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Alexandria, VA

April 1, 2011

Mr. James A. Hanlon
Director, Office of Wastewater Management
US Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Mail Code: 4201M
Washington, DC 20460

Re: Barriers to Implementation of Green Infrastructure

Dear Mr. Hanlon:

Thank you for providing the opportunity to meet with your staff and provide WEF's perspective on implementation of green infrastructure. Attached is a compilation of barriers (and corresponding potential solutions) to the implementation of green infrastructure. This list was developed through input from WEF technical committees and our regional and state Member Associations. As discussed in our meeting, the barriers identified listed by priority are:

1. Funding and Cost of Implementing Green Infrastructure
2. Regulatory Impediments to Implementation of Green Infrastructure
3. Acceptance of Municipal Staff, Local Leaders and Practitioners
4. Programmatic Challenges
5. Maintenance Burdens
6. Design and Construction Hurdles

We look forward to working with the Office of Water as you update your Green Infrastructure Strategy. If you have any questions, please feel free to contact me at 703-684-2400 or Seth Brown, WEF Stormwater Program Manager, at 703-684-2423 or sbrown@wef.org.

Sincerely,



Jeffery A. Eger

Executive Director

Green Infrastructure: Barriers to Implementation

March 31, 2011

WEF supports the implementation of green infrastructure (GI), which is defined by EPA as “management approaches and technologies that infiltrate, evapotranspire, and reuse stormwater to maintain or restore natural hydrology.” The information presented in this document reflects input from WEF members across the country. WEF welcomes the opportunity to present this information on their behalf, and we look forward to working with EPA to further identify critical problem areas and explore solutions that will help to promote the adoption of green infrastructure practices.

WEF was asked by EPA to provide a listing of barriers to green infrastructure. These barriers, along with some potential solutions, are listed below in priority order.

1. Funding and Cost of Implementing Green Infrastructure

- **Problem:** Communities considering GI are not convinced of the potential for long-term cost savings with a keen focus on maintenance as a hurdle to overcome.
- **Solution:** Recognize the change in cost paradigm (initial capital outlay vs. long-term O&M costs and social/environmental co-benefits) and focus funding towards study of long-term maintenance efforts/costs and Triple Bottom Line benefits.
- **Solution:** Share costing data (capital and O&M) collected across the country with decision makers in an effort to illustrate the potential cost savings of GI.
- **Solution:** Identify opportunities and funding for cost analysis studies of watershed-scale GI efforts to illustrate cost savings beyond the site level.
- **Solution:** Encourage the use of “stormwater credits” to incent the use of GI practices in development/re-development efforts within the development community.

2. Regulatory Impediments to Implementation to Green Infrastructure

- **Problem:** The regulatory/enforcement community is often directed to only accept solutions to water quality problems that have a high degree of success and certainty.
- **Solution:** Permit authorities should work hand-in-hand with the enforcement community at all levels (national, regional, and state) to encourage the implementation of GI.
- **Solution:** Provide regulatory recognition for early adopters of GI by offsetting permit requirements to reflect the water quality benefits of GI.
- **Solution:** Target permit and enforcement staff as top priority group for information sharing on successful applications of GI.
- **Solution:** Incorporate adaptive management principles, such as interim review and updates within a longer permit cycle, into permitting framework.
- **Solution:** Encourage flexibility in permits to recognize the variable nature of GI solutions.

3. Acceptance of Green Infrastructure by Municipal Staff, Local Leaders and Practitioners

- **Problem:** Green infrastructure is an emerging practice with a light track record on performance and little understanding of local impact to development, which has led to a lack of acceptance by municipalities. Local stormwater ordinances, which often do not include GI practices (and in some cases inadvertently discourage GI), reflect this lack of acceptance.
- **Solution:** Identify early adopters and highlight case studies through information dissemination.
- **Solution:** Study the effects of GI on development patterns in communities who have implemented these practices in a community-wide manner with a particular focus on the effect on sprawl development.
- **Solution:** Educate local municipal leaders on the benefits of GI in an effort to promote greater acceptance of the integration of GI practices local stormwater ordinances.
- **Solution:** Provide open forum for communities contemplating GI solutions and encourage the development of a Standards of Practice (SOP) within physiographic and climatic regions.
- **Solution:** Identification and publication of consensus best practices, such as a WEF Manual of Practice (MOP).

4. Programmatic Challenges

- **Problem:** The transition to green infrastructure is a multi-decade effort that will require enhanced public outreach, intensive monitoring, and inter-governmental coordination.
- **Solution:** Increase Long-Term Control Plan schedules to respect the challenges associated with implementing large-scale GI programs.
- **Solution:** Develop training materials to illustrate successful inter-governmental coordination efforts by early adopters who are initiating green infrastructure planning efforts.
- **Solution:** Increase funding for local education campaigns focusing on benefits to public as well as highlighting successful projects already in the ground in similar areas.
- **Solution:** Encourage GI retrofit solutions when replacement or repair of existing grey infrastructure is needed.

5. Maintenance Burdens

- **Problem:** Green infrastructure, unlike traditional grey infrastructure, relies heavily on maintenance for long-term effective performance, which often impact privately-held property and areas.
- **Solution:** Educate local communities on the need to respect the change in paradigm for maintenance, and the significance of the role of maintenance in GI system performance.
- **Solution:** Develop and publish strategies for communities on maintenance issues unique to GI, such as incentives to private owners for proper maintenance of GI practices and the importance of enforcement of poorly-maintained practices in local ordinances.

6. Design and Construction Hurdles

- **Problem:** Stormwater is uniquely affected by local climatic patterns, dominant soils, groundwater levels, and other site-specific parameters, all of which increase the complexity of design and construction.
- **Solution:** Develop practitioner-level guidance material to provide enhanced understanding of on-the-ground techniques to address challenges in construction of GI solutions.
- **Solution:** Develop “boiler plate” GI codes, ordinances and design standards for various regions to provide a launching point for the integration of green solutions into community standards.