

NUISANCE FLOODING PLAN



PREPARED FOR:
THE CITY OF SALISBURY, MARYLAND
DEPARTMENT OF INFRASTRUCTURE AND
DEVELOPMENT



Prepared by:
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July 1, 2019

INTRODUCTION

In accordance with House Bill 1350, the City of Salisbury has undertaken an effort to put in place a plan to mitigate nuisance flooding to the extent practical and to better cope with those events that are unavoidable. The bill defines the term as “high tide flooding that causes public inconvenience”. Public inconvenience is a fairly broad term and in this context is being taken to mean anything from temporary road closures to chronic flooding of properties. We will endeavor here to outline efforts from the recent past and ongoing efforts as well as set out some concrete steps to be undertaken over the next five years to mitigate potential nuisance flooding.

AREAS OF INTEREST

The area subject to nuisance flooding within the City of Salisbury is located in the floodplain near the confluence of the North Prong and South Prong of the Wicomico River. This area has been separated into three areas of interest due to the geographical nature of the overall area being discussed.



The first area is below the confluence along the main section of the river down to where Mitchell Pond enters the Wicomico River. It includes Fitzwater Street and West Main Street on the north bank and a portion of Riverside Drive on the south bank (see Appendix A - Area 1 Fitzwater Street & West Main Street). The Fitzwater Street area has been subject to chronic flooding events. The Germania Circle neighborhood has also seen persistent flooding and will be discussed in greater detail within this outline. Area 1 is primarily comprised of commercial and industrial

designated areas with approximately 15 residences. The City's Fitzwater Street pump station is also located within this area.

Area 2 is located along the South Prong and is bound to the east by a dam just beyond Snow Hill Road (see Appendix A - Area 2 Downtown Salisbury) and includes a fair portion of downtown Salisbury. East Main Street, West Market Street, East Market Street, Baptist Street, and Poplar Hill Road are all within this area. This area contains the States Attorney's Office, Riverwalk, and numerous commercial buildings along with about 10 residences.

Area 3 is located along the North Prong of the Wicomico River and is bound to the north by Johnson Dam (see Appendix A - Area 3 Lake Street & Mill Street). Portions of Lake Street and Mill Street are included within the outlined area. This area is also primarily designated as commercial and industrial. Additionally, Salisbury's Fire Station 16 and the Mill Street pump station are within these limits.

What these areas all have in common is a direct connection to the Wicomico River with very little topographic relief. Tidal fluctuations and the resulting tailwater conditions have a direct impact on the storm drain capacity throughout the entire area of interest. Furthermore, some high tide

events can cause flooding in some areas, even without any associated rainfall. All three aforementioned areas are significantly developed, where most of the development occurred prior to any floodplain regulations.

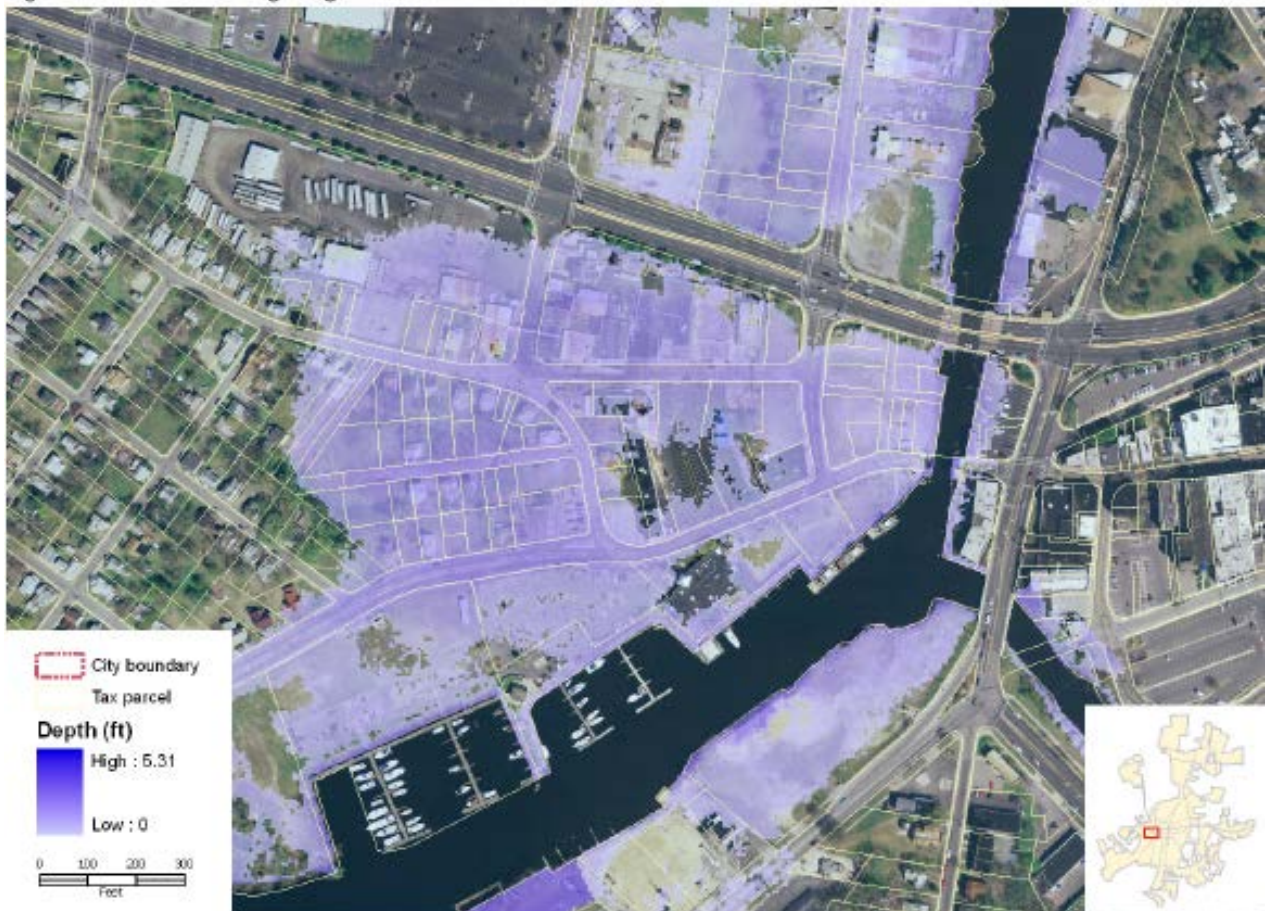
PAST MITIGATION EFFORTS

The City of Salisbury has been proactive in their numerous efforts to explore alternatives to help alleviate flooding; both tidal and capacity related. We shall outline a few of the initiatives that were undertaken in the recent past here.

City of Salisbury Flood Mitigation Plan

A Flood Mitigation Plan was commissioned in 2008. One of the recommendations of that study was that the City should attempt to acquire the Germania Circle properties (see excerpted graphic below). There was a total of 26 properties involved; 12 of which had residences located on them. In 2014 the City began the process of contacting the property owners in an effort to obtain a grant from the Maryland Emergency Management Agency for Hazard Mitigation Assistance. The City's outreach included a public meeting, individual contact with the property owners, and even knocking on doors in the neighborhood to provide information to the owners. In 2017 the City reached out once again to the property owners in a final attempt to acquire the properties. Unfortunately, only 3 of the 26 owners were amenable to the purchase of their property. Due to the lack of acceptance, the plan had to be abandoned.

Figure 2.14 Potential flooding along Germania Circle/West Main Street





Another initiative presented in the 2008 plan was for the City to provide public information related to flood mitigation. Field Operations established the link shown below to a Flood Prevention Page on the City website to assist property owners with finding products for flood mitigation. Presently there are links to bladder bags (alternative to sand bags, pictured) products on the page. There are a number of additional products that can be added to this page, some of which will be discussed later within this outline.

<https://salisbury.md/departmentsfieldoperationsflood-prevention>

Baptist Street at Market Street

In 2017, the City commissioned a Flood Study and Remediation Assessment for the area bound by Baptist Street, Calvert Street, Poplar Hill Avenue, and Market Street (Area 2). The study concluded that “The primary factor restricting the operation of the storm drain system in the study area is the low elevation of the area relative to the elevation of the tidally-influenced South Prong of the Wicomico River”. Unfortunately, due to those conditions, the only tide related recommendation involved a stormwater pump station with a price tag in excess of \$8,000,000.

Accessory Actions

In 2015 the City made significant drainage improvements to Coty Cox Branch. While this work was not directly related to tidal flooding, it underscores the commitment to solving flooding issues to the extent practical. Operational plans are in place to help cope with flood events around the City. Improvement activities include high water signage, detour plans, and provision of sandbags to property owners during flooding events. Additionally, Chapter 15.16 of the City Code, updated in 2015, requires two feet of freeboard for new construction within the floodplain.

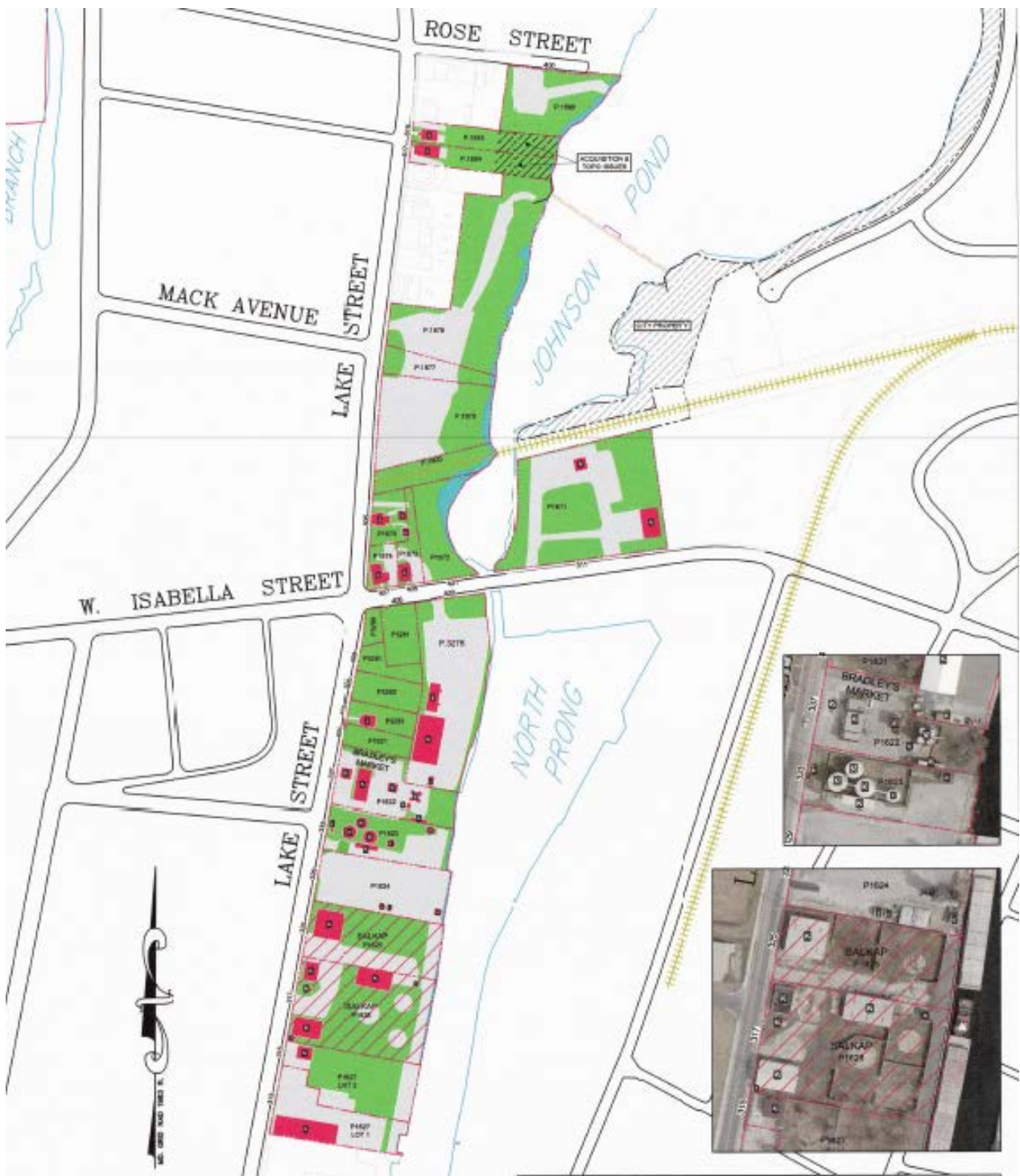
CURRENT MITIGATION EFFORTS

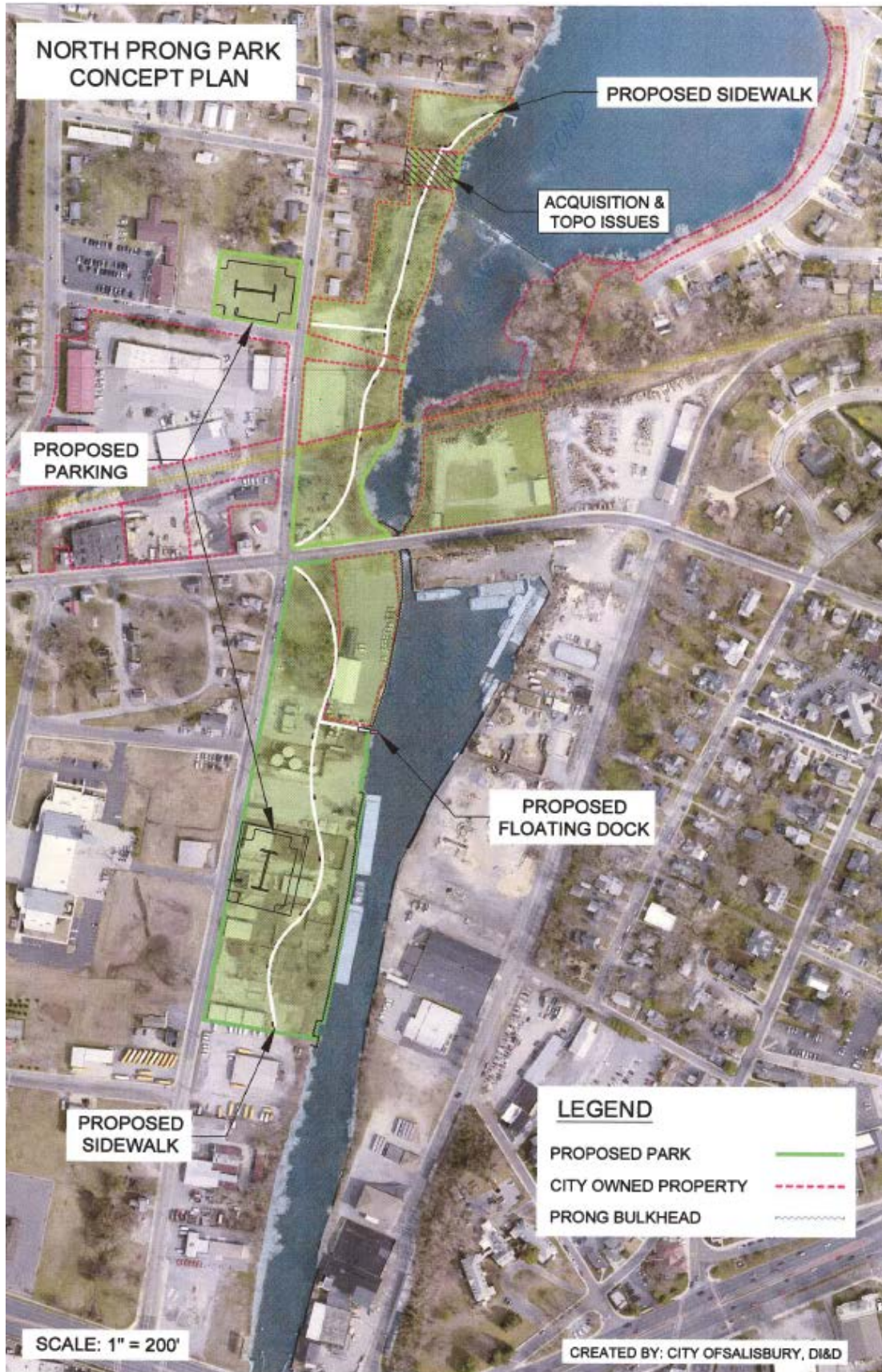
North Prong Park



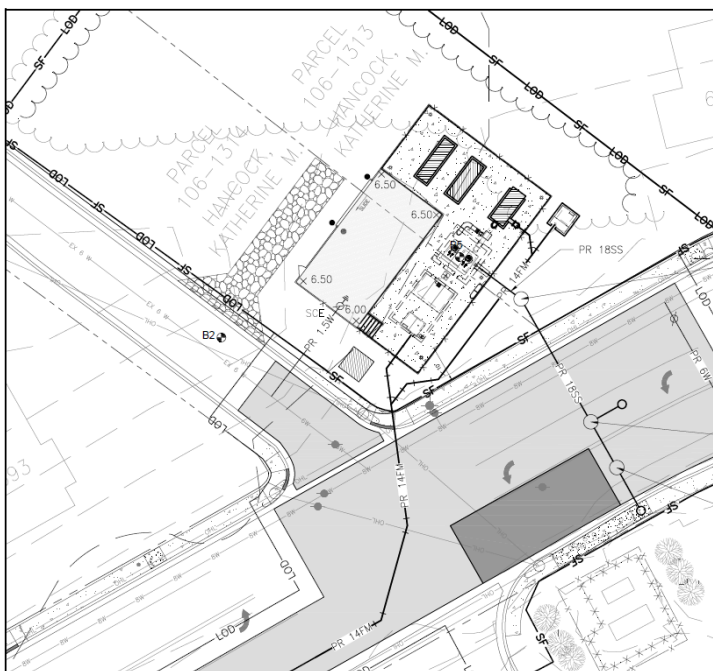
The Downtown Salisbury Master Plan, adopted in 2016, included a plan to create a park that would lie between the North Prong of the Wicomico River and Lake Street, north and south of W. Isabella Street (Area 3). The project would serve several purposes. It would remove vulnerable properties from the floodplain, provide open space, and provide some mitigation benefit by allowing the area to be inundated during flood events. The area consists mostly of under-utilized industrial

properties; some of which are already owned by the City. Efforts are underway to obtain grant funding to aid in the purchase of the remaining parcels. Below are graphics showing the current configuration and the concept for the park.





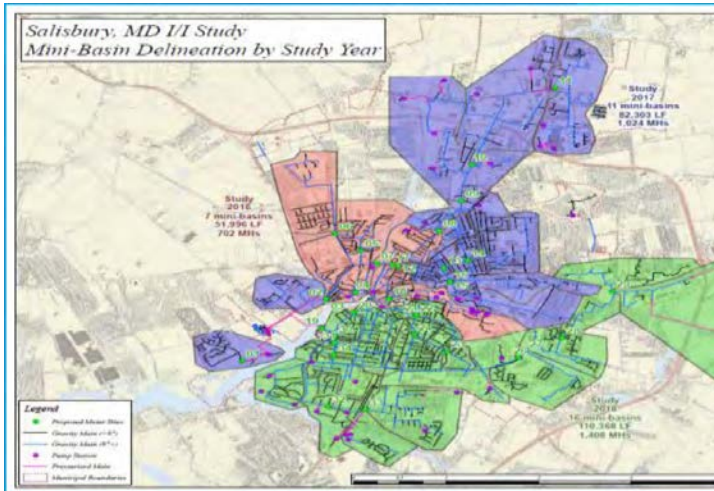
Fitzwater Street Pump Station



The Fitzwater Street pump station (pictured below) is currently located in the roadbed, with its vents and controls located just adjacent to the road and is vulnerable to the frequent inundations in the area (Area 1). The City has a project out to bid that will relocate the pump station to the intersection of Fitzwater and Pearl Streets and raise it to Elevation 8.00, which is two feet above flood elevation and about three feet above the adjacent grade. The proposed site plan is depicted to the left.



City-Wide I/I Study



The City commenced an Infiltration and Inflow Study in 2016 for the approximately 155 miles of sewer mains and 3,200 manholes in their system. The study is slated to continue through 2019 and 2020 with funds having been allocated for the remedial construction in fiscal years 2019 through 2022. The inflow portion of this work will yield direct benefits to the City in protecting both their mains and the treatment plant from nuisance flooding. Related to this work is a program to install sewer manhole inserts to prevent inflow to the manholes via the lids.

Funds have been allocated in FY19 for this work.

Further Actions

Tide gates have been evaluated and a pilot program is planned to address concerns about their function in low head situations. Storm drain capacity improvements are planned for an area along East Main Street. The City is also partnering with the owner of the Sharp Energy property in the same watershed to provide some temporary stormwater storage.

FIVE YEAR PLAN

Objectives

Ideally, the goal would be to fully protect the vulnerable areas from potential flooding through the use of practices like seawalls and stormwater pumping. Such a large-scale undertaking is, unfortunately, well beyond the resources of cities like the City of Salisbury. Our objective then should be to build upon what has already been completed and incorporate such features that can be utilized to help mitigate nuisance flooding in a practical and feasible fashion. Our plan then for the 2019 through 2023 period is as follows:

Continuation of Existing Programs

- Implementation of the North Prong Park Plan through continued property acquisitions and eventual conversion to open park land.
- Expansion of the City's public outreach on available flood mitigation technology. The current webpage should be expanded to cover additional flood related products like portable flood gates (pictured) and other helpful information, with a disclaimer that no endorsement of particular brands is implied. The outreach should also include a public awareness campaign so that City residents know where the information can be found.



- Implementation of a Tide Gate pilot installation on one of the affected outfalls and pending a successful trial, additional installations at other locations within the areas of interest. The Market Street area may be an ideal test location since storm drain manhole lids have been observed to have been lifted off the frame due to the backpressure of tidal inflow at that location.
- Implementation of a sensor light (pictured) trial on Fitzwater Street and pending a successful trial, additional installations at other locations within the areas of interest.
- Construction of the capital improvements identified and programmed in the I/I Study through 2022 and other capital projects like the Fitzwater Street Pump Station that are already in the current Capital Improvement program.
- Creation of a program for tracking the progress of the various initiatives herein and forward planning for the succeeding five-year plan.



APPENDIX A





| PRINTS ISSUED FOR: | |
|--------------------|--|
| DATE | |
| REVISIONS | |
| NO | |



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Nuisance Flooding Plan
Preparation
Salisbury, Maryland

Area 1
Fitzwater Street
&
West Main Street

| SCALE | 1" = 200' | SHEET NO. |
|------------|-----------|-----------|
| DESIGN BY | | EX. 1 |
| DRAWN BY | SMK | |
| CHECKED BY | | |
| GMB FILE | 170202-H | |
| DATE | 3/25/2019 | |

