



# MEMORANDUM

*Your first source for best practices in  
stormwater and watershed management*

To: National Fish and Wildlife Foundation

From: The Center for Watershed Protection

Date: February 20, 2015

Re: Stormwater offset and banking demand survey

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## **Background/Purpose**

Managing stormwater in urban environments involves numerous implementation constraints that make full on-site compliance with stormwater management regulations difficult and/or costly. Stormwater banking has the potential to reduce costs for stormwater permit holders and, when coupled with local incentives, can open up an inventory of properties that would not have otherwise been targeted for restoration while at the same time facilitating local water quality improvements across urban communities. The demand for stormwater banking derives from developers needing to meet stormwater management requirements for new or redevelopment, owners of land parcels with significant impervious cover interested in reducing their stormwater management utility fees with the municipality, and regulated municipal separate storm sewer system (MS4) entities needing to significantly reduce their recordable pollutant loads to comply with Chesapeake Bay and/or local total maximum daily load (TMDL) requirements.

The Center for Watershed Protection (the Center) and the University of Maryland Environmental Finance Center conducted a study on the potential application of stormwater banking to the stormwater compliance landscape in the Chesapeake Bay watershed, based on a case study analysis of supply and market drivers in Baltimore City, Maryland and the City of Hampton, Virginia. This study found a large supply of potential BMPs and credits in both locations but an evaluation of the demand side was needed to better place these results into context. In the absence of support for conducting a local market survey in Hampton or Baltimore, the Center conducted a broader survey to evaluate interest in stormwater banking and determine what factors are most important to influence participation in such a program. The survey methods and results are summarized below.

## **Methods**

The Center conducted a direct-response survey. A survey was crafted in four versions: developer, MS4, property owner, and the catch-all, "other". Links to all four surveys were sent out to approximately

18,000 contacts with an invitation to take the survey that most closely relates to their function as it relates to stormwater. At the conclusion of each survey, an invitation to continue a conversation with The Center was extended, and several respondents chose to speak more on the topic. The Center received 231 direct responses to the survey, and conducted another 10 phone interviews to delve more deeply into the details and gain additional perspective. The survey intended to provide information regarding how much demand existed in the development community for alternatives to onsite stormwater management, what the approximate monetary value of those alternatives might be, and similarly identify how much demand there is among MS4-permitted entities for trading to meet their stated goals. See appendices A-1 to A-4 for the general summaries of the survey responses by category, and for graphical representation of numbers of responses.

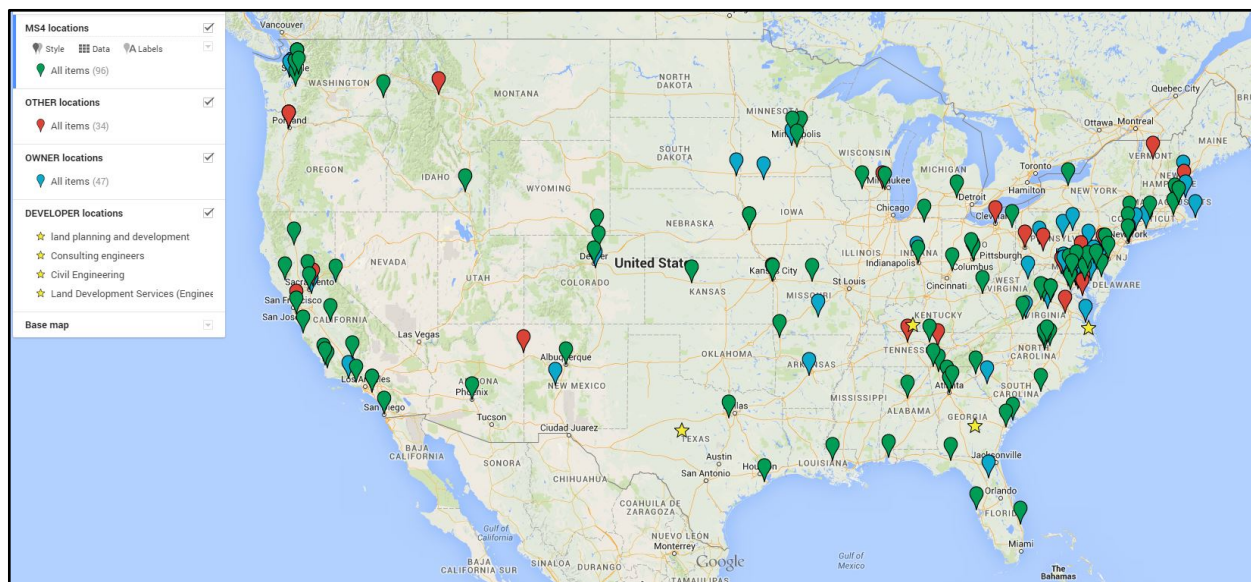
## **Results**

### ***Who took the survey?***

The number of respondents by category was Developer – 4; MS4-regulated entity – 97; Owner – 67; Other – 63. Though the intent was to capture developer demand, there was little direct response to the survey from respondents self-identifying as “Developer,” and attempts to reach out directly to statewide and regional development associations such as the Maryland-National Capital Building Industry Association (MBIA) received very little response. While direct Developer response was low, consultants and municipalities seem to have a handle on developer interest/demand.

Of those respondents who elected to take the survey for “Other,” 16 were consultants or members of a consulting engineering firm, several of which do work for development companies. 13 were environmental non-profits or small environmental consulting companies typically not engaged in development activities directly. The remainder of those who identified their type of organization were non-MS4-regulated municipalities (12), tribal governments, U.S. Army Core of Engineers, federal and state agencies such as the USDA, NRCS, and state environmental departments, and soil and water conservation districts.

Image 1 below shows the geographic distribution of the survey respondents by type, for those who entered location data. Approximately two thirds of the survey respondents entered their location. This caused the disproportionately large number of map markers for MS4 respondents, since these were input as city/town and state.



**Image 1: Locations of survey respondents, by type. (Only U.S. locations are shown.)**

### ***What were the general findings of the survey?***

There is definitely a demand for alternative stormwater management options for developers and property owners, typically of commercial or other largely impervious parcels. But, the demand is difficult to quantify for many reasons. One reason is that the stormwater management plan varies significantly by state, county, local municipality. Where there is a regulated and costly need to manage stormwater runoff, there is a demand for alternatives. In tight urban settings, or other heavily-constrained geographic regions like low-elevation (high water table) areas, development often requires some type of alternative to onsite management. For properties already developed, newly-implemented stormwater utility fees may drive a need or desire for some kind of fee mitigation, but only if the fees are perceived as substantial and the crediting system offsets enough of the cost.

Half of the MS4-regulated entities surveyed had stormwater utility fees, but those varied greatly. The regulations for management of stormwater varied greatly; some had only flow rate management requirements for erosion control, some had volume capture requirements, some had volume and pollutant management requirements. The local regulations were the most common, most significant driver for cost, and therefore also the demand for alternative management measures. Many have tried to implement a fee system, but have failed due to public reception. And many municipalities have no statutory ability to implement a fee system, thus pulling all of their stormwater management costs out of a general fund.

When developer and property owners were asked directly if they would take advantage of alternatives if available, many said no. There was a common misunderstanding that paying a fee in lieu of onsite management meant that the management was simply not getting done. There was also a common distrust that the administration of such a system would be functional, or prevent liability for the runoff that was not directly managed onsite.

### ***What were the more detailed, more specific findings?***

#### **Developer**

The purpose of the developer survey was to gage the demand for offsite compliance options to meet state stormwater regulations.

- Local/municipal guidelines drive the need for stormwater management and thus alternatives, among both developers and probable developers from the “Other” category.
- There is a general wariness and skepticism of the feasibility of a banking/offset system, in terms of both administrative ability and water quality goal attainment.
  - Liability and the general litigious nature of our society make any alternatives to complete onsite management risky, unless somehow protected.
- From direct one-on-one conversation, if there was some increased cost relative to a baseline expectation for BMP construction or implementation costs, but it reduced the risk of possibly getting hit with much more, it is worth it. The time-value of money and the way money is borrowed and spent is a huge factor. Return on investment depends a lot on when money is spent. Two significant costs are design and approvals/permitting. Design may require a lot of time, especially if something shifts during development; even the regulations can change during the development of a site, causing a huge shift in design, more time, and more money. And permitting can be a big issue as well, as often the SWM plan must fit into a mixed land use community; the more stakeholders involved in any decision, the less likely a consensus can be reached.

#### **MS4**

The purpose of the MS4 survey was to gage the need for MS4s to purchase credits from a stormwater bank in order to meet their MS4 permit/TMDL requirements at a lower cost. A secondary purpose of the MS4 survey was to ask respondents about their perceptions of the demand for offsite compliance options to meet state stormwater regulations as well as for stormwater fee relief for large property owners within their jurisdictions.

Stormwater utility fees and credits:

- Roughly one third of the surveyed MS4s are Phase I, two thirds are Phase II.
- Half of them had a stormwater utility fee in place.
  - Several have either tried to implement a stormwater utility fee and had it repealed or defeated, or there is no statutory basis or path for them to levy one.
- Fee structure is very variable, ranging from \$0.01 flat fee per parcel, to ~\$200/yr for residential parcels. Commercial and industrial rates are typically much higher, and are often based on impervious cover area or parcel size.
  - The proportion of municipal stormwater costs funded by stormwater utility fees versus other sources is highly variable. For example, Frederick, MD has \$0.01/parcel fee, but has over \$5M for the 2015 fiscal year in the MS4 program, from general funds or taxes.
- Of those that have a stormwater utility fee, ½ have some kind of credit system, ½ do not
  - The credit structure is very variable.
  - If the fees are small enough, no one applies for fee reduction by implementing BMPs.
- Plans to implement new stormwater utility fee and/or credit programs are very loose or undefined, generally. Very few have banking or trading systems planned.

- An example of a well-defined plan is Chattanooga, TN which has a 1” capture/treat requirement to meet TMDL, and a fee to pay if capture/treatment is not practicable, with a 1.5 safety factor. This fee will be the cap for a free-market trading system of coupons.

Developer demand for alternatives to onsite stormwater management:

- The biggest drivers for municipal stormwater costs are MS4 permit regulations, TMDL limits, followed by a variety of others including infrastructure repair and operations and maintenance (O&M), flood prevention, threatened and endangered (T&E) species and waterway and ecosystem health.
- There is some developer interest in offsite or alternative treatment/offset options. Commentary indicates this is primarily due to redevelopment regulations getting more stringent, or developed areas having very high density, and therefore little space to implement stormwater management practices.
- Additional interest in either offsite mitigation or fee-in-lieu options stems from infeasible or prohibitively expensive onsite management.

MS4 permit compliance as a driver for offsets:

- Only 7.2% of the respondents from MS4-regulated entities answered “Yes” to the question whether they anticipated a need to purchase stormwater credits to offset shortfalls in their MS4 permit goals. However, there were 21 free response comments, many of which expressed uncertainty about future needs to purchase offset credits, or confidently anticipated a need for offsets as the easier, more practical best management practices are implemented and the remaining goals become more difficult to reach.

### **Other Entities Involved in BMP Construction**

This survey was intended to gather additional information about the demand for offsite compliance options to meet state stormwater requirements from a mix of entities with experience constructing stormwater BMPs. The audience included consulting firms, non-profits, local governments, state agencies and universities.

- Costs for stormwater management are extremely variable, ranging by orders of magnitude in the responses. The percentage of total development cost is equally variable with reported cost between 2-20%, cost per acre of treatment. Part of the difference is highly variable cost drivers, like development size, site constraints, and regulations. Some responses include O&M costs or fees, while others included what appeared to be amortized 20+ year total costs.
- Primary cost drivers are local/municipal/state regulations, and TMDL.
- Constraints in building structural stormwater BMPs are many and various, resulting in moderate cost increase (according to most survey respondents) due to workarounds being more expensive than ideal, baseline construction costs. Poor soils, topography and elevation, lack of available space, and existing utility interference were selected by the majority as contributing factors. Other cost variables include:
  - The Chesapeake Bay area has a lot of high water table issues.

- Other geographic areas have very different concerns – Karst topography through some areas, extreme flooding or erosion potential in arid regions, etcetera.
- Rights-of-way are politically and financially cumbersome – permissions can be difficult or impossible to gain.
- Most people do not take advantage of alternative mitigation options; offsite mitigation is the most commonly used option
- Generally, there must be significant cost to drive a need/desire for cost reduction or profit from action.
- Land value and opportunity cost are a potential driver for offsite mitigation or other projects. A developer's acre lost to a pond might be worth more sold to an individual homeowner or business than the additional cost of an offset for stormwater management.
- There was significant interest in alternatives such as purchase of credits, or municipal provision of alternative sites for BMP construction, and a majority of respondents said they would be interested in over-building BMPs in order to sell credits to others. However, the question about what costs or profit margins would be necessary garnered very unspecific, and often philosophical responses. These responses varied greatly depending on the type of respondent; individuals tended to not have an idea, small companies had very variable numerical responses that in cases accounted for necessary administrative changes to keep up with a new program, and municipalities often had programmatic or political, rather than monetary, constraints.

## **Owner**

The purpose of the Owner survey was to gage the demand for stormwater utility fee credits by large property owners and, more specifically, whether an offsite fee credit system would increase the number of property owner who take advantage of stormwater fee credits.

- Stormwater utility fees among survey respondents were most typically a flat fee structure (as opposed to the more common impervious cover based fee). This is representative of the residential sector primarily, which constituted most of our responses. There are instances where a fee based on impervious area was instituted, but then reverted to flat fee due to push-back, or where the impervious area basis was defeated initially for similar reasons.
- Many property owners (among those who responded to the survey) are happy to pay the fees, and in cases wish they were more substantial.
- The fees range greatly in magnitude.
- Of those that have fees, a quarter have some kind of credit rebate option for onsite management. Of those that have credit options, most have not taken advantage because of either (a) high cost:benefit for construction, (b) high paperwork and time investment for little cost benefit, (c) the fees are so low already it's not worth the time or trouble.
- The most common responses to the questions "would you take advantage of selling credits?" and "what would your profit margin need to be?" were a mix of "money isn't the issue," and "1:1 return." This is similar to the responses in the survey of respondents identifying as "Other." Survey respondents stated that the municipalities that offer a small percentage credit on an already small fee in return for constructing a very expensive BMP are disincentivizing onsite management.

## **Common concerns about a stormwater offset and banking program identified by survey respondents**

- There is a popular view that regulatory and political processes will stymie the development and smooth operation of a stormwater offset and banking system.
- **An important take-away** is that preserving what is good, or improving “low hanging fruit” is the best approach to stormwater management on a large scale. Retrofitting to fix past issues is often very low benefit and very high cost. Redmond, WA is focusing on the five best candidate impaired streams, with the understanding that stream restoration is much, much higher benefit:cost than individual site practices, no matter whether they are all hitting target hydromodification standards. New development benefits from onsite management, but retrofitting is usually too costly.
- Several respondents reported that development nearby had negative impact on their property. Even with at least 75% onsite management requirements in many places, damage is still done locally, regardless of whether overall watershed impacts appear to be net-zero. Offsite compliance would likely exacerbate this issue, since the onsite management requirement would be circumvented, increasing localized impacts.
- **General, overarching questions that arise are:**
  - *How will it be regulated/administered?*
    - There is concern over ability and desire of municipalities to maintain proper/necessary control over the inspection and verification process.
  - *What are the appropriate geographical boundaries for a bank?*
    - The larger the boundaries of the area, the more likely the market will drive more BMP construction, provide options for purchasers, and keep costs competitive. However, the larger the boundaries, the less likely the trading will prevent damage to smaller, more urban waterways.

## **Conclusion**

Though more information would help substantiate this conclusion, the distillation of the survey responses and follow-up conversations is that if proper regulatory guidelines are in place demanding a level of stormwater management that is neither easy nor cheap, there will be a demand for alternative management methods, or an offset and banking option. There is interest in the profit side of a banking scenario as well, but at this time very limited due to lack of structure or foundation. The simpler the regulatory requirements are, the easier the implementation of an offset and banking system will be, thus reducing administration costs and improving feasibility. Proper public education and presentation/marketing of a fee system and alternative management options are extremely important.

While these general findings from the survey are helpful to gage the potential for stormwater banking demand, actually quantifying this demand must be done at the municipal scale through a targeted survey of the market where demand appears to be greatest. For example, a survey and interviews with the development community would help to determine the appropriate price points for stormwater credits and local redevelopment incentives. The next steps to advance implementation of a stormwater banking program in Hampton or Baltimore might be to conduct a more detailed survey and provide incentives for participation. Some next steps that are more broadly applicable to urban jurisdictions across the Bay watershed are to delve further into the major concerns identified by the survey respondents, such as how the BMPs will be inspected and verified, the appropriate geographic boundaries for the bank, and liability issues associate with offsite stormwater management.