

THE CONTINUING EVOLUTION OF STORMWATER MANAGEMENT IN GEORGIA

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Abstract. The new millennium brought many new changes, and stormwater management was no exception in the State of Georgia. The new millennium has effected change in many arenas, not the least of which is stormwater management. Minimum compliance is no longer the standard, and stormwater is no longer an afterthought for community planning. For example:

2001 – The State of Georgia completed its Stormwater Management Manual (GSMM), providing a methodology for selecting and implementing Best Management Practices (BMPs) for new development, in accordance with the goal of improving water quality through reduced sediment loads.

2003 – Nationally, Phase II of the National Pollutant Discharge Elimination System program led cities and counties (86 in Georgia) to develop stormwater management programs.

2006 – Stringent measures in the Etowah River Basin were adopted through the Etowah Habitat Conservation Plan to prevent the “taking” of several endangered darters.

Over the past few years in the Atlanta metropolitan area, the Metropolitan North Georgia Water Planning District (MNGWPD) developed six model stormwater management ordinances, addressing post-development stormwater management, floodplain management, conservation subdivision / open space development, illicit discharge and illegal connections, litter control, and stream buffer protection.

The paper focuses on causes, effects, and remedies leading to the establishment and refinement of administrative procedures, professional trust, proactive approaches, and the elimination of plan implementation obstacles. As a community, we must pool our resources to help enable a positive return on our endeavors. The goal is not only to continually improve the protection and restoration of our streams and watersheds, but also to improve the process. .

BETTER METHODS TO QUANTIFY PROGRESS

Stormwater management is valuable and necessary. Based on each community’s environmental and economic needs, many state and local governments are going beyond the minimal stormwater management requirements

set by the federal government. In addition, protection, stewardship, sustainable growth, and quality of life have become more important and valuable among a wider variety of stakeholders.

As a result, better methods are evolving to quantify progress. Stormwater management implementation must take place sooner and show tangible results. We cannot wait for technical certainty and guidance that would leave no question left unanswered. Instead, our actions must be bolder based on confidence gained by more sophisticated approaches.

Below are brief synopses of explicit and sophisticated requirements and issues that the Atlanta area and other rapidly developing areas of Georgia are experiencing:

Floodplain Management

The MNGWPD model ordinances require that floodplains be developed for *all* streams. By expanding the mapping of floodplains from Federal Emergency Management Agency (FEMA) regulated streams to the headwaters, two distinct results occur: Firstly, because we are required to map future land use, conditions of the floodplains are conservatively wide, and secondly, because we are mapping streams that were not studied by FEMA, there are more identified floodplains.

The general intent and benefits are clear: We can update our current situation and more effectively plan for the future. For example, with more accurate floodplain information (i.e., models) at our disposal, more potential flooding problems (i.e., maps) can be identified. Not only can this change the way floodplain issues are managed, but it can also serve as the basis for finding solutions to flooding problems. There is less speculation now that more “engineering evidence” is available. The mandated implementation timeline varies, but definitive actions must be taken swiftly because we now know the problems and which solutions will be most beneficial.

Stream Buffer Protection

Minimum stream buffer control measures maintain tree canopies that reduce temperatures and provide vegetative cover that reduces pollutant loads. Many undeveloped sites do not have enough available space to deal with the

larger buffers economically. Therefore, communities are faced with identifying alternatives (e.g., variance procedures) that preserve one's right to develop the land, but not to let the process become overly subjective and arbitrary.

Field Sampling and Inventory

Field sampling and inventory requirements are necessary in order to make sure that each community understands the health of their watersheds and when corrective actions are required. Field data provide proof of what is occurring, whether it is pollutant discharges or deteriorating infrastructure. The question is... what do you do when the actual requirements of the investigations are extensive and threaten to use the resources that could begin to resolve the noted concerns? Which do you address first: the big ones, regardless of their location, or those only in the right-of-way?

Design Freedom and Technical Innovation

New development requires innovative techniques and products to meet the intended use while complying with water quality standards. Balancing reliable and predictable performance with increased performance to offset available space requirements is an important issue. Even though there are many new products and techniques available, it is important to understand what works best, is easiest to design, and can get approved. Technical innovation can be risky. For developers, innovation can be costly due to multiple design concepts, and for communities, a failed BMP project for watershed restoration can be a political nightmare. However, there are instances where the reward outweighs the risks, such as finding ways to control the risks while capitalizing on the potential rewards of new innovation.

CONNECTING THE DOTS

Knowing the available options is imperative to understanding the myriad issues and the resulting changes that are either taking place or still needed. Below is one attempt at connecting those dots to provide an overview of the options we have to move ahead.

Venturing Into The Watershed

Think of the flexibility in design options that could be gained if involved parties would go beyond their site or public right-of-way limits. Most projects are not conceived to handle the time involved and money required to coordinate activities such as access and easements with property owners. However, following are examples of how this approach could be applied.

Off-Site Mitigation. From a private site development perspective, off-site mitigation has been used when wetlands and streams are impacted and the effects cannot be mitigated on site by other measures (e.g., BMPs). In addition, off-site mitigation can be useful when the site is small and heavily encroached upon by restricted areas, such as stream buffers that exceed the minimum state widths. The result is that a new site is developed as planned and impacts are addressed by mitigating the effects through control measures, either on or off site. This is not to suggest that wetland, stream bank or stream buffer "banking" is easy to do or always an option, but it is a general mechanism that can allow development and provide an acceptable level of watershed protection.

From a redevelopment perspective where a vacant parcel exists but there is no feasible way to meet the current stormwater standards, do you scrap the idea and allow the property to remain unusable? Or, do you identify another undeveloped site further downstream with enough room for BMPs that you could use to treat the pollutant load from the upstream redevelopment site? For developers and local plan reviewers, this is not a new or easy concept but definitely worth investigating.

Land Acquisition. From the government's perspective, there are homes in the FEMA floodplain that have been damaged by flooding, often because they were built before FEMA had mapped floodplains, or before there were local regulations for stormwater detention. The properties aren't worth much money and the owners aren't asking much. Communities have purchased some of these properties and turned them into useful sites, such as recreation areas, which ultimately benefit the communities by reducing claims and flood insurance premiums.

Extensive future floodplain mapping is good, but it comes with potential trade-offs. For example, floodplain mapping has legitimized claims and concerns of floods and/or threats of floods. However, there may not be sufficient available funds to meet the public's demands, making it unclear as to which projects are most worthy of the funds. The situation is complicated because emotions and people's homes are involved, so we should be sophisticated in identifying and prioritizing the most deserving projects to receive the designated funds.

Field Inventory/Operations and Maintenance Outside of the right-of-way area, who is responsible for field inventory as well as operating and maintaining stormwater systems? Communities are ultimately responsible for ensuring that the stormwater systems are functioning and that proper maintenance is scheduled and funded.

However, the community does not own everything that collects and conveys stormwater or most of the land that generates the runoff. So, is the community responsible for all stormwater system features? Generally, the answer given by communities is “no.” Private property is private and, as you can imagine, this creates challenges such as dealing with the political and public relations aspects. For example, what if portions of your stormwater system (e.g., a roadway culvert) depend on the function of a private system (e.g., a detention pond) to work? Who is ultimately responsible for operating and maintaining that private system?

In each of the examples above, there is a common theme: How does one move from a point of control (your site, the right-of-way, etc.) to one that requires cooperation, communication, and dependency on others? For the developer, there is the risk of time and money. For the community, how do you buy “some” houses in the floodplain or inventory/fix only “some” privately owned stormwater systems and not others? For both parties, failing to follow your instincts to the problem’s source and the solution may lead to a bigger problem than the one you are trying to avoid.

Floodplains Floodplain management is a balancing act. In many cases, the required detention facilities that control peak flows of heavy rainfall are not owned by the community, but the community is responsible for maintaining (or at least ensuring) flood control. The concern is that without proper maintenance, those ponds could fail and the watershed could behave as if the ponds did not exist. One remedy, or safety factor, applied by the MNGWPD is that if not owned by the regulating entity, detention facilities are not included in hydrologic studies. Models are run with increased imperviousness, but no additional detention to mitigate the additional runoff.

It is a reasonable approach intended to keep people safe from flooding while erring on the side of caution. However, in some cases the over-predicted floodplain limits will prevent land from being developed as intended. In other cases, improvement projects such as culvert and bridge upgrades could be ranked improperly (too high or too low) for implementation. Many of the more-experienced decision makers look at the basis and ramifications of future floodplain limits and are able to put the information into the right context to make good decisions. On the other hand, those newer to the process will not find it as easy to make such judgments.

Trust, Comfort, Rights and Privileges

How do you manage stormwater and watershed health without slowing or stopping a collaborative and flexible process? Stormwater initiatives often do not provide instant or obvious returns, and it is difficult to recognize

their value. In some cases, doubts occur and questions arise. The deciding factor can be tied to confidence and/or comfort.

New BMPs Validated BMP performance and new BMPs that haven’t been field-tested increase each year creating questions such as...

- How much information is needed to trust new techniques or technologies?
- Who is qualified to certify new products—the designer, vendor, or community?
- Who is liable if the products do not perform to standards?
- If the community is not responsible, can they delegate that responsibility, or do they unknowingly share the responsibility by allowing the process to move forward?
- Can the community really afford to delegate the responsibility?

THE CHALLENGES

All of the aforementioned stormwater management quantification methods and implications of the various site development and redevelopment options prove that the stormwater industry has entered a new realm of philosophy, approach, and technological applications. But this transition into the new millennium has brought some challenges: How can innovative applications of accepted methodologies be developed? And who has (or, more appropriately, *wants*) the responsibility to determine which application should be allowed, and under what circumstances? The key issues are:

- What do you do for redevelopment where sites can be well constrained—even beyond what the smaller, undeveloped lots experience?
- How can a variance procedure help without being viewed as arbitrary, unfair, and leaving the community in a state of non-compliance?
- How do you manage stormwater and watershed health without slowing or stopping the previously mentioned collaborative and flexible process?

Many times, stormwater initiatives do not provide instant or obvious returns, which makes it difficult to recognize their full value. Moving forward with any significance and putting theory into practice begins with a leap of faith, and the momentum either continues or stagnates.

Occasionally new technologies and/or techniques allow you to develop or redevelop a site as planned and meet stormwater management requirements. All types of new products are advertised and introduced at events such as StormCon and are being used with success. Even

though the number of new BMPs increases yearly, not all of them have been field-tested. So how much information do you need to place your trust in new techniques or technologies and who is qualified to certify that a new product will work as intended – the designer, the vendor, or the community? There are questions associated with new BMPs such as:

- Will the product work as touted?
- Who is liable if the product does not perform?
- Who takes the responsibility? If not the community, can they delegate that responsibility or have they unknowingly shared it by allowing the process to move forward? Can the community afford to delegate the responsibility? The community should remain focused on the goal to improve the manner in which land is developed. The Atlanta area is doing this through special committees who ask questions and acknowledge and assess the value of the risks, which ultimately provides the community and stormwater managers the confidence to make sound decisions.

For the redevelopment issue, here's the question to consider: What is "good enough?" For new development, the Atlanta region requires an 80% reduction of the sediment load (TSS) resulting from the post-development changes (e.g., added imperviousness). When looking to redevelop properties that initially were developed under the "old" stormwater management standards, you are faced with another dilemma: hold fast to the 80% reduction rule and risk forcing the developer to decide not to redevelop the property, or accept a lower standard knowing that things will be improved under the proposed redevelopment plan. The first response (and a valid argument) to that scenario may be, "If we let one person get away with it, they'll all want to do it." If we recognize the differences between developing new, impact-free parcels and redeveloping older, impacting sites and acknowledge that the reason for having an 80% reduction load in new development is to counter the increased pollutant loads from past development, it all begins to make sense. Many watershed improvement studies are based on finding ways to improve the effectiveness of existing BMPs – not necessarily to 80% efficiency, but enough to make it worthwhile and undo a little bit of the past. The goal is making things better, while still growing.

For the issue regarding the collaborative, flexible process, consider how flexible and conservative stormwater management initiatives can be when you are dealing with rain and land development—two random and unpredictable events. Stormwater management is a well-regulated field of expertise, with federal, state, and local regulations that can lead to penalties when not followed. While technical methods are typically conservative, logical, and based on reasonable assumptions, being too con-

servative and simple in order to alleviate the fear of consequences can limit options and increase costs. On the other hand, being too flexible with respect to more inventive methods can lead to inconsistent practices and standards. Historically, being conservative in the technical approach has been a way to apply techniques that are easier to implement without the fear of consequences. However, space limitations and other controlling site features associated with redevelopment require some out-of-the-box thinking and a balanced approach.

Professional Certification The procedures were followed, the proper control measures were applied, and a good post-development stormwater management plan was developed, but who can certify it? The latest revisions to the Post-Development Stormwater Management Model Ordinance states that only the following four, of the original 12 elements in the MNGWPD model ordinance for post-development stormwater management must be certified by a Professional Engineer (PE):

- Existing conditions hydrology,
- Post-development hydrology,
- Stormwater Management System, and
- Post-development downstream analysis.

If this revision is accepted, either a PE or a Registered Landscape Architect (RLA) can control the plan, while portions of it may be prepared and stamped by a Registered Landscape Surveyor (RLS). Depending on your position, this ruling can be considered progress or a compromise. The debate continues in the Atlanta region, including some very passionate discussions about self-regulation. This can be unsettling, recognizing the conservative nature in which the formal responsibility and liability for stormwater management has been approached by many communities. Do you leave it up to each profession, all of which have been exposed to the subject matter through academic training, professional certification, and/or professional work experience? After all, all professions have both types of performers – those that meet and exceed the technical needs of the task and those who should not be doing this work until they are trained and experienced. But is it too late when you have had to make a formal complaint regarding one's competence to the State Professional Licensing Board? Are we justified in excluding/limiting some professions from providing such certifications? Is it the community's right to view the professional rights and privileges granted by the State as the minimum level of qualification, and supersede them with higher minimal qualifications at their discretion? Is the cost of excluding or limiting the involvement of one profession(s) worth it, in terms of reducing the number of capable professionals available to the development community, based on an administrative categorization? The

following programs may offer some insight into how these issues may evolve:

Prequalification The pre-qualification process to provide professional services to certify stormwater management plans, hydraulic analyses and designs is basically two-fold:

- The client sends a Request For Qualifications (RFQ) to a firm, and
- The firm responds with a Statement of Qualifications (SOQ) describing their capabilities and experience. In some communities an SOQ is required just to have the opportunity to bid on a project.

The Georgia Department of Transportation employs a unique pre-qualification process that requires at least two qualified individuals be employed at the firm in order to be awarded the contract. The point of setting higher standards for qualified people charged with certain responsibilities is not new in the stormwater management arena.

Certification Stormwater control measures for construction and post-development have evolved from a general task to one that requires specific certifications set by various professions or by Federal and state agencies. An example of one such certification program that may begin to shape future discussions on certifications is Erosion and Sediment Control (E&SC). In order to certify a construction E&SC plan in Georgia, you must have passed the State Certification by Dec. 31, 2006.

There are currently two opinions regarding whether RLSs and RLAs can certify post-development stormwater management plans since they can certify E&SC plans. Both types of work are related but are they similar enough to make it clear that certification for E&SC automatically allows for stormwater management plan certification? Not in the opinion of many, noting that the ES&C program does not address the same technical issues as the four noted post-development stormwater management requirements elements in the MNGWPD model ordinance. There is no advantage to a PE, RLA or RLS; however if one certification program can evolve that focuses on actual skills of the individual and not on typical or historical training and roles of that profession, and includes a wider group of state registered professionals, then this discussion needs to continue.

CONCLUSION

Precedents are being set on many levels – procedural compliance, effectiveness, responsibility and liability. We are bridging gaps for better use of our technical resources so that progress will continue and the fear of consequences will not stagnate by:

- Encouraging dialogue and sharing information,
- Enabling people to do their jobs,
- Implementing useful techniques, and
- Developing / refining administrative procedures.

Conservativeness is still needed in order to get the rules in place as quickly as we can to protect, rather than perpetually restore our watersheds. The perspective from those taking the lead will involve communities, which may not have solved these stormwater management issues, but have clearly recognized them and have taken steps to either move forward or determine how to prepare themselves to move forward.