

**Final Report**  
**of the**  
**SBREFA Small Business Advocacy Review Panel**  
**on EPA.s Planned Proposed Rule for**  
**Effluent Limitation Guidelines and Standards**  
**for the**  
**Construction and Development Industry**

October 12, 2001

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## 1. Introduction

The Small Business Advocacy Review (SBAR) Panel has prepared this report for the rulemaking entitled .Effluent Limitation Guidelines and Standards for the Construction and Development Industry. that the U.S. Environmental Protection Agency (EPA) is currently developing. The Panel was convened by EPA.s Small Business Chairperson, Thomas E. Kelly, on July 16, 2001 under Section 609(b) of the Regulatory Flexibility Act (RFA) as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA). In addition to the chairperson, members of the Panel include Sheila Frace, Director, Engineering and Analysis Division within EPA.s Office of Water; John Graham, Administrator, Office of Information and Regulatory Affairs within the Office of Management and Budget; and Susan Walthall, Acting Chief Counsel for Advocacy, Small Business Administration.

The purpose of the Panel is to collect the advice and recommendations of representatives of small entities that may be affected by the rule and to report on those comments and the Panel.s findings as to issues related to the key elements of an initial regulatory flexibility analysis (IRFA) under section 603 of the RFA. The elements of an IRFA are:

- . A description of and, where feasible, and estimate of the number of small entities to which the proposed rule will apply;
- . A description of projected reporting, record keeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities, which will be subject to the requirements and the type of professional skills necessary for preparation of the report or record.
- . An identification, to the extent practicable, of all relevant Federal rules which may duplicate, overlap, or conflict with the proposed rule; and
- . A description of any significant alternative to the proposed rule which accomplishes the stated objectives of applicable statutes and which minimizes any significant economic impact of the proposed rule on small entities.

Once completed, the Panel report is provided to the agency issuing the proposed rule and is included in the rulemaking record. In light of the Panel report, the agency will consider changes to the proposed rule or the IRFA for the proposed rule, where appropriate.

This report by the Panel for the Construction and Development Industry (C&D) proposed rule includes a summary of the advice and recommendations received from each of the small entity representatives identified for purposes of the panel process. Written comments submitted by the representatives are provided in Appendix A to the report. The report also presents the Panel.s findings and a discussion of issues related to the elements of an IRFA identified above.

## **2. Scope and Regulatory History**

### **2.1 Discussion of Effluent Guidelines**

Effluent guidelines are national standards that are developed by EPA on an industry-by-industry basis, and are intended to represent the greatest pollutant reductions that are economically achievable for an industry (e.g., Construction and Development Industry). These limits are technology-based and apply to every construction project in the industry falling within the scope defined by the regulations; they are not tied to water quality conditions in the receiving water.

Recognizing that different technology based requirements may be appropriate for different segments with a broader sector, EPA sometimes subcategorizes an industry and applies different limits to each subcategory. In the case of the C&D industry, however, there is so much inherent variability across sites that it may not be possible to identify a single set of technologies that is applicable even to a definable subcategory. For this reason, EPA is exploring approaches in which a single set of requirements would be applicable to all or a definable subset of projects but the requirements themselves would be crafted to allow site specific selection of appropriate control technologies and/or best management practices (BMPs).

To develop these technology-based regulations for an industry, EPA compiles information about the industry on the typical wastewater characteristics and treatment technologies used to treat the discharge. In evaluating controls available for an industry, EPA considers the age of equipment and projects or facilities involved, processes employed, potential process changes, engineering aspects of applying various control techniques, the cost of achieving effluent reductions, cross media impacts, and any other factors relevant to decision-making. Using this information in conjunction with financial data for the affected projects or facilities, EPA then identifies the best available technology that is economically achievable for that industry and sets effluent limitations based on the performance of that technology. (Note: The effluent guidelines do not require projects or facilities to install the particular treatment technology identified by EPA.) The effluent guidelines are used by permit writers and control authorities to write wastewater discharge permits. Permits may be more stringent than applicable national guidelines and standards due to water quality considerations and additional state and local requirements, but may not be less stringent.

EPA has issued national technology-based effluent guidelines for over 50 industries. The effluent guidelines for the Construction and Development Industry will be a new category. The C&D effluent guidelines will be listed in Title 40 of the U.S. Code of Federal Regulations.

### **2.2 Related Regulations and Permits**

#### **2.2.1 National Pollutant Discharge Elimination System (NPDES) Stormwater Rules**

The NPDES Stormwater Program requires operators of both large and small construction sites to obtain authorization to discharge storm water under an NPDES construction storm water permit. EPA promulgated the national requirements for stormwater discharge permits in two phases. The Phase I Storm Water regulations, promulgated in 1990, require permits for large sites (40 CFR 122.26(b)(14)(x)).

A large-site construction activity is one that:

- . Will disturb five acres or greater; or
- . Will disturb less than five acres but is part of a larger common plan of development or sale whose total land disturbing activities total five acres or greater (or is designated by the NPDES permitting authority); and
- . Will discharge storm water runoff from the construction site to a municipal separate storm sewer system (MS4) or waters of the United States.

The Phase II rule, promulgated in 1999, extends permit coverage to sites one acre or greater (40 CFR 122.26(b)(15)).

In addition to requiring permits for construction site discharges, the NPDES regulations require permits for municipal separate storm sewer systems (MS4). The local governments responsible for the MS4s must operate a stormwater management program. The local programs regulate a variety of business activities that affect stormwater runoff, including construction, and the components of these programs are described in Section 2.2.3 below.

## **2.2.2 Stormwater Permits for Construction: General and Individual**

Pursuant to the NPDES Phase I stormwater regulations at 40 CFR 122.26, EPA and the States began issuing permits for stormwater discharges from large construction sites in 1992. The Phase II rule requires that permits for smaller sites be issued starting in 2003. A description of the implementation of the basic requirements for the Phase I and Phase II regulations is as follows.

### *General Permits*

The vast majority of sites are covered by general permits, which simplifies the application process for the industry, provides uniform requirements across all sites, and reduces administrative workload for the permit authorities. EPA and the states have published notices containing the general permits, along with forms and related procedures. To obtain coverage under a general permit, the permittee, either the developer, builder or contractor for a construction project, submits a Notice of Intent (NOI) to the permit authority. The NOI takes the place of a lengthier application package that would be used for an individual NPDES permit. By submitting the NOI, the permittee agrees to the conditions in the published permit. The permittee may begin land disturbance after a specified interval (typically 48 hours) following NOI submittal unless otherwise notified by the permit authority.

### *EPA Construction General Permit*

EPA's Construction General Permit (CGP) covers construction activities in six states, the District of Columbia, Puerto Rico, the territories, and specifically designated portions of other states such as Indian Lands and Federal facilities. The "national" CGP, covering Regions 1-3, 5, and 7-10 was published on February 17, 1998 (63 FR 7898). Slightly different versions of the permit for Regions 4 and 6 were published on April 28, 2000 (65 FR 25122) and July 6, 1998 (63 FR 36490) respectively.

The principal requirement in the CGP is the preparation of a stormwater pollution prevention plan (SWPPP) before submittal of the NOI. EPA's 1992 guidance manual, *Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices*, describes the SWPPP process in detail. The plan must include a description of the site, with maps showing drainage, discharge points, and location of runoff controls; a description of the BMPs used; inspection procedures and reports. A copy of the plan must be kept on the construction site from the date of project initiation to the date of final stabilization. The plan is not routinely submitted to the permit authority, but a copy must be readily available to authorized inspectors during normal business hours. EPA's construction general permit does not require that specific BMPs be contained in the SWPPP, except that sediment basins shall be used on sites of 10 or more acres.

EPA encourages multiple operators at a construction site to develop a comprehensive SWPPP. Other requirements include conducting regular inspections and reporting releases of reportable quantities of hazardous substances.

To discontinue permit coverage, an operator must complete and submit to the appropriate NPDES permitting authority a Notice of Termination (NOT) Form upon satisfying the appropriate permit conditions described in the CGP.

### *State Construction General Permits*

For the most part, the state general permits have followed EPA's format. Some states have modified requirements in their permits. For example, California has added a requirement to monitor for settleable solids and total suspended solids (TSS) where the receiving water body is listed as impaired (water quality-limited) for sedimentation.

### *Individual Permits*

A permit authority may require any site to apply for an individual permit rather than using the general permit. The individual permit is most often used for complex projects and/or projects located in sensitive watersheds. State stormwater permit coordinators have informed EPA that this provision has been rarely used.

### **2.2.3 Municipal Stormwater Permits and Local Government Regulation of Construction Activity**

#### *NPDES Requirements*

The NPDES stormwater regulations require that municipal separate storm sewer systems (MS4) obtain permits. In general, the Phase I rule covers municipalities with population of 100,000 or more. The Phase II rule extends coverage to most other municipalities in urbanized areas, and States may designate additional MS4's for permit coverage.

The regulations require that each MS4 operate a local stormwater program in order to properly control its discharges. This includes a local program for regulating construction activity and managing post-construction runoff. EPA has provided guidance to the states and municipalities on the recommended components and activities for a well-operated local program. For Phase I MS4s, 40 CFR 122.26(d) requires:

A description of the existing management programs to control pollutants from the municipal separate storm sewer system. The description shall provide information on existing structural and source controls, including operation and maintenance measures for structural controls, that are currently being implemented. Such controls may include, but are not limited to: Procedures to control pollution resulting from construction activities; floodplain management controls; wetland protection measures; best management practices for new subdivisions; and emergency spill response programs. The description may address controls established under State law as well as local requirements...

A description of a program to implement and maintain structural and non-structural best management practices to reduce pollutants in storm water runoff from construction sites to the municipal storm sewer system, which shall include:

- (1) A description of procedures for site planning which incorporate consideration of potential water quality impacts;
- (2) A description of requirements for nonstructural and structural best management practices;
- (3) A description of procedures for identifying priorities for inspecting sites and enforcing control measures which consider the nature of the construction activity, topography, and the characteristics of soils and receiving water quality; and
- (4) A description of appropriate educational and training measures for construction site operators.

For Phase II MS4s, 40 CFR 122.26 (b)(15)(ii) requires, at a minimum:

- (A) An ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance, to the extent allowable under State, Tribal, or local law;
- (B) Requirements for construction site operators to implement appropriate erosion and sediment control best management practices;
- (C) Requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality;
- (D) Procedures for site plan review which incorporate consideration of potential water quality impacts;
- (E) Procedures for receipt and consideration of information submitted by the public, and
- (F) Procedures for site inspection and enforcement of control measures.

#### *Other State and Local Requirements*

States and municipalities may have other requirements for flood control, erosion and sediment (E&S) control, and in some cases, stormwater quality. Many of these provisions were enacted before the promulgation of the EPA Phase I stormwater rule. All states have laws for E&S control, and these are often implemented by MS4's.

### **2.3 Description of the Construction and Development Rule and its Scope**

The objective of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. EPA is developing proposed effluent limitation guidelines for construction and development projects to limit the discharge of pollutants into waters of the United States. The proposed effluent guidelines would be implemented through the permit program developed as a result of the Phase I and Phase II NPDES Storm Water Regulations. The construction and development effluent guidelines would cover business establishments that *disturb land* in the process of developing residential and nonresidential construction projects. EPA is not including, in the scope of the proposal, business establishments that construct and develop remodeling projects and C&D projects that disturb less than one acre of land unless part of a common plan of development. Based on the population of construction and development projects in the 1997 Census of Construction and these adjustments, EPA

believes there are about 148,000 establishments that are involved in the process of constructing and developing projects. EPA has not yet estimated the number of establishments that disturb land and would be in the scope of the proposed C&D rule. Table 1 provides an estimate of the number of potentially affected establishments.

To help estimate the size of the potentially affected businesses and sites, EPA has also collected state Notice of Intent (NOI) databases, that contain information on the number of stormwater permits issued under the Phase I NPDES Storm Water Regulations. EPA has also analyzed the data in the NOI database for States, tribal lands, and trust territories where EPA administers the Phase I program. Based upon the State and EPA databases, EPA estimates that about 20,000 permits are currently issued each year under the Phase I regulations, which apply to sites disturbing 5 or more acres. Many more establishments are likely to require permit coverage under Phase II, covering sites that disturb from 1 to 5 acres, which goes into effect in 2003. Many establishments engaged in C&D projects are not required to obtain a permit. Establishments that are not required to obtain a permit are those that meet the following two conditions: (1) they are not the project owner or operator or (2) they are developing projects that disturb less than one acre, unless part of a common plan of development.

| <b>Table 1: Number of Potentially Affected C&amp;D Business Establishments (1997)</b> |   |                          |                  |
|---|---|--------------------------|------------------|
| NAICS <sup>1</sup>  | Description                                   | Number of Establishments | Percent of Total |
| 233   | Building, developing, and general contracting | 86228                    | 58               |
| 234   | Heavy construction                            | 42557                    | 28.7             |
| 23532   | Special trade contractors                     | 19771                    | 13.3             |
| Total   |   | 148556                   | 100              |

Source: 1997 Census of Construction, U.S. Census Bureau; Harvard Housing Study; National Association of Home Builders

1. North American Industrial Classification System (NAICS), replaced the Standard Industrial Classification (SIC) System.

2. Special trade contractors that disturb land.

The C&D industry consists of different types of business establishments. These are business establishments that build and construct projects, including those that subdivide land, and those that undertake general contracting projects. The C&D industry also includes business establishments that undertake heavy construction projects such as roads, bridges, and

telecommunication towers. Special trade business establishments, such as those engaged in demolition, are also included in the C&D industry. In most cases, a business establishment is synonymous with a C&D project, because most business establishments undertake one project at a time. However, a small number of business establishments undertake multiple projects, and a few establishments have many projects located in different parts of the country.

Based on the 1997 Census of Construction and other information, EPA estimates that about 86,228 establishments build, develop, and engage in general contracting and may be potentially impacted by the proposed regulation. In addition, EPA estimates that about 42,557 establishments in heavy construction and 19,771 establishments in special trades could be impacted by the proposed regulation. The NPDES program currently covers establishments that potentially disturb more than one acre of land in one year. In some cases, establishments disturbing smaller acres may also be covered, if their projects are part of a larger plan of common development.

The Construction and Development (C&D) effluent guidelines would cover construction activities associated with new development, as well as those associated with re-development activities. The regulations would address stormwater runoff from construction sites during the active phase of construction and during the post-construction phase of development.

The schedule for the C&D rulemaking is included in a consent decree between EPA and the Natural Resources Defense Council (*Natural Resources Defense Council et al v. Whitman*, D.D.C. 89-2980; January 31, 1992, as modified). The deadline for proposing the C&D rule is March 2002 with final action by March 2004.

### **3. Overview of Technology and Regulatory Options**

In order to develop *regulatory* options for the construction and development industry, EPA is first developing a number of *technology* options, including BMPs, appropriate for managing storm water runoff from various types of construction sites and for managing post-construction runoff. In developing regulatory options for this industry, EPA may draw from several of these technology options, and provide a menu approach for determining site-specific BMP requirements. This approach would allow for flexibility at the local level to determine appropriate technologies based on variations in geography, climate, and land use patterns, as well as allow site planners and engineers to select and design technologies that are appropriate for their particular development project.

#### **3.1 Construction Phase Technology Options**

*Scope:* The effluent guideline requirements may apply to the design, installation, and maintenance of erosion and sediment controls used during the construction-phase of projects to control the

generation, transport and discharge of construction-site storm water. This may include, for some technologies, numerical performance-based standards. The scope of potential construction-phase requirements is based on the current NPDES Storm Water regulations, and includes individual sites or sites that are part of a common plan of development or sale that disturb more than 1 acre of land. Each option may include requirements that are keyed to different site sizes based on technology applicability requirements (for example, standards may be developed within each technology option based on site size breakdowns of 1-5 acres, 5-10 acres, and >10 acres) and provide for site-specific technology selection by the planner and/or local approving authority. Options currently under consideration include:

**Baseline:** This technology option would be used to set an estimate of loadings and cost levels, assuming the use of controls that are typical of existing construction sites currently regulated under NPDES Phase I Storm Water regulations as well as existing state and local requirements. It would also include projected controls for sites regulated under Phase II, which becomes effective in 2003.

**Effluent Limit or Performance-Based Standard:** This technology option includes controls targeted at meeting a maximum site sediment discharge based on a settleable solids standard for sediment basins or other equivalent erosion and sediment controls.

**Enhanced Performance-Based Standard:** This technology option is similar to the Effluent Limit or Performance-Based Standard, above, but relies on an additional level of technology, namely application of polyacrylamide and/or alum treatment.

**Design and Maintenance Certification:** Within each of the above technology options, or as an alternative to numerical standards, there may also be a range of design certification and maintenance standards developed. These standards are intended to provide increasing levels of assurance that the appropriate design criteria are being implemented, and that the controls are being properly installed, operated, and maintained. The design and maintenance certification standards include the following elements, with certification being done by the design engineers, certified inspector, or other appropriate entity:

Level 1- Certification that BMPs proposed in the Storm Water Pollution Prevention Plan (SWPPP) have been **designed** to meet the effluent guideline standard.

Level 2- Level 1 plus certification that the BMPs have been **installed** correctly in order to meet the design requirements contained in the SWPPP.

Level 3- Level 2 plus certification that the BMPs are being **inspected** according to an appropriate inspection schedule.

Level 4- Level 3 plus certification that the BMPs are being **maintained** in order to maintain their functionality as designed and installed.

Level 5- Level 4 plus certification through **monitoring** that the BMPs are performing at a level necessary to meet the design standard.

### 3.2 Post-Construction Phase Technology Options

*Scope:* The effluent guidelines requirements may apply to all site sizes currently within the scope of the NPDES storm water regulations for post-construction storm water management or to a subset of these site sizes. Requirements are designed to control the generation and discharge of pollutants from post-construction storm water discharges from new construction activities. The requirements may affect the design of permanent storm water BMPs such as retention ponds, constructed wetlands and filtration systems, as well as the overall site characteristics in terms of storm water runoff generation. Options under consideration include:

**Baseline:** The baseline technology option would be used to set current loadings and cost levels, and consists of a suite of technologies designed to meet the requirements contained in the Phase I and II NPDES storm water regulations as well as existing state/county/local requirements.

**Design for Peak Runoff Control and TSS Removal:** This technology option includes the same suite of technologies required to meet baseline requirements, but provides a numerical total suspended solids (TSS) reduction goal of 80% as well as a requirement for reducing peak runoff rates to pre-development levels for flood control.

**Unified Sizing Criteria:** This technology option includes technologies designed to control storm water discharges in order to meet the following goals:

1. Pollutant removal for water quality
2. Peak runoff rate control for flood control
3. Infiltration for groundwater maintenance
4. Volume discharge requirements for stream channel erosion protection.

**Hydrologically Functional Site Design:** This technology option is similar to the Unified Sizing Criteria described above, but includes an added dimension of controls integrating physical, chemical and ecological approaches to minimize the impacts of development. This technology standard focuses on storm water volume and flow duration as the primary causes of impacts from land development activities, and therefore targets controls that minimize runoff generation and maintain more of the natural hydrologic functioning of the landscape. Use of such controls is sometimes termed Low Impact Development..

### 3.3 Regulatory Options

EPA distributed a paper to the SERs outlining a regulatory framework for the C&D effluent guidelines that builds upon the NPDES stormwater regulations ("Regulatory Concept," July 20, 2001 draft). The options are outlined in the following table.

| Active Construction  | Post-Construction   |
|--|---|
| <p><u>Regulatory Options Framework</u><br/>           (1) "Do nothing" (no new regulatory requirements)</p> <p>(2) Codification of existing CGP requirements (SWPPP describing E&amp;S controls; sediment basins for sites &gt;= 10 acres)</p> <p>(3) Baseline plus additional E&amp;S controls based on technology options</p>  | <p><u>Regulatory Options Framework</u><br/>           (1) "Do nothing" (no new regulatory requirements)</p> <p>(2) Codification of flexible requirements in the CGP (SWPPP describing stormwater management measures)</p> <p>(3) Requirements based on meeting numerical design criteria and/or performance standard (based on technology options)</p>  |
| <p><u>Compliance Determination Procedures</u><br/>           For options 2 &amp; 3 above, combinations of A, B, and C may be used for demonstrating compliance</p> <p>(A) permittee certify as to<br/>           - design<br/>           - installation<br/>           - maintenance</p> <p>(B) inspection (third party)</p> <p>(C) permittee self-monitoring:<br/>           - visual<br/>           - effluent or in-stream (chemical testing)</p> | <p><u>Compliance Determination Procedures</u><br/>           For options 2 &amp; 3 above, combinations of A, B, and C may be used for demonstrating compliance</p> <p>(A) permittee certify as to<br/>           - design<br/>           - installation</p> <p>(B) inspection (third party)</p> <p>(C) post-construction bond (e.g. hold bond for 2 years after notice of termination to cover potential problems w/BMPs)</p>                   |
| <p><u>Implementation Flexibility:</u><br/> <u>Options using BMP/Technology</u></p> <p>(1) identify required BMP/Technology alternatives based on appropriate criteria such as geography, climate, and soil</p> <p>(2) local selection of BMP/Technology alternatives for additional E&amp;S controls based on identified criteria</p> <p>(3) either (1) or (2) with a waiver that allows local selection based upon specific criteria</p>            | <p><u>Implementation Flexibility:</u><br/> <u>Options using BMP/Technology</u></p> <p>(1) identify required BMP/Technology alternatives based on appropriate criteria such as geography, climate, and soil</p> <p>(2) local selection of BMP/Technology alternatives for additional post-construction BMPs based on identified criteria</p> <p>(3) either (1) or (2) with a waiver that allows local selection based upon specific criteria</p> |

EPA later distributed an expanded options paper to the SERs ("Additional Discussion of Regulatory Options", August 9, 2001 draft). This paper provided examples of design and/or performance criteria to illustrate the possible ways in which the effluent guidelines criteria might be expressed.

#### 4. Applicable Small Entity Definitions

EPA has carefully considered the appropriate definition for a small business establishment. The Agency reviewed the Small Business Administration's (SBA) small business definition for all standard industrial classification (SIC) codes for the C&D industry. SBA's small business classification criteria for the C&D industries is annual revenue. SBA established small business classification criteria for annual revenue for each sector in the C&D industry.

In 1997, the year of the Census of Construction, SBA was using SIC codes for industry annual revenue small business classification and had not switched to the NAICS system. EPA transferred the SBA small business classification criteria from the SIC system to the NAICS system. The result of this analysis shows that each C&D sector has a small business classification criteria of \$27.5 million in annual revenue except for land development, which has a threshold of \$5.0 million in annual revenue.

EPA has conducted a series of economic analyses regarding the distribution of establishments by size. These analyses provide annual revenue data for each sector in the C&D industry. In addition, the Agency's contacts with the C&D industry indicate that most business establishments that provide construction and development products are small. As a result of these analyses, for purposes of the initial regulatory flexibility analysis (IRFA), EPA has defined an establishment as a small business if it is owned by a firm that receives \$27.5 million or less in annual revenue, except for land development which is \$5.0 million or less in annual revenue.

EPA estimates that there may be up to 148,000 construction and development establishments that meet the SBA definition of "small business." EPA has not yet estimated the number of establishments that disturb land and would be in the scope of the proposed C&D rule. EPA estimates that about 20,000 permits are currently issued each year under the Phase I regulations, which apply to sites disturbing 5 or more acres. Many more establishments are likely to require permit coverage under Phase II, covering sites that disturb from 1 to 5 acres, which goes into effect in 2003.

The following table lists the SBA small business definitions for the C&D sectors (and activities):

| <b>Table 2. SBA Small Business Definitions for Construction and Development Industry</b> |                       |                                      |
|--|-----------------------|--------------------------------------|
| <b>Sector Name</b>   | <b>NAICS Code</b>     | <b>SBA Definition</b>                |
| Construction   | 233 (exc. 23311), 234 | annual revenues under \$27.5 million |
| Land development   | 23311                 | annual revenues under \$5 million    |

## **5. Small Entities That May Be Subject to the Proposed Regulation**

See section 4 above. The industrial sectors which are being examined for the C&D regulation include residential buildings; non-residential buildings; heavy construction; and land development.

## **6. Summary of Small Entity Outreach**

Outreach to the regulated community is an important part of regulatory development. EPA has actively involved stakeholders in the development of the proposed rule in order to ensure the quality of information, identify and understand potential implementation and compliance issues, and explore regulatory alternatives. EPA has participated in numerous meetings, seminars and workshops that included substantial small business representation. Since this rulemaking effort began in 1998, EPA has consulted with the major trade associations representing the industry--National Association of Home Builders (NAHB), Associated General Contractors (AGC), Associated Builders and Contractors (ABC), American Road and Transportation Builders Association (ARTBA) and National Utility Contractors Association (NUCA)--and representatives of many small businesses in a variety of activities and regulatory issues.

### **6.1 Pre-Panel Outreach**

Prior to convening the Panel, EPA had several discussions, meetings, and conference calls with small entities that would potentially be affected by this regulation. Between March and June 2001, EPA had discussions with several trade associations to identify potential small entity representatives. EPA invited 7 residential builders and developers, 5 heavy construction companies, 1 local government official, 1 trade association representative and 5 consultants to serve as potential small entity representatives (SERs) for the pre-panel outreach process. On June 4, 2001, EPA mailed a packet of background materials about the rulemaking to the potential SERs. A list of all materials shared with the potential SERs during pre-panel outreach is contained in Appendix B of this document.

### **6.2 Small Entity Representative Conference Calls and Meetings**

On June 14, 2001 EPA held a meeting/conference call in Washington, DC with small entities potentially impacted by this rulemaking. EPA presented an overview of the SBREFA process, an explanation of effluent guidelines rulemakings, and background of the C&D rule. In addition, EPA explained the contents of the outreach mailing. Following the meeting, EPA sent a short initial paper on unit compliance costs to the potential SERs on June 16, 2001.

### 6.3 Panel Outreach and SER Conference Calls/Meetings

The Panel's outreach to SERs consists of the following:

- . EPA sent background material about the C&D industry to the potential SERs on June 4, 2001.
- . EPA held a pre-panel meeting/conference call on June 14, 2001 with the SBAR panel members and the potential SERs. The meeting/conference call summary is in Appendix C of this report.
- . Potential SERs provided comments on background materials June 28, 2001.
- . Panel convened on July 16, 2001.
- . EPA provide additional information on the proposed rule to the SERs, affiliates, and panel members on July 20, July 27, and August 10, 2001.
- . The panel held a meeting/conference call on August 6-7, 2001, to obtain input from SERs. The conference call summary is in Appendix C of this report.
- . SERs provided comments on materials August 22, 2001.

Appendix B lists all of the materials that EPA provided to the SERs and to the Panel

### 7. Small Entity Representatives

As part of its SBREFA outreach, EPA selected nineteen small entity representatives (SERs) for the purpose of obtaining advice and recommendations ...about the potential impacts of the proposed rule. (SBREFA, 244(b)(2)), and provided the following list in Table 3 to the Chief Counsel for Advocacy of the Small Business Administration on May 16, 2001.

| <b>Table 3: Small Entity Representatives for the C&amp;D Industry</b> |   |
|---|---|
| <b>SER</b>  | <b>Company or Trade Association</b>   |
| James Anderson  | Anderson Brothers Construction Company  |
| Elizabeth Brockway  | Engineered Structures, Inc.   |
| Larry G. Conner, Sr., P.E.  | Aaron J. Connor, General Contractor, inc.   |
| Robert D. Santo, Ph.D.  | Parsons Transportation Group  |
| Jonathan P. Deason, Ph.D., P.E.                                       | The George Washington University; American Road & Transportation Builders Association |

|                     |  |
|---------------------|--|
| Chuck Ellison       | Ellison & Associates, Inc.   |
| Don Jandreau        | George Schmid & Sons, Inc.   |
| Bob Kaufman         | Michael T. Rose Companies  |
| W. Gayle Kirkland   | 3D/International, Inc.   |
| Jeff Longsworth     | Kelley Drye and Warren LLP (retained by Associated General Contractors of America and Associated Builders & Contractors) |
| Simon McHugh        | Dallas Chapter of Associated General Contractors   |
| Richard Oliphant    | Oliphant & Williams Associates, Inc.   |
| James R. Peterson   | James Peterson & Sons, Inc.  |
| J. Greg Schwinn     | Schwinn Homes, Inc.  |
| Bruce H. Secor      | Town of Bethlehem, NY  |
| Richard Steiner     | Steiner, Inc.  |
| Jack Waggener, P.E. | URS Corporation (retained by Associated General Contractors of America and Associated Builders & Contractors)            |
| Bruce Wetzel        | Advance Homes, Inc.  |
| Robby Wilkins       | RPW Development  |

## 8. Summary of Input from Small Entity Representatives

The Panel received 15 sets of written comments from SERs in response to the July 20, 2001, July 27, 2001, and the August 10, 2001 panel SER outreach packages. The Panel held SER/Panel meetings on August 6 and 7, 2001. The table below provides a record of comments received in response to three outreach packages. This section also summarizes the main issues raised by SERs on the four elements of an IRFA specified by the RFA to be examined during the Panel. This includes information from their written comments gathered during pre-panel and panel outreach efforts, as well as information conveyed in telephone discussions with SERs over the past few months. The complete written comments are provided in Appendix A and include additional areas of comment. Complete summaries of the outreach meetings can be found in Appendix C.

**List of SER Written Comments**

| <b>Name</b>                     | <b>Organization</b>  | <b>Date Received</b> | <b>Number of Pages</b> |
|---------------------------------|--|----------------------|------------------------|
| Jonathan P. Deason, Ph.D., P.E. | The George Washington University; American Road & Transportation Builders Association                                  | 8/17/01              | 5                      |
| Robert DeSanto, Ph.D.           | Parsons Transportation Group   | 8/17/01              | 5                      |
| James R. Peterson               | James Peterson & Sons, Inc.  | 8/22/01              | 7                      |
| J. Greg Schwinn                 | Schwinn Homes  | 8/22/01              | 3                      |
| Larry G. Connor, Sr., P.E.      | Aaron J. Connor, General Contractor, Inc.  | 8/22/01              | 14                     |
| Chuck Ellison                   | Ellison & Associates, Inc.   | 8/22/01              | 4                      |
| Richard E. Steiner              | Steiner, Inc.  | 8/22/01              | 3                      |
| Elizabeth Brockway              | Engineered Structures, Inc.  | 8/22/01              | 5                      |
| Simon McHugh                    | Dallas Chapter of Associated General Contractors   | 8/22/01              | 4                      |
| Chuck Ellison                   | Ellison & Associates, Inc.   | 8/24/01              | 2                      |
| Jack Waggener, P.E.             | URS Corporation (retained by Associated General Contractors of America and Associated Builders & Contractors)          | 8/24/01;<br>8/28/01  | 14;<br>4               |
| Jeffrey Longsworth              | Kelley Drye & Warren LLP (retained by Associated General Contractors of America and Associated Builders & Contractors) | 8/24/01              | 5                      |
| Robby Wilkins                   | RPW Development  | 8/28/01              | 2                      |
| Gayle Kirkland                  | 3D/International, Inc.   | 8/29/01              | 3                      |

**8.1 Potential Reporting, Record Keeping, and Compliance Requirements**

SER comments were received on various aspects related to reporting, monitoring, and compliance determination. The comments are summarized by category below.

### **8.1.1 Sampling, Monitoring and Reporting**

Several of the SERs commented that effluent guidelines requirements that contain monitoring provisions will result in an unnecessary burden due to the inherent difficulty in obtaining representative samples of storm water runoff.

One SER expressed that level II, Section B for active construction sites requires that each facility design and sample/monitor to comply with specific values for total suspended solids and turbidity for all event up to the local 2-year, 24-hour storm. The SER further indicated that sampling to confirm compliance will be a costly "nightmare" for both the regulated community and regulators; EPA should remove sampling/monitoring from consideration. The SER indicated that his experience overseeing the sampling of 250 sites throughout the country leads to the conclusion that sampling is very time consuming and difficult at best and it is very expensive. The SER provided details about the resource requirements to sample during a 2-year, 24-hour storm event.

Another SER indicated that Wisconsin's Trans 401 regulations require that the Wisconsin DOT inspect sites at least once a week, and after each rain of more than 0.5 inches in a 24-hour period.

Another SER commented that builders cannot monitor sites after the project is complete. He indicates a long term liability would make it very hard to attract capital investment for development and would be an undue hardship on the municipality charged with compliance.

### **8.1.2 Permit Requirements**

Several of the SERs expressed concern over the additional complexity of permits following effluent guidelines implementation and the costs associated with delays in obtaining permits. One SER expressed concern that the proposed rule would impact the time that it takes to get a permit. She specifically indicated that any additional regulatory layer adds time, money and onerous paper work to a process that is already "backed up" and overburdened. She reported that her firm was delayed two years to get approval to break ground for one project after they initially submitted a request for the site design review (SDR). She also commented on a project in Tualatin, Oregon where a requirement for landscape islands requires more land for the project.

### **8.1.3 Rules Too Complex for Small Businesses**

Several SERs commented that effluent guidelines will be too complex for small businesses to understand, and that they will need to rely on consultants in order to be in compliance. They were concerned with the cost of acquiring this additional expertise.

SERs commented that EPA should allow the Phase I and Phase II NPDES Storm Water Regulations to work before issuing additional regulations. One SER expressed concern that small businesses in the construction and development sector, confronted with the Phase I and Phase II NPDES Storm Water Regulations, do not have the ability to contend with the complexity associated with the overall storm water regulatory regime. The SER indicated that the costs of controls may not be excessive, but the costs associated with understanding the regulatory requirements is beyond the capacity of small entities. The SER expressed the view that many of the small entities in the membership of the American Road and Transportation Builders Association (ARTBA) are bewildered by a perceived onslaught of increasingly complex regulatory requirements in the storm water area. The SER indicated that the costs of understanding the recently promulgated array of regulatory requirements exceeds the benefits to the environment by a substantial margin.

#### **8.1.4 Maintenance/Inspection of Existing Regulations Needed Instead of Additional Regulation**

Several SERs noted that existing Federal, state and local requirements are sufficient for controlling erosion and storm water, and that the main problem with these existing regulations is the lack of adequate inspection, maintenance and enforcement.

#### **8.1.5 Shift Resources Away from Maintenance of Existing Infrastructure**

One of the SERs commented that additional requirements for storm water management from new development will shift resources away from maintenance of existing infrastructure.

### **8.2 Related Federal Rules**

SER comments were received on various aspects related to related Federal rules. The comments are summarized by category below.

#### **8.2.1 Overlap of Federal, State and Local Regulations**

Several of the SERs expressed concern over the overlap of existing Federal, state and local regulations concerning erosion and sediment control and storm water management and that effluent guidelines would further complicate the issue. One SER also indicates that from a small business perspective, this multiple overlapping regulatory system has the potential to greatly increase compliance costs, which may have no corresponding benefit.

#### **8.2.2 Adequacy of Existing Regulations**

Several of the SERs commented that existing regulations concerning erosion and sediment and control and storm water management, namely the Phase I and II NPDES and the myriad of

state and local regulations, are adequately controlling environmental impacts attributable to the construction and land development industry. They question the need and environmental benefits of additional regulations.

### **8.2.3 "One Size Fits All"**

Several of the SERs commented that uniform national standards for erosion and sediment control and storm water management through effluent guidelines, such as required BMPs or numerical standards, are not feasible given the variety of development types, climate patterns, geography, and soil types present around the country.

### **8.2.5 Impacts on Land Use and Sprawl**

Several of the SERs noted that certain storm water management practices that require more land than conventional practices have an adverse impact on "smart growth" principles and encourage sprawl.

### **8.2.6 Opt-Out for Equivalent State/Local Programs**

A comment was raised that EPA needs to provide a mechanism in order for states or municipalities to be able to opt-out of effluent guidelines requirements if they have an equivalent program that meets the requirements for erosion and sediment control and post-construction storm water management.

## **8.3 Regulatory Alternatives**

SER comments were received on various aspects related to regulatory alternatives. The comments are summarized by category below.

### **8.3.1 Appropriateness of Numerical Effluent Guideline Standards**

Several SERs expressed concern over the use of numerical effluent guideline standards for storm water runoff. They noted that the stochastic nature of runoff events and the variety of site conditions would make it very difficult for all sites to meet numerical effluent standards. One SER indicated that numerical limits are unproven and are extremely cost-ineffective.

### **8.3.2 Appropriateness of Chemical Treatment of Storm Water**

SERs commented that chemical treatment of storm water runoff is not appropriate due to the high degree of operator control required and the costs. They also expressed concerns over safety and secondary environmental impacts of chemical treatment.

### **8.3.3 Post-Development Runoff Equal to Pre-Development**

Several of the SERs commented that maintaining runoff at pre-development levels is not feasible given the variety of site conditions, land uses, and climatic regions in existence. They added that such a requirement could be costly and cause significant adverse environmental effects.

### **8.3.4 Infiltrative Controls**

Several SERs expressed concern over potential adverse impacts of BMPs designed to maintain pre-development infiltration conditions. They noted that use of swales and open ditches could contribute to pollution of underwater aquifers (e.g., by pesticides), sinkhole formation or undermining of basement foundations. Further, BMPs that increase the amount of standing water near residential properties may raise various public health and safety issues, such as increased risk of mosquito infestation and drowning of infants or toddlers in open ditches.

### **8.3.5 Codifying Existing Construction General Permit Requirements**

Several SERs commented that codifying the existing construction general permit requirements should be considered as a regulatory option because such an approach raises the floor of environmental protection nationwide, and the costs would be reasonable.

### **8.3.6 Affordable Housing/Economics**

SERs commented that EPA should consider fully the economic impacts of new effluent guidelines regulations on affordable housing projects. One SER referred to a site in Northwest Lincoln, Nebraska where creativity in controlling storm water led to affordable housing for families making as low as 50% of the median family income in Lincoln. The community brought creativity to the project by using bioengineering techniques to create a stream channel. This approach met the State and local requirements and also made the housing affordable.

### **8.3.7 Zoning Requirements Prohibit Certain Controls**

Several of the SERs commented that existing zoning requirements prohibit the use of certain BMPs and low impact development principles such as the use of open swales. One SER also noted that Federal Housing Administration (FHA) grading requirements prohibit standing water, which would be common in certain BMPs.

### **8.3.8 EPA Not Controlling Other Pollutant Sources**

SERs commented that additional regulations on the construction and land development industry will result in new development shouldering and unfair burden for water quality improvement when other sources in the watershed, such as agriculture and existing urban development, are significant sources of impairment.

## **8.4 Methodological Issues**

SER comments were received on various aspects related to methodological issues. The comments are summarized by category below.

### **8.4.1 Appropriate Baseline and Costs**

Several SERs commented that the BMPs used by EPA to establish baseline conditions are not representative of the Phase I or II requirements. Increasing the baseline requirements had the effect of lowering considerably the costs of the incremental regulatory requirements under consideration by the agency. Specifically, they noted that the example citing standards from the State of Virginia were too strict, which results in EPA overestimating the cost of the baseline requirements.

One SER offered comments that contained incremental cost estimates, using cost assumptions from EPA's draft technical development document for this rule. Instead of EPA's incremental cost of up to \$100/acre, the SER estimated an incremental cost of \$11,000/acre. Another SER, who also submitted cost estimates in his comments, indicated that costs appear to be 50% to 100% less than the actual costs, and that maintenance runs 50% to 100% of installation costs.

One SER commented that the cost estimates do not include the largest component of costs that fall on small entities. The missing component concerns the need for small entities to develop or purchase the expertise necessary to understand the regulatory requirements. He indicated that the cost to implement the proposed new requirements are very small when compared to the costs of understanding the Federal requirements. He recommends a survey and analysis of the true costs to small entities and that the survey include, on a cumulative basis, the entire array of Federal storm water regulations.

This comment was reiterated to some extent by another SER, who indicated that small entities have no choice but to hire consultants in matters related to Federal and State permits. He indicated that issues related to local requirements infrequently need environmental consultants. He also called for a chart that summarizes all of the Federal storm water requirements so that all parties may more clearly understand them. He indicated that, if EPA does not develop such a chart or "Master Compliance Plan," the industry will, but this will take longer and be more expensive. He indicated that this rule could serve to integrate all Federal storm water requirements, in which case it could serve a valuable purpose.

### **8.4.2 Costs Using R.S. Means Too Low**

Several SERs commented that using data from the R.S. Means Company underestimates unit costs, and that Means is often inaccurate for smaller projects such as those done by small businesses.

#### **8.4.3 EPA's Baseline Costs Too High**

One of the SERs commented that EPA's per-acre costs for storm water infrastructure and flood protection were too high.

#### **8.4.4 Transportation Projects Not Analyzed**

One of the SERs commented that EPA's cost analysis needs to analyze costs for transportation projects separately from other construction projects. He observed that BMPs that protect the environment and are cost-effective may be different for the transportation industry, versus other types of construction. He commented that transportation projects are unique and must be considered in light of important public needs which often must be met within the confines of existing transportation infrastructure.

#### **8.4.5 Need to Address Land Costs for BMPs**

SERs commented that the costs for additional land for BMPs needs to be included in EPA's costing analysis.

#### **8.4.6 Sediment Loading Rates Do Not Match Virginia Figures**

One of the SERs commented that the sediment loading rates provided by EPA do not match the sediment loadings presented in the Virginia Erosion and Sediment Control Manual.

#### **8.4.7 Basin Sizing Criteria and Flood Control Routing Provisions**

SERs commented that the sediment basin sizing criteria and emergency spillway provisions cited by EPA are not representative of national baseline conditions.

#### **8.4.8 Secondary Impacts of BMPs**

Several SERs expressed concern over the secondary impacts of certain BMPs, namely infiltration and porous pavement systems causing groundwater contamination, seepage along foundations, safety hazards for toddlers, and standing water causing insect breeding problems.

#### **8.4.9 Errors in EPA's Baseline Environmental Assessment**

Several of the SERs commented that there are errors in EPA's draft Baseline Environmental Assessment, such as inconsistent pre-development land uses, erroneous sediment erosion rates, and overestimated stream channel erosion rates. Several SERs also noted the

absence of the underlying bases for many of the EPA draft estimates, which made it difficult to provide comments.

#### **8.4.10 Competition, Cost Pass-Through**

SERs commented that EPA needs to fully consider competition among firms and the ability of developers and contractors to pass through costs. In general, SERs indicated that they were often unable to pass through most or any of the increased costs to the customer. One SER commented that in competitive markets contractors may view the erosion and sediment controls requirements as secondary to the primary scope of the projects. If the contractor includes the increased cost of environmental compliance in his bid, it may cause him to lose the contract. The SER indicated that recognizing that the majority of all construction firms are small businesses, anything that hurts construction will have a disproportionate effect on small businesses.

#### **8.4.11 Cost Adjustment Factors**

SERs commented that EPA must consider differing economic impact based on site size, regional and local elasticity, and seasonal factors in its economic analysis.

### **9. Panel Findings and Discussion**

It is important to note that the Panel's findings and discussion are necessarily based on the information available at the time this report was drafted. EPA is continuing to conduct analyses relevant to the proposed rule, and additional information may be developed or obtained during this process and from public comment on the proposed rule. Any options the Panel identifies for reducing the rule's regulatory impact on small entities may require further analysis and/or data collection to ensure that the options are practicable, enforceable, environmentally sound, and consistent with the Clean Water Act.

#### **9.1 Potential Reporting, Record Keeping, and Compliance Requirements**

##### *Implementation and Enforcement of Existing Requirements*

Several of the SERs commented that the problem with the effectiveness of existing erosion and sediment control requirements is not the lack of standards but the lack of adequate implementation and enforcement, including education, bid solicitation and evaluation, proper design, installation, and maintenance of BMPs, and inspection. One SER, cited the recent study, *Construction Practices: The Good, The Bad and the Ugly* (included in the materials provided by EPA to the SERs and the Panel), which found that contractors were not following good installation and maintenance practices, and recommended that more inspection and education be instituted to remedy this problem, instead of additional substantive regulatory requirements.

Another SER indicated that based on his experience in Lexington County, SC, most water quality problems were not due to poor design of BMPs but to poor installation and maintenance of these measures. He attached some expert comments that he had solicited from the county planning engineer which agreed with this assessment and recommended additional education of contractors, inspectors and design engineers, rather than the imposition of additional Federal regulatory requirements, to address this problem.

The Panel agrees that implementation of erosion and sediment controls is difficult due to many factors, including lack of knowledge of appropriate technologies and applicable requirements by subcontractors and lack of regular maintenance by the owner/operator. The Panel further recognizes that many municipalities do not have adequate resources to conduct regular inspection of all construction sites to ensure adequate compliance with existing requirements. The Panel agrees with SER commenters that increased attention to education and outreach, compliance assistance, regular inspection of installed BMPs, and appropriate enforcement of existing requirements may prove a more effective means of enhancing sediment and erosion and post-development runoff control than adding a new layer of Federal regulatory requirements. The Panel thus recommends that EPA continue and expand its efforts to provide information and assistance to both regulators and the regulated community in understanding and implementing the existing stormwater program, as well as any new requirements that may be included in the effluent guidelines. The Panel further recommends that in fashioning the effluent guidelines, EPA strive to maintain the site-specific flexibility that is the strength of the current program, while enhancing accountability to ensure that effective BMPs are implemented and maintained. In this context, the Panel endorses EPA's intention to explore regulatory options that reduce the inspection workload for local authorities by incorporating requirements for self-inspection and certification, and/or inspection and certification by third-party consultants, and appropriate reporting to the permitting authority. EPA should also fully evaluate the costs and economic impacts of these activities in its economic analysis.

The Panel also notes the concern of one SER that consultants might be reluctant to certify that erosion and sediment controls or BMPs will perform to a certain level, given the limited information currently available on effectiveness of such measures. The Panel thus recommends that EPA not incorporate performance certifications in its proposed requirements.

#### *Need for Site-Specific Flexibility*

Several of the SERs commented that an effluent guidelines standard could limit flexibility for site-specific selection of BMPs and that a one-size fits all national standard is not appropriate. The Panel agrees and recommends that EPA develop regulatory options that include flexibility by allowing a menu-type approach for selecting individual controls. The Panel understands that EPA must select specific technologies for purposes of evaluating costs and benefits of regulatory options, however the Panel recommends that EPA not require specific technologies at any one site. Rather, EPA should develop requirements that allow for selection of a variety of BMPs that can meet the effluent guidelines technology-based standard.

## 9.2 Related Federal Rules

### *Complexity of Existing Rules and Potential Increased Complexity of ELGs*

Several SERs expressed concern over the complexity of overlapping and/or inconsistent Federal, State, and local storm water regulations and the difficulties small businesses have in understanding them. One of the SERs stated that the costs of understanding any new Federal regulations would likely exceed direct compliance costs and noted that small businesses will have to either train in-house personnel, hire additional staff, or contract for the services of high-priced consultants to acquire the necessary expertise. Another SER estimated the costs of consultants to comply with existing Federal storm water regulations at \$5,000 to \$150,000 per project, for projects ranging in size from 1 to 50 acres.

The Panel shares the SERs' concern over the potential for complex, overlapping or inconsistent regulations. Because sediment and erosion control has traditionally been primarily a State and local responsibility, and because Phase I and Phase II have imposed an additional layer of Federal control that has not yet been fully implemented, there is significant potential for further Federal requirements to add significantly to the already daunting complexity of the current regulatory regime, as viewed by the typical small business. Further, unlike most industries where stationary facilities generally need to obtain only a single NPDES permit once every five years, small businesses in the construction industry must obtain a new permit for each project. Complexity is increased still further when the business operates in multiple local jurisdictions with differing requirements.

While small construction businesses often already rely on consultants to assure compliance with existing requirements, new requirements that may need to be added to permits to incorporate the effluent guidelines may require additional consulting work as part of the development of erosion and sediment control, drainage and storm water management plans for each project. This is particularly likely for areas where existing local requirements are less stringent than the effluent guidelines. In areas where the local requirements are more stringent than the guidelines, consultants will not necessarily have to charge more.

The costs to consultants of understanding the new regulations will also be reflected in additional fees charged for their services. In addition, there may be significant costs for State and local regulators to understand the new requirements, and their interplay with existing requirements at all jurisdictional levels. One SER noted the significant delays (four months) that she had encountered in receiving local approval for a small project because of the difficulty of obtaining short letters from the Department of State Lands and the Army Corps of Engineers indicating that permits from these agencies were not required for her project. Approval for the project, which took two years in all, was further complicated by rapid turnover of personnel at the local planning department. Any increase in complexity of Federal regulations may exacerbate

such problems. Alternatively, well-designed regulations may actually help to streamline the process by providing greater consistency between jurisdictions and greater certainty to permittees. The Panel thus recommends that EPA make every effort to minimize the potential for these ELGs to further increase the complexity of existing storm water regulations. This should include full consideration of both deferring additional regulation until after the Agency has had a chance to evaluate the effects of full implementation of Phase I and Phase II, and of allowing a certification process in which ELGs could be waived if it were determined that existing State and local requirements already provide comparable environmental protection, as viable regulatory options. At the very least, each of these options should be fully discussed and presented for comment in the preamble to the proposed rule. In addition, EPA should fully evaluate the costs associated with additional complexity of any proposed new regulations, including the costs of any increased permitting delays, and the associated impacts on the ability of small businesses to comply.

#### *Relationship to NPDES Phase I and Phase II*

Many SERs reminded the Panel that erosion and sediment control and post-construction storm water management for new development activities are already covered by the existing Federal NPDES Phase I and Phase II Storm Water Regulations, although the Phase II regulations have not yet gone into effect and the Phase I regulations have not been in effect long enough for their effectiveness to be fully evaluated. These SERs questioned whether it was appropriate to be considering additional Federal stormwater regulations at such an early stage in the implementation of these existing programs. They noted that these programs generally defer to State and local authorities to determine on a site-specific basis what sediment and erosion and post-construction runoff controls are appropriate for a given project, given local climate, soil types, land use patterns, and development objectives. The SERs generally believed that additional Federal requirements at this time could only exacerbate the inter-jurisdictional complexity of the existing program (see above) and questioned whether the significant costs that such increased complexity would impose on small businesses would generate significant environmental benefits.

The Panel appreciates this concern. The Phase I regulation has resulted in significant improvements in water quality nationwide, and the Phase II regulation will result in additional improvements. It is the goal of the effluent guidelines program to evaluate the technologies that are being selected for compliance with the Phase I and eventually the Phase II construction site erosion and sediment control and post-construction storm water management requirements and the efficacy of applying a BAT technology standard nationwide in a manner which allows for appropriate selection of additional controls based on site conditions. As part of the effluent guidelines cost and benefits analysis, EPA will evaluate the effectiveness of controls that will be used to comply with Phase I and Phase II regulations (baseline) as well as evaluate the incremental costs and benefits of the additional technology-based standards.

The Panel believes there may be some confusion on the part of SERs over the relationship between NPDES permitting requirements and effluent guidelines. The Phase I and Phase II regulations identify who must obtain permit coverage, and discuss generally what areas (e.g.,

sediment and erosion control, post-construction runoff control) should be addressed in the permit requirements. They do not specify particular technology options, the selection of which are left to the best professional judgement of the permit writer. In the case of storm water permits for construction, virtually all sites are covered by general permits, which require preparation of a stormwater pollution prevention plan, but contain no technology requirements. Effluent guidelines, in contrast, establish national performance standards, based on best available technology economically achievable, that each permit must include. In many industries, these may actually streamline the permitting process by providing a nationally consistent basis to permit writers on what the appropriate technology options are and the required limitations in the permit. Thus, there is no inherent duplication in adopting effluent guidelines for an industry that is already covered by permitting requirements. In fact, by definition, all effluent guidelines apply to point sources already covered by the NPDES program.

However, as noted above, the construction industry is different from most other industries in several key respects. Paramount among these is the inherent variability across sites, which may make it difficult to identify a single set of technology options, or even a single set of performance standards based on underlying technology options, that has general applicability across either the industry as a whole, or any identifiable subcategory. As many of the SERs noted, in this industry, one size does not fit all. The Panel thus shares the concern of many SERs that efforts to impose national consistency on the permitting process through the development of effluent guidelines are difficult.

The Panel recognizes that EPA is operating under a consent decree that requires it to propose effluent guidelines by March 2002 and take final action by March 2004. The Panel recommends that EPA, during the development of the proposed effluent guidelines, evaluate the adequacy of the current Phase I and II program. The Panel also recommends that EPA proceed with the development of proposed effluent guidelines, but that in doing so, keep open the option of ultimately declining to promulgate final guidelines until the effectiveness of Phase I and Phase II, without national effluent guidelines, can be more fully evaluated.

The Panel further recommends the inclusion in the proposal of regulatory language that would provide a mechanism by which construction sites could meet the effluent guidelines requirement by complying with state and/or local regulations that provide a comparable level of environmental protection. The Panel also notes and endorses EPA's intention to incorporate any additional requirements for erosion and sediment control and storm water management developed under the effluent guidelines into the existing construction general permitting system, which should ease the regulatory burden associated with the new requirements, at least in terms of permitting and related paperwork costs.

#### *Impacts of Effluent Guidelines on Affordable Housing*

One of the SERs expressed concern over the effluent guidelines requirements conflicting with Federally funded affordable housing projects. The SER was concerned that requirements

that foster enhanced infiltration and may also result in additional standing water on residential properties following a major storm event may conflict with FHA grading and lot design requirements. The Panel recommends that EPA evaluate the percentage of annual housing that could potentially be affected as part of the effluent guidelines economic analysis and evaluate any impacts on affordable housing of additional requirements. Additionally, the Panel recommends that in adopting a menu approach (see above), EPA ensure that developers of federally-funded affordable housing projects will have an opportunity to select controls that do not conflict with grading and lot design requirements.

### *Impacts on Local Land Use Decisions and Potential for Increased Sprawl*

Several of the SERs expressed concern over the potential for post-construction stormwater management requirements to interfere with local land use planning. They noted that requirements that post-construction peak or average flows be no greater than pre-construction flows and/or requirements that post-construction infiltration mimic pre-construction infiltration could limit local flexibility in implementing land use plans or pursuing particular development goals. They particularly noted the potential for so-called low impact development to interfere with other smart growth strategies because such development often requires more land for a particular project and may thus promote sprawl. One SER noted her experience with the construction of a parking lot with infiltration islands that had required significantly more land in order to accommodate truck access.

The Panel agrees that this is an important concern, and recommends that in adopting a menu approach, EPA ensure sufficient flexibility in post-construction flow and infiltration requirements so as not to interfere with local land use planning. The Panel also notes that in some cases, low impact development may be accomplished in ways that do not require more total land, for example by eliminating the need for conventional BMPs, such as stormwater retention ponds. However, the guidelines should recognize that low impact development may not be appropriate for all jurisdictions, and maintaining pre-development flow conditions may not be feasible or desirable in all situations. The Panel endorses EPA's intention to ensure that local land use decisions, including factors such as project types, density, and location not be affected by the effluent guidelines, and to identify effective technologies to manage runoff from the full range of development types and densities. At the same time, the Panel recognizes the use of appropriate low impact development principles as an important tool for reducing runoff volumes and improving storm water quality, and endorses EPA's intention to explore regulatory alternatives that encourage, but do not require the use of low impact development practices.

## **9.3 Regulatory Alternatives**

### *Appropriateness of Numerical Effluent Guideline Standards*

Many of the SERs commented that quantitative or numerical effluent standards are not appropriate for storm water discharges. One SER indicated that numeric limits are unproven in a

construction discharge context and are extremely cost-ineffective. Another SER noted the special challenges involved with sampling of storm water and indicated that in his extensive experience with such sampling, three to five attempts were often necessary in order to obtain a single usable sample. He estimated that the cost of two usable samples could exceed \$10,000 and characterized nationally imposed stormwater sampling requirements as a costly nightmare for both the regulated community and the regulators. Another SER indicated his belief that such requirements would have a devastating economic effect, but would be unlikely to yield any environmental benefits over the current requirements.

The Panel generally agrees with this assessment and notes in this context that EPA considered the issue of quantitative removal requirements during development of the 1992 Phase I stormwater general permit. Noting that even jurisdictions with quantitative control targets for TSS (e.g., 80% removal) generally allow variances or waivers based on review of individual site plans, EPA concluded that inclusion of such a requirement in the general permit would be inappropriate because it would not be able to provide flexibility in sites where such controls were not economically achievable. (57 FR 41205, September 9, 1992.) The Panel believes this conclusion is also valid today and recommends against establishing across-the-board storm water monitoring requirements as part of the effluent guidelines.

The Panel further notes that the issue of stormwater monitoring was also considered by EPA during development of the general permit. EPA concluded at that time that while, storm water monitoring from construction sites can be appropriate in some situations, the Agency is concerned about requiring storm water monitoring for all facilities covered by today's permit for a number of reasons. The Agency has concerns that sampling data may not reflect the transient nature of construction activities. As discussed below, the Agency believes that inspection requirements can be as or more effective than monitoring discharges for evaluating compliance with permit conditions. In addition, the Agency has concerns regarding the possible burdens placed on industries and EPA regarding the review of this information. (57 FR 41207, September 9, 1992.) The Panel believes this conclusion is also valid today and recommends against establishing storm water monitoring requirements that would apply to all construction activities as part of the effluent guidelines.

However, the Panel also recognizes that EPA is specifically required to evaluate the feasibility of establishing numeric effluent limitations for some parameters under its settlement agreement with the Natural Resources Defense Council (NRDC). The Panel would urge EPA however, as it conducts this evaluation, to fully consider the many challenges associated with developing numeric effluent standards, such as monitoring difficulties, site-specific variability, and the stochastic nature of rainfall and runoff events. The Panel recommends that EPA acquire and evaluate data on both costs and effectiveness of such requirements from sites across the country, reflecting a variety of geographic, weather, soil and other site conditions, before it makes any determination on the utility and feasibility of such standards.

One alternative to a quantitative removal requirement, with monitoring to demonstrate compliance, is a design standard with professional certification that the installed BMPs can meet the standard. The advantage of such a design standard is that it eliminates the need for costly monitoring requirement. However, there is still the problem that it may not be achievable or appropriate for every site, so some kind of waiver or variance provision would almost certainly be needed. Further, as noted by one SER, professional engineers would likely be reluctant to certify the performance of installed BMPs due to current data limitations. The Panel thus recommends that any certification requirements that may be included in the guidelines be limited to design parameters only and not include performance certification or liability of the certifier for failure of BMPs to perform as expected.

#### *Chemical Treatment of Storm Water or Soils*

Some of the SERs commented that requiring chemical treatment of storm water or soils from construction sites is not appropriate due to costs and the potential for adverse secondary environmental effects. One SER expressed concern that use of such treatment could leave operators vulnerable to Superfund type liability in the future if unanticipated adverse environmental consequences were to result. Another SER noted that polyacrylamide makes the soil slippery, potentially endangering workers at the site, and that it would be a logistical challenge to constantly be reapplying it as new areas of soil were exposed. The Panel shares the SERs' concerns with the potential for unanticipated environmental consequences and operational challenges associated with these technologies. There are little data in the literature evaluating the potential effects to the environment of chemical treatments such as polyacrylamide or alum when used to treat soils or stormwater to reduce sediment loadings. Neither practice, to date, is in widespread use. The Panel is further concerned that chemical treatment may be problematic for many sites due to the specialized nature of the technology and the need for trained personnel to implement it. Some SERs further indicated that proper use of other BMPs would displace the need for such chemical treatments. The Panel notes that EPA has been exploring these technologies as a menu alternative and not as a required component of the regulation. The Panel agrees that uniform national requirements for chemical treatment of stormwater or soils at construction sites would be inappropriate and recommends that EPA fully evaluate the costs, operational difficulties, limitations and potential for adverse secondary environmental effects of these technologies before proceeding further with the development of any regulatory options that might promote their widespread use.

#### *Post-Development Runoff Equal to Pre-Development*

Several SERs commented that requiring post-development runoff equal to pre-development levels is unreasonable. One SER specifically indicated this standard may not be practical or economically feasible to achieve in many situations and could actually be detrimental to the environment. Other SERs noted that such a requirement could interfere with local land use decisions. As noted above, the Panel believes it important that any requirements relating to post-development runoff control be flexible enough so as not to result in any such interference.

The Panel recognizes that EPA is specifically required to evaluate regulatory options that limit post-construction runoff based on pre-existing conditions under its settlement agreement with the Natural Resources Defense Council (NRDC). Post-development peak runoff flow rates often require control to pre-development levels in order to prevent downstream flooding. Many States and localities already address this need to varying degrees in existing programs, some of which may use a site-specific waiver approach. Other components of post-development runoff conditions that feasibly can be maintained at or near pre-development levels for some development types and for some storm durations and frequencies include total runoff volume and pollutant concentrations. Control of total volume to pre-development levels for certain storm events may be warranted in order to reduce stream channel erosion rates. Control of pollutant sources in urban runoff to pre-development levels may not be achievable or even desirable (e.g., if the pre-development land use was row crop agriculture, the urbanization may result in a net decrease in total sediment loading), but significant reduction through the use of BMPs can often still be achieved at reasonable cost. The Panel recommends that EPA fully evaluate the feasibility and cost effectiveness of various BMPs in maintaining post-development runoff volume, flow rate and pollutant loadings to pre-development levels. However, specific BMPs should be included in a menu format rather than as across-the-board requirements, so as not to limit local flexibility in land use planning.

### *Infiltrative Controls*

Several SERs expressed concern over potential adverse impacts of BMPs designed to maintain pre-development infiltration conditions. They noted that use of swales and open ditches could contribute to pollution of underwater aquifers (e.g., by pesticides), sinkhole formation or undermining of basement foundations. Further, BMPs that increase the amount of standing water near residential properties may raise various public health and safety issues. While the Panel agrees that these are important concerns, they may be limited to specific site conditions and may be avoidable in many cases through appropriate design and maintenance of BMPs. For example, soil may act as an effective medium for filtration and treatment of some contaminants found in runoff from residential and commercial areas. Industrial areas and highways may be more of a concern due to the possibility of contamination of runoff with a variety of organic chemicals, metals, hydrocarbons and other potentially harmful materials. The Panel recommends that EPA fully consider the potential for infiltrative BMPs to result in increased risk of groundwater contamination as it develops a menu of possible measures, and to the extent possible, identify the situations in which such measures should and should not be used and appropriate practices for minimizing such risk.

The Panel agrees that standing water and associated mosquito breeding may also be a concern but believes in many cases this concern can be minimized if BMPs are designed correctly and maintained regularly. Most practices, such as swales, filtration systems, and infiltration basins are designed to completely drain within a period of 24 to 72 hours. Properly designed and maintained swales, filtration systems, and infiltration systems should generally not present a mosquito problem in most cases. However, the Panel recognizes that BMPs may not always

operate as expected, and that in some cases they may result in standing water that persists long enough to support mosquito breeding. The Panel recommends that EPA fully consider all of the potential adverse impacts of infiltrative BMPs and only include such measures in a menu-based approach with sufficient flexibility to allow these concerns to be addressed on a site-specific basis at the local level, through proper selection, design, maintenance, and inspection of appropriate measures.

#### *Basing Effluent Guidelines on Existing Construction General Permit (CGP) Requirements*

Several of the SERs suggested that EPA base the effluent guidelines on the existing CGP requirements. Such an option may provide additional economically achievable environmental benefits above the current baseline. The Panel agrees that such an approach is worth exploring. It would provide a uniform set of requirements for preparing stormwater pollution plans but would not impose uniform technology requirements on all sites. This might facilitate a site-specific approach with enhanced accountability while minimizing the additional complexity and permitting delays that may be associated with the implementation of new effluent guidelines because many regulated entities, regulators, and consultants are already familiar with the requirements of the CGP. The panel recommends that EPA give consideration to this approach. At a minimum, EPA should present it for comment in the preamble to the proposed effluent guidelines as a regulatory option under consideration.

#### *Defer Additional Regulation Until Current NPDES Permitting Requirements Have Been Fully Implemented*

Many SERs commented that because Phase II has not yet gone into effect, and the benefits of Phase I have not been fully realized, it is premature to be developing another set of regulatory requirements for the construction industry. Most SERs noted that the NPDES regulations already have strong components designed to address soil erosion and post construction runoff controls. The NPDES regulations do not contain nationally uniform technology requirements, but provide instead a flexible approach that relies on site-specific determinations of appropriate BMPs by regulators at the State and local level. Since most construction activity subject to NPDES is covered by general permits, site-specific review of individual projects is left mainly to local governments. EPA has data to suggest there is wide variation in the extent to which local municipalities conduct reviews of individual site plans. Many SERs felt that EPA has not allowed adequate time to determine if the approach adopted in Phase I and Phase II is working and thus if additional regulations, which may entail significant costs to small businesses, are warranted.

The Panel appreciates the SERs concerns about EPA's schedule for developing effluent guidelines and recommends that EPA fully discuss and present as a viable final regulatory option the possibility of deferring the adoption of effluent guidelines until after Phase II has been implemented and there has been more opportunity to evaluate the effects of both Phase I and II in

terms of environmental improvements and in terms of programmatic strengths and weaknesses that might be addressed through effluent guidelines or other rulemaking.

#### **9.4 Methodological Issues**

##### *Appropriate Baseline and Costs*

Several of the SERs commented that EPA's baseline for technology and costs, as presented to SERs in its preliminary cost estimate of regulatory options, is not accurate and assumes a higher level of control than is actually occurring or required. They are concerned that such an assumption overestimates baseline costs, and subsequently underestimates the incremental costs required to comply with EPA's technology options. One SER described the EPA baseline as reflecting the Cadillac of erosion and sediment controls. Several SERs indicated that it was inappropriate to use Virginia and Maryland as typical states in determining a baseline of existing practice. Several other SERs noted that sediment basins and diversion ditches are not required by the general permits for lots smaller than 10 acres. Two SERs pointed out that the permits only require soil stabilization within 14 days of denuding a site, not 7 days, as assumed in the baseline.

Two of the SERs commented that the sediment basin sizing criteria cited in the Virginia Handbook suggesting that basins must maintain structural integrity during a 25-year storm of 24-hour duration is unreasonable. These SERs asserted that, in contrast, the general permit only requires that the basin be able to contain the runoff from a 2-year, 24-hour storm. The Panel notes that these two requirements are not inconsistent. The first requirement refers only to ensuring that basins are properly designed (e.g., through sizing of outlet structures or incorporating emergency spillways into surface impoundments) to avoid catastrophic failure of the embankment during large storm events, while the second refers to sizing requirements for the basin itself to ensure that it can contain the runoff of a particular size storm.

One SER provided detailed re-estimates of the baseline and incremental costs for the regulatory options identified by EPA, based on EPA's draft technology assessment and his experience as a consultant to small businesses developing storm water pollution prevention plans. For sediment and erosion control, he estimated baseline costs of \$35,000, with costs for the identified regulatory options ranging up to \$120,000 for a 7.5 acre lot. In contrast, EPA estimated baseline costs of \$20,000 and costs for the most stringent regulatory options of \$21,000. This SER provided detailed documentation showing the basis of his estimates and each step in his calculations. His calculations showed significant differences in some unit costs and baseline assumptions. EPA has examined the SER's cost estimates and has some concerns with his methodology. For example, EPA believes these estimates may, in some cases, be based on maximum unit cost values from the literature rather than average values, and that maintenance cost figures may overestimate average project duration.

One SER attached comments from a consulting engineer suggesting that EPA may have overestimated some costs, such as those for silt fences, diversion dikes and post-construction stormwater management and flood control measures. She was concerned that use of these estimates might result in higher bonding requirements that could impose additional cost on developers.

A number of other SERs also expressed concern with EPA's cost estimates. Several suggested that RS Means data (R.S. Means Co., *Site Work and Landscape Cost Data*, 19<sup>th</sup> Ed., 2000), which EPA used as the basis for many of its unit cost assumptions, is generally based on costs for larger construction sites, and tends to underestimate unit costs for small sites, because of the significant economies of scale in installing and maintaining stormwater BMPs. Some SERs also noted that various costs that had been omitted from EPA's preliminary analysis, such as maintenance, permitting, inspections, and bonding, were likely to be significant. SERs also noted several types of indirect costs that have apparently not yet been considered, such as the need for more land or decreased property values if contractors are required to adopt certain LID techniques that conflict with consumer preferences (e.g., for curbs and gutters).

EPA has used the economic analysis from the Phase II rulemaking as the basis for its assumptions regarding baseline costs and technology requirements. The Panel believes EPA has made a reasonable preliminary attempt in a limited time frame to estimate these costs. At the same time the Panel believes that some of the concerns raised by the SERs are well founded and notes that according to EPA's preliminary analysis of capital and infrastructure costs of one site size (7.5 acres) and one land use (low-density residential), incremental costs for the most stringent soil and erosion control option are only 5% of baseline costs, and net incremental costs for the most stringent post-construction runoff control option are actually negative. The Panel finds this result surprising and worthy of further evaluation. The Panel recognizes that establishing an appropriate baseline presents significant analytical challenges, especially when some of the baseline costs are associated with requirements that have not yet been implemented for a portion of the industry (i.e., Phase II sites). However, establishment of an appropriate baseline is critical in order to properly reflect the incremental costs of the regulatory options. The Panel understands that in establishing an appropriate baseline for erosion and sediment control usage, EPA is relying on the Phase I and II NPDES storm water regulations, the EPA construction general permit, and an evaluation of existing information on state and local requirements. This is appropriate since, following implementation of the Phase II regulation in 2003, most construction activities over 1 acre will be required to implement a storm water pollution prevention plan and install appropriate erosion and sediment controls on their site. However, based on SER comments and the Panel's own concern with the incremental cost estimates in EPA's preliminary analysis, the Panel believes that EPA needs to reevaluate its cost estimates and revise them as appropriate. The panel recommends that EPA fully evaluate the appropriateness of the selected baseline requirements and the estimated costs, and the regulatory requirements and their costs in the development of the proposed rule. The Panel further recommends that EPA specifically consider the comments of the SERs in this effort.

## *Transportation Projects*

One of the SERs noted that transportation projects are very different from commercial and residential projects and that EPA's consideration of regulatory options and costing analysis should reflect this. Among the differences pointed out by this SER were locational constraints, the challenges of dealing simultaneously with multiple jurisdictions, and the significant public benefits provided by most transportation projects. The Panel agrees that the issues and costs faced by transportation projects are likely to be significantly different from those faced by residential and commercial projects, and that transportation projects may warrant serious consideration as a separate sub-category. The Panel understands that EPA has found little data that can quantify, on a national level, the percentage of construction projects that are transportation-related. EPA is attempting to locate additional information through state Notice of Intent (NOI) databases. The Panel recommends that EPA continue its efforts to locate such data, and that, based on this data, EPA determine whether sub-categorization of this sector is appropriate. Whatever the results of this determination EPA should develop appropriate costing analyses for this sector.

## *Baseline Assessment of Environmental Impacts*

One SER commented that EPA's sediment runoff rate estimates from construction do not match with sediment loadings quoted by Virginia. EPA states in Fact Sheet 3.0, "Storm Water Phase II Final Rule Small Construction Program Overview," that "sediment rates from construction sites are typically 10 to 20 times greater than those from agricultural lands." The SER commented, based on information presented in the *Virginia Erosion and Sediment Control Handbook*, that agriculture accounts for 50% of all erosion in the U.S., while construction accounts for 20% of all erosion. The Panel notes that the fact sheet quotes a sediment generation rate (tons/acre), while the Virginia Handbook presents information on percentages of total sediment loads, and that the information provided in the two sources is not necessarily inconsistent, as explained below.

The United States Department of Agriculture's 1997 National Resources Inventory (NRI) estimates that in 1997 there were approximately 377 million acres of crop land in the U.S., with total annual sheet and rill erosion of approximately 1.06 billion tons per year. This equates to an average erosion rate of approximately 2.8 tons/acre/year for crop land. By comparison, there were approximately 2.2 million acres of new land development in the U.S. in 1997, according to the NRI. Thus, if 50% of the annual erosion was due to agriculture, then the total annual erosion in 1997 would have been approximately 2.12 billion tons. If construction were responsible for 20% of this loading, then the annual contribution from construction would have been approximately 424 million tons. This equates to an average construction-site erosion rate of approximately 190 tons/acre/year. This would yield construction site erosion rates approximately 70 times higher than agricultural erosion rates which actually exceeds the estimates quoted in the Phase II fact sheet. This indicates that EPA's estimated construction-site erosion rates are not inconsistent with the percentage estimates in the Virginia Handbook, and may even be

conservative. EPA's estimates are also broadly consistent with a variety of other published sources.

However, another SER raised concerns with EPA's loadings estimates that the Panel believes may have merit. First of all, the SER noted that EPA's baseline loadings estimates are extremely low (0.1 to 4 lbs per acre per year) and that these are not consistent even with estimates contained elsewhere in the Baseline Assessment document, which lists erosion rates of 76, 75, and 401 lbs per year for forest, pasture, and crop land respectively. The SER further notes that the estimates for the State of Pennsylvania are not consistent with national estimates, and imply that 1/3 of all construction site runoff nationally is attributable to a single State, which appears unlikely. Several SERs also noted that the document failed to explain the basis for several of its estimates. As in the case of costs (see above), the Baseline Assessment is important because it serves as the benchmark against which loadings reductions attributable to the effluent guidelines are measured. If pre-development loadings rates are underestimated, then incremental loadings due to construction activities and the reductions in these incremental loadings due to the effluent guidelines may both be overestimated. The Panel notes that the Baseline Assessment is a preliminary analysis and that several peer reviewers also raised significant concerns. The Panel recommends that EPA carefully reevaluate this assessment, and assure that the final baseline assessment is both internally consistent, and consistent with other published data, particularly since there is wide variation in reported erosion rates.

The Panel notes that EPA is concerned not only with direct erosion from the construction site itself, but with the indirect effects of in-channel erosion due to higher volumes of storm water reaching streams. The Virginia Handbook also identifies this concern, stating:

Indirect effects of construction may be resulting in much higher sediment production than direct activities. Stormwater runoff from impervious surfaces in urban areas is causing many streams that were relatively stable to suffer severe channel erosion. (Virginia Responsible Land Disturber Certificate of Competence Program, Applicant Packet, p. 11)

The Panel agrees that this is an important concern. However, here again, the Panel believes that EPA's preliminary Baseline Assessment may need to be revised before it can be used as the basis for a benefits analysis of the proposed rule. One SER in particular questioned several aspects of EPA's quantitative estimates of in-stream erosion. For example, the SER interpreted EPA's analysis as assuming 50% impermeable surface in post-development areas, but the SER believes this is higher than the percentage generally associated with residential development (20-40%) which comprises a large share of total construction nationwide. The SER also questioned the assumptions regarding increases in cross-sectional stream area. This SER felt that applying a factor of 2.6 to reflect the effects of development was excessive. While the SER did not provide specific data, his BPJ estimate for Middle and East Tennessee was that a factor in the range of 1.25 would be more appropriate. He also suggested that there may be little in-channel erosion for very small streams in urban areas because many of them have already been culverted.

The Panel notes that EPA believes its estimates of stream channel erosion are defensible. EPA acknowledges that the magnitude of such erosion is difficult to establish, but notes that the direction of change is not. (The Panel notes that this is not inconsistent with the SER.s comment, which suggested that a 25% increase in channel size due to development-induced erosion would be reasonable.) EPA believes it has chosen a relatively conservative estimate of 30% overall watershed imperviousness in order to establish the magnitude of enlargement expected to occur in Pennsylvania but acknowledges that further data are needed to determine the applicability of this estimate nationwide. The Panel acknowledges the challenges to making national estimates of stream channel erosion, but recommends that EPA evaluate the SER.s comments regarding its methodology for estimating stream channel erosion, as well as other issues raised by the peer reviewers, and to the extent possible, revise its baseline estimates of erosion due to construction activity accordingly.

Finally, this SER also raised concerns with the estimates of habitat loss attributable to development (e.g., through replacement of natural streams with pipe systems and concrete channels) in the Baseline Assessment. Apparently, data from one fully-developed watershed in Maryland, which show that about 60% of the headwater stream miles have experienced habitat loss over a 51-year period, was used to estimate a maximum annual rate of habitat loss for new development acreage in Pennsylvania. A low-end estimate for annual rate of habitat loss was also provided using a rate of 20%. The methodology used to derive this result is unclear. The Panel recommends that EPA also reevaluate its baseline estimates of habitat loss due to development.

#### *Erosion BMP Effectiveness*

The Panel notes that EPA has not yet developed loadings reductions estimates for any of its regulatory options. However, the Panel is aware that as EPA develops the effluent guidelines, it will need to determine pollutant removal efficiencies for the BMPs under consideration. The Panel notes that there is currently a limited amount of data on which to base such quantified loadings reductions estimates. The September 2000 "Erosion and Sediment Control Best Management Practices (BMPs) Research Project," prepared by the consulting firm of PBS&J for the NAHB, which was provided as an attachment to his comment by one of the SERs, concluded that there are very large data gaps that must be remedied before EPA can establish what pollutant removal efficiencies can be expected from even the most commonly used structural BMPs. Furthermore, the report shows that there are large areas of the country from which there are no published data. The Panel understands that EPA has provided a grant to the American Society of Civil Engineers (ASCE) to supplement this database and compile adequate data on representative BMPs across a variety of geographic locations and site types. The Panel endorses this effort and recommends that EPA obtain the best data possible on BMP effectiveness before it attempts to quantify the loadings reductions that may be expected from the proposed regulatory options.

## **Appendix A. Written Comments from Potential SERS**

## Appendix B. Chronologically Indexed List of Materials

### SBAR Panel - Supporting Documents for SBAR Panel Members

May 26, 2001

.Section 6: Technology Assessment,. Draft November 13, 2000 (summaries of different BMP types, applicability, performance data if any, etc.)

State BMP manuals.

National Stormwater BMP Database, Version 1.0, June 1999

Preliminary Data Summary of Urban Storm Water Best Management Practices, U.S. Environmental Protection Agency, Office of Water, EPA-821-R-99-012, August 1999

National Resource Inventory

EPA Construction and Development Draft Data Summary

Economic Analysis of the Final Phase II Storm Water Rule, Final Report, Science Applications International Corporation, October 1999

40 CFR Parts 9, 122, 123, and 124 National Pollutant Discharge Elimination System - Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges; Final Rule, December 8, 1999

Analysis for Best Management Practices for Small Construction Sites, U.S. Army Corps of Engineers, June 1998.

### Package #1 June 4, 2001

Cover letter

- List Construction and Development Effluent Guidelines Rulemaking Project Background Materials for Potential Small Entity Representatives, 6/4/01
- TAB A Effluent Guidelines, C&D Background, 5/28/01
- TAB B Construction and Development Effluent Guidelines - Overview, June 4, 2001
- TAB C Construction and development Effluent Guidelines, Summary of Clean Water Requirements, 5/29/01
- TAB D Construction and Development Effluent Guidelines, Economic Analysis, June 4, 2001
- TAB E Motion to Modify Effluent Guidelines Consent Decree and Settlement Agreement. *Natural Resources Defense Council, Inc., Public Citizen, Inc., Plaintiffs v. Carol M. Browner, Administrator, U.S. Environmental Protection Agency, Defendant, and*

*American Forest & Paper Association, et al. Intervener-Defendants*, D.D.C. Civ. No. 89-2980 (RCL). August 10, 2000.

- TAB F Storm Water Associated with Construction Activities (Overview of Existing Construction General Permit). EPA, 2000.
- TAB G Storm Water Phase II Final Rule, An Overview, January 2000, Fact Sheet 1.0
- TAB H Storm water Phase II Final Rule, Small Construction Program Overview, January 2000, Fact Sheet 3.0
- TAB I Compilation of State and Municipal Existing Control Strategies, Criteria and Standards
- TAB J Storm Water Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices. EPA, September 1992. (Excerpts)
- TAB K Construction and Development Effluent Guidelines Technology Options for Regulation Development, Draft 6/1/2001

Package #2 July 20, 2001

Cover letter

Enclosure 1 Members of the RFA/SBREFA SBAR Panel for the Construction and Development Rule

Enclosure 2 SER Outreach Meeting with SBREFA SBAR Panel for the Construction and Development Rule

Enclosure 3 Construction and Development SBREFA Panel SER Documents, July 20, 2001

.Effluent Guidelines for the Construction and Development Industry,.  
Regulatory Concept, Draft 7/20/01

.Estimation of Capital Costs for Technology Options,. Draft Revised July  
20, 2001

.Section 6: Technology Assessment,. Draft November 13, 2000 (summaries  
of different BMP types, applicability, performance data if any, etc.) (by E-  
mail)

.Construction Practices: The Good, the Bad, and the Ugly,. Article 60,  
Feature article from *Watershed Protection Techniques*. 1(3): 95-99

Environmental Impacts of Construction and Land Development Activities,  
Baseline Assessment, Draft April 5, 2001

Appendix A Inventorying of the Potentially Impacted Environment, Tetra Tech, Draft April 5,  
2001

Appendix B Influence of Land Development on Habitat and Habitat Access, Tetra Tech,  
Draft April 5, 2001

- Appendix C Impacts of Land Development on Stream Channel Erosion, Tetra Tech, Draft April 5, 2001
- Appendix D Evaluating Pollutant Loads from the Land Development Industry that Potentially Impact the Environment, Tetra Tech, Draft April 5, 2001
- Appendix E Evaluating Pollutant Loadings from Construction Activities that Potentially Impact the Environment, Tetra Tech, Draft April 5, 2001
- Appendix F Impacts of Construction and Land Development on Hydrology, Tetra Tech, Final Draft March 25, 2001
- Appendix G Impacts of Land Development on Stream Water Temperature, Tetra Tech, Draft April 5, 2001

Assessing the Influence of Urbanization on Floodplains, Tetra Tech, Draft April 5, 2001

Package #3      July 27, 2001

Cover Memorandum

Questions for Small Entity Representatives

.Additional Discussion of Regulatory Options,. Draft, August 9, 2001

.Bridging the Gap: Developers Can See Green,. *Land Development*, National Association of Home Builders, Spring/Summer 2000

Low Impact Development Case Studies: Patuxent Riding

City of High Point, NC - LID Case Studies

Package #4      August 10, 2001

Cover letter

Additional Discussion of Regulatory Options, italicized and underlined text added, August 9, 2001

Erosion Control Ordinance, Dane County, Wisconsin

40 CFR 122.26. Storm water discharges (applicable to State NPDES programs, see 123.25)

40 CFR 122.30. What are the objectives of the storm water regulations for small MS4s?

40 CFR 122.31. As a Tribe, what is my role under the NPDES storm water program?

40 CFR 122.32. As an operator of a small MS4, am I regulated under the NPDES storm water program?

40 CFR 122.33. If I am an operator of a regulated small MS4, how do I apply for an NPDES permit and when do I have to apply?

40 CFR 122.34. As an operator of a regulated small MS4, what will my NPDES MS4 storm water permit require?

40 CFR 122.35. As an operator of a regulated small MS4, may I share the responsibility to implement the minimum control measures with other entities?

40 CFR 122.36. As an operator of a regulated small MS4, what happens if I don't comply with the application or permit requirements in 40 CFR 122.33 through 122.35?

40 CFR 122.37. Will the small MS4 storm water program regulations at 40 CFR 122.32 through 122.36 and 122.35 of this chapter change in the future?

## **Appendix C. Summaries of SER Outreach Meetings**