.org/tools/leed-certification/cities-communities>
- The Sustainable Sites Initiative (SITESM) program
 - Evaluates landscapes for sustainability
 - <http://www.sustainablesites.org>
- STAR Community Rating System from STAR Communities
 - National framework and certification program for local sustainability.
 - <http://www.starcommunities.org>

Next Steps

- Consider adding the Environmental Addendum from the 2009 Comprehensive Plan to the current Comprehensive Plan. Ideally this document would be updated with the most current law and scientific research.
 - <https://colonialbeachva.net/wp-content/uploads/2018/06/Chapter-6-Environmental-Addendum.pdf>
- Work towards incorporating elements from the Hazard Mitigation Plan into the Comprehensive Plan with references and links to relevant sections.

Next Steps