2020 Cecil County Nuisance Flooding Plan
Acknowledgements

The Cecil County Department of Land Use and Development Services expresses its appreciation to the many people, agencies and organizations that provided information, ideas and input for this plan.

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Nuisance Flooding Plan Stakeholders

The Cecil County Department of Land Use and Development Services recognizes stakeholders for their time contributions to the development of this plan.

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Jim Bass, Eastern Shore Land Conservancy
Ken Confalone, Town of Charlestown Planning Commission

Special Thanks to Sasha Land at the Maryland Department of Natural Resources; Kristen Forti at the Maryland Emergency Management Agency; and Debbie Herr-Cornwell at the Maryland Department of Planning.

Cover Photo

Reservoir Road was inundated by Mill Creek as it raced through the low-lying area in Perryville by Jane Bellmyer, Cecil Whig
Placeholder to insert Council Resolution
Placeholder to insert Council Resolution
August 18, 2020

County Council of Cecil County
c/o The Honorable Robert Meffley, President
200 Chesapeake Blvd., Suite 2110
Elkton, MD 21921

Dear Sir:

Please be advised that the Planning Commission, at their meeting on August 17, 2020, made the following recommendation in regard to the items below:

**DRAFT – Cecil County Nuisance Flooding Plan**

**APPROVAL.**

**AGRICULTURAL PRESERVATION DISTRICT:**

**FILE CE-21-01** -APPLICANT: Darrell & Eva Byerly.
FOR: Preservation District Establishment.
PROPERTY LOCATION: 1285 Cecilton-Warwick Road, Warwick, MD 21912, Election District: 1, Tax Map; 58, Grids: 22 & 16, Parcels: 13, 73, 62.
ACREAGE: 302.34.
PROPERTY OWNERS: Darrell & Eva Byerly.

**APPROVAL.**

www.ccgov.org
REZONING:

FILE: 2020-04  APPLICANT: 929 West Pulaski Hwy, LLC.
REQUEST: Request to rezone .626 acres from Residential Mixed Use, (RMU) to Heavy Industrial, (M2).
PROPERTY LOCATION: 927 West Pulaski Hwy., Elkton, MD 21921, Election District: 3, Tax Map: 26, Parcel: 55.
PROPERTY OWNER: 929 West Pulaski Hwy, LLC c/o Charmie Polansky.
PRESENTLY ZONED: Residential Mixed Use, (RMU).

APPROVAL, due to a demonstrated mistake in the 2011 Comprehensive Rezoning.

Sincerely,

[Signature]
Eric S. Sennstrom
Director
Land Use & Development Services

/jb
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Background

Pursuant to Maryland House Bill 1427 (2019), §3-1018(b) and (c), on or before October 1, 2020, a local jurisdiction that experiences nuisance flooding (NF) shall develop a Plan to address nuisance flooding. In addition, a local jurisdiction shall update the plan every five years; publish the plan on the local jurisdiction’s website; and shall submit a copy of the Plan to the Maryland Department of Planning. This legislation is an update to Maryland Senate Bill (SB) 1006 and House Bill 1350 (2018) that states “on or before July 1, 2019, a local jurisdiction that experiences nuisance flooding shall develop a plan to address nuisance flooding.” The legislation further specifies that the plan must be submitted to the Maryland Department of Planning, published on the local jurisdiction’s website, and updated at least every five years.

The Cecil County Nuisance Flood Plan (NFP) will help to better understand the extent of nuisance flooding, create an inventory of conditions that attribute to nuisance flooding, and document the number and location of nuisance flood events, in an effort to respond to and implement risk reduction actions.

I. Introduction

Flooding is one of the most common natural hazards experienced in Cecil County. Depending on the circumstances, flooding may be widespread or isolated, developing slowly or quickly. It may take the form of coastal, overland, or flash flooding. Floods may originate from ice jams or from the failure of dams. Nuisance flooding is a more specific and commonplace phenomenon which dictates a slighter response and threatens the community in less intrusive ways. These small magnitude events are happening more often and becoming more chronic than more extreme events.

The National Oceanic and Atmospheric Administration (NOAA) defines nuisance flooding, or high tide flooding, as “flooding that leads to public inconveniences such as road closures. It is increasingly common as coastal sea levels rise.” The language of SB 1006 refers to nuisance flooding as “high-tide flooding that causes public inconvenience.” Nuisance flooding is typically unrelated to particular storm events, though it may be exacerbated by long-duration wind events or passing storm systems. As such, it is frequently referred to as “sunny day flooding.”

Nuisance flooding is capable of disrupting daily activities through a variety of mechanisms, such as the closure of roads due to high water, the inundation of yards and parks, and the impairment of engineered and natural drainage systems. Currently, these disruptions typically occur for a period of several hours and then abate. However, as a changing climate drives sea levels higher and precipitation events to greater severity, these repeated “nuisance” impacts will become significant stressors on the infrastructure, natural systems, emergency response, public health and safety, and fabric of the community.

In Cecil County, nuisance flooding occurs most predominately in locations near or adjacent to major bodies of water. Along the Big Elk Creek, nuisance flooding is common on residential and commercial properties. Elsewhere in the County, nuisance flooding is experienced as debris from farm fields washes into ditches and eventually settles on roadways as ditches overflow. Culverts in low-lying areas may have difficulty conveying water adequately, causing ponding on low-lying roadways throughout the County. This plan will be addressing both tidal and precipitation nuisance flooding based events. Without the
II. Preparing for Nuisance Flooding
Because nuisance flooding is a complex problem, strong partnerships between planning, public works, emergency management, and geographic information systems (GIS) are necessary for Cecil County to properly prepare for the impacts of nuisance flooding. In particular, it is important that departments collaborate to inventory and map chronically inundated areas and prepare to implement targeted mitigation actions.

As part of the nuisance flood planning process for Cecil County, a team of staff created a thorough inventory of known flood hazard areas, which can be found as Appendix I to this document. The inventory will be used as a baseline for areas of further study and evaluation. Stakeholder groups and agencies involved in the nuisance flood planning and inventory process can be found in Appendix II.

In addition to mapping, accurate flood forecasting and warning is critical to the safety and preparedness of a community. Weather forecast data is received from the National Weather Service (NWS) forecasting office at Mount Holly, New Jersey. Critical tide information is received from the NOAA tide gauges stationed at the Big Elk Creek, Conowingo, and Octoraro Creek, as well as United States Geological Survey (USGS) gauges also reported by the NWS elsewhere throughout the County. These gauges allow Cecil County to be aware of and prepare for possible nuisance flooding impacts.

The Cecil County Department of Emergency Services (DES) maintains a close relationship with NWS Mount Holly, receiving notifications of special hazards and watches or warnings of severe weather before the community is impacted. The timeliness of these severe weather alerts is critical when the potential for public safety impacts exists, such as in flood situations. Additionally, it is the responsibility of the Cecil County DES to disseminate public safety information via their mass notification system and social media outlets.

The Cecil County Nuisance Flood Plan is consistent with other Cecil County plans, including the 2010 Comprehensive Plan, the 2015 Hazard Mitigation Plan, the 2017 Land Preservation, Parks & Recreation Plan, the 2019 Green Infrastructure Plan, and the 2020 Strategic Plan. Additionally, elements from Cecil County’s municipalities’ plans including Elkton’s 2007 Flood Control Study & 2018 Flood Risk Assessment; Charlestown’s 2019 Stormwater Vulnerability and Floodplain Management Assessment; and Port Deposit’s 2018 Waterfront Master Plan have been incorporated into this plan. This plan covers areas in Cecil County and the municipalities that lie within for the period from October 1, 2020 through December 31, 2025.

III. Responding to Nuisance Flooding
A. Emergency Response
Thresholds are maintained for Cecil County which direct a set of actions based on an inundation level or frequency of flooding. These thresholds are meant to supplement actions directed by the Cecil County Emergency Operations Plan.
### B. Nuisance Flooding Thresholds

<table>
<thead>
<tr>
<th>Threshold</th>
<th>Response Level</th>
<th>Required Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flood waters are present below nuisance levels and are rising</td>
<td>Monitor Inundation</td>
<td>Above actions; notify Department of Public Works (DPW) and State Highway Administration (SHA) personnel to monitor flood levels as needed and place high water signs at impacted locations.</td>
</tr>
<tr>
<td>Flood waters are high enough to warrant temporary road closures</td>
<td>Flood Response</td>
<td>Above actions including mass notifications; Place additional DPW and SHA personnel on standby; close roads and reroute traffic as flooding reaches hazardous levels</td>
</tr>
</tbody>
</table>

When flooding reaches such a severity that life safety, critical infrastructure, and key resources are threatened, “nuisance” flooding levels have been exceeded. Below are response concepts consistent with the Cecil County Emergency Operations Plan which may become necessary as flood waters rise beyond nuisance levels. Determination of nuisance flood thresholds will be evaluated during the 2020-2025 time period.

- **Response**
  - Lifesaving activities
  - Incident containment
  - Public health concerns
  - Maintenance of transportation routes
  - Maintenance of critical facilities
  - Public warning mechanisms
  - Responder health & safety
  - Media & VIP management
  - Control & coordination of operations
  - Provision of transport, shelter and documentation of displaced persons
  - Restoration of normality

- **Recovery**
  - Begins when life safety actions are complete
  - Facilitate the restoration of systems to normality
  - Assess damage and return vital life support systems to minimum operating standards
  - Collate financial cost of the event
  - Legal implications, claim investigation
  - Debrief & compilation of final report
  - Community & restoration of services

### C. Documentation

Documenting the extent and impacts of nuisance flooding is critical to public safety and the long-term resilience of Cecil County. This information will be documented and updated on a regular basis for emergency planning purposes and informing future restoration activities. A review of flood documentation should provide Cecil County a comprehensive view of trends in flooding over time. The following factors will be recorded by Cecil County DES and reported to the Department of Land Use and Development Services (DLUDS) for tracking and archiving. This includes instances of nuisance flooding
addressed by SHA and communicated over the radio. Documentation and mapping analyses will be distributed to stakeholder groups and agencies as part of the annual review process.

- Date, time, and location of nuisance flooding
- Impacts (e.g. “estimated depth and extent of water on the roadway,” “ditch overflow,” “docks underwater,” critical facility threats, etc.)
- Agency notified and action taken

See Appendix III for a copy of the Cecil County nuisance flooding documentation tool. Additionally, the MyCoast Maryland tool is scheduled to come online Fall 2020, which the County will consider using as another documentation tool.

D. Hazard Assessment

Responding to and documenting nuisance flooding are building blocks to assessing the hazard’s location and impacts. County Staff has created a preliminary countywide inventory of critical facilities, roads, and sewer infrastructure that are located within the 100-year floodplain. Critical facilities have also been identified within the 500-year floodplain and sea level rise inundation areas predicted for the year 2100, when combined with a 100-year storm event. The sea level rise study for the region also includes an estimate for the number of buildings that could be impacted by 2050 and 2100, including damage estimates in US dollars. Additionally, staff will be reviewing the locations of roads compared to Base Flood Elevation and topography, and reviewing available bridge and culvert data. These sites already have quantified flood threats, and when combined with nuisance flooding documentation, will provide for a clearer picture for specific mitigation actions to consider. The documented nuisance flooding areas will be reviewed by stakeholder groups and agencies to help assess the problems. Once the problems are identified, mitigation strategies will be developed with the ultimate goal of providing an individualized action plan for the site. Once the action plan is implemented, the outcomes will be evaluated, and the action plan will be revised. This cycle will continue until nuisance flooding is minimized to the maximum extent possible.

IV. Nuisance Flooding Planning Goals

Cecil County has established the following goals to help inform the review of possible activities and future mitigation actions:

1. Protect the lives and properties of residents and businesses from flooding.
2. Ensure that public services and critical facilities operate during and after flooding.
3. Prioritize mitigation projects to reduce flood damage to communities.
4. Inform the general public of actions they can take to reduce their flood risk.
5. Protect, preserve, and restore natural floodplain functions.
V. Nuisance Flooding Management Activities

A. Preventative Measures
Cecil County uses a variety of ordinances and codes to help ensure new development does not adversely impact existing homes and businesses, as well as, several ongoing programs to help reduce flood threats.

1. Floodplain ordinance
2. Building codes
3. Stormwater management
4. Drainage system maintenance

B. Property Protection
New residential development in the 100-year floodplain is required to be elevated two feet above the base flood elevation and new critical facilities in the 100-year floodplain are required to be elevated three feet above the base flood elevation. Existing structures can also be voluntarily elevated or retrofitted to reduce flood risk, and flood insurance can be purchased to help recover from flood damages.

C. Natural Resource Protection
Cecil County has a number of different agencies and local non-profit groups whose primary functions are land stewardship, and making sure open spaces are preserved and/or restored. These activities include erosion and sediment control, wetland protection, maintaining wildlife corridors, and water quality improvement projects.

D. Emergency Services
Cecil County’s Department of Emergency Services takes measures to reduce the impacts of flooding on our communities. They are responsible for recognizing threats, providing warning to citizens, and responding during and after a flood event to help protect lives, health, and properties.

E. Public Information
Cecil County agencies disseminate flood risk information in a variety of ways, including an online floodplain map information service, outreach projects via social media and community events, local libraries, and environmental education activities. Nuisance flooding information dissemination activities will be further developed in this plan and future plans including the Program for Public Information Plan to be developed in the near future.

VI. Mitigating Nuisance Flooding Impacts
Both the Emergency Operations Plan and the Hazard Mitigation Plan (HMP) for Cecil County address measures by which the impacts of flooding can be mitigated, or lessened, by structural and nonstructural means. The Green Infrastructure Plan identifies natural infrastructure solutions, such as open space preservation, restoration of natural systems, and living shorelines, which can also help to reduce flood
risks. The purpose of the Nuisance Flooding Plan is to augment and support the information and recommended actions found in other planning documents. According to the County’s 2017 HMP (p. 6-7):

*The Hazard Mitigation Plan addresses the County’s waterfront community with 120 miles of shoreline along the Chesapeake Bay, its tributaries, and the Susquehanna River. The Hazard Mitigation Plan identify shoreline control/stabilization measures and both residential and agricultural best management practices as viable means of reducing accretion/erosion of Cecil’s highly erodible soils. The plan also emphasizes the maintenance, enforcement, and strengthening of floodplain regulations and participation in the Community Rating System. All county projects will be evaluated for consistency with the Hazard Mitigation Plan.*

The principles of floodplain management are fundamental to the proper mitigation of nuisance flooding in Cecil County. Cecil County’s floodplain regulations already exceed the minimum requirements set by FEMA and the NFIP. For example, two or three feet of freeboard, development restrictions on the size of accessory structures, and open foundations for new dwellings, etc. – can be more effective in mitigating the impacts of both nuisance flooding and other major flooding events.

Cecil County’s HMP identifies four areas of focus that help direct mitigation activities. These four areas include:

- Ensure that existing structures are resistant to flood-related damage,
- Create awareness of floodplain hazards and protective measures,
- Protect critical facilities, and
- Prepare/update stormwater management plans for various areas in the County.

In addition to actions specified in the HMP, the NFP includes activities which Cecil County will implement or consider implementing to mitigate the impacts of nuisance flooding. These activities support the four areas of focus found in the Hazard Mitigation Plan. They also support the implementation strategies identified in the Cecil County Green Infrastructure Plan and the goals and objectives of the Cecil County Comprehensive Plan.
## Table of Implementation Strategies

<table>
<thead>
<tr>
<th>Area of Focus</th>
<th>Action Items</th>
<th>Lead Agency</th>
<th>Partners &amp; Support</th>
<th>Funding Options</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Structural</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Expand the lateral extent of the regulatory flood zone boundaries to include the 0.2-percent chance or 500-year floodplain and determine the base flood elevations.</td>
<td>DLUDS</td>
<td>FEMA, MDE</td>
<td>HGMP</td>
<td>2-3 years</td>
</tr>
<tr>
<td></td>
<td>Continue to improve stormwater management infrastructure to more effectively convey water from flood-prone areas.</td>
<td>DLUDS, DPW</td>
<td>SCD</td>
<td></td>
<td>2-3 years</td>
</tr>
<tr>
<td></td>
<td>Incentivize residents and businesses to implement stormwater management practices and runoff retention, including rain barrels, rain gardens, and conservation landscaping.</td>
<td>DPW</td>
<td>DLUDS, Town DPW, SCD, SR</td>
<td>County CIP, CBT WAGP, BRIC, HGMP, FMA, DNR CR</td>
<td>0-1 year</td>
</tr>
<tr>
<td></td>
<td>Design ways for existing open space areas to better address flood hazards, such as holding water and collecting sediment and debris, create local demonstration projects.</td>
<td>DLUDS</td>
<td>DPR, DPW, Town DPZ/DPW, FEMA</td>
<td>CBT G3, CBT WAGP, BRIC, HGMP, FMA, DNR CR</td>
<td>2-3 years</td>
</tr>
<tr>
<td></td>
<td>Develop watershed master plans to better understand flood risks and create incentives to implement strategic natural infrastructure protection and stormwater management solutions that benefit entire communities.</td>
<td>DLUDS</td>
<td>DPW, SCD</td>
<td>County CIP, CBT WAGP</td>
<td>0-1 year</td>
</tr>
<tr>
<td></td>
<td>Conduct regular maintenance of drainage and stormwater control systems.</td>
<td>DPW</td>
<td>DLUDS</td>
<td>County CIP</td>
<td>0-1 year</td>
</tr>
<tr>
<td></td>
<td>Consider green infrastructure options rather than conventional grey infrastructure stormwater solutions, or consider a hybrid approach.</td>
<td>DLUDS, DPW</td>
<td>SCD</td>
<td>County CIP, CBT WAGP</td>
<td>0-1 year</td>
</tr>
<tr>
<td></td>
<td>Develop criteria and update mapping of critical facilities, roads, water and sewer infrastructure.</td>
<td>DLUDS, DPW</td>
<td></td>
<td>County CIP, CBT WAGP</td>
<td>0-1 year</td>
</tr>
<tr>
<td></td>
<td>Document nuisance flood locations capturing depth, extent, and duration and maintain records for dissemination.</td>
<td>DLUDS, DPW</td>
<td>DES</td>
<td>County CIP, CBT WAGP</td>
<td>0-1 year</td>
</tr>
<tr>
<td>Area of Focus</td>
<td>Action Items</td>
<td>Lead Agency</td>
<td>Partners &amp; Support</td>
<td>Funding Options</td>
<td>Timeline</td>
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</tbody>
</table>
| Public Information  
Nonstructural | Communicate the risk of nuisance flooding in non-emergency times to residents and businesses via mass mailings, social media, press releases, or automated phone calls. | DES, DLUDS  | PIO               | staff time     | 0-1 year  |
|               | Disseminate flood preparedness information to enable a safer and more aware public in the face of flooding.                                                                                                     | DES, DLUDS  | PIO               | staff time     | 0-1 year  |
|               | Integrate nuisance flooding-related public messaging into Cecil County’s Program for Public Information Plan (under development), and incorporate a flood insurance coverage assessment and implementation plan. | DLUDS, DES  | PIO, MIA          | staff time     | 0-1 year  |
|               | Incorporate a nuisance flooding element into the County’s current Floodplain Map Information Service.                                                                                                          | DLUDS       |                   | staff time     | 0-1 year  |
| Planning  
Nonstructural | Ensure Cecil County’s NFP is kept up to date and integrate with the Hazard Mitigation Plan, other pertinent plans, and regulations.                                                                                | DES, DLUDS  | DPW               | staff time     | 2-3 years |
|               | Schedule annual review of the nuisance flooding planning committee to develop a report on the status of the implementation strategies.                                                                        | DES, DLUDS  |                   | staff time     | 0-1 year  |
|               | Improve stormwater management planning and strengthen policies to reduce runoff.                                                                                                                               | DES, DLUDS  | DPW               | staff time     | 2-3 years |
| Implementation  
Nonstructural | Educate and train County staff on responsibilities under the NFP.                                                                                                                                              | DES, DLUDS  | DPW               | staff time     | 0-1 year  |
|               | Create a thorough flood hazard profile and mitigation action plan for each critical facility and County roadway vulnerable to nuisance flooding.                                                               | DLUDS, DPW  | DES               | County CIP, CBT G3, BRIC, HMGP, FMA, DNR CR | 2-3 years |
|               | Identify areas of flood concern in close proximity to capital improvements and prioritize mitigation solutions for high-risk assets.                                                                         | DLUDS, DPW  | FEMA              | BRIC, HGMP, FMA, VLT | 2-3 years |
|               | Identify and acquire vacant lots in flood risk areas for natural infrastructure protection.                                                                                                                  | DLUDS       | DPR, DES, FEMA, ESLC, CLT | County CIP, CBT G3, BRIC, HMGP, FMA, DNR CR | 2-3 years |
|               | Increase funding for and incentivize the Purchase of Development Rights (PDR) program, to strategically preserve lands with flood risk.                                                                      | DLUDS       |                   | County CIP, CBT G3, BRIC, HMGP, FMA, DNR CR | 2-3 years |
|               | Protect and restore natural coastal features (forests, marshes, dunes, underwater grasses, and oysters) that can reduce the impacts of flooding.                                                              | DLUDS, DPW  | SR                | County CIP, CBT G3, BRIC, HMGP, FMA, DNR CR | 2-3 years |
|               | Identify opportunities to re-use dredge material for living shoreline projects and determine candidate sites for developing a local grant program.                                                              | DLUDS       | DNR CCS, USACOE, MDE | CBT WAGP, DNR CR | 0-1 year  |
VII. Projections for Future Impacts

The areas impacted by nuisance flooding are projected to increase gradually in the coming years as changing climate elevates water levels and drives precipitation patterns to new extremes. This shift, however, is likely to accelerate gradually over time. New areas will also become impacted, leading to an increased number of businesses, residents, and critical infrastructure at risk. Public services will also be more frequently impaired as flooding increases.

Cecil County will maintain a level of awareness of data made available by NOAA, the State of Maryland, the University of Maryland Center for Environmental Science, and other scientific institutions as it pertains to the community and local flood risks. These risks of increased nuisance flooding will be communicated appropriately to residents and decision makers and direct them to take appropriate action in the areas of emergency response and hazard mitigation. Elected officials and County staff will utilize venues such as County Council meetings and Planning Commission meetings to communicate information on long-term flood risks. Future projections of sea level change and nuisance flooding should also be integrated into land use planning, floodplain management, comprehensive planning, and capital investment planning.

VIII. Plan Maintenance

Implementation and maintenance of the nuisance flooding plan is critical to the success of this planning process. Once adopted, plan maintenance will adhere to a schedule of developing an annual progress report on the action items identified in the section on Mitigating Nuisance Flooding Impacts. Members of the nuisance flooding plan steering committee will be invited to an annual meeting conducted by the DLUDS and DES to discuss collaborative efforts with community partners, monitor funding sources, and recommend any adjustments to lead and support agencies, funding sources, and timeframes for completion. Understanding local capacity will be a key part of the discussions and will revolve around new approaches getting projects into the ground, engaging different groups and new technical experts, and developing incentive programs. The DLUDS and DES are responsible for preparing the annual progress report and will submit the document to the appropriate agencies for review and comment. The DLUDS and DES are also responsible for coordinating with other Departments and the Towns to integrate the appropriate nuisance flooding implementation strategies into future updates of the Comprehensive Plan, Hazard Mitigation Plan, Stormwater Management Plan, Land Preservation, Parks, and Recreation Plan, Green Infrastructure Plan, and Strategic Plan. Finally, the plan must be updated every five years and include any changes within the nuisance flooding areas, mapping assessments, and mitigation actions. The next plan update will occur in 2025.
Appendix I – Nuisance Flooding Location Inventory

A team of staff created a thorough inventory of known flood hazard areas. The inventory will be used as a baseline for areas of further study and evaluation.

A. Inventory of roads and bridges that are vulnerable to nuisance flooding

<table>
<thead>
<tr>
<th>Location</th>
<th>Approx. Length of Road(s)</th>
<th>Flooding Source</th>
<th>Road Ownership</th>
<th>Bridge Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 block of Delaware Ave.</td>
<td>1,610 ft.</td>
<td>Big Elk Creek</td>
<td>State of Maryland</td>
<td>Yes (State Owned)</td>
</tr>
<tr>
<td>100 block of Howard St.</td>
<td>1,200 ft.</td>
<td>Big Elk Creek</td>
<td>Town of Elkton</td>
<td>No</td>
</tr>
<tr>
<td>100-200 blocks of S. Bridge St. (MD RTE 213)</td>
<td>1,540 ft.</td>
<td>Big Elk Creek</td>
<td>State of Maryland</td>
<td>Yes (State Owned)</td>
</tr>
<tr>
<td>300 Block of Fletchwood Road. (MD RTE 277)</td>
<td>1,230 ft</td>
<td>West Creek</td>
<td>Cecil County</td>
<td>Yes (XCE-2012)</td>
</tr>
<tr>
<td>Deaver &amp; S. Simpers Rd.</td>
<td>250 ft</td>
<td>East Branch of Laurel Run</td>
<td>Cecil County</td>
<td>No</td>
</tr>
<tr>
<td>Elkton Rd. (MD RTE 279) at W. Pulaski Hwy. (US RTE 40)</td>
<td>1300 ft of Elkton Rd 2730 ft. of W. Pulaski Hwy.</td>
<td>Little Elk Creek</td>
<td>State of Maryland</td>
<td>Yes (state owned) – Elkton Rd. Yes (state owned) – W. Pulaski Hwy.</td>
</tr>
<tr>
<td>Ricketts Mill Rd. at Appleton Rd. (MD RTE 316)</td>
<td>685 ft of Ricketts Mill Rd. 220 ft. of Appleton Rd.</td>
<td>Big Elk Creek</td>
<td>Ricketts Mill Rd. – Cecil County Appleton Rd. – State of Maryland</td>
<td>Yes (County owned, CE-0027)- Ricketts Mill Rd. Yes (State owned) – Appleton Rd.</td>
</tr>
<tr>
<td>900 block of Broad St. (MD RTE 7)</td>
<td>575 ft</td>
<td>Mill Creek</td>
<td>State of Maryland</td>
<td>Yes (state owned)</td>
</tr>
<tr>
<td>1400 Block of Frenchtown Road (Perryville)</td>
<td>1030 ft</td>
<td>Susquehanna River</td>
<td>Town of Perryville</td>
<td>No</td>
</tr>
<tr>
<td>0-100 blocks of Edgewater Ave.</td>
<td>920 ft</td>
<td>North East River</td>
<td>Cecil County</td>
<td>No</td>
</tr>
</tbody>
</table>

1 Source: Cecil County Green Infrastructure Plan, August 2019 – Appendix H
<table>
<thead>
<tr>
<th>Location</th>
<th>Approx. Length of Road(s)</th>
<th>Flooding Source</th>
<th>Road Ownership</th>
<th>Bridge Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shore Dr, Pennsylvania Ave. and Kline Ave.</td>
<td>1,925 ft.</td>
<td>North East River</td>
<td>Shore Dr. – Cecil County</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pennsylvania Ave. &amp; Kline Ave. - Private</td>
<td></td>
</tr>
<tr>
<td>0 block or N. Main St. &amp; 0-200 blocks of S. Main St. (MD RTE 272)</td>
<td>575 ft. of N. Main St.</td>
<td>North East River</td>
<td>State of Maryland</td>
<td>Yes (state owned) – N. Main St.</td>
</tr>
<tr>
<td></td>
<td>900 ft. of S. Main St.</td>
<td></td>
<td></td>
<td>No – S. Main St.</td>
</tr>
<tr>
<td>100-200 blocks of W. Cecil Ave. (MD RTE 7)</td>
<td>1,900 ft.</td>
<td>North East River</td>
<td>State of Maryland</td>
<td>Yes (state owned)</td>
</tr>
<tr>
<td>0 block of Washington St.</td>
<td>400 ft.</td>
<td>North East River</td>
<td>Town of North East</td>
<td>No</td>
</tr>
<tr>
<td>0-100 blocks of W. Race St. (North East)</td>
<td>840 ft.</td>
<td>North East River</td>
<td>Town of North East</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>1,130 ft of North East Isles Dr.</td>
<td></td>
<td>North East Isles Dr. – Town of North East</td>
<td>Yes (Town of North East owned, CE-NE01)</td>
</tr>
<tr>
<td>500 block of Calvert Rd.</td>
<td>885 ft.</td>
<td>North East Creek</td>
<td>Cecil County</td>
<td>Yes (County owned, CE-0011)</td>
</tr>
<tr>
<td>300 block of Bank St.</td>
<td>675 ft.</td>
<td>Chesapeake &amp; Delaware Canal</td>
<td>Town of Chesapeake City</td>
<td>No</td>
</tr>
<tr>
<td>300-500 block of Slicers Mill Rd.</td>
<td>2,200 ft.</td>
<td>Stone Run</td>
<td>Cecil County</td>
<td>Yes (County owned, CE-0082)</td>
</tr>
<tr>
<td>Crothers Rd. &amp; England Creamery Rd.</td>
<td>1500 ft of Crothers Rd.</td>
<td>North East Creek</td>
<td>Cecil County</td>
<td>Yes (County owned (CE-0056) – Crothers Rd.</td>
</tr>
<tr>
<td></td>
<td>&gt;100 ft of England Creamery Rd.</td>
<td></td>
<td></td>
<td>Check Bridge Inventory for Eng. Creamery.</td>
</tr>
<tr>
<td>0-100 block of Moore Rd.</td>
<td>2,200 ft.</td>
<td>Octoraro Creek</td>
<td>Cecil County</td>
<td>No</td>
</tr>
<tr>
<td>1800 block of Principio Rd.</td>
<td>585 ft.</td>
<td>Principio Creek</td>
<td>Cecil County</td>
<td>Yes (County Owned, CE-0052)</td>
</tr>
<tr>
<td>300 block of Wilson Rd.</td>
<td>700 ft</td>
<td>North East Creek</td>
<td>Cecil County</td>
<td>No</td>
</tr>
<tr>
<td>Oldfield Point Rd. at Jones Creek</td>
<td>1,800 ft</td>
<td>Jones Creek</td>
<td>Cecil County</td>
<td>No</td>
</tr>
</tbody>
</table>
## Inventory of sewer infrastructure that is vulnerable to nuisance flooding

<table>
<thead>
<tr>
<th>Sewer Segment</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stony Run Interceptor, Manholes 806-811</td>
<td></td>
</tr>
<tr>
<td>Stony Run Interceptor, Manholes 831-850</td>
<td></td>
</tr>
<tr>
<td>Stony Run Interceptor, Manholes 837-845</td>
<td></td>
</tr>
<tr>
<td>Stony Run Interceptor, Manholes 856-858</td>
<td></td>
</tr>
<tr>
<td>Stony Run Interceptor, Manholes 858-871</td>
<td></td>
</tr>
<tr>
<td>Stony Run Interceptor, Manholes 872-876</td>
<td></td>
</tr>
<tr>
<td>Stony Run Interceptor, Manholes 872-876</td>
<td></td>
</tr>
<tr>
<td>Stony Run Interceptor, Manholes 875-1211</td>
<td>See Map 46 through Map 54 in appendix IV for identified risk locations</td>
</tr>
<tr>
<td>Stony Run Interceptor, Manholes 1282-1287</td>
<td></td>
</tr>
<tr>
<td>Stony Run Interceptor, Manholes 1288-1396</td>
<td></td>
</tr>
</tbody>
</table>

\[2\] Source: Cecil County Green Infrastructure Plan, August 2019 – Appendix H
### Other Locations Identified by NFP workgroup

<table>
<thead>
<tr>
<th>Location</th>
<th>Jurisdiction</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>George Street</td>
<td>Cecil County</td>
<td>Fredericktown</td>
</tr>
<tr>
<td>Buena Vista Drive</td>
<td>Cecil County</td>
<td></td>
</tr>
<tr>
<td>Church Road</td>
<td>Cecil County</td>
<td>North of Rumsey Road</td>
</tr>
<tr>
<td>Glebe Road</td>
<td>Cecil County</td>
<td>South of Mill Lane</td>
</tr>
<tr>
<td>River Road</td>
<td>Cecil County</td>
<td>Locust Point</td>
</tr>
<tr>
<td>Conestoga Street, from Bladen to Water Streets</td>
<td>Charlestown</td>
<td></td>
</tr>
<tr>
<td>Water Street, from Conestoga to Frederick Streets</td>
<td>Charlestown</td>
<td></td>
</tr>
<tr>
<td>Intersection of Water and Conestoga Streets</td>
<td>Charlestown</td>
<td>Long Point Park</td>
</tr>
<tr>
<td>Intersection of Water &amp; Louisa Streets</td>
<td>Charlestown</td>
<td>Avalon Park</td>
</tr>
<tr>
<td>Intersection of Bladen and Conestoga Streets</td>
<td>Charlestown</td>
<td>Foot Log Park</td>
</tr>
<tr>
<td>Baltimore Street</td>
<td>Charlestown</td>
<td>Foot Log Beach</td>
</tr>
<tr>
<td>Colonial Drive</td>
<td>Charlestown</td>
<td>Sewer Pump/inlet station on beach</td>
</tr>
<tr>
<td>Holloway Beach</td>
<td>Charlestown</td>
<td>Identified problem with septic along Long Beach Road</td>
</tr>
<tr>
<td>Big Elk Creek Area</td>
<td>Elkton</td>
<td>Areas adjoining the Big Elk Creek beginning at Historic Elk Landing including under US RTE 40 bridge, through Marina Park, under MD RTE 213 bridge into properties along Main Street, Eder Park, and Meadow Park on both sides’ MD RTE 7 (Delaware Avenue).</td>
</tr>
<tr>
<td>269 E. Main St.</td>
<td>Elkton</td>
<td></td>
</tr>
<tr>
<td>US RTE 40 and Aiken Avenue</td>
<td>Perryville</td>
<td></td>
</tr>
<tr>
<td>Aiken Avenue and Broad Street</td>
<td>Perryville</td>
<td></td>
</tr>
<tr>
<td>Broad street</td>
<td>Perryville</td>
<td>At the rail overpass just past Town Hall</td>
</tr>
<tr>
<td>Marion Tapp Parkway</td>
<td>Perryville</td>
<td>Floodplain</td>
</tr>
<tr>
<td>Marina Park</td>
<td>Port Deposit</td>
<td>Public Trails, Playground, &amp; Parking</td>
</tr>
<tr>
<td>North Main Street</td>
<td>Port Deposit</td>
<td>Between 140 and 220 North Main Street. Stormwater facilities failing; causing road to flood</td>
</tr>
</tbody>
</table>
D. Inventory of critical facilities that are vulnerable to nuisance flooding

Critical infrastructure includes power production and transmission facilities, hospitals, police stations, fire stations, emergency management centers, water supplies, wastewater treatment facilities, evacuation routes, and more. We compared locations of critical infrastructure in Cecil County to SHA’s predicted 1% flood extent in the year 2100 in coastal areas (described in previous section), as well as, the current 0.2% flood extent in riverine areas. Scientists typically use statistical probability to put a context to floods and their occurrence. For example, 0.2% has a 1 in 500 chance of occurring any given year, 1% has a 1 in 100 chance, and 10% has a 1 in 10 chance. We found 49 potentially vulnerable facilities, each with varying degrees of threat level, current protection, and recommended flood reduction measures.

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Hazard</th>
<th>Threat Level</th>
<th>Current Protection</th>
<th>Potential GI Measures to Reduce Flood Risk</th>
</tr>
</thead>
</table>
| **Port Herman Condominiums Treatment Plant** | • Not in 100yr or 500yr floodplain  
  • 1% chance storm with sea level rise by 2100  
  • 1% chance storm with sea level rise by 2100 | Low          | permeable surfaces surrounding, little wooded area                                | • Retention or detention pond nearby  
  • Constructed wetland and/or submerged gravel wetlands                                                   |
| **Harbour View WWTP**         | • Within 100yr floodplain  
  • 0.2% chance storm with sea level rise by 2050  
  • 1% chance storm with sea level rise by 2100  
  • 1% chance storm with sea level rise by 2100 | High         | existing forest provides some protection, most plant components have been relocated outside of 100 yr floodplain | • Constructed wetland with infiltration berms and retentive grading  
  • Restoration of floodplain once relocation is complete                                                   |
| **Elkton Water Treatment Plant** | • Within 100yr floodplain  
  • 1% chance storm with sea level rise by 2100  
  • 0.2% chance storm with sea level rise by 2050, level 3 Hazard Vulnerability on Delaware Ave | Medium       | wooded areas surrounding facility and lining adjacent creek                       | • Bio-swale into adjacent forested area  
  • conservation landscaping  
  • Constructed wetland with infiltration berms and retentive grading                                        |
| **Cecil County Detention Center** | • Within 500yr floodplain  
  • 1% chance storm with sea level rise by 2100 | Medium       | Minimal pervious surfaces surrounding facility                                  | • Retention or detention pond on the grounds  
  • Upgrade to porous pavement and addition of filter strips  
  • Constructed wetland                                                                                   |

---

3 Source: Cecil County Green Infrastructure Plan, August 2019 – Table 10. Potentially vulnerable critical facilities in Cecil County
<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Hazard</th>
<th>Threat Level</th>
<th>Current Protection</th>
<th>Potential GI Measures to Reduce Flood Risk</th>
</tr>
</thead>
</table>
| **North East Town Hall**            | • Within 100 Yr floodplain                                             | High         | little natural protection, micro bioretention project installed in parking lot in May of 2016 | • Green roof or wall  
• Rain gardens and cisterns  
• Upgrade to porous pavement |
|                                    | • 0.2% storm with sea level rise by 2050, level 3 Hazard               |              |                                                                                    |                                                                                                              |
|                                    | Vulnerability on Main St; level 2 on West St.                          |              |                                                                                    |                                                                                                              |
|                                    | • 0.2% chance storm with sea level rise by 2050                       |              |                                                                                    |                                                                                                              |
| **North East Police Department**    | • Within 100yr floodplain                                             | High         | forested area behind facility                                                      | • Detention area on grounds or in parking lot and/or filter strips  
• Upgrade to porous pavement  
• Conservation landscaping and bio-swale into forested area  
• Managed retreat if other options are unsuccessful |
|                                    | • 0.2% storm with sea level rise by 2050, level 3 Hazard               |              |                                                                                    |                                                                                                              |
|                                    | Vulnerability on Cecil Ave; level 2 on Race St.                       |              |                                                                                    |                                                                                                              |
|                                    | • 1% chance storm with sea level rise by 2100                         |              |                                                                                    |                                                                                                              |
| **Perryville Vol. Fire Department** | Within 500yr floodplain                                               | Low          | wooded areas surrounding 2/3 of facility                                           | • Conservation landscaping  
• Rain garden and cisterns  
• Upgrade to porous pavement  
• Bio-swale and/or detention ponds on ground  
• Green roof and/or wall |
| **Port Deposit WWTP**               | • Within 100 year floodplain                                          | High         | large forested area behind facility                                                 | • Possible relocation out of 100yr floodplain  
• Higher floodproofing |
|                                    | • 10% chance storm with sea level rise by 2050                       |              |                                                                                    |                                                                                                              |
| **Port Deposit Town Hall and Police Station** | • Within 500yr floodplain                                             | Medium       | large forested area behind facility                                                 | • Bio-swale to forested area  
• Upgrade to porous pavement in parking lot  
• Backfill foundation crawlspaces  
• Improve flood openings and Elevate utilities |
|                                    | • 1% chance storm with sea level rise by 2100; level 3 Hazard         |              |                                                                                    |                                                                                                              |
|                                    | Vulnerability on S Main St                                           |              |                                                                                    |                                                                                                              |
| **Water Witch Vol. Fire Department**| • Within 100yr floodplain                                             | High         | wooded area behind adjacent structures                                             | • Upgrade to porous pavement in parking lot and addition of filter strips or bio-swale  
• Rain garden and cisterns |
<p>|                                    | • 1% chance storm with sea level rise by 2100; level 3 Hazard         |              |                                                                                    |                                                                                                              |
|                                    | Vulnerability on S Main St                                           |              |                                                                                    |                                                                                                              |</p>
<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Hazard</th>
<th>Threat Level</th>
<th>Current Protection</th>
<th>Potential GI Measures to Reduce Flood Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Port Deposit WTP</strong></td>
<td>• Within 100yr floodplain, 1% chance storm with sea level rise by 2100 ; level 2 Hazard Vulnerability on Rock Run Landing</td>
<td>Medium</td>
<td>Adjacent wooded strip between facility and shoreline</td>
<td>• Constructed wetland with infiltration berms and retentive grading&lt;br&gt;• Conservation landscaping and bio-swale into forested area</td>
</tr>
<tr>
<td><em>Meadowview WWTP influent pump station</em></td>
<td>• Within 100yr floodplain</td>
<td>High</td>
<td>wooded area behind adjacent structures</td>
<td>• Constructed wetland with infiltration berms and retentive grading&lt;br&gt;• Rain garden and cisterns</td>
</tr>
<tr>
<td><strong>Persimmon Creek Pump Station</strong></td>
<td>• Within 500yr floodplain</td>
<td>Medium</td>
<td>wooded area behind adjacent structures, detention pond on the grounds</td>
<td>• Bio-swale to forested area&lt;br&gt;• Floodproofing</td>
</tr>
<tr>
<td><strong>W.L. Gore Elk Mills Campus Pump Station</strong></td>
<td>• Within 500yr floodplain</td>
<td>Medium</td>
<td>wooded area behind adjacent structures, detention pond on the grounds</td>
<td>• Bio-swale to forested area&lt;br&gt;• Floodproofing</td>
</tr>
<tr>
<td><strong>Carpenter's Point Grinder Station #11</strong></td>
<td>• Within 100yr floodplain, 1% chance storm with sea level rise by 2100</td>
<td>High</td>
<td>little natural protection</td>
<td>• Constructed wetland with infiltration berms and retentive grading&lt;br&gt;• Rain garden and cisterns&lt;br&gt;• Floodproofing&lt;br&gt;• Backup generator</td>
</tr>
<tr>
<td><strong>143 Greenbank Grinder Station</strong></td>
<td>• Within 100yr floodplain, 1% chance storm with sea level rise by 2100</td>
<td>High</td>
<td>little natural protection</td>
<td>• Constructed wetland with infiltration berms and retentive grading&lt;br&gt;• Rain garden and cisterns&lt;br&gt;• Floodproofing&lt;br&gt;• Backup generator</td>
</tr>
<tr>
<td><strong>121 Kirk Road Grinder Station</strong></td>
<td>• Within 100yr floodplain, 1% chance storm with sea level rise by 2100</td>
<td>High</td>
<td>little natural protection</td>
<td>• Constructed wetland with infiltration berms and retentive grading&lt;br&gt;• Rain garden and cisterns&lt;br&gt;• Floodproofing&lt;br&gt;• Backup generator</td>
</tr>
<tr>
<td>Facility Name</td>
<td>Hazard</td>
<td>Threat Level</td>
<td>Current Protection</td>
<td>Potential GI Measures to Reduce Flood Risk</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>--------------</td>
<td>-----------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>72 Little River Road Grinder Station</td>
<td>• Within 100yr floodplain, 1% chance storm with sea level rise by 2100</td>
<td>High</td>
<td>little natural protection</td>
<td>• Constructed wetland with infiltration berms and retentive grading</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Rain garden and cisterns</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Floodproofing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Backup generator</td>
</tr>
<tr>
<td>Newport Landing Grinder Station</td>
<td>• Within 100yr floodplain, 1% chance storm with sea level rise by 2100</td>
<td>High</td>
<td>little natural protection</td>
<td>• Constructed wetland with infiltration berms and retentive grading</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Rain garden and cisterns</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Floodproofing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Backup generator</td>
</tr>
<tr>
<td>Charlestown Manor Pump Station</td>
<td>• Within 100yr floodplain, 1% chance storm with sea level rise by 2100</td>
<td>High</td>
<td>little natural protection</td>
<td>• Conservation landscaping</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Rain garden and cisterns</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Floodproofing</td>
</tr>
<tr>
<td>Church Point Pump Station</td>
<td>• Within 100yr floodplain, 1% chance storm with sea level rise by 2100</td>
<td>High</td>
<td>little natural protection</td>
<td>• Conservation landscaping</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Rain garden and cisterns</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Higher floodproofing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Managed retreat if other options are unsuccessful</td>
</tr>
<tr>
<td>Greenbank Pump Station</td>
<td>• 1% chance storm with sea level rise by 2100</td>
<td>Low</td>
<td>wooded area behind adjacent structures</td>
<td>• Conservation landscaping</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Rain garden and cisterns</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Floodproofing</td>
</tr>
<tr>
<td>Mechanic's Valley Pump Station</td>
<td>• Within 100yr floodplain</td>
<td>High</td>
<td>adjacent bridge culvert has been enlarged</td>
<td>• Higher floodproofing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Managed retreat if other options are unsuccessful</td>
</tr>
<tr>
<td>North East Isles Pump Station</td>
<td>• 1% chance storm with sea level rise by 2100</td>
<td>Low</td>
<td>little natural protection</td>
<td>• Conservation landscaping</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Rain garden and cisterns</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Higher floodproofing</td>
</tr>
<tr>
<td>Rt. 40 Pump Station</td>
<td>• Within 500yr floodplain</td>
<td>Low</td>
<td>large forested area surrounds facility</td>
<td>• Higher floodproofing</td>
</tr>
<tr>
<td>Price Marina Pump Station</td>
<td>• Within 100yr floodplain, 1% chance storm with sea level rise by 2100</td>
<td>High</td>
<td>little natural protection</td>
<td>• Conservation landscaping</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Rain garden and cisterns</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Higher floodproofing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Managed retreat if other options are unsuccessful</td>
</tr>
<tr>
<td>Facility Name</td>
<td>Hazard</td>
<td>Threat Level</td>
<td>Current Protection</td>
<td>Potential GI Measures to Reduce Flood Risk</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>--------------</td>
<td>-------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| *Port Deposit Town Hall Pump Station* | • Within 100yr floodplain, 1% chance storm with sea level rise by 2100 | High         | little natural protection                 | • Constructed wetland with infiltration berms and retentive grading  
• Rain garden and cisterns  
• Floodproofing  
• Backup generator                                                               |
| *Port Deposit Vannort Pump Station* | • Within 100yr floodplain, 1% chance storm with sea level rise by 2100 | High         | little natural protection                 | • Constructed wetland with infiltration berms and retentive grading  
• Rain garden and cisterns  
• Floodproofing  
• Backup generator                                                               |
| *Chesapeake Estates Pump Tank #9*  | • 1% chance storm with sea level rise by 2100                           | Low          | wooded area behind adjacent structures    | • Bio-swale to forested area  
• Floodproofing                                                                 |
| *Chesapeake Estates Pump Tank #11* | • 1% chance storm with sea level rise by 2100                           | Low          | wooded area behind adjacent structures    | • Bio-swale to forested area  
• Floodproofing                                                                 |
| *Elkton Pump Station 13002*     | • Within 500yr floodplain, 1% chance storm with sea level rise by 2100 | Medium       | little natural protection                 | • Constructed wetland with infiltration berms and retentive grading  
• Rain garden and cisterns  
• Floodproofing  
• Backup generator                                                               |
| *Elkton Pump Station 17001*     | • 1% chance storm with sea level rise by 2100                           | Low          | wooded area behind adjacent structures    | • Bio-swale to forested area  
• Floodproofing                                                                 |
| *Frenchtown Road Pump Station #49* | • Within 500yr floodplain                                               | Medium       | large forested area surrounds facility    | • Constructed wetland with infiltration berms and retentive grading  
• Rain garden and cisterns  
• Floodproofing, Backup generator                                                                 |
| *South Chesapeake City Pump Station* | • Within 100yr floodplain, 1% chance storm with sea level rise by 2100 | High         | little natural protection                 | • Constructed wetland with infiltration berms and retentive grading  
• Rain garden and cisterns  
• Floodproofing  
• Backup generator                                                               |
## Appendix II – Nuisance Flooding Committee Members

<table>
<thead>
<tr>
<th>AGENCY</th>
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<td>Cecil County Department of Emergency Services</td>
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<td>Cecil County DLUDS – Planning</td>
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<td>Cecil County DLUDS – Zoning</td>
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<td>Cecil County DPW - Stormwater</td>
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<td>Cecil County DPW - Roads</td>
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<td>Environmental Health Department</td>
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<td>Cecil County - Public Information Officer</td>
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<td>Cecil County Sheriff’s Office</td>
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<td>Maryland Department of Transportation – State Highway Administration</td>
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<td>Town of Cecilton</td>
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<td>Town of Chesapeake City</td>
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<td>Town of Elkton</td>
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<td>Town of Port Deposit</td>
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<td>Town of Rising Sun</td>
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<tr>
<td>Sea Grant Extension Office</td>
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<td>Eastern Shore Land Conservancy</td>
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<td>Cecil Soil Conservation District</td>
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<td>Critical Area Commission</td>
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<td>Maryland Park Service</td>
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<td>Artesian Water, Inc.</td>
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Appendix III- Nuisance Flood Documentation Tool

6/22/2020

Cecil County Department of Emergency Services - Members Only - Forms

Nuisance Flooding Report
Cecil County Department of Emergency Services

Submitted By: Paula Robinson
Date/Time Submitted: Jun 16, 2020 at 12:12

Definition
Nuisance Flooding: High tide flooding that causes a public inconvenience. Frequently referred to as "sunny-day" flooding, it is typically unrelated to storm events. It may be exacerbated by long duration wind events, passing storm systems, and tides. It dissipates quickly.

General Information
Date of Flooding: Jun 16, 2020
Time of Flooding: 1211

Reporting Information
Location of Flooding: 107 Chesapeake Blvd Suite 108 Elkton, MD 21901
Name of Caller: Paula Robinson
Phone Number of Caller: 4430074065
CAD Event #: 123456789
Impacts of the Flooding: None — this is a test

Notifications (If Necessary)
Cecil County Departments: Emergency Services
Outside Agencies: None
Actions Taken: None — this is a test
Appendix IV - Nuisance Flooding Location Maps
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
200 block of Delaware Ave, Elkton, MD

MAP 1

Address Points
Road Segments Prone To Flooding
Water Lines
Town / Private Sewer Line
A - 100 yr flood, no base elevations
AE - 100 yr flood, base elevations determined
VE - 100 yr flood, subject to high velocity wave action
April 1, 2019

1,610 ft of Delaware Ave
Flooding source: Big Elk Creek
Road Ownership: State of Maryland
Bridge present: Yes (state owned)
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
100 block of Howard St, Elkton, MD

1,200 ft of Howard St
Flooding source: Big Elk Creek
Road Ownership: Town of Elkton
Bridge present: No
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
100 and 200 block of S Bridge St, Elkton, MD

Road Segments Prone To Flooding
Town / Private Sewer Line
Water Lines
A - 100 yr flood, no base elevations
AE - 100 yr flood, base elevations determined
VE - 100 yr flood, subject to high velocity wave action

Address Points
April 2, 2019

1,540 ft of S Bridge St
Flooding source: Big Elk Creek
Road Ownership: State of Maryland
Bridge present: Yes (state owned)
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
Vicinity of 300 block of Fletchwood Rd, Elkton, MD

Road Segments Prone To Flooding
Water Lines
Gravity San. Sewer (county owned)
A - 100 yr flood, no base elevations
AE - 100 yr flood, base elevations determined
VE - 100 yr flood, subject to high velocity wave action

Address Points
April 2, 2019
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
Intersection of Deaver Rd and S Simpers Rd, Elkton, MD

250 ft total roadway
Flooding source: East Branch of Laurel Run
Road Ownership: Cecil County
Bridge present: No

April 2, 2019

Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
Intersection of Deaver Rd and S Simpers Rd, Elkton, MD

250 ft total roadway
Flooding source: East Branch of Laurel Run
Road Ownership: Cecil County
Bridge present: No

April 2, 2019
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
Elkton Rd and W Pulaski Hwy, Elkton, MD

1,300 ft of Elkton Rd
Flooding source: Little Elk Creek
Road Ownership: State of Maryland
Bridge present: Yes (state owned)

2,730 ft of W Pulaski Hwy
Flooding source: Little Elk Creek
Road Ownership: State of Maryland
Bridge present: Yes (state owned)

April 2, 2019
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
Ricketts Mill Rd and Appleton Rd, Elkton, MD

685 ft of Ricketts Mill Rd
Flooding source: Big Elk Creek
Road Ownership: Cecil County
Bridge present: Yes (County owned, CE-0027)

220 ft of Appleton Rd
Flooding source: Big Elk Creek
Road Ownership: State of Maryland
Bridge present: Yes (state owned)

Road Segments Prone To Flooding
Town / Private Sewer Line
Water Lines
Address Points
A - 100 yr flood, no base elevations
AE - 100 yr flood, base elevations determined
VE - 100 yr flood, subject to high velocity wave action

April 2, 2019
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
900 block of Broad St, Perryville, MD

575 ft of Broad St
Flooding source: Mill Creek
Road Ownership: State of Maryland
Bridge present: Yes (state owned)

Road Segments Prone To Flooding
Town / Private Sewer Line
Water Lines
- Address Points

A - 100 yr flood, no base elevations
AE - 100 yr flood, base elevations determined
VE - 100 yr flood, subject to high velocity wave action

April 2, 2019

MAP 8
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
1400 block of Frenchtown Rd, Perryville, MD

1,030 ft of Frenchtown Rd
Flooding source: Susquehanna River
Road Ownership: Town of Perryville
Bridge present: No

Road Segments Prone To Flooding
Town / Private Sewer Line
Water Lines
- Address Points
  A - 100 yr flood, no base elevations
  AE - 100 yr flood, base elevations determined
  VE - 100 yr flood, subject to high velocity wave action

April 3, 2019

MAP 9
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
Edgewater Ave, Charlestown, MD

920 ft of Edgewater Ave
Flooding source: North East River
Road Ownership: Cecil County
Bridge present: No

Road Segments Prone To Flooding
Water Lines
Gravity San. Sewer (county owned)
San. Sewer Force Main
• Address Points

A - 100 yr flood, no base elevations
AE - 100 yr flood, base elevations determined
VE - 100 yr flood, subject to high velocity wave action

April 3, 2019
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
Shore Dr, Pennsylvania Ave, and Kline Ave, Charlestown, MD

Road Segments Prone To Flooding
Water Lines
Gravity San. Sewer (county owned)
Address Points

A - 100 yr flood, no base elevations
AE - 100 yr flood, base elevations determined
VE - 100 yr flood, subject to high velocity wave action

April 3, 2019

1,925 ft of roads
Flooding source: North East River
Road Ownership:
1) Shore Dr = Cecil County
2) Kline & PA Ave = Private
Bridge present: No

MAP 11
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
N Main St (unit block) and S Main St (0-100 block), North East, MD

575 ft of N Main St
Flooding source: North East River
Road Ownership: State of Maryland
Bridge present: Yes (state owned)

900 ft of S Main St
Flooding source: North East River
Road Ownership: State of Maryland
Bridge present: No

Road Segments Prone To Flooding
Water Lines
Gravity San. Sewer (county owned)
Address Points

A - 100 yr flood, no base elevations
AE - 100 yr flood, base elevations determined
VE - 100 yr flood, subject to high velocity wave action

April 3, 2019
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
W Cecil Ave (0-200 block), North East, MD

1,900 ft of W Cecil Ave
Flooding source: North East River
Road Ownership: State of Maryland
Bridge present: Yes (state owned)

MAP 13

Road Segments Prone To Flooding
Water Lines
Gravity San. Sewer (county owned)
San. Sewer Force Main
Address Points

A - 100 yr flood, no base elevations
AE - 100 yr flood, base elevations determined
VE - 100 yr flood, subject to high velocity wave action

April 3, 2019
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
Washington St (unit block), North East, MD

Road Segments Prone To Flooding
Water Lines
Gravity San. Sewer (county owned)
San. Sewer Force Main
• Address Points

**A** - 100 yr flood, no base elevations
**AE** - 100 yr flood, base elevations determined
**VE** - 100 yr flood, subject to high velocity wave action

April 3, 2019

MAP 14
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
W Race St (0-100 block), North East, MD

840 ft of W Race St
Flooding source: North East River
Road Ownership: Town of North East
Bridge present: No

Road Segments Prone To Flooding
Water Lines
Gravity San. Sewer (county owned)
• Address Points

A - 100 yr flood, no base elevations
AE - 100 yr flood, base elevations determined
VE - 100 yr flood, subject to high velocity wave action

April 3, 2019

MAP 15
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
W Old Philadelphia Rd & North East Isles Dr, North East, MD

700 ft of W Old Philadelphia Rd
Flooding source: North East River
Road Ownership: State of Maryland
Bridge present: Yes (Amtrak owned)

1,130 ft of North East Isles Dr
Flooding source: North East River
Road Ownership: Town of North East
Bridge present: Yes (Town owned, CE-NE01)

Road Segments Prone To Flooding
Water Lines
Gravity San. Sewer (county owned)
San. Sewer Force Main
Address Points

A - 100 yr flood, no base elevations
AE - 100 yr flood, base elevations determined
VE - 100 yr flood, subject to high velocity wave action

April 3, 2019
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan Flooding 500 block of Calvert Rd, Rising Sun, MD

885 ft of Calvert Rd
Flooding source: North East Creek
Road Ownership: Cecil County
Bridge present: Yes (County owned, CE-0011)

Road Segments Prone To Flooding
Water Lines
Gravity San. Sewer (county owned)
San. Sewer Force Main
Address Points
A - 100 yr flood, no base elevations
AE - 100 yr flood, base elevations determined
VE - 100 yr flood, subject to high velocity wave action
April 3, 2019

MAP 17
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
Bank Street, Chesapeake City, MD.

Areas of Nuisance Flooding

- Address Points
- A - 100 yr flood, no base elevations
- AE - 100 yr flood, base elevations determined
- VE - 100 yr flood, subject to high vel. wave action

675 ft of Bank Street
Flooding source: C&D Canal
Road Ownership: U.S. Army Corps of Engineers
Bridge Present: No

July 27, 2020
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
300-500 block of Slicers Mill Rd, Rising Sun, MD

2,200 ft of Slicers Mill Rd
Flooding source: Stone Run
Road Ownership: Cecil County
Bridge present: Yes (County owned, CE-0082)

Road Segments Prone To Flooding
• Address Points

A - 100 yr flood, no base elevations
AE - 100 yr flood, base elevations determined
VE - 100 yr flood, subject to high velocity wave action

April 3, 2019
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
Crothers Rd & England Creamery Rd, Rising Sun, MD

1,500 ft of Crothers Rd
Flooding source: North East Creek
Road Ownership: Cecil County
Bridge present: Yes (County owned, CE-0056)

Road Segments Prone To Flooding
- Address Points
  - A - 100 yr flood, no base elevations
  - AE - 100 yr flood, base elevations determined
  - VE - 100 yr flood, subject to high velocity wave action

April 3, 2019
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
Moore Rd (0-100 block), Conowingo, MD

2,200 ft of Moore Rd
Flooding source: Octoraro Creek
Road Ownership: Cecil County
Bridge present: No
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
Principio Rd (1800 block), Port Deposit, MD

585 ft of Principio Rd
Flooding source: Principio Creek
Road Ownership: Cecil County
Bridge present: Yes (County owned, CE-0052)

April 3, 2019
Inventory of roads and bridges that are vulnerable to flooding from the Cecil County Green Infrastructure Plan
Wilson Rd (300 block), Rising Sun, MD

700 ft of Wilson Rd
Flooding source: North East Creek
Road Ownership: Cecil County
Bridge present: No (culvert pipes only)

Road Segments Prone To Flooding
• Address Points

A - 100 yr flood, no base elevations
AE - 100 yr flood, base elevations determined
VE - 100 yr flood, subject to high velocity wave action

April 3, 2019
1,800 ft of Oldfield Point Rd
Flooding source: Jones Creek
Road Ownership: Cecil County
Bridge present: No (culvert pipes)

Inventory of roads and bridges that are vulnerable to flooding from
the Cecil County Green Infrastructure Plan
Oldfield Point Rd at Jones Creek, Elkton, MD

April 3, 2019
Other Locations Identified by Nuisance Flood Plan Work Group
George Street, Fredericktown, MD

800 ft of George Street
Flooding source: Sassafras River
Road Ownership: Cecil County Government
Bridge Present: No
Other Locations Identified by Nuisance Flood Plan Work Group
Buena Vista Drive, Earleville, MD

2,100 ft of Buena Vista Drive
Flooding source: Sassafras River
Road Ownership: Cecil County Government
Bridge Present: No

Areas of Nuisance Flooding
- Address Points
- A - 100 yr flood, no base elevations
- AE - 100 yr flood, base elevations determined
- VE - 100 yr flood, subject to high vel. wave action

MAP 26
July 27, 2020
Other Locations Identified by Nuisance Flood Plan Work Group
Church Road, Warwick, MD

2,000 ft of Church Rd
Flooding source: Unknown
Road Ownership: Cecil County Government
Bridge Present: No

Areas of Nuisance Flooding
Address Points
A - 100 yr flood, no base elevations
AE - 100 yr flood, base elevations determined
VE - 100 yr flood, subject to high vel. wave action

0 350 700 Feet
July 27, 2020
Other Locations Identified by Nuisance Flood Plan Work Group
Glebe Road, Earleville, MD

500 ft of Glebe Rd
Flooding source: Unknown
Road Ownership: Cecil County Government
Bridge Present: No

Areas of Nuisance Flooding

- A - 100 yr flood, no base elevations
- AE - 100 yr flood, base elevations determined
- VE - 100 yr flood, subject to high vel. wave action

July 27, 2020
Other Locations Identified by Nuisance Flood Plan Work Group
River Road, Elkton, MD

Areas of Nuisance Flooding

A - 100 yr flood, no base elevations
AE - 100 yr flood, base elevations determined
VE - 100 yr flood, subject to high vel. wave action

2,500 ft of River Road
Flooding source: Elk River
Road Ownership: Cecil County Government
Bridge Present: No

July 27, 2020
Other Locations Identified by Nuisance Flood Plan Work Group
Conestoga St, Charlestown, MD

Conestoga St, Charlestown, MD.

Areas of Nuisance Flooding
- Address Points
- A - 100 yr flood, no base elevations
- AE - 100 yr flood, base elevations determined
- VE - 100 yr flood, subject to high vel. wave action

1,250 ft of Conestoga Street
Flooding source: North East River
Road Ownership: Town of Charlestown
Bridge Present: No

July 27, 2020
Other Locations Identified by Nuisance Flood Plan Work Group
Water St, Charlestown, MD

1,000 ft of Water Street
Flooding source: North East River
Road Ownership: Town of Charlestown
Bridge Present: No

MAP 31

July 27, 2020
Other Locations Identified by Nuisance Flood Plan Work Group
Long Point Park, Charlestown, MD

Long Point Park
Intersection of Water St and Conestoga St
Flooding source: North East River
Road Ownership: Town of Charlestown

Areas of Nuisance Flooding
- Address Points
- A - 100 yr flood, no base elevations
- AE - 100 yr flood, base elevations determined
- VE - 100 yr flood, subject to high vel. wave action

July 27, 2020

MAP 32
Other Locations Identified by Nuisance Flood Plan Work Group
Water St and Louisa Ln, Charlestown, MD

Intersection of Water St and Louisa Ln
Flooding source: North East River
Road Ownership: Town of Charlestown

July 27, 2020
Other Locations Identified by Nuisance Flood Plan Work Group
Bladen St and Conestoga St, Charlestown, MD

Intersection of Bladen St and Conestoga St
Flooding source: North East River
Road Ownership: Town of Charlestown

Areas of Nuisance Flooding
- Address Points
- A - 100 yr flood, no base elevations
- AE - 100 yr flood, base elevations determined
- VE - 100 yr flood, subject to high vel. wave action

July 27, 2020
Other Locations Identified by Nuisance Flood Plan Work Group
Baltimore St (Foot Log Beach), Charlestown, MD

Baltimore St (Foot Log Beach)
Flooding source: North East River
Road Ownership: Town of Charlestown
Other Locations Identified by Nuisance Flood Plan Work Group
Colonial Drive (at beach), Charlestown, MD

Colonial Drive (at beach)
Flooding source: North East River
Road Ownership: Town of Charlestown
Other Locations Identified by Nuisance Flood Plan Work Group
Long Beach Rd, Charlestown, MD

Long Beach Rd
Flooding source: North East River
Road Ownership: Private

MAP 37

July 27, 2020
Other Locations Identified by Nuisance Flood Plan Work Group
Big Elk Creek area, Elkton, MD

Areas of Nuisance Flooding

A - 100 yr flood, no base elevations

AE - 100 yr flood, base elevations determined

VE - 100 yr flood, subject to high vel. wave action

July 27, 2020
Other Locations Identified by Nuisance Flood Plan Work Group
269 East Main Street, Elkton, MD

Areas of Nuisance Flooding

- A - 100 yr flood, no base elevations
- AE - 100 yr flood, base elevations determined
- VE - 100 yr flood, subject to high vel. wave action

MAP 39

July 27, 2020
Other Locations Identified by Nuisance Flood Plan Work Group
Intersection of Aiken Ave and Pulaski Hwy, Perryville, MD

Intersection of Aiken Ave and Pulaski Hwy
Flooding source: Unknown
Road Ownership: State
Other Locations Identified by Nuisance Flood Plan Work Group
Intersection of Aiken Ave and Broad St, Perryville, MD

Intersection of Aiken Ave and Broad St
Flooding source: Unknown
Road Ownership: State

Areas of Nuisance Flooding
- Address Points
- A - 100 yr flood, no base elevations
- AE - 100 yr flood, base elevations determined
- VE - 100 yr flood, subject to high vel. wave action

July 27, 2020
Other Locations Identified by Nuisance Flood Plan Work Group
Broad St at Railroad Tracks, Perryville, MD

Broad St at Railroad Tracks
Flooding source: Unknown
Road Ownership: State

Areas of Nuisance Flooding
- Address Points
- A - 100 yr flood, no base elevations
- AE - 100 yr flood, base elevations determined
- VE - 100 yr flood, subject to high vel. wave action

July 27, 2020
Other Locations Identified by Nuisance Flood Plan Work Group
Marion N Tapp Pkwy, Perryville, MD

Marion N Tapp Pkwy
Flooding source: Mill Creek
Road Ownership: Town of Perryville

Areas of Nuisance Flooding
- Address Points
- A - 100 yr flood, no base elevations
- AE - 100 yr flood, base elevations determined
- VE - 100 yr flood, subject to high vel. wave action

July 27, 2020

MAP 43
Other Locations Identified by Nuisance Flood Plan Work Group
Marina Park vicinity, Port Deposit, MD

Marina Park vicinity
Flooding source: Susquehanna River
Road Ownership: State
Other Locations Identified by Nuisance Flood Plan Work Group
Between 140-220 N Main St, Port Deposit, MD

Between 140-220 N Main St
Flooding source: Failing stormwater facilities
Road Ownership: State
Sewer line at risk of exposure - Need to survey and see how much cover remains

Need to see how close this manhole is to the stream bank and what the conditions are
MH 838 - Major erosion compare the 2006 and 2019 photos
The concrete encasement is exposed and shows damage. There are also some trees on the bank that are in the sewer easement that would interfere with any repairs that need to be done.

MH 840 - Erosion
Compare the 2006 and 2019 photos

MH 842 is at risk during floods
MH 843 has been exposed by erosion
- Compare the 2006 and 2019 photos
Need to survey to see how much cover remains on the pipe.
Concrete encasement is exposed

At risk of exposure
Need to survey to see how much cover over the pipe

At risk of exposure
Need to survey to see how much cover over the pipe
Sewer lines and manholes at risk

At risk of exposure
Need to survey to see how much cover over the pipe

MH 864 is in the middle of the stream

At risk of exposure
Need to survey to see how much cover over the pipe

Concrete Encasement is exposed and damaged

This manhole is at great risk of exposure due to erosion and storm water levels
At risk of exposure
Need to survey to see how much cover over the pipe

MH 1210 is in danger of exposure due to erosion

At risk of exposure
Need to survey to see how much cover over the pipe

Manhole is unable to be found

At risk of exposure
Need to survey to see how much cover over the pipe
At risk of exposure
Need to survey to see how much cover over the pipe

MH at risk of exposure due to erosion

At risk of exposure due to erosion