

Appendices

Financing Feasibility Study for Stormwater Management in Berlin, Maryland

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Appendix A – Timeline of Major Events, Presentations, and Meetings

July-September 2011

July 14, 2011 – EFC facilitated two meetings – one with Berlin staff and one with Berlin staff and members of Grown Berlin Green to begin outreach discussion.

August 14, 2011 – EFC hosted an informational table at the Peach Festival.

September 8, 2011 – EFC co-hosted a luncheon for local stormwater management engineers and practitioners.

September 15, 2011 – EFC met with Berlin town officials and conducted a site visit to ten stormwater hotspots around Berlin.

September 17, 2011 – EFC hosted an informational table at the Tindley Gospel Festival.

September 17, 2011 – Grow Berlin Green distributed stormwater postcards and flyers at Coast Day at Assateague State Park. Coast Day is hosted annually by the Maryland Coastal Bays Program.

September 18, 2011– EFC launched stormwater photo contest.

September 23, 2011 – EFC and the town sent a press release to eight local media sources to announce the Stormwater Photo Contest.

October-December 2011

October 4, 2011 – The first meeting of the Stormwater Stakeholder Committee took place at Berlin’s Town Hall.

October 5, 2011– EFC facilitated the District 1 Public Meeting.

October 14, 2011 – EFC co-hosted an informational table, including a display of the photo contest, at the Friday Art Stroll.

October 15, 2011 – EFC co-hosted an informational table, including a display of the photo contest, at Berlin’s Oktoberfest.

October 18, 2011– EFC facilitated the District 2 Public Meeting.

October 19, 2011 – EFC and the town of Berlin announce photo contest winners.

November 10, 2011– EFC facilitated the District 3 Public Meeting.

November 15, 2011 – The second meeting of the Stormwater Stakeholder Committee took place at Berlin’s Town Hall.

November 15, 2011 – EFC facilitated the District 4 Public Meeting.

December 7, 2011 – EFC met with Town Administrator, Water Resources Manager, and Engineer to review sites and prioritize needs for stormwater improvements.

December 7, 2011 – EFC facilitated a walking tour of the neighborhood around St. Paul United Methodist church at 405 Flower Street. Following the tour, residents and community leaders were invited to an informal discussion facilitated by the EFC.

January-March 2012

January 12, 2012 – EFC facilitated a meeting with town officials and the Maryland Department of Natural Resources at DNR Headquarters to facilitate dialogue about the Hudson Branch project.

February 9, 2012 – EFC met with Town Administrator and Water Resources Manager to review and revise the Level of Service for Berlin. Project Team met separately with Planning Director to review planning and zoning maps of Berlin.

February 10, 2012 – EFC facilitated a site visit between Maryland Department of Natural Resources and town of Berlin officials.

March 7, 2012 – EFC presented preliminary findings to the town of Berlin Historic District Commission.

March 7, 2012 – EFC met with residents of Decatur Farms at the monthly Decatur Farms Homeowner's Association meeting.

March 12, 2012 – EFC met with Town Administrator and Water Resources Manager to review and revise the Level of Service for Berlin. EFC met separately with Planning Director to review planning and zoning maps of Berlin.

March 26, 2012 – EFC drafted and submitted a project update for the Spring 2012 issue of the Berlin Community News.

April-June 2012

May 15, 2012 – EFC met with Berlin town officials and EA Engineering to discuss preliminary findings and next steps.

June 14, 2012 – EFC met with Berlin town officials and the Mayor to discuss preliminary findings and next steps.

June 14, 2012 – The third meeting of the Stormwater Stakeholder Committee took place at Berlin's Town Hall.

Appendix B – Town Engineer’s Study



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Ocean Pines, MD 21811
Telephone: 410-641-5341
Fax: 410-641-5349
www.eaest.com

June 6, 2012
EA Project No. 1470404

Tony Carson, MPA
Town Administrator
Town of Berlin
10 Williams Street
Berlin, Maryland 21811

RE: DRAFT - Stormwater Management Financial Study – Budgetary Cost Estimates for High Priority Areas within the Town of Berlin

Dear Mr. Carson:

EA Engineering, Science and Technology, Inc. (EA) is pleased to submit these budgetary cost analyses and documentation for options to address flooding concerns and provide water quality at several areas in the Town of Berlin in support of the financial study being conducted by the University of Maryland Environmental Finance Center (EFC) and the Maryland Department of Natural Resources (DNR). The following sections present an overview of methodology, assumptions and a summary of the budgetary cost estimates resulting from the feedback from the Town’s residents and information provided by the EFC.

Introduction

The EFC is conducting a stormwater management (SWM) financial study for the Town of Berlin to provide recommendations for how the town might implement a long-term strategy for financing a self-sustaining SWM program. As an integral component of the EFC’s preparation of a SWM financial study for the Town of Berlin, the EFC organized and conducted a public outreach meeting for each district (1 through 4) within the Town. The goal and intent of these public outreach meetings was to gain valuable insight from the residents’ and business owners’ perspective on flooding concerns within the Town of Berlin. The information was collected and evaluated by the EFC. Based on the tabulated results from the participants in the public outreach meetings, the EFC presented the areas of high priority regarding flooding within the Town. This list of areas was used as the basis to compare to the *Draft Stormwater System Improvement Study* prepared by the Army Corps of Engineers (USACE) for the Town of Berlin dated July 2007 (USACE Study). As a part of this study, the Town has asked EA to develop budgetary cost estimates for the stormwater management improvements associated with these high priority areas.

Methodology

Hydrologic and hydraulic modeling performed by the USACE was systematically evaluated. The report identified several problem areas where flooding occurs due to stormwater runoff. The areas were prioritized as high, medium and low. EA correlated the areas of concern voiced by residents with several of the areas identified as high priority in the USACE study to develop budgetary cost estimates for use in the SWM financial study. The USACE study provided several alternatives to address flooding concerns within each of the areas. EA selected those alternatives that alleviated the flooding condition and provided opportunities for improving water quality. For example, an alternative that included both storm drain replacements to increase capacity and a water quality facility like a pond to help attenuate flows was selected over an alternative that included just storm drain replacements. This approach is based on the updated stormwater management requirements implemented following the preparation of the USACE study. The budgetary cost estimates utilized the SWM Cost Templates developed by EA in 2011. The basis for the Cost Templates was published standard unit prices from Wicomico County, Charles County,



RS Means, and recent project bids to estimate overall project costs. Costs were also added for survey, engineering design, geotechnical investigations, mobilization/demobilization and maintenance of traffic.

The following areas of concern identified during the public outreach were evaluated and listed in their projected order of priority from highest priority to lowest:

- Area 2 – Cedar, Pine, maple, Franklin, Grice, and Nelson
- Area 3 – Williams Street Near Electrical Plant
- Area 5 – Henry's Green/Henry's Mill
- Area 1 – West Street Near Abbey Lane
- Area 6 – Hudson Branch at Flower and Showell
- Area 16 – Decatur Farms Development

The following is a general discussion identifying the major improvements for each of the highest priority flooding areas within the Town of Berlin listed above.

Area 2 – Cedar, Pine, Maple, Franklin, Grice, and Nelson

Area 2, as identified in the USACE Study, is located within District 1 of the Town of Berlin. After reviewing the tabulated feedback from the residents resulting from the public outreach meetings, it is clear that this is a high priority area of concern regarding flooding within this district. Area 2 consists of the area associated with Cedar Street, Pine Street, Maple Drive, Franklin Avenue, Grice Street and Nelson Avenue. This area maintains a long history of public and resident's expressed concerns over the frequency and amount of flooding within this area. EA evaluated the USACE study and the alternatives presented for stormwater management improvements provided in the study for Area 2. Based on this review, EA considers Alternative 2E the most comprehensive and complete option to mitigate the flooding concerns experienced within this area. The improvements associated with this area include a regional stormwater management system consisting of a wet pond/constructed wetland, associated conveyance piping, bypass piping and major street repairs. It should be noted that property to the west of Nelson Avenue and north of the Perdue Plant is in the planning stages for improvements related the development of an activity center. This component will be required to meet the current stormwater management regulations and may provide a slight improvement to flooding in this area. Although, the improvements to flooding is anticipated to be minor and major improvements to stormwater management control in this area are still anticipated. The breakdown of the budgetary cost items associated with this regional stormwater management facility is illustrated in Table 1 (attached).

Area 3 – Williams Street Near Electrical Plant

Area 3, as identified in the USACE Study, is located within District 2 of the Town of Berlin. After reviewing the tabulated feedback from the residents resulting from the public outreach meetings, it is clear that this is a high priority area of concern regarding flooding within. Area 3 consists of the area on Williams Street near the Town of Berlin's Electrical Plant. It should also be noted that this area is downstream of the stormwater conveyance network associated with Area 2 which is also in District 2. EA evaluated the USACE study and the alternatives for stormwater management improvements provided in the study for Area 3. Based on this review, EA considers Alternative 3C the most comprehensive and complete option to mitigate the flooding concerns experienced on Williams Street. The improvements associated with this area include a regional diversion stormwater management system consisting of a wet pond/constructed wetland and associated conveyance piping. The breakdown of the budgetary cost items associated with this regional stormwater management facility is illustrated in Table 2 (attached).

Area 5 – Henry's Green/Henry's Mill

Area 5, as identified in the USACE Study, is also located within District 2 of the Town of Berlin. After reviewing the tabulated feedback from the residents resulting from the public outreach meetings, it is clear



that this is a high priority area of concern regarding flooding within this district is associated with the developments consisting of Henry's Green and Henry's Mill. It should also be noted that this area of concern is adjacent to Area 1 of the USACE Study which is also in District 2. EA evaluated the USACE study and the alternatives for stormwater management improvements provided in the study. Based on this review, EA considers Alternative 5H2 the most comprehensive and complete option to mitigate the flooding concerns experienced within and adjacent to these developments. The improvements associated with this area include a regional stormwater management system consisting of a wet pond/constructed wetland and associated conveyance piping. This regional stormwater management system would impact and reduce the flooding experienced in Area 1 as well. The breakdown of the budgetary cost items associated with this regional stormwater management facility is illustrated in Table 3 (attached).

Area 1 – West Street Near Abbey Lane

Area 1, as identified in the USACE Study, is located within District 2 of the Town of Berlin. After reviewing the tabulated feedback from the residents resulting from the public outreach meetings, it is clear that a high priority area of concern regarding flooding within this district is associated with West Street and Abbey Lane. It should also be noted that this area of concern is adjacent to Area 5 of the USACE Study which is also in District 2. EA evaluated the USACE study and the alternatives for stormwater management improvements provided in the study. Based on this review, EA considers Alternative 1-5A the most comprehensive and complete option to mitigate the flooding concerns experienced on West Street and Abbey Lane. The improvements associated with this area include a regional stormwater management system consisting of a wet pond/constructed wetland and associated conveyance piping. This regional stormwater management system would impact and reduce the flooding experienced in Area 5 as well. The breakdown of the budgetary cost items associated with this regional stormwater management facility is illustrated in Table 4 (attached).

Area 6 – Hudson Branch at Flower and Showell

Area 6, as identified in the USACE Study, is located within Districts 3 and 4 of the Town of Berlin. After reviewing the tabulated feedback from the residents resulting from the public outreach meetings, it is clear that this is a high priority area of concern regarding flooding within this district is associated with Hudson Branch near Branch Street, Flower Street and Showell Street. EA evaluated the USACE study and the alternatives for stormwater management improvements provided in the study. Based on this review, EA considers Alternative 6B and 6C the most comprehensive and complete option to mitigate the flooding concerns experienced on Branch, Flower and Showell Streets. The improvements associated with this area include increasing the size of the culvert system associated with Hudson Branch traveling under Flower Street and possible flood proofing of adjacent residential and business dwellings. It should be noted this area of Hudson Branch is in the planning and designing phase of improvements consisting of a regenerative stormwater conveyance system. These improvements may have a significant impact on flooding in the area. The breakdown of the budgetary cost items associated with this regional stormwater management facility is illustrated in Table 5 (attached).

Area 16 – Decatur Farms Community

Area 16 is not identified within the USACE Study, but is located within District 4 of the Town of Berlin. Although feedback was not provided from residents within the Decatur Farms community during the public outreach meetings, it is clear that this is a high priority area of concern regarding flooding within this district. The Decatur Farms Home Owner's Association (HOA) has voiced their concerns regarding localized flooding within the development to the Town prior to the public outreach meetings. The HOA has also discussed their concerns with EA and attempted to illustrate the cause of the flooding being related to original completed construction of the community. Based on site evaluations and discussions with the HOA, there appears to be sufficient capacity within the community stormwater management ponds. The apparent issue is with the construction of the swales transporting the stormwater. The improvements associated with this area include significant regrading to the existing swales throughout the community. It



is also possible that the capacity of the existing stormwater management ponds may need to be increased based on the regrading activities. These improvements may have a significant impact on localized flooding in the Decatur Farms community. The breakdown of the budgetary cost items associated with this regional stormwater management facility is illustrated in Table 6 (attached).

Implementation

Based on the prioritization of the projects, EA evaluated the recommended timeframe for implementation of the projects. Each area was systematically evaluated to determine the watershed in which the area lies, whether the area of concern was in the upper or lower portions of the watershed, and which areas of concern were located within the same watershed downstream that may be impacted by other areas. EA also assessed timeframes for design and permitting versus construction durations to assist in the determination when funds would need to be allocated by the Town.

Improvements for four of the six priority areas include design and construction of regional stormwater management pond. The function of these facilities is to detain runoff to decrease the peak flow rate downstream. As such, stormwater ponds should be constructed upstream to downstream within a given watershed. The flow reduction benefit of an upstream pond can lead to reduced sizes of other stormwater management infrastructure within the watershed downstream of a pond. Of the four regional stormwater ponds evaluated, no two are in series along the same watercourse, however, Areas 2 and 3 both drain to Area 6. The implementation of regional stormwater ponds in Areas 2 and 3 will significantly reduce flow rates conveyed to the undersized culvert in Area 6 and may reduce or eliminate the flooding concerns in Area 6. For this reason, it is recommended that projects be implemented in Areas 2 and 3 prior to Area 6. All other recommendations could be designed and constructed in the order of prioritization based on public outreach.

In order to allocate available funding based on the timing of design, permitting, and construction the following table indicates estimated timeframes required for each phase of the project.

| Project | Estimated Design and Permitting Time (months) | Estimated Construction Time (months) |
|---------|-----------------------------------------------|--------------------------------------|
| Area 2 | 12 | 3 |
| Area 3 | 18 | 3 |
| Area 5 | 12 | 3 |
| Area 1 | 12 | 3 |
| Area 6 | 6 | 2 |
| Area 16 | 3 | 3 |

Assumptions

The following assumptions were used to approximate project costs:

1. The recommended approaches in the USACE study were the basis for the budgetary cost estimates and the validity of each alternative was not necessarily confirmed.
2. In some cases, Worcester County GIS data, including 2-foot contour interval LIDAR data and storm drain system data, along with engineering judgment were used to supplement the written descriptions of the design alternatives from the USACE study,
3. Survey costs were estimated using 5 percent of total construction cost for total construction costs of less than or equal to \$500,000 4 percent of total construction cost for total construction costs greater than \$500,000 and less than or equal to \$1,000,000, and 3 percent of total construction cost for total construction costs greater than \$1,000,000,
4. Engineering design costs were estimated using 10 percent of total construction cost,



5. Mobilization/demobilization costs were estimated using 10 percent of total construction cost,
6. Geotechnical investigation costs were estimated using RS Means,
7. Maintenance of traffic costs were estimated using daily costs from a recent project bid, and
8. A 30 percent contingency was added to the total project cost to account for items that could not be quantified without a more complete design.
9. Estimated costs associated with property easements and/or acquisitions are not included within these budgetary estimates.

It should also be noted that for Alternative 6C, an estimated high-end cost was provided using engineering judgment for the flood proofing of five homes located within a floodplain of Hudson Branch to provide a range of cost. Without structure survey data including finished floor elevation, lowest adjacent grade, and lowest opening elevation, estimating the required work necessary to flood proof the homes is not possible.

Budgetary Cost Estimates

The Budgetary Engineer's Cost Estimate Tables 1 through 5 prepared for each alternative is attached. The following table summarizes the total estimated project costs for each of the alternatives:

| High Priority Area | Budgetary Cost Estimate |
|-------------------------|-------------------------|
| Area 2 | \$1,018,582 |
| Area 3 | \$395,617 |
| Area 5* | \$1,114,293 |
| Area 1* | \$1,913,814 |
| Area 6 (Alternative 6B) | \$126,400 |
| Area 6 (Alternative 6C) | \$570,000 |
| Area 16 | \$112,500 |

**The evaluated approach and cost associated with Area 1 is inclusive of the effort identified above for Area 5. These areas are segregated and outlined above as separate areas based on the approach identified in the USACE study. With the implementation of the improvements proposed for Area 1, the costs associated with Area 5 would not be required. It is recommended that a regional stormwater management facility like that of which is proposed within Area 1 be implemented to maximize the reduction of flooding within Areas 5 and 1.*

The estimates above reflect the budgetary cost estimates for the high priority areas resulting from the EFC's public outreach. EA understands that the EFC will be including the budgetary estimates associated with inspection and maintenance of the both the existing stormwater management systems and anticipated new systems and/or improvements. Further, EA recognizes that this is a small component of the more detailed and complex financial impact study for stormwater management within the Town of Berlin. EA can be available to meet and discuss in further detail the determination of the overall costs projected for the stormwater management improvements for the Town of Berlin. Please feel free to contact me if you have any questions.

Sincerely,

Darl Kolar, P.E.
 Project Manager

Attachments: Tables 1 through 6

Appendix C – Local Press Coverage

Local press, including the Bayside Gazette, Maryland Coast Dispatch, and Ocean City Today, provided a lot of coverage (mostly positive) throughout this feasibility study. The press was particularly helpful in promoting the photo contest and highlighting the winning photos. Significant press is included in the list below:

- October 7th – Bayside Gazette, Berlin Gets Proactive with Storm Water, Tony Russo, <http://www.baysideoc.com/eastern-shore-news/Berlin-Gets-Proactive-with-Storm-Water>
- October 7th – Maryland Coast Dispatch, Berlin Residents Discuss Flooding Woes, Travis Brown, <http://www.mdcoastdispatch.com/articles/2011/10/07/Top-Stories/Berlin-Residents-Discuss-Flooding-Woes>
- October 14th – Ocean City Today, Stormwater solutions and projects sought for town of Berlin, Tony Russo, http://www.oceancitytoday.net/news/2011-10-14/Top_News/Stormwater_solutions_and_projects_sought_for_town_.html
- October 20th – Bayside Gazette, Valliant takes first place in storm water photo contest, Tony Russo, <http://www.baysideoc.com/> and <http://www.baysideoc.com/eastern-shore-news/Photo-Contest-Winners-Announced>
- October 23th – The Daily Times, Grapevine, Anonymous, <http://www.delmarvanow.com/article/20111023/OPINION08/110230323/GRAPEVINE>
- October 28th – Berlin Briefs, Nancy Powell, http://www.oceancitytoday.net/news/2011-10-28/Top_News/BERLIN_BRIEFS.html
- October 28th – Ocean City Today, Berlin announces stormwater management photo contest winners, http://www.oceancitytoday.net/news/2011-10-28/Lifestyle/Berlin_announces_stormwater_management_photo_contest.html
- November 11th - Ocean City Today, Berlin Stormwater meeting set, http://www.oceancitytoday.net/news/2011-11-11/Top_News/Berlin_stormwater_meeting_set.html
- November 18th – Maryland Coast Dispatch, Berlin to Hear Possible Flooding Fixes Next Year, Travis Brown, <http://www.mdcoastdispatch.com/articles/2011/11/18/Top-Stories/Berlin-To-Hear-Possible-Flooding-Fixes-Next-Year>
- January 27th – Maryland Coast Dispatch, Berlin Planners Give Approval to Activities Depot, Travis Brown, <http://www.mdcoastdispatch.com/articles/2012/01/27/Top-Stories/Berlin-Planners-Give-Approval-To-Activities-Depot>
- March 9th – Maryland Coast Dispatch, Berlin to Soon Hear Suggestions for Flooding Woes, Travis Brown, <http://www.mdcoastdispatch.com/articles/2012/03/09/Top-Stories/Berlin-To-Soon-Hear-Suggestions-For-Flooding-Woes>

Appendix D – Outreach & Marketing Strategy for Berlin Stormwater Plan

Where: Berlin, Maryland

When: July 2011 to May 2012

Partners: UMD Environmental Finance Center, Town of Berlin, Grow Berlin Green Partners (GBG), Stakeholder Committee

What: A public outreach, education and marketing plan that communicates stormwater issues, including water quality/quantity, infrastructure problems, and solutions for long-term funding. This plan may be modified throughout the project period, as needed, to adjust to specific community needs.

Why: To improve stormwater (and water quality) conditions in Berlin and create a dedicated funding source for infrastructure, operations and maintenance needs.

Audience: Citizens, property owners, businesses, elected officials

July 2011

- Begin recruitment for a Stormwater Stakeholder Committee

August 2011-September 2011

- Launch first phase of outreach campaign: “How much is too much...” campaign, with a goal of soliciting input from stakeholders about the need (or not) for better stormwater management
- Specific outreach events:
 - August 12-14 - Assist GBG with initial outreach at the Peach Festival; hand out postcards and display poster
 - September 8 - Host Engineer’s Workshop on Environmental Site Design (co-hosted by EA Engineering and Town of Berlin)
 - September 16-17 – Host table at the Tindley Festival; borrow rainbarrel from GBG
 - Photo Contest – opens Sept 19-Oct 7
 - Promoted through Chamber, GBG, Town
 - Ads taken out in...
 - GBG promoting at Farmer’s Market and Coast Day (Sept 17)
 - Promoted at Tindley Fest
- Hold first Stormwater Stakeholder Committee meeting to discuss purpose and roles of the group, agree on marketing and outreach strategy – Oct 4
- Brief Town Council on our progress and outreach efforts
- Interview with Tony Russo for article in Bayside Gazette, tonyrusso@baysidegazette.com

October 2011-November 2011

- Hold public outreach meetings for the Stormwater Feasibility Project
 - Oct 5 – District 1

- Oct 18 – District 2
- Nov 10 – District 3
- Nov 15 – District 4
- Meetings advertised through GBG and Town
- Hold second Stakeholder Advisory Work Group meeting
- Host Photo Contest of Best Stormwater pictures from public and hold event at the Globe Restaurant (How much is too much stormwater? Show us your photos.)
- Present to Historic Commission & Planning Commission
- Present to Economic and Community Development
- Present stormwater project to HOA and other community groups
- Launch second phase of outreach campaign, with messaging dependent on what is learned in first phase

December 2011-January 2012

- Hold third Stakeholder Committee meeting
- Present stormwater project to HOA and other community groups
- Update Town Council on our efforts

February 2012-June 2012

- Hold fourth Stakeholder Committee meeting to present draft recommendations
- Final presentation to Town Council
- Launch third phase of outreach campaign, with messaging dependent on what is learned in phase one and two

The following outreach and marketing activities may occur, as appropriate, throughout the project period, with particular emphasis in spring 2012:

- TV, radio, newspaper articles and ads
- Magazine articles regarding stormwater efforts in Berlin
- Development of webpage on town website (blog and/or other web-media)
- Presentations to HOAs, nonprofits, and other groups
- Storm drain stencil campaign
- Highlighting town projects, such as the stream restoration project (Hudson Branch)
- Farmers Market tabling and information gathering

Appendix E – Stormwater Photo Contest Flyer & Registration Form

STORMWATER: HOW MUCH IS TOO MUCH?

Berlin Stormwater Photo Contest

~~ Entries Accepted: *Sept 19-Oct 7, 2011* ~~ Voting Takes Place: *Oct 14-15, 2011* ~~

Enter your photo **TODAY** of a flood and/or flood impact in Berlin, MD and win a Berlin Chamber of Commerce Gift Certificate to over 30 shops, galleries, restaurants, and businesses!
Recent or historical photos welcome.

Registration Rules

- ✓ Maximum of 2 photos per person accepted for judging
- ✓ Photo(s) must be the original art of the entrant *or* may be entered with the permission of the original photographer
Note: For any historical photos or original photos with family value, it is recommended that you make and submit a copy of the original – photos will not be returned.
- ✓ “Candid” photos welcome – images do not need to be professionally photographed.
- ✓ Photos submitted in person must be unframed and *no bigger* than 8 by 10 inches
- ✓ Photo(s) must be of a flood and/or flood impact that took place in Berlin, MD *only*
- ✓ Entrants do not need to be Berlin residents

Submission Guidelines

If submitting your photo *in person*, bring photo to:

Sharon Timmons at **Town Hall**, 10 William Street, Berlin, MD 21811 - In person photo entries accepted Mon, Sept 19th through Fri, Oct 7th, 2011 between the hours of 8:00 am and 4:30 pm. *When you submit your photo, you will be asked to fill out the registration form.*

Vote for your favorite photo!

Stop by Berlin’s Chamber of Commerce to vote for your favorite photo!
14 South Main Street, Berlin, MD 21811
Oct 14, 5-8pm and Oct 15, 10am-6pm

Voting will begin at Berlin’s 2nd Friday Art Stroll and continue through Berlin’s OctoberFest.

Prizes awarded to top 3 photos! Winners will be notified the week of Oct 17.

The Photo Contest is hosted by the University of Maryland Environmental Finance Center, the Town of Berlin, Grow Berlin Green, and the Berlin Chamber of Commerce with generous funding from the Town Creek Foundation.



STORMWATER: HOW MUCH IS TOO MUCH?

Berlin Stormwater Photo Contest

Hosted by the Environmental Finance Center at the University of Maryland, the
Town of Berlin, and Grow Berlin Green
October 14-15, 2011

Registration Form

Name: _____

Phone Number: _____

Email: _____

Address: _____

Date of when photo
was taken: _____

Location of where
photo was taken: _____

Photographer is a(n): (check one) ADULT CHILD 12 and under

Registration Rules

- ✓ Maximum of 2 prints per person accepted for judging
- ✓ Photo(s) must be the original art of the entrant or photo(s) must be submitted by owner of the rights to the original art
Note: For any historical photos or original photos with family value, it is recommended to make a copy of the original for judging or submit electronically
- ✓ Photo(s) *will not* be returned to owner once the contest is complete
- ✓ Photos submitted in person must be unframed and *no bigger* than 8 by 10 inches
- ✓ Photo(s) must be of a flood and/or flood impact that took place in Berlin, MD *only*
- ✓ Entrants do not need to be Berlin residents

Submission Guidelines

If submitting your photo in person, bring photo to:

Sharon Timmons at **Town Hall**, 10 William Street, Berlin, MD 21811

Monday, September 19th through Friday, October 7th, 2011

Monday-Friday, 8:00am-4:30pm

You must fill out the registration form immediately and leave both your photo and registration form with Sharon Timmons



STORMWATER: HOW MUCH IS TOO MUCH?

Berlin Stormwater Photo Contest

Hosted by the Environmental Finance Center at the University of Maryland, the
Town of Berlin, and Grow Berlin Green
October 14-15, 2011

Photographer Authorization and Release Form

I, the undersigned Rights-holder, hereby grant the Environmental Finance Center (EFC) at the University of Maryland a nonexclusive, fully paid, right and license to reproduce, distribute, modify, and publicly display the photograph in connection with any EFC activity, in any medium and using any technology now known or hereafter developed provided the EFC does not sell or license any of the photographs to third parties to use for any purpose. This permission shall last for the duration of copyright in the Photograph. I represent and warrant that I either hold exclusive copyright in the Photograph or otherwise have the authority to grant this license. If Rights-holder is under the age of 18, I represent and warrant that I am the parent/guardian of the exclusive copyright holder. I also represent that photographs are my original work and do not infringe the copyright or other proprietary rights of any third person and that I have obtained any permissions that may have been required in connection with the Photograph.

I forever discharge and release the EFC and its employees, officers, agents, students and other persons acting under its authority from all claims and causes of action, liabilities and damages arising out of or related to authorized uses of the Photograph, including but not limited to claims for invasion of privacy or misappropriation, and I forever waive any right I might have to receive compensation of any kind based on the EFC's authorized use of the Photograph.

In exchange for this license, the EFC agrees to identify the Rights-holder photographer and copyright owner of the photograph in print and online publications and will use its best efforts to acknowledge the Rights-holder in public relations or promotional materials.

I have read and understand the above authorization and have had the opportunity to consult with legal counsel of my choosing.

Print name as you wish to be identified in acknowledgements

Signature

Date

If under 18, parent/guardian signature

Date



Appendix F – Stormwater Photo Contest Event Photos



Raindrop shaped cookies purchased from the local bakery, *Baked Desserts*



Display table where voters could submit their votes and learn about stormwater in Berlin



Kids examining their favorite submitted photos



People voting for their favorite submitted photos

Appendix G – Stormwater Photo Contest Top 3 Photos

1st Place: Krista Valliant, Cedar & William Streets



2nd Place: Susan Schwarten, Powell Circle



3rd Place: Kristin Johnson, William Street



Appendix H – Reverend Tindley Festival Photo



Informational booth including materials about stormwater in Berlin and rain barrel provided from Grow Berlin Green, set up at the Tindley Festival honoring Reverend Tindley

Appendix I – Promotional Materials

Stormwater in Berlin How much is too much? Fact Sheet



- 💧 **Stormwater runoff has caused large flooding and water quality concerns for the Town of Berlin.**
- 💧 **The majority of Berlin lies within the Trappe Creek watershed. This is a sub-watershed of the Newport Bay watershed, one of five major Maryland Coastal Bays. All stormwater runoff in Berlin is untreated, causing pollution to run into the Coastal Bays.**
- 💧 **Berlin’s population has increased 30% since 1990. This has increased stormwater runoff past the capacity of Berlin’s current stormwater infrastructure system.**
- 💧 **The Town of Berlin is 3.13 square miles containing 69,438 linear feet (13.2 linear miles) of stormwater piping.**
 - 💧 1,034 stormwater structures: including corrugated plastic, concrete, corrugated metal, cast iron, and PVC pipes.
 - 💧 All stormwater infrastructure needs periodic maintenance, cleaning, and repair as it ages.
- 💧 **Stormwater problems in Berlin**
 - 💧 Stormwater infrastructure cannot handle even small rainstorms
 - 💧 No adequate operations and maintenance program
 - 💧 No sustainable source of funding

Appendix J – Level of Service Expenditures, Year 1

| | Cost | Comments |
|----------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Personnel Costs | | |
| Cleaning (inlets, ditches, drains) staff | \$90,000 | 2 FTE @ \$30,000 plus \$15,000 fringe benefits |
| Comprehensive trash collection staff | \$0 | No staff needed, will utilize volunteers and electric company |
| Green infrastructure plan staff | \$0 | No staff needed |
| IDD&E staff | \$0 | No staff needed |
| Public outreach & education staff | \$0 | No staff needed, will utilize NGO's and volunteer groups |
| GIS management intern | \$0 | Will utilize current staff and 1 intern |
| Total Personnel Costs | \$90,000 | |
| Capital Improvements - includes design, equipment, and installation | | |
| Area 2 and 3 upgrades | \$1,414,199 | Engineering study indicates that Area 2 and 3 should be completed first; will take 12 months to design Area 2 and 18 months for Area 3; both are estimated to take 3 months of construction work; cost includes design and planning and 30% contingency |
| WWTP truck | \$30,000 | Funds will be set aside each year towards the purchase of a new truck at the end of a 10 year period; calculated at 10% of \$300,000 truck purchase price |
| Total Capital Improvements | \$1,444,199 | |
| Operations & Maintenance | | |
| Cleaning (inlets, ditches, drains) | \$5,000 | Gas, insurance, routine maintenance of existing WWTP truck |
| Comprehensive trash collection | \$500 | Promotional materials for waste collection events |
| Green infrastructure plan | \$100,000 | BMP erosion control measures (includes design services) |
| IDD&E | \$3,000 | Equipment and analysis expenses |
| Public outreach & education | \$10,000 | General Fund budgets \$10,000 for environmental projects. These funds will be put toward outreach and education as needed. |
| Redevelopment projects | \$45,000 | Annual operating expenses |
| Total Operations & Maintenance | \$163,500 | |
| Total Expenditures | \$1,697,699 | |

Appendix K – Level of Service Expenditures, Projected Years 1-10

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
|--------------------------------------------------------------------------------|--------------------|--------------------|------------------|-----------------|-----------------|------------------|------------------|------------------|------------------|------------------|
| Personnel Costs | | | | | | | | | | |
| Cleaning (inlets, ditches, drains) staff | \$90,000 | \$92,250 | \$94,556 | \$96,920 | \$99,343 | \$101,827 | \$104,372 | \$106,982 | \$109,656 | \$112,398 |
| Total Personnel Costs | \$90,000 | \$92,250 | \$94,556 | \$96,920 | \$99,343 | \$101,827 | \$104,372 | \$106,982 | \$109,656 | \$112,398 |
| Capital Improvements - includes equipment, installation, and inspection | | | | | | | | | | |
| Area 2 (Cedar, Pine, Maple, Franklin, etc.) | \$1,018,582 | | | | | | | | | |
| Area 3 (Williams Street near Electrical Plant) | \$395,617 | | | | | | | | | |
| Area 5 (Henry's Mill/Henry's Green) | | \$1,114,293 | | | | | | | | |
| Area 1 (West St Near Abbey Lane) | | \$1,913,814 | | | | | | | | |
| Area 6 (Hudson Branch @ Flower/Showell) | | | \$570,000 | | | | | | | |
| Area 16 (Decatur Farms) | | | \$112,500 | | | | | | | |
| Annual savings for WWTP truck | \$30,000 | \$30,750 | \$31,519 | \$32,307 | \$33,114 | \$33,942 | \$34,791 | \$35,661 | \$36,552 | \$37,466 |
| Total Capital Improvements | \$1,444,199 | \$3,058,857 | \$714,019 | \$32,307 | \$33,114 | \$33,942 | \$34,791 | \$35,661 | \$36,552 | \$37,466 |
| Operations & Maintenance | | | | | | | | | | |
| Vehicle maintenance | \$5,000 | \$5,125 | \$5,253 | \$5,384 | \$5,519 | \$5,657 | \$5,798 | \$5,943 | \$6,092 | \$6,244 |
| Trash collection promotional materials | \$500 | \$513 | \$525 | \$538 | \$552 | \$566 | \$580 | \$594 | \$609 | \$624 |
| Erosion control measures and BMPs | \$100,000 | \$102,500 | \$105,063 | \$107,689 | \$110,381 | \$113,141 | \$115,969 | \$118,869 | \$121,840 | \$124,886 |

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
|-------------------------------------------|--------------------|--------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| IDD&E inspection equipment & analysis | \$3,000 | \$3,075 | \$3,152 | \$3,231 | \$3,311 | \$3,394 | \$3,479 | \$3,566 | \$3,655 | \$3,747 |
| Public outreach & education | \$10,000 | \$10,250 | \$10,506 | \$10,769 | \$11,038 | \$11,314 | \$11,597 | \$11,887 | \$12,184 | \$12,489 |
| Redevelopment projects | \$45,000 | \$46,125 | \$47,278 | \$48,460 | \$49,672 | \$50,913 | \$52,186 | \$53,491 | \$54,828 | \$56,199 |
| Total Operations & Maintenance | \$163,500 | \$167,588 | \$171,777 | \$176,072 | \$180,473 | \$184,985 | \$189,610 | \$194,350 | \$199,209 | \$204,189 |
| Total Expenditures | \$1,697,699 | \$3,318,695 | \$980,352 | \$305,298 | \$312,931 | \$320,754 | \$328,773 | \$336,992 | \$345,417 | \$354,053 |

Appendix L – Site Examples: Stormwater Utility Fees for Specific Non-Residential Properties

| Property name | Total lot size (acres) | Impervious Cover (ft ²) | Impervious area (as % of total area) | Annual stormwater utility fee (impervious cover/2,100ft ² x \$45) |
|---------------------------------------------------------------|------------------------|-------------------------------------|--------------------------------------|------------------------------------------------------------------------------|
| Atlantic General Hospital | 23.9 | 421,225 | 40.4 | \$9,026.25 |
| Worcester County Public Schools (sum of Berlin properties) | 83.16 | 1,244,507 | -- | \$26,668.01 |
| Stephen Decatur High School | 27.4 | 554,528 | 46.4 | \$11,882.53 |
| Stephen Decatur Middle School | 25.0 | 222,156 | 20.4 | \$4,760.49 |
| Buckingham Elementary School | 12.0 | 195,148 | 37.3 | \$4,181.74 |
| Berlin Intermediate School | 18.76 | 272,685 | 33.3 | \$5,843.25 |
| Worcester Preparatory School | 32.80 | 314,938 | 22.0 | \$6,748.67 |
| St. Paul's Episcopal Church | 2.74 | 26,571 | 22.2 | \$569.38 |
| St. Paul's Methodist Church | 1.30 | 40,075 | 70.7 | \$858.75 |
| Rite Aid | 2.43 | 51,836 | 48.9 | \$1,110.77 |
| Sav-A Lot Shopping Center | 9.73 | 343,688 | 81.0 | \$7,364.74 |

Atlantic General Hospital, 9733 Healthway Drive



Stephen Decatur High School, 9913 Seahawk Road



Stephen Decatur Middle School, 9815 Seahawk Road



Buckingham Elementary School, 100 Buckingham Rd.



Berlin Intermediate School, 309 Franklin Avenue



Worcester Preparatory School, 508 South Main Street



St. Paul's Episcopal Church, 3 Church Street



St. Paul's Methodist Church, 405 Flower Street



Rite Aid, 10119 Old Ocean City Boulevard



Sav-A Lot Shopping Center, 10452 Old Ocean City Boulevard

