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*Via U.S. Mail and E-mail*

**RE: Comments on Draft Phase II General Permit ALR040000**

Dear Mr. Kelly and Mr. McGill:

The Alabama Stormwater Partnership submits the following comments concerning the draft Phase II Municipal Separate Storm Sewer System (“MS4”) General Permit (hereinafter the “Draft Permit” or the “Draft GP”). The Alabama Stormwater Partnership includes the Cahaba River Society, Cahaba Riverkeeper, Alabama Rivers Alliance, Black Warrior Riverkeeper, Choctawhatchee Riverkeeper, Mobile Baykeeper, Hurricane Creekkeeper, World Wildlife Fund Southeast Rivers and Streams Program, and Southern Environmental Law Center. Our organizations work throughout Alabama to protect and improve water quality, much of which is negatively affected by municipal stormwater pollution. We have worked extensively with both the Alabama Department of Environmental Management (“ADEM”) and the United States Environmental Protection Agency (“EPA”) to ensure that general permits such as this comply with the mandates of the Clean Water Act (“CWA”), the Alabama Water Pollution Control Act, and federal and state regulations.

While this version of the Draft Permit is a positive step towards clean water in Alabama when compared with the current Phase II permit, significant revisions are needed to ensure

compliance with the CWA. In its current form the Draft Permit contains many serious flaws, several of which render it inconsistent with the provisions of the CWA relating to the protection of water quality generally and the municipal stormwater program specifically. The current Draft Permit is vague in some places to the point of being unenforceable and does not require the control of stormwater discharges to the maximum extent practicable (“MEP”) as required by federal regulation. We also believe the Draft Permit is a significant departure from the draft Phase II permit that was circulated in fall 2009. We submitted extensive comments on that draft on February 9, 2010, which are attached as Exhibit 1. To the extent those comments have not been addressed in the current Draft Permit, we reiterate them in full and incorporate them into this letter.

For all of these reasons, we believe the Draft GP needs significant revision and improvement. Our specific concerns and suggestions are given below.

### **I. The Permit Must Be Revised to Include Clear, Specific, Measurable, and Enforceable Standards.**

The Draft Permit contains numerous instances of vague language which will complicate the permittees’ compliance with the terms of the permit, as well as ADEM’s and the public’s oversight role in ensuring adherence to the permit. Examples of these ambiguities are listed below. We strongly encourage ADEM and EPA to conduct a thorough review to locate and correct other instances of nonspecific language and to insist that all Phase II entities understand the standards which they are required to meet.<sup>1</sup>

In particular, we believe that the Phase II permit must emphasize that all aspects of the storm water management program (“SWMP”) must be implemented to reduce stormwater discharges to the MEP. The current draft of the permit is selective in using this phrase, which is an overarching requirement and should be presented as such to permittees.

- I.C.1.6. The first sentence should be clarified to emphasize that the permit does not authorize discharges that cause or contribute to exceedances of either narrative *or* numeric water quality standards.
- I.E.1. The second sentence should be changed to *require* MS4s to modify their programs if and when water quality considerations warrant greater attention or prescriptiveness in

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<sup>1</sup> See *Ross Neely Express, Inc. v. ADEM*, 437 So.2d 82, 85 (Ala. 1983). In examining the phrase “reasonable precautions” in an ADEM regulation, the Alabama Supreme Court noted that “the regulation before us is so vague that men of common intelligence must necessarily guess at its meaning and differ as to its application.” The same holds true for vague terms like “significant” in the Draft Permit.

specific components of the municipal program. The word “should” needs to be changed to “shall” or “must.”

- III.1.(b) ADEM needs to define “full implementation,” which ADEM claims is required within five years of the effective date of the Phase II permit. There has already been a substantial delay in the implementation of key requirements of the CWA due to vagueness in prior versions of the Phase II general permit. ADEM must make clear that all terms of this permit must be complied with as soon as possible and must provide interim dates of compliance so that permittees know that they must meet benchmarks throughout the process. Otherwise, in five years’ time, ADEM could issue a new Phase II permit, itself with a five-year grace period. The end result is that key aspects of the SWMP are perpetually put off and never actually implemented.
- III.1.(c) ADEM must define “condition mechanisms” in this section to educate permittees about how to coordinate within the legal bounds of the Phase II permit.
- III.B. ADEM must change “consider the use of” to “use” to require the use of Low Impact Development (“LID”) as a way to meet the MEP standard as described below. ADEM should also replace “where feasible” with “to the maximum extent practicable.”
- III.B.1.(a) The sentence “This program is the continuous implementation in the areas served by the MS4 as established in the previous permit cycle, if applicable,” needs further clarification.
- III.B.2.(a) This section is silent about when *existing* MS4s must comply with its provisions. It speaks only to new MS4s.
- III.B.2.(b) ADEM says that the permittee “shall consider the development of opportunities” for public participation. This sentence is vague and unenforceable.
- III.B.2.(b)7. This section should make clear that the Notice of Intent must also be publicly available. Additionally, according to the Draft Permit, the latest annual report “should” be placed on the Permittee’s website; this “should” needs to be changed to a “shall.”
- III.B.3.(a)2. Permittees should be required to include land uses on the maps referenced in this subsection; currently the language is merely suggestive. Furthermore, when updating maps, the Phase II permit should require the additions listed in this subsection; again, the additions are only suggestive in the current Draft Permit.
- III.B.3.(a)3. The ordinances referred to in this section “shall be reviewed” and “updated when necessary.” The subsection should both identify who reviews the ordinances (presumably ADEM or the permittee) and the specific factors that would necessitate an update.
- III.B.4.(c)1. This subsection gives permittees the ability to self-schedule the development of an ordinance or other mechanism to enforce erosion control measures at construction sites. The Phase II permit should provide a date certain by which this must occur, to be no more than 1 year from finalization of this permit.

- III.B.5.(a)2. This subsection requires that the volume and velocity of pre-construction runoff from a site is not “significantly” exceeded. This term has no definition and renders the efficacy and enforceability of this subsection questionable.

## II. The Draft Permit as Written Does Not Meet the “Maximum Extent Practicable” Standard.

The National Pollutant Discharge Elimination System (“NPDES”) program is a technology-forcing program intended by Congress to ultimately eliminate the discharge of waste into waters of the United States through progressively more advanced technology. *See Entergy Corp. v. Riverkeeper, Inc.*, 129 S. Ct. 1498, 1506 (discussing the CWA as requiring progress toward the goal of zero pollution); 33 U.S.C. § 1311(b)2(a). The language of the federal CWA plainly requires forward progress towards clean water rather than inertia and stagnation, a background principle also evidenced by the CWA’s antidegradation policy. *See* 33 U.S.C. § 1313(d)(4)(B) (general antidegradation standard of CWA); 33 U.S.C. 1342(o)(1) (anti-backsliding provision of NPDES permit provisions); *accord* Ala. Code § 22-22-2 (“[It is the] policy of this state and the purpose of this chapter to conserve the waters of the state and to protect, maintain and *improve* the quality thereof”)(emphasis added). It is important to remember that NPDES stands for National Pollutant Discharge *Elimination* System; the inclusion of the word “elimination” in the very title of the permitting program clearly evinces Congress’s intent to create an iterative standard for water discharge permits to take continually advancing steps to clean up waterways.

The specific method of technology-forcing utilized in the municipal stormwater context is the MEP standard. EPA’s rules promulgated pursuant to 33 U.S.C. § 1342(p) (2006) require regulated entities to “develop, implement, and enforce a stormwater management program designed to reduce the discharge of pollutants . . . to the *maximum extent practicable*, to protect water quality, and to satisfy the appropriate requirements of the Clean Water Act.” 40 C.F.R. §122.34(a) (2006) (emphasis added). Based upon existing case law, “maximum extent practicable” means to the *fullest degree technologically feasible* for protection of water quality, except where costs are wholly disproportionate to the potential benefits. *See Haeuser v. Department of Law*, 97 F.3d 1152, 1155 (9th Cir. 1996) (“practicable” has been defined as “capable of being done: feasible”); *Rybachek v. United States EPA*, 904 F.2d 1276, 1289 (9th Cir. 1990) (EPA must select best level of technology unless costs are “wholly disproportionate” to the benefits); *Ass’n of Pac. Fisheries v. United States E.P.A.*, 615 F.2d 794, 805 (9th Cir. 1980). In the stormwater context, these stringent definitions of the term “practicable” are further

narrowed by the use of “maximum,” clearly indicating that the measures to be required must be *more* protective, especially where existing measures are failing to protect water quality.<sup>2</sup>

Like the other technology-based standards for control of point source discharges, MEP is supposed to evolve over time as industries and technologies mature, control costs diminish, and we learn more about stormwater control options and practices. As EPA has noted, achieving MEP is “an ‘iterative’ process that optimizes the reduction of stormwater pollutants, rather than a static pollution reduction requirement.” April 16, 2004, Memorandum from James A. Hanlon to Water Management Division Directors, Regions I-X, attached as Exhibit 2. The requirements that first-generation MS4 permits contained are no longer sufficient to meet emerging standards of MEP. As permits expire and new permits are issued, it is no longer acceptable for permit writers and permit holders to simply rely on past techniques that cannot demonstrate successful prevention or reduction of stormwater pollution. To have any meaning, the MEP standard must evolve to encompass new developments, such as numeric effluent limitations and the use of Low Impact Development/Green Infrastructure to reduce stormwater flows at their source. The MEP standard cannot be satisfied by merely freezing permit requirements to reflect yesterday’s norms.

**a. Incorporating EPA’s “Guidelines” Is Required To Meet MEP.**

The Phase II regulations dictate that stormwater pollution must be controlled to the MEP. MEP is the standard for measuring how far a municipality must go in preventing stormwater pollution. MEP means to the fullest degree technologically feasible for the protection of water quality, and its only limit is in those cases where costs are wholly disproportionate to the potential benefits. The final Phase II rule states that “EPA envisions application of the MEP standard as an iterative process,” 40 Fed. Reg. 68,754. In order to achieve “iterative” progress towards MEP, each subsequent permit must contain successively more stringent requirements to reduce the discharge of pollutants from the MS4.

In previous drafts of the Phase II permit, ADEM made a fair start toward refining what will constitute MEP for the new permit term and we commented accordingly. We attach that comment letter for your information. However, the latest Draft GP retreats substantially from those requirements. Not only are almost none of the constructive comments in our February 9,

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<sup>2</sup>Such a definition would also comport with the Ninth Circuit decision interpreting Phase II program requirements. The court there stated that the “maximum extent practicable” standard requires more of permittees than mere compliance with water quality standards or numeric effluent limitations designed to meet such standards. *Env’tl. Def. Ctr., Inc. v. EPA*, 344 F.3d 832, 853-56 (9<sup>th</sup> Cir. 2003) (noting that although general permits will explicitly require compliance with numeric effluent limitations designed to ensure compliance with water quality standards, additional review of permittees’ notices of intent to be covered under a general permit is required to ensure that permittees have also designed programs that do in fact reduce their stormwater pollution to the maximum extent practicable).

2010 letter reflected in the Draft GP; the permit has actually been weakened to such an extent that we must now address issues that appeared to be settled in that earlier draft. It is important to point out that the Draft GP does not include many of the specific requirements incorporated in the earlier draft; the Draft GP now only vaguely dictates that the required SWMP components be developed and implemented. As a result, evaluating compliance will be extremely difficult for ADEM, operators and stakeholders alike because there are no specific benchmarks to measure for compliance purposes. It is the very opposite of the “clear, specific, measurable and enforceable” guidance given by the EPA in its April 15, 2010 letter to James McIndoe, Chief of ADEM’s Water Division, attached as Exhibit 3.

Many of the provisions and standards removed from the permit were originally contained in EPA recommendations and guidelines given to ADEM to assist in drafting the Phase II permit. The removal of these provisions is counterproductive and misguided. Precisely because EPA’s recommendations and guidelines are *practicable* within Alabama, ADEM *must* incorporate them into the permit in order to meet the MEP standard. ADEM cannot simply reissue a permit which allows Phase II communities to continue to operate at the status quo and expect that this will comply with the Clean Water Act. New technologies and methods must be adopted into the permit as they become feasible. Because EPA’s guidelines do not represent unachievable goals but rather reasonable methods for reducing pollutants to the MEP, any permit that does not incorporate EPA’s guidelines will not reduce pollutants to the MEP and will therefore be in violation of the Clean Water Act.

**b. Clear And Specific Incorporation Of Low-Impact Development Practices Is Required To Meet MEP.**

Low-Impact Development (“LID”) practices fall within the category of measures that are more protective than current standard practices and should be required in both NPDES Phase I and Phase II stormwater permits. Whereas conventional stormwater controls are designed only to collect and convey stormwater offsite, LID practices are meant to mimic the predevelopment hydrograph on a site, using practices including but not limited to bioretention areas, permeable pavement, stormwater capture and reuse, green roof design, and grassed swales. LID site design also incorporates the protection of wide naturally-vegetated riparian buffers and standards that actually or effectively minimize impervious surface. EPA states that LID practices offer “both economical and environmental benefits.” US EPA, Office of Water, *Low Impact Development (LID): A Literature Review*, EPA-841-005, at 2 (October 2000). “LID measures result in less disturbance of the development area, conservation of natural features and can be less cost intensive than traditional stormwater control mechanisms.” *Id.* EPA’s own study, “*Reducing Stormwater Costs through Low Impact Development (LID) Strategies and Practices*,” U.S. EPA, (December 2007), as well as model projects in our region, prove that LID practices have provided significant cost-savings over conventional storm water practices. Practices that cost

less than and reduce pollution more than traditional practices must therefore be required by ADEM in NPDES stormwater permits, since they are clearly practicable.

In February 2009, the Washington Pollution Control Hearings Board issued a ruling requiring MS4s around Puget Sound to take more aggressive steps to reduce stormwater runoff. The Board struck down provisions in two Phase II stormwater permits as inadequate and concluded that greater use of "low impact development" techniques is required to meet the Clean Water Act's MEP standard. *Puget Soundkeeper Alliance, et al. v. State of Washington, Department of Ecology*, PCHB Nos. 07-022, 07-023, 46-48 (Feb. 2009). The Board concluded that the permits' focus on traditional engineered stormwater management facilities like detention ponds was inadequate to protect water quality and meet Clean Water Act requirements. *Id.* at 47. The Board further concluded that the permits failed "to require that the municipalities control stormwater discharges to the maximum extent practicable and [did] not require application of all known, available and reasonable methods to prevent and control pollution, because [they] fail[ed] to require more extensive use of low impact development techniques." *Id.*

Here, ADEM has not adequately incorporated LID practices into the draft GP. In fact, in the most recent draft of the permit, LID practices have been reduced to mere suggestions; they were mandated in the earlier draft. Language dictating that MS4s "must develop and implement a plan" for incorporating LID practices was replaced with language encouraging MS4s only to "consider" LID practices. This change in language does not comply with the MEP standard and is in violation of the Clean Water Act. ADEM must revise this section to *unequivocally require* the use of LID to the maximum extent practicable.

It is important to remember that LID techniques allow for flexibility. Construction sites differ according to soil type, topography, rainfall amount, vegetation, etc., so there is no one-size-fits-all solution when recommending practices to manage stormwater runoff from these sites. LID practices are not intended to hamstring companies into pursuing only a handful of options. Like best management practices generally, LID techniques allow developers to choose the best alternatives that fit their project scope and the individual site conditions. There is no reason why such flexible techniques should not be mandated in this general permit.

### **III. Several "Minimum Control Measure" Sections in the Draft Permit Require Substantial Revision.**

#### **a. Public Involvement/Participation**

Citizens must have access to information in order to play a meaningful role in the development and enforcement of stormwater controls. The proposed requirement that the operator must provide a copy of the SWMP to any member of the public only "when requested,"

Draft GP Part II.B.2(b)7, falls far short of meeting applicable legal requirements for public involvement. Public availability of the Notice of Intent (“NOI”), SWMP, and annual reports is easily achievable electronically and is critical if the public involvement and participation requirements in the permit are to have any actual meaning. Making these documents widely available through electronic means will reduce the burden of production on the permittee while facilitating access for the public. It would be a simple matter -- and should be a permit requirement -- for each MS4 to provide a link to these basic items on its municipal webpage.

Moreover, if an MS4 has any monitoring responsibilities imposed by Part IV.D of the Draft GP, those reports should also be available and accessible to the public. While the Draft GP states that a monitoring plan is a required part of the SWMP if any part of the MS4 discharges to impaired waters (Part IV.D.1(b), (c), (g) and (h)), there is no mention of making the required monitoring data public. Making these results available not only helps meet the public involvement requirements of Part IV.D.2(e) of the draft GP, it also allows the public reasonable notice of potential problematic discharges and fosters wider scrutiny to make sure that impaired waterways are not further degraded.

#### **b. Illicit Discharge Detection and Elimination (“IDDE”)**

This section has undergone substantial revision since the earlier draft Phase II permit was issued. ADEM must reinsert the language reminding permittees that the standard they must meet is MEP, particularly in Part III.B.3.(a)4. In addition, references to federal Clean Water Act regulations have been removed, thus clouding the authority which mandates the IDDE provisions. In III.B.3.(a)4.i., the field assessment results should be publicly available along with the NOI and the other aspects of the SWMP. In III.B.3.(b)3., the permittee should be required to commit sufficient resources in order to be able to fully implement and enforce this provision.

The most troublesome section concerning IDDE is III.B.3.(a)7., which allows the Permittee itself to identify stormwater discharges that will be exempt from the protections offered by the Phase II permit. This is flatly inconsistent with federal regulations, which do not allow for permittees to make these selections. Moreover, the regulations identify a discrete list of potentially exempt discharges, and the list is exclusive. See 40 CFR § 122.34(b)(3)(iii). Permittees are not given legal leeway to expand this list. This section renders the Draft Permit incompatible with federal law and illegal.

#### **c. Construction Site Stormwater Control**

This section requires significant revisions to clarify and ensure compliance with federal regulations. Federal regulations require all small MS4s to develop and implement a construction site stormwater regime with six parts: 1) an ordinance or other regulatory mechanism to require

erosion and sediment controls, 2) requirements for construction site operators to implement appropriate erosion and sediment control BMPs, 3) requirements for construction site operators to control waste that may cause adverse impacts to water quality, 4) procedures for site plan review which incorporate consideration of potential water quality impacts, 5) procedures for receipt and consideration of information submitted by the public, and 6) procedures for site inspection and enforcement of control measures. See 40 C.F.R. 122.34(b)(4)(ii)(A-F). This section must be revised to indicate that meeting these requirements is a *mandatory responsibility* for all small MS4s.

In addition to clarifying the requirements on small MS4s, this section must be revised to indicate that small MS4s may *not* rely upon ADEM's statewide construction program for implementation. While federal regulations do provide a mechanism for small MS4s to rely on another entity such as a statewide construction program to fulfill this minimum control measure, there are requirements that must be met first. Specifically, a local MS4 is allowed to rely on another entity's program *only if* "that program satisfies all of the requirements of [the Phase II regulations]". 40 C.F.R. 122.35(b). ADEM's construction stormwater program does not meet the requirements of the Phase II construction stormwater regulations, and thus cannot be relied on by small MS4s to meet the construction site runoff minimum control measure. See Id.

ADEM's construction site regulatory program does not meet or implement many of the requirements that Phase II regulations impose on small MS4s for their construction site runoff programs. Specifically, ADEM's construction program currently operates under a "notice of registration" ("NOR") procedure, which does not provide for the site plan review and consideration of water quality impacts required by the Phase II regulations. See Ala. Admin Code r. 335-6-12-.11. When submitting an NOR, most site operators are not even required to include copies of their BMPs, making it impossible for ADEM to review site plans in any meaningful way. See Ala. Admin Code r. 335-6-12-.10 (requiring submittal of BMPs only for construction sites discharging to Tier 1 waters). There is no procedure or opportunity in ADEM's construction program to consider information submitted by the public, nor are there requirements for the control of waste onsite, both of which are required of small MS4s by Phase II regulations. See 40 C.F.R. 122.34(b)(4)(ii)(C-E). These glaring deficiencies in ADEM's construction program render the program ineligible under 40 C.F.R. 122.35(b).

In addition to revising the permit to reflect the inability of an MS4 to rely on ADEM's construction program, ADEM should revise the Draft Permit to include several provisions from the earlier draft Phase II permit. Four sections were removed from the construction section between the current Draft GP and the prior draft released for public comment. These sections covered requirements for an enforcement response plan, inspection frequency guidelines, non-filer referrals, and enforcement tracking. Each of these sections outlined reasonable programs which, when implemented, would significantly enhance any MS4's construction program and

reduce pollutants entering Alabama’s waterways from construction sites. There is absolutely no reason for these provisions to have been removed from the permit, as they represent clear, targeted, reasonable, and effective methods for reducing pollution to the maximum extent practicable.

#### **d. Post-Construction Stormwater Controls**

The post-construction section contains both encouraging additions and troubling deletions. The revision of the section to add an actual standard that MS4s must meet when designing post-construction stormwater controls represents a significant step towards clear guidance. A specific technical discussion of the 2yr-24hr storm event as the basis for a standard is attached as Exhibit 4. While the addition of this standard represents significant progress, substantial changes are still needed to make this minimum control measure clear and enforceable:

##### **(1) Specifically incorporate LID to meet Maximum Extent Practicable standard.**

As noted above, LID must be required to reduce stormwater pollution to the MEP. To achieve this the following sentence should be inserted as a new second sentence in Part III.B.5(a): “You shall incorporate the use of Low Impact Development(LID)/Green Infrastructure to the maximum extent practicable to attain these elements.” Low Impact Development practices are highly effective to achieve post-construction stormwater management, are reasonable, available and known technology, and should be specifically required in this section.

##### **(2) Replace many conflicting, vague performance standards with one MEP standard as the overall objective.**

According to ADEM’s Permit Rationale, this draft added “... that the overarching objective of the post-construction program is to establish controls that will, to the maximum extent practicable, ensure the maintenance of site hydrological conditions from pre- to post-construction phases.” This is good, clear language. However, that clear language is not in Part III.B.5 of the permit, which instead includes multiple different, even conflicting statements of the overall objective, and thus the permit is not clear, specific, measurable and enforceable. One performance standard needs to be stated and used throughout.

For instance, III.B.5(a)2 has this wording: “that the volume and velocity of pre-construction stormwater runoff is not significantly exceeded.” The terms “volume and velocity” are more limited than the language in the permit rationale - “hydrological conditions.” While volume and velocity are key components, the “hydrological conditions” term captures all of the 5

potential hydrologic changes due to urban stormwater that can degrade water quality and designated uses (see Exhibit 4). Also, this is not a clear, specific, enforceable performance standard because “significant” is not defined. Who defines it – the permittee or site operator? How would their individual definitions of “significant” relate to avoidance of damage to water quality or designated uses of streams? The first sentence of this section should be revised to read “... to the maximum extent practicable, ensure the maintenance of site hydrological conditions from pre- to post- construction phases, including but not limited to volume and velocity of runoff.”

The following sections of the post-construction provisions all have different, and potentially conflicting, performance standard language and should be revised:

5.(a)1 – “... prevent or minimize water quality impacts...” Water quality impacts alone do not encompass all damaging post-construction stormwater impacts. Controlling increases in volume as well as rate of runoff is essential in order to prevent erosion and protect water quality, instream habitat, and designated uses (see Exhibit 4). “Prevent or minimize” is vague and unenforceable; the word “prevent” is negated by “or minimize.” MEP is not included.

5(b)2 – “... attempt to maintain predevelopment runoff conditions.” The use of the vague word “attempt” is unenforceable – what level of an attempt is sufficient? The MEP standard needs to be referenced. This section, as well as 5(b)3.iii, also is too limited in referring only to “... minimize water quality impacts.”

5(b)3 - “including, as appropriate” is vague and unenforceable. If no non-structural BMPs are deemed “appropriate” by the permittee, is that acceptable? Most Low Impact Development practices are non-structural BMPs, and as noted above, LID is necessary to meet MEP. Replace this language with “... any nonstructural BMPs in the program as required to achieve the post-construction objective and performance standard in III.B.5(a)2.”

Each of these sections needs to be revised to include the above recommended language or to refer back to the section of the permit containing such language.

**(3) Include proposed 2-year 24-hour storm as an initial specific post-construction performance standard and undertake process to improve that standard within 2 years.**

Our comments on the previous draft recommended that ADEM begin the process for developing a performance standard that would provide a clear, specific measurement tool necessary to allow Phase II permittees to implement post-construction controls and document compliance. ADEM has included the beginning basis of such a standard in this second draft in III.B.5(a)2, stating that a design rainfall event with an intensity up to that of a 2 yr-24 hr storm shall be the basis for design and implementation of BMPs. This is a significant, important and

needed addition to the permit. However, as currently drafted the standard has some vagueness and is open to different interpretations. This will make the standard difficult to implement and enforce.

Exhibit 4 includes technical comments concerning this proposed standard. Hydrology is complex, and the objective to maintain natural hydrology to the MEP requires a more complex standard. Exhibit 4 supports the inclusion of the proposed 2 yr-24 hr storm, with improved explanation for greater clarity, as an initial standard that must be in the final permit to allow adequate initial implementation of post-construction controls. However, the appendix also documents scientific research and on-the-ground practices that establish the need for a standard that more fully encompasses both the frequent storms that deliver channel-shaping flow ( such as the 2 yr-24 hr storm) and the larger, less frequent storms that have potential for intensive stormwater impacts and hydrologic changes that impact water quality and designated uses.

Exhibit 4 also acknowledges the challenges of maintaining natural hydrology between pre- and post-construction and the importance of the MEP concept as a target for performance. We recognize that practices aiming to achieve this objective, such as Low Impact Development, have changed and improved significantly within the past 5 years and will continue to improve significantly within the term of the adopted Phase II permit. The costs of these practices have become reduced within the past few years and will continue to come down. Thus the MEP practices will be a moving target over the permit term. The standard in the permit needs to have the flexibility to respond to this forward evolution.

We recommend and request that the 2 yr-24 hr storm be included in this permit and clarified as requested in Exhibit 4, with the understanding that ADEM will begin the process of developing a more thorough and inclusive performance standard appropriate for Alabama and, through the Phase II General Permit, notify permittees that they will be required to institute this performance standard or an equivalent standard appropriate to local conditions within two years. The timeline will ensure that further development of this useful tool will not be delayed until the next Phase II General Permit is issued in 2015 (or later). The organizations presenting these comments offer their knowledge and support for an ADEM process to develop a more thorough, feasible performance standard for post-construction.

#### **(4) Ensure adoption of adequate legal authority within 18 months.**

We note that III.B.5(a)3 has been revised in this draft to change “Adopt or amend an ordinance ...” to read “Use an ordinance ....” With this revision the effect of the section remains that the MS4 must have the legal authority to implement these requirements on the books. Typical existing ordinances dealing with stormwater retention or detention for flood management purposes alone will not be sufficient to achieve MEP post-construction

performance standards. Revision of zoning, subdivision, and stormwater codes at least will be needed.

As with the sections noted above, this section has vague and unenforceable language, "... to address post-construction runoff ... to the extent allowable under State law." There is no reference to implementation of an enforceable performance standard, and the permittee appears to be exempt from the most basic requirement to actually implement this section – having legal authority to do so – if it can be claimed that State law does not allow it or limits the extent to which this minimum control measure can be met. Also, there should be a clear timeline for having legal authority in place. The MS4s have not been required to implement the entire post-construction minimum control measure in the past. Implementation is past due, streams are being severely degraded due to the lack of effective post-construction stormwater control, and this minimum control measure urgently needs to be implemented. This section should be revised as follows: "Use an ordinance or other regulatory mechanism to achieve the performance objective and standard of Part III.B.5(a)2 and the provisions of III.B.5. The regulatory mechanism shall be effective within 18 months of the effective date of permit coverage."

**(5) Improve requirements to ensure long-term maintenance of post-construction BMPs.**

III.B.5(a)4 requires the MS4 to "...ensure long-term operation and maintenance of BMPs." This is extremely important, as some post-construction BMPs require regular clean-out or use plant materials as essential elements that require maintenance over the long term. These BMPs can cease to function or have reduced function if not properly maintained. A proper program for long-term maintenance must address (1) the party legally obligated to maintain, (2) the methods of maintenance, and (3) the oversight by the MS4 to ensure maintenance actually occurs. Without these elements the maintenance will fail.

ADEM must include the language that was contained in the previous draft of this permit in section III.B.5.b.6. This language called for "ordinances establishing requirements for owner/operators of privately owned storm water controls and new or re-development sites to ensure that such controls are maintained and repaired as necessary during the operational life of such controls." The requirements discussed in this language are essential to ensuring the working of the post-construction section. Requiring landowners to maintain and repair stormwater control structures throughout their operational life will ensure that post-construction controls are effective and that target discharge amounts and flow are maintained. Any set of post-construction requirements which does not require the maintenance of control structures is entirely ineffective.

**(6) Improve information about non-structural BMPs, evaluation of program effectiveness, and opportunities for public involvement.**

While it is a good start that III.B.5(b)3 includes a list of nonstructural BMP practices, many typical and effective practices, such as pervious or permeable paving, need to be added to that list. Reference should be added in this section to the terms “Low Impact Development” and “Green Infrastructure”, as well as links to websites or guidance that better describes the full array of potential practices.

The specific requirements from III.B.5(b)7 outlining an effective evaluation program should be reinstated. The language in the previous draft that was deleted from this section ensured that the evaluation process developed by the Permittee will result in specific measures to satisfy the performance objectives. Without an effective and simple means of evaluation, there will be no way to measure progress and make improvements upon MS4 post-construction programs. In addition to evaluation, this section should be revised to add a provision for public participation, similar to that found in the construction minimum control measure.

#### **IV. The Draft Permit Creates Unlawful Defenses To Pollution And Non-Compliance With Federal Law.**

##### **a. The Draft Permit Must Be Revised To Remove The “BMP Defense.”**

Part IV.C requires substantial revision. The title of this section is “Discharge Compliance with Water Quality Standards.” Given the title, it seems only logical that the section would require discharges to comply with applicable water quality standards. As it is written, however, the section seems to *exempt* compliance with applicable water quality standards if a permittee has implemented BMPs. A so-called “BMP defense” is in direct violation of both federal and state laws, which flatly prohibit the issuance of an NPDES Permit that will “cause or contribute to a violation of water quality standards.” 40 C.F.R. § 122.4(i); Ala. Admin Code r. 335-6-6-.04(i); see also Ala. Admin Code r. 335-6-10-.06 (describing the minimum conditions applicable to all state waters “at all times and at all places”). Even if the BMP defense is recognized in the context of compliance with a Phase II permit, it does not extend to the overriding and more universal prohibition against violating narrative and numeric water quality standards. This section should be revised to read as follows: “No discharges authorized by this permit shall cause or contribute to a violation of Alabama’s water quality standards, as provided by Ala. Admin Code r. 335-6-10.”

##### **b. The Draft Permit Should Clarify The Legal Authority Available To And Requirements On Permittees.**

The draft GP must provide the necessary legal authority for MS4s to develop and enforce a stormwater management program with the six minimum control measures required by law. 40 C.F.R. § 122.34. If there is any uncertainty about the legal authority of MS4s to meet these

minimum requirements, then ADEM must resolve those legal issues (whether legislatively or otherwise) before issuing the permit.

## **V. The Draft Permit Must Provide Strong Protections for Impaired Waters**

We strongly support the continued inclusion of the section regarding completion of Total Maximum Daily Loads (“TMDLs”) and point out that water quality restoration for impaired waters will only be effective where TMDLs have been developed or approved by EPA. It is vitally important for ADEM to expeditiously complete TMDLs for impaired waters.

The draft Sediment TMDL for the Cahaba River was issued in October of 2003. We do not see any legitimate reason why this TMDL has not been finalized in 6 ½ years, and both ADEM and EPA should make this a high and immediate priority. We ask for ADEM’s commitment to a completion date certain within 2010.

With regard to Section IV.D.2.(g), concerning monitoring cycles for achieving TMDL water quality goals, we question whether two cycles are sufficient in order for monitoring to determine whether the TMDL allocations are being met, especially considering the great variation in flow volumes that Alabama has experienced in wet and dry years. How long is an adequate monitoring cycle? If the permit is not revised to be more clear and specific, then demonstration of compliance with TMDL targets over a ten-year period should be required rather than over just 2 monitoring cycles.

## **VI. Miscellaneous Recommendations**

In addition to the specific comments above, we have the following suggestions for improvements to the Draft Permit:

- I.E.2. This section needs to be expanded to include violations of water quality standards that may not be reflected on the 303(d) list or covered by a TMDL. While both the 303(d) list and TMDLs provide clear indications of water quality violations, they are not meant to be exclusive.
- II.B.3. Delete the word “permit” from “formal permit decision.”
- III.B.1.(a) There is a typographical error in the last sentence; change “implementation on” to implementation of.”
- III.B.3.(a) Delete “the Permittee must” at the beginning of this subsection.
- III.B.3.(a)2. Change “maintained by boundaries of the Permittee’s watershed” to “maintained within the boundaries of the Permittee’s watershed.” Delete “following” and “as” in the last sentence.

- III.B.3.(a)4. Change “their” to “its” in the first sentence.
- III.B.3.(a)5. Add “The Permittee shall” at the beginning of the first sentence.
- III.B.3.(a)6. Add “The Permittee shall” at the beginning of the first sentence.
- III.B.3.(b)1. Change “location of all receiving waters” to “locations of all receiving waters.”
- III.B.4.(a) Change “land disturbance or greater than or equal to one acre” to “land disturbance of greater than or equal to one acre.”
- III.B.4.(a)1. Change “pollutant” to “pollutants.”
- III.B.4.(b) Add the word “must” after “Permittee” in the final sentence.
- III.B.4.(c) Change the subsection from (a) to (c).
- III.B.4.(c)2. Change “such a stop work orders” to “such as stop work orders.”
- III.B.5.(b)3.iv. Add “of” after “thought.”
- III.B.6.(b)3.iv. Change “additional water quality protection devices or practices” to “additional devices or practices where necessary to protect water quality.”
- IV.A. The heading should be in bold.
- IV.B.2.(b) The first sentence should be rewritten to read “Changes replacing an ineffective or unfeasible component, control measure, or requirement specifically identified in the SWMP, with an alternate component, control measure, or requirement may be requested at any time.”
- IV.B.2.(b)1. Change “components, control measures, or requirements” to “component, control measure, or requirement.”
- IV.B.2.(b)2. Change “Expectations on” to Expectations of.”
- IV.B.4.(b) This subsection should be its own number (5) since it is not related to the transfer of ownership, operational authority, or responsibility for SWMP implementation.
- IV.D.1. Delete “listed as” and “listed” in the last sentence.
- IV.D.1.(c) Change “notify the Department on how” to “notify the Department as to how.”

- VI.P.3. In the last sentence, the reference should be to Part VI.P. of the permit, not Part VI.O.
- VI.T.(15) “Priority developments” is undefined.

**Conclusion**

Thank you for your consideration of these comments. We ask that ADEM and EPA provide written responses to these comments and notify us of further revisions or drafts of this General Permit. We look forward to continued participation in this important process.

Sincerely,

 on behalf of

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# **EXHIBIT 1**



*Restoring and protecting the Cahaba River watershed and its rich diversity of life*

Cahaba  
River  
Society

February 9, 2010

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Re: Draft Phase II MS4 General Permit issued for public comment on January 14, 2010  
ADEM Public Notice 605

Dear Ms. Dean, Mr. Kelly, Mr. McGill and Mr. Mitchell:

The Cahaba River Society ("CRS"), the Southern Environmental Law Center ("SELC"), the Black Warrior Riverkeeper, the Mobile Baykeeper, the Choctawhatchee Riverkeeper, River Network, Friends of Shades Creek and the Alabama River Alliance present the following comments on the draft Phase II MS4 General Permit (the "draft GP") released by ADEM for public comment on January 14, 2010.

The draft GP represents a positive step toward bringing Alabama Phase II communities into compliance with EPA regulations implementing the federal Clean Water Act. While the draft GP needs further improvements as outlined below, we would like our initial comment to be one of commendation for ADEM's effort.

We are pleased with ADEM's implicit recognition that it cannot, as a practical matter, fully implement on behalf of Phase II communities the minimum control measures regarding Construction Site Stormwater Runoff and Post-Construction Stormwater Management. As we have noted in many past communications with ADEM and EPA, ADEM has neither the staff nor the local expertise, presence, and involvement with the development review process needed to implement these two minimum control measures on behalf of Phase II MS4s. Although Section

IV.A.1 still contemplates the possibility that ADEM might conduct a stormwater management program on behalf of a Phase II MS4, the requirements laid out for Phase II MS4 compliance with the Construction and Post-Construction minimum control measures specify a level of activity that can only be accomplished by local governments.

We also strongly support the draft GP's recognition of low-impact development ("LID") stormwater management techniques and the regulatory requirements for greater public participation in Phase II MS4 stormwater management programs. As noted below, the draft GP should be further improved to promote more effectively both LID techniques and the public participation required to ensure that Phase II communities properly implement their programs as required by the General Permit.

Our comments below focus first on LID implementation and then on improvements to public participation requirements -- particularly in the areas of ensuring that public participation in development and amendment of the stormwater management program ("SWMP") occurs and making documents readily available to the public. Finally, we note specific inadequacies in the permit and recommend additional language needed to make the permit more effective and to bring it into compliance with federal and state laws.

**I. The Phase II Permit must ensure that permittees require LID in new development and redevelopment projects because LID is necessary to reduce stormwater discharges to the "maximum extent practicable" ("MEP").**

EPA's rules promulgated pursuant to 33 U.S.C. § 1342(p) (2006) require regulated entities to "develop, implement, and enforce a stormwater management program designed to reduce the discharge of pollutants . . . to the *maximum extent practicable*, to protect water quality, and to satisfy the appropriate requirements of the Clean Water Act." 40 C.F.R. §122.34(a) (2006) (emphasis added). Based upon existing case law, "maximum extent practicable" means to the fullest degree technologically feasible for protection of water quality, except where costs are wholly disproportionate to the potential benefits. See *Haeuser v. Department of Law*, 97 F.3d 1152, 1155 (9th Cir. 1996) ("practicable" has been defined as "capable of being done: feasible"); *Rybachek v. United States EPA*, 904 F.2d 1276, 1289 (9th Cir. 1990) (EPA must select best level of technology unless costs are "wholly disproportionate" to the benefits); *Ass'n of Pac. Fisheries v. United States E.P.A.*, 615 F.2d 794, 805 (9th Cir. 1980). In the stormwater context, these stringent definitions of the term "practicable" are further narrowed by the use of "maximum," clearly indicating that the measures to be required must be more protective than standard practice, or than ordinary measures, especially where those measures are failing to protect water quality.<sup>1</sup>

LID practices fall within this category of measures that are more protective than current standard practices and should be required in NPDES Phase I and II stormwater permits. Whereas conventional stormwater controls are designed to collect and convey stormwater off of a site, LID practices are meant to mimic the predevelopment hydrograph on a site using practices, including but not limited to bioretention areas, permeable pavement, stormwater capture and reuse, green roof

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<sup>1</sup>Such a definition would also comport with the Ninth Circuit decision interpreting Phase II program requirements. The court there stated that the "maximum extent practicable" standard requires more of permittees than mere compliance with water quality standards or numeric effluent limitations designed to meet such standards. *Env'tl. Def. Ctr., Inc. v. EPA*, 344 F.3d 832, 853-56 (9<sup>th</sup> Cir. 2003) (noting that although general permits will explicitly require compliance with numeric effluent limitations designed to ensure compliance with water quality standards, additional review of permittees' notices of intent to be covered under a general permit is required to ensure that permittees have also designed programs that do in fact reduce their stormwater pollution to the maximum extent practicable).

design, and grassed swales. LID site design also incorporates the protection of wide naturally-vegetated riparian buffers and standards that actually or effectively minimize impervious surface. EPA states that LID practices offer “both economical and environmental benefits.” US EPA, Office of Water, *Low Impact Development (LID): A Literature Review*, EPA-841-005, at 2 (October 2000). “LID measures result in less disturbance of the development area, conservation of natural features and can be less cost intensive than traditional stormwater control mechanisms.” *Id.* EPA’s own study, *Reducing Stormwater Costs through Low Impact Development (LID) Strategies and Practices*,” U.S. EPA, (December 2007), as well as model projects in our region, prove that LID practices have provided significant cost-savings over conventional storm water practices. Practices that cost less than and reduce pollution more than traditional practices should be required by ADEM in NPDES stormwater permits.

In February 2009, the Washington Pollution Control Hearings Board issued a ruling requiring MS4s around Puget Sound to take more aggressive steps to reduce stormwater runoff. The Board struck down provisions in two Phase II stormwater permits as inadequate and concluded that greater use of “low impact development” techniques is required to meet the Clean Water Act’s MEP standard. *Puget Soundkeeper Alliance, et al. v. State of Washington, Department of Ecology*, PCHB Nos. 07-022, 07-023, 46-48 (Feb. 2009). The Board concluded that the permits' focus on traditional engineered stormwater management facilities like detention ponds was inadequate to protect water quality and meet Clean Water Act requirements. *Id.* at 47. The Board further concluded that the permits failed “to require that the municipalities control stormwater discharges to the maximum extent practicable and does not require application of all known, available and reasonable methods to prevent and control pollution, because it fails to require more extensive use of low impact development techniques.” *Id.*

While we appreciate the LID measures suggested in the draft GP Part III.B.5.b(3) & (4)ii & iii (e.g. encouraging infill development, minimizing impervious areas, building bioretention devices, etc.), we believe that adoption of LID techniques should be mandatory for Phase II permittees in Alabama given the regulatory language, study results, and case law described above. Thus, the introductory language of Part III.B and the language of Part III.B.5.b should require permittees to incorporate LID for new development and redevelopment projects.

To accomplish this, “where feasible” should be replaced by “to the maximum extent practicable” in the first introductory sentence of Part III.B. In addition, this sentence (with “where feasible” replaced by “to the maximum extent practicable”) should be repeated as a minimum requirement in the rationale statement for the post-construction SWMP under Part III.B.5.b, including substitution of this phrase for the vague wording in III.B.5.(b)2. As demonstrated above, the term “maximum extent practicable” is meant to encompass more than just the question of feasibility. Focusing solely on feasibility effectively writes the word “maximum” out of “maximum extent practicable.” LID is an effective and essential way to control stormwater runoff and can result in lower overall costs for the permittee to meet stormwater requirements.

For this reason, we also request that the definition of Low Impact Development found at Part VI.S.6. include an additional sentence as follows: “Because LID design techniques are tested, available and reasonable methods to control and prevent pollution from stormwater run-off, Phase II permittees must ensure that LID techniques are used for on-site management of post-construction stormwater volumes to the maximum extent practicable.”

We further request that Part III.B.5.(a)3 be revised to require the adoption of adequate legal authority to implement LID, with subsequent incorporation of the specific performance standard discussed below.

Finally, we note that Part III.B.5 on the post-construction minimum control measure consistently refers only to water quality. Controlling increases in volume as well as rate of runoff is essential in order to prevent erosion and protect water quality. The permit should specify the necessity to minimize impacts to runoff rate and volume to the maximum extent practicable in III.B.5.(a)1 and III.B.5.(b) 2 and should include this in the measurable goals in III.B.5.(b) 7.

**II. The Phase II General Permit should include a timetable for developing a post-construction stormwater volume reduction performance standard that Phase II permittees will be required to implement within two years of issuance of the final General Permit.**

MS4 permits recently developed in other states include objective performance standards for reducing stormwater runoff volumes. For example, these permits may establish specific percentages of stormwater that must be managed on-site using LID methods, or may designate a maximum amount of allowable impervious area, or may require that post-construction runoff volumes not exceed pre-development runoff volumes. See, e.g., MS4 permits for West Virginia and Ventura County, California.

Such an objective standard would provide a helpful “bright line” measurement tool, necessary to allow Phase II permittees to document compliance as they implement the post-construction program required by Part III.B.5 of the draft GP. ADEM should begin the process of developing such a performance standard appropriate for Alabama and, through the Phase II General Permit, notify permittees that they will be required to institute this performance standard or an equivalent standard appropriate to local conditions within two years. By incorporating a timeline within this Phase II General Permit for performance standard development and permittee adoption thereof, ADEM will ensure that permittees will have time to understand the development standard idea and yet will also ensure that development of such a useful tool will not be delayed until the next Phase II General Permit is issued in 2015 (or later).

The organizations presenting these comments offer their knowledge and support for an ADEM process to develop a feasible performance standard for post-construction.

**III. To fulfill their public involvement and participation requirements, Phase II permittees must provide both opportunities for public involvement in SWMP development and easy public access to reports and documents produced to meet General Permit obligations.**

**A. The General Permit should require permittees to develop opportunities for the public to participate in drafting and updating SWMPs.**

In Part III.B.2(b), the draft GP requires permittees to “consider” developing opportunities for the public to participate in SWMP drafting and updating. This word is not strong enough. Permittees can “consider” any number of options without actually allowing public participation to occur. In order to ensure that permittees provide for public participation in the drafting and updating of the SWMP, the Phase II General Permit should delete the word “consider” from the

first sentence of Part III.B.2(b) and substitute in its place “shall develop.” Parts III.B.4(b) and III.B.5(b) should also be revised to require that permittees’ rationale statements include information about public involvement procedures used in development of the construction site stormwater control program and the post-construction SWMP. Finally, we request that Parts IV.B.1 & 2 be revised to require public involvement in annual review of SWMPs and any updates to SWMPs.

- B. The General Permit should require permittees to provide public internet access to all reports and documents generated to meet permit obligations.

In the draft GP, ADEM has taken some positive steps to repair a woefully inadequate record of providing public access to documentation generated to meet NPDES requirements. For example, the draft GP implicitly acknowledges that the internet now exists as a medium that can facilitate the distribution of documents to the public. We welcome this acknowledgement because a publicly-accessible internet site is the easiest way for government agencies to provide documents to the public and for members of the public to access those documents.

We applaud ADEM’s steps in the right direction but note several inadequacies and inconsistencies regarding public access to documents that should be corrected in the final General Permit. These corrections are essential for permittees to fulfill their obligations under the second minimum control measure (public participation and involvement), because without easy access to documents such as SWMPs, annual reports, enforcement and monitoring results, and TMDL allocation calculations, the public cannot determine whether or not a Phase II permittee is fulfilling its permit obligations. Adequate and effective public participation is not possible without easy access to relevant information.

For this reason, the following revisions should be made to the draft GP:

1. The draft GP Part III.B.2(b)8 states that permittees shall make their SWMP and annual reports available to the public “when requested.” It states that permittees “should” publish these documents on their website, if available, or else submit the documents to ADEM for electronic distribution in accordance with ADEM’s public records process.

Given the subjective nature of the word “should,” the well-documented difficulties that members of the public have had with past document requests through ADEM’s public records process, and the potential cost of obtaining records through ADEM, this provision is not clear enough or strong enough. It would be much simpler and more forthright for this provision to state simply that permittees shall make their SWMP and annual reports available to the public on a website. Many current Phase II communities already have such websites. See, e.g., [www.ci.tuscaloosa.al.us](http://www.ci.tuscaloosa.al.us); [www.digitaldecalur.com](http://www.digitaldecalur.com); [www.sheffieldalabama.org](http://www.sheffieldalabama.org); [www.phenixcityal.us](http://www.phenixcityal.us); [www.cityoftuscumbia.org](http://www.cityoftuscumbia.org). Public posting of such documents on community websites is increasingly the norm throughout the nation. ADEM should not hesitate to require such website posting of Phase II SWMPs and annual reports.

If ADEM believes that it is economically infeasible to require all permittees to develop such websites, then ADEM should categorically state that it will post all SWMPs, annual reports, and contact information for each MS4 on its own website so that the public may review them and easily call the appropriate person with questions -- without having to go through an onerous public records process.

2. Other documents, reports and data delineated in the Phase II General Permit should also be made easily electronically available to the public. Revisions to the GP that will require electronic posting of documents should also be made to these sections:

- Enforcement case documentation under Part III.B.4(f);
- Monitoring plans, results, evaluations, and calculations under Part IV.D; and
- Data, documentation and records required under Part V.A & B.

**IV. Permittees should be required to develop an enforcement response plan (“ERP”) immediately as part of their SWMP, not within the five year cycle of the permit.**

Effective enforcement is an essential part of a successful stormwater management program. Why, under Part III.B.4(d), should permittees be given five years to come up with an enforcement response plan (“ERP”), when, under Part II.A, all other aspects of the SWMP must be developed and submitted with the Notice of Intent (“NOI”) within 90 to 180 days of the date of permit issuance or of designation notification by ADEM? This separate ERP requirement and delayed deadline create confusion as to what enforcement program steps are required of permittees and by what date they must be taken, and would likely lead to a delay in implementation of effective enforcement. For this reason, we request that Part III.B.4(d) be eliminated and the ERP be included as a minimum requirement of the SWMP as outlined under Part III.B.4 (a)(7-9) & (b)(2), consistent with all other aspects of the SWMP.

**V. Several additional provisions of the General Permit require clarification or improvement.**

The following provisions of the draft GP require clarification or improvement:

- A. In Part I.E.1, the phrase “in discharges ... to the MS4 to cause or contribute to violations” should be revised to read “in discharges ... to the MS4 that cause or contribute to violations...”
- B. The deadline for NOI/SWMP submittal by existing Phase II MS4s in Part II.A.1 needs to be clarified. As currently written, this section appears to require existing Phase II MS4s to submit their NOI/SWMP at the end of the five year permit period (“within 90 days before the expiration of this permit”). We assume that the intent is for existing Phase II MS4s to submit a new NOI/SWMP meeting the requirements of the revised General Permit within 90 days of effective date of permit coverage. This needs to be clarified in the wording of Part II.A.1.B.
- C. Part II.C.2 should require dischargers to provide a MS4 system map as part of the NOI.
- D. As part of the NOI, dischargers should be required in Part II.C.2. to list whether any receiving waters are Outstanding National Resource Waters as described in Ala. Admin. Code r. 335-6-10-.04 and -.12 , Outstanding Alabama Waters as listed in Ala. Admin. Code r. 335-6-11-.02, and other Tier 2 waters as described in 335-6-10-.12.
- E. MS4s must demonstrate in their SWMP that they are in compliance with Alabama’s antidegradation policy (Ala. Admin Code r. 335-6-10-.04) and implementation

procedures (Ala. Admin Code r. 335-6-10-.12) regarding Tier 1 waters (not harming existing uses classified in Ala. Admin Code r. 335-6-11-.02), Tier 2 waters (including Outstanding Alabama Waters) and Tier 3 waters (Outstanding National Resource Waters – for future designations, since there are currently none in Alabama) as identified in the NOI.

- F. So that ADEM can require SWMP updates as state requirements change, Part IV.B.3.(c) should read “... to comply with new Federal or State statutory requirements ...”
- G. Part III.B.4(a)4 requires that construction program procedures for site plan review must be consistent with Alabama Administrative Code 335-12-6 (the rule that codifies the Construction General Permit (“the CGP”). As stated in our comment letter on the CGP dated January 27, 2010, we think that the CGP application procedures should be made consistent with the MS4 permits. In other words, MS4s should issue their permits to construction site operators before ADEM approves the operator’s Notice of Intent (“NOI”) and Construction Best Management Practices Plan (“CMBPP”) and allows construction to commence under the CGP. As part of its CGP approval process, ADEM should require construction site operators to submit simultaneously with their NOI and CBMPP a final permit from the relevant MS4 showing that the MS4 has reviewed and approved their construction and post-construction stormwater management plans.
- H. Our experience is that many municipal inspectors have not been trained in how to inspect construction sites for stormwater violations. For this reason, we request that minimum certification or training requirements for inspection staff be incorporated into Part III.B.4(c).
- I. Part III.B.5(b)5 requires permittees without existing regulatory mechanisms addressing post-construction runoff to describe “a plan and a schedule” for developing that regulatory mechanism. In order to minimize delays in developing this essential part of the post-construction requirements, we request that Part III.B.5(b)5 state a deadline for development and implementation of that mechanism, e.g. within 18 months of the effective date of permit coverage. Because the draft GP already gives permittees one year to develop a post-construction program under Part III.B.5, permittees should require no more than an additional six months to develop and implement their regulatory mechanism.
- J. Part IV.C requires substantial revision. The title of this section is “Discharge Compliance with Water Quality Standards.” Given the title, it seems only logical that the section would require discharges to comply with applicable water quality standards. As it’s written however, the section seems to *exempt* compliance with applicable water quality standards if a permittee has implemented BMPs. A so called “BMP defense” is in direct violation of both federal and state laws, which prohibit the issuance of an NPDES Permit that will “cause or contribute to a violation of water quality standards.” 40 C.F.R. § 122.4(i); Ala. Admin Code r. 335-6-6-.04(i); see also Ala. Admin Code r. 335-6-10-.06 (describing the minimum conditions applicable to all state waters “at all times and at all places”). This section should be revised to read as follows: “No discharges authorized by this permit shall cause or contribute to a violation of Alabama’s water quality standards, as provided by Ala. Admin Code r. 335-6-10.”

- K. Part IV.D. should have more specifics about the timing and procedures regarding necessary adjustments to the SWMPs and actual enhancements of BMPs when discharge is to impaired or TMDL waters and current practices are resulting in violations of water quality standards.
- L. Part IV.D.1. states that the permit does not authorize discharges into impaired waters and defines such waters as those identified on the State's 303(d) list. However, waters with an adopted TMDL are removed from the 303(d) list. For this reason, the following final clause should be added to the second sentence of Part IV.D.1: "or for which an EPA-Approved TMDL has been developed."
- M. Part IV.D.2(h) requires permittees with discharges into impaired waters to follow the process outlined in Part IV.D.2(d-h) until an approved monitoring plan shows that TMDL allocations are being met for "two continuous monitoring cycles." The duration of those monitoring cycles is unclear. We request that the time allotted for a monitoring cycle be clearly stated in the General Permit. We also request that some monitoring still be required after an approved monitoring plan shows that TMDL allocations are being met. This would assure that TMDL allocations continue to be met over time rather than only once. Part IV.E. should also include a provision that allows any interested person to petition the Director to require any discharger to apply for and obtain an individual NPDES permit, as provided in 40 C.F.R. § 122.28(b)(3).
- N. Part V.A.1 states that permittees discharging into impaired waters "may" have monitoring requirements. This conflicts with Part IV.D.1 (b) & (c) which state that such permittees "must" include monitoring plans in their SWMPs. For this reason, we request that "may" be eliminated from the second sentence of Part V.A.1. Monitoring will be necessary to evaluate the effectiveness of control measures for impaired waters.
- O. Because pollution from in-stream erosion caused by increased volumes of stormwater runoff is a major problem in many impaired Alabama watersheds, we request that Part V.A include requirements for monitoring and assessing stream geomorphology and stability changes.
- P. Part V.B.1 requires permittees to retain required records for three years or "the term of this permit, whichever is longer." Given ADEM's history of delay in reissuance of general permits, this language should be revised to state "the term of this permit, including any administrative continuation, whichever is longer."
- Q. Under Part V.C.1(p), permittees who claim that they do not have adequate legal authority to implement any part of the Phase II MS4 permit requirements must submit to ADEM "written notification based on applicable State Law precluding implementation of any minimum measure or component" of the Phase II permit. We request further clarification in the Phase II permit as to how ADEM will respond to any such "written notification" by a permittee. We also caution that if there are any such barriers in State Law preventing permittees from meeting permit requirements that are also minimum requirements under the Clean Water Act, this is grounds for withdrawal of delegation of the water program. ADEM should take action expeditiously to cure any such barriers to permittee compliance.

We thank you for taking these comments on the draft Phase II MS4 General Permit into consideration. We are pleased with the progress that this draft shows over the last Phase II permit and look forward to seeing an effective final permit that will help us to protect and restore Alabama's water resources.

Sincerely,



Beth K. Stewart  
Executive Director  
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Henry Faulconer Hughes  
Executive Director  
Friends of Shades Creek  
401 Woodland Drive  
Homewood, AL 35209

# **EXHIBIT 2**

April 16, 2004

MEMORANDUM

Subject: Implementing the Partial Remand of the Stormwater Phase II Regulations  
Regarding Notices of Intent & NPDES General Permitting for Phase II MS4s

From: James A. Hanlon /s/  
Director, Office of Wastewater Management

To: Water Management Division Directors, Regions I - X

The purpose of this memorandum is to provide guidance on implementing a partial remand of the Stormwater Phase II regulations. The U.S. Court of Appeals for the Ninth Circuit recently denied EPA's petition for rehearing in the Phase II litigation. Environmental Defense Center, et al. v. EPA, No. 70014 & consolidated cases (9<sup>th</sup> Cir., Sept. 15, 2003). The Department of Justice has informed us that further review by the U.S. Supreme Court is not available. This memorandum provides interim guidance to EPA and State NPDES permitting authorities pending a rulemaking to conform the Phase II rule to the court's order.

The Relevant Provisions of the Rules

This case challenged the NPDES stormwater regulations issued pursuant to Clean Water Act ("CWA") section 402(p)(6). That section directs EPA to "establish a comprehensive program to regulate" stormwater discharges designated by EPA. We commonly describe these regulations as stormwater "Phase II." The regulations require NPDES permits for discharges from certain municipal separate storm sewer systems ("MS4s") for which NPDES permits were not required under CWA section 402(p)(2) and the Phase 1 regulations.

The Phase II regulations require that MS4s reduce the discharge of pollutants "to the maximum extent practicable" (or "the MEP standard"). The regulations also require the MS4s to develop, implement and enforce a stormwater management program containing, among other things, best management practices ("BMPs") identified by the discharger. The regulations authorize the use of "general permits" and require that these BMPs (as well as measurable goals associated with these BMPs) be identified in the Notice of Intent ("NOI") filed by the MS4 in seeking authorization under a general permit. Relying on the "traditional" general permit model, the Agency did not require NOIs to be subject to public hearings.

## The Ninth Circuit's Decision

The Ninth Circuit held that these NOI requirements violated various provisions of CWA section 402. They concluded that “the EPA’s failure to require review of NOIs, which are the functional equivalents of permits under the Phase II General Permit option, and its failure to make NOIs available to the public or subject to public hearings contravene the express requirements of the Clean Water Act.” The remand raises important questions regarding the procedures that would be appropriate for authorization of Phase II MS4 discharges *other than* through an individual permit.

In denying EPA’s motion for rehearing the court “vacated” the portions of the Phase II rule that address the procedural issues relating to the general permitting option for Phase II MS4s. Therefore, the Agency needs to take affirmative action to clarify the general permitting option for Phase II MS4s. In any such action, we believe it is imperative that implementation of the MEP standard remain an “iterative” process that optimizes the reduction of stormwater pollutants, rather than a static pollution reduction requirement.

In looking at options for implementing the court’s decision, we want to continue to provide States with maximum flexibility. Some State Phase II MS4 permitting procedures already appear to meet the court’s intent and will not need changes. However, the general permits and procedures of other States, along with the provisions developed by EPA in States where EPA has program implementation responsibilities, will need to change. To assist MS4 permitting authorities in moving forward with implementing program revisions where needed, EPA provides the following recommendations to address the court's decision.

### Guidance for Issuance of New General Permits

1. Public availability of NOIs The Phase II rules already require that Phase II MS4 permittees make the records of their stormwater management plans publicly available at reasonable times during regular business hours. 40 C.F.R. 122.34(g)(2). NOIs (which essentially summarize stormwater management plans) should also be made publicly available. Permitting authorities can ensure the public availability of Phase II MS4 NOIs by providing notice on the web of the facilities applying for coverage under a general permit with either an electronic posting of the NOIs or information on how NOIs can be accessed. NOIs could also be public noticed in a newspaper, or by another effective manner.

Unless a permitting authority has already otherwise incorporated public notice procedures into its processes for issuance of Phase II MS4 general permits, NPDES agencies that have not yet issued final permits should include permit language explaining that (and how) NOIs will be made available to the public with sufficient time to allow for meaningful public comment. EPA recommends that permitting authorities make the NOIs available to the public at least thirty days before authorization to discharge.

2. Opportunity for public hearing The court's decision requires that the public be given an opportunity to request a public hearing. If the Phase II MS4 general permittee provides public notice for the NOI, the permitting authority will still need to provide the public an opportunity to request a hearing. EPA recommends that permitting authorities include permit language explaining the process for requesting a public hearing on an NOI, the standard by which such requests will be judged, the procedures for conducting public hearing requests that are granted, and the procedures for permitting authority consideration of the information submitted at the hearing in determining whether to grant authorization to discharge to the submitter of the NOI. If a public hearing is requested, the permitting authority should consider both whether to grant a hearing and the range of options for the conduct of the hearing, including, for example, a single public hearing for consideration of multiple Phase II MS4 permittee NOIs.

3. Permitting Authority reviews of NOIs The permitting authority will need to conduct an appropriate review of Phase II MS4s' NOIs to ensure consistency with the permit. General permits should, to the extent practicable, specify in objective terms what is expected of a Phase II MS4 in order to meet the MEP standard. Due to the iterative nature of the MEP standard, we do not believe official "approval" of NOIs is necessary, but the general permits will need to specify when authorization occurs, such as after notice from the permitting authority that review is complete, or after a specified waiting period. EPA notes that this process does not preclude the permitting authority from denying an MS4 authorization to discharge. Either of these timing options should provide the permitting authority with sufficient time to review NOIs, to ensure that NOIs have been publicly available, and that there has been an opportunity to request a public hearing to provide input.

#### Guidance for General Permits Already Issued for MS4s

Permitting authorities that already have issued general permits should determine the most effective way to provide public notice and review of MS4 NOIs. Unless a permitting authority has already otherwise incorporated such procedures into its processes for issuance of Phase II MS4 general permits, NPDES agencies that have issued final permits should:

- List on the State or EPA Region's web site those MS4 permittees who have submitted NOIs and how NOIs can be reviewed by the public. Include information on how comments can be submitted and a hearing can be requested. If a public hearing is requested, the permitting authority should consider both whether to grant a hearing and the range of options for the conduct of the hearing, including, for example, a single public hearing for consideration of multiple Phase II MS4 permittee NOIs.
- Conduct an appropriate review of submitted NOIs (to determine compliance with the permit) and contact the MS4 when changes appear to be needed.

MS4s continue to have an obligation to apply for permit coverage, whether under an individual NPDES permit or an NPDES general permit. We do not believe that the court ruling

creates legal vulnerability for violations of the CWA for Phase II MS4 permittees that have filed timely applications, whether or not authorization has been granted. The Phase II regulations establish application deadlines, not authorization deadlines. Even when Phase II MS4 permittees are authorized, the regulations do not require immediate compliance with the MEP standard, i.e., development and full implementation of the Phase II MS4 stormwater management program. Instead, the permitting authority specifies the applicable time period, which may be as long as five years after permit issuance.

We request that you communicate this guidance to States within your Region which are authorized to administer the NPDES program. If you have questions or concerns, please contact Linda Boornazian at (202) 564-0221 or Wendy Bell at (202) 564-0746.

cc: Ben Grumbles, OW  
NPDES Branch Chiefs, EPA Regions I - X  
Susan Lepow, OGC  
Mark Pollins, ORE  
Robbi Savage, ASIWPCA

# **EXHIBIT 3**



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

REGION 4  
ATLANTA FEDERAL CENTER  
61 FORSYTH STREET  
ATLANTA, GEORGIA 30303-8960

**APR 15 2010**

Mr. James McIndoe  
Chief  
Water Division  
AL Department of Environmental Management  
Post Office Box 301463  
Montgomery, Alabama 36130

**RECEIVED**  
APR 19 2010  
**WATER DIVISION**

Re: Expectations for Municipal Separate Storm Sewer System permits

Dear Mr. McIndoe:

The U.S. Environmental Protection Agency (EPA) has recently finalized the "MS4 Permit Improvement Guide" (Guide) which is available on our website at: [www.epa.gov/npdes/pubs/ms4permit\\_improvement\\_guide.pdf](http://www.epa.gov/npdes/pubs/ms4permit_improvement_guide.pdf). The Guide underscores the importance of permit requirements that are clear, specific, measurable, and enforceable, and it includes examples of permit provisions as well as sample language for supporting rationale. As described in my letter to your office dated November 24, 2009, EPA Region 4 expects Municipal Separate Storm Sewer (MS4) permit requirements and performance standards to reflect a level of detail and specificity similar to that of the examples in the Guide. I would also like to take this opportunity to further describe EPA Region 4's expectations for MS4 National Pollutant Discharge Elimination System (NPDES) permits submitted for our review, and to identify aspects of the permits that are particular areas of focus when we conduct our review.

The Region will be taking a closer look at future MS4 permits for clear, specific and measurable performance standards sufficient to ensure the implementation of controls to reduce the discharge of pollutants to the maximum extent practicable, as required under Section 402(p)(3)(B) of the Clean Water Act. Our expectation is based on the principle that it is the permit writer's obligation to determine performance standards that are consistent with the maximum extent practicable (MEP) requirement, and the development of appropriate performance standards should not be left to the permittee. Our expectation for more effective requirements also serves to help gauge progress and delineate accountability, and it applies to all sections of the permit. As such, permits should specify minimum requirements, with schedules, for the establishment and maintenance of a MS4's stormwater management program. For example, specific obligations and timeframes should be included in the public education and outreach/public involvement and pollution prevention/good housekeeping components of the permit. Where applicable (primarily Phase I MS4s), permits should include measurable performance standards for inventorying and inspecting industrial and other high-risk stormwater systems, as well as specific conditions for monitoring activities (*e.g.*, monitoring type, frequency, location, protocol, etc.). EPA also expects MS4 permits to require that the permittee operate its system and any structural controls in a manner to reduce the discharge of pollutants, and to that

end permits should include enforceable and effective system inspection and maintenance requirements.

Although the specific performance standards and required actions may vary depending on the specific MS4 and its programs, future MS4 permits should be explicit in what MEP-level controls are required. It is not EPA's intention to prescribe specific thresholds of performance necessary for an MS4 to reduce pollutants from stormwater to the MEP. Instead, we are looking to States to determine appropriate MEP-levels of control on a case-by-case basis and to write clear and enforceable performance standards and required actions that reflects this level of control. Such specificity will be especially important with the following permit elements, of which Region 4 has identified as an area of focus: (1) Total Maximum Daily Load (TMDL) implementation, (2) stormwater controls for construction activities, (3) stormwater controls for new development and redevelopment (post-construction), and (4) illicit discharge detection and elimination. Our expectation for each permit area is described in further detail below.

### **Implementation of TMDLs**

Pursuant to 40 CFR §122.44(d)(1)(vii)(B), NPDES permits must contain conditions that are consistent with the assumptions and requirements of wasteload allocations (WLAs) in applicable TMDLs. Accordingly, for MS4s subject to a TMDL approved or established by EPA, we expect permit requirements regarding TMDL implementation to be clear, specific and measurable in terms of required actions or achievement of specific performance standards. First, individual permits should identify all applicable TMDLs. Phase II MS4 general permits should contain provisions that require MS4s to determine the applicability and details of any EPA-approved or established TMDL to their discharge, unless the State affirms in the permit that it is responsible for notifying the permittee of such information.

Second, permits should include clear and specific requirements related to the identification, evaluation, and implementation of appropriate water quality controls, with attached timeframes and/or milestones, which are necessary to address any applicable WLA. Given that WLAs for MS4s are typically implemented through non-numeric requirements in the permits, effective TMDL implementation for an MS4 often depends on selecting the appropriate combination of control measures to achieve progress towards addressing the WLA, coupled with monitoring to support the determination of when additional or enhanced control measures are necessary. Some approaches to having clear and specific requirements in terms of control measures could include: requiring MS4s to develop a TMDL implementation plan that identifies enhanced control measures the MS4 will implement and explains how measures implemented by the MS4 will address the WLA; the identification of specific best management practices (BMPs) or a menu of potential BMPs in the permit for MS4s to evaluate and select; reference to BMP performance standards; benchmarks that trigger adaptive management requirements; or requiring MS4s to review existing BMPs and select additional control measures to achieve progress towards addressing the WLA. Whether States choose to identify specific BMPs or rely on MS4s to do the evaluation and selection on their own, EPA expects permits to include language that clearly describes the specific actions required on the part of the permittee, including requirements for adaptive management if initial implementation plans are not demonstrating adequate progress towards achieving the WLA.

Permits should also address the monitoring and assessment of MS4 pollutant load contributions - either at the outfalls and/or in the receiving waters. The permit could include specific provisions for monitoring and assessment activities to first establish a baseline that characterizes the relative pollutant load contributions from the areas of the MS4 that discharge to waters subject to a TMDL. Pursuant to 40 CFR §122.44(i), NPDES permits must also specify the monitoring necessary to determine compliance with effluent limitations, including effluent limits that are specified as BMPs. For example, the permit could require monitoring of BMP performance to assess if the expected load reductions attributed to BMP implementation are achieved and to determine if additional BMPs are necessary to address any applicable WLAs. To better gauge BMP effectiveness and quantifiable improvements to water quality, permits should be clear and specific on what elements, such as monitoring frequency, locations, duration, etc., must be included in a MS4's monitoring plan.

The Guide does not explicitly include or address the implementation of TMDLs in MS4 permits largely due to the fact that EPA is currently developing a policy document that will address many of these issues. The "TMDLs to Stormwater Permit Handbook," which will be released in the coming months, provides information on approaches for translating TMDL WLAs and implementation recommendations into NPDES stormwater permit requirements. Upon its release, we encourage you to consider it as another resource. Additionally, our office is in the process of drafting example language for TMDL implementation for MS4s, which we are hopeful will be useful to States in developing permit limits for applicable TMDLs. It is our intention to share a draft version with your staff in the coming month for your feedback and consideration. If you have any suggestions or recommendations regarding this matter, we welcome you to share those with us as we proceed in this effort.

## **Construction**

Section 402(p)(3)(B)(iii) provides that MS4 permits must require controls, "including management practices, control techniques and . . . such other provisions" determined appropriate to reduce the discharge of pollutants from MS4s to the MEP. One area in which MS4s must develop and implement MEP-level controls is in the control of pollution in runoff from construction sites (see Phase I MS4 regulations at 40 CFR §122.26(d)(2)(iv)(D) and Phase II MS4 regulations at 40 CFR §122.34(b)(4)(ii)), including requirements for construction site plan reviews and a construction site inspection and enforcement program.

Permits should require MS4s to implement a process for site plan review to ensure that to the maximum extent practicable, construction plans are reviewed prior to commencement of construction activities to ensure that adequate measures will be implemented to protect water quality, and that any water quality-related requirements of the MS4's construction program are followed. Regulations for Phase II MS4s require "procedures for site plan review which incorporate considerations of water quality impacts." Similarly, Phase I regulations require "procedures for site planning." Accordingly, permits should clearly specify the minimum stormwater requirements concerning erosion and sediment control, pollution prevention, and other State regulations or local ordinances, and a review procedure should be outlined in the permit as well. A schedule for review and the conditions for approval for construction occurring

within the MS4 should also be included in the permit in order to provide a mechanism to track construction activities and enforce control standards. Site plan review requirements for Phase I MS4s should be at least as stringent as the Phase II requirements, as Phase I MS4s have had more time for, and typically have more resources for, stormwater management program development. Further, impacts from construction activity tend to be greater in Phase I communities.

As part of a construction site inspection and enforcement program, permits should establish a minimum inspection frequency or other measurable level of effort requirement for inspecting construction sites. The absence of a measurable requirement for construction site inspections undermines the enforceability of the permits with respect to the permittees' construction program. The inclusion of such requirement would help to ensure that the permittees will reduce pollutants in stormwater entering the MS4 from construction sites to the maximum extent practicable, as required by the Section 402(p)(3)(B)(iii).

States may choose an inspection frequency that is appropriate for each MS4, provided that the inspection frequency reflects an MEP-level of control for the MS4 and it is measurable and enforceable. The inspection obligation could be expressed as a minimum time interval for inspecting active sites, which could vary for categories of sites with different priority levels. Alternatively, the permit could establish a minimum percentage of inspection sites that must be inspected within specified time intervals. The frequency could also be tied to significant rainfall events, and States might choose to require an initial inspection prior to or soon after the commencement of land disturbance. The permit could also require the development and implementation of a prioritization scheme for addressing more significant sites based on criteria laid out in the permit (*e.g.*, nature and extent of construction activity, slope of the site, proximity and/or water quality status of receiving water, etc.). EPA expects that permitting authority judgment and discretion will be applied to establish an appropriate construction inspection performance standard. To the extent that such requirements are already imposed through non-Clean Water Act requirements utilizing processes outside of the NPDES program, such requirements could be referenced as a relevant minimum requirement that MS4's could incorporate and implement in their own construction program. However, EPA does expect that the inspection obligation will be defined in a way that is effective, measurable, and enforceable.

### **Post-Construction Requirements**

As noted above, Section 402(p)(3)(B)(iii) provides that MS4 permits must require controls to reduce the discharge of pollutants to MEP and contain such other provisions as the Administrator or State determines appropriate for the control of such pollutants. Another area in which MS4 permittees must develop and implement MEP-level controls is in the control of pollution from residential and commercial areas, including "controls to reduce the discharge of pollutants from municipal separate storm sewers which receive discharges from areas of new development and significant redevelopment." (see Phase I MS4 regulations at 40 CFR §122.26(d)(2)(iv)(A)(2)). The requirement for a program to control pollution from new development and significant redevelopment must "address controls to reduce pollutants in discharges from municipal separate storm sewers after construction is completed." *Id.* Similarly, regulations for Phase II MS4s require the development and implementation of "a

program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre.” (see Phase II MS4 regulations at 40 CFR §122.34(b)(5)).

Permits should include specific, enforceable language that require MS4s to establish and enforce minimum requirements, such as flow control standards or requirements to infiltrate, evapotranspire, harvest or re-use stormwater from new and redeveloped sites after construction is completed, when such controls represent control of discharges to the maximum extent practicable. For example, the permit could require enactment and enforcement of an ordinance that requires that post-construction flow be consistent with pre-development characteristics, or that precipitation from a rain event of a particular size be managed to prevent off-site stormwater discharges. Low-impact development approaches such as infiltration, reuse and evapotranspiration should be utilized to the maximum extent practicable. EPA expects States to use their judgment and discretion to arrive at enforceable permit requirements to control pollutants in stormwater discharges entering the MS4 from new development and redevelopment sites that are appropriate for States and the permittees. To the extent that such requirements are already imposed through non-Clean Water Act requirements imposed under processes outside of the NPDES program, such requirements could be referenced as a relevant minimum requirement that MS4’s could incorporate and implement in their own post-construction program. However, EPA expects any post-construction requirement to be defined in a way that is effective, measurable, and enforceable. In addition, permits should include enforceable requirements that MS4 post-construction programs include site plan review procedures, ordinances requiring long-term operation and maintenance of post-construction BMPs and including inspection and enforcement authorities, development and maintenance of an inventory of post-construction controls, and minimum inspection frequencies.

On a related matter, in December 2009 EPA issued a document entitled, “*Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act*” (see [http://www.epa.gov/owow/NPS/lid/section438/pdf/final\\_sec438\\_eisa.pdf](http://www.epa.gov/owow/NPS/lid/section438/pdf/final_sec438_eisa.pdf)). The Energy Independence and Security Act Section 438 was enacted with the intention of maintaining and restoring pre-development site hydrology during the development or redevelopment process in order to protect and preserve both the water resources onsite and those downstream. This guidance was prepared to provide technical guidance and background information to assist federal agencies in achieving, measuring, and evaluating their compliance with Section 438. It describes two approaches to establishing the Section 438 performance objectives through the design, construction, and maintenance of stormwater management practices that manage rainfall onsite. The first option involves the prevention of the off-site discharge of precipitation from all rainfall events less than or equal to the 95<sup>th</sup> percentile rainfall event to the maximum extent technically feasible. The second option allows the designer to conduct a site-specific hydrologic analysis to determine the pre-development runoff conditions and quantify the post-development runoff volume and peak flow discharges that are equivalent to pre-development conditions. Included in the document are several case studies of sites with stormwater management systems that retain the 95<sup>th</sup> percentile storm onsite.

The Section 438 Guidance reflects EPA's perspective that retaining all storms up to and including the 95<sup>th</sup> percentile storm event is analogous to maintaining or restoring the pre-development hydrology with respect to the volume, flow rate, and duration and temperature of the runoff for most sites. This 95<sup>th</sup> percentile approach was identified and recommended because this storm size represents the volume that appears to best represent the volume that is fully infiltrated in a natural condition and thus should be managed onsite to achieve the objectives of Section 438.

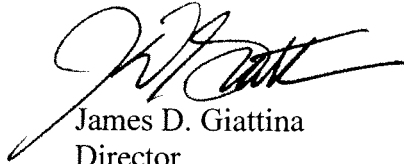
Although the performance standards and practices discussed in this guidance were developed to apply to federal development and redevelopment projects, they can serve as a useful guide for municipal systems as well. We encourage States to replicate similar green infrastructure and quantifiable objectives in their MS4 permits, or at least develop a plan on working towards comparable requirements. We also recognize that some MS4s may not be equipped to achieve a 95<sup>th</sup> percentile storm event, but Region 4 does expect States to use their judgment to identify in MS4 permits an alternatively appropriate, specific, and measurable threshold that maximizes the practice of infiltration, evapotranspiration, and/or rainwater harvesting and use. The concepts and principals included in this guidance document are among those being evaluated and considered as part of EPA's stormwater rulemaking effort, which was initiated in October 2009. The rule is intended to address, at a minimum, stormwater from development and redevelopment sites and is expected to be completed by November 2012.

### **Illicit Discharge Detection and Elimination Program**

Another area in which MS4 permittees must develop and implement MEP-level controls is in the development and implementation of a program to detect and eliminate illicit discharges and improper disposal into the MS4. See Phase I MS4 regulations at 40 CFR §122.26(d)(2)(iv)(B) and Phase II MS4 regulations at §122.34(b)(3). Such a program should include, among other requirements, inspections, on-going field screening activities, investigation when field screening or other information indicates reasonable potential of illicit discharge, and procedures for removal of identified illicit discharges and improper disposal. 40 CFR §122.34(b)(3)(iv). To ensure that a permittee's illicit discharge detection and elimination (IDDE) program controls pollution discharges to the MEP, permits should include measurable and enforceable requirements for conducting field screenings, conducting inspections, initiating and completing investigations of suspected illicit discharges, and taking action to eliminate identified illicit discharges as soon as practicable. The inspection requirements for the industrial and high-risk program may overlap with inspections conducted to support the IDDE program.

EPA may object to permits provided to our office per the NPDES Memorandum of Agreement that do not meet the expectations in this letter. As appropriate, we encourage you to engage your regulated MS4 community and utilize the available data and information when establishing clear, specific and measurable performance standards that reflect an MEP-level of control for their permits. It is our intention to work constructively with your office to resolve any potential issues or challenges concerning this, and we are pleased to provide any assistance in this regard. If you have any questions, please feel free to contact me at (404) 562-9345, or have your staff contact Mr. Thomas McGill at (404) 562-9243 or Mr. Mike Mitchell at (404) 562-9303.

Sincerely,

A handwritten signature in black ink, appearing to read 'J. Giattina', written in a cursive style.

James D. Giattina  
Director  
Water Protection Division

# **EXHIBIT 4**

## Exhibit 4

### POST-CONSTRUCTION PERFORMANCE STANDARD JOINT COMMENTS, ALABAMA URBAN STORMWATER PARTNERS Draft Permit ALR040000 Issued March 18, 2010

*These technical comments support the joint comments of the Alabama Urban Stormwater Partners on the Draft NPDES General Permit ALR040000, Small Municipal Separate Storm Sewer Systems.*

Many Alabama streams exhibit significant losses of their beneficial uses due to urban stormwater impacts. Preparation of drinking water is becoming more expensive and our biological heritage is being degraded and lost. Recreational uses of streams and lakes are being impaired. Property damage due to increased peak flood elevations is worsening in our communities. These are all beneficial uses of our streams the Clean Water Act was intended to protect. While ADEM and other environmental protection agencies have made great progress in managing point source pollution, non-point source pollution problems have been more intractable and continue to degrade our streams. About 440 miles or 20% of the total 2,252 miles of Alabama streams with separate entries in the 2010 §303(d) List for which the “Source” of the impairment was attributable was classified as due to “urban runoff / storm sewers”, “land development”, or “urban development”<sup>1</sup>.

There appear to be at least two kinds of barriers to improved management of urban stormwater. The first is the complexity of the problem and the general lack of understanding about how and why urban stormwater is a problem for Alabamians. The complexity of many stormwater-generated water quality problems defies simple solutions. A second significant barrier is the lag in adoption and implementation of proven stormwater management technology<sup>2</sup>. This document addresses both challenges.

#### ***Urban Stormwater Impacts***

It has become clear that urban streams and urbanizing areas are being degraded by stormwater runoff<sup>3</sup>. That stream degradation is the result of at least two processes: 1) water quality degradation, and 2) geomorphological alteration of streams down gradient from the changed land use.

***Water Quality Degradation:*** Stormwater can either dissolve or entrain a substantial array of pollutants and sediment, creating water quality problems. Some of the more sensitive species of our native aquatic fauna cannot tolerate the change in water chemistry those changes bring. These water quality problems are the more direct and obvious cause of non-point source problems in our urban streams. There is substantial scientific data and growing public awareness of how an oil sheen on a stream or how the presence of pesticides or sediment can be a problem for aquatic wildlife, fishing, recreation, or other beneficial uses of our streams.

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<sup>1</sup> See the “Sources” column in the 303 (d) listed streams in Alabama spreadsheet, available at <http://www.adem.alabama.gov/programs/water/wquality/2010AL303dListpending.pdf>. Entries labeled with “Urban Development”, “Land Development”, or “Urban Runoff” as the source of the impairment are probably non-point source problems.

<sup>2</sup> Pitt, R. and S.E. Clark. 2008. Integrated Storm-Water Management for Watershed Sustainability. Journal of Irrigation and Drainage Engineering. ASCE. September/October. pp 548-565.

<sup>3</sup> US EPA, [http://cfpub.epa.gov/npdes/home.cfm?program\\_id=6](http://cfpub.epa.gov/npdes/home.cfm?program_id=6) or <http://cfpub.epa.gov/npdes/stormwatermonth.cfm>

**Geomorphic Alteration:** A separate set of problems associated with stormwater runoff are the changes in the magnitude, timing, duration, frequency, and rate of change of those stormwater flows compared to pre-development hydrology<sup>4, 5, 6, and 7</sup>. These changes are associated with the increased imperviousness that results from development. They cause physical changes in downstream channel morphology by indirect, and more subtle means.

Each of these five hydrological parameters (the magnitude, timing, duration, frequency, and rate of change of those stormwater flows) are interrelated. A change in any one requires the remaining factors to “adjust” to accommodate that change<sup>8 and 9</sup>. As an example, it is widely understood that increased imperviousness for an area results in a greater volume of stormwater discharge. A simple equation for stream discharge is:

$$Q = W \times D \times V$$

where:

*Q* is total discharge at a given location,

*W* is the stream width,

*D* is the stream depth, and

*V* is the velocity of water passing the discharge measurement point.

If the discharge, *Q*, is increased for any reason (for example by increasing the imperviousness of the watershed), then there must be some increase in either *W* or *D* or *V*. In the short term (a time scale of hours), an increase in *Q* for streams is accompanied by an increase in *D*, their depth, and *V*, their velocity (water levels and velocity increase). However, in the longer term (a time scale of months and years), the stream’s *W* and *D* re-adjust in a geomorphological sense because the increased *D* and *V* cause much greater than usual erosion in the stream channel. So, in the long run, an increase in *Q* must be accommodated by an increase in the stream’s *W* or *D*. ***This has been found to be the source of a greater proportion of the sediment loading to some streams than sediment loading from construction site runoff.*** For example, for Shades Creek in the Cahaba River watershed, 62% of the sediment is estimated to be from this “in-stream” process while 38% of the sediment is from construction site runoff<sup>10</sup>, based on modeling of a 2001 land use scenario.

Once increased flows are being delivered to a stream, the physics of this process is unalterable. Often the aquatic communities trying to live in those geomorphically readjusting streams are unable to survive.

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<sup>4</sup> Hammer, T.R. 1972. Stream channel enlargement due to urbanization. *Water Resources Research* 8: 1530-1540.

<sup>5</sup> Prestegaard, K.L. 1988. Morphological controls on sediment delivery pathways. pp 533-540 in Walling, D.E. ed. Sediment Budgets.

<sup>6</sup> Wallingford (UK): IAHS Press. International Association of Hydrological Sciences Publication # 174.

<sup>7</sup> Leopold, L. 1968. Hydrology for Urban Land Planning: A Guidebook on the Hydrologic Effects of Land Use. Reston (VA) US Geological Survey, Circular # 554.

<sup>8</sup> Leopold, L.B., M.G. Wolman, and J.P. Miller. 1964. Fluvial Processes in Geomorphology. Freeman and Sons, San Francisco. 522 p. See page 268. They describe eight interrelated hydrological parameters, so the five we mention here are a simplified version of Leopold, *et al.* used by The Nature Conservancy and others as described by Poff *et al.* 1997 (next reference).

<sup>9</sup> Poff, N.L., J.D. Allan, M.B. Bain, J.R. Karr, K.L. Prestagaard, B.D. Richter, R.E. Sparks, and J.C. Stromberg. 1997. The Natural Flow Regime: A paradigm for river conservation and restoration. *BioScience* 47 (11): 769-784.

<sup>10</sup> EPA, Region 4. 2004. Total Maximum Daily Load (TMDL) for Siltation, Turbidity, and Habitat Alteration in Shades Creek, Jefferson County, Alabama. October 2004. 41 pp. (See Table 11. *Comparison of relative source contributions between 1991 and 2001 landuse scenarios.*)

This process has been dubbed “urban stream syndrome”<sup>11</sup>. Two of the most common responses of urban streams are to dramatically increase stream width and to scour out pools and riffles<sup>11</sup>.

As development occurs in a watershed, each of these five flow characteristics can be significantly altered from their pre-development states. These changes follow as a result of the increasing imperviousness associated with development in that watershed. Exactly which or how much each parameter changes is a function of the characteristics of the watershed. As a result of increased imperviousness, the physical integrity of urban streams is degraded. The water quality, chemical, and biological integrity of those streams can neither be protected nor restored if that physical damage continues unabated.

While it is critical to address and improve the water quality problems that accompany urban stormwater, it is no less critical to address and improve the hydrological alterations that come with poorly managed urban stormwater runoff. Alabama’s average rainfall amounts and intensity and our geology present some particular technical challenges for developing an achievable post-construction performance standard. Just as important, solutions to these challenges must be economically feasible.

We recognize the great complexity of these challenges for selection of successful post-construction performance standards that represents maximum extent practicable protection. We note here that there are specific questions and issues concerning the proposed event standard described below.

To highlight practices that can help achieve the “maximum extent practicable (MEP)”, we identify below several Low Impact Development (LID) post-construction success stories in the Birmingham metro area that can and must be replicated to restore habitat, water quality, and overall stream health as additional development progresses in our watersheds. These successes demonstrate that such practices are achievable to meet the MEP standard of the Clean Water Act storm water regulations here in our region.

### ***Technical issues in Developing a Post-Construction Performance Standard***

The Draft Permit indicates that the design storm event that is the basis for maintaining pre-construction hydrology is the event. We understand this to mean that stormwater discharge resulting from the design storm event must be treated and managed to the MEP (to address potential water quality problems) before being discharged at a rate and volume that, to the MEP, matches the pre-development hydrology (to address potential geomorphological problems such as scouring flows).

The event should **not** be interpreted as an allowable discharge rate or volume **for lesser storm events**. For lesser storm events (less than the event), to the maximum extent practicable, the post-development discharge rates and volumes should be managed to match the pre-development discharge rates and volumes for a storm event of **equivalent magnitude**, not the much larger discharge rates and volumes associated with the storm event. While the above may be the intent of the permit language, the Draft Permit language does not make this absolutely clear and could be misinterpreted.

We agree that the storm event is temporarily acceptable, for the interim of the current permit cycle, as a design storm event for the terms of the present permit, provided it is interpreted as described above. However, the use of a single design storm event does not address the full range of stormwater discharges

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<sup>11</sup> Walsh, C.J., *et al.* 2005. The urban stream syndrome: current knowledge and the search for a cure. J. N. Am. Benthol. Soc. 24(3): 706-723. (See Table 1. *Symptoms generally associated with the urban stream syndrome.*)

that do need to be controlled. Unfortunately, it is too simplistic to assume that managing a large storm event will suffice for the management of all rain events of smaller magnitude. This is due to the much greater frequency of smaller rain events and the disproportionate impact those frequent, albeit smaller magnitude, events have on “channel-shaping”. If urban streams are already incised and have lost their hydrological connection to flood plains, prolonging the duration of those flows will exacerbate the amount of erosion and stream scour they experience. For small storms, there *may* be an advantage in shortening the duration of resulting stormwater discharge, depending on the degree of imperviousness, degree of stream incision, and other watershed characteristics. The best solution to this source of erosive conditions is to infiltrate as much stormwater generated by these small rain events as possible at or near the development site.

Future permits should be improved by incorporating design standards that address adequate stormwater management for frequent small storms *and* the larger storm events.

For Birmingham, information from NOAA indicates the 2-year, 24-hour event is approximately the 4.2” rain event. Dr Robert Pitt <sup>12</sup> has analyzed rain events for Birmingham and found that 75% of the total stormwater runoff is associated with 0.5” to 3.0” per rain events. Only 25% of the total stormwater runoff is associated with storm events over 3” per rain event. In some parts of the Southeast, stormwater jurisdictions have chosen to address this concern by defining a series of design storm events, from the 1 year 24-hour storm (for stream channel protection) as well as the 2-, 10-, and 25-year, 24-hour storm events (for overbank and extreme flood protection) that must be managed to match pre-development hydrology <sup>13</sup>. The Knox County experience might suggest that not all four of these design storm events must be specifically managed. Rather, their experience may suggest that managing for the 2-year, 24-hour storm and the 25-year, 24-hour storm has, in their setting, been adequate to manage the damage that would otherwise be expected to result from stormwater.

We are not asserting that a similar approach must be used here at this time; that would be premature for the present situation. However, we are asserting that within 18 months of the issuance of this new permit, ADEM should further refine and implement an improved set of standards, including a better set of design storm characteristics, that are more protective of water quality and habitat than the current proposal and which will allow engineers the flexibility to utilize stormwater management techniques to the MEP to avoid the damage to our streams that is now occurring. This improved post-construction standard should then be applied to the Phase II permits. Eventually, modeling techniques that integrate a variety of control practices and land uses for specific watersheds should be used to determine the optimal combination of controls to minimize stormwater and flooding problems <sup>14</sup>.

The efforts to match post-development hydrology to pre-development hydrology to the MEP in an urban setting will likely fall short of perfectly matching the characteristics of pre-development hydrology, depending on specific site conditions and watershed conditions. Therefore, it is also important to define a minimum performance standard for stormwater discharge characteristics. For example, stormwater discharge rates and discharge volumes should not, in any case, cause or contribute to downstream channel degradation. The MS4 permittee’s development review process should ensure that stormwater

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<sup>12</sup> Cudworth Professor of Urban Water Systems, Department of Civil, Construction, and Environmental Engineering, University of Alabama, Tuscaloosa, Alabama.

<sup>13</sup> See Knox County, Tennessee Ordinance included among attachments. Guidance documents and a copy of ordinances are also available at [http://www.knoxcounty.org/stormwater/proposed\\_stormwater\\_ordinance.php](http://www.knoxcounty.org/stormwater/proposed_stormwater_ordinance.php).

<sup>14</sup> Pitt, R. and S.E. Clark. 2008. Integrated Storm-Water Management for Watershed Sustainability. Journal of Irrigation and Drainage Engineering. September/October edition. pp. 548-555.

management practices are planned that are sufficient to meet such a minimum standard. Particular caution should be exercised for discharge to streams listed as impaired or for which TMDLs have been finalized. Enhanced BMP plan review, inspections, and prioritized enforcement should be required in those situations.

The permit refers to matching “pre-development” hydrology as closely as practicable as a goal for post-construction stormwater runoff. For new development in Alabama, the appropriate land use upon which the pre-development hydrology should be based is undeveloped forested land. The goal for post-development stormwater management should be to mimic, to the maximum extent practicable, the hydrology of undeveloped forested land. If “re-development” of an already developed site is contemplated, the developer’s goal should be to minimize, to the MEP, the rate and volume of stormwater discharge rather than matching the stormwater runoff rates and volumes of the previous development, which were probably excessive. This is important to restore water quality in streams already degraded by urban runoff.

### ***Sizing of Sediment Ponds***

Standard engineering practices have not been adequate to protect many Alabama streams. We have found that the high intensity of rain events frequently overwhelm standard BMPs. We need a higher standard for a variety of BMPs. For example, most sediment ponds on Alabama construction sites, sized as per standard practice, are actually under-sized. A practice common to successful projects we have observed is avoidance of under-sizing sediment ponds. Sediment ponds that are two- and three-fold larger than “standard practices” would dictate have achieved significantly better control. Avoiding under-sizing sediment ponds allows far better sediment management by increasing settling times as well as by increasing the range of storm events that are successfully managed. More appropriately-sized sediment ponds should become the common practice and should be required by the MS4 permittee in this round of permitting.

### ***Infiltration of Stormwater from Industrial Sites***

Infiltration of stormwater is crucial if pre-development discharge volumes and hydrologic characteristics are to be maintained. However, the Draft Permit does not address the potential for severe groundwater contamination that may very likely accompany infiltration of stormwater from industrial sites. Stormwater from industrial sites must be pre-treated before being infiltrated to avoid this problem. This permit should include pre-treatment requirements for stormwater from industrial sites that is to be discharged or infiltrated.

### ***Successful LID Examples***

A good example of the variety of thoughtfully applied stormwater management approaches that have been successful in managing construction and post-construction stormwater are those used for the recent construction of the Hewitt-Trussville High School in Trussville, Alabama. Although constructed adjacent to the banks of the Cahaba River, the developers did an excellent job in managing the construction stormwater runoff and in planning for ameliorating the impacts of post-construction stormwater runoff. A series of LID and green infrastructure practices were used including underground infiltration features in parking areas, bioswales in parking areas, and leaving trees in parking areas to intercept and evaporate stormwater rather than concentrating it into storm drains. They also installed an over-sized stormwater retention pond that is now used for landscape watering. During construction,

forest conservation zones, particularly adjacent to the Cahaba River, were clearly indicated and respected. The construction was staged or phased to avoid the use of large construction equipment in sensitive areas, especially near the Cahaba River.

Similarly, the Bass Pro Shop in Leeds, Alabama incorporated a variety of effective construction and post-construction stormwater management techniques. They used a stormwater infiltration field during their construction phase that we believe significantly diminished runoff volumes and improved runoff water quality as well. They also utilized innovative inlet protection devices that were far more effective in reducing construction phase sediment runoff. LID and green infrastructure practices for post-construction stormwater management included bioswales in parking areas, parking areas and roadways that are terraced to avoid destruction of wooded areas, pond storage and reuse of stormwater for landscape irrigation, and permanent buffers on streams, including intermittent streams. Also, some areas of those streams were initially intended to be impounded, but were instead protected as streams without impoundment.

In each case, the particular approaches used were largely dictated by specific site conditions. These are examples of developers who, out their own desire to have the least possible impact on the Cahaba River, have had far greater success in managing stormwater runoff problems than conventional stormwater practices have achieved. Several other case studies are attached, projects that have received Conservation Development awards from the Cahaba River Society for their successful LID approaches.

Thus, there is a significant disparity between what is feasibly achievable and what is normally done to manage stormwater runoff from urban development projects. However, it will be impossible to keep our Alabama streams healthy unless we close the gap between what is “feasible” and what is “typical”. It is essential that developers adopt these technically feasible and financially feasible practices, and provide a demonstrably higher level of management of construction and post-construction stormwater to reduce water quality and stream degradation associated with their activities. The impacts from conventional stormwater practices are currently degrading our streams dramatically.

Those successful developments described above and below provide tangible examples for the meaning of “maximum extent practicable”. These practices are technically feasible, financially feasible, and provide a demonstrably higher level of management of construction and post-construction stormwater to reduce water quality and stream degradation associated with development.

The health of Alabama’s rivers, economy and people depends on achieving such a level of success. Stronger standards for the quality and hydrological characteristics of urban stormwater runoff are essential to Alabamians.

### ***Additional LID Success stories***

The Cahaba River Society gives annual awards that highlight green building projects in our region that conserve water resources through low impact development (LID) stormwater management, rainwater harvesting, and drinking water efficiency. The awards recognize leaders who invest in these solutions and the design and construction firms that can deliver quality water-saving projects. The following summaries highlight several award-winning LID projects constructed in the Birmingham region.

## **BIRMINGHAM-SOUTHERN COLLEGE URBAN ENVIRONMENT PARK**

Birmingham Southern College; Johnson Kreis; Derck & Edson.

Birmingham Southern College's new Urban Environment Park demonstrates that stormwater run-off from roofs and parking lots can be infiltrated, filtered and reused, even on a hilltop of red Alabama clay. BSC's Urban Environment Park provides an outdoor area for students and staff and an example of LID solutions for its Urban Environment Program majors.

- Stormwater management "train" captures rainwater runoff from the Methodist Center roof and parking lot and directs it into three rain gardens, where some of it is infiltrated into groundwater and the rest is filtered before being reused to fill the Urban Environment Park pond. Native plants further filter the water in the pond and allow its level to fluctuate aesthetically.
- Existing natural wetland was saved as a third stormwater feature to help infiltrate rainwater back into the ground whenever heavy rains exceed the pond's holding capacity. Contractors guarded trees and minimized tree removal to protect the existing campus forest.

## **STEWART PERRY CORPORATE HEADQUARTERS**

Stewart Perry Company; South & Associates; HKW & Associates; Beardon Services, LLC.

Stewart Perry's headquarters on Overton Road uses natural building methods that protect the Cahaba, make these offices an attractive place to work, and demonstrate the value of water-wise building to their clients and the public.

- Has a large roof rainwater catchment and reuse system for landscape watering.
- Infiltrates parking lot and roof rainwater runoff into the ground using infiltration strips below the eaves and a created surface stream, versus conventional concrete storm water infrastructure.
- Removed mining waste and restored a pond to capture site runoff and improve habitat.

## **RUFFNER MOUNTAIN NATURE CENTER**

Ruffner Mountain Nature Center; Stewart Perry Company; KPS Group; Stoneshovel.

Perched on mountainside piers, the Ruffner Mountain Nature Center sits lightly on the land, minimizing its impact on the surrounding forest environment. Designed to meet LEED Gold standards, the buildings including many LID features.

- A roof rainwater catchment system with a 2,900 gallon cistern reuses stormwater for animal care and landscape maintenance and a green roof absorbs rain, reducing stormwater run-off from the building.
- Natural landscaping directs rainwater into the surrounding forest environment, helping to keep it out of the storm sewer system. Ruffner volunteers used native plants to relandscape areas that had been impacted by construction and to fine-tune and naturalize the stormwater flow.

## **BASS PRO SHOPS**

Bass Pro Shops; Goodwyn, Mills & Cawood; Saiia Construction; Spreadrite Organics

At its Leeds, Alabama store, Bass Pro Shops and its development team did a commendable job of keeping dirt out of the river during construction and using LID design to minimize long-term impacts. Additional costs for enhanced construction stormwater management were offset by significant savings in

site design and LID practices. Bass Pro Shops plans to use their Leeds store as a model for stores across the nation.

- Environmental site design principles for the tiered parking lot and entrance road minimized grading and forest loss and saved Bass Pro significant money in grading costs.
- LID practices including french drains along the road and parking lot bioswales that allow some runoff to infiltrate into the ground while directing the rest to an on-site lake for reuse.

### **BRASFIELD & GORRIE LEED CERTIFIED OFFICE ADDITION**

Brasfield & Gorrie; Thompson Architecture

The first LEED certified building in Birmingham city limits, the Brasfield & Gorrie office, on a dense urban site, secured some of its LEED credits by reducing the site's stormwater run-off into Birmingham's aging storm sewers.

- Rooftop rainwater is stored in underground cisterns for reuse in irrigation, preventing thousands of gallons of runoff from funneling into storm sewers and reducing use of municipal water.
- Large courtyard and walkways paved with permeable surfaces allow rainwater to soak into the ground rather than running offsite to storm drains.

### **TRUSSVILLE CITY SCHOOLS**

Trussville School Board; Davis Architects, Inc.; LBYD; Robert Marvin/Howell Beach & Associates; Doster Construction Company

This large school campus constructed on both sides of the Cahaba River proves that sensitive design and construction, using many different LID approaches, can protect water quality and habitat.

- Overall, 39% of the site remained as undisturbed open space for outdoor education and recreation, including a 100' forested buffer setback from the river (allowing minimal floodplain impact) and a forested hill.
- "Woodland parking" was designed among existing trees, resulting in minimal clearing, and has no curb or storm drains; other parking areas have bioswales for infiltration and overflow storm-drains for detention.
- Sports fields are designed with sand bases to promote rapid infiltration of rain.
- Runoff is stored in a large pond and reused for irrigation of the mostly-native landscaping.

### **MCWANE CAST IRON PIPE**

McWane designed and installed a stormwater and industrial process water filtration and reuse system that both protects water quality and conserves drinking water.

- The system captures, stores and redirects stormwater into the pipe manufacturing process. This reduces stormwater flows to streams and also reduces the plant's draw on drinking water.
- The system routes the industrial process water into a filtration system and recycles it to be used in the process again.
- For any stormwater not captured by the reuse system (as during a major rainfall event), a state-of-the-art centrifugal system treats the water before it is discharged offsite, to protect water quality.

These projects help give meaning to the MEP and LID. Clearly, the effective stormwater management approaches these developers adopted were physically and economically feasible. We should use these examples to help set the standard for what is expected from all development projects.