

Town of New Market Stormwater Retrofit Plan

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Produced by the Center for Watershed Protection
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Produced for the Town of New Market, MD
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New Market, MD 21774

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Section 1. Introduction

1.1 Plan Overview

The Town of New Market was established more than 200 years ago; therefore, much of the Town does not have the water quality best management practices (BMPs) that are now required for development projects to capture and treat stormwater runoff before it enters nearby waterways. In 2017, the Center for Watershed Protection, Inc. (the Center) conducted an assessment for the Town to evaluate opportunities to install stormwater retrofits that reduce stormwater pollution. This plan presents the recommendations resulting from this assessment.

1.2 Overview of Stormwater Management in New Market

The Town of New Market encompasses approximately 1.6 square miles of land in eastern Frederick County, Maryland. The northern section of Town drains to Lower Linganore Creek while the southern part of Town drains to Lower Bush Creek. Both streams feed into the Monocacy River which is part of the Middle Potomac River Basin shown in Figure 1. Figure 2 illustrates the location of the Town and its watersheds.

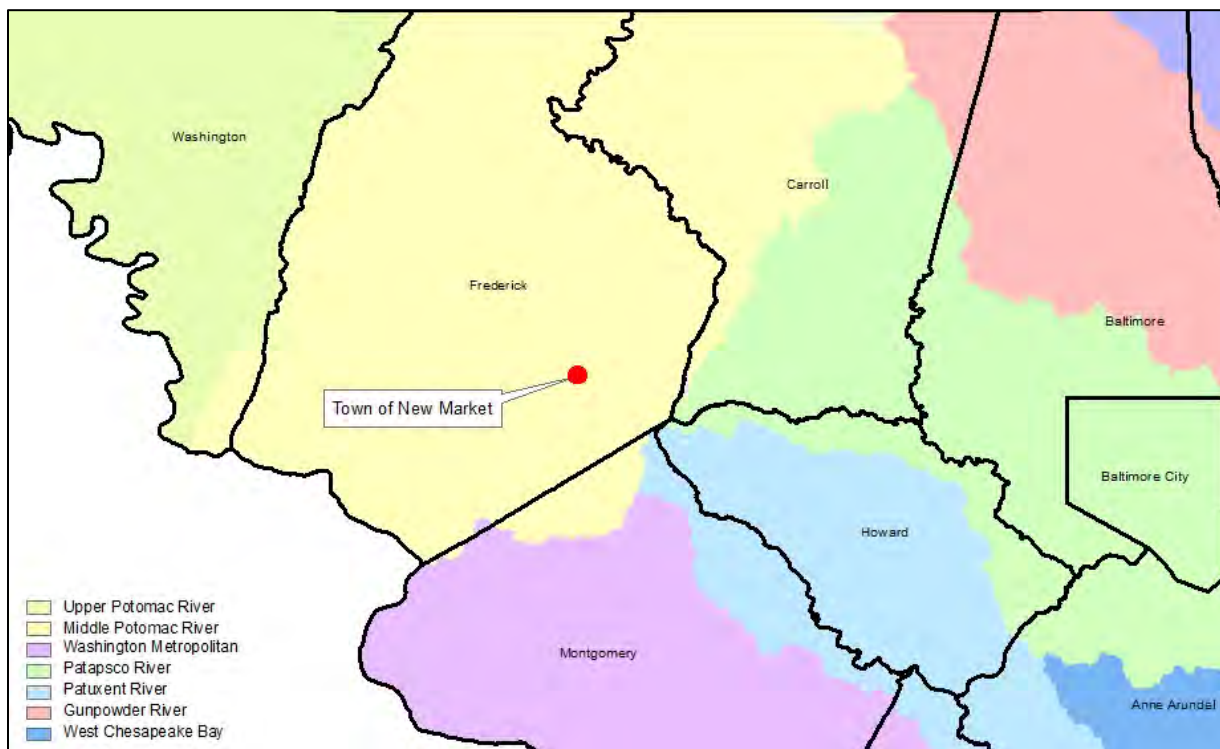


Figure 1. Town of New Market, located in Frederick County and the Middle Potomac Basin

According to Frederick County's 2015 stream survey, both the Lower Linganore Creek and Lower Bush River watersheds received scores of Poor or Very Poor for Benthic Index of Biotic Integrity. In addition, Linganore Creek discharges into Lake Linganore, a drinking water source that has a total maximum daily load (TMDL) for sediment and phosphorus. Uncontrolled runoff is likely a major contributor to these poor stream

conditions as numerous studies have shown that the amount of impervious cover has a direct link on watershed and stream quality (Schueler et al., 2009).

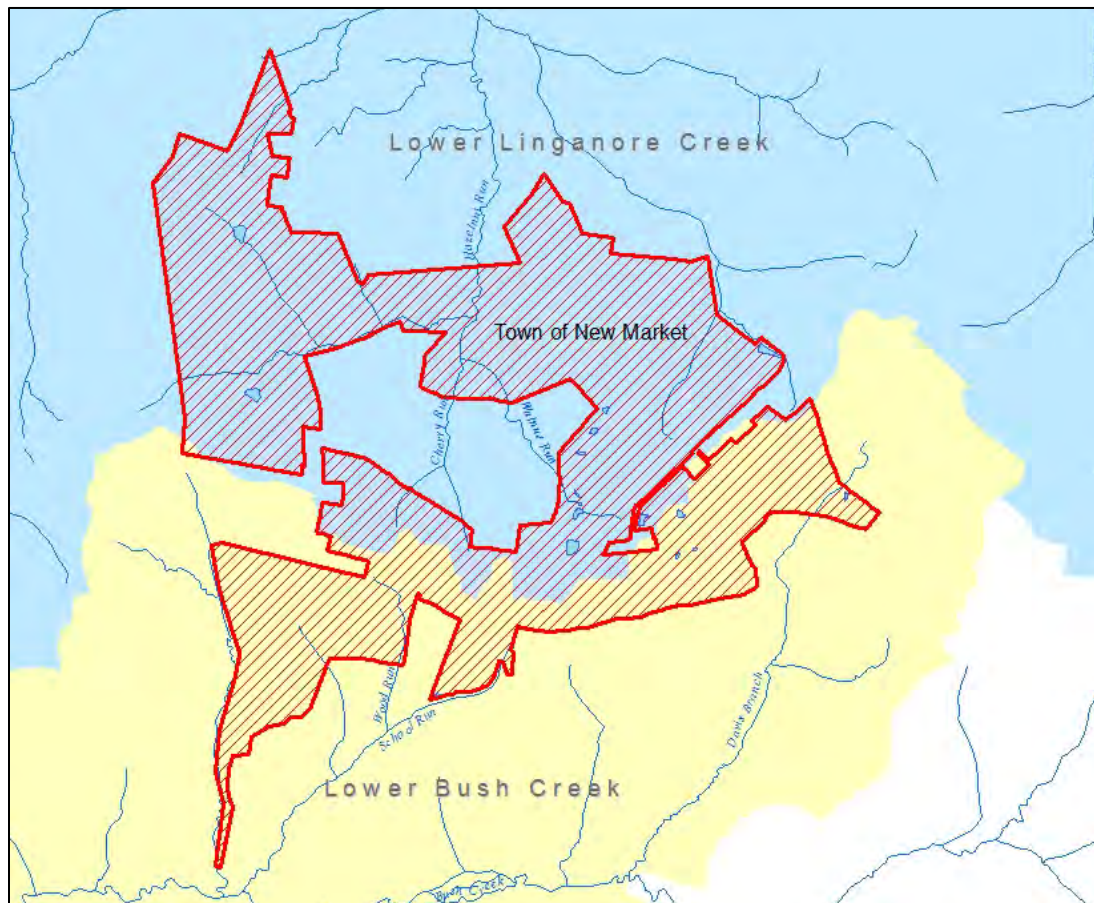


Figure 2. Town of New Market Watersheds

1.2.1 Regulatory Status

The Town operates a municipal separate storm sewer system (MS4) but is not currently regulated under the Clean Water Act National Pollutant Discharge Elimination System (NPDES) MS4 permit program because it does not meet the population threshold that would trigger a permit. As an unregulated MS4, the Town does not have obligations to restore 20% of their untreated lands with stormwater retrofits during each five-year permit cycle, as do Phase I and II MS4 permittees in Maryland. This plan serves to provide a strategy for better managing stormwater runoff in the Town to improve water quality as well as to address localized drainage issues and meet other community goals. This plan will help the Town to meet future obligations if they become permitted under the MS4 program due to population increases.

The Town has delegated to Frederick County's Division of Utilities and Solid Waste management the task of reviewing the stormwater management plans of private development applications on behalf of the Town. Review is based on current County regulations and the Maryland Stormwater Management Act of 2007. As the Town grows, they may need or want to assume these duties in the future, which would require

preparation and adoption of new stormwater management regulations in order to take over this task. However, this change is not anticipated to occur in the near term according to the 2016 Town of New Market Master Plan.

1.2.2 Existing Stormwater Management Facilities

The Frederick County stormwater infrastructure GIS layer shows there are currently 16 stormwater BMPs located in the Town (Figure 3), all of which are on properties developed in the past few decades. None are located on Town-owned property. In the historic part of Town, runoff flows untreated to Cherry Run and Walnut Run (tributaries of Hazelnut Run which flows to Linganore Creek), or to Wood Run and other tributaries of Bush Creek. No storm drainage maps are available for the historic part of the Town, but the County maintains GIS layers of storm drain outfalls, pipes, BMPs, BMP drainage areas, and inlets for the more recently developed areas of the Town.

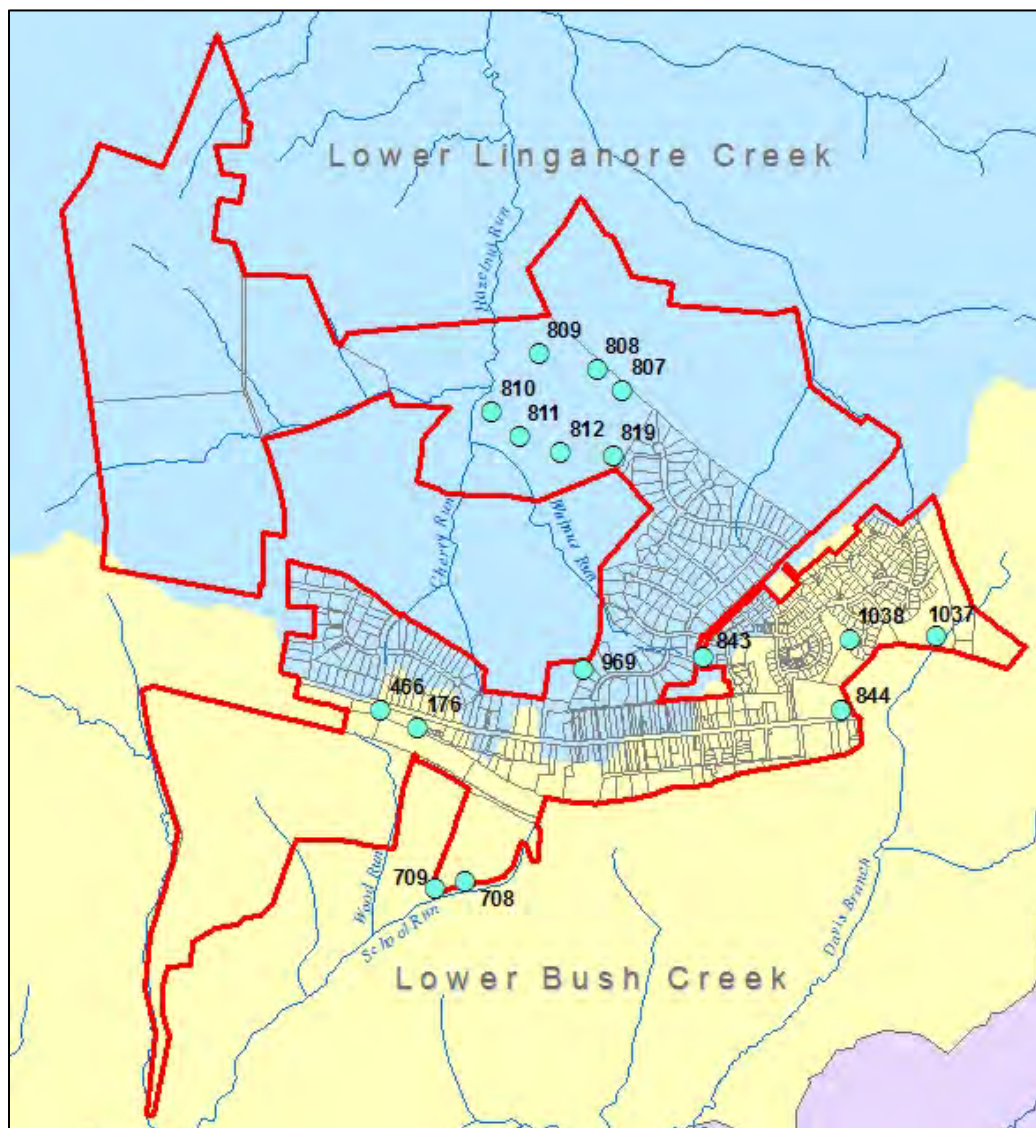


Figure 3. Existing Stormwater BMPs in the Town of New Market

Table 1 summarizes the existing BMPs in the Town. Other than the one unknown BMP near New Market Elementary School and the infiltration trench at the Post Office, these BMPs are all relatively recently constructed with an active homeowners' association (HOA) or property management company responsible for maintaining them and are regularly inspected by the County. Most of these BMP types have limited retrofit potential as they were designed to meet the most recent stormwater management standards. Additional BMPs not shown on this list are located in the Royal Oaks development but have not yet been added to the County's GIS database. It is assumed that these also offer little retrofit potential and will be maintained by the Royal Oaks HOA.

Table 1. Existing Stormwater BMPs in the Town of New Market						
BMP ID	Name	BMP Type	Watershed	Drainage Area (acres)	Impervious Area Treated (acres)	Party Responsible for Maintenance
176	New Market Professional Center	Sand Filter	Lower Bush Creek	1.27	0.62	New Market Professional Center, LLC
466	New Market Post Office	Infiltration Trench	Lower Bush Creek	1	0.75	FDI Postal Properties
708	Adventure Park USA, BMP #1	Sand Filter	Lower Bush Creek	6.67	4.47	Intercoastal Industrial Park, LTD
709	Adventure Park USA, BMP #2	Sand Filter	Lower Bush Creek	5.24	1.46	Intercoastal Industrial Park, LTD
807	LOUYAA Athletic Fields, Structure #1	Infiltration Trench	Lower Liganore Creek	4	0.14	New Market Residential, LLC
808	LOUYAA Athletic Fields, Structure #2	Infiltration Trench	Lower Liganore Creek	6.1	0	New Market Residential, LLC
809	LOUYAA Athletic Fields, Structure #3	Infiltration Trench	Lower Liganore Creek	2.4	0.01	New Market Residential, LLC
810	LOUYAA Athletic Fields, Structure #4	Infiltration Trench	Lower Liganore Creek	7.3	0.22	New Market Residential, LLC
811	LOUYAA Athletic Fields, Structure #5	Infiltration Trench	Lower Liganore Creek	1.2	0	New Market Residential, LLC
812	LOUYAA Athletic Fields, Structure #6	Infiltration Trench	Lower Liganore Creek	1.2	0.13	New Market Residential, LLC
819	LOUYAA Athletic Complex, Pond #10	Sand Filter	Lower Liganore Creek	9.8	2.41	New Market Residential, LLC

Table 1. Existing Stormwater BMPs in the Town of New Market

BMP ID	Name	BMP Type	Watershed	Drainage Area (acres)	Impervious Area Treated (acres)	Party Responsible for Maintenance
843	Brinkley Manor, SWM Pond #1	Extended Detention Structure, Dry; Sand Filter, and Infiltration Trench	Lower Linganore Creek	12.12	4.06	Marley Gate, LLC
844	Brinkley Manor, SWM Pond #2	Extended Detention Structure, Dry; Sand Filter, and Infiltration Trench	Lower Bush Creek	23.08	5.96	Marley Gate, LLC
969	Unidentified BMP between New Market Elementary School and Royal Oaks neighborhood	Unknown	Lower Linganore Creek	Unknown	Unknown	Unknown
1037	The Orchard at New Market, SWM Pond #1	Extended Detention Structure, Wet	Lower Bush Creek	29.2	Unknown	Orchard at New Market, LLC
1038	The Orchard at New Market, SWM Pond #2	Sand Filter	Lower Bush Creek	2.26	Unknown	Orchard at New Market, LLC

The estimated impervious area within the Town limits is 114 acres, based on the County's building and pavement GIS layers. This equates to 11% of the Town's area. Of this impervious area, it is estimated that 53% is treated by existing BMPs, leaving 54 acres of roadway, buildings, and parking lots that are presently untreated. This estimate was determined using the County's BMP drainage area layer and the assumption that all of The Orchard development is treated by BMPs that have not yet been added to the BMP drainage area layer. Figure 4 shows the Town's impervious surfaces and other land cover, as well as the areas that are treated versus untreated. The stormwater retrofit assessment for the Town focused on evaluation of both existing BMPs and untreated areas to make recommendations for improvement.

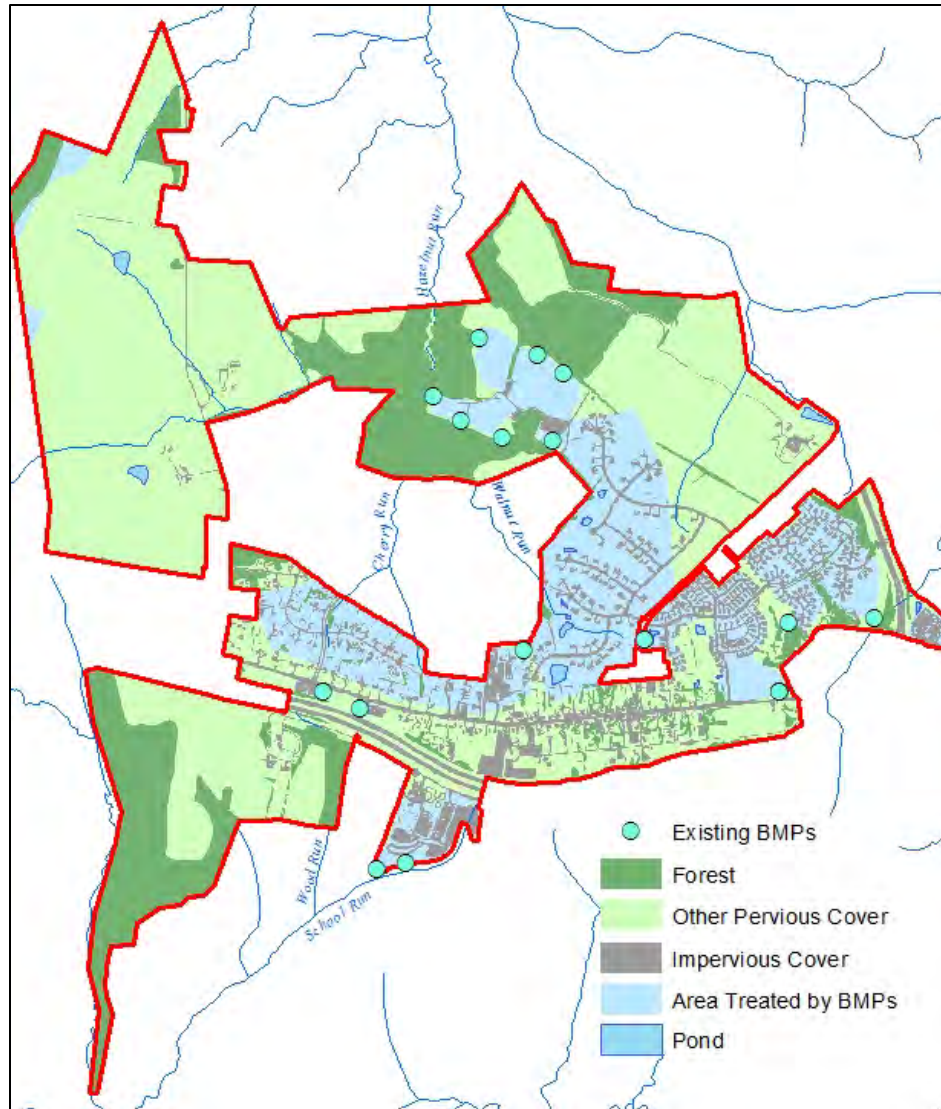


Figure 4. Treated and Untreated Impervious Cover in the Town of New Market

1.2.3 Previous and Related Stormwater Planning Efforts

The Town has not previously undertaken any stormwater retrofit planning efforts. Previous plans prepared by Frederick County and other agencies for the Lower Linganore Creek and Lower Bush Creek watersheds were reviewed, two of which identify specific stormwater retrofit opportunities within the Town. The 2006 Assessment of Stormwater Management Retrofits and Stream Restoration Opportunities in the Linganore Creek Watershed is more than 10 years old and covered the entire Linganore Creek watershed. It evaluated only two properties in the Town: New Market Middle School and New Market Elementary School. Several potential retrofits—including retrofit of an existing pond—were identified at these locations but none have been implemented to date. The information provided on the proposed retrofits at these two sites does not include sufficient detail about the proposed projects (e.g., specific location, estimated pollutant reduction) to prioritize the sites or develop concepts to

move forward on implementation. The 2016 Frederick County Stormwater Restoration Plan identifies one retrofit at New Market Middle School, but the rest are generic recommendations—based on modeling scenarios—for BMP types in each major watershed to meet MS4 and TMDL goals.

This plan builds upon and updates these previous assessments by focusing specifically on the Town and by providing more detailed information to prioritize and develop conceptual designs for proposed retrofit sites. Implementation of the retrofits identified in this plan will help to meet the goals of the Lake Linganore TMDL and the Linganore Source Water Protection Plan by identifying opportunities to reduce nutrient and sediment inputs to Linganore Creek through installing stormwater retrofits. Additionally, it helps to address recommendations in the Lower Monocacy Watershed Plan, such as implementation of stormwater management practices to treat 6,780 acres of land. Lastly, it will amplify the ongoing efforts by Frederick County to make water quality improvements and is included in Frederick County's 2016–2017 two-year Watershed Implementation Plan (WIP) milestones provided to Maryland Department of the Environment (MDE).

Section 2. Field Assessment and Findings

2.1 Stormwater Retrofit Inventory and Protocol

Stormwater retrofits are structural stormwater management practices that can be used to address existing stormwater management problems within a watershed. These practices are installed in upland areas to capture and treat stormwater runoff before it is delivered to the storm drainage system, and ultimately, to local waterways such as Linganore Creek and Bush Creek. They are an essential element of a holistic watershed restoration program because they can help improve water quality, increase groundwater recharge, provide channel protection, and control overbank flooding. Without using stormwater retrofits to address existing problems and to help establish a stable, predictable hydrologic regime by regulating the volume, duration, frequency, and rate of stormwater runoff, the success of many other watershed restoration strategies—such as stream stabilization and aquatic habitat enhancement—will be threatened. In addition to the stormwater management benefits they offer, stormwater retrofits can be used as demonstration projects, forming visual centerpieces that can be used to help educate residents and build additional interest in watershed restoration.

Potential stormwater retrofit opportunities at a number of candidate project sites in the Town were assessed during the retrofit inventory. The Center's Retrofit Reconnaissance Inventory (RRI) field form (Appendix A) and associated protocols (Schueler et al. 2007) were used to evaluate retrofit opportunities at candidate sites. The RRI is designed to evaluate the feasibility of constructing a stormwater retrofit at each site and to collect enough information to develop a retrofit concept.

2.2 Desktop Assessment

In preparation for the field assessment, the Center first conducted a desktop analysis using ArcGIS Pro, which narrowed down the locations to visit within the Town. The Center used aerial imagery and the following GIS layers¹:

- Buildings
- Contours
- Hydrography
- Parcels
- Edge-of-pavement
- Stormwater management infrastructure

Candidate retrofit sites identified for the assessment generally included existing stormwater ponds and publicly-owned, institutional, or commercial sites with large areas of untreated impervious cover. The GIS data helped to further narrow down appropriate locations for a retrofit. Due to the small size and limited opportunity for stormwater retrofits in the Town, the desktop search was expanded to include sites in the area immediately surrounding the Town as well. The Center identified 23 locations to visit for field investigation of retrofit potential (Figure 5).

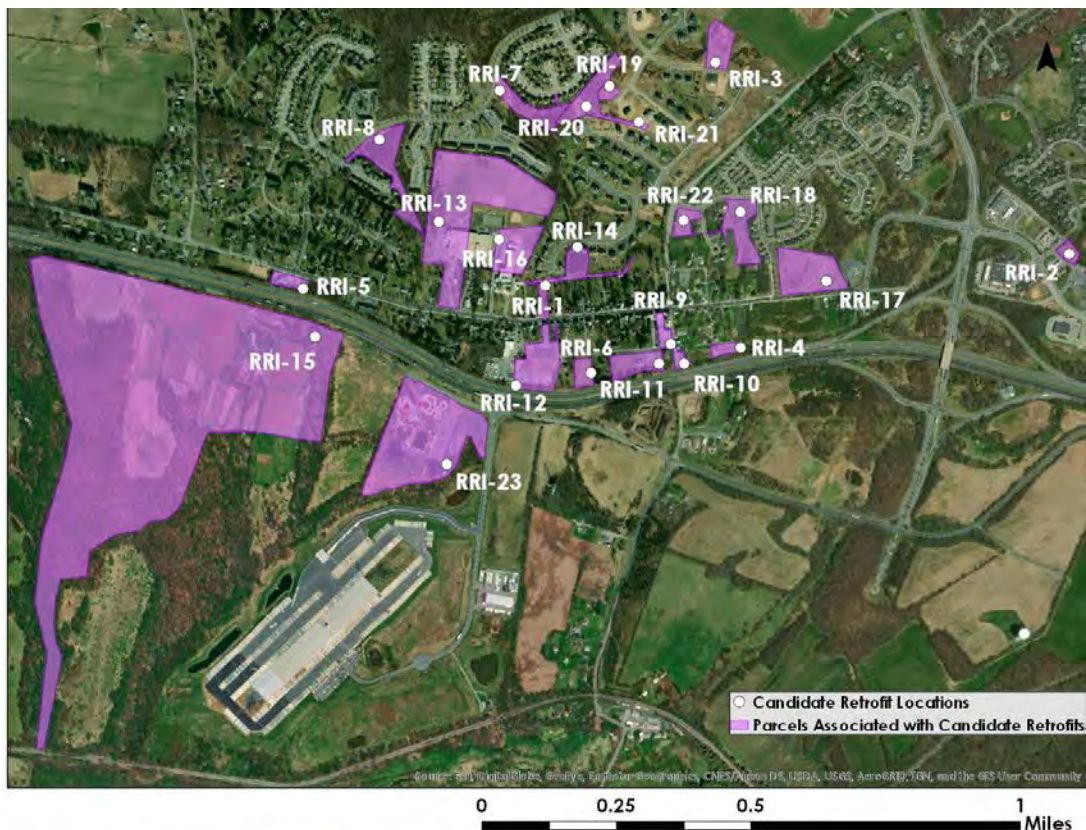


Figure 5. Candidate Retrofit Locations Assessed in the Town of New Market

¹ All GIS layers sourced from: <https://www.frederickcountymd.gov/5969/Download-GIS-Data>

2.3 Field Assessment

Two Center field teams conducted the RRI in December of 2017 to assess the feasibility of retrofitting the identified candidate sites. Of the 23 sites visited (Figure 5), 14 were determined to be suitable for retrofits. The other nine locations were deemed unsuitable for retrofit construction, either because they had existing BMPs that were found to provide adequate water quality treatment, or because of site constraints such as utilities and conflicting land use that would make constructing a stormwater retrofit inherently difficult or expensive. In addition, two sites were identified as candidates for stream restoration and/or in need of BMP maintenance.

2.4 Retrofit Site Summary

A summary of existing conditions at sites proposed for stormwater retrofits, stream restoration and/or BMP maintenance is provided in Table 2. More site-specific details were noted in the field forms for each site, all of which can be found in Appendix B.

Table 2. Existing Conditions at Candidate Stormwater Retrofit Sites in the Town of New Market	
Retrofit Location	Photo
RRI-1: Burhans Property 69 W Main Street, New Market, MD 21774 This outfall is located on the Burhans property, and the grass channel below it conveys stormwater from Old National Pike and slopes toward North Alley, empties into the Town storm drain system, and eventually the Town fire pond. The channel runs along and eventually crosses the adjacent residential property line. The homeowner reports drainage issues in this area during/after storms.	

Table 2. Existing Conditions at Candidate Stormwater Retrofit Sites in the Town of New Market

Retrofit Location	Photo
RRI-2: Food Lion/High's Pond <i>11800 Old National Pike, New Market, MD 21774</i> This dry pond collects drainage from the adjacent Food Lion and High's parking lots. The pond has one weir, three inlets, and one outlet. There is a large amount of trash surrounding the perimeter of the existing dry pond. This site is located outside the Town boundaries and the pond does not treat any runoff from the Town.	
RRI-3: Royal Oaks Pond <i>511 Isaac Russell Street, New Market, MD 21774</i> This recently-built dry pond collects runoff from nearby residences in the Royal Oaks neighborhood. It has one inlet and one standpipe. There is a mound of sediment and a pool of standing water adjacent to the inlet, presumably due to clogging.	

Table 2. Existing Conditions at Candidate Stormwater Retrofit Sites in the Town of New Market	
Retrofit Location	Photo
RRI-4: New Market Community Park <i>7 South Federal Street, New Market, MD 21774</i> The park, parking lot, and part of the adjacent neighborhood drain to one of two locations on the park property: 1) a small swale that empties into existing storm drain infrastructure, or 2) directly into the storm drain infrastructure, which crosses under South Alley and outlets to an adjacent parcel owned by Maryland SHA. There is some minor erosion occurring on the SHA parcel as a result of the unmitigated flow from the parking lot and alley.	
RRI-5: New Market Post Office <i>168 West Main Street, New Market, MD 21774</i> This small depression collects runoff from the adjacent Post Office parking lot. It is currently classified by Frederick County as an infiltration trench. This BMP outlets to Wood Run, south of I-70 on the New Market Plains Winery property, where significant stream erosion is occurring due to the high volume of runoff.	

Table 2. Existing Conditions at Candidate Stormwater Retrofit Sites in the Town of New Market	
Retrofit Location	Photo
RRI-6: New Town Hall Adjacent Parcel <i>28 South Alley, New Market, MD 21774</i> This site is an undeveloped property that is located next to the new Town Hall on South Alley. There is a grass channel which drains from the outlet at a headwall south of South Alley, past a small treed area, and ultimately to the I-70 drainage system. It conveys runoff from the alley, the adjacent residences, and part of Old National Pike. The channel is partially located on a Town-owned parcel, but is close to and likely crosses over into, the adjacent residential parcel.	
RRI-7: New Market West Pond #2 <i>Royal Oak Drive, New Market, MD 21774</i> This dry detention pond is in line with Walnut Run, a Use IV-P waterway that is a tributary to Lake Linganore. Abundant wetland vegetation and an existing riser structure are present. Just upstream of the pond, stream erosion is occurring due to runoff from the adjacent/upstream developments and there are some areas of trash dumping. The pond is located just outside the Town boundary but treats runoff from a portion of the Town.	

Table 2. Existing Conditions at Candidate Stormwater Retrofit Sites in the Town of New Market

Retrofit Location	Photo
RRI-8: New Market West Pond #1 <i>Royal Oak Drive & Talbot Court, New Market, MD 21774</i> This pond, which is in line with Cherry Run, was designed as an extended detention dry pond but has been functioning as a wet pond system for years due to a clogged outlet structure. The pond is located just outside the Town boundary but treats runoff from a portion of the Town. Downstream of the pond, channel erosion is occurring below the road culvert and further downstream on Cherry Run.	
RRI-9: Vintage Parking Lot <i>8 West Main Street, New Market, MD 21774</i> This site includes the parking lot behind Vintage Restaurant and The Original Playhouse south of Main Street. Runoff from a portion of the parking lot, buildings, and adjacent alley flows south toward a grassy area, across South Alley and ultimately makes it way to Bush Creek at I-70. There is no existing stormwater treatment. Overhead electric lines are present along with a septic cleanout.	

Table 2. Existing Conditions at Candidate Stormwater Retrofit Sites in the Town of New Market

Retrofit Location	Photo
RRI-10: 8th Alley Cul-de-Sac <i>5 Eighth Alley, New Market, MD 21774</i> Runoff from 8th Alley, South Alley, and the surrounding neighborhood is conveyed via roadside channels around this cul-de-sac into a conveyance channel alongside I-70, and a culvert that goes underneath I-70 and outlets to Bush Creek. There is no existing stormwater treatment at this site. The property is owned by the New Market Grange and appears to be primarily used for parking. Several utilities are present in the area.	
RRI-11: New Market Grange <i>40 South Alley, New Market, MD 21774</i> This property contains a building, small parking lot and large lawn area. The downspout of the building has been disconnected, but there is no existing stormwater treatment. Runoff from the parking lot drains east-southeast into a channel that goes underneath I-70 and outlets to Bush Creek. This property is occasionally used for Town events and is proposed as a location for a future farmers' market.	

Table 2. Existing Conditions at Candidate Stormwater Retrofit Sites in the Town of New Market

Retrofit Location	Photo
RRI-12: New Market Fire Station 76 West Main Street, New Market, MD 21774 Runoff from the fire station drains north toward Main Street while runoff from the parking lot drains south to the back of the lot where there is a natural low spot in the southwest corner. In this location is an abandoned retaining wall and outlet structure that ultimately flows untreated to Bush Creek. The property is owned by the New Market District Volunteer Fire Department who is interested in cleaning up the property so that it can be used for community events.	
RRI-13: New Market Middle School 125 West Main Street, New Market, MD 21774 The New Market Middle School property has a large building, parking lot, ballfields and other open areas. Runoff from part of the parking lot discharges to a small depression next to an area with apparent wetland vegetation. A raised berm with a walkway acts as a sort of embankment but it is unclear if this area was originally designed as a BMP. The rest of the parking lot drains to an inlet that appears to discharge into nearby Walnut Run. It is assumed that the roof drains, which run underground, also outlet to the stream. There is erosion occurring in the grassy slope next to the inlet, which appears to be from overflowing runoff due to the inlet clogging with leaves and debris.	 

Table 2. Existing Conditions at Candidate Stormwater Retrofit Sites in the Town of New Market

Retrofit Location	Photo
RRI-14: Fire Pond <i>415 William Plummer Street, New Market, MD 21774</i> The Town's fire pond was originally built for Town fire protection but is no longer used for this purpose. The pond outlets into a small wetland that flows into Walnut Run, a Use IV-P waterway that is a tributary to Lake Linganore. The property is owned by the Town, and concerns include algae blooms in the summer, as well as the stability of the embankment, which is covered with trees and other vegetation.	
RRI-15: New Market Plains Winery <i>11111 W Baldwin, New Market, MD 21774</i> Upstream of Baldwin Road, the headwaters of Wood Run consist of networks of road ditches and storm sewers that convey runoff from I-70 and parts of the Town. Runoff from these areas are ultimately conveyed under Baldwin Road through road culverts before being discharged into Wood Run on the new Market Plain Winery property. Severe erosion is occurring along Wood Run from uncontrolled runoff, despite the fact that the stream corridor is primarily forested.	

Table 2. Existing Conditions at Candidate Stormwater Retrofit Sites in the Town of New Market

Retrofit Location	Photo
RRI-16: New Market Elementary School 93 West Main Street, New Market, MD 21774 The New Market Elementary School property consists of a large building, parking lot, ballfields, playground and other open areas. Runoff from the parking lot drains to a small landscaped island and is treated by two Filterra practices, one of which had no tree and one of which had an invasive species (tree of heaven) that was not growing there. No other stormwater BMPs were located at this site.	

Section 3. Recommendations

3.1 Water Quality Retrofits

Fourteen retrofits were proposed at 13 sites (Figure 6). Drainage areas for each proposed retrofit are illustrated in Figure 7. The New Market Post Office was originally explored as a possible retrofit, but was taken out of consideration because the water quality calculations showed there was no net pollution reduction benefit from converting the existing BMP. However, the Town should explore opportunities to improve runoff quality at this site as part of future proposed expansion to the Post Office.

Table 3 provides a description and concept photo of each proposed retrofit. Additional information is included in the field forms in Appendix B. Appendix C includes more detailed concept designs for three of the most promising retrofit locations.

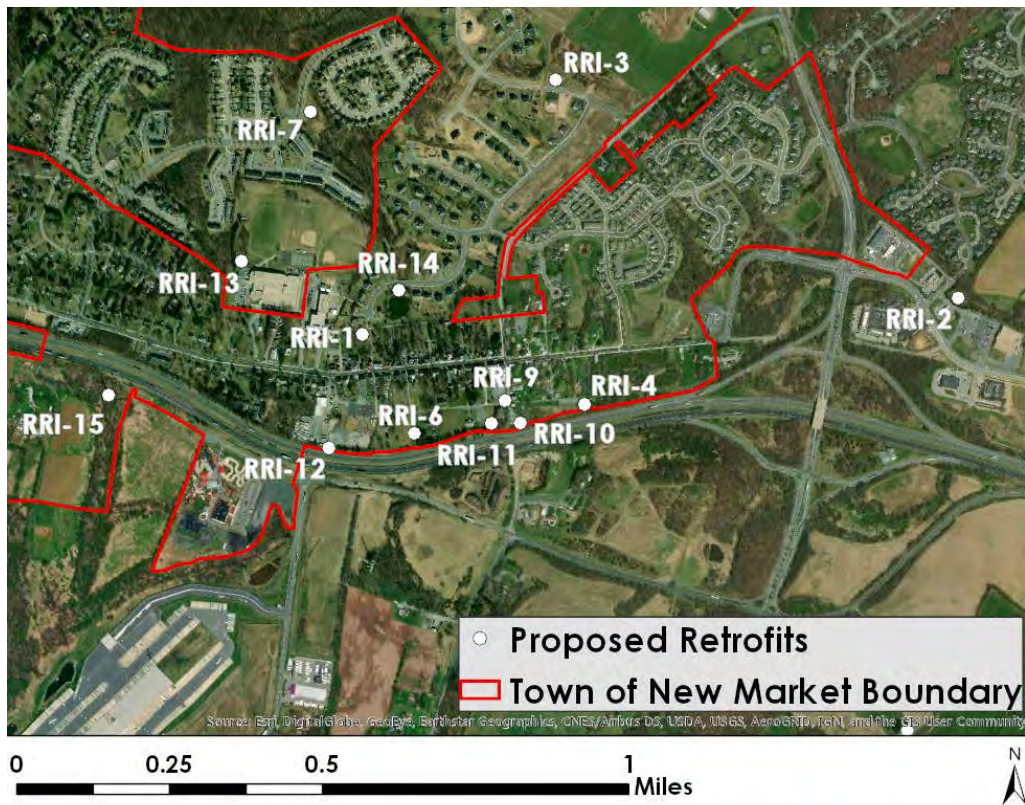


Figure 6. Proposed Stormwater Retrofit Locations in the Town of New Market

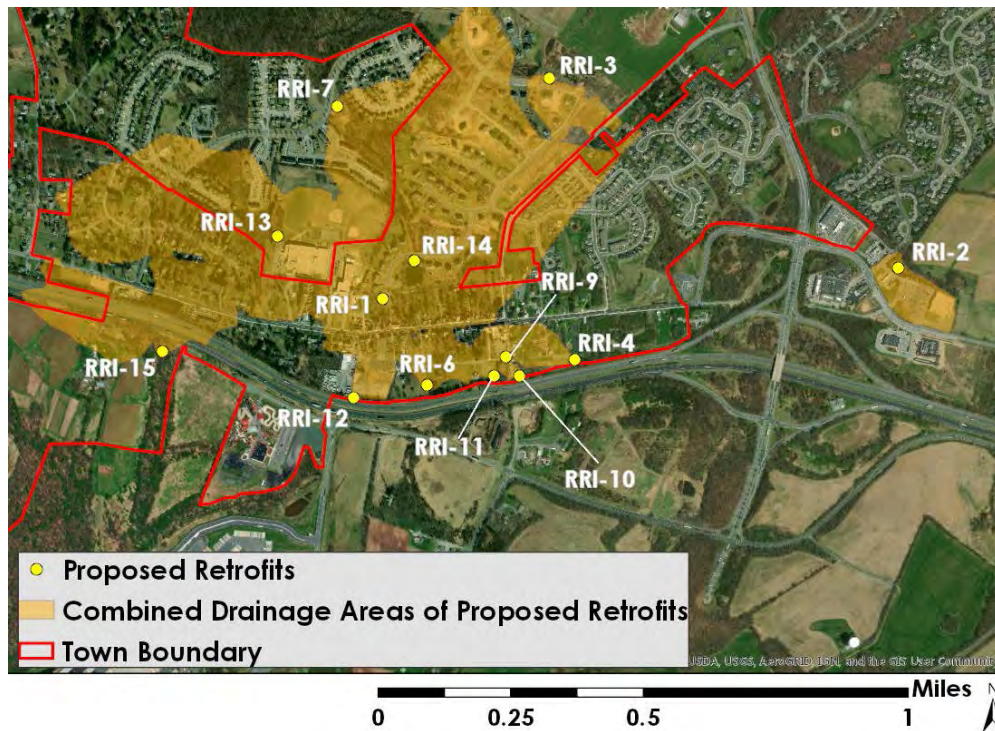


Figure 7. Drainage Area Treated by Proposed Stormwater Retrofits in the Town of New Market

Table 3. Proposed Stormwater Retrofits in the Town of New Market

Retrofit Location	Photo
RRI-1: Burhans Property 69 W Main Street, New Market, MD 21774 The Center proposes to realign the existing grass channel, currently on the Burhans property, to align with the property line. Additionally, step pools will be installed along the channel to capture and treat additional runoff.	
RRI-2: Food Lion/High's 11800 Old National Pike, New Market, MD 21774 The Center proposes to convert this dry pond to a wet pond by excavating a series of depressions within the basin. A stand pipe will also be constructed for extended detention.	

Table 3. Proposed Stormwater Retrofits in the Town of New Market

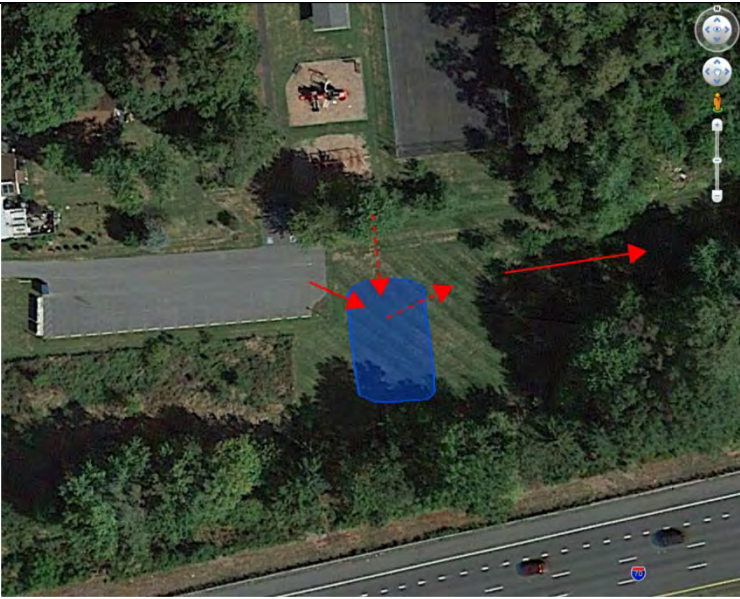
Retrofit Location	Photo
RRI-3: Royal Oaks Pond 511 Isaac Russell Street, New Market, MD 21774 The Center proposes to convert this dry pond to a wet pond with extended detention by excavating the pond bottom.	
RRI-4: New Market Community Park 7 South Federal Street, New Market, MD 21774 The Center proposes to install a submerged gravel wetland south of the park at the southeast corner of the parking lot to capture and treat untreated runoff from a portion of the park and adjacent alleys of the neighborhood before it enters the drainage swale on the SHA property.	

Table 3. Proposed Stormwater Retrofits in the Town of New Market

Retrofit Location	Photo
RRI-6: New Town Hall Adjacent Parcel 28 South Alley, New Market, MD 21774 The Center proposes to install a series of bioretention cells along an existing grass channel that directs runoff to I-70. This channel collects runoff from a section of alleys north of I-70. This retrofit should be coordinated with any plans for this site, such as the addition of parking.	
RRI-7: New Market West Pond #2 Royal Oak Drive, New Market, MD 21774 The Center proposes to convert this dry pond to a constructed wetland in addition to completing stream restoration on a segment of Walnut Run, which outlets into the pond.	

Table 3. Proposed Stormwater Retrofits in the Town of New Market

Retrofit Location	Photo
RRI-9: Vintage Parking Lot <i>8 West Main Street, New Market, MD 21774</i> The Center proposes installing a rain garden in the grassy area on the southeast side of the Vintage parking lot to capture and treat parking lot runoff. This proposed BMP is within the drainage area of the 8th Alley Cul-de-Sac proposed retrofit.	
RRI-10: 8th Alley Cul-de-Sac <i>5 Eighth Alley, New Market, MD 21774</i> The Center proposes constructing a stepped bioswale along the east side of the existing conveyance channel, leading down to a bioretention basin. The existing channel will be widened for additional storage. This retrofit should be coordinated with any plans to upgrade the drainage system in these alleys.	

Table 3. Proposed Stormwater Retrofits in the Town of New Market

Retrofit Location	Photo
RRI-11: New Market Grange 14 South Alley, New Market, MD 21774 The Center proposes installing a bioretention basin (with an underdrain) adjacent to the tree line located at the southeast corner of the property.	
RRI-12: New Market Fire Station 76 West Main Street, New Market, MD 21774 The Center proposes building a sand filter on the southwest corner of the property to treat runoff from the parking lot. The existing weir and underdrain would be used. A small portion of the gravel/crushed concrete would be removed as part of the retrofit, and it is recommended to coordinate with the property owner on removal of the remainder of the material concurrently with retrofit construction.	

Table 3. Proposed Stormwater Retrofits in the Town of New Market

Retrofit Location	Photo
RRI-13: New Market Middle School 125 West Main Street, New Market, MD 21774 The Center proposes to construct a shallow sand filter in the depression since there is little available head, and use the existing outlet structure. Delineation of any established wetlands above/adjacent to area recommended for retrofit is also likely necessary. Further exploration of retrofit opportunity near the south end of the parking lot is also recommended to address the erosion issue.	
RRI-14: Fire Pond 415 William Plummer Street, New Market, MD 21774 The Center proposes to dewater the pond, remove the dam, and construct a step pool stormwater conveyance (SPSC) system that consists of a series of six shallow step pools. The pools will be constructed using a sand/wood chip base, cobbles and boulders, and a mixture of herbaceous and woody vegetation. This retrofit will address concerns about embankment stability and algae/mosquitos, and open up a portion of the property for community use.	

Table 3. Proposed Stormwater Retrofits in the Town of New Market

Retrofit Location	Photo
RRI-15: New Market Plains Winery 11111 W Baldwin, New Market, MD 21774 The Center proposes installing two SPSCs here in conjunction with the proposed stream restoration design for Wood Run, to transition the flow from the suburban drainage system to the natural stream. By providing a stable, armored series of pools, the SPSCs will capture the high-velocity flows from the outfalls and dissipate energy as the water flows down the steep hillside, significantly reducing erosion potential in the restored stream below.	

3.1.1 Water Quality and Pollutant Removal Calculations

A water quality volume (WQv) was calculated for each retrofit drainage area. This volume captures high pollutant loads in the “first-flush” of stormwater runoff from all rainfall events. The WQv was calculated for each proposed retrofit as follows:

$$WQv = \frac{P \times Rv \times A}{12}$$

where:

- WQv = water quality volume (ft³)
- P = design storm runoff depth (1 inch)
- Rv = 0.05 + 0.009(I), where (I) is the percent impervious cover of the site
- A = site drainage area (square feet)

This volume reflects the water quality design volume defined in Chapter 2 of the Maryland Stormwater Design Manual (MDE, 2009), and is used to assess each retrofit’s sizing and pollutant removal potential. Nutrient load reductions for total nitrogen (TN), total phosphorus (TP), and total suspended solids (TSS), were calculated based upon

several recommendations of the Chesapeake Bay Program Expert Panel on Stormwater Retrofits (Schueler & Lane, 2012):

- The nutrient and sediment removal rate for each individual retrofit project is determined based on the amount of runoff it treats and the degree of runoff reduction it provides.
- Removal rates for proposed retrofits are derived from the adjustor curves based on the runoff depth captured by the practice and whether the BMP is defined as a “runoff reduction” or “stormwater treatment” practice.

3.1.2 Cost Estimates

Cost estimates include design and construction of the proposed retrofits. The primary source of cost data is from Costs of Stormwater Management Practices in Maryland Counties (King & Hagan, 2011), although information from the Center’s Urban Stormwater Retrofit Practices Manual (Schueler et al., 2007) and professional judgment were utilized as well to refine the estimates for certain proposed retrofits.

Table 4 summarizes the suite of proposed retrofits, including the estimated pollutant load reduction and cost.

Table 4. Summary of Proposed Stormwater Retrofits										
Site ID	Site Description	Watershed	Proposed BMP	Drainage Area (acres)	Impervious % in Drainage Area	Proposed Treatment Volume (CF)	Pollutant Removal (lbs/yr)			Estimated Design & Construction Cost
							TN	TP	TSS	
RRI-1	Burhans Property	Lower Linganore Creek	Regenerative Stormwater Conveyance	2.15	40%	739	12.79	0.55	1,083	\$43,000
RRI-2	Food Lion/High's	Bush Creek	Dry ED Pond to Wet Pond	8.49	55%	16896	62.52	3.90	8,350	\$200,000
RRI-3	Royal Oaks Pond	Lower Linganore Creek	Dry Detention Pond to Wet Pond	8.60	22%	20100	78.76	5.29	9,589	\$150,000
RRI-4	New Market Community Park	Bush Creek	Constructed Wetlands	5.28	25%	4519	40.22	3.09	4,552	\$156,000
RRI-6	New Town Hall Adjacent Parcel	Bush Creek	Regenerative Stormwater Conveyance	7.28	20%	3502	84.12	4.93	5,794	\$197,000
RRI-7	New Market West Pond #2	Lower Linganore Creek	Dry ED Pond to Constructed Wetland	146.42	23%	25200	458.71	29.51	56,423	\$358,000
RRI-9	Vintage Parking Lot	Bush Creek	Bioretention	1.11	45%	1073	11.62	0.58	920	\$40,000
RRI-10	8th Alley Cul-de-Sac	Bush Creek	Bioretention	5.22	24%	916	26.76	1.53	1,893	\$40,000
RRI-11	New Market Grange	Bush Creek	Bioretention	0.45	34%	1026	6.49	0.35	486	\$40,000
RRI-12	New Market District Volunteer Fire Department	Bush Creek	Filtering Practice	3.49	66%	7174	24.19	1.38	3415	\$220,000

Table 4. Summary of Proposed Stormwater Retrofits										
Site ID	Site Description	Watershed	Proposed BMP	Drainage Area (acres)	Impervious % in Drainage Area	Proposed Treatment Volume (CF)	Pollutant Removal (lbs/yr)			Estimated Design & Construction Cost
							TN	TP	TSS	
RRI-13	New Market Middle School	Lower Linganore Creek	Dry Detention Pond to Filtering Practice	8.81	12%	5057	75.96	5.20	8720	\$69,000
RRI-14	Fire Pond	Lower Linganore Creek	Regenerative Stormwater Conveyance	25.82	34%	12735	228.82	10.26	18650	\$319,000
RRI-15a	New Market Plains Winery, west of Wood Run	Bush Creek	Regenerative Stormwater Conveyance	14.77	26%	5287	122.52	6.91	8734	\$309,000
RRI-15b	New Market Plains Winery, east of Wood Run	Bush Creek	Regenerative Stormwater Conveyance	21.64	23%	2802	88.26	5.10	6234	\$164,000

3.2 Prioritized Ranking

The estimated cost and pollutant removal, along with additional information about each site were used to score each retrofit in order to prioritize them for implementation. Scoring factors are described in Table 5.

Table 5. Scoring Factors for Proposed Stormwater Retrofits		
Scoring Factor	Description	Score
Cost-effectiveness	Calculated as the cost per impervious acres treated	< \$50,000 = 35 points \$50,000-\$100,000 = 20 points > \$100,000 = 0 points
Overall effectiveness	Reflects how much pollutant removal can be achieved with a single BMP	5 points per impervious acre treated, rounded to nearest integer, with a maximum of 50 points.
Maintenance burden	Based on difficulty/expense associated with BMP maintenance	Low = 15 points Medium = 7.5 points High = 0 points
Potential site constraints	Includes land ownership, utilities, access and other site constraints	Low = 30 points Medium = 15 points High = 0 points
Aesthetics/safety/exposure	Reflects community concerns such as safety, aesthetics and visibility for demonstration purposes	Good = 20 points Fair = 10 points Poor = 0 points

Table 6 presents the results of the ranking and prioritization exercise.

Table 6. Prioritized List of Proposed Stormwater Retrofits								
Site ID	Site Description	Cost Effective-ness	Overall Effective-ness	Maintenance Burden	Potential Site Constraints	Aesthetics/ Safety/ Exposure	Total Score	Rank
RRI-14	Fire Pond	20	18	15	30	20	103	1
RRI-13	New Market Middle School	35	6	7.5	30	20	98.5	2
RRI-2	Food Lion/High's	35	23	7.5	15	10	90.5	4
RRI-7	New Market West Pond #2	35	35	15	0	10	95	3
RRI-3	Royal Oaks Pond	35	14	15	15	10	89	5
RRI-4	New Market Community Park	0	6	15	30	20	71	6
RRI-6	New Town Hall Adjacent Parcel	0	5	15	15	20	55	7
RRI-15a	New Market Plains Winery, west of Wood Run	0	7	15	15	10	47	8
RRI-15b	New Market Plains Winery, east of Wood Run	0	4	15	15	10	44	9
RRI-12	New Market District Volunteer Fire Department	0	10	7.5	15	10	42.5	10
RRI-9	Vintage Parking Lot	0	1	15	15	10	41	11
RRI-10	8th Alley Cul-de-Sac	0	1	15	15	10	41	12
RRI-11	New Market Grange	0	1	7.5	15	10	33.5	13
RRI-1	Burhans Property	0	1	7.5	0	10	18.5	14

*Shaded rows represent projects that are located in the County.

3.3 Additional Recommendations

3.3.1 Stream Restoration

Three of the sites evaluated in the field presented opportunities for stream restoration. The existing conditions and proposed actions for each site are described in Table 7.

Table 7. Recommendations for Potential Stream Restoration Sites in the Town of New Market	
Retrofit	Photo
RRI-8: New Market West Pond #1 <i>Royal Oak Drive & Talbot Court, New Market, MD 21774</i> This pond was designed as an extended detention pond but has been functioning as a wet pond system for years due to a clogged outlet structure. While a wet pond offers better water quality treatment, an extended detention pond offers better downstream channel protection. Downstream of the pond, channel erosion is occurring below the road culvert and further downstream on Cherry Run. This area warrants further investigation by Frederick County as a potential stream restoration candidate. Any stream restoration project should also address upgrades/maintenance for the pond.	
RRI-7: New Market West Pond #2 <i>Royal Oak Drive, New Market, MD 21774</i> The stream network just upstream of this pond includes Walnut Run and some small tributaries. Stream erosion is occurring due to runoff from the adjacent and upstream developments. There are also some areas of trash dumping. This area warrants further investigation by Frederick County as a potential stream restoration candidate.	

Table 7. Recommendations for Potential Stream Restoration Sites in the Town of New Market	
Retrofit	Photo
RRI-15: New Market Plains Winery 11111 W Baldwin, New Market, MD 21774 Wood Run flows through this property and begins at an outfall below I-70 that drains a portion of I-70 and part of the Town north of I-70. Severe erosion is occurring along Wood Run from uncontrolled runoff. This area warrants further investigation by the Town as a potential stream restoration candidate in conjunction with upland stormwater controls. Coordination with Maryland State Highway Association may be needed to determine if space exists in the right-of-way for a retrofit practice.	

3.3.2 BMP Maintenance

The parking lot at New Market Elementary School did not present an opportunity to install a stormwater retrofit, as runoff from the lot is currently treated by two Filterra practices. However, field crews observed that these devices are in need of maintenance as one of them contains a dead tree and both appear to have debris in the inlet.

3.3.3 Rain Barrel Program

Town residents have expressed interest in a rain barrel program similar to the Town's compost bin program that launched in 2017 and provides large compost bins to residents (and non-residents) at a very low cost. While not specifically evaluated as part of the stormwater survey, there is opportunity for the Town to develop a rain barrel program following a similar model as the compost bins to provide small-scale treatment and reduction of stormwater runoff. The program could offer low-cost rain barrels by subsidizing the cost of the barrels and also provide information to residents on the benefits of rain barrels and how to install one.

3.4 Implementation Schedule and Funding Sources

Implementation of the stormwater retrofits identified in this plan will primarily be dependent upon receipt of grant funding. Based on the schedules for grant programs that would likely fund these projects, we expect that implementation can occur at a rate of approximately two to four projects every five years (if only grant funding is utilized), using the prioritization in Table 6. Table 8 lays out a proposed schedule for the near-term (1-5 years) recommended actions that identifies the responsible party and

funding sources. A detailed list of potential funding sources is provided following Table 8.

Table 8. Near-Term Implementation Schedule and Funding Sources			
Action	Responsible Party	Timeframe	Funding Sources
Construction of Fire Pond retrofit	Town	December 2019	NFWF Small Watershed Grants (\$150,000 secured), Maryland DNR Trust Fund
Design of New Market Middle School retrofit	Town	December 2019	EPA/MDE CBRAP (\$48,190 secured)
Design of Royal Oaks Pond retrofit	Town	December 2019	EPA/MDE CBRAP (\$48,190 secured)
Construction of New Market Middle School Retrofit	Town	December 2022	NFWF Small Watershed Grants, Maryland DNR Trust Fund, EPA/MDE 319 Grants, CBT G3 Grants
Construction of Royal Oaks Pond retrofit	Town	December 2023	NFWF Small Watershed Grants, Maryland DNR Trust Fund, EPA/MDE 319 Grants, CBT G3 Grants
Implement rain barrel program	Town Green Team	December 2019	CBT Community Involvement Mini-Grants, BGE Green Grants
Further investigation of New Market Plains retrofit and stream restoration opportunities	Center for Watershed Protection	March 2020	CBT Watershed Assistance Grants

Chesapeake Bay Trust (CBT) Green Street, Green Jobs, Green Towns (G3)

- What they fund: implementation of stormwater retrofits; grants amounts up to \$75,000; match strongly encouraged
- Timeframe: RFP released in Winter
- Link: <https://cbtrust.org/grants/green-streets-green-jobs-green-towns/>

CBT Watershed Assistance Grants

- What they fund: planning and design for stormwater retrofits; grant amounts up to \$75,000.
- Timeframe: RFP released in Summer
- Link: <https://cbtrust.org/grants/watershed-assistance/>

EPA/MDE 319 Grants

- What they fund: implementation of restoration projects in EPA-approved watershed plans (New Market is in the Lower Monocacy plan); grants range from \$100,000-\$300,000; a 40% non-federal match is required.

- Timeframe: RFP released in late Fall
- Link: <http://mde.maryland.gov/programs/Water/319NonPointSource/Pages/factsheet.aspx>

EPA/MDE Chesapeake Bay Regulatory and Accountability Program

- What they fund: design of stormwater retrofits; Town has received a grant of \$48,190 through this program that can help to fund design; designs completed using a CBRAP grant are eligible for implementation funds through the EPA/MDE 319 grant program.

Maryland Department of Natural Resources (DNR) Chesapeake and Atlantic Coastal Bays Trust Fund

- What they fund: implementation of stormwater retrofits; no limit on grant amounts; match/leverage strongly encouraged.
- Timeframe: RFP released in Winter
- Link: http://dnr.maryland.gov/ccs/Pages/funding/trust-fund_grants.aspx

MEMA Pre-Disaster Mitigation Grants

- What they fund: implementation of stormwater management projects that reduce flood risk; 25% non-federal match is required; cost-benefit analysis required to demonstrate value of project for reducing flood damage potential.
- Timeframe: RFP released Fall
- Link: <https://www.fema.gov/hazard-mitigation-assistance-mitigation-activity-chart>

National Fish and Wildlife Foundation (NFWF) Small Watershed Grants

- What they fund: implementation of stormwater retrofits; grants range from \$20,000 to \$200,000 and require non-federal match of 1/3 of the total request.
- Timeframe: RFP released in early Spring
- Link: <https://www.nfwf.org/chesapeake/Pages/home.aspx>

Transportation Alternatives Program

- What they fund: design (partial) and construction of stormwater retrofits that treat runoff from highways; 20% non-federal match and 30% design completion required
- Timeframe: RFP released in Spring

- Link: <http://roads.maryland.gov/Index.aspx?PageId=144>

References

King, D., & P. Hagan. 2011. *Costs of Stormwater Management Practices in Maryland Counties*. Prepared for Maryland Department of the Environment by the University of Maryland Center for Environmental Services. Technical Report Series No. TS-626-11 of the University of Maryland Center for Environmental Science.

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Schueler, T., & C. Lane. 2012. *Recommendations of the Expert Panel to Define Removal Rates for Urban Stormwater Retrofit Projects: Long Version*. Chesapeake Stormwater Network, Ellicott City, MD. Pages 1–62.

Schueler, T., Fraley-McNeal, L., & K. Cappiella. 2009. Is Impervious Cover Still Important? A Review of Recent Research. *Journal of Hydrologic Engineering*, 14(4), 309. ASCE, Reston, VA.

Schueler, T., Hirschman, D., Novotney, M., & J. Zielinski. 2007. *Urban Stormwater Retrofit Practices Version 1.0. Manual 3 in the Urban Subwatershed Restoration Manual Series*. Center for Watershed Protection. Ellicott City, MD.

Town of New Market. 2017. *Town of New Market Master Plan 2016*. <http://www.townofnewmarket.org/wp-content/uploads/mp-toc.pdf>

Appendix A. RRI Form

Retrofit Reconnaissance Investigation

RRI

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID:	
DATE:		ASSESSED BY:		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: _____					
Address: _____					
Ownership: ☐ Public ☐ Private ☐ Unknown					
If Public, Government Jurisdiction: ☐ Local ☐ State ☐ DOT ☐ Other: _____					
Corresponding USSR/USA Field Sheet? ☐ Yes ☐ No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
☐ Existing Pond ☐ Above Roadway Culvert					
☐ Below Outfall ☐ In Conveyance System					
☐ In Road ROW ☐ Near Large Parking Lot					
☐ Other: _____					
On-Site					
☐ Hotspot Operation ☐ Individual Rooftop					
☐ Small Parking Lot ☐ Small Impervious Area					
☐ Individual Street ☐ Landscape / Hardscape					
☐ Underground ☐ Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area $\approx$ _____			Drainage Area Land Use:		
Imperviousness $\approx$ _____ %			☐ Residential ☐ Institutional		
Impervious Area $\approx$ _____			☐ SFH (< 1 ac lots) ☐ Industrial		
Notes:			☐ SFH (> 1 ac lots) ☐ Transport-Related		
			☐ Townhouses ☐ Park		
			☐ Multi-Family ☐ Undeveloped		
			☐ Commercial ☐ Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: ☐ Yes ☐ No ☐ Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Head Available and Points Where Measured:					

Retrofit Reconnaissance Investigation

RRI

PROPOSED RETROFIT																												
Purpose of Retrofit: ☐ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control ☐ Demonstration / Education ☐ Repair ☐ Other: _____																												
Retrofit Volume Computations - Target Storage: 	Retrofit Volume Computations - Available Storage: 																											
Proposed Treatment Option: ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention ☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other: _____																												
Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance: 																												
SITE CONSTRAINTS																												
Adjacent Land Use: ☐ Residential ☐ Commercial ☐ Institutional ☐ Industrial ☐ Transport-Related ☐ Park ☐ Undeveloped ☐ Other: _____ Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No If Yes, Describe:	Access: ☐ No Constraints Constrained due to ☐ Slope ☐ Space ☐ Utilities ☐ Tree Impacts ☐ Structures ☐ Property Ownership ☐ Other: _____																											
Conflicts with Existing Utilities: ☐ None ☐ Unknown <table style="width: 100%;"> <thead> <tr> <th style="text-align: left;">Yes</th> <th style="text-align: left;">Possible</th> <th></th> </tr> </thead> <tbody> <tr><td>☐</td><td>☐</td><td>Sewer</td></tr> <tr><td>☐</td><td>☐</td><td>Water</td></tr> <tr><td>☐</td><td>☐</td><td>Gas</td></tr> <tr><td>☐</td><td>☐</td><td>Cable</td></tr> <tr><td>☐</td><td>☐</td><td>Electric</td></tr> <tr><td>☐</td><td>☐</td><td>Electric to Streetlights</td></tr> <tr><td>☐</td><td>☐</td><td>Overhead Wires</td></tr> <tr><td>☐</td><td>☐</td><td>Other: _____</td></tr> </tbody> </table>	Yes	Possible		☐	☐	Sewer	☐	☐	Water	☐	☐	Gas	☐	☐	Cable	☐	☐	Electric	☐	☐	Electric to Streetlights	☐	☐	Overhead Wires	☐	☐	Other: _____	Potential Permitting Factors: Dam Safety Permits Necessary ☐ Probable ☐ Not Probable Impacts to Wetlands ☐ Probable ☐ Not Probable Impacts to a Stream ☐ Probable ☐ Not Probable Floodplain Fill ☐ Probable ☐ Not Probable Impacts to Forests ☐ Probable ☐ Not Probable Impacts to Specimen Trees ☐ Probable ☐ Not Probable How many? _____ Approx. DBH _____ Other factors: _____ _____ _____
Yes	Possible																											
☐	☐	Sewer																										
☐	☐	Water																										
☐	☐	Gas																										
☐	☐	Cable																										
☐	☐	Electric																										
☐	☐	Electric to Streetlights																										
☐	☐	Overhead Wires																										
☐	☐	Other: _____																										
Soils: Soil auger test holes: ☐ Yes ☐ No Evidence of poor infiltration (clays, fines): ☐ Yes ☐ No Evidence of shallow bedrock: ☐ Yes ☐ No Evidence of high water table (gleying, saturation): ☐ Yes ☐ No																												

Retrofit Reconnaissance Investigation



SKETCH

A large, empty rectangular box intended for a sketch or drawing.

Retrofit Reconnaissance Investigation

RRI**DESIGN OR DELIVERY NOTES****FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT**

- | | |
|---|--|
| ☐ Confirm property ownership | ☐ Obtain existing stormwater practice as-builts |
| ☐ Confirm drainage area | ☐ Obtain site as-builts |
| ☐ Confirm drainage area impervious cover | ☐ Obtain detailed topography |
| ☐ Confirm volume computations | ☐ Obtain utility mapping |
| ☐ Complete concept sketch | ☐ Confirm storm drain invert elevations |
| ☐ Other: _____ | ☐ Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:	☐ YES	☐ NO	☐ MAYBE
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):	☐ YES	☐ NO	☐ MAYBE
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):	☐ YES	☐ NO	☐ MAYBE
If YES, TYPE(S): _____			

Appendix B. Completed Field Forms

8:16 AM

WATERSHED: <u>Lower Linganore</u>		SUBWATERSHED: <u>Hazelnut Run</u>		UNIQUE SITE ID: <u>A</u>	
DATE: <u>12/29/17</u>		ASSESSED BY: <u>GPH, JF KC, ADD</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>Mayor Burnham's home</u>					
Address: <u>69 W Main St, New Market MD 21774</u>					
Ownership: <u>Mayor</u> ☐ Public ☒ Private ☐ Unknown					
If Public, Government Jurisdiction: ☐ Local ☐ State ☐ DOT ☐ Other: _____					
Corresponding USSR/USA Field Sheet? ☐ Yes ☐ No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage			On-Site		
☐ Existing Pond ☐ Above Roadway Culvert			☐ Hotspot Operation ☐ Individual Rooftop		
☒ Below Outfall ☐ In Conveyance System			☐ Small Parking Lot ☐ Small Impervious Area		
☐ In Road ROW ☐ Near Large Parking Lot			☐ Individual Street ☐ Landscape / Hardscape		
☐ Other: <u>RSC/other channel</u>			☐ Underground ☐ Other: _____		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			☒ Residential ☐ Institutional		
Impervious Area ≈ _____			☐ Industrial		
Notes:			☒ SFH (< 1 ac lots) ☐ Transport-Related		
			☐ SFH (> 1 ac lots) ☐ Park		
			☐ Townhouses ☐ Undeveloped		
			☐ Multi-Family ☐ Other: _____		
			☐ Commercial		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: ☐ Yes ☒ No ☐ Possible					
If Yes, Describe:					
<u>Outfall, conveyance channel</u>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Street Width: _____					
<u>Slopes toward back from old National</u>					
<u>conveyance channel runs along & crosses property line</u>					
Existing Head Available:			Note where points are measured from: (i.e. street elevation to catch basin invert, manhole rim to catch basin invert, other)		
<u>yes - ~ 4 ft</u>			<u>estimated from inlet to outlet</u>		

PROPOSED RETROFIT

Purpose of Retrofit:

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☒ Other: RSC (SPSC)

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☒ Other: SPSC/KSC

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

Realign channel to go down property line
install SPSC

Available Width: 50ft
 Available Length: 190ft
 Available Area: _____
 Ponding Depth: _____
 Soil Depth: _____

SITE CONSTRAINTS

Adjacent Land Use:

- ☒ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☒ No

If Yes, Describe: _____

Access:

- ☐ No Constraints
 Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☒ Tree Impacts
☐ Structures ☐ Property Ownership

☐ Other: _____

Conflicts with Existing Utilities:

	Yes	Possible/ Modifiable	No	Unknown
Sewer:	☐	☐	☐	☐
Water:	☐	☐	☐	☐
Gas:	☐	☐	☐	☐
Electric to				
Streetlights:	☐	☐	☐	☐
Other:	☒	☐	☐	☐

overhead power lines

Potential Permitting Factors:

- Dam Safety Permits Necessary ☐ Probable ☐ Not Probable
 Impacts to Wetlands ☐ Probable ☐ Not Probable
 Impacts to a Stream ☐ Probable ☐ Not Probable
 Floodplain Fill ☐ Probable ☐ Not Probable
 Impacts to Forests ☐ Probable ☐ Not Probable
 Impacts to Specimen Trees ☐ Probable ☐ Not Probable

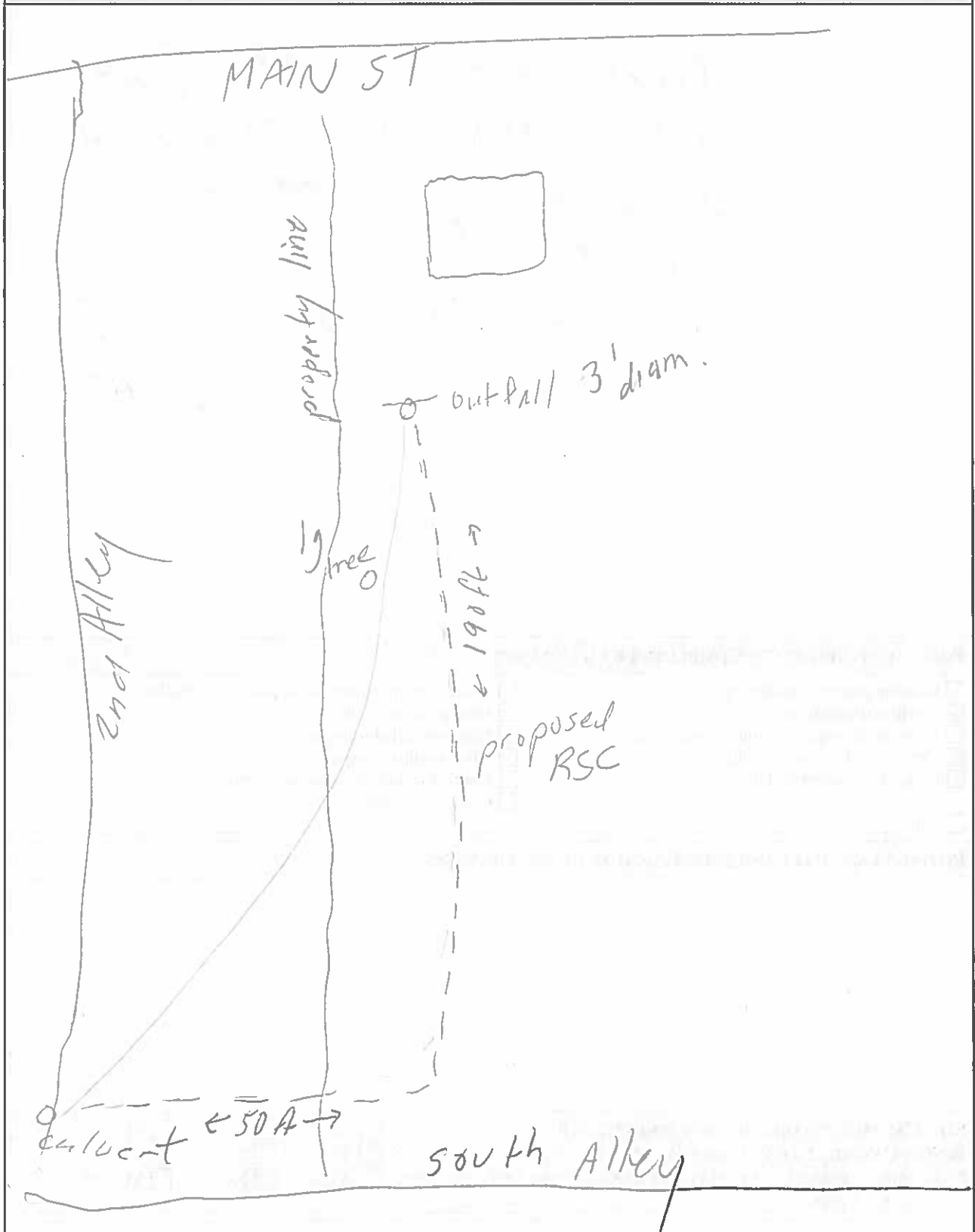
How many? _____
 Approx. DBH _____

Other factors: _____

Soils:

- Soil auger test holes: ☐ Yes ☐ No
 Evidence of poor infiltration (clays, fines): ☐ Yes ☐ No
 Evidence of shallow bedrock: ☐ Yes ☐ No
 Evidence of high water table (gleying, saturation): ☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES

Potential impacts to 60" tree (maple?)
 Concerns: Private property (2 owners), no easement
 will drain to fire pond retrofit
 no apparent erosion
 culvert will be fixed with alley paving project

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| ☐ Confirm property ownership | ☐ Obtain existing stormwater practice as-builts |
| ☒ Confirm drainage area | ☐ Obtain site as-builts |
| ☐ Confirm drainage area impervious cover | ☐ Obtain detailed topography |
| ☒ Confirm volume computations | ☐ Obtain utility mapping |
| ☐ Complete concept sketch | ☐ Confirm storm drain invert elevations |
| ☐ Other: _____ | ☐ Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☐ YES☐ NO☐ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

9:30 AM

WATERSHED: <u>Lower Bush Creek</u>		SUBWATERSHED: <u>LBC Monrovia</u>		UNIQUE SITE ID: <u>B</u>	
DATE: <u>12/29/17</u>		ASSESSED BY: <u>GTH, JH</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>Food Lion / Highs parking lot dry pond</u>					
Address: <u>11800 Old Natl Pike, New Market, MD 21774</u>					
Ownership: ☐ Public ☒ Private ☐ Unknown					
If Public, Government Jurisdiction: ☐ Local ☐ State ☐ DOT ☒ Other: <u>commercial</u>					
Corresponding USSR/USA Field Sheet? ☐ Yes ☐ No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
☒ Existing Pond ☐ Above Roadway Culvert					
☐ Below Outfall ☐ In Conveyance System					
☐ In Road ROW ☐ Near Large Parking Lot					
☐ Other: _____					
On-Site					
☐ Hotspot Operation ☐ Individual Rooftop					
☐ Small Parking Lot ☐ Small Impervious Area					
☐ Individual Street ☐ Landscape / Hardscape					
☐ Underground ☐ Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			☐ Residential ☐ Institutional		
Impervious Area ≈ _____			☐ Industrial		
Notes:			☐ SFH (< 1 ac lots) ☐ Transport-Related		
			☐ SFH (> 1 ac lots) ☐ Park		
			☐ Townhouses ☐ Undeveloped		
			☐ Multi-Family ☐ Other: _____		
			☒ Commercial		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: ☒ Yes ☐ No ☐ Possible					
If Yes, Describe:					
<u>dry pond w/ 1 weir wall</u>					
<u>3 inlets</u>					
<u>1 outlet</u>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Street Width: _____					
<u>Food Lion & Highs parking lot drain to existing dry pond</u>					
<u>lots of trash along edges of dry pond adjacent to parking</u>					
Existing Head Available:			Note where points are measured from: (i.e. street elevation to catch basin invert, manhole rim to catch basin invert, other)		
<u>~2 ft</u>			from pond bottom to stream elevation		

PROPOSED RETROFIT**Purpose of Retrofit:**

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:**Retrofit Volume Computations - Available Storage:****Proposed Treatment Option:**

- ☒ Extended Detention ☒ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

excavate pond bottom to create wet pond
construct stand pipe for extended detention

Available Width: _____
 Available Length: _____
 Available Area: _____
 Ponding Depth: _____
 Soil Depth: _____

SITE CONSTRAINTS**Adjacent Land Use:**

- ☐ Residential ☒ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☒ No

If Yes, Describe: _____

Access:

- ☐ No Constraints
 Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☒ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

	Yes	Possible/ Modifiable	No	Unknown
Sewer:	☐	☐	☒	☐
Water:	☐	☐	☒	☐
Gas:	☐	☐	☒	☐
Electric to				
Streetlights:	☐	☐	☒	☐
Other:	☐	☐	☒	☐

Potential Permitting Factors:

- Dam Safety Permits Necessary ☐ Probable ☒ Not Probable
 Impacts to Wetlands ☐ Probable ☒ Not Probable
 Impacts to a Stream ☐ Probable ☒ Not Probable
 Floodplain Fill ☐ Probable ☒ Not Probable
 Impacts to Forests ☐ Probable ☒ Not Probable
 Impacts to Specimen Trees ☐ Probable ☒ Not Probable

How many? _____

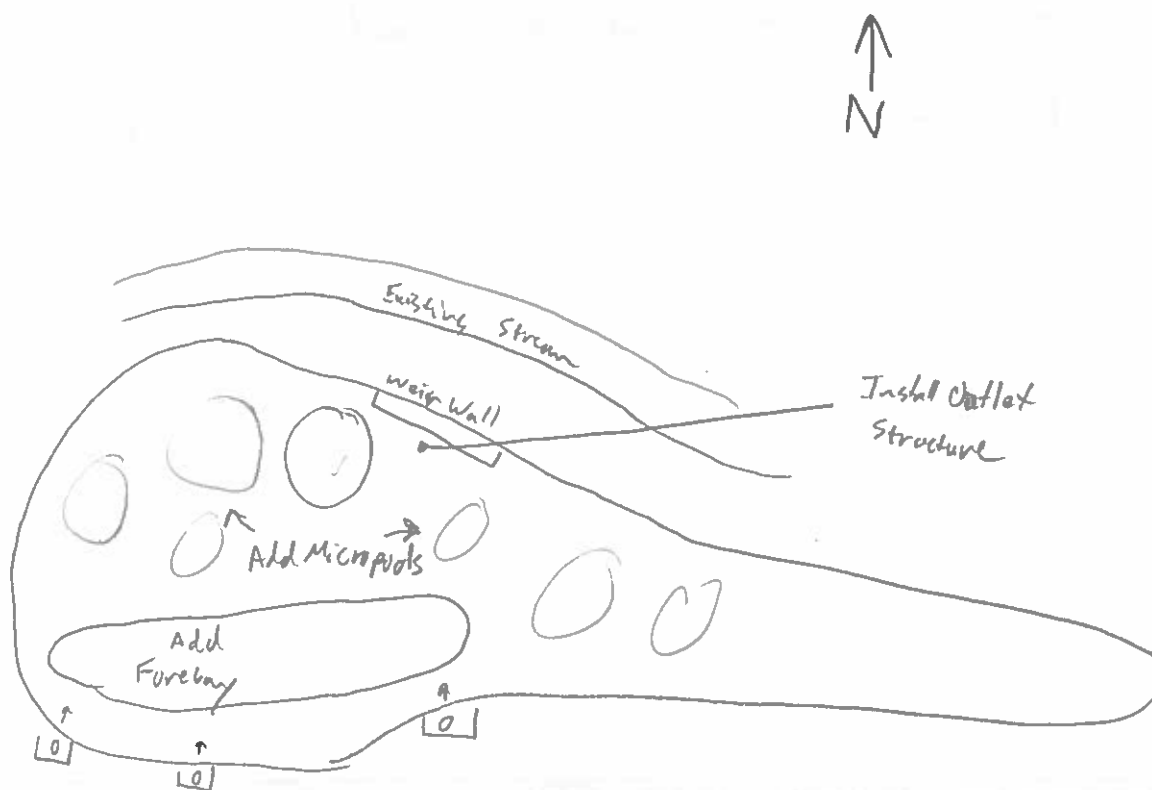
Approx. DBH _____

Other factors: _____

Soils:

- Soil auger test holes: ☐ Yes ☐ No
 Evidence of poor infiltration (clays, fines): ☐ Yes ☐ No
 Evidence of shallow bedrock: ☐ Yes ☐ No
 Evidence of high water table (gleying, saturation): ☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES

- Avoid impact to existing embankment.
- Private property, but out of the way. Wet pond is feasible.

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|---|
| ☐ Confirm property ownership | ☒ Obtain existing stormwater practice as-builts |
| ☐ Confirm drainage area | ☐ Obtain site as-builts |
| ☐ Confirm drainage area impervious cover | ☐ Obtain detailed topography |
| ☒ Confirm volume computations | ☐ Obtain utility mapping |
| ☐ Complete concept sketch | ☐ Confirm storm drain invert elevations |
| | ☐ Confirm soil types |
| ☐ Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS**SITE CANDIDATE FOR FURTHER INVESTIGATION:**☐ YES☐ NO☐ MAYBE**IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):**☐ YES☐ NO☐ MAYBE**IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):**☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

WATERSHED: <u>Lower Linganore creek</u>		SUBWATERSHED: <u>Hazelnut Run</u>		UNIQUE SITE ID: <u>C</u>	
DATE: <u>12/29/17</u>		ASSESSED BY: <u>GPH, JF</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>No field map!</u>					
Address: <u>511 Isaac Ruffel St, New Market, MD 21774</u>					
Ownership: ☐ Public ☐ Private ☐ Unknown					
If Public, Government Jurisdiction: ☐ Local ☐ State ☐ DOT ☒ Other: <u>HOA?</u>					
Corresponding USSR/USA Field Sheet? ☐ Yes ☐ No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
☒ Existing Pond ☐ Above Roadway Culvert					
☐ Below Outfall ☐ In Conveyance System					
☐ In Road ROW ☐ Near Large Parking Lot					
☐ Other: _____					
On-Site					
☐ Hotspot Operation ☐ Individual Rooftop					
☐ Small Parking Lot ☐ Small Impervious Area					
☐ Individual Street ☐ Landscape / Hardscape					
☐ Underground ☐ Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			☒ Residential		
Impervious Area ≈ _____			☐ Institutional		
Notes:			☐ Industrial		
			☒ SFH (< 1 ac lots)		
			☐ SFH (> 1 ac lots)		
			☐ Townhouses		
			☐ Multi-Family		
			☐ Commercial		
			☐ Transport-Related		
			☐ Park		
			☐ Undeveloped		
			☐ Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: ☒ Yes ☐ No ☐ Possible					
If Yes, Describe: <u>Dry pond w/ 1 inlet and 1 standpipe</u>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance: Existing Street Width: _____ <u>1 inlet pipe w/ standing water pool @ opening</u> <u>mound of sediment in front of inlet</u>					
Existing Head Available: <u>N/A</u>			Note where points are measured from: (i.e. street elevation to catch basin invert, manhole rim to catch basin invert, other)		

PROPOSED RETROFIT**Purpose of Retrofit:**

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:**Retrofit Volume Computations - Available Storage:****Proposed Treatment Option:**

- ☒ Extended Detention ☒ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

excavate pond bottom to create wet pond

Available Width: _____
 Available Length: _____
 Available Area: _____
 Ponding Depth: _____
 Soil Depth: _____

SITE CONSTRAINTS**Adjacent Land Use:**

- ☒ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☒ Yes ☐ No

If Yes, Describe:

resident opinion

Access:

- ☒ No Constraints
 Constrained due to
☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

	Yes	Possible/ Modifiable	No	Unknown
Sewer:	☐	☐	☒	☐
Water:	☐	☐	☒	☐
Gas:	☐	☐	☒	☐
Electric to Streetlights:	☐	☐	☒	☐
Other:	☐	☐	☒	☐

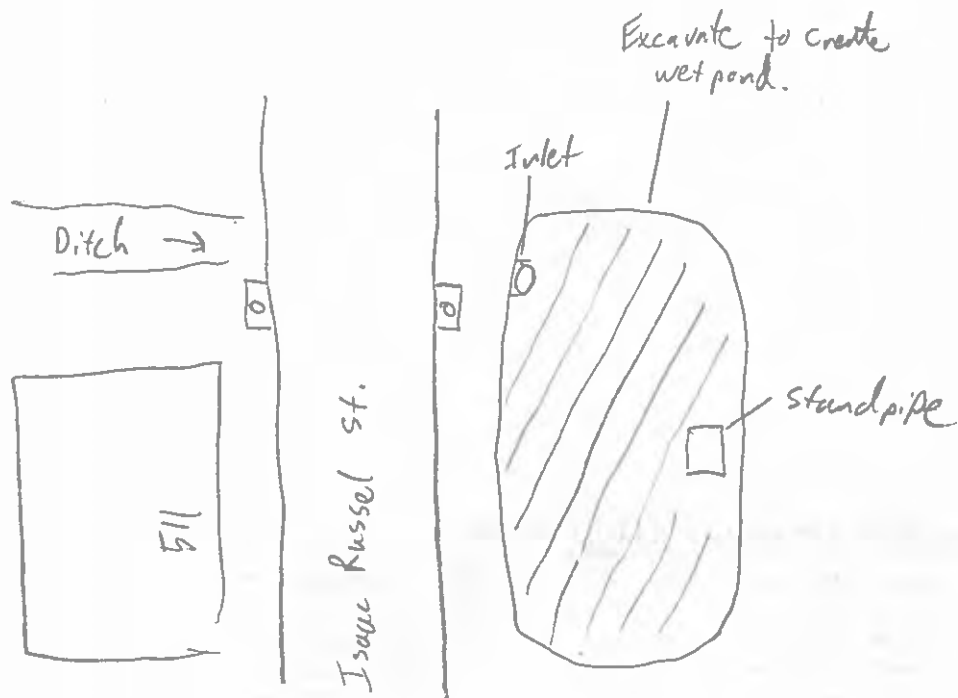
Potential Permitting Factors:

- Dam Safety Permits Necessary ☐ Probable ☒ Not Probable
 Impacts to Wetlands ☐ Probable ☒ Not Probable
 Impacts to a Stream ☐ Probable ☒ Not Probable
 Floodplain Fill ☐ Probable ☒ Not Probable
 Impacts to Forests ☐ Probable ☒ Not Probable
 Impacts to Specimen Trees ☐ Probable ☒ Not Probable
 How many? _____
 Approx. DBH _____

Other factors:**Soils:**

- Soil auger test holes: ☐ Yes ☐ No
 Evidence of poor infiltration (clays, fines): ☐ Yes ☐ No
 Evidence of shallow bedrock: ☐ Yes ☐ No
 Evidence of high water table (gleying, saturation): ☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES

- Dry pond appears to be extended detention,

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|---|
| ☐ Confirm property ownership | ☒ Obtain existing stormwater practice as-builts |
| ☒ Confirm drainage area | ☐ Obtain site as-builts |
| ☐ Confirm drainage area impervious cover | ☐ Obtain detailed topography |
| ☐ Confirm volume computations | ☐ Obtain utility mapping |
| ☐ Complete concept sketch | ☐ Confirm storm drain invert elevations |
| ☐ Other: _____ | ☐ Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☐ YES☐ NO☐ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

WATERSHED: <u>Lower Bush Creek</u>		SUBWATERSHED: <u>LBC-monrovia</u>		UNIQUE SITE ID: <u>D</u>	
DATE: <u>12/29/17</u>		ASSESSED BY: <u>GPH, JF</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>Park</u>					
Address: <u>7 Federal St, New Market, MD 21774</u>					
Ownership: ☐ Public ☐ Private ☐ Unknown					
If Public, Government Jurisdiction: ☐ Local ☐ State ☐ DOT ☒ Other: <u>Unknown?</u>					
Corresponding USSR/USA Field Sheet? ☐ Yes ☐ No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
☐ Existing Pond ☐ Above Roadway Culvert					
☐ Below Outfall ☐ In Conveyance System					
☐ In Road ROW ☐ Near Large Parking Lot					
☐ Other: _____					
On-Site					
☐ Hotspot Operation ☐ Individual Rooftop					
☒ Small Parking Lot ☐ Small Impervious Area					
☐ Individual Street ☐ Landscape / Hardscape					
☐ Underground ☐ Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			☒ Residential ☒ Institutional		
Impervious Area ≈ _____			☐ Industrial		
Notes:			☒ SFH (< 1 ac lots) ☐ Transport-Related		
			☐ SFH (> 1 ac lots) ☒ Park		
			☐ Townhouses ☐ Undeveloped		
			☐ Multi-Family ☐ Other: _____		
			☐ Commercial		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: ☐ Yes ☒ No ☐ Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Street Width: _____					
<u>Drainage channel along unpaved driveway</u>					
<u>Collects from parking lot, park, and nearby residences</u>					
<u>ends to a headwall blocked w/ debris</u>					
Existing Head Available:			Note where points are measured from: (i.e. street elevation to catch basin invert, manhole rim to catch basin invert, other)		
<u>NA</u>					

PROPOSED RETROFIT**Purpose of Retrofit:**

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:**Retrofit Volume Computations - Available Storage:****Proposed Treatment Option:**

- ☐ Extended Detention ☐ Wet Pond ☒ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☒ Swale ☐ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

- Wet swall in drainage ditch (A)
- Gravel wetland adjacent to ditch inlet (B)

Available Width: _____
 Available Length: _____
 Available Area: _____
 Ponding Depth: _____
 Soil Depth: _____

SITE CONSTRAINTS**Adjacent Land Use:**

- ☒ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☒ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☒ No

If Yes, Describe: _____

Access:

- ☐ No Constraints
 Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☒ Property Ownership

☒ Other: grassy driveway

Conflicts with Existing Utilities:

	Yes	Possible/ Modifiable	No	Unknown
Sewer:	☐	☐	☒	☐
Water:	☐	☐	☒	☐
Gas:	☐	☐	☒	☐
Electric to				
Streetlights:	☐	☐	☒	☐
Other:	☐	☐	☒	☐

Potential Permitting Factors:

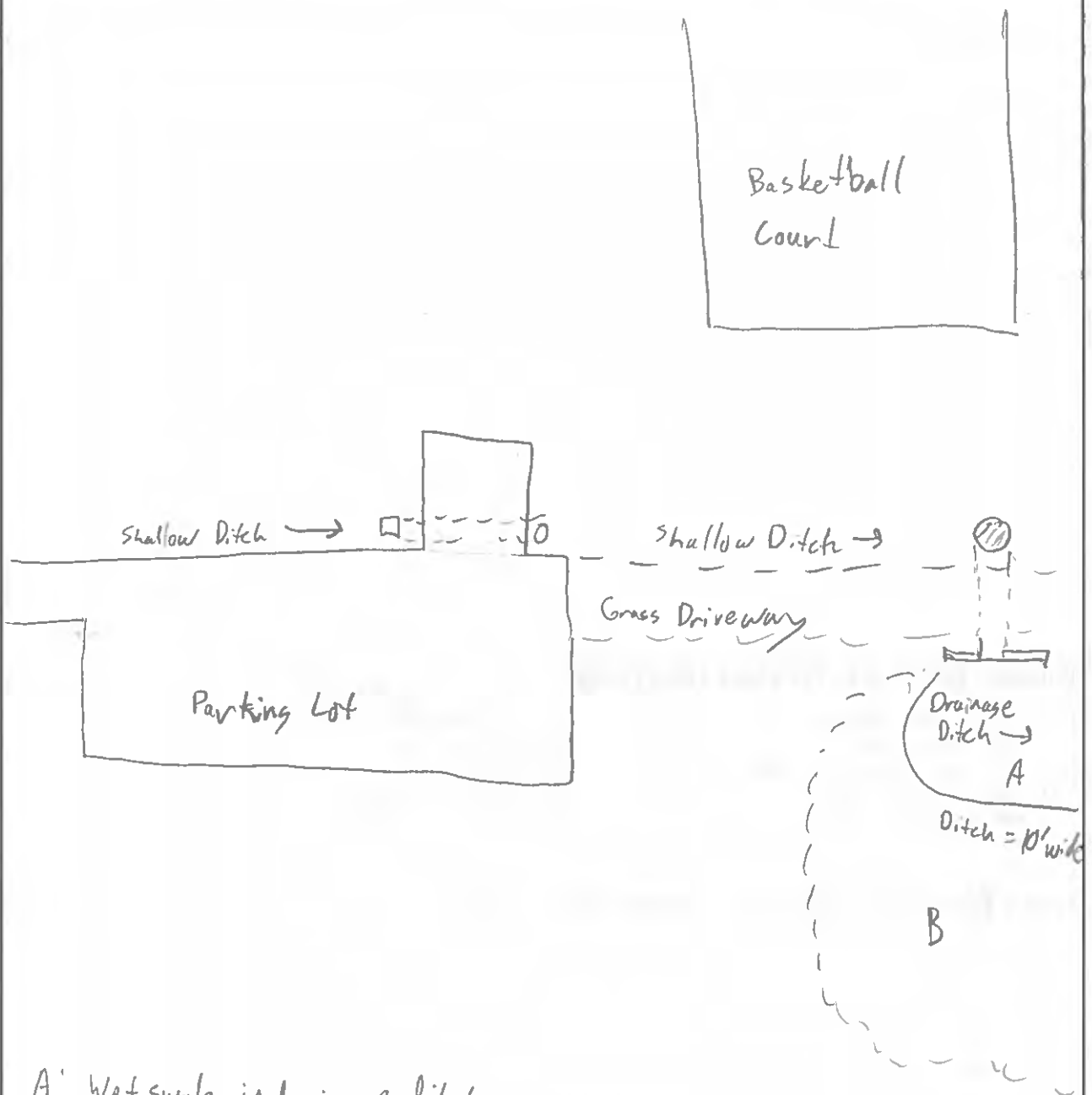
- Dam Safety Permits Necessary ☐ Probable ☒ Not Probable
 Impacts to Wetlands ☐ Probable ☒ Not Probable
 Impacts to a Stream ☐ Probable ☒ Not Probable
 Floodplain Fill ☐ Probable ☒ Not Probable
 Impacts to Forests ☐ Probable ☒ Not Probable
 Impacts to Specimen Trees ☐ Probable ☒ Not Probable
 How many? _____
 Approx. DBH _____

Other factors: _____

Soils:

- Soil auger test holes: ☐ Yes ☐ No
 Evidence of poor infiltration (clays, fines): ☐ Yes ☐ No
 Evidence of shallow bedrock: ☐ Yes ☐ No
 Evidence of high water table (gleying, saturation): ☐ Yes ☐ No

SKETCH



A: Wet swale in drainage ditch.

B: Plenty of space for gravel wetland.

DESIGN OR DELIVERY NOTES

- Ownership of ditch and grass driveway is uncertain
- Plenty of available space for gravel wetland,

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| ☐ Confirm property ownership | ☐ Obtain existing stormwater practice as-builts |
| ☐ Confirm drainage area | ☐ Obtain site as-builts |
| ☐ Confirm drainage area impervious cover | ☐ Obtain detailed topography |
| ☐ Confirm volume computations | ☐ Obtain utility mapping |
| ☐ Complete concept sketch | ☐ Confirm storm drain invert elevations |
| ☐ Other: _____ | ☐ Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS**SITE CANDIDATE FOR FURTHER INVESTIGATION:**☐ YES☐ NO☐ MAYBE**IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):**☐ YES☐ NO☐ MAYBE**IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):**☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

WATERSHED: <u>Lower Bush Creek</u>		SUBWATERSHED: <u>LBC-moonville</u>		UNIQUE SITE ID: <u>E</u>	
DATE: <u>12/29/17</u>		ASSESSED BY: <u>GPH, JF</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>Post Office</u>					
Address: <u>168 W Main St New Market MD 21774</u>					
Ownership: ☐ Public ☐ Private ☐ Unknown					
If Public, Government Jurisdiction: ☐ Local ☐ State ☐ DOT ☒ Other: <u>Federal</u>					
Corresponding USSR/USA Field Sheet? ☐ Yes ☐ No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage			On-Site		
☐ Existing Pond			☐ Hotspot Operation		
☐ Above Roadway Culvert			☐ Individual Rooftop		
☐ Below Outfall			☐ Small Parking Lot		
☐ In Conveyance System			☐ Small Impervious Area		
☐ In Road ROW			☐ Individual Street		
☐ Near Large Parking Lot			☐ Landscape / Hardscape		
☒ Other: <u>Existing depression</u>			☐ Underground		
			☐ Other: _____		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			☒ Institutional		
Impervious Area ≈ _____			☐ Residential		
Notes:			☐ SFH (< 1 ac lots)		
			☐ SFH (> 1 ac lots)		
			☐ Townhouses		
			☐ Multi-Family		
			☐ Commercial		
			☐ Institutional		
			☐ Industrial		
			☐ Transport-Related		
			☐ Park		
			☐ Undeveloped		
			☐ Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: ☐ Yes ☒ No ☐ Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Street Width: _____					
<u>small depression / baby ditch collecting from post office parking lot</u>					
Existing Head Available:			Note where points are measured from: (i.e. street elevation to catch basin invert, manhole rim to catch basin invert, other)		
<u>4.5'</u>			<u>grate to bottom of inlet</u>		

PROPOSED RETROFIT**Purpose of Retrofit:**

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:**Retrofit Volume Computations - Available Storage:****Proposed Treatment Option:**

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

• construct small bioretention in bottom of depression

Available Width:	10'
Available Length:	60'
Available Area:	
Ponding Depth:	
Soil Depth:	

SITE CONSTRAINTS**Adjacent Land Use:**

- ☐ Residential ☐ Commercial ☒ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☒ No

If Yes, Describe:

Access:

- ☐ No Constraints
 Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☒ Tree Impacts
☐ Structures ☒ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

	Yes	Possible/ Modifiable	No	Unknown
Sewer:	☐	☐	☒	☐
Water:	☐	☐	☒	☐
Gas:	☐	☐	☒	☐
Electric to	☐	☐	☒	☐
Streetlights:	☐	☐	☒	☐
Other:	☐	☐	☒	☐

Potential Permitting Factors:

- Dam Safety Permits Necessary ☐ Probable ☒ Not Probable
 Impacts to Wetlands ☐ Probable ☒ Not Probable
 Impacts to a Stream ☐ Probable ☒ Not Probable
 Floodplain Fill ☐ Probable ☒ Not Probable
 Impacts to Forests ☐ Probable ☒ Not Probable
 Impacts to Specimen Trees ☐ Probable ☒ Not Probable

How many? _____

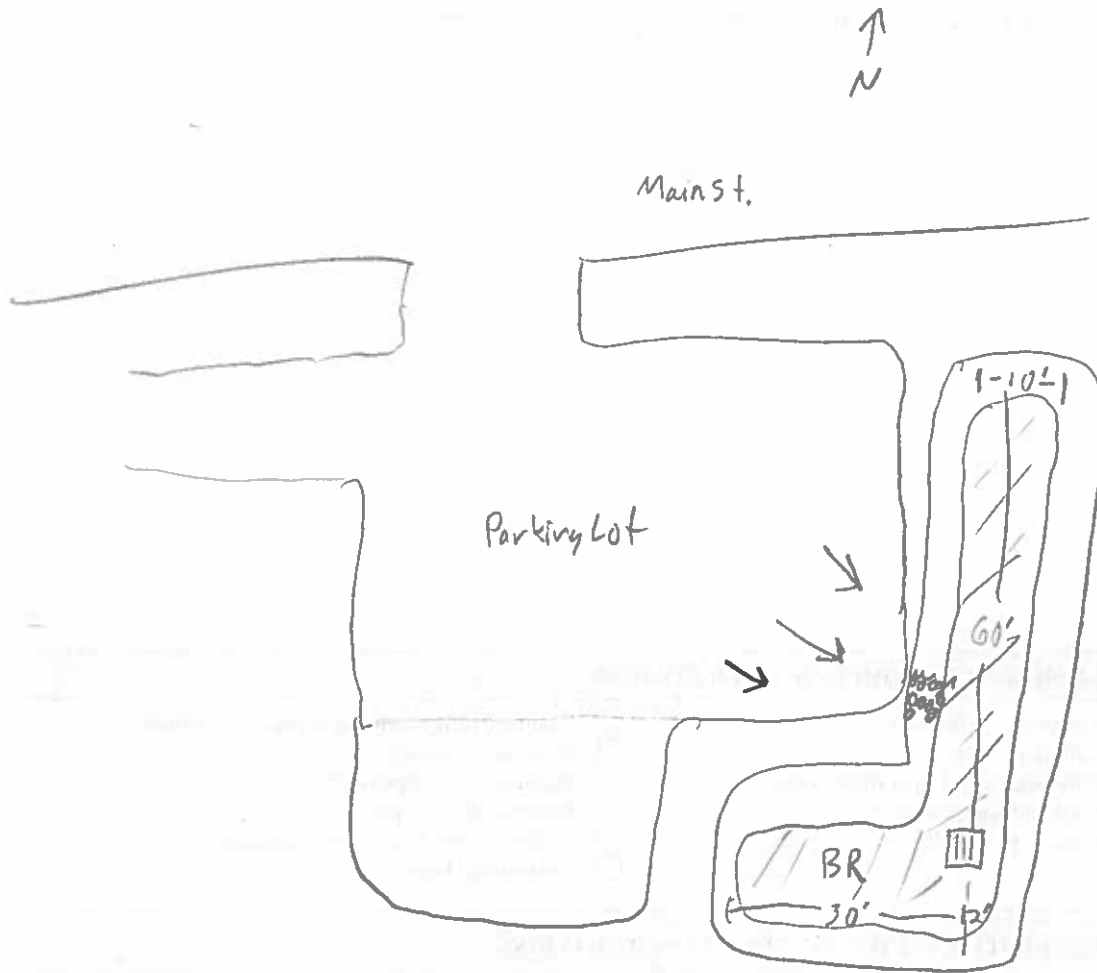
Approx. DBH _____

Other factors: _____

Soils:

- Soil auger test holes: ☐ Yes ☐ No
 Evidence of poor infiltration (clays, fines): ☐ Yes ☐ No
 Evidence of shallow bedrock: ☐ Yes ☐ No
 Evidence of high water table (gleying, saturation): ☐ Yes ☐ No

SKETCH



Raise inlet structure to install BR.

DESIGN OR DELIVERY NOTES

- Not clear where inlet directs water.
- Some tree impacts
- Drainage area includes entire public parking area.

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| ☐ Confirm property ownership | ☐ Obtain existing stormwater practice as-builts |
| ☒ Confirm drainage area | ☐ Obtain site as-builts |
| ☐ Confirm drainage area impervious cover | ☐ Obtain detailed topography |
| ☐ Confirm volume computations | ☐ Obtain utility mapping |
| ☐ Complete concept sketch | ☐ Confirm storm drain invert elevations |
| | ☐ Confirm soil types |
| ☐ Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS**SITE CANDIDATE FOR FURTHER INVESTIGATION:**☐ YES☐ NO☐ MAYBE**IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):**☐ YES☐ NO☐ MAYBE**IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):**☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

WATERSHED: <u>Lower Bush Creek</u>		SUBWATERSHED: <u>LBC-Monrovia</u>		UNIQUE SITE ID: <u>F</u>	
DATE: <u>12/29/17</u>		ASSESSED BY: <u>GPH, JF</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>Not on aerial map</u>					
Address: <u>South ave 3 4th ave</u>					
Ownership: ☐ Public ☐ Private ☒ Unknown					
If Public, Government Jurisdiction: ☐ Local ☐ State ☐ DOT ☐ Other: <u>unknown?</u>					
Corresponding USSR/USA Field Sheet? ☐ Yes ☐ No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
☐ Existing Pond ☐ Above Roadway Culvert					
☐ Below Outfall ☐ In Conveyance System					
☐ In Road ROW ☐ Near Large Parking Lot					
☐ Other: _____					
On-Site					
☐ Hotspot Operation ☐ Individual Rooftop					
☐ Small Parking Lot ☐ Small Impervious Area					
☐ Individual Street ☐ Landscape / Hardscape					
☐ Underground ☒ Other: <u>grass channel</u>					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			☒ Residential ☐ Institutional		
Impervious Area ≈ _____			☐ Industrial		
Notes:			☒ SFH (< 1 ac lots) ☐ Transport-Related		
			☐ SFH (> 1 ac lots) ☐ Park		
			☐ Townhouses ☐ Undeveloped		
			☐ Multi-Family ☐ Other: _____		
			☐ Commercial		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: ☐ Yes ☒ No ☐ Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Street Width: <u>grass channel draining from outlet @ headwall to 1-70 drainage</u>					
Existing Head Available: <u>N/A</u>			Note where points are measured from: (i.e. street elevation to catch basin invert, manhole rim to catch basin invert, other)		

PROPOSED RETROFIT**Purpose of Retrofit:**

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:**Retrofit Volume Computations - Available Storage:****Proposed Treatment Option:**

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☒ Other: SPSC (small)

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

- excavate channel
- replace w/ sandy media
- add stone for SPSC-style bioretention cells

Available Width: _____

Available Length: _____

Available Area: _____

Ponding Depth: _____

Soil Depth: _____

SITE CONSTRAINTS**Adjacent Land Use:**

- ☒ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☒ No

If Yes, Describe: _____

Access:☐ No Constraints

Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☒ Property Ownership

☐ Other: _____**Conflicts with Existing Utilities:**

	Yes	Possible/ Modifiable	No	Unknown
Sewer:	☐	☐	☒	☐
Water:	☐	☐	☒	☐
Gas:	☐	☐	☒	☐
Electric to Streetlights:	☐	☐	☒	☐
Other:	☐	☐	☒	☐

Potential Permitting Factors:

Dam Safety Permits Necessary

Impacts to Wetlands

Impacts to a Stream

Floodplain Fill

Impacts to Forests

Impacts to Specimen Trees

How many? _____

Approx. DBH _____

Other factors: _____

- ☐ Probable ☒ Not Probable
☐ Probable ☒ Not Probable
☐ Probable ☒ Not Probable
☐ Probable ☒ Not Probable
☐ Probable ☒ Not Probable

Soils:

Soil auger test holes:

☐ Yes ☐ No

Evidence of poor infiltration (clays, fines):

☐ Yes ☐ No

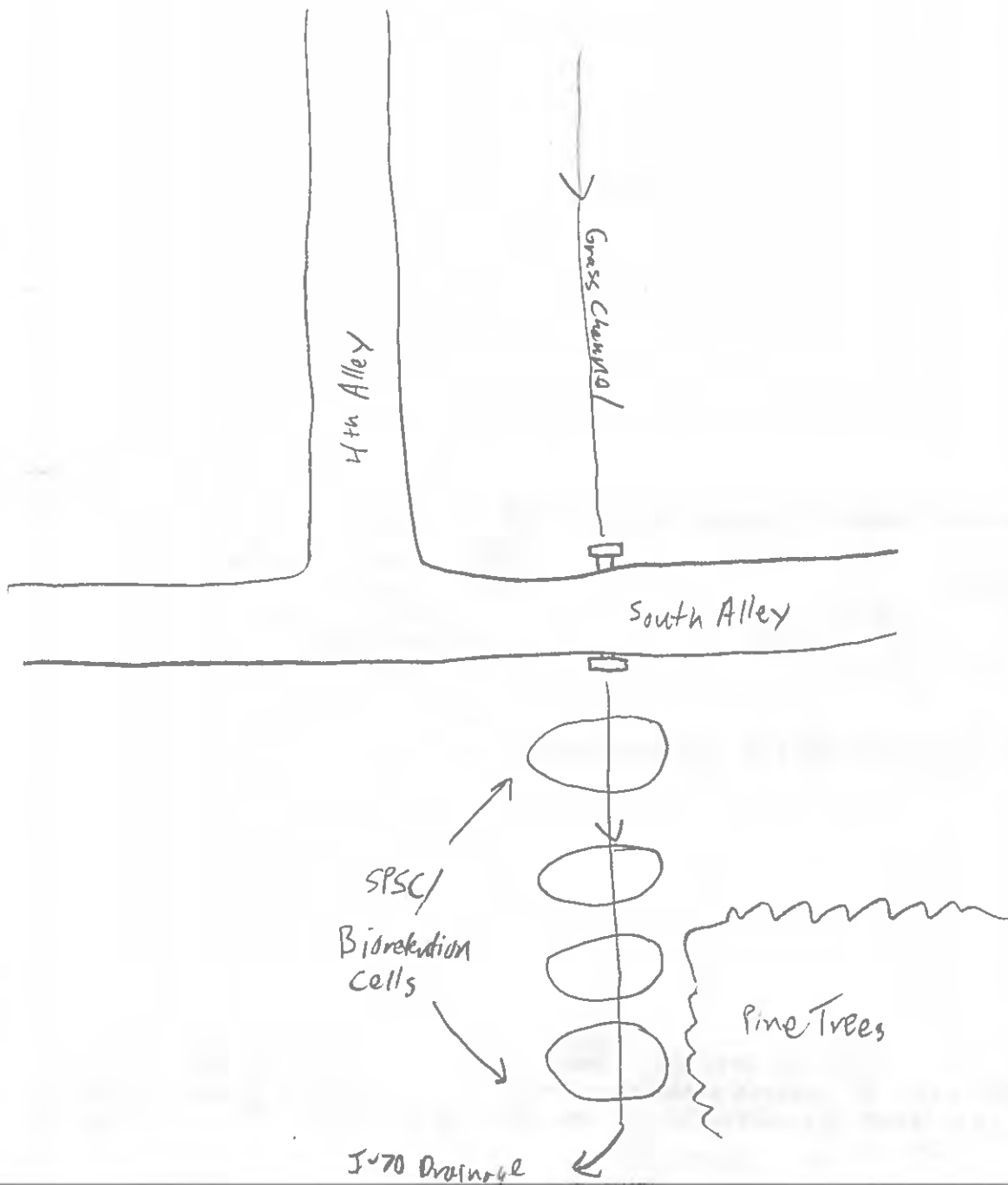
Evidence of shallow bedrock:

☐ Yes ☐ No

Evidence of high water table (gleying, saturation):

☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES

- May be on town hall property.
- Green space north of South Alley is also possible.

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| ☒ Confirm property ownership | ☐ Obtain existing stormwater practice as-builts |
| ☒ Confirm drainage area | ☐ Obtain site as-builts |
| ☐ Confirm drainage area impervious cover | ☐ Obtain detailed topography |
| ☒ Confirm volume computations | ☐ Obtain utility mapping |
| ☐ Complete concept sketch | ☐ Confirm storm drain invert elevations |
| ☐ Other: _____ | ☐ Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:	☐ YES	☐ NO	☐ MAYBE
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):	☐ YES	☐ NO	☐ MAYBE
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):	☐ YES	☐ NO	☐ MAYBE
IF YES, TYPE(S): _____			

WATERSHED: <i>Lower Linganore creek</i>		SUBWATERSHED: <i>Hazelnut Run</i>		UNIQUE SITE ID: <i>G</i>	
DATE: <i>12/29/17</i>		ASSESSED BY: <i>KE ADP</i>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION <i>Royal Oak near Worchesker Dr.</i>					
Name: _____					
Address: _____					
Ownership: ☐ Public ☒ Private ☐ Unknown					
If Public, Government Jurisdiction: ☐ Local ☐ State ☐ DOT ☐ Other: <i>HOA</i>					
Corresponding USSR/USA Field Sheet? ☐ Yes ☒ No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
☒ Existing Pond ☐ Above Roadway Culvert					
☐ Below Outfall ☐ In Conveyance System					
☐ In Road ROW ☐ Near Large Parking Lot					
☐ Other: _____					
On-Site					
☐ Hotspot Operation ☐ Individual Rooftop					
☐ Small Parking Lot ☐ Small Impervious Area					
☐ Individual Street ☐ Landscape / Hardscape					
☐ Underground ☐ Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			☒ Residential ☐ Institutional		
Impervious Area ≈ _____			☐ Industrial		
Notes:			☒ SFH (< 1 ac lots) ☐ Transport-Related		
			☐ SFH (> 1 ac lots) ☐ Park		
			☒ Townhouses ☐ Undeveloped		
			☐ Multi-Family ☐ Other: _____		
			☐ Commercial		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: ☒ Yes ☐ No ☐ Possible					
If Yes, Describe: <i>Dry detention pond</i>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Street Width: _____					
<i>pond has lots of wetland vegetation</i>					
<i>existing riser structure</i>					
<i>small stream feeds into BMP - has unstable slope + erosion</i>					
Existing Head Available: <i>trib from the north</i>			Note where points are measured from: (i.e. street elevation to catch basin invert, manhole rim to catch basin invert, other)		

(Water Run use)
4

PROPOSED RETROFIT**Purpose of Retrofit:**

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☒ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:**Retrofit Volume Computations - Available Storage:****Proposed Treatment Option:**

- ☐ Extended Detention ☐ Wet Pond ☒ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☒ Other: stream restoration

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

Available Width: 30' 4" DS
 Available Length: 12' 0" DS
 Available Area: _____
 Ponding Depth: _____
 Soil Depth: _____

SITE CONSTRAINTS**Adjacent Land Use:**

- ☒ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☒ No

If Yes, Describe: _____

Access:

- ☐ No Constraints
 Constrained due to
☒ Slope ☒ Space
☐ Utilities ☒ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

	Yes	Possible/ Modifiable	No	Unknown
Sewer:	☐	☐	☐	☐
Water:	☐	☐	☐	☐
Gas:	☐	☐	☐	☐
Electric to				
Streetlights:	☐	☐	☐	☐
Other:	☐	☒	☐	☐

MDE wells

Potential Permitting Factors:

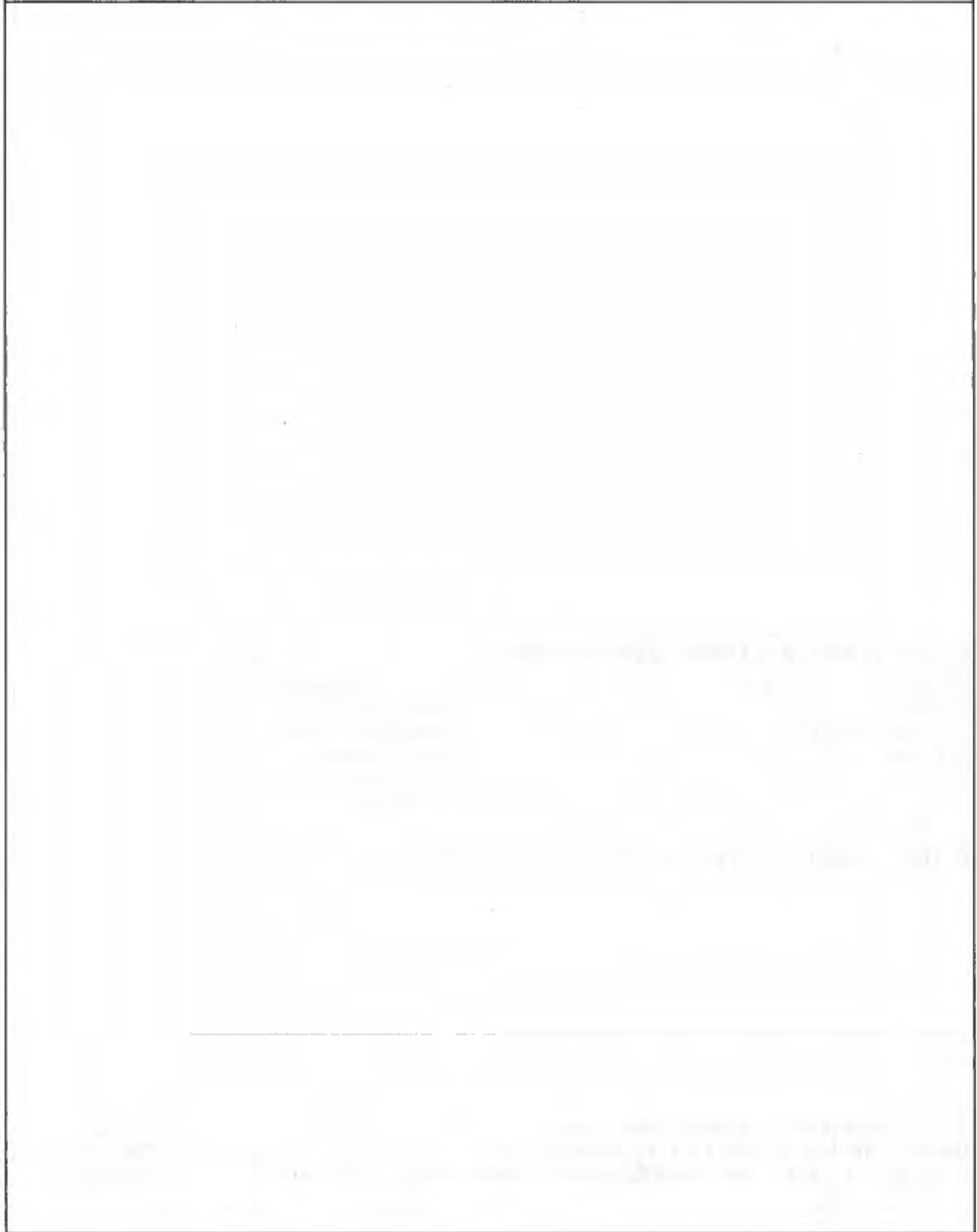
Dam Safety Permits Necessary ☒ Probable ☐ Not Probable
 Impacts to Wetlands ☒ Probable ☐ Not Probable
 Impacts to a Stream ☒ Probable ☐ Not Probable
 Floodplain Fill ☐ Probable ☐ Not Probable
 Impacts to Forests ☒ Probable ☐ Not Probable
 Impacts to Specimen Trees ☐ Probable ☐ Not Probable
 How many? _____
 Approx. DBH _____

Other factors: _____

Soils:

Soil auger test holes: ☐ Yes ☐ No
 Evidence of poor infiltration (clays, fines): ☐ Yes ☐ No
 Evidence of shallow bedrock: ☐ Yes ☐ No
 Evidence of high water table (gleying, saturation): ☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES

Possible permitting nightmare with
conversion of dry pond to wetland (code
378)

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| ☐ Confirm property ownership | ☐ Obtain existing stormwater practice as-builts |
| ☒ Confirm drainage area | ☐ Obtain site as-builts |
| ☐ Confirm drainage area impervious cover | ☐ Obtain detailed topography |
| ☐ Confirm volume computations | ☒ Obtain utility mapping (wells) |
| ☐ Complete concept sketch | ☐ Confirm storm drain invert elevations |
| | ☐ Confirm soil types |
| ☐ Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☐ YES☐ NO☐ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

WATERSHED: <u>Lower Linganore Creek</u>		SUBWATERSHED: <u>Hazelnut Run</u>		UNIQUE SITE ID: <u>H</u>	
DATE: <u>12/29/17</u>		ASSESSED BY: <u>KC/ADD</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION <u>Royal Oak near Talbot</u>					
Name:					
Address: <u>ROYAL OAK DR & TALBOT CT, NEW MARKET MD 21774</u>					
Ownership:		☐ Public ☒ Private ☐ Unknown			
If Public, Government Jurisdiction:		☐ Local ☐ State ☐ DOT ☐ Other: <u>HGA</u>			
Corresponding USSR/USA Field Sheet?		☐ Yes ☒ No		If yes, Unique Site ID: _____	
Proposed Retrofit Location:					
Storage					
☒ Existing Pond		☐ Above Roadway Culvert			
☐ Below Outfall		☐ In Conveyance System			
☐ In Road ROW		☐ Near Large Parking Lot			
☐ Other: _____					
On-Site					
☐ Hotspot Operation		☐ Individual Rooftop			
☐ Small Parking Lot		☐ Small Impervious Area			
☐ Individual Street		☐ Landscape / Hardscape			
☐ Underground		☐ Other: _____			
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ <u>8.97</u>		Drainage Area Land Use:			
Imperviousness ≈ _____ %		☒ Residential			
Impervious Area ≈ _____		☒ SFH (< 1 ac lots)			
		☐ SFH (> 1 ac lots)			
		☒ Townhouses			
		☐ Multi-Family			
		☐ Commercial			
Notes:		☐ Institutional			
		☐ Industrial			
		☐ Transport-Related			
		☐ Park			
		☐ Undeveloped			
		☐ Other: _____			
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice:		☒ Yes ☐ No ☐ Possible			
If Yes, Describe:					
<u>wet pond</u>					
<u>County BMP layer lists as dry pond</u>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Street Width: _____					
<u>existing riser structure is clogged</u>					
<u>so not functioning as a dry pond</u>					
<u>downstream channel is incised with</u>					
<u>mod/severe erosion</u>					
Existing Head Available:		Note where points are measured from: (i.e. street elevation to catch basin invert, manhole rim to catch basin invert, other)			

PROPOSED RETROFIT

Purpose of Retrofit:

- ☐ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☒ Other: Stream restoration / outfall

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☒ Other: downstream str. Rest.

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

Stream resto. downstream of road/unbankment.Available Width: ~40'Available Length: 7100 ft -- ~50 yds.

Available Area: _____

Ponding Depth: _____

Soil Depth: _____

* use if probably

SITE CONSTRAINTS

Adjacent Land Use:

- ☒ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☒ No

If Yes, Describe: _____

Access:

- ☐ No Constraints
 Constrained due to
☒ Slope ☒ Space
☐ Utilities ☒ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

	Yes	Possible/ Modifiable	No	Unknown
Sewer:	☐	☐	☐	☐
Water:	☐	☐	☐	☐
Gas:	☐	☐	☐	☐
Electric to				
Streetlights:	☐	☐	☐	☐
Other:	☐	☐	☐	☐

Potential Permitting Factors:

- Dam Safety Permits Necessary ☐ Probable ☒ Not Probable
 Impacts to Wetlands ☐ Probable ☐ Not Probable
 Impacts to a Stream ☒ Probable ☐ Not Probable
 Floodplain Fill ☐ Probable ☐ Not Probable
 Impacts to Forests ☐ Probable ☐ Not Probable
 Impacts to Specimen Trees ☐ Probable ☐ Not Probable

How many? _____

Approx. DBH _____

Other factors: _____

Soils:

- Soil auger test holes: ☐ Yes ☐ No
 Evidence of poor infiltration (clays, fines): ☐ Yes ☐ No
 Evidence of shallow bedrock: ☐ Yes ☐ No
 Evidence of high water table (gleying, saturation): ☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES

Permitting would be very tricky for anything dealing with pond. Current "dry" pond is wet - outlet structure completely clogged.

Downstream of road / embankment, stream / channel is badly eroded / incised. Decent candidate for outfall stabilization, and possible stream restoration.

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|--|--|
| ☐ Confirm property ownership | ☐ Obtain existing stormwater practice as-builts |
| ☒ Confirm drainage area | ☐ Obtain site as-builts |
| ☒ Confirm drainage area impervious cover | ☐ Obtain detailed topography |
| ☐ Confirm volume computations | ☐ Obtain utility mapping |
| ☐ Complete concept sketch | ☐ Confirm storm drain invert elevations |
| | ☐ Confirm soil types |
| ☐ Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

Access, tricky
and staging

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☒ YES☐ NO☐ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

WATERSHED: <u>Lower Bush Creek</u>		SUBWATERSHED: <u>WBC-MONROVIA</u>		UNIQUE SITE ID: <u>I</u>	
DATE: <u>12/29/17</u>		ASSESSED BY: <u>KC/ADD</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
GPS ID:		LMK ID:		LONG:	
SITE DESCRIPTION <u>12 West Main St (Vintage / Top parking lot)</u>					
Name: _____					
Address: _____					
Ownership: ☐ Public ☒ Private ☐ Unknown If Public, Government Jurisdiction: ☐ Local ☐ State ☐ DOT ☐ Other: _____					
Corresponding USSR/USA Field Sheet? ☐ Yes ☐ No If yes, Unique Site ID: _____					
Proposed Retrofit Location: Storage ☐ Existing Pond ☐ Above Roadway Culvert ☐ Below Outfall ☐ In Conveyance System ☐ In Road ROW ☐ Near Large Parking Lot ☐ Other: _____ On-Site ☐ Hotspot Operation ☐ Individual Rooftop ☒ Small Parking Lot ☐ Small Impervious Area ☐ Individual Street ☐ Landscape / Hardscape ☐ Underground ☐ Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____ Imperviousness ≈ _____ % Impervious Area ≈ _____			Drainage Area Land Use: ☐ Residential ☐ Institutional ☐ SFH (< 1 ac lots) ☐ Industrial ☐ SFH (> 1 ac lots) ☐ Transport-Related ☐ Townhouses ☐ Park ☐ Multi-Family ☐ Undeveloped ☒ Commercial ☐ Other: _____		
Notes:					
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: ☐ Yes ☒ No ☐ Possible If Yes, Describe: _____					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance: Existing Street Width: _____ <u>parking lot runoff drains south</u> <u>to grassy area / south alley</u> <u>Two roof drains from building are directed to parking lot</u> <u>but most of this runoff likely goes to Sth Alley</u>					
Existing Head Available: <u>54'</u>			Note where points are measured from: (i.e. street elevation to catch basin invert, manhole rim to catch basin invert, other) <u>edge of parking lot to corner of</u> <u>ditch at intersection of alleys</u>		

PROPOSED RETROFIT

Purpose of Retrofit:

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention (Rain Garden)
☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

install Rain garden in grassy area on south side of parking lot to capture + treat parking lot runoff

Available Width:	_____
Available Length:	_____
Available Area:	_____
Ponding Depth:	_____
Soil Depth:	_____

SITE CONSTRAINTS

Adjacent Land Use:

- ☐ Residential ☒ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☒ No

If Yes, Describe: _____

Access:

- ☐ No Constraints
 Constrained due to
☐ Slope ☒ Space
☒ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

	Yes	Possible/ Modifiable	No	Unknown
Sewer:	☐	☒	☐	☐
Water:	☐	☒	☐	☐
Gas:	☐	☐	☐	☐
Electric to				
Streetlights:	☐	☒	☐	☐
Other:	☐	☐	☐	☐

Potential Permitting Factors:

- Dam Safety Permits Necessary ☐ Probable ☒ Not Probable
 Impacts to Wetlands ☐ Probable ☒ Not Probable
 Impacts to a Stream ☐ Probable ☒ Not Probable
 Floodplain Fill ☐ Probable ☒ Not Probable
 Impacts to Forests ☐ Probable ☒ Not Probable
 Impacts to Specimen Trees ☐ Probable ☒ Not Probable
 How many? _____
 Approx. DBH _____

Other factors: _____

Soils:

- Soil auger test holes: ☐ Yes ☐ No
 Evidence of poor infiltration (clays, fines): ☐ Yes ☐ No
 Evidence of shallow bedrock: ☐ Yes ☐ No
 Evidence of high water table (gleying, saturation): ☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES

potential project identified at
 Eighth Alley Cul de sac could treat runoff
 from this site as well as from the alleys

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|--|--|
| ☒ Confirm property ownership | ☐ Obtain existing stormwater practice as-builts |
| ☒ Confirm drainage area | ☐ Obtain site as-builts |
| ☒ Confirm drainage area impervious cover | ☐ Obtain detailed topography |
| ☒ Confirm volume computations | ☐ Obtain utility mapping |
| ☐ Complete concept sketch | ☐ Confirm storm drain invert elevations |
| ☐ Other: _____ | ☐ Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

Need to determine interest from landowner

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☐ YES☐ NO☐ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

WATERSHED: <u>Lower Bush Creek</u>		SUBWATERSHED: <u>LC-Monrovia</u>		UNIQUE SITE ID: <u>J</u>	
DATE: <u>12/29/17</u>		ASSESSED BY: <u>EC/ADD</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION <u>8th Alley Cul de sac</u>					
Name: _____					
Address: <u>Eighth Aly & South Aly New Market MD 21774</u>					
Ownership:		☐ Public ☒ Private ☐ Unknown		<u>owned by New Market Grange?</u>	
If Public, Government Jurisdiction:		☐ Local ☐ State ☐ DOT ☐ Other:			
Corresponding USSR/USA Field Sheet?		☐ Yes ☒ No		If yes, Unique Site ID: _____	
Proposed Retrofit Location:					
Storage					
☐ Existing Pond		☒ Above Roadway Culvert		☐ Individual Rooftop	
☐ Below Outfall		☒ In Conveyance System		☐ Small Impervious Area	
☐ In Road ROW		☐ Near Large Parking Lot		☐ Landscape / Hardscape	
☐ Other: _____				☐ Other: _____	
On-Site					
☐ Hotspot Operation		☐ Small Parking Lot		☐ Individual Street	
☐ Underground					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____		Drainage Area Land Use:			
Imperviousness ≈ _____ %		☒ Residential			
Impervious Area ≈ _____		☒ SFH (< 1 ac lots)			
Notes:		☐ SFH (> 1 ac lots)			
		☐ Townhouses			
		☐ Multi-Family			
		☐ Commercial			
		☐ Institutional			
		☐ Industrial			
		☒ Transport-Related			
		☐ Park			
		☐ Undeveloped			
		☐ Other: _____			
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice:		☐ Yes ☒ No ☐ Possible			
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Street Width: _____ <u>Runoff from 8th Alley and South Alleys is conveyed in roadside channels & flows around the cul de sac into a culvert that goes underneath I-70 & presumably into Bush Creek</u>					
Existing Head Available:		Note where points are measured from: (i.e. street elevation to catch basin invert, manhole rim to catch basin invert, other)			

PROPOSED RETROFIT

Purpose of Retrofit:

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention *stepped bioswale*
☐ Filtering Practice ☒ Infiltration ☐ Swale ☐ Other: *or possible BR or IT*

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

Available Width: _____

Available Length: _____

Available Area: _____

Ponding Depth: _____

Soil Depth: _____

possible stepped bioswale in E side of conveyance channel before driveway to reforestation area.
After driveway, either rain garden, possibly BR, and may widen / excavate for more area - careful of tree roots. May outfall to roadside ditch on 70.

SITE CONSTRAINTS

Adjacent Land Use:

- ☒ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☒ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☒ No

If Yes, Describe: _____

Access:

☐ No Constraints

Constrained due to

- ☐ Slope ☒ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☒ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

	Yes	Possible/ Modifiable	No	Unknown
Sewer:	☐	☐	☐	☐
Water:	☐	☐	☐	☐
Gas:	☐	☐	☐	☐
Electric to				
Streetlights:	☐	☒	☐	☐
Other:	☐	☐	☐	☐

overhead power / telecom

Potential Permitting Factors:

Dam Safety Permits Necessary ☐ Probable ☒ Not ProbableImpacts to Wetlands ☐ Probable ☒ Not ProbableImpacts to a Stream ☐ Probable ☒ Not ProbableFloodplain Fill ☐ Probable ☒ Not ProbableImpacts to Forests ☐ Probable ☒ Not ProbableImpacts to Specimen Trees ☐ Probable ☒ Not Probable

How many? _____

Approx. DBH _____

Other factors: _____

Soils:

Soil auger test holes:

☐ Yes ☐ No

Evidence of poor infiltration (clays, fines):

☐ Yes ☐ No

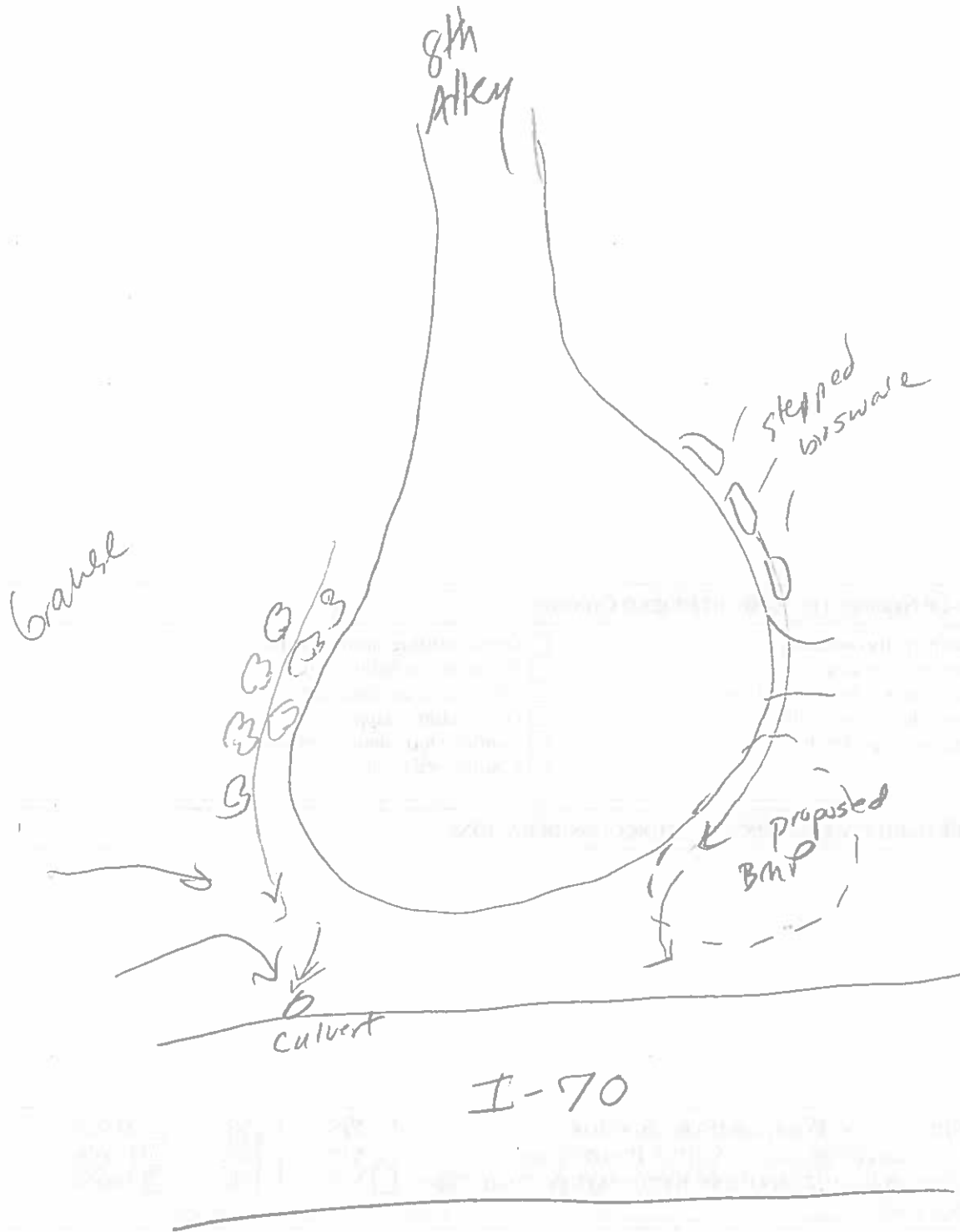
Evidence of shallow bedrock:

☐ Yes ☐ No

Evidence of high water table (gleying, saturation):

☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES**FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT**

- | | |
|---|--|
| ☐ Confirm property ownership | ☐ Obtain existing stormwater practice as-builts |
| ☐ Confirm drainage area | ☐ Obtain site as-builts |
| ☐ Confirm drainage area impervious cover | ☐ Obtain detailed topography |
| ☐ Confirm volume computations | ☐ Obtain utility mapping |
| ☐ Complete concept sketch | ☐ Confirm storm drain invert elevations |
| ☐ Other: _____ | ☐ Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS**SITE CANDIDATE FOR FURTHER INVESTIGATION:**☐ YES☐ NO☐ MAYBE**IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):**☐ YES☐ NO☐ MAYBE**IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):**☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

WATERSHED: <u>Lower Bush Creek</u>		SUBWATERSHED: <u>LBC - Monland</u>		UNIQUE SITE ID: <u>K</u>	
DATE: <u>12/29/17</u>		ASSESSED BY: <u>KC/APD</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>New Market Grange</u>					
Address: <u>14 South Ave New Market MD 21774</u>					
Ownership: ☐ Public ☒ Private ☐ Unknown <u>confirm</u>					
If Public, Government Jurisdiction: ☐ Local ☐ State ☐ DOT ☐ Other: _____					
Corresponding USSR/USA Field Sheet? ☐ Yes ☒ No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
☐ Existing Pond ☐ Above Roadway Culvert					
☐ Below Outfall ☐ In Conveyance System					
☐ In Road ROW ☒ Near Large Parking Lot					
☒ Other: <u>low edge of property</u> <u>+ near parking lot</u>					
On-Site					
☐ Hotspot Operation ☐ Individual Rooftop					
☐ Small Parking Lot ☐ Small Impervious Area					
☐ Individual Street ☐ Landscape / Hardscape					
☐ Underground ☐ Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area $\approx$ <u>780</u> <u>~1 ac</u>			Drainage Area Land		
Imperviousness $\approx$ <u>~33</u> %			Use: ☒ Institutional		
Impervious Area $\approx$ <u>~0.33 ac</u>			☐ Residential ☐ Industrial		
Notes: <u>half or more building, plus majority of</u> <u>side parking lot, drains to E/SE.</u>			☐ SFH (< 1 ac lots)		
			☐ SFH (> 1 ac lots)		
			☐ Townhouses		
			☐ Multi-Family		
			☐ Commercial		
			☐ Transport-Related		
			☐ Park		
			☐ Undeveloped		
			☐ Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: ☐ Yes ☒ No ☐ Possible					
If Yes, Describe: <u>Current downspout disconnect, but nothing more</u>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Street Width: <u>W side drains NNW, E side drains ESE</u>					
Existing Head Available: <u>76'</u>			Note where points are measured from: (i.e. street elevation to catch basin invert, manhole rim to catch basin invert, other)		
			<u>Edge of parking lot to edge of parcel</u>		

PROPOSED RETROFIT

Purpose of Retrofit:

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☒ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention *possible trench: bioretention to infiltration trench*
☐ Filtering Practice ☒ Infiltration ☐ Swale ☐ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

Could do bioretention adjacent to parking lot on S or E side, underdrain and further surface drainage to lower E edge infiltration trench.

Available Width: *~20 check*
 Available Length: *~100 check*
 Available Area: _____
 Ponding Depth: _____
 Soil Depth: _____

BR
smaller BR
~ 10 x 60 ?
check aerial

SITE CONSTRAINTS

Adjacent Land Use:

- ☒ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☒ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe:

Access:

- ☐ No Constraints
 Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership

☐ Other: _____

Conflicts with Existing Utilities:

	Yes	Possible/ Modifiable	No	Unknown
Sewer:	☐	☐	☐	☐
Water:	☐	☒	☐	☐
Gas:	☐	☐	☐	☐
Electric to				
Streetlights:	☐	☐	☐	☐
Other:	☐	☐	☐	☐

water well, believed

Potential Permitting Factors:

- | | | |
|------------------------------|-----------------------------------|---------------------------------------|
| Dam Safety Permits Necessary | ☐ Probable | ☐ Not Probable |
| Impacts to Wetlands | ☐ Probable | ☐ Not Probable |
| Impacts to a Stream | ☐ Probable | ☐ Not Probable |
| Floodplain Fill | ☐ Probable | ☐ Not Probable |
| Impacts to Forests | ☐ Probable | ☐ Not Probable |
| Impacts to Specimen Trees | ☐ Probable | ☐ Not Probable |

How many? _____

Approx. DBH _____

Other factors: _____

Soils:

- Soil auger test holes: ☐ Yes ☐ No
 Evidence of poor infiltration (clays, fines): ☐ Yes ☐ No
 Evidence of shallow bedrock: ☐ Yes ☐ No
 Evidence of high water table (gleying, saturation): ☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES

^{french potential}
Infiltration location may impact tree roots, or need to move uphill a bit.

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|--|--|
| ☐ Confirm property ownership | ☐ Obtain existing stormwater practice as-builts |
| ☒ Confirm drainage area | ☐ Obtain site as-builts |
| ☒ Confirm drainage area impervious cover | ☒ Obtain detailed topography |
| ☐ Confirm volume computations | ☒ Obtain utility mapping |
| ☒ Complete concept sketch | ☐ Confirm storm drain invert elevations |
| | ☐ Confirm soil types |
| ☐ Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS**SITE CANDIDATE FOR FURTHER INVESTIGATION:**☒ YES☐ NO☐ MAYBE**IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):**☐ YES☐ NO☐ MAYBE**IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):**☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

Paul Hacke NMFO president

Retrofit Reconnaissance Investigation

RRI

WATERSHED: <u>Lower Bush Creek</u>		SUBWATERSHED: <u>4BC-Monrovia</u>		UNIQUE SITE ID: <u>L</u>	
DATE: <u>12/29/17</u>		ASSESSED BY: <u>KC/ADD</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>New Market Fire Station</u>					
Address: <u>716 W Main St New Market MD 21774</u>					
Ownership: ☒ Public ☐ Private ☐ Unknown					
If Public, Government Jurisdiction: ☐ Local ☐ State ☐ DOT ☐ Other: _____					
Corresponding USSR/USA Field Sheet? ☐ Yes ☒ No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
☒ Existing Pond ☐ Above Roadway Culvert					
☐ Below Outfall ☐ In Conveyance System					
☐ In Road ROW ☐ Near Large Parking Lot					
☐ Other: _____					
On-Site					
☐ Hotspot Operation ☐ Individual Rooftop					
☐ Small Parking Lot ☐ Small Impervious Area					
☐ Individual Street ☐ Landscape / Hardscape					
☐ Underground ☐ Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			☒ Institutional		
Impervious Area ≈ _____			☐ Residential		
Notes:			☐ SFH (< 1 ac lots)		
			☐ SFH (> 1 ac lots)		
			☐ Townhouses		
			☐ Multi-Family		
			☐ Commercial		
			☐ Industrial		
			☐ Transport-Related		
			☐ Park		
			☐ Undeveloped		
			☐ Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: ☐ Yes ☐ No ☒ Possible					
If Yes, Describe: <u>retaining wall/weir already present with under drain</u>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Street Width: _____					
<u>Fire station parking lot drains south - parking area is part paved & part gravel</u>					
<u>towards half-completed BMP</u>					
<u>Piles of gravel & crushed concrete block are present</u>					
Existing Head Available:			Note where points are measured from: (i.e. street elevation to catch basin invert, manhole rim to catch basin invert, other)		
<u>maybe 2.5-3.0' from weir crest to outlet pipe</u>					

PROPOSED RETROFIT**Purpose of Retrofit:**

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:**Retrofit Volume Computations - Available Storage:****Proposed Treatment Option:**

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

use existing weir + underdrain, build bioretention to treat partly lot runoff

Available Width: _____

Available Length: _____

Available Area: _____

Ponding Depth: _____

Soil Depth: _____

SITE CONSTRAINTS**Adjacent Land Use:**

- ☐ Residential ☐ Commercial ☒ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☒ No

If Yes, Describe: _____

Access:☐ No Constraints

Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership

☒ Other: *need to determine what***Conflicts with Existing Utilities:**

	Yes	Possible/ Modifiable	No	Unknown
Sewer:	☐	☐	☐	☐
Water:	☐	☐	☐	☐
Gas:	☐	☐	☐	☐
Electric to				
Streetlights:	☐	☐	☐	☐
Other:	☐	☐	☐	☐

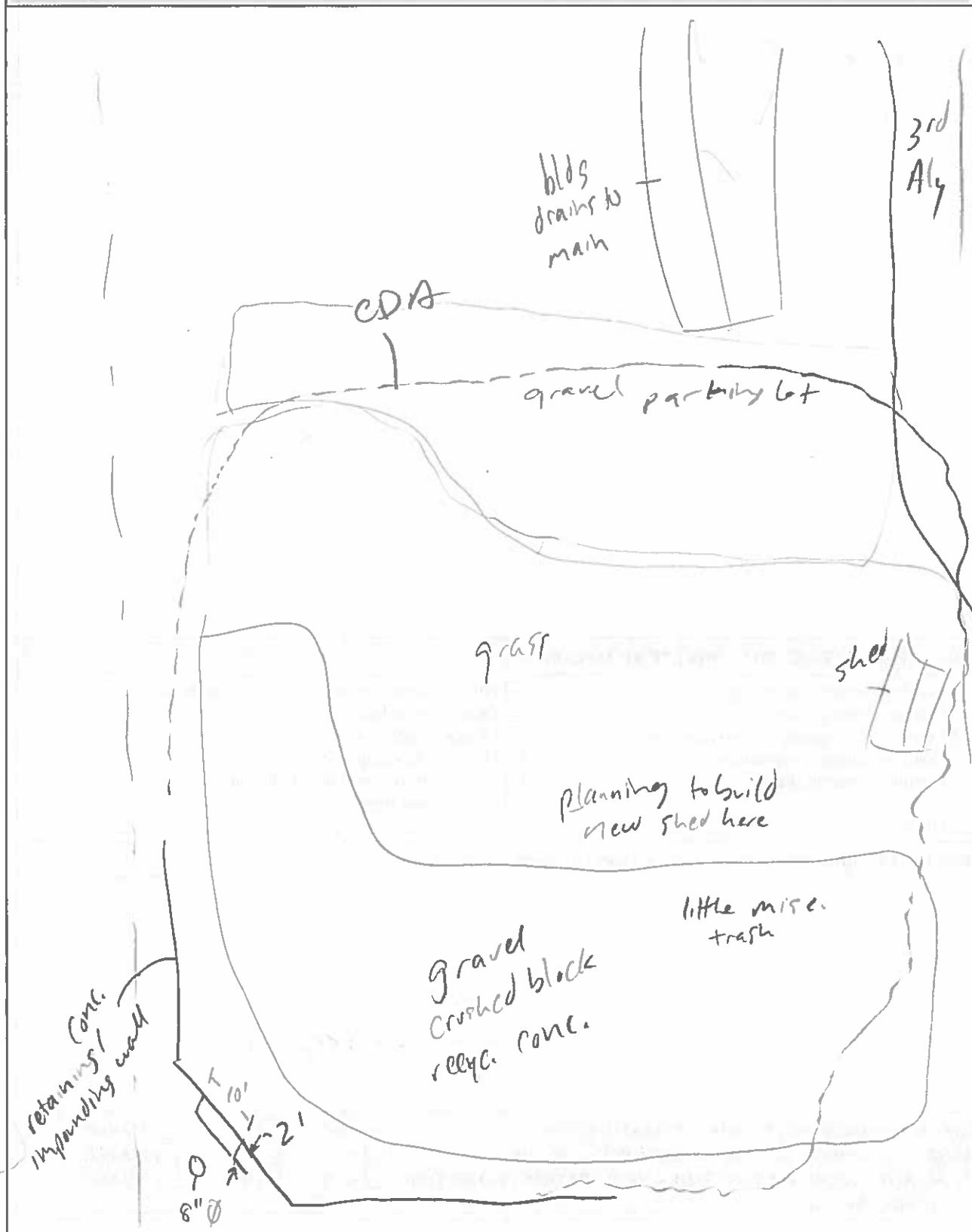
Potential Permitting Factors:

- Dam Safety Permits Necessary ☐ Probable ☒ Not Probable
 Impacts to Wetlands ☐ Probable ☒ Not Probable
 Impacts to a Stream ☐ Probable ☒ Not Probable
 Floodplain Fill ☐ Probable ☒ Not Probable
 Impacts to Forests ☐ Probable ☒ Not Probable
 Impacts to Specimen Trees ☐ Probable ☒ Not Probable
 How many? _____
 Approx. DBH: _____

Other factors: *possible waste disposal issue***Soils:**

- Soil auger test holes: ☐ Yes ☐ No
 Evidence of poor infiltration (clays, fines): ☐ Yes ☐ No
 Evidence of shallow bedrock: ☐ Yes ☐ No
 Evidence of high water table (gleying, saturation): ☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES

Need to remove rubble first
 Much of it may be able to be used in project

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|--|--|
| ☐ Confirm property ownership | ☐ Obtain existing stormwater practice as-builts |
| ☒ Confirm drainage area | ☐ Obtain site as-builts |
| ☒ Confirm drainage area impervious cover | ☐ Obtain detailed topography |
| ☐ Confirm volume computations | ☐ Obtain utility mapping |
| ☐ Complete concept sketch | ☐ Confirm storm drain invert elevations |
| | ☐ Confirm soil types |
| ☐ Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

potentially a LOT of heavy haul/spoil, possible hazmat considerations.

The wall may not have been designed to handle much hydrostatic pressure, or prevent low seepage.

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☒ YES☐ NO☐ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

WATERSHED: <u>Lower Lingandore Creek</u>		SUBWATERSHED: <u>Hazelnut Run</u>		UNIQUE SITE ID: <u>M</u>	
DATE: <u>12/29/17</u>		ASSESSED BY: <u>CC/ADD</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>New Market Elementary School</u>					
Address: <u>93 W Main St New Market MD 21774</u>					
Ownership: ☒ Public ☐ Private ☐ Unknown					
If Public, Government Jurisdiction: ☐ Local ☐ State ☐ DOT ☐ Other: _____					
Corresponding USSR/USA Field Sheet? ☐ Yes ☒ No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
☐ Existing Pond ☐ Above Roadway Culvert					
☐ Below Outfall ☐ In Conveyance System					
☐ In Road ROW ☐ Near Large Parking Lot					
☐ Other: _____					
On-Site					
☐ Hotspot Operation ☐ Individual Rooftop					
☒ Small Parking Lot ☐ Small Impervious Area					
☐ Individual Street ☐ Landscape / Hardscape					
☐ Underground ☐ Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			☒ Institutional		
Impervious Area ≈ _____			☐ Residential		
Notes:			☐ SFH (< 1 ac lots)		
			☐ SFH (> 1 ac lots)		
			☐ Townhouses		
			☐ Multi-Family		
			☐ Commercial		
			☐ Industrial		
			☐ Transport-Related		
			☐ Park		
			☐ Undeveloped		
			☐ Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: ☒ Yes ☐ No ☐ Possible					
If Yes, Describe: <u>a Filterra with no tree</u>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Street Width: <u>parking lot runoff drains to inlet but it's unclear where it goes to</u>					
Existing Head Available:			Note where points are measured from: (i.e. street elevation to catch basin invert, manhole rim to catch basin invert, other)		

PROPOSED RETROFIT**Purpose of Retrofit:**

- ☐ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:**Retrofit Volume Computations - Available Storage:****Proposed Treatment Option:**

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

Available Width: _____
 Available Length: _____
 Available Area: _____
 Ponding Depth: _____
 Soil Depth: _____

SITE CONSTRAINTS**Adjacent Land Use:**

- ☐ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe: _____

Access:

- ☐ No Constraints
 Constrained due to
☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

	Yes	Possible/ Modifiable	No	Unknown
Sewer:	☐	☐	☐	☐
Water:	☐	☐	☐	☐
Gas:	☐	☐	☐	☐
Electric to				
Streetlights:	☐	☐	☐	☐
Other:	☐	☐	☐	☐

Potential Permitting Factors:

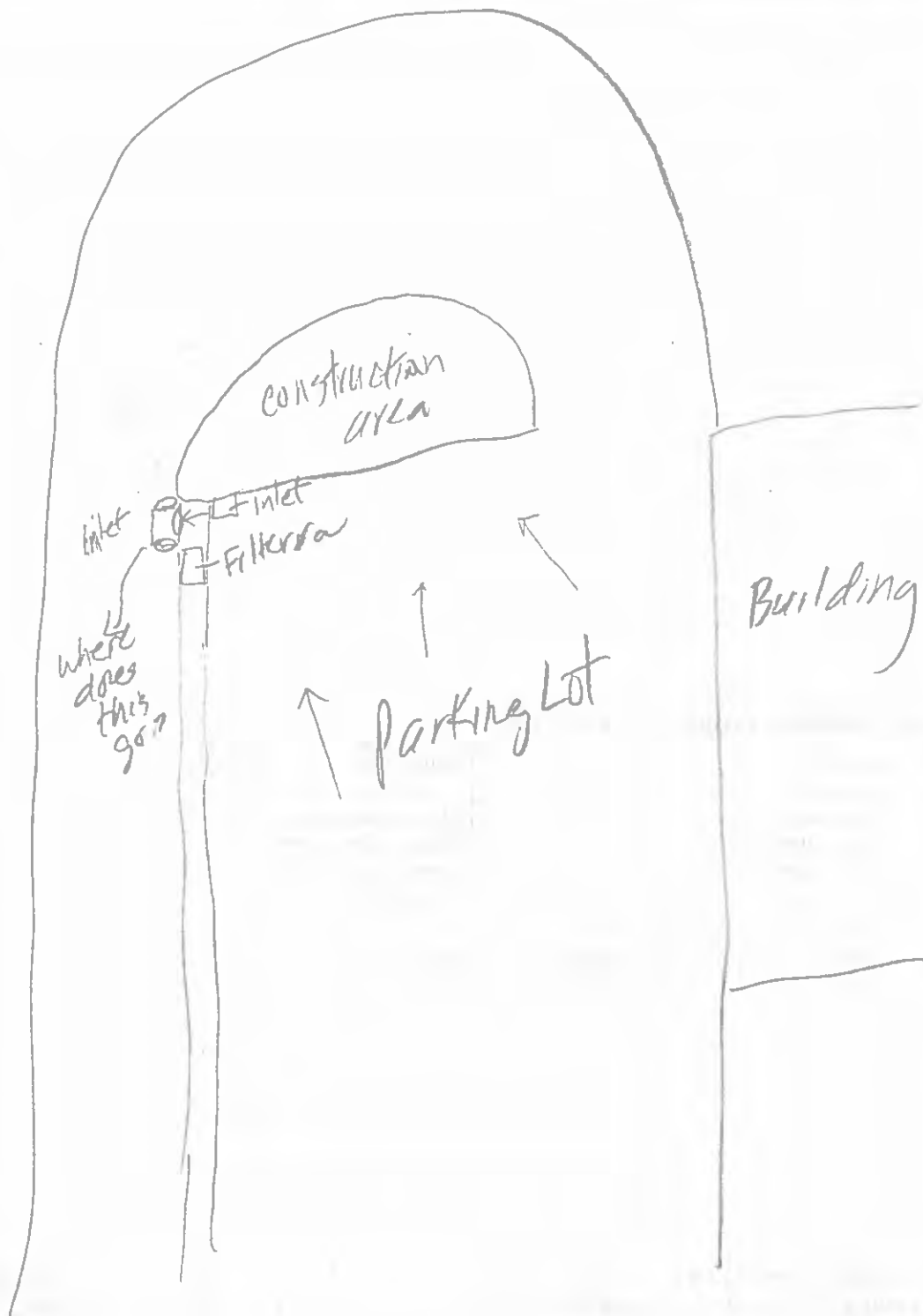
- Dam Safety Permits Necessary ☐ Probable ☐ Not Probable
 Impacts to Wetlands ☐ Probable ☐ Not Probable
 Impacts to a Stream ☐ Probable ☐ Not Probable
 Floodplain Fill ☐ Probable ☐ Not Probable
 Impacts to Forests ☐ Probable ☐ Not Probable
 Impacts to Specimen Trees ☐ Probable ☐ Not Probable
 How many? _____
 Approx. DBH _____

Other factors: _____

Soils:

- Soil auger test holes: ☐ Yes ☐ No
 Evidence of poor infiltration (clays, fines): ☐ Yes ☐ No
 Evidence of shallow bedrock: ☐ Yes ☐ No
 Evidence of high water table (gleying, saturation): ☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES**FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT**

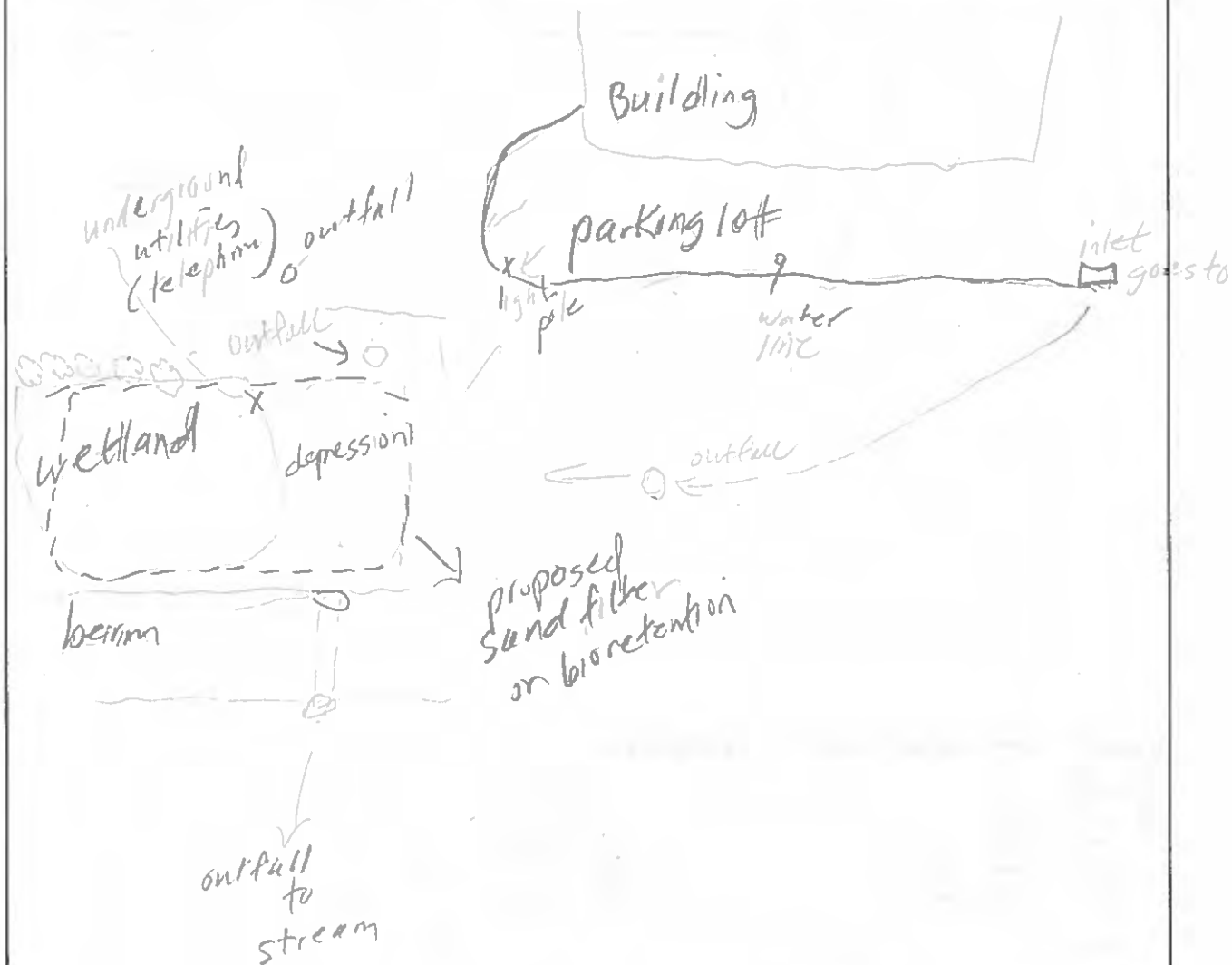
- | | |
|---|--|
| ☐ Confirm property ownership | ☐ Obtain existing stormwater practice as-builts |
| ☐ Confirm drainage area | ☐ Obtain site as-builts |
| ☐ Confirm drainage area impervious cover | ☐ Obtain detailed topography |
| ☐ Confirm volume computations | ☐ Obtain utility mapping |
| ☐ Complete concept sketch | ☐ Confirm storm drain invert elevations |
| ☐ Other: _____ | ☐ Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS**SITE CANDIDATE FOR FURTHER INVESTIGATION:**☐ YES☐ NO☐ MAYBE**IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):**☐ YES☐ NO☐ MAYBE**IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):**☐ YES☐ NO☐ MAYBE

If YES, TYPE(S): _____

WATERSHED: <u>Lower Ligonore creek</u>		SUBWATERSHED: <u>Hazelnut Run</u>		UNIQUE SITE ID: <u>N</u>	
DATE: <u>12/29/17</u>		ASSESSED BY: <u>KL/ADD</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>NEW MARKET Middle School</u>					
Address: <u>125 W Main St NEWMARKET MD 21774</u>					
Ownership: ☒ Public ☐ Private ☐ Unknown					
If Public, Government Jurisdiction: ☐ Local ☐ State ☐ DOT ☐ Other: _____					
Corresponding USSR/USA Field Sheet? ☐ Yes ☒ No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
☐ Existing Pond ☐ Above Roadway Culvert					
☒ Below Outfall ☒ In Conveyance System					
☐ In Road ROW ☐ Near Large Parking Lot					
☐ Other: _____					
On-Site					
☐ Hotspot Operation ☐ Individual Rooftop					
☐ Small Parking Lot ☐ Small Impervious Area					
☐ Individual Street ☐ Landscape / Hardscape					
☐ Underground ☐ Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ <u>TBD</u>			Drainage Area Land Use:		
Imperviousness ≈ _____ %			☒ Institutional		
Impervious Area ≈ _____			☐ Residential		
Notes:			☐ SFH (< 1 ac lots)		
			☐ SFH (> 1 ac lots)		
			☐ Townhouses		
			☐ Multi-Family		
			☐ Commercial		
			☐ Industrial		
			☐ Transport-Related		
			☐ Park		
			☐ Undeveloped		
			☐ Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: ☐ Yes ☒ No ☐ Possible					
If Yes, Describe:					
Runoff from parking lot & some of building discharges to a small depression next to a wetland area. Does not look like it was designed as a BMP.					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Street Width: _____					
→ Raised berm with walkway acts as a sort of embankment					
Existing Head Available:			Note where points are measured from: (i.e. street elevation to catch basin invert, manhole rim to catch basin invert, other)		
2 ft from top to bottom of depression					
10 ft from bottom of depression to stream outfall					

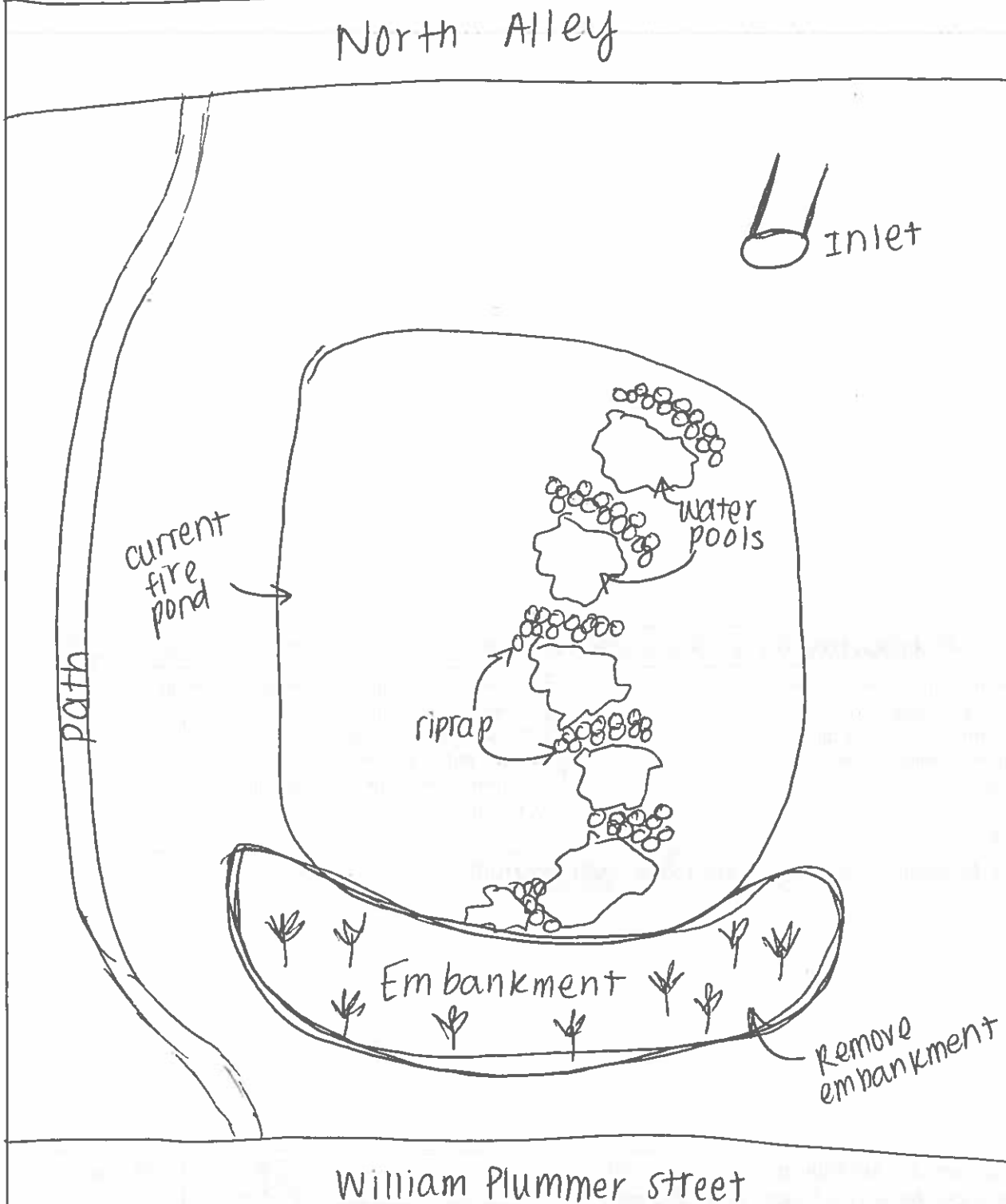
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WATERSHED: <u>Lower Linganore</u>		SUBWATERSHED: <u>Hazelnut Run</u>		UNIQUE SITE ID: <u>0</u>	
DATE: <u>12/29/2017</u>		ASSESSED BY: <u>GPH, ADD, KC, JF</u>		CAMERA ID: _____	
GPS ID: _____		LMK ID: _____		LAT: _____	
GPS ID: _____		LMK ID: _____		LONG: _____	
SITE DESCRIPTION <u>Fire Pond</u>					
Name: <u>Fire pond</u>					
Address: <u>415 William Plummer Street, New Market, MD 21774</u>					
Ownership:		☒ Public		☐ Private	
If Public, Government Jurisdiction:		☐ Local		☐ State	
		☐ DOT		☐ Other: <u>TOWN OWNS IT</u>	
Corresponding USSR/USA Field Sheet?		☐ Yes		☐ No	
		If yes, Unique Site ID: _____			
Proposed Retrofit Location:					
Storage					
☒ Existing Pond		☐ Above Roadway Culvert		☐ On-Site	
☐ Below Outfall		☐ In Conveyance System		☐ Hotspot Operation	
☐ In Road ROW		☐ Near Large Parking Lot		☐ Small Parking Lot	
☐ Other: _____				☐ Individual Street	
				☐ Underground	
				☐ Individual Rooftop	
				☐ Small Impervious Area	
				☐ Landscape / Hardscape	
				☐ Other: _____	
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____		Drainage Area Land Use:			
Imperviousness ≈ _____ %		☒ Residential			
Impervious Area ≈ _____		☒ SFH (< 1 ac lots)			
Notes: _____		☐ SFH (> 1 ac lots)			
		☐ Townhouses			
		☐ Multi-Family			
		☐ Commercial			
		☐ Institutional			
		☐ Industrial			
		☐ Transport-Related			
		☐ Park			
		☐ Undeveloped			
		☐ Other: _____			
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice:		☒ Yes		☐ No	
If Yes, Describe:		☐ Possible			
<u>Fire pond receiving stormwater drainage</u>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<u>-Drainage from adjacent alleys conveyed via culvert</u>					
<u>-Existing embankment has many trees</u>					
Existing Head Available and Points Where Measured:					
<u>> 6 ft</u>					

PROPOSED RETROFIT																																														
Purpose of Retrofit: ☒ Water Quality ☒ Recharge ☐ Channel Protection ☒ Flood Control ☐ Demonstration / Education ☐ Repair ☐ Other: _____																																														
Retrofit Volume Computations - Target Storage: 	Retrofit Volume Computations - Available Storage: 																																													
Proposed Treatment Option: ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention ☐ Filtering Practice ☐ Infiltration ☐ Swale ☒ Other: <u>SPSC</u>																																														
Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance: Remove embankment & replace pond with meandering SPSC																																														
SITE CONSTRAINTS																																														
Adjacent Land Use: ☒ Residential ☐ Commercial ☐ Institutional ☐ Industrial ☐ Transport-Related ☐ Park ☐ Undeveloped ☐ Other: _____ Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No If Yes, Describe: _____	Access: ☐ No Constraints Constrained due to ☐ Slope ☐ Space ☐ Utilities ☐ Tree Impacts ☐ Structures ☐ Property Ownership ☐ Other: _____																																													
Conflicts with Existing Utilities: ☐ None ☐ Unknown <table style="width: 100%;"> <tr> <th style="text-align: left;">Yes</th> <th style="text-align: left;">Possible</th> <th></th> </tr> <tr><td>☐</td><td>☐</td><td>Sewer</td></tr> <tr><td>☐</td><td>☐</td><td>Water</td></tr> <tr><td>☐</td><td>☐</td><td>Gas</td></tr> <tr><td>☐</td><td>☐</td><td>Cable</td></tr> <tr><td>☐</td><td>☐</td><td>Electric</td></tr> <tr><td>☐</td><td>☐</td><td>Electric to Streetlights</td></tr> <tr><td>☐</td><td>☐</td><td>Overhead Wires</td></tr> <tr><td>☐</td><td>☐</td><td>Other: _____</td></tr> </table>	Yes	Possible		☐	☐	Sewer	☐	☐	Water	☐	☐	Gas	☐	☐	Cable	☐	☐	Electric	☐	☐	Electric to Streetlights	☐	☐	Overhead Wires	☐	☐	Other: _____	Potential Permitting Factors: <table style="width: 100%;"> <tr> <td style="width: 60%;">Dam Safety Permits Necessary</td> <td>☐ Probable</td> <td>☐ Not Probable</td> </tr> <tr> <td>Impacts to Wetlands</td> <td>☐ Probable</td> <td>☐ Not Probable</td> </tr> <tr> <td>Impacts to a Stream</td> <td>☐ Probable</td> <td>☐ Not Probable</td> </tr> <tr> <td>Floodplain Fill</td> <td>☐ Probable</td> <td>☐ Not Probable</td> </tr> <tr> <td>Impacts to Forests</td> <td>☐ Probable</td> <td>☐ Not Probable</td> </tr> <tr> <td>Impacts to Specimen Trees</td> <td>☐ Probable</td> <td>☐ Not Probable</td> </tr> </table> How many? _____ Approx. DBH _____ Other factors: _____	Dam Safety Permits Necessary	☐ Probable	☐ Not Probable	Impacts to Wetlands	☐ Probable	☐ Not Probable	Impacts to a Stream	☐ Probable	☐ Not Probable	Floodplain Fill	☐ Probable	☐ Not Probable	Impacts to Forests	☐ Probable	☐ Not Probable	Impacts to Specimen Trees	☐ Probable	☐ Not Probable
Yes	Possible																																													
☐	☐	Sewer																																												
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Soils: <table style="width: 100%;"> <tr> <td>Soil auger test holes:</td> <td>☐ Yes ☐ No</td> </tr> <tr> <td>Evidence of poor infiltration (clays, fines):</td> <td>☐ Yes ☐ No</td> </tr> <tr> <td>Evidence of shallow bedrock:</td> <td>☐ Yes ☐ No</td> </tr> <tr> <td>Evidence of high water table (gleying, saturation):</td> <td>☐ Yes ☐ No</td> </tr> </table>		Soil auger test holes:	☐ Yes ☐ No	Evidence of poor infiltration (clays, fines):	☐ Yes ☐ No	Evidence of shallow bedrock:	☐ Yes ☐ No	Evidence of high water table (gleying, saturation):	☐ Yes ☐ No																																					
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Evidence of shallow bedrock:	☐ Yes ☐ No																																													
Evidence of high water table (gleying, saturation):	☐ Yes ☐ No																																													

SKETCH



DESIGN OR DELIVERY NOTES**FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT**

- | | |
|---|--|
| ☐ Confirm property ownership | ☐ Obtain existing stormwater practice as-builts |
| ☐ Confirm drainage area | ☐ Obtain site as-builts |
| ☐ Confirm drainage area impervious cover | ☐ Obtain detailed topography |
| ☐ Confirm volume computations | ☐ Obtain utility mapping |
| ☐ Complete concept sketch | ☐ Confirm storm drain invert elevations |
| ☐ Other: _____ | ☐ Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS**SITE CANDIDATE FOR FURTHER INVESTIGATION:****IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):****IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):**

If YES, TYPE(S): _____

- | | | |
|------------------------------|-----------------------------|--------------------------------|
| ☐ YES | ☐ NO | ☐ MAYBE |
| ☐ YES | ☐ NO | ☐ MAYBE |
| ☐ YES | ☐ NO | ☐ MAYBE |

Appendix C. Concept Designs

APPLICANT

CENTER FOR WATERSHED PROTECTION, INC.
3290 N RIDGE RD. SUITE #290
ELLCOTT CITY, MD 21043
CONTACT: ARI DANIELS, EIT
PH: 434-409-3075
EMAIL: ADD@CWP.ORG

SURVEYOR

WILSON T. BALLARD COMPANY
17 GWYNNS MILL CT.
OWINGS MILLS, MD 21117
CONTACT: BRYAN DUSZA, PE
PH: 410-363-0150
EMAIL: BDUSZA@WTBCO.COM

ENGINEER

CENTER FOR WATERSHED PROTECTION, INC.
3290 N RIDGE RD. SUITE #290
ELLCOTT CITY, MD 21043
CONTACT: ARI DANIELS, EIT
PH: 434-409-3075
EMAIL: ADD@CWP.ORG

GEOTECHNICAL

N/A

OWNER INFORMATION

OWNER: TOWN OF NEW MARKET, MARYLAND
PARCEL ADDRESS: NORTH ALLEY, AT 1ST ALLEY
MAP/GRID: 0801/0016
PARCELS: 3844
LOT:
ZONING:

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL UNDER THE LAWS OF THE STATE OF MARYLAND.

GREGORY HOFFMANN
ENGINEER'S NAME, P.E.

MD REGISTRATION NO. 35532, EXPIRATION DATE: 3/13/2020

DESIGN CERTIFICATION

I HEREBY CERTIFY THAT ALL SEDIMENT AND EROSION CONTROL MEASURES SHOWN ON THESE PLANS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE 2011 MD STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL OR CURRENT REVISIONS THEREOF.

DESIGNER'S SIGNATURE

DATE

GREGORY HOFFMANN

MD REGISTRATION NO. 35532

PRINTED NAME

P.E., R.L.S., OR R.L.A (CIRCLE ONE)

OWNER'S / DEVELOPER'S CERTIFICATION

I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, AND/OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT.

NAME

TITLE

SIGNATURE

DATE

MISS UTILITY NOTE

INFORMATION CONCERNING EXISTING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS. THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION AND ELEVATION OF ALL EXISTING UTILITIES AND UTILITY CROSSINGS BY DIGGING TEST PITS BY HAND, WELL IN ADVANCE OF THE START OF EXCAVATION. CONTACT "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO THE START OF EXCAVATION. IF CLEARANCES ARE LESS THAN SHOWN ON THIS PLAN OR TWELVE (12) INCHES, WHICHEVER IS LESS, CONTACT THE ENGINEER AND THE UTILITY COMPANY BEFORE PROCEEDING WITH CONSTRUCTION. CLEARANCES LESS THAN NOTED MAY REQUIRE REVISIONS TO THIS PLAN.

DISTURBED AREA QUANTITY
The total area to be disturbed shown on these plans has been determined to be approximately 63,000 sq. ft. and the total amount of excavation and fill as shown on these plans has been computed to be approximately 1,750 cu. yds. of excavation, 2,130 cu. yds. of fill, and 395 cu. yds. of additional materials for construction of the BMP.

Name

Date

This development plan is approved for soil erosion and sediment control by the FREDERICK SOIL CONSERVATION DISTRICT.

FREDERICK SCD

Date

NEW MARKET FIRE POND RETROFIT

STEP POOL STORM CONVEYANCE

BETWEEN WILLIAM PLUMMER ST. AND NORTH ALLEY, AT 1ST ALLEY



VICINITY MAP
SCALE 1"=2000'



SITE AERIAL
SCALE 1"=200'

- #### SHEET INDEX
- TITLE PAGE AND VICINITY MAP
 - EXISTING CONDITIONS
 - NOTES AND CALCULATIONS (not included yet)
 - PROPOSED LAYOUT
 - PROFILE & CROSS SECTIONS
 - PLANTING PLAN (not included yet)
 - EROSION & SEDIMENT CONTROL
 - EROSION & SEDIMENT CONTROL NOTES (not included yet)

PROJECT SCOPE
APPROXIMATELY 25.8 ACRES, 44% OF WHICH IS IMPERVIOUS AREA, DRAINS TO AN EXISTING WET POND WHICH PREVIOUSLY FUNCTIONED AS A FIRE POND. A STEP-POOL STORM CONVEYANCE RETROFIT IS PROPOSED.

NO NEW IMPERVIOUS SURFACES WILL BE CREATED, AND NO NEW DEVELOPMENT WILL OCCUR.

PROJECT INFORMATION
THE PROJECT IS IN THE MONOCACY RIVER WATERSHED.

THIS LOCATION IS THE HEADWATERS OF WALNUT RUN. THE STREAM IS DESIGNATED "USE IV-P" WHICH INCLUDES HEAT AMONG POLLUTANTS OF CONCERN.

NOTES:

OWNER:

TOWN OF NEW MARKET

DEVELOPER:

ENGINEER:

Center for Watershed Protection, Inc.
3290 N Ridge Road, Suite #290
Ellicott City, MD 21043
410-461-8323

CENTER FOR WATERSHED PROTECTION

60%

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--	1	--
Date	No.	Revision Desc.

SHEET TITLE:

FIRE POND

TITLE PAGE AND VICINITY MAP

SCALE: Varies - see viewport

DESIGN BY: Only at scale if

DRAWN BY: printed on 24"x36"

CHECKED BY: ARCH-D paper

PROJECT ID: W-17-023

DATE: 2018.03.30

SHEET NUMBER:

01 of 08



NOTES:
• EXISTING GRADE AND CONTOURS COMPRISED OF COMBINATION OF 2-FT GIS TOPOGRAPHY AND SITE-LEVEL TOPOGRAPHIC SURVEY. IRREGULAR APPEARANCE OF CONTOURS OCCURS AT MERGE LOCATIONS.

OWNER:
TOWN OF NEW MARKET

DEVELOPER:

ENGINEER:
Center for Watershed Protection, Inc.
3290 N Ridge Road, Suite #290
Ellicott City, MD 21043
410-461-8323



60%

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--	1	--
Date	No.	Revision Desc.

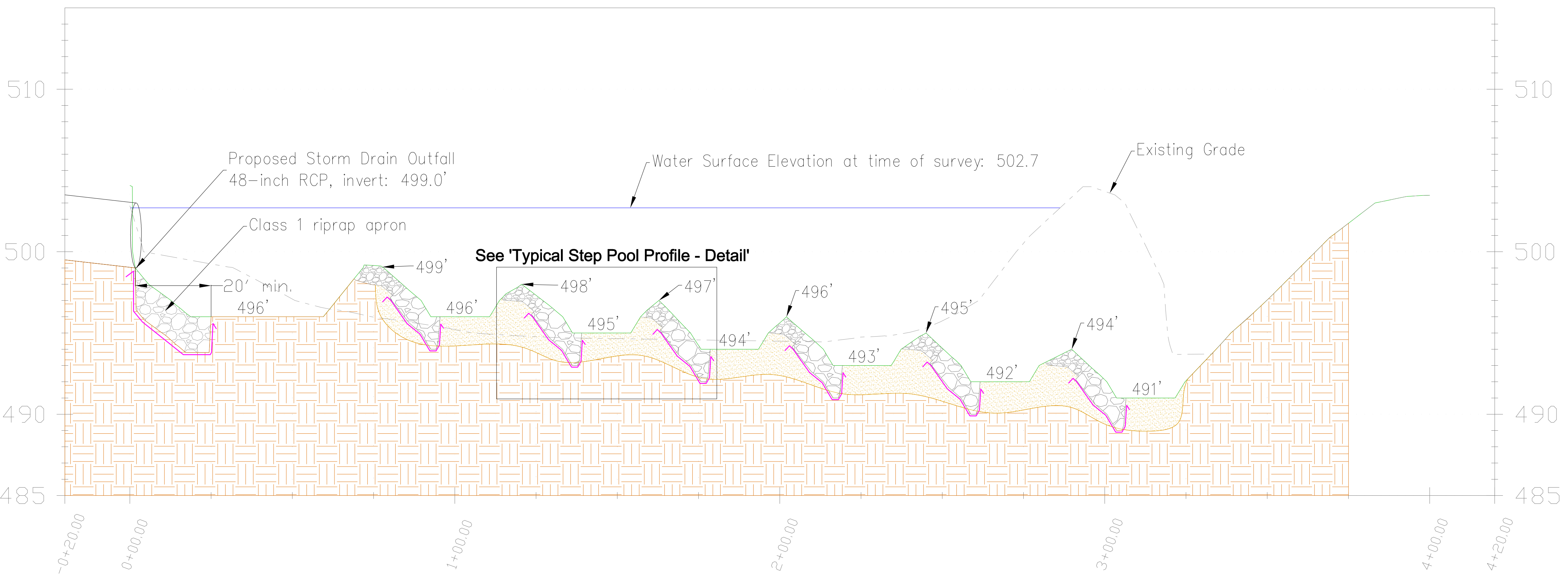
SHEET TITLE:
FIRE POND
EXISTING CONDITIONS

SCALE: 1 INCH = 20 FEET
DESIGN BY: *Only at scale if* ADD
DRAWN BY: *printed on 24"x36"* ADD
CHECKED BY: *ARCH-D paper* GPH
PROJECT ID: W-17-23
DATE: 2018.03.30

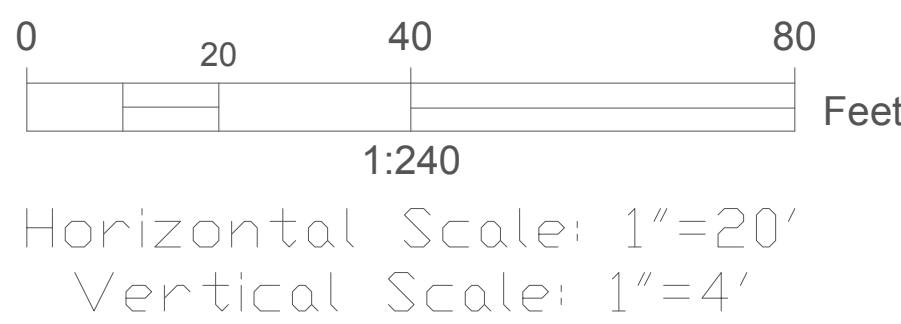
SHEET NUMBER: 02 of 08

Profile View of Fire Pond RSC Centerline

Elevation

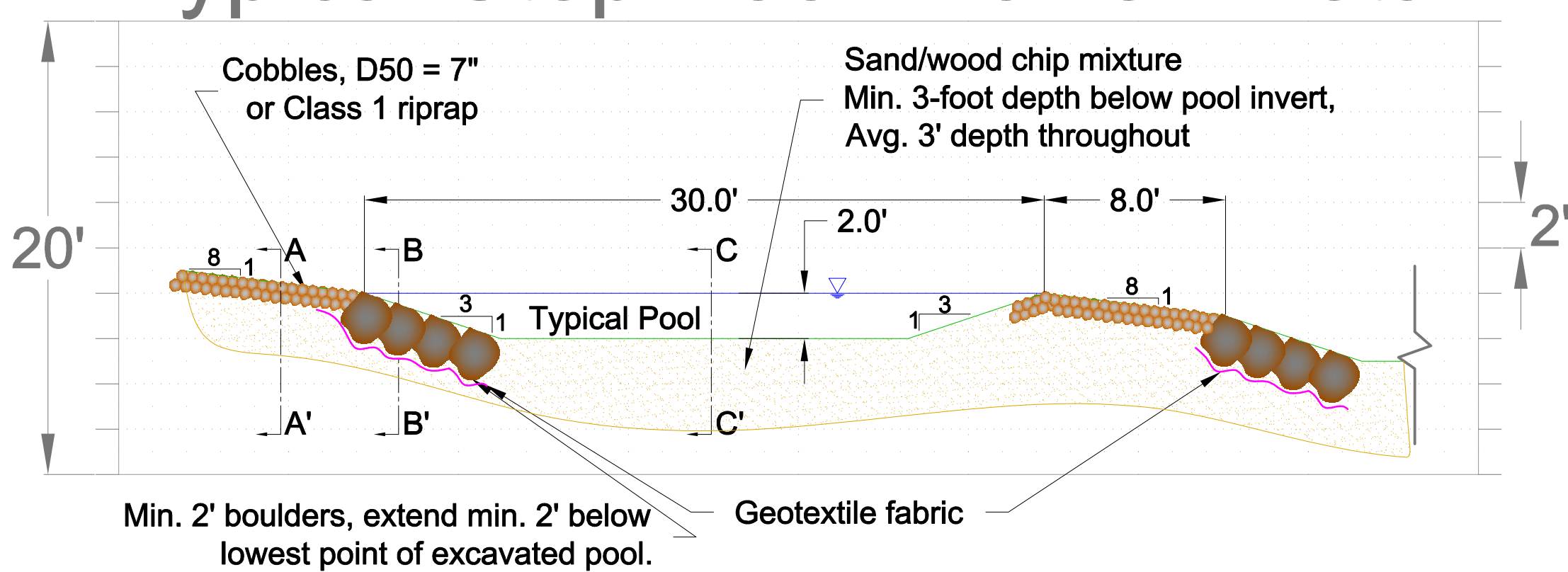


Station

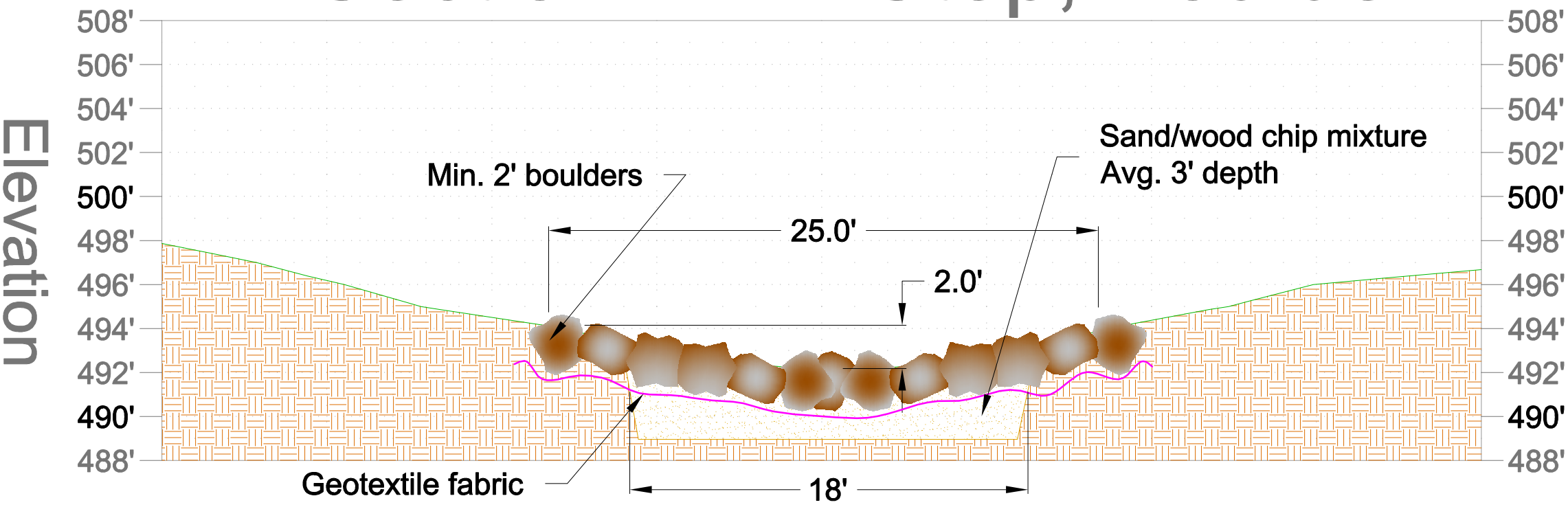


Elevation

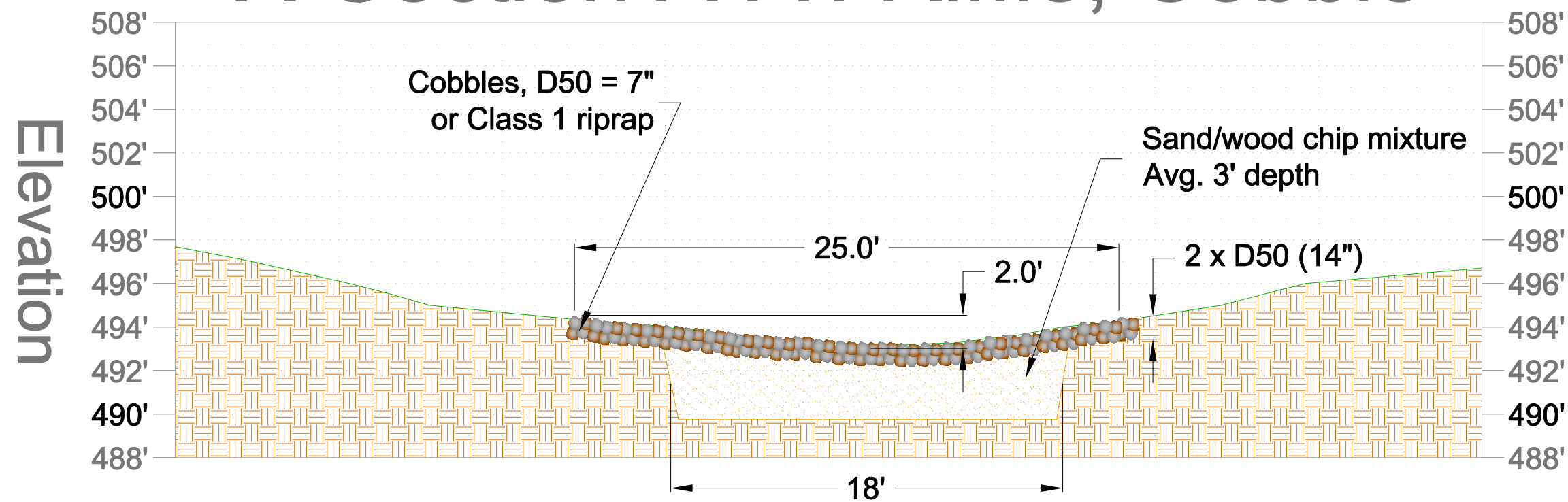
Typical Step Pool Profile - Detail



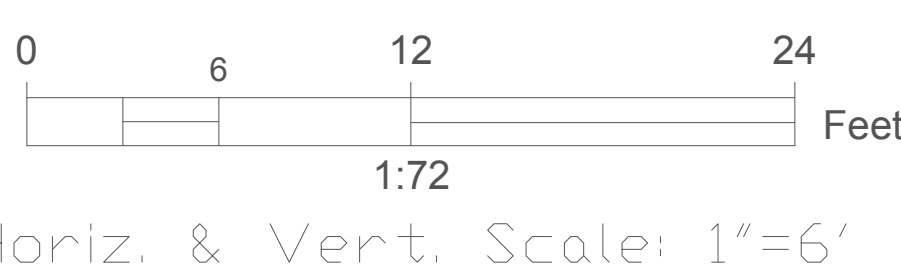
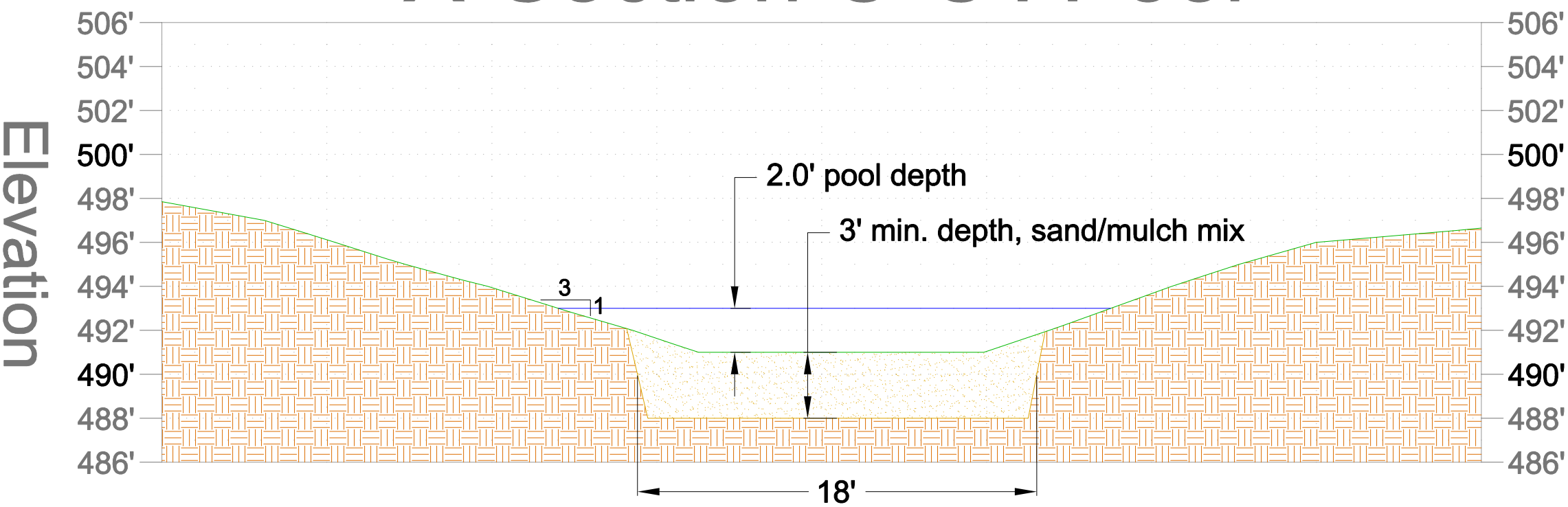
X-Section B-B': Step, Boulder



X-Section A-A': Riffle, Cobble



X-Section C-C': Pool



NOTES:
• EXISTING GRADE AND CONTOURS
COMPRISED OF COMBINATION OF 2-FT
GIS TOPOGRAPHY AND SITE-LEVEL
TOPOGRAPHIC SURVEY. IRREGULAR
APPEARANCE OF CONTOURS OCCURS
AT MERGE LOCATIONS.

OWNER:
TOWN OF NEW MARKET

DEVELOPER:

ENGINEER:
Center for Watershed Protection, Inc.
3290 N Ridge Road, Suite #290
Ellicott City, MD 21043
410-461-8323



60%

1	4	--	--
2	3	--	--
3	2	--	--
4	1	--	--
Date	No.	Revision	Desc.
SHEET TITLE: FIRE POND PROFILE & SECTIONS			
SCALE: Varies - see viewport			
DESIGN BY:	Only at scale if	ADD	
DRAWN BY:	printed on 24"x36"	ADD	
CHECKED BY:	ARCH-D paper	GPH	
PROJECT ID:	W-17-23		
DATE:	2018.03.30		

SHEET NUMBER: 05 of 08



NOTES:

- EXISTING GRADE AND CONTOURS COMPRISED OF COMBINATION OF 2-FT GIS TOPOGRAPHY AND SITE-LEVEL TOPOGRAPHIC SURVEY. IRREGULAR APPEARANCE OF CONTOURS OCCURS AT MERGE LOCATIONS.
- BORROW MATERIAL TO BE CLEAN AND CERTIFIED FREE OF ANY TOXICS. FOUR (4) INCHES TOPSOIL REQUIRED BEFORE FINAL STABILIZATION ANYWHERE BORROW OR HEAVILY COMPACTED FILL MATERIAL IS PLACED, UNLESS THE BORROW MATERIAL SUFFICIENTLY CLOSE IN COMPOSITION TO TOPSOIL AS TO PROPERLY SUPPORT NEW TURF AND LANDSCAPING VEGETATION ESTABLISHMENT.

OWNER:
TOWN OF NEW MARKET

DEVELOPER:

ENGINEER:
Center for Watershed Protection, Inc.
3290 N Ridge Road, Suite #290
Ellicott City, MD 21043
410-461-8323



60%

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--	2	--
--	1	--
Date	No.	Revision Desc.
SHEET TITLE: FIRE POND EROSION & SEDIMENT CONTROL		
SCALE: 1 INCH = 20 FEET		
DESIGN BY:	Only at scale if	ADD
DRAWN BY:	printed on 24"x36"	ADD
CHECKED BY:	ARCH-D paper	GPH
PROJECT ID:	W-17-23	
DATE:	2018.03.30	

SHEET NUMBER: 07 OF 08

APPLICANT

CENTER FOR WATERSHED PROTECTION, INC.
3290 N RIDGE RD. SUITE #290
ELLCOTT CITY, MD 21043
CONTACT: ARI DANIELS, EIT
PH: 434-409-3075
EMAIL: ADD@CWP.ORG

SURVEYOR

N/A

ENGINEER

CENTER FOR WATERSHED PROTECTION, INC.
3290 N RIDGE RD. SUITE #290
ELLCOTT CITY, MD 21043
CONTACT: ARI DANIELS, EIT
PH: 434-409-3075
EMAIL: ADD@CWP.ORG

GEOTECHNICAL

N/A

OWNER INFORMATION

OWNER: NEW MARKET DISTRICT VOLUNTEER FIRE DEPARTMENT
PARCEL ADDRESS: 76 W MAIN ST., NEW MARKET, MD 21774
MAP/GRID: 0801/0000
PARCELS: 3763
LOT:
ZONING:

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL UNDER THE LAWS OF THE STATE OF MARYLAND.

GREGORY HOFFMANN
ENGINEER'S NAME, P.E.

MD REGISTRATION NO. 35532, EXPIRATION DATE: 3/13/2020

DESIGN CERTIFICATION

I HEREBY CERTIFY THAT ALL SEDIMENT AND EROSION CONTROL MEASURES SHOWN ON THESE PLANS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE 2011 MD STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL OR CURRENT REVISIONS THEREOF.

DESIGNER'S SIGNATURE

DATE

GREGORY HOFFMANN

MD REGISTRATION NO. 35532

PRINTED NAME

P.E., R.L.S., OR R.L.A (CIRCLE ONE)

OWNER'S / DEVELOPER'S CERTIFICATION

I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, AND/OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT.

NAME

TITLE

SIGNATURE

DATE

MISS UTILITY NOTE

INFORMATION CONCERNING EXISTING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS. THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION AND ELEVATION OF ALL EXISTING UTILITIES AND UTILITY CROSSINGS BY DIGGING TEST PITS BY HAND, WELL IN ADVANCE OF THE START OF EXCAVATION. CONTACT "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO THE START OF EXCAVATION. IF CLEARANCES ARE LESS THAN SHOWN ON THIS PLAN OR TWELVE (12) INCHES, WHICHEVER IS LESS, CONTACT THE ENGINEER AND THE UTILITY COMPANY BEFORE PROCEEDING WITH CONSTRUCTION. CLEARANCES LESS THAN NOTED MAY REQUIRE REVISIONS TO THIS PLAN.

DISTURBED AREA QUANTITY
The total area to be disturbed shown on these plans has been determined to be approximately 32,300 sq. ft. and the total amount of excavation and fill as shown on these plans has been computed to be approximately 560 cu. yds. of excavation and 60 cu. yds. of fill, for a net 500 cu. yds spoil.

Name

Date

This development plan is approved for soil erosion and sediment control by the FREDERICK SOIL CONSERVATION DISTRICT.

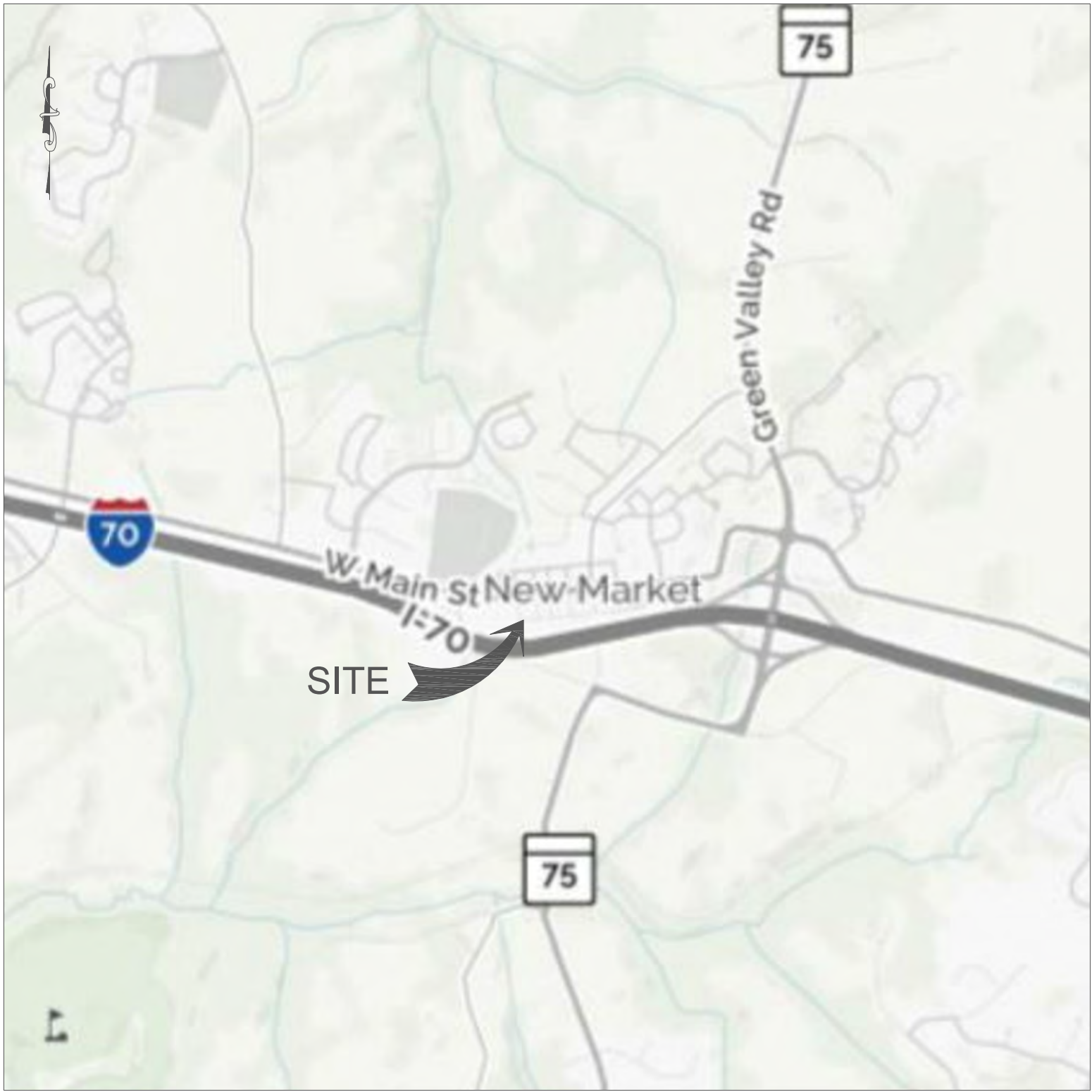
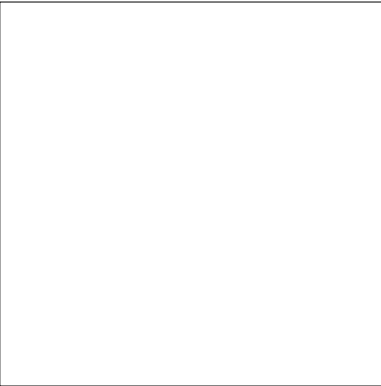
FREDERICK SCD

Date

NEW MARKET DISTRICT VOLUNTEER FIRE DEPARTMENT

SAND FILTER RETROFIT

76 W MAIN ST., NEW MARKET, MD 21774



VICINITY MAP
SCALE 1"=2000'



SITE AERIAL
SCALE 1"=200'

- SHEET INDEX
1.

TITLE PAGE AND VICINITY MAP
2.

EXISTING CONDITIONS
3.

NOTES AND CALCULATIONS (not included yet)
4.

PROPOSED CONDITIONS
5.

PROFILE & CROSS SECTIONS (not included yet)
6.

PLANTING PLAN (not included yet)
7.

EROSION & SEDIMENT CONTROL (not included yet)
8.

EROSION & SEDIMENT CONTROL NOTES (not included yet)

PROJECT SCOPE
APPROXIMATELY 3.5 ACRES, 57% OF WHICH IS IMPERVIOUS AREA IN THE FORM OF CRUSHED BLOCK AND AGGREGATE COVER OVER TURFGRASS, DRAINS TO THE SOUTHWEST CORNER OF THE PARCEL WHERE AN EXISTING RETAINING WALL SITS, INCLUDING A WEIR AND UNDERDRAIN/RELIEF PIPE. LEGACY SATELLITE IMAGERY SHOWS DROP INLETS WHICH MAY HAVE BEEN REMOVED OR COVERED SINCE THE IMAGERY WAS OBTAINED. WITH THIS RETAINING WALL AND OUTLET STRUCTURE AS A KEY FEATURE, A SAND FILTER RETROFIT IS PROPOSED.

NO NEW IMPERVIOUS SURFACES WILL BE CREATED, AND NO NEW DEVELOPMENT WILL OCCUR.

PROJECT INFORMATION
THE PROJECT IS IN THE BUSH CREEK WATERSHED OF THE MONOCACY RIVER GREATER WATERSHED.

NOTES:

-

OWNER:
NEW MARKET DISTRICT VOLUNTEER FIRE DEPARTMENT

DEVELOPER:

ENGINEER:
Center for Watershed Protection, Inc.
3290 N Ridge Road, Suite #290
Ellicott City, MD 21043
410-461-8323

CENTER FOR WATERSHED PROTECTION

30%

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--	1	--
Date	No.	Revision Desc.

SHEET TITLE:
FIRE DEPARTMENT
TITLE PAGE AND VICINITY MAP

SCALE: Varies - see viewport

DESIGN BY: ADD
DRAWN BY: ADD
CHECKED BY: GPH
PROJECT ID: W-17-023
DATE: 2018.03.30

SHEET NUMBER: 01 of 08



NOTES:

- EXISTING GRADE AND CONTOURS COMPRISED OF 2-FT GIS TOPOGRAPHY.
- DRAINAGE AREA DELINEATED BY SITE INSPECTION.
- EXISTING CONDITIONS DIFFER SLIGHTLY FROM SATELLITE IMAGERY. SATELLITE IMAGERY PROVIDED FOR REFERENCE ONLY.
- SITE-LEVEL TOPOGRAPHIC SURVEY, FURTHER INVESTIGATION OF PRIOR CONSTRUCTION PLANS AND ACTIONS, AND POSSIBLY SUBSURFACE INVESTIGATION REQUIRED TO ACCURATELY REPRESENT EXISTING SITE CONDITIONS. ENGINEERING DESIGN DEPENDENT ON ACCURATE DEPICTION OF SITE CONDITIONS.

OWNER:
NEW MARKET DISTRICT VOLUNTEER FIRE DEPARTMENT

DEVELOPER:

ENGINEER:
Center for Watershed Protection, Inc.
3290 N Ridge Road, Suite #290
Ellicott City, MD 21043
410-461-8323



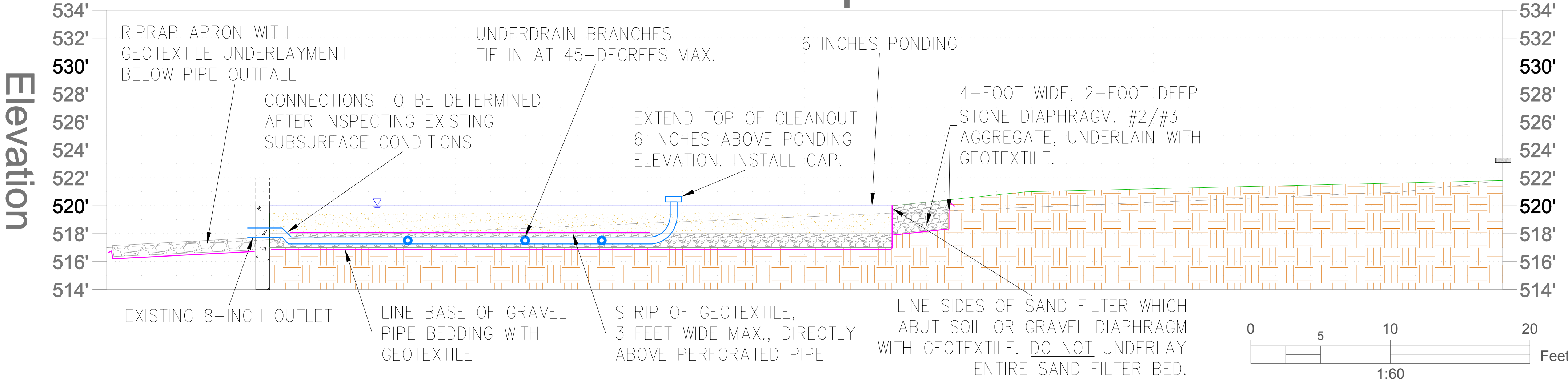
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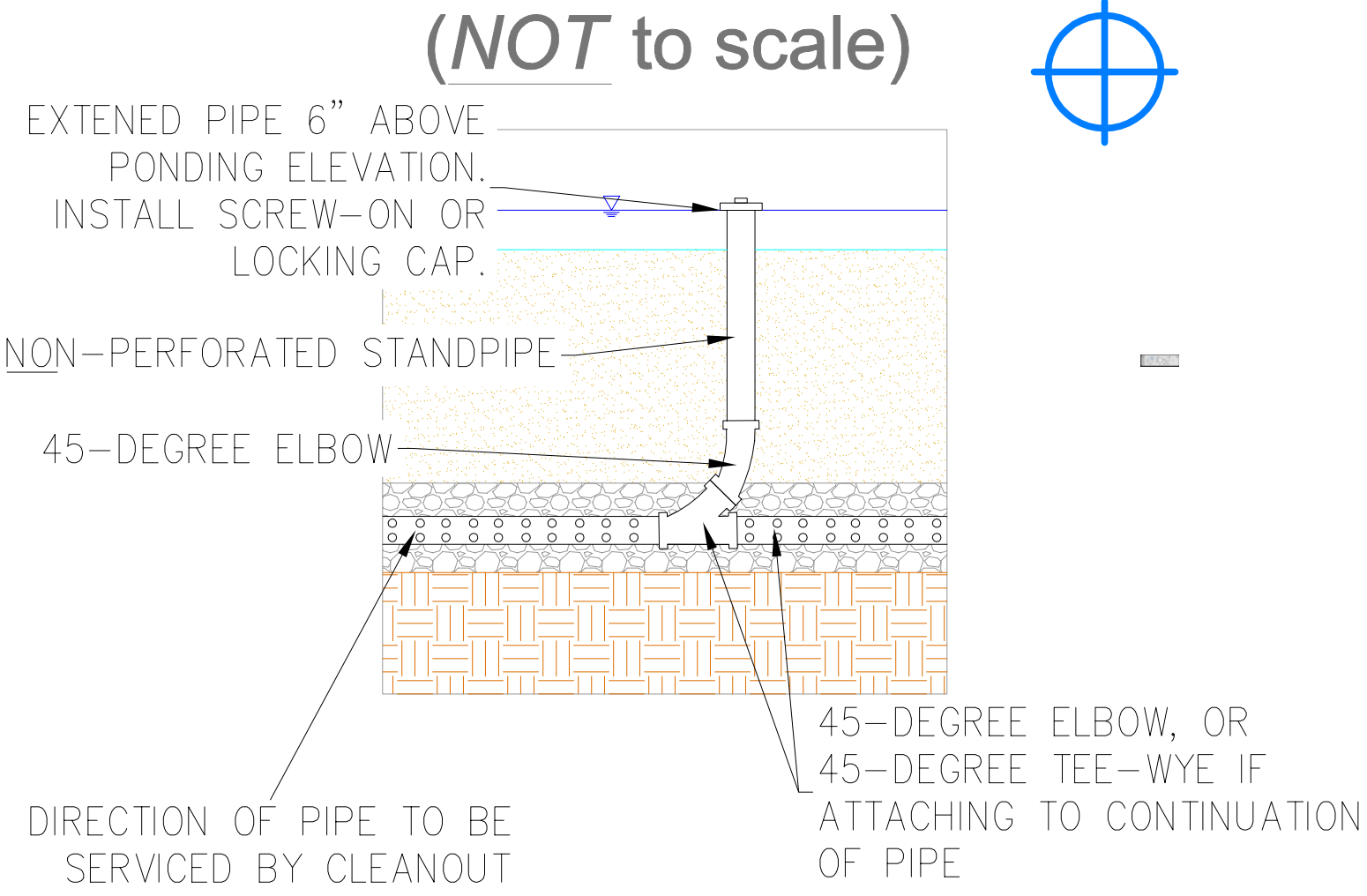
SHEET TITLE:
FIRE DEPARTMENT SAND FILTER
EXISTING CONDITIONS

SCALE: 1 INCH = 20 FEET
DESIGN BY: ADD
DRAWN BY: ADD
CHECKED BY: GPH
PROJECT ID: W-17-23
DATE: 2018.03.30

X-Section A-A': Fire Department Sand Filter



Cleanout Detail

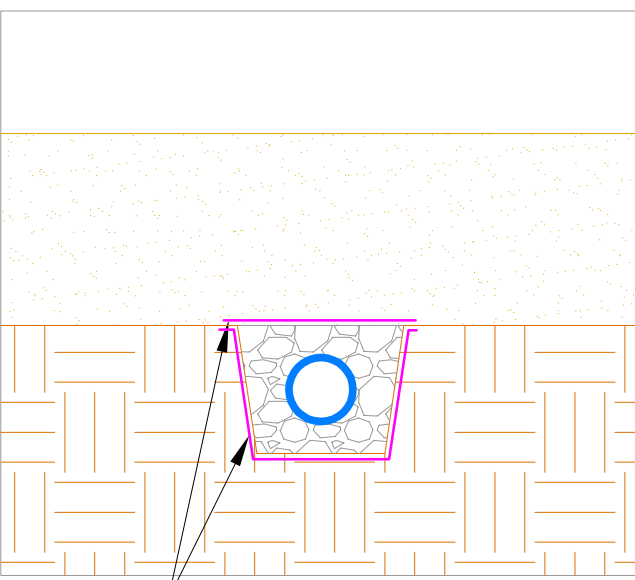


NOTES:

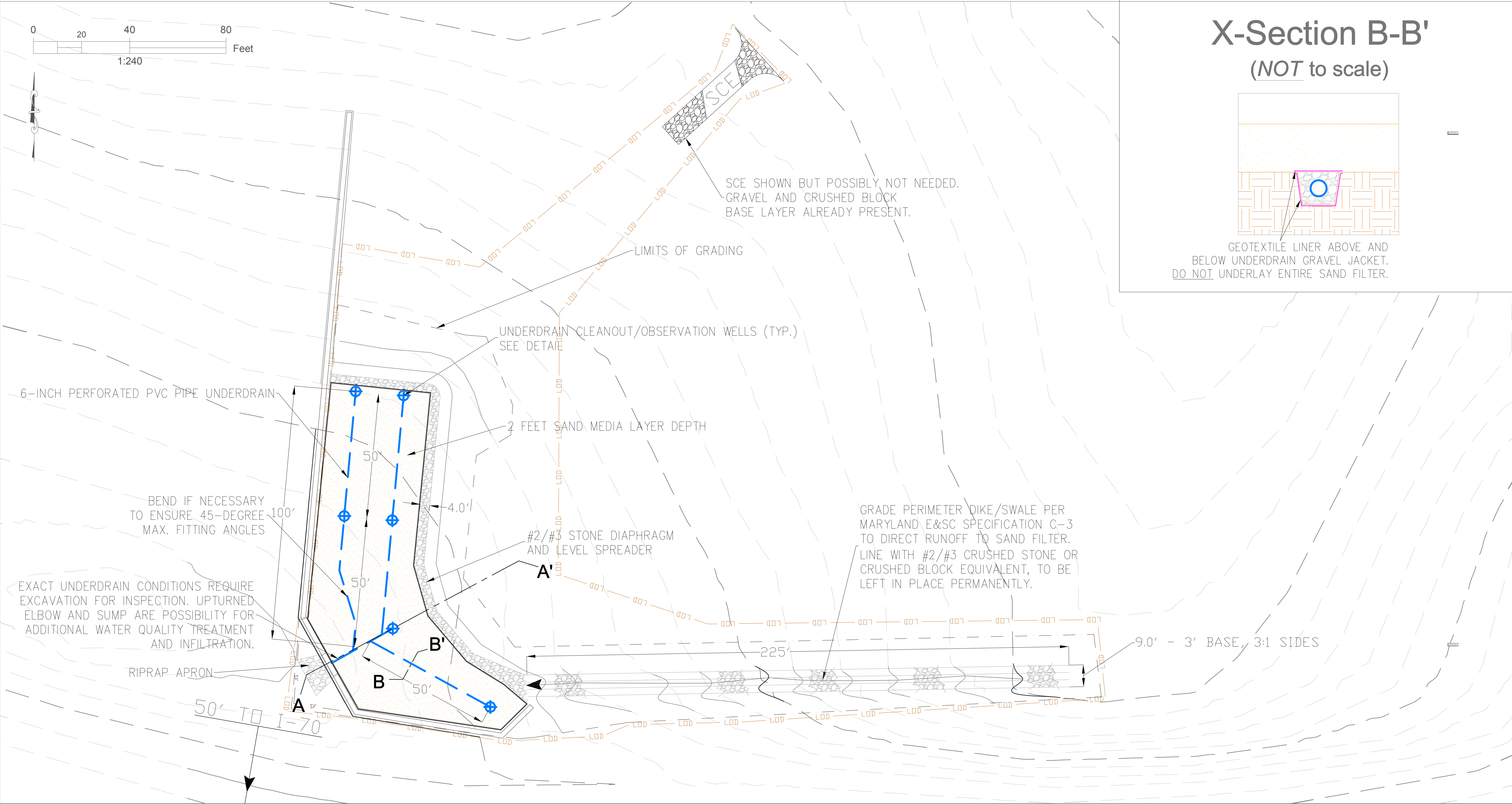
- EXISTING GRADE AND CONTOURS COMPRISED OF 2-FT GIS TOPOGRAPHY.
- DRAINAGE AREA DELINEATED BY SITE INSPECTION.
- EXISTING CONDITIONS DIFFER SLIGHTLY FROM SATELLITE IMAGERY. SATELLITE IMAGERY PROVIDED FOR REFERENCE.
- SITE-LEVEL TOPOGRAPHIC SURVEY, FURTHER INVESTIGATION OF PRIOR CONSTRUCTION PLANS AND ACTIONS, AND POSSIBLY SUBSURFACE INVESTIGATION REQUIRED TO ACCURATELY REPRESENT EXISTING SITE CONDITIONS. ENGINEERING DESIGN DEPENDENT ON ACCURATE DEPICTION OF SITE CONDITIONS.
- THIS SHEET CURRENTLY INCLUDES CONTENT WHICH WILL EVENTUALLY BE ON SEPARATE SHEETS.

X-Section B-B'

(NOT to scale)



GEOTEXTILE LINER ABOVE AND BELOW UNDERDRAIN GRAVEL JACKET. DO NOT UNDERLAY ENTIRE SAND FILTER.



OWNER:
NEW MARKET DISTRICT VOLUNTEER FIRE DEPARTMENT

DEVELOPER:

ENGINEER:
Center for Watershed Protection, Inc.
3290 N Ridge Road, Suite #290
Ellicott City, MD 21043
410-461-8323



30%

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--	2	--
--	1	--
Date	No.	Revision Desc.
SHEET TITLE: FIRE DEPARTMENT SAND FILTER PROPOSED CONDITIONS		
SCALE: Varies - see viewport		
DESIGN BY:	ADD	
DRAWN BY:	ADD	
CHECKED BY:	GPH	
PROJECT ID:	W-17-23	
DATE:	2018.03.30	
SHEET NUMBER:		04 of 08

APPLICANT

CENTER FOR WATERSHED PROTECTION, INC.
3290 N RIDGE RD. SUITE #290
ELLCOTT CITY, MD 21043
CONTACT: ARI DANIELS, EIT
PH: 434-409-3075
EMAIL: ADD@CWP.ORG

SURVEYOR

WILSON T. BALLARD COMPANY
17 GWYNNS MILL CT.
OWINGS MILLS, MD 21117
CONTACT: BRYAN DUSZA, PE
PH: 410-363-0150
EMAIL: BDUSZA@WTBCO.COM

ENGINEER

CENTER FOR WATERSHED PROTECTION, INC.
3290 N RIDGE RD. SUITE #290
ELLCOTT CITY, MD 21043
CONTACT: ARI DANIELS, EIT
PH: 434-409-3075
EMAIL: ADD@CWP.ORG

GEOTECHNICAL

N/A

OWNER INFORMATION

OWNER:

TOWN OF NEW MARKET, MARYLAND

PARCEL ADDRESS:

SOUTH ALLEY, AT FEDERAL STREET

MAP/GRID:

079B/0016

PARCELS:

3803

LOT:

2A

ZONING:

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL UNDER THE LAWS OF THE STATE OF MARYLAND.

GREGORY HOFFMANN

ENGINEER'S NAME, P.E.

MD REGISTRATION NO. 35532,

EXPIRATION DATE: 3/13/2020

DESIGN CERTIFICATION

I HEREBY CERTIFY THAT ALL SEDIMENT AND EROSION CONTROL MEASURES SHOWN ON THESE PLANS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE 2011 MD STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL OR CURRENT REVISIONS THEREOF.

DESIGNER'S SIGNATURE

DATE

GREGORY HOFFMANN

MD REGISTRATION NO. 35532

PRINTED NAME

P.E., R.L.S., OR R.L.A (CIRCLE ONE)

OWNER'S / DEVELOPER'S CERTIFICATION

I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, AND/OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT.

NAME

TITLE

SIGNATURE

DATE

MISS UTILITY NOTE

INFORMATION CONCERNING EXISTING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS. THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION AND ELEVATION OF ALL EXISTING UTILITIES AND UTILITY CROSSINGS BY DIGGING TEST PITS BY HAND, WELL IN ADVANCE OF THE START OF EXCAVATION. CONTACT "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO THE START OF EXCAVATION. IF CLEARANCES ARE LESS THAN SHOWN ON THIS PLAN OR TWELVE (12) INCHES, WHICHEVER IS LESS, CONTACT THE ENGINEER AND THE UTILITY COMPANY BEFORE PROCEEDING WITH CONSTRUCTION. CLEARANCES LESS THAN NOTED MAY REQUIRE REVISIONS TO THIS PLAN.

DISTURBED AREA QUANTITY

The total area to be disturbed shown on these plans has been determined to be approximately 14,400 sq. ft. and the total amount of excavation and fill as shown on these plans has been computed to be approximately 363 cu. yds. of excavation, 74 cu. yds. of fill, and 333 cu. yds. of additional materials for construction of the BMP.

Name

Date

This development plan is approved for soil erosion and sediment control by the FREDERICK SOIL CONSERVATION DISTRICT.

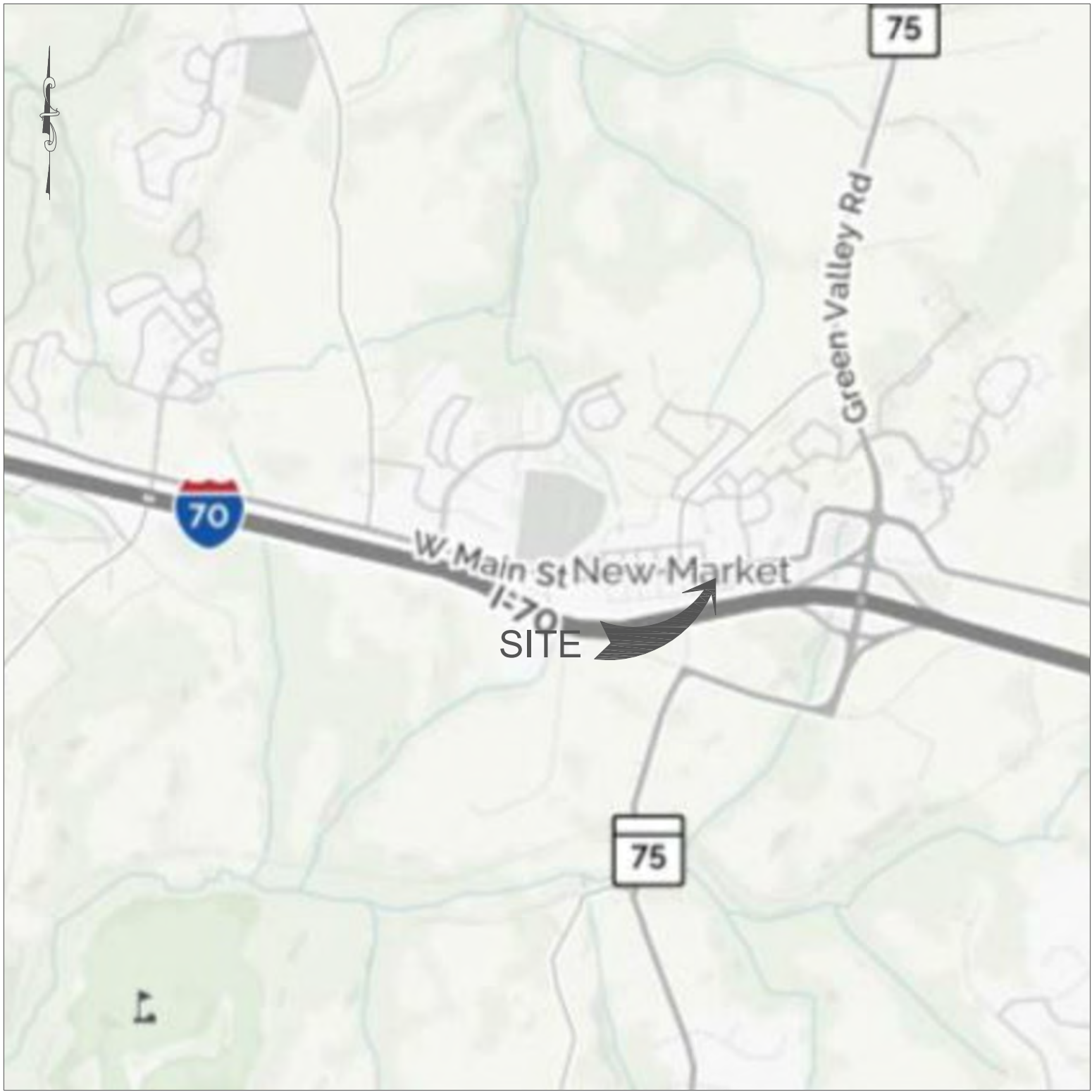
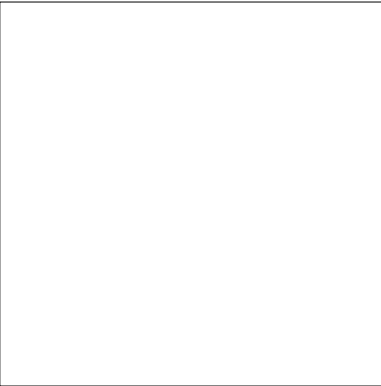
FREDERICK SCD

Date

NEW MARKET COMMUNITY PARK RETROFIT

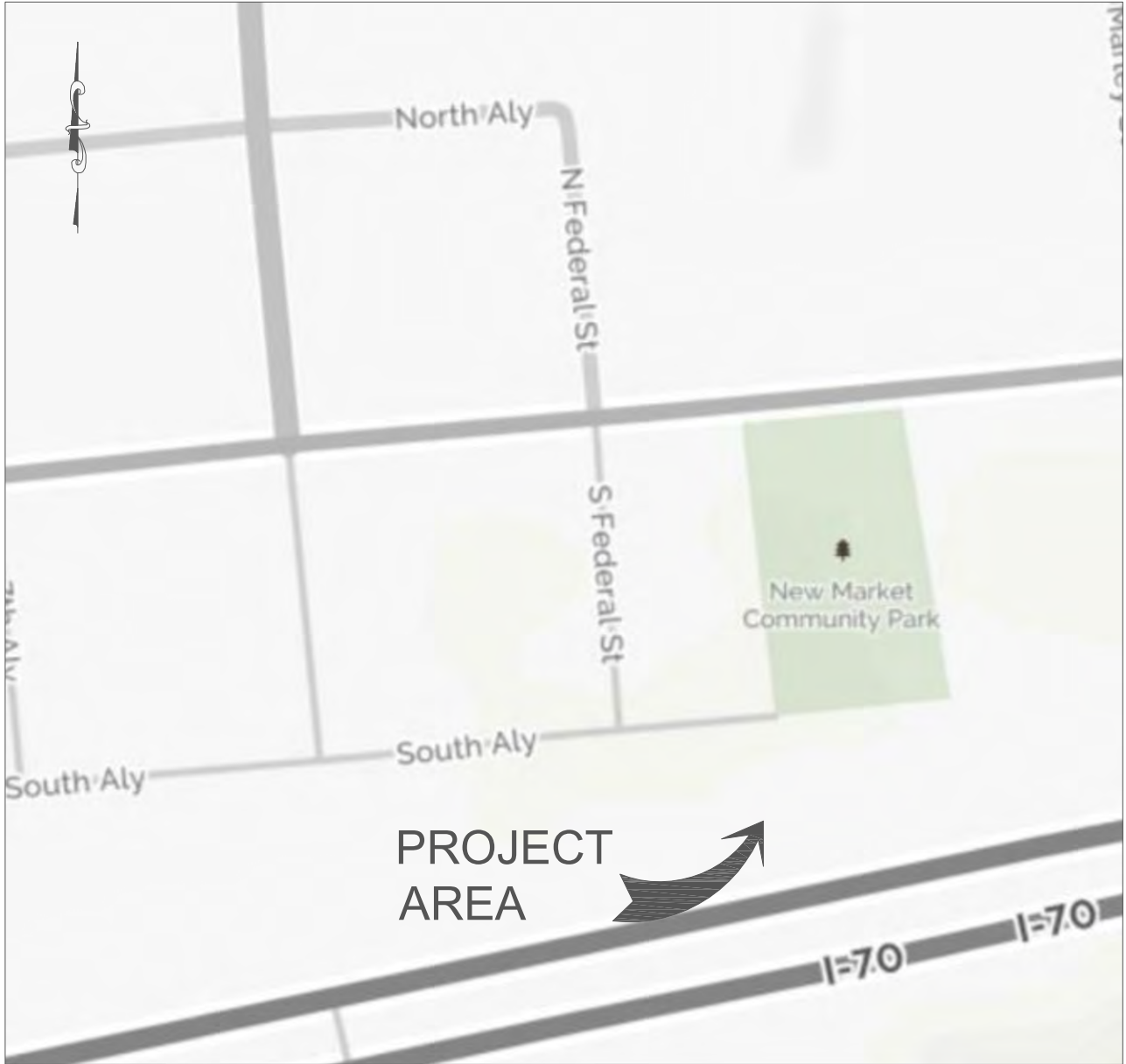
CONSTRUCTED GRAVEL WETLAND

SOUTH ALLEY AT FEDERAL STREET



VICINITY MAP

SCALE 1"=2000'



SITE AERIAL

SCALE 1"=200'

- SHEET INDEX
1.

TITLE PAGE AND VICINITY MAP
2.

EXISTING CONDITIONS
3.

NOTES AND CALCULATIONS
4.

PROPOSED LAYOUT
5.

PROFILE & CROSS SECTIONS
6.

PLANTING PLAN
7.

EROSION & SEDIMENT CONTROL

PROJECT SCOPE

APPROXIMATELY 5.3 ACRES, 29% OF WHICH IS IMPERVIOUS AREA, DRAINS UNTREATED TO AN EXISTING SWALE ON MARYLAND STATE HIGHWAY ADMINISTRATION LAND. A PROPOSED CONSTRUCTED GRAVEL WETLAND WILL INTERCEPT AND TREAT THIS RUNOFF.

NO NEW IMPERVIOUS SURFACES WILL BE CREATED, AND NO NEW DEVELOPMENT WILL OCCUR.

PROJECT INFORMATION

THE PROJECT IS IN THE BUSH CREEK WATERSHED OF THE MONOCACY RIVER GREATER WATERSHED.

NOTES:

OWNER:
TOWN OF NEW MARKET

DEVELOPER:

ENGINEER:
Center for Watershed Protection, Inc.
3290 N Ridge Road, Suite #290
Ellicott City, MD 21043
410-461-8323

CENTER FOR WATERSHED PROTECTION

30%

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4

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3

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2

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1

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Date

No.

Revision Desc.

SHEET TITLE:

COMMUNITY PARK WETLAND

TITLE PAGE AND VICINITY MAP

SCALE:

Varies - see viewport

DESIGN BY:

ADD

DRAWN BY:

ADD

CHECKED BY:

GPH

PROJECT ID:

W-17-023

DATE:

2018.03.30

SHEET NUMBER:

01 of 08



NOTES:

- EXISTING GRADE AND CONTOURS COMPRISED OF COMBINATION OF 2-FT GIS TOPOGRAPHY AND SITE-LEVEL TOPOGRAPHIC SURVEY. IRREGULAR APPEARANCE OF CONTOURS OCCURS AT MERGE LOCATIONS.
- DRAINAGE AREA DELINEATED BY SITE INSPECTION.
- EXISTING CONDITIONS DIFFER SLIGHTLY FROM SATELLITE IMAGERY. SATELLITE IMAGERY PROVIDED FOR REFERENCE ONLY.
- SITE-LEVEL TOPOGRAPHIC AND FEATURE SURVEY REQUIRED TO ACCURATELY REPRESENT EXISTING SITE CONDITIONS. ENGINEERING DESIGN DEPENDENT ON ACCURATE DEPICTION OF SITE CONDITIONS.

OWNER:
TOWN OF NEW MARKET

DEVELOPER:

ENGINEER:
Center for Watershed Protection, Inc.
3290 N Ridge Road, Suite #290
Ellicott City, MD 21043
410-461-8323



30%

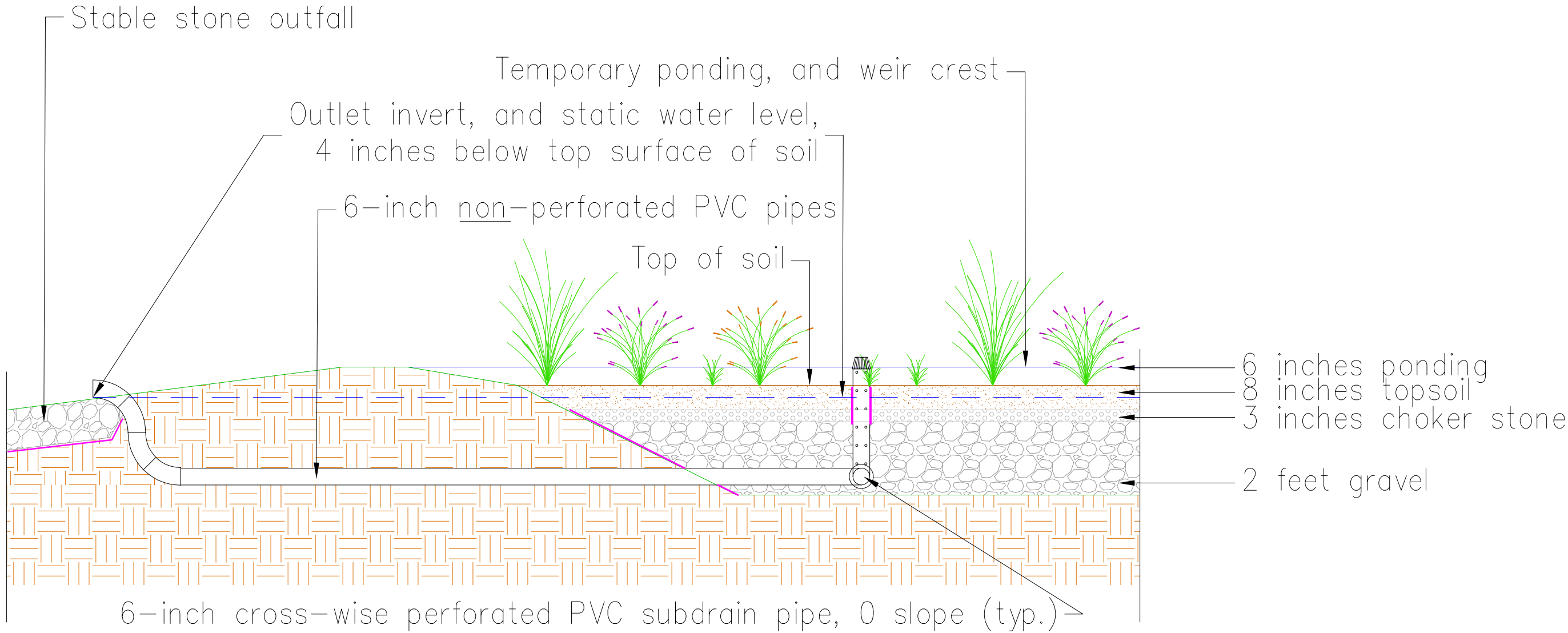
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--	3	--
--	2	--
--	1	--
Date	No.	Revision Desc.

SHEET TITLE:
**COMMUNITY PARK WETLAND
EXISTING CONDITIONS**

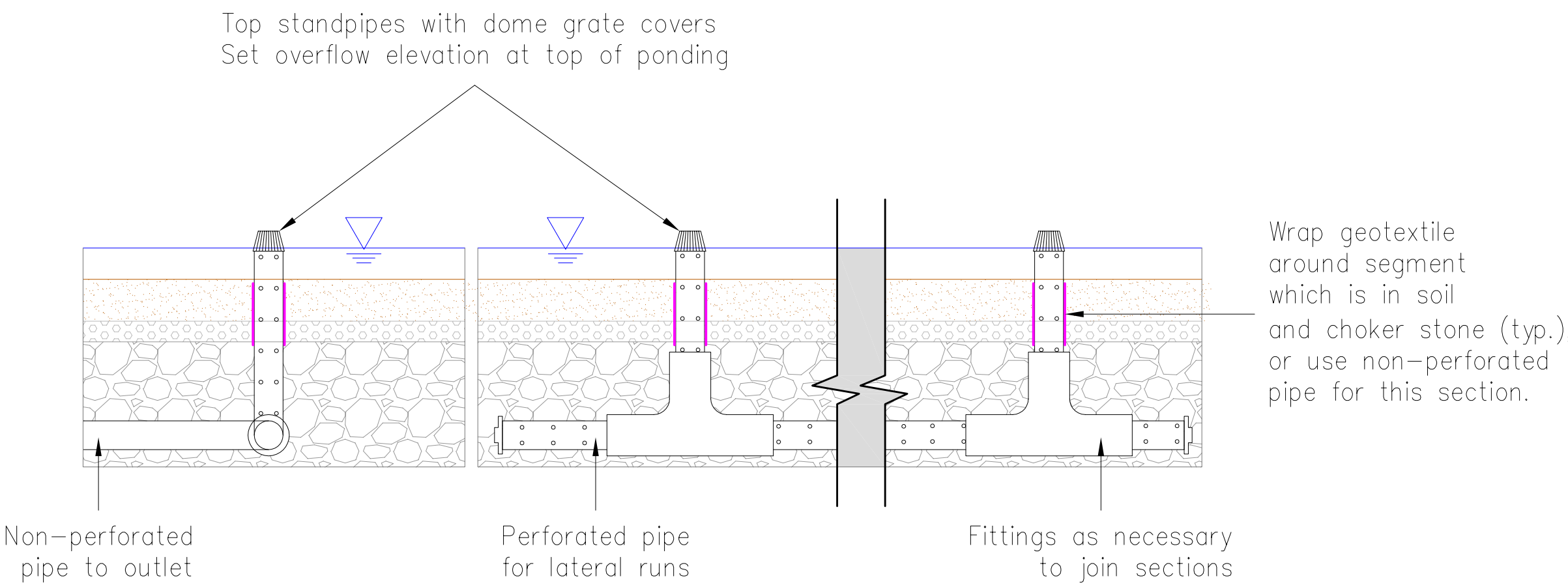
SCALE: 1 INCH = 20 FEET
DESIGN BY: ADD
DRAWN BY: ADD
CHECKED BY: GPH
PROJECT ID: W-17-23
DATE: 2018.03.30

SHEET NUMBER: 02 of 08

Typical Submerged Gravel Wetland Profile

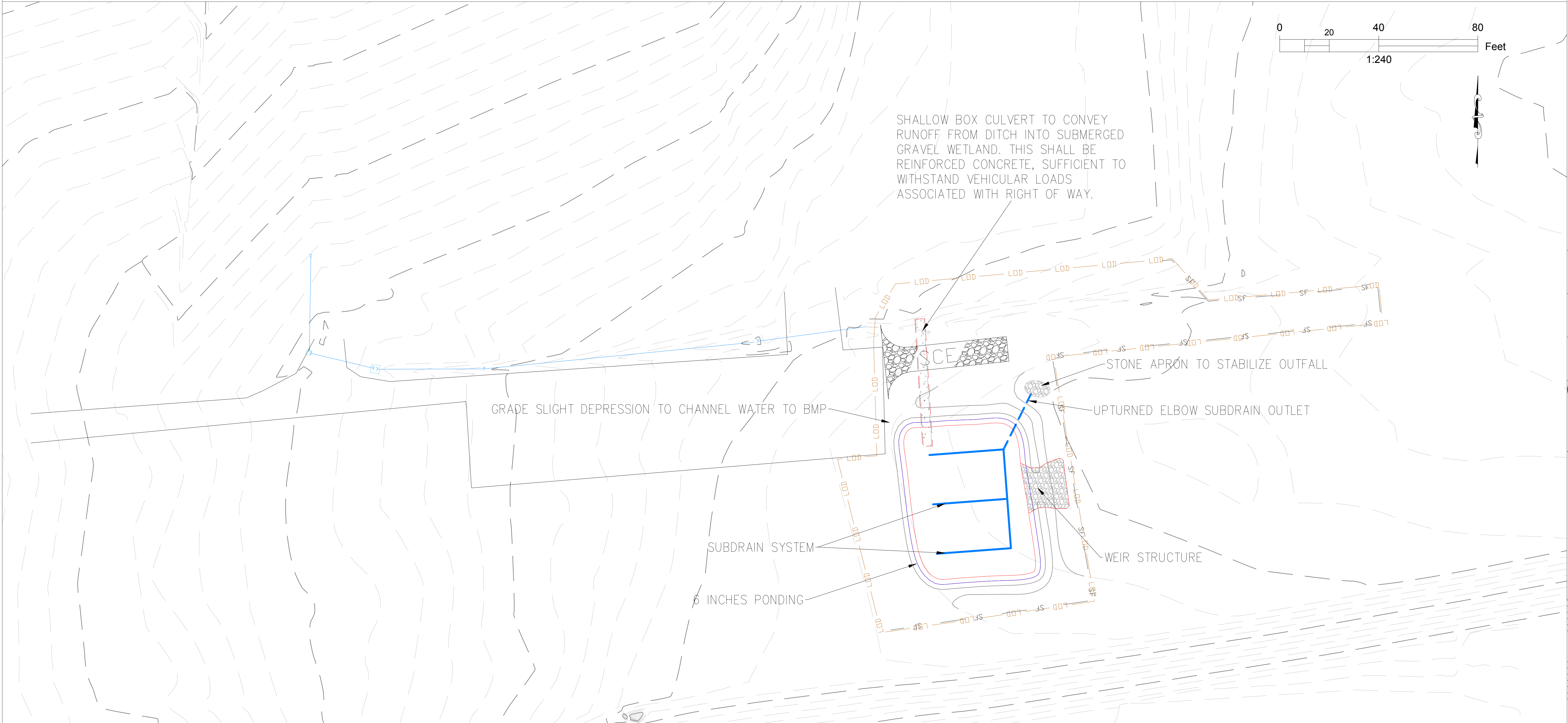


Subdrain Details



NOTES:

- EXISTING GRADE AND CONTOURS COMPRISED OF COMBINATION OF 2-FT GIS TOPOGRAPHY AND SITE-LEVEL TOPOGRAPHIC SURVEY. IRREGULAR APPEARANCE OF CONTOURS OCCURS AT MERGE LOCATIONS.
- THIS SHEET CURRENTLY INCLUDES CONTENT WHICH WILL EVENTUALLY BE ON SEPARATE SHEETS.



OWNER:
TOWN OF NEW MARKET

DEVELOPER:

ENGINEER:
Center for Watershed Protection, Inc.
3290 N Ridge Road, Suite #290
Ellicott City, MD 21043
410-461-8323



30%

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--	3	--
--	2	--
--	1	--
Date	No.	Revision Desc.

SHEET TITLE:
**COMMUNITY PARK WETLAND
PROPOSED CONDITIONS**

SCALE: Varies - see viewport
DESIGN BY: ADD
DRAWN BY: ADD
CHECKED BY: GPH
PROJECT ID: W-17-23
DATE: 2018.03.30