



The Town of Walkersville Municipal Separate Storm Sewer (MS4) Presentation

Wednesday February 8,
2023



Agenda



1. Overview of the Town's Stormwater (MS4) program



2. Public information related to the Town's MS4 program



3. Update on the Town's current Chesapeake Bay restoration projects



5. Summary/Questions/Comments



Walkersville's Stormwater (MS4) Program

- The EPA's National Pollutant Discharge Elimination System (NPDES) general permit covers small *municipal separate storm sewer systems* (MS4s) in certain portions of the State of Maryland.
- Walkersville is categorized as an MS4 designated by the Maryland Department of the Environment (MDE) under the Clean Water Act (CWA) and associated regulations. MS4 owners and operators covered under this general permit must manage, implement, and enforce management programs for controlling all stormwater discharges. The Town must effectively prohibit pollutants in stormwater discharges or other unauthorized discharges into the MS4 as necessary to comply with Maryland's receiving water quality standards.

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Town of Walkersville Stormwater Resources

For more information regarding stormwater events, public meetings, and other public participation opportunities, please visit the Town website at the bottom of this page. The MS4 Information subpage also contains an educational survey and an illicit discharge reporting form.

walkersvillemd.gov/water/ms4-information

Walkersville Town Office
21 West Frederick Street
P.O. Box 249
Walkersville, MD 21793

—
(301) 845-4500
—

walkersville-md.com/contact-us

—
www.walkersvillemd.gov

What is Stormwater

For Town Residents



ARRO

Public Education/Involvement

- Educational MS4 information is regularly posted on the Town's MS4 Information webpage.
 - [Link](#)
- Frederick County Water Quality - [Link](#)
- Stormwater (MS4) pamphlets are available at the Town office, on the Town website, and upon request. Six (6) pamphlets have been created for the following target audience groups.
- Town Cleanup Event – Spring 2023



Existing Stormwater Infrastructure

- The Town's stormwater infrastructure help store stormwater/runoff and provide water quality treatment.
- Responsible parties of stormwater infrastructure must conduct regular inspections and maintenance according to the issued O&M agreement.
- Stormwater ponds provide different surface water runoff treatment rates.
- Treatment rate is determined by the facility type.
- Facility type is based off standards set fourth in the "Maryland Stormwater Design Manual" which was last updated in 2000.
 - Facilities built prior to 2000 may not be up to current treatment standards.



Bioretention Facility, Solar Drive



Dry Basin, Polaris Drive

Illicit Discharge Detection and Elimination

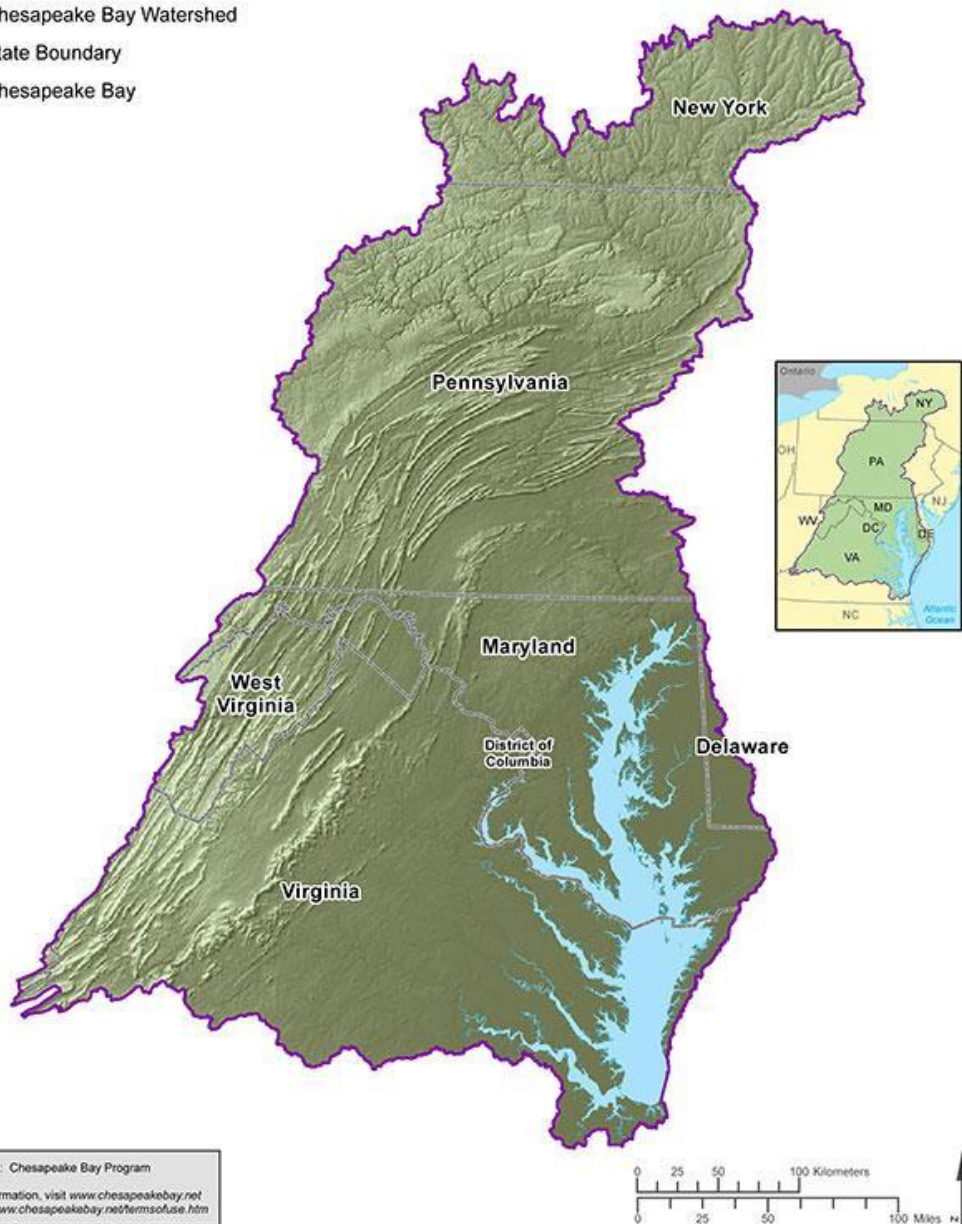
- Federal regulations define an illicit discharge as “...any discharge to an MS4 that is not composed entirely of stormwater.” This can include household cleaners, lawn products, trash, deicers and organic debris. We ask the public to not contaminate our stormwater system with items/materials such as these.
 - Exceptions (according to EPA):
 - Water from firefighting activities.
 - Water from hydrant flushing.
 - Water from facilities with an NPDES permit.
 - Potable water sources.
 - **MUST BE NON-CONTAMINATED**
- To report an Illicit Discharge, Call the Town Office at 301-845-4500, or fill out the Illicit Discharge Reporting Form on the Town’s stormwater webpage.



The background features a central white diamond shape. This diamond is surrounded by a thick, light blue border that has a white inner edge. The corners of the diamond are decorated with overlapping geometric shapes in shades of gold and blue. The overall design is clean and modern.

CHESAPEAKE BAY
RESTORATION PROJECTS
UPDATE

-  Chesapeake Bay Watershed
-  State Boundary
-  Chesapeake Bay



Data Sources: Chesapeake Bay Program
For more information, visit www.chesapeakebay.net
Disclaimer: www.chesapeakebay.net/termsofuse.htm

Chesapeake Bay Restoration Requirements

- Maryland's Watershed Implementation Plan (WIP) specifies the nutrient and sediment load reductions required to address the Chesapeake Bay TMDL by 2025.
- This five-year permit (2018-2023) term requires permittees to develop planning strategies and work toward implementing water quality improvement projects. Restoration planning strategies and implementation schedules required under this general permit are consistent with addressing the water quality goals of the Chesapeake Bay TMDL by 2025.
- The Town of Walkersville has a 56.24 impervious acre restoration requirement by 2025. Walkersville must update or create new stormwater Best Management Practices (BMPs) to account for treatment of 56.24 impervious acres by 2025.

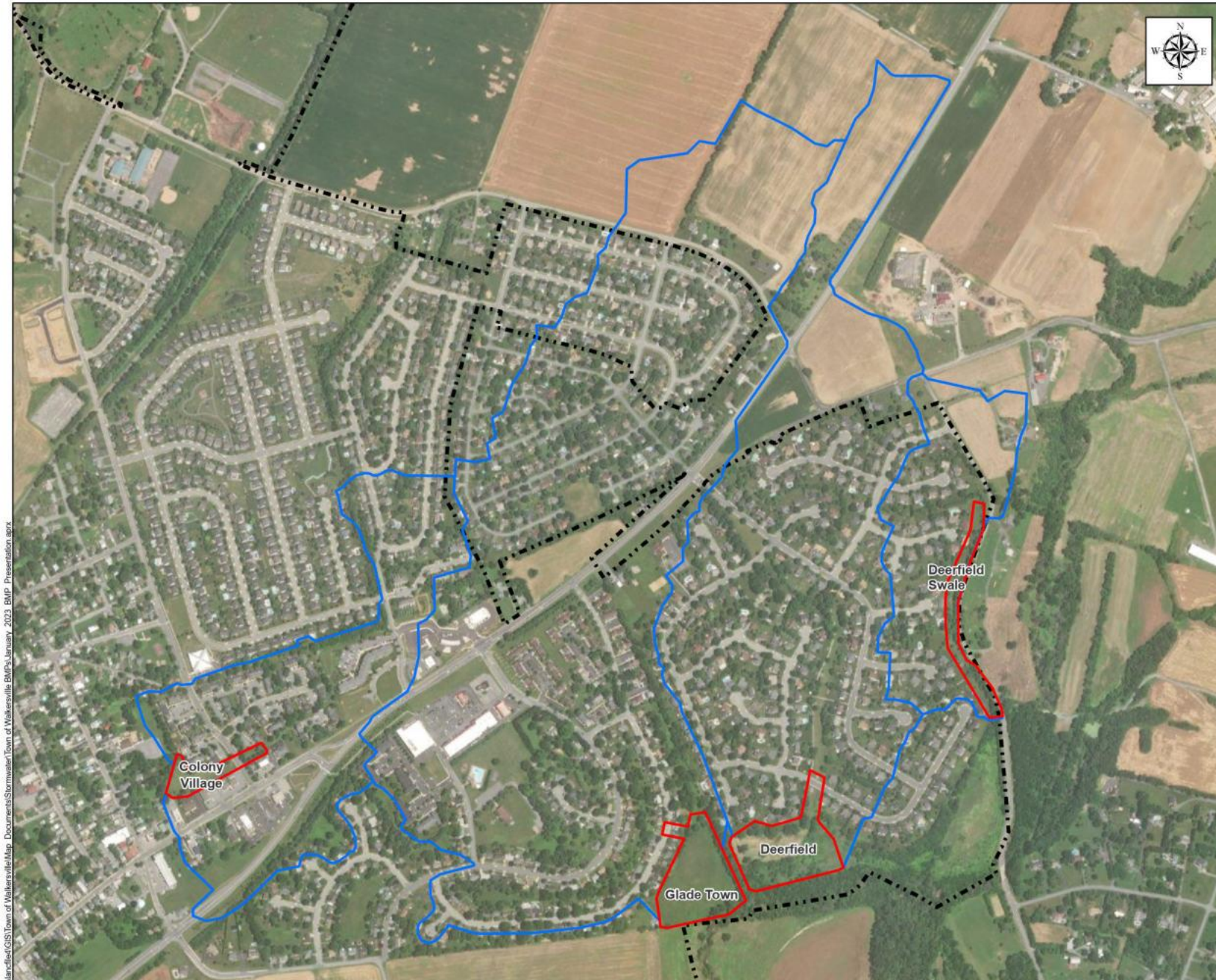
Meeting Restoration Requirements

Initial Assumptions

- Alternative Credits would provide .51 credits – tree planting, street sweeping
- 4 Identified locations would in whole provide conservatively 55.73 credits
- Total cost to meet 56.24 acres of restoration is between 1-2 million dollars

Future Restoration Requirements and Crediting

- 2025-2030 requirements are still under consideration, but in discussions with MDE the requirement may be 10% reduction of untreated impervious surfaces. Excess credits from the current permit cycle may be used for future restoration credit.

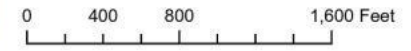


Stormwater Projects

Town of Walkersville
Frederick County, MD

Legend

- Best Management Practice (BMP) Design Project
- BMP DA
- Town Boundary



Date Produced/Author:
1/24/2023 3:58 PM RWC
Projection/Coordinate System:
NAD 1983 NSRS2007 StatePlane Maryland FIPS 1900 Ft US
Data Source:
World Imagery: Maxar



I:\landfill\GIS\Town of Walkersville\Map Documents\Stormwater\Town of Walkersville BMP\January 2023 BMP Presentation.aprx

Summary of Overall Project Status (1 of 2)

- Fall 2022 – Met with MDE to review draft designs, propose outstanding questions, and gather any feedback regarding impervious restoration crediting from MDE’s MS4 program staff.
- ARRO has completed 4 proposed designs to date.
 - Goal is to increase nutrient and sediment load reduction
 - 1 retrofitted multiple pond facility, 2 new multiple pond facilities
 - 1 retrofitted dry swale
 - Fencing is not a requirement but can be implemented if desired.
 - While the permanent ponds will include standing water, vegetative plantings around the pond cells will attract species that feed on insects.
- ARRO will submit designs to the Frederick Soil Conservation District (SCD) and then to Frederick County. Any comments provided will be addressed, and plans will be re-submitted as needed.
 - It is anticipated that an NPDES permit will be required for all projects except the Deerfield swale.
 - It is anticipated that a forest conservation study may be required for Deerfield and Glade Town open space properties.
 - A general permit may also be required at the Deerfield/Glade town open space properties due to the presence of a floodplain on the property.
- After approval from the SCD and the County, ARRO will prepare an opinion of probable construction costs for proposed BMPs, provide an approximate construction time frame for construction and other work to be completed.

Summary of Overall Project Status (2 of 2)

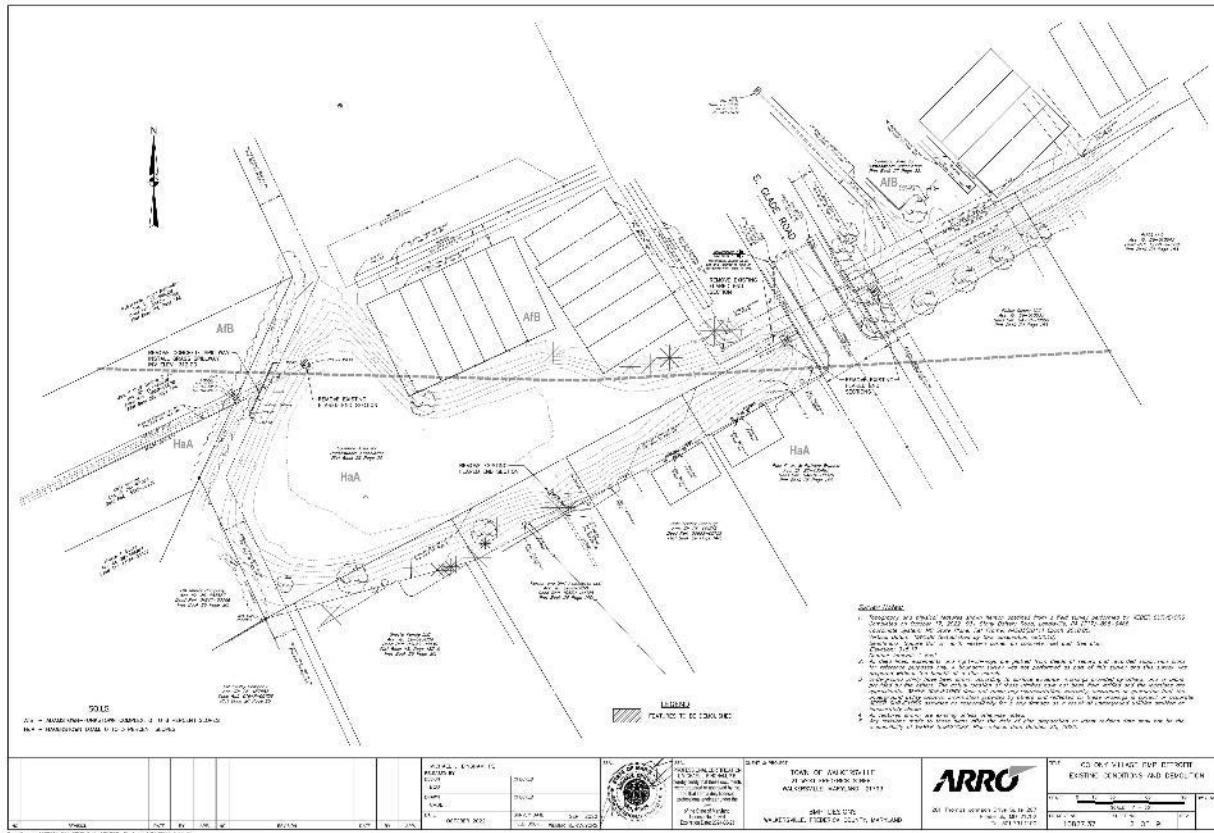
- The Town ARRO will prioritize projects based upon credits received upon implementation, project cost, and the ability to partner with identified property owners.
- The Town/ARRO will review approved designs with identified property owners and execute construction and maintenance easement agreements as appropriate.
- The Town must also prepare bid documents, submit the projects for bid, and award the project to a bidder. ARRO can complete this task if authorized by the Town in an estimated two-month timeframe.
- ARRO currently estimates total construction timeframe of 4-12 months to completely install all projects.
- If authorized, the anticipated start of construction for the new BMPs is Summer 2023, with an anticipated completion date late 2023.

Colony Village Basin (Retrofit)

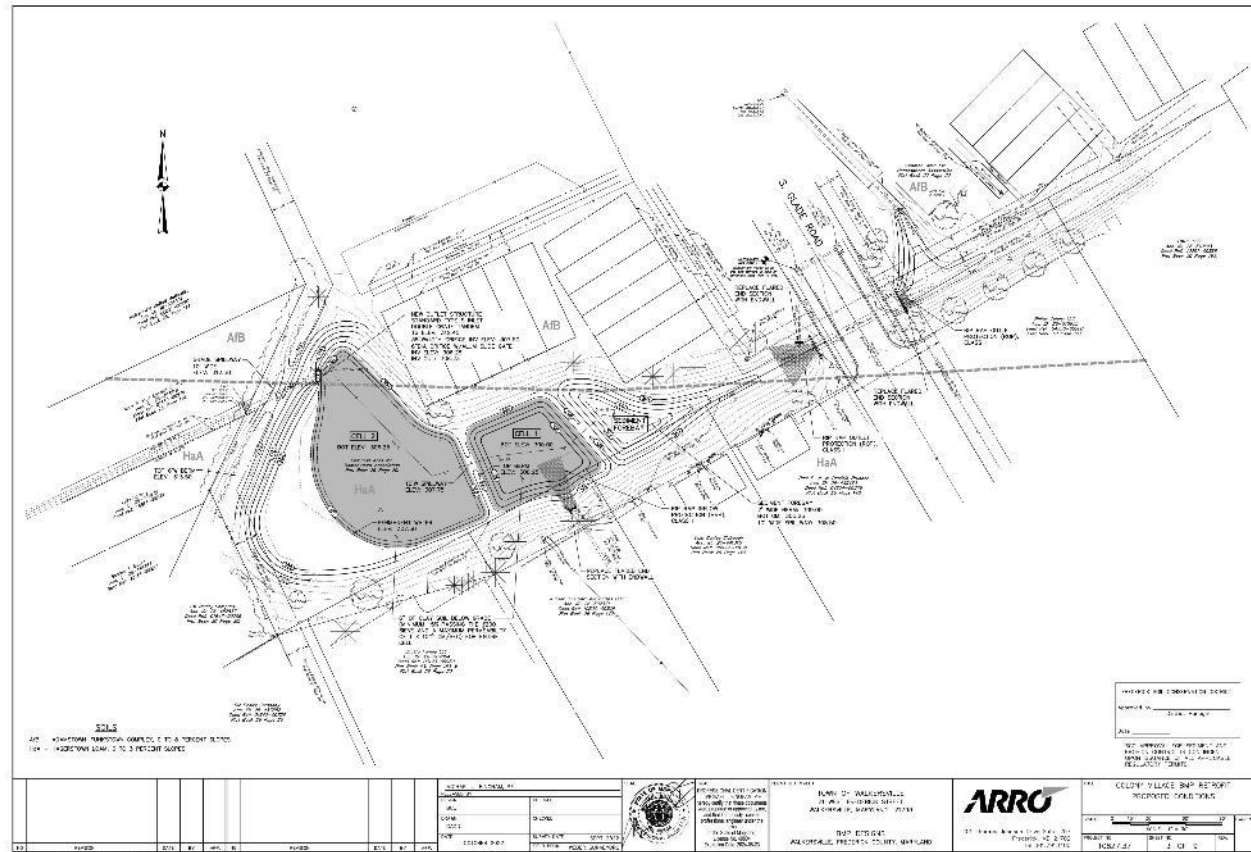
- Current facility drains through a 48" CMP outlet pipe in a westward direction tributary to Glade Creek.
- After construction of the proposed BMP, the site will continue to flow in the same pattern as the existing conditions, however at an even lesser rate due to a larger storage volume and modified outlet structure in the proposed BMP. Project will reduce the current peak flow rates by increasing the basin volume and modifying the outlet structure.
- Six major BMPs are within the drainage area. Each was analyzed and included in the model to accurately portray runoff conditions.
- Structural Improvements Include:
 - Lowering basin bottom
 - Increasing berm height
 - Modifying basin grading
 - Installing a slow-release outlet structure
 - Installation of sediment forebay
 - Increasing spillway invert
 - 2 pond cells to be installed for water quality treatment – **cell 1** – 2.75' permanent water depth, **cell 2** – 1.25' permanent water depth
- 36.9 credits, high-end cost estimate = 350-475 k

Colony Village Basin (Retrofit)

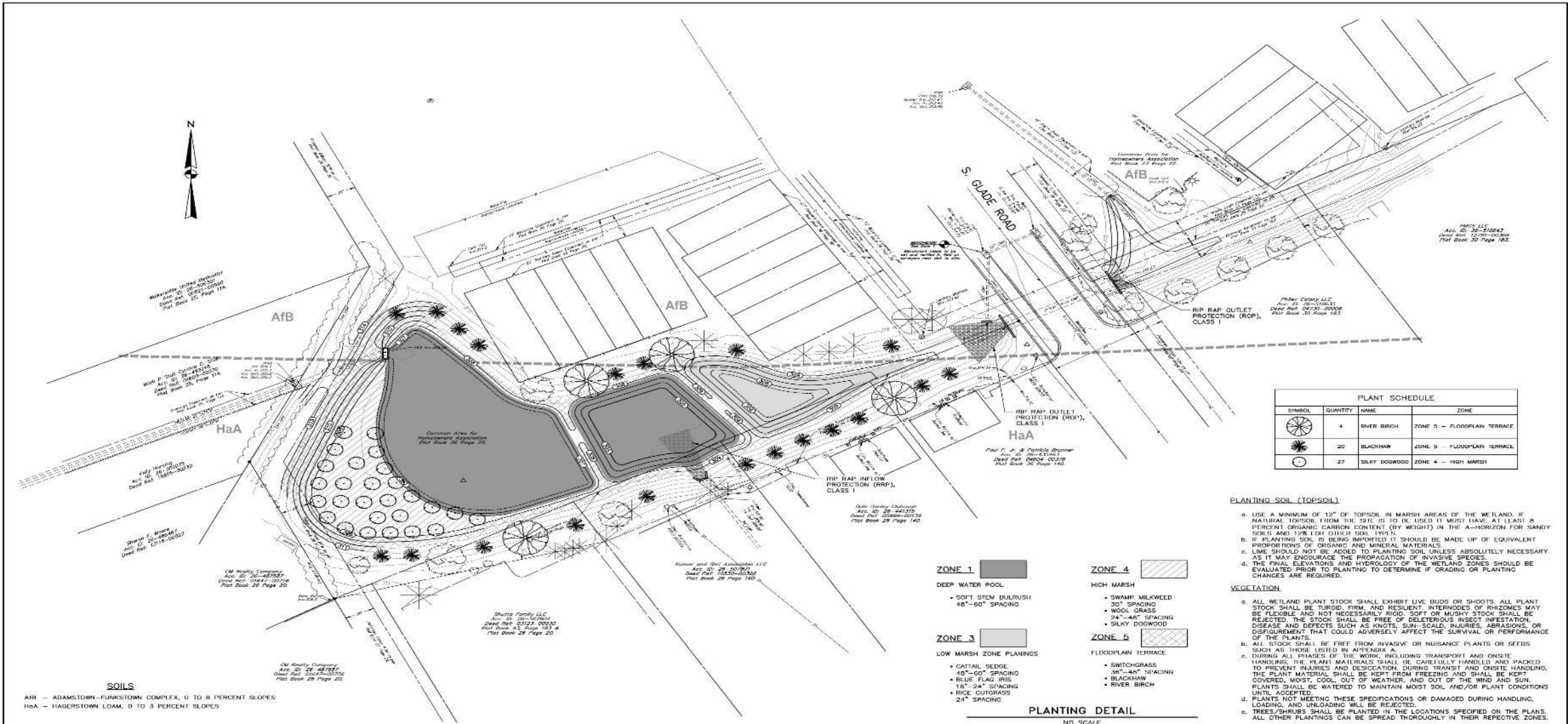
Existing Conditions



Proposed Conditions



Landscape Plan



PLANT SCHEDULE			
SYMBOL	QUANTITY	NAME	ZONE
	4	RIVER BIRCH	ZONE 5 - FLOODPLAIN TERRACE
	20	BLACKHAW	ZONE 5 - FLOODPLAIN TERRACE
	27	SILKY DOGWOOD	ZONE 4 - HIGH MARSH

- PLANTING SOIL (TOPSOIL)**
- USE A MINIMUM OF 12" OF TOPSOIL IN MARSH AREAS OF THE WETLAND. IF NATURAL TOPSOIL FROM THE SITE IS TO BE USED IT MUST HAVE AT LEAST 8 PERCENT ORGANIC CARBON CONTENT (BY WEIGHT) IN THE A-HORIZON FOR SANDY SOILS AND 12% FOR OTHER SOIL TYPES.
 - IF PLANTING SOIL IS BEING IMPORTED IT SHOULD BE MADE UP OF EQUIVALENT PROPORTIONS OF ORGANIC AND MINERAL MATERIALS.
 - LIME SHOULD NOT BE ADDED TO PLANTING SOIL UNLESS ABSOLUTELY NECESSARY AS IT MAY ENCOURAGE THE PROPAGATION OF INVASIVE SPECIES.
 - THE FINAL ELEVATIONS AND HYDROLOGY OF THE WETLAND ZONES SHOULD BE EVALUATED PRIOR TO PLANTING TO DETERMINE IF GRADING OR PLANTING CHANGES ARE REQUIRED.

- VEGETATION**
- ALL WETLAND PLANT STOCK SHALL EXHIBIT LIVE BUDS OR SHOOTS. ALL PLANT STOCK SHALL BE TURPID, FIRM, AND RESILIENT. INTERNODES OF RHIZOMES MAY BE FLEXIBLE AND NOT NECESSARILY RIGID. SOFT OR MUSHY STOCK SHALL BE REJECTED. THE STOCK SHALL BE FREE OF DELETERIOUS INSECT INFESTATION, DISEASE AND DEFECTS SUCH AS KNOTS, SUN-SCALD, INJURIES, ABRASIONS, OR DISFIGUREMENT THAT COULD ADVERSELY AFFECT THE SURVIVAL OR PERFORMANCE OF THE PLANTS.
 - ALL STOCK SHALL BE FREE FROM INVASIVE OR NOISY PLANTS OR SEEDS SUCH AS THOSE LISTED IN APPENDIX A.
 - DURING ALL PHASES OF THE WORK, INCLUDING TRANSPORT AND ONSITE HANDLING, THE PLANT MATERIALS SHALL BE CAREFULLY HANDLED AND PACKED TO PREVENT INJURIES AND DESICCATION. DURING TRANSPORT AND ONSITE HANDLING, THE PLANT MATERIAL SHALL BE KEPT FROM FREEZING AND SHALL BE KEPT COVERED, MOIST, COOL, OUT OF WEATHER, AND OUT OF THE WIND AND SUN. PLANTS SHALL BE WATERED TO MAINTAIN MOIST SOIL AND/OR PLANT CONDITIONS UNTIL ACCEPTED.
 - PLANTS NOT MEETING THESE SPECIFICATIONS OR DAMAGED DURING HANDLING, LOADING, AND UNLOADING WILL BE REJECTED.
 - TREES/SHRUBS SHALL BE PLANTED IN THE LOCATIONS SPECIFIED ON THE PLANS. ALL OTHER PLANTINGS CAN BE SPREAD THOROUGHLY IN THEIR RESPECTIVE ZONES.

PLANTING DETAIL
NO SCALE

<p>ZONE 1</p> <p>DEEP WATER POOL</p> <ul style="list-style-type: none"> SOFT STEM BULRUSH 48"-60" SPACING 	<p>ZONE 4</p> <p>HIGH MARSH</p> <ul style="list-style-type: none"> SWAMP MILKWEED 30" SPACING WOOL GRASS 24"-48" SPACING SILKY DOGWOOD
<p>ZONE 3</p> <p>LOW MARSH ZONE PLANNING</p> <ul style="list-style-type: none"> CATTAIL SEDGE 48"-60" SPACING BLUE FLAG IRIS 18"-24" SPACING RICE CUTGRASS 24" SPACING 	<p>ZONE 5</p> <p>FLOODPLAIN TERRACE</p> <ul style="list-style-type: none"> SWITCHGRASS 36"-48" SPACING BLACKHAW RIVER BIRCH

SOILS
Afb - ADAMSTOWN-FUNKSTOWN COMPLEX, 0 TO 8 PERCENT SLOPES
HaA - HAGERSTOWN LDM, 0 TO 3 PERCENT SLOPES

<p>NO. REVISION DATE BY APP. NO.</p>			<p>NO. REVISION DATE BY APP. NO.</p>			<p>DATE: OCTOBER 2022 SURVEY DATE: SEPT 2022 FIELD BOOK: WILSON SURVEYS</p>		<p>PROFESSIONAL CERTIFICATION I, MICHAEL J. BINGHAM, P.E., hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 06584, Expiration Date: 2024-08-23</p>		<p>CLIENT & PROJECT TOWN OF WALKERSVILLE 21 WEST FREDERICK STREET WALKERSVILLE, MARYLAND 21793</p>		<p>ARRG 701 Thomas Johnson Drive Suite 207 Frederick, MD 21702 Tel: 301.791.1100</p>		<p>TITLE: COLONY VILLAGE BMP RETROFIT LANDSCAPE PLAN</p> <p>SCALE: 0 10' 20' 30' 40' 50' 60' 70' 80' 90' 100' (INCHES)</p> <p>PROJECT NO. 10B27.37 SHEET NO. 6 OF 9 REV.</p>	
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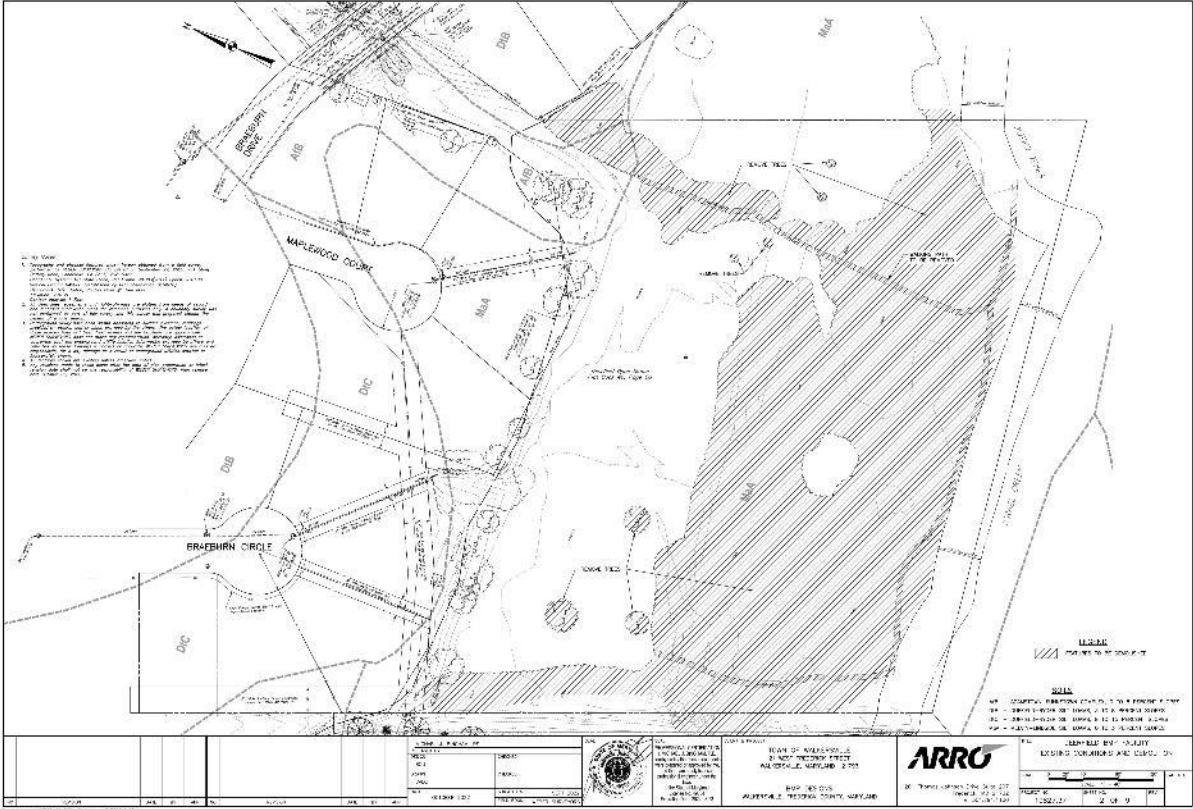
Dwg Name: 10B2737-000 COLONY VILLAGE.DWG Plot Date: 1/16/2023 2:27 PM

Deerfield Stormwater Basin (New)

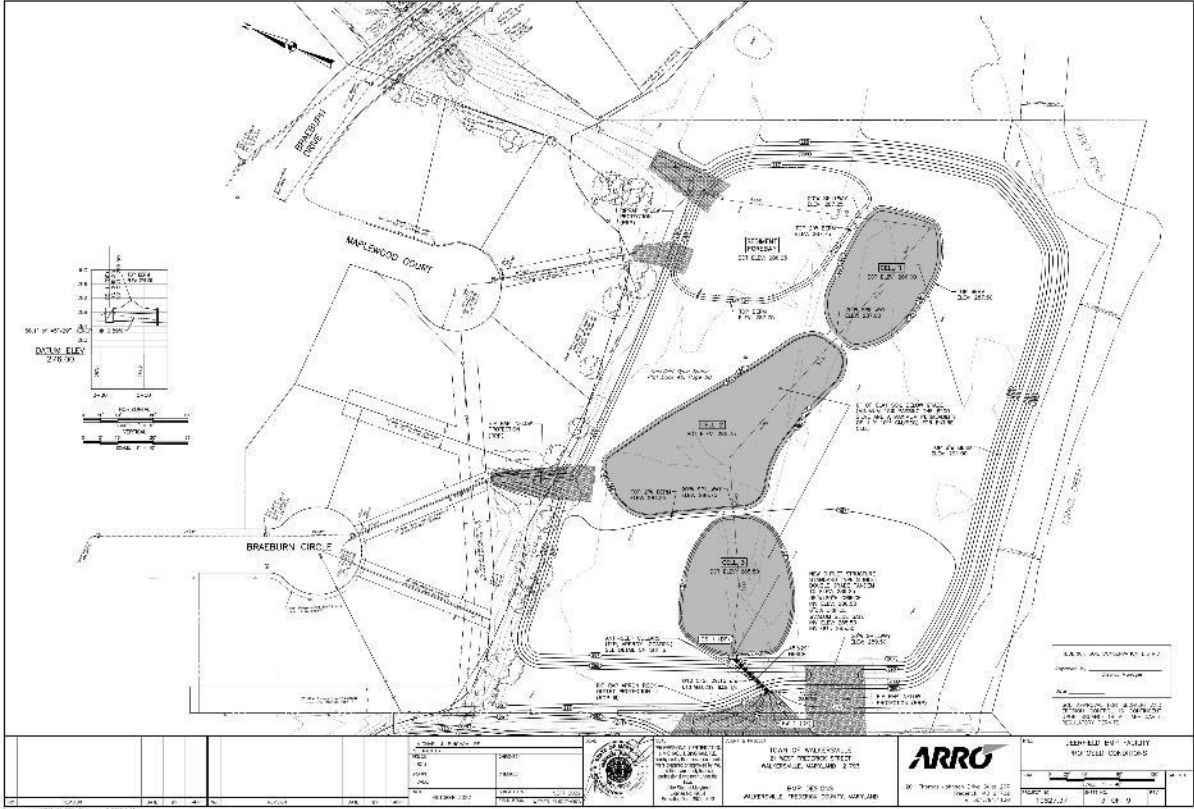
- The site is currently a field that drains in a southward direction into Israel Creek.
- After construction of the proposed BMP, the site will continue to flow in the same pattern as the existing conditions, however at an even lesser rate due to a large storage volume and installed outlet structure in the proposed BMP.
- Improvements will create lower peak runoff rates discharging from the BMP, as well as detain water for a longer period of time which will help treat the stormwater and improve downstream impacts.
- Structural Improvements Include:
 - Forming basin bottom
 - Installing a berm
 - Modifying site grading
 - Installing an outlet structure
 - Installation of sediment forebay
 - Installing an emergency spillway
 - 3 pond cells to be installed for water quality treatment – **cell 1** – 1' permanent water depth, **cell 2** – 1' permanent water depth, **cell 3** 1.' – permanent water depth
- 44.00 credits, high-end cost estimate = *900-1,800 k*

Deerfield Stormwater Basin (New)

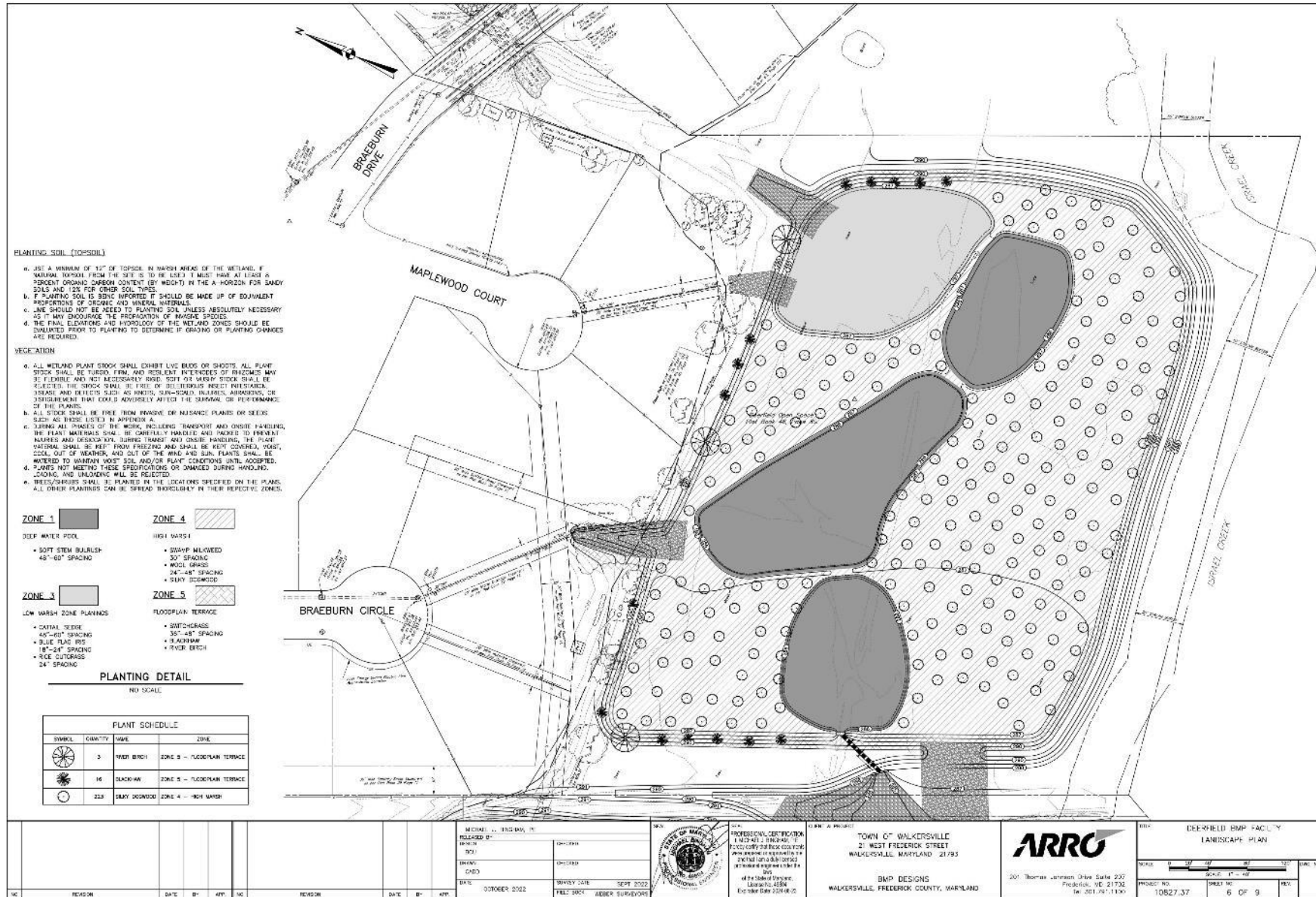
Existing Conditions



Proposed Conditions



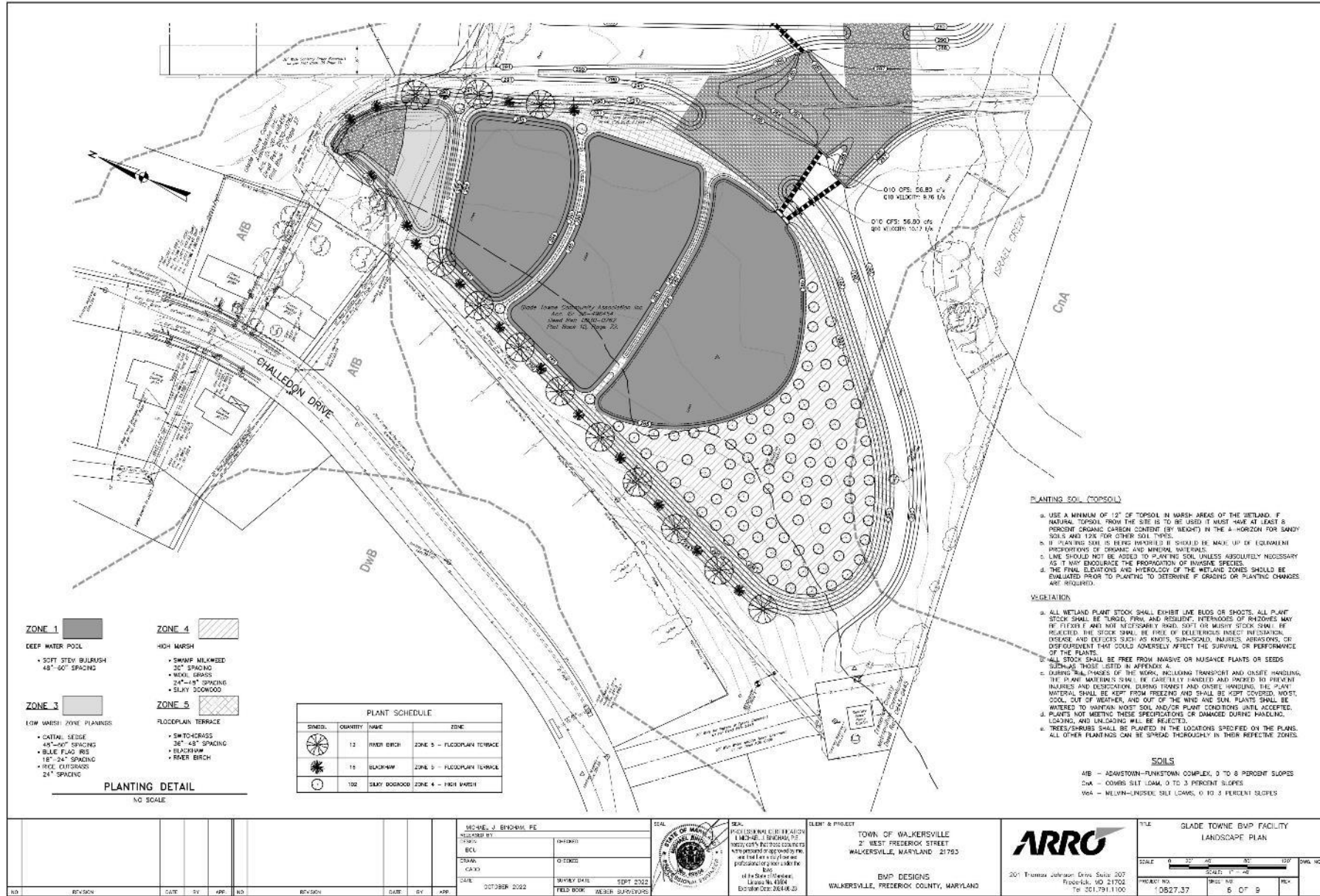
Landscape Plan



Glade Town Basin (New)

- The site currently drains through a concrete swale in a southern direction into Israel Creek.
- After construction of the proposed BMP, the site will continue to flow in the same pattern as the existing conditions, however at an even lesser rate due to a larger storage volume and addition of 2 outlet structures in the proposed BMP.
- Improvements will create lower peak runoff rates discharging from the BMP, as well as detain water for a longer period of time which will help treat the stormwater and improve downstream impacts.
- Structural Improvements Include:
 - Forming basin bottom
 - Installing a berm
 - Modifying site grading
 - Installing outlet structures
 - Installation of sediment forebays
 - Installing an emergency spillway
 - 3 pond cells to be installed for water quality treatment – **cell 1** – 2.25' permanent water depth, **cell 2** – 1' permanent water depth, **cell 3** 1.25' – permanent water depth
- 72.14 credits, high-end cost estimate = *900-1,500 k*

Landscape Plan

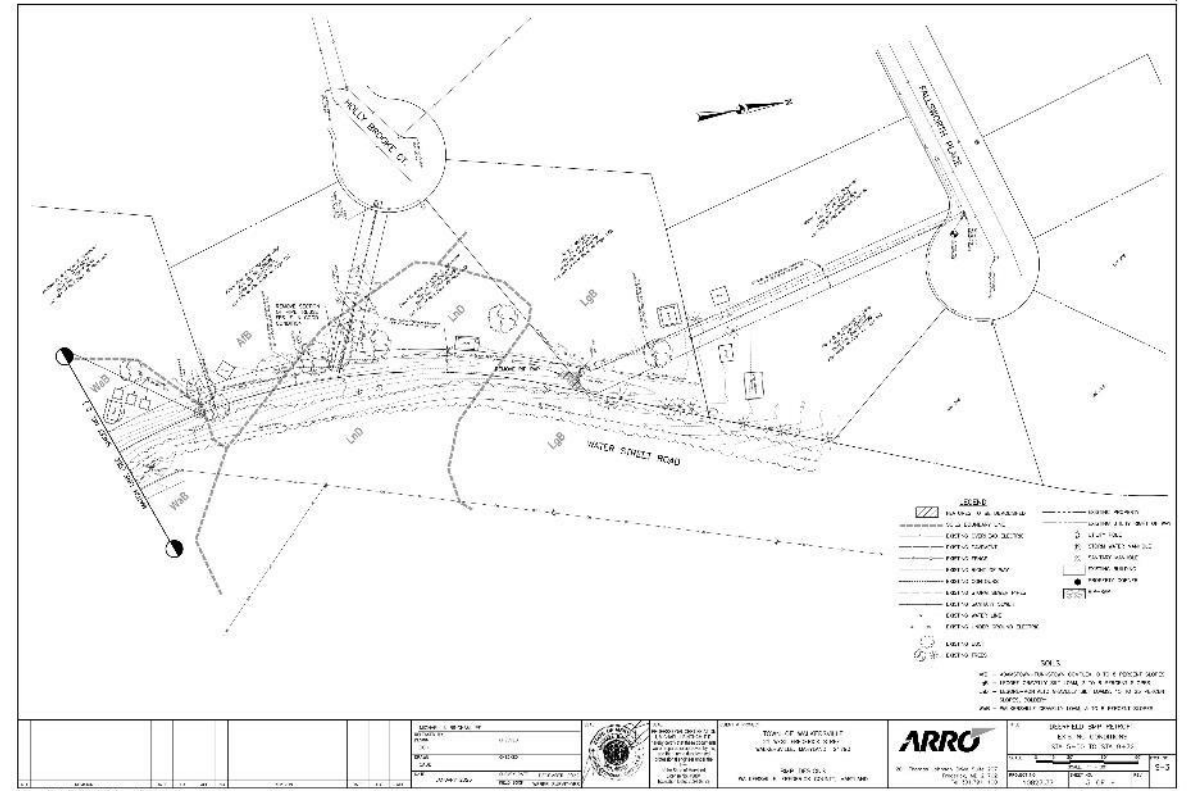
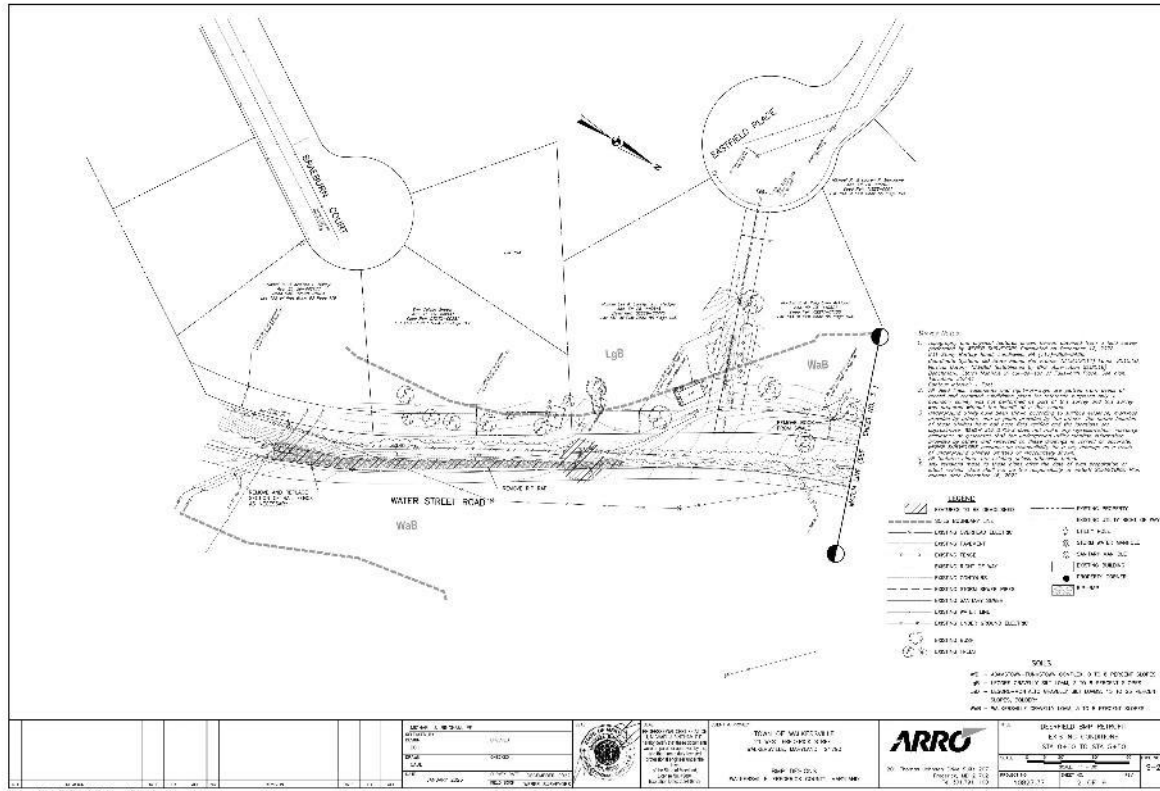


Deerfield Swale (Retrofit)

- The site is currently a swale that drains through a 2 X 33" RCP culvert in an eastward direction into Israel Creek.
- After construction of the proposed BMP, the site will continue to flow in the same pattern as the existing conditions.
- Retrofitted facility will improve the current site conditions, prevent erosion, and decrease nutrient and sediment loads into local surface waters.
- Structural Improvements Include:
 - Regrading swale
 - Installation of sediment forebay
 - Installing new rip-rap
 - Installing permeable soils
 - Installing a a 4" PVC underdrain
- Currently a number of fences installed by private residents encroach the existing 10' swale buffer.
- 6.96 credits, high-end cost estimate = 250-350 k

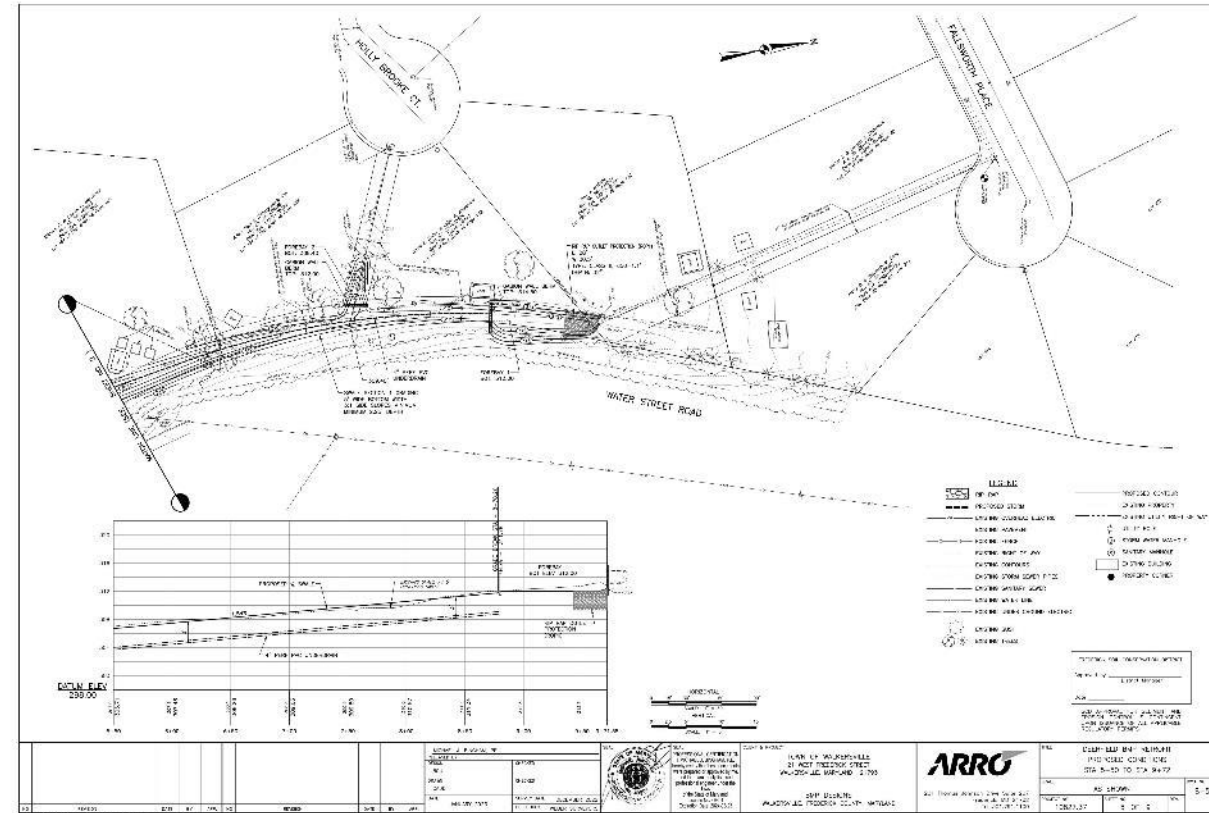
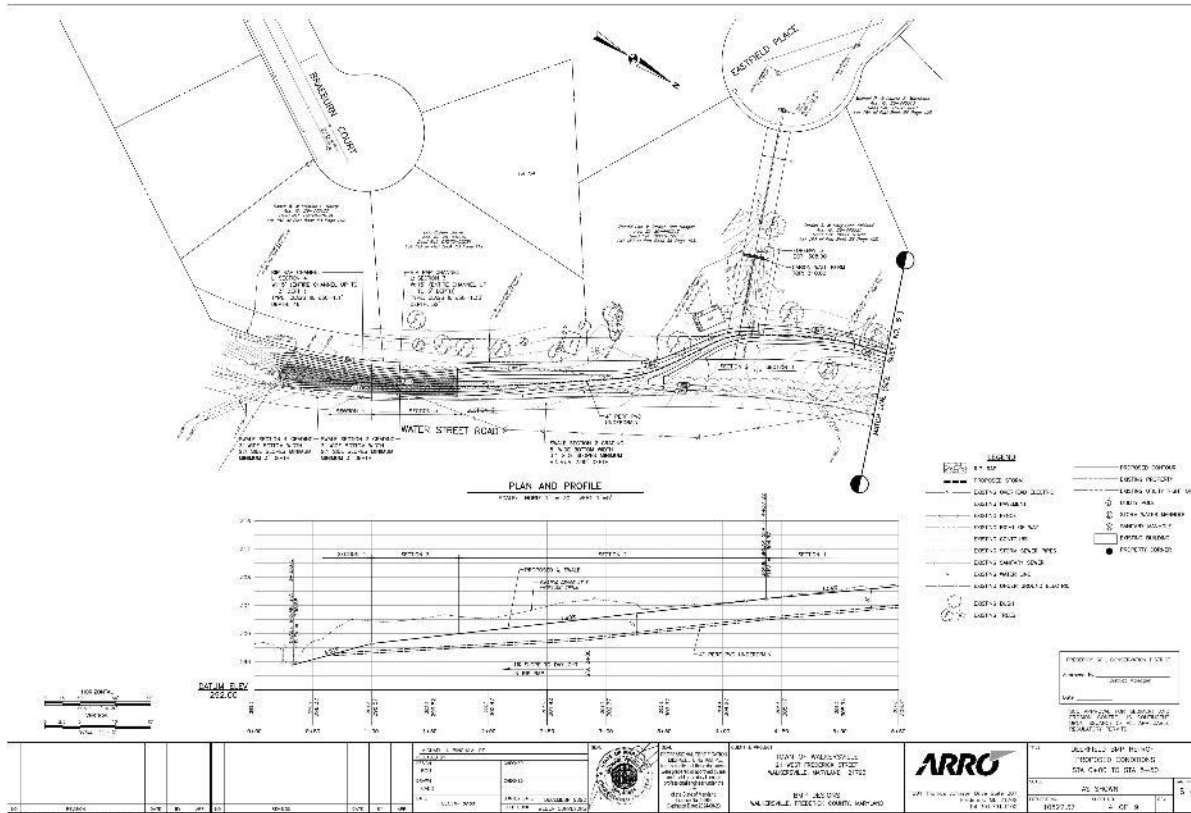
Deerfield Swale (Retrofit)

Existing Conditions



Deerfield Swale (Retrofit)

Proposed Conditions



Summary/Questions/Comments

- **ARRO/The Town will work to meet Walkersville's 2025 impervious surface restoration goal by 2025.**
- **The Town will continue to conduct infrastructure inspections as required by its stormwater permit. Required maintenance will be communicated to the responsible party.**
- **The County and the Town have a memorandum of understanding (MOU) which enables the County to conduct stormwater BMP facility inspections on the Town's behalf. Required maintenance will be communicated to the responsible party directly from Frederick County.**
- **The Town encourages the public to report illicit discharges and dumping to the Town office or through the Town's illicit discharge reporting form on the Town's stormwater webpage.**
- **If you are a private property owner interested in partnering with the Town for a future stormwater project, please contact the Town office.**
- **The Town will continue to advertise events and new information related to MS4 at quarterly public meetings, and on the Town's stormwater webpage.**