

Proceedings of Three Workshops on

**Impediments to Low Impact Development and  
Environmental Sensitive Design**

Sponsored Jointly by:  
Chesapeake Bay Program's Land, Growth and Stewardship Subcommittee  
Chesapeake Bay Program's Scientific and Technical Advisory Committee  
and  
Virginia Tech's Institute for Innovative Governance

Workshops were held in:  
Fredericksburg, Virginia on October 10, 2002  
New Carrollton, Maryland on October 17, 2002  
and  
Carlisle, Pennsylvania on October 24, 2002

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### **Purpose of the Workshops**

The Chesapeake Bay Program's Chesapeake 2000 Commitment number C2K 4.2.2 calls for the Bay Program "By 2005, in cooperation with local government, identify and remove state and local impediments to low impact development designs to encourage the use of such approaches and minimize water quality impacts."

### **Goals of the Workshops**

The first goal of the workshops was to identify important impediments to use of low impact development (LID) and environmental sensitive design (ESD) for improving water quality in the Chesapeake Bay watershed and to recommend ways to remove these impediments. A second goal was to encourage the use of policy, tools and techniques for overcoming these impediments.

### **Expected Outcomes of the Workshops**

Suggested actions to remove LID/ESD impediments will be passed to state and local jurisdictions that will use the information in developing their local efforts to remove impediments to low impact development and environmental sensitive design.

### **Workshop Attendees**

Workshop attendees included local elected/appointed officials, persons responsible for conservation and/or economic development, private sector planners, engineers, landscape architects, developers, builders, lenders, contractors, realtors, conservation group members and interested citizens.

See the appendices for a list of participants in each workshop.

## **Workshop Organizers**

This report was compiled and edited by Dr. Waldon R. Kerns, Chair of the Bay Program's Scientific and Technical Advisory Committee and Director of the Virginia Tech Institute for Innovative Governance.

Todd McNew of the Virginia Tech Department of Agricultural and Applied Economics did much of the work to organize the workshops. Pam Gibson of the Virginia Tech Institute for Innovative Governance and Lisa Blankenship of the Virginia Tech Department of Agricultural and Applied Economics assisted with the organization activities.

Thanks are extended to the note takers for the 3 workshops:

Brian Rustia of MWCOG

Christine Dunham of CRC and the Chesapeake Bay Program's Development, Redevelopment, and Revitalization Workgroup

Ted Graham of MWCOG

Pam Gibson of the Virginia Tech Institute for Innovative Governance

Special thanks are extended to the presenters at the workshops. The following individuals made presentations during the expert panel portion of each of the workshops. The presentations were used to provide focus for the subsequent break out discussions. These presenters then served as moderators for the break out discussions.

Jesse Richardson of Virginia Tech

Larry Gavan of Virginia DCR

Kurt Stephenson of Virginia Tech

Waldon Kerns of Virginia Tech

Neil Kinsey of Governor's Center for Local Government Services in Pennsylvania

Ken Murin of Division of Waterways, Wetlands and Erosion Control in Pennsylvania

Rob Bowman of Charter Homes in Pennsylvania

## **Structure of Report on Workshop Proceedings**

The purpose of these proceedings is to present in a summarized form the comments and suggestions as presented by the participants at the 3 workshops. These comments included those of the expert panel members at the beginning of each workshop and the comments of all participants during break out discussion sessions. For discussion purposes, the issues were divided into three categories: laws and governing structure/planning and zoning, construction and design/operations and maintenance, and market forces.

The first section of this report will be a compilation of a summary list of the most important impediments as they were discussed in all 3 workshops. These issues are deemed to be the priority and critical issues that must be addressed immediately with respect to impediments to the use of low impact development and environmental sensitive design.

The summary section is followed, in order, by a summary of comments on each of the three issue categories from each of the states and DC in order of the dates of the 3 workshops – Virginia, Maryland/DC, and then Pennsylvania.

For ease of readership, the capital letters for two primary definitions were used often in this document.

(LID – Low Impact Development)

(ESD – Environmental Sensitive Design)

## **A Summary List of Most Important Impediments**

as discussed in all three workshops

Everyone should understand that implementation of LID/ESD techniques and practices will occur over time as opposed to immediate adoption and use. The participants recommended use of smaller pilot projects as a way to start on a small scale and then move to larger scale projects. In this way the impacts of risks and serious mistakes will be minimized.

Recommended action: The Bay Program Office should provide incentives (such as funding and technical assistance) for small-scale pilot projects. The Bay Program Office should take steps to publicize results of existing and future pilot projects.

Considerable knowledge exists on individual LID/ESD techniques and practices. However, we often know little about how these techniques and practices will function within a system. Therefore, one issue that needs to be addressed before LID/ESD is adopted is to demonstrate that LID/ESD on a large scale works from an ongoing, overall management perspective.

Recommended action: The Bay Program, in cooperation with the states and DC, should undertake a research and study program that will provide necessary evaluation of implementation of LID/ESD on a large scale effort.

A communication gap exists between state/DC players and local players with respect to what is available and what is required or recommended. Also, a communication gap exists between local jurisdictions and developer/engineers/regulators/financial people.

Recommended action: While considerable effort exists to provide advice and technical assistance, the states and DC must provide more effort to bridge the communications gap. The states and DC must provide well-trained and knowledgeable persons to work with local jurisdictions.

A program of science-based and/or sophisticated technical-based education is a primary need. Someone with complete knowledge of state and DC laws must have considerable input into the process of changing local codes and ordinances. Someone with complete knowledge of LID/ESD techniques and practices must provide high-level technical and policy education to local planners, engineers and plan review persons.

Recommended action: The Bay Program must realize that awareness and self-promotion information is no longer sufficient for dealing with these highly sophisticated and highly technical issues in both the policy and the technology arena. Resources must be reallocated or new resources found to provide the high level of effort needed in these education activities on these complex issues.

Cost of implementing LID/ESD (cost of approval, cost of services and costs in terms of reduced revenues) is the primary concern of elected/appointed officials. In most cases, information on these costs is not presently available.

Recommended action: The Bay Program Office should provide for collection and analysis of existing cost and benefit information on LID/ESD and make that information available to local jurisdictions and other interested parties.

There is a need for “Model Principles and Standards” for LID/ESD from the state and DC level with the same words used by everybody involved. This should be the case for both construction and maintenance of LID/ESD systems. A major question remains whether the state/district should mandate that plans, ordinances, etc., conform to model principles and standards or whether the state and DC would provide only review and recommendations.

Recommended action: Each state and DC develop model principles and standards for LID/ESD that are specific to their state or the district. The principles and standards must address both construction and maintenance issues.

In all three states, but in Pennsylvania in particular, the issue of “who coordinates the LID/ESD effort” is extremely important. The designation of this responsibility must be clear to all involved in the LID/ESD effort.

Recommended action: The states and DC authorities need to designate a responsible party for all LID/ESD activities and make clear the identity of this responsible party.

As one means to improve the entire process, localities should consider pre-qualifying consultants and developers on LID/ESD knowledge. The pre-qualifying would be based on data knowledge and exposure to LID/ESD techniques and practices. The pre-qualifiers would then get preferential treatment in the plan approval process.

Recommended action: That each jurisdiction take necessary steps to establish a pre-qualifying procedure for consultants and developers.

Knowledge on efficiency rates for LID/ESD practices and techniques must be provided to local jurisdictions. The efficiency question must address the benefits and costs on a systems perspective. Much of the information is now available but needs to be put into a manual and distributed to local jurisdictions.

Recommended action: That the Bay Program Office undertake an internal or an externally funded program to collect and publish the available data on LID/ESD practices and techniques efficiency rates including benefits and costs and make this information readily available to local jurisdictions.

There is a perception that LID/ESD is costly. Builders and developers need to know that there will be a market for their product and that they can still make money by using LID/ESD.

Recommended action: That the Bay Program, the states, DC and local jurisdictions undertake programs to demonstrate to builders and developers that they can make money by using LID/ESD.



## Laws and Governing Structure/Planning and Zoning

### **VA Laws and Governing Structure/Planning and Zoning**

#### Panel Statements:

Since 1926 local zoning has used the Euclidian Zoning concept that provides for segregation of land uses. The Supreme Court has in many cases upheld the Euclidian Zoning concept. However, other concepts are in use now. For instance, in July 2002 state legislation: 1) enabled use of cluster development and 2) stated that if cluster development is same density as current zoning then the developer no longer needs a special use permit. Cluster becomes a by-right development. If however, a bonus is used, then a special use permit may be needed.

Developers need local ordinances that will give them certainty.

Local governments lack information and data for LID/ESD decisions making. For instance, local governments don't know where karst area sinkholes are located.

Problems exist with cumulative impacts of individual based decisions of local government.

A major question is how to get LID/ESD into current zoning ordinances as well as new zoning ordinances.

#### Primary issues were rated by participants as low to severe impediments:

- |  |                   |
|--|-------------------|
| Need Enabling Authority for:                                   | (Severe)          |
| Tree preservation.   |                   |
| Performance standards.   |                   |
| More LID/ESD detail earlier in rezoning process.               |                   |
| Presentation of open space in perpetuity.                      |                   |
| More LID/ENV flexibility to local governments.                 |                   |
| Lack of Consistent Coordinated Comprehensive Local Regulation. | (Low to Moderate) |
| Lack of Education – economic and other benefits of LID/ESD.    | (Severe)          |
| Lack of Clear Characteristics of LID/ESD.                      | (Severe)          |
| Residential versus commercial versus redevelopment.            |                   |
| What are the criteria for using LID/ESD?                       |                   |
| Lack of Trust Between Development and Planning.                | (Low)             |
| Impact of Approved Lots in the Pipeline.                       | (Moderate)        |

Overall Fragmented Process.	(Severe – Moderate)
Uncertainty of Trying Something New. Need for legal documentation. Will it work?	(Moderate)
LID has not been Incorporated into Policy Decisions at all Levels. Need state storm-water management standards, etc. Need state standards with ability of locality to go further. Need local flexibility. There is a lack of leadership at all levels.	(Severe)
Lack of Expertise and Resources at Local and State Level. Process is fragmented at state level. Universities and extension need to be involved in process. Need a state agency to create guidelines and support for local staffs.	(Moderate)
Lack of Site Specific Data (such as GIS) Early in the Process.	(Moderate)
Need more Maintenance, Monitoring, and Enforcement.	(Moderate)

Statements by Participants:

- PUD or PDD- Planned Urban Development or Planned District Development.  
Unclear as to what you are voting on when you vote on a PUD.  
Lack of details! “No check and balance system in process.”  
PUD process is the problem.  
PUD process is flawed in its method.  
PUD is viewed as a big problem for the approval process. County approval personnel view them as too vague as to the final site design make up. It was suggested that strings be attached to the master-zoning plan (MZP).  
Solution: empower local governments to be able to control final design types.
- Must put LID/ESD into the Zoning Ordinance.  
State needs to take a larger role in promoting LID/ESD. Need model ordinance revisions for the counties to follow. There is no state structure for helping to implement LID/ESD.  
Developers don’t like anything that is open to a public hearing. LID/ESD designs might open up projects for public debate.  
LID/ESD is not incorporated at all policy levels. Need to put LID/ESD into subsections of the VA Storm-water Handbook or create a new Handbook.  
Local planning ordinances have too much hand tying for LID/ESD development.  
One participant noted that it could be hard to get the zoning ordinance approved.  
A general concern with LID/ESD is where do you put all the vehicles, boats, etc.

#### Problems with the Zoning Process.

Original zoning (dating back years) was flawed and in many cases is out of touch with current times.

The approval process is very fragmented. Zoning, site planning, etc. needs to be streamlined.

Use performance standards instead of hard ordinances.

Need legal standards for design.

#### Concern over Proffer System.

Developers view the proffer system as a fee generation system where the county has too much power to impose fees that nickel and dime the developer along the way.

The proffer system needs a systems approach instead of design standards.

#### Unwillingness to Cooperate with Other Jurisdictions Leading to Cross-jurisdictional Conflicts.

### **MD/DC Laws and Governing Structure/Planning and Zoning**

#### Statements by Participants:

Lack of enabling authority (particularly non-charter counties).

State code on clustered easements is needed.

Need shared systems.

Fragmented, non-comprehensive regulation, e.g. 66B versus critical areas.

Sometimes these are conflicting.

Lack of local political will.

Need state mandates and incentives for LID/ESD.

Too often have outdated, rigid local ordinances.

Some type of national standards would be more defensible.

Zoning ordinances and subdivision regulations must be updated.

Need to incorporate national standards but use local conditions.

Lack of maintenance/upkeep.

Must consider role of individual homeowners and homeowner associations.

Consider use of notices (deed, mail).

Consider use of notations on property transfers.

Is ownership by local government the answer? Some counties take over stormwater BMPs, some don't.

Need consideration of onsite signage.

Need education for land owners, real estate agents.

Complexity of state statutes/regulations.

Increased review time/uncertainty.  
Need case-by-case versus cookie cutter checklist.

Lack of data/information at state, local, federal level.  
Should consider national standards.  
Need state standards.  
State must provide technical assistance.

Federal/state agencies do not have to comply with local standards.  
Need much more cooperation and coordination with local entities.

Everyone needs to apply LID/ESD at front end of process.

The development process is fragmented.

Lack of enticements.  
More difficult with LID/ESD.

Charter versus non-charter requirements must be considered.

Non-tidal riparian regulations vary widely by locality.

Need flexibility for LID/ESD.  
Need clear guidelines.  
Must consider legal issues.  
Must consider administrative issues.

Difficulty and/or fear of change.  
Time/effort/process means more dollars.

Lack of understanding/knowledge.  
On economic benefits/environmental benefits/social benefits/quality of life.  
By landowners.  
By builders/developers.  
By local government officials.  
By planners.

Maybe returning to national standards setting for ordinances is needed.

Need for further delineation of easements on plots.

Could use education via real estate agents.

Need more R&D to confirm value of extensive use of LID/ESD in redevelopment.

Lack of statewide/non-tidal riparian buffer ordinances.

Lack of comprehensiveness in terms of assessing impacts.

Must consider added cost associated with change in review time.

Consider complexity.

Consider more reviewers.

Consider staffing constraints.

Lack of enforcement of approved plans.

Certification process may help.

Needs to be “top down” and locals will adopt.

Need for more urban canopy requirements.

Must use state as a source of expertise and funding.

What about previously developed areas?

## **PA Laws and Governing Structure/Planning and Zoning**

### Statements by Participants:

The Pennsylvania “Municipalities Planning Code” (MPC) will let communities and developers use LID and ESD practices and techniques. Nothing in the MPC impedes implementation of LID/ESD tools and techniques.

One problem in Pennsylvania is that there are 2,566 municipalities. How do you educate all these local officials? Good science-based knowledge as well as continued awareness education for these many officials is the most important need to remove impediments.

It takes time to change/update comprehensive plans and zoning ordinances. In some cases, municipalities do not have an existing plan and for others the plan is 30 years old.

With the large number of local jurisdictions, Pennsylvania needs much more multiple-municipal planning. The number of communities that have undertaken multi-municipal planning efforts in recent years has increased considerably to the point where about 24% of municipalities are currently planning together. This increase is due to a concerted state effort including awareness, education and training, technical assistance, and especially financial assistance. A similar state effort to promote LID/ESD could reasonably be expected to yield similar results.

Ordinances on construction and design for LID/ESD are needed to support efforts. With appropriate support LID/ESD can provide for developers to make their profit while also providing for better development.

A system is needed whereby a sketch plan is prepared as the initial effort. We need to somehow incorporate initial conception of LID/ESD into this first design activity. Some participants suggest that a sketch plan be required prior to hiring engineers to draw up preliminary plans. One state employee states that there is case law in Pennsylvania that says a required sketch plan is in essence a preliminary plan. At this time a municipality cannot require 3 approvals. Ways must be found to encourage more use of the sketch design. Incentives must be provided for a developer to voluntarily submit a sketch plan. One way to encourage voluntary submission is to demonstrate how LID/ESD would save money and reduce time for approval. Some participants suggested that a regulatory process or a mandated process may be needed. In any case, more discussion is needed about LID/ESD process up front among supervisors, local government officials, planners, builders, etc.

Some participants cautioned against creating a third review just to get the sketch plan.

MPC probably cannot mandate this additional review.

Everybody needs guidance up front.

First, engineers and planners must give vision as to what the community wants.

An open forum is needed to develop the vision with participation by development community, officials and citizens – a meeting of the minds.

“Growing Greener” practices could be part of the comprehensive plan.

Jurisdictions could provide incentives such as establishing a process that provides for skipping a layer of review.

What type of planning/zoning effort is needed? Some suggested a regional effort. Everybody agreed that the effort must start with grass roots and the community-at-large. Use of the school district may be a good regional approach. It was stated that oftentimes development is seen as what the supervisors want rather than what the public wants. As a solution to the problem, some participants suggest that Pennsylvania should consider mandated training for local elected officials. Attendance would be mandatory. However, other suggest that mandatory training for planning officials could face fierce opposition from local governments and could damage the whole LID/ESD effort in Pennsylvania. Training programs and certification programs exist now. But, all of these programs are voluntary.

A realistic timeline is needed with respect to expected implementation of LID/ESD.

Changing attitudes and the present system may take several years.

Some participants suggested use of pilot projects to demonstrate the concepts.

Some felt that larger projects may be better because they have much more impact.

Some suggested that local government or universities provide the pilot projects because these projects may be too risky or too expensive for a developer to

provide.

It was suggested that the Bay Program provide funding for the pilot projects. It was pointed out that a fiscal analysis is needed. The Bay Program should provide funding for the fiscal analysis of what is available now – several LID/ESD projects have been developed around the country as well as in the local area.

Local codes and ordinances must be changed. The primary discussion was how this will get done.

Someone with complete knowledge of state laws must have considerable input into the process in a hands-on situation. These issues cannot be dealt with simply through awareness education. Some jurisdictions have the resources but others will have to use consultants or other sources.

Local communities need access to someone in the state government to help them develop LID/ESD comprehensive plans. Smaller governments may need to go to consultants to get the correct technical language. Not everyone has the technical training needed. It is very important to provide high-level technical and policy training to engineers, developers, etc.

Someone with complete technical knowledge must be involved. Again, these issues cannot be dealt with simply through awareness education. These individuals must have complete understand of the range of alternatives available through standard practice and with LID/ESD alternatives. Some jurisdictions have engineers with this knowledge. Others will have to use consultants or other sources. A major need is to provide science-based knowledge on LID/ESD to all engineers.

A change in ordinances to allow for conditional use is one alternative that should be considered. However, the group cautioned that the process should allow for ease of use and should not add cost to the process.

Ordinances must be uniform and legally defensible.

A participant asked if colleges and universities are offering this information to their student engineers. If not colleges and universities should be encouraged to incorporate LID/ESD into the curriculum.

Who coordinates the effort in the State of Pennsylvania? Who should coordinate the effort?

Someone or some agency at the state level must provide overall coordination. The designation of responsibility must be clear to all concerned.

MPC enables land-use activities but doesn't have enforcement authority.

DEP deals with many environmental issues but not land-use issues.

Is it possible to use provisions of ACT 167?

In Pennsylvania, Zoning Hearing Boards are quasi-judicial and are mandated. These boards seem to work well for zoning issues. However, the ability of developers to gain a variance for many other land-use related issues creates a major problem in Pennsylvania. More specific LID/ESD ordinances are needed to help solve these issues.

How to accomplish the necessary education continues to be a major issue. The first issue is to be sure what we mean by education. Sometimes education is simply awareness or self-promotion. In other cases, education deals with science-based policy and complex technical issues. Each type (awareness and science-based technical) requires a different process and is provided by a different group of persons. For instance, very knowledgeable persons need to handle education dealing with which tools and techniques are most effective for which situations. In this case, education is the process of getting science-based technical information or science-based policy information to those who need to use the technical or policy information. A major point is that local planners and local engineers need specific technical and policy knowledge that will allow them to develop and implement the very complex plans, ordinances, etc. The Bay Program and all others must recognize that general awareness information or self-promotion is insufficient for these purposes and may even impede the implementation of LID/ESD by delaying the process.

States must provide grant monies for these education activities.

How to deal with the human factor is a major issue.

Need ways to develop a better consensus within the community on a community vision as well as on land-use issues.

One jurisdiction uses a township newsletter.

It tells how tax dollars are being used.

It contains very worthwhile information that the citizens want to hear.

It tells how property owners deal with their property.

The most important point about the success is that the newsletter contains only important information that the citizen understands and wants to hear.

One participant stated that education is second to the need for legislation.

Public relations and self-promotion may be a better word for some activities. We need to look for opportunities to show win/win situations as a way to get the word out on what is there. A rewards system is needed to perpetuate the good.

One participant noted that the Bay Program, in some cases the state and several federal offices do provide reward programs. Information on these programs should be made known to all involved.

Cost is biggest issue for town council. The Bay Program Office should pull together economic information and make the science-based information available to local elected/appointed officials. The Bay Program Office should get information from local developers where it exists and make that information available on a data base system.

Every community is a different world. Issues are seen differently in each community. Therefore, we must recognize this fact as we try to remove the impediments to LID/ESD. We must know our own community and know what works but also try new approaches. Everything must be tailored to the local area.

We must pay attention to how the news media operate and get plugged into the news media procedures.



## Construction and Design/Operation and Maintenance

### **VA Construction and Design/Operation and Maintenance**

#### Panel Statements:

Both the Chesapeake Bay Local Assistance Department and the Department of Conservation and Recreation allow for use of LID/ESD tools and techniques.

It is recognized that many of the LID/ESD tools and techniques are experimental.

For operation and maintenance of storm-water management systems, LID/ESD is seen as a sleeping giant.

The present storm-water management system results in less groundwater and less evapotranspiration. Therefore, Virginia should consider the creation of water budgets as part of the storm-water management process. The concept of water quality credits is already in the DCR Storm-water Handbook.

For homeowners, a major question is who has maintenance requirements. Some homeowner associations may need to hire a contractor to care for the maintenance of systems.

In some cases, storm-water management creates a public health nuisance.

Must use rules, regulations and codes to provide for optimization of management of water systems. Flexible building codes are important. Need to consider multi-functional systems.

The present storm-water management approach is not cost-effective. LID/ESD can help change the approach but we must be able to show that ecological design pays in terms of increased sales, increased lot premiums and results in a reduction of infrastructure costs. States and localities should consider more use of sanitary districts as a way to bring laws to bear on the situation.

#### Statements by Participants:

Mind-set.

A major issue facing the adoption of LID/ESD is how to get the development community to get out of their set ways.

LID/ESD requires a different mind set with respect to the technology. A decentralized as opposed to the current centralized concept is needed.

Must use the hydrologic cycle in design with respect to volume of water.

Must understand perceptions of all actors and consider how one can change those perceptions. Example: Many actors are willing to use LID/ESD if developed area will look exactly as it did in undeveloped state (a wooded area).

It was noted that 90% of land area in question is already in the build-out state. If the program concentrates only on new development the impact will be rather small. Therefore, we need to concentrate also on retrofit in built-out areas.

#### Techniques.

Participants were generally familiar with the 160 plus techniques for LID/ESD of which approximately 28 are structural practices.

Participants believe localities are willing to accept the LID/ESD practices.

However, many persons who need to know about LID/ESD do not. Consequently, more sophisticated, science-based education/information efforts are needed.

Much information on techniques and practices has been developed for neighboring states. Several participants want concise information on techniques and practices for the Virginia situation.

For LID/ESD developers must start doing the work correctly. The practices must work and not have standing water as is often the case now.

#### Change Incrementally.

A holistic approach to start with is an unrealistic goal. Maybe we need a hybrid start over the next 10 years. Start with small-scale sites for plan review. Stakes are smaller and where significant risks exist, mistakes will be less severe. (It was stated that the MS4 phase two has a realistic time line.)

Localities need a step-by-step ordinance outlining the goal and the steps needed to reach that goal.

#### Need Better Communications.

Although some participants felt that state agencies were doing a reasonable job in communicating program goals and techniques/practices to the development community, others felt a need for much better communications. More effort is needed to include all the appropriate players. Everybody must be aware of potential pitfalls that lay ahead relative to adoption to LID/ESD practices and techniques.

Many things are in the way of additional adoption. It was stated that the Corps of Engineers generally yield to local jurisdictions on LID/ESD issues.

Agencies must work closer together to get out consistent approaches and consistent regulatory information.

In either case of new development or retrofit, landscapers must be a part of the solution in adoption of techniques and practices.

A communication gap exists among developers, engineers and regulators.

Everything is different in each county. Must get to the local level and work with those people.

Oftentimes it is the engineer versus the financial people. Financial people must be made to understand the constraints. But, the financial people need assistance also and need commitments and time frames.

The developer and the planning review process oftentimes work together to come up with an elaborate design but then the health department may simply say no.

#### How to Reach Developers.

Developers will live with the rules whatever they are – just don't keep changing the rules.

Some developers want a clear, clean and concise set of rules. Others may not.

One way to get to the development community is to take the message to the developers meetings. This is best done by local government working through already developed avenues and structures of operation.

One major issue is need for a system that is fast and profitable to the development community. The development community wants to know how they can get their plan through the process. Particularly the rezoning process, in a little time as possible and how much profit they can expect to make.

Engineers say just tell me what you want me to do and I will do it and go on to next project.

The planners and engineers are at a disadvantage unless kept informed about new practices.

#### New Process.

At the local level, everyone needs to develop a new process that developers and engineers can use. The new process may be needed for approval of cluster development or new transportation patterns. Someone must take responsibility for the new process.

It was noted that the existing process is not smooth and that there will be suspicion of any new system. For instance, designer decisions are needed on LID/ESD questions such as what can go on what size lots and may include a sliding scale.

#### Consistent Message.

Oftentimes, each jurisdiction has a different interpretation of regulations.

Need coordination and a consistent message from everyone.

Lots of stuff in new state manuals must be put into local codes and must be streamlined.

#### Integrity of Process.

Quite often there is mistrust among the many working groups. A smooth system is needed so that everybody knows what everybody else is doing. Developers, engineers, surveyors, planners and financial world must be fully involved. First, must get information out. Second, must develop integrity of system and third, must keep financial world informed. Bankers loan based on approved plans, usually for a 3-month commitment. A different route is needed if delay in approval occurs. If the developer diverts from the normal route it may create too much risk for the lending institution.

The concept of LID/ESD must be accepted, supported and pushed by local jurisdiction elected officials. Everyone must remember that each local government has its own local vision. LID/ESD is only part of that local vision.

#### Plan Reviewers.

In most cases, the plan reviewer has very little stake in the process. If they follow a checklist and are comfortable with the plan they will simply give it approval. The primary change must take place with local elected officials. Plan reviewers deal with the issue after adoption of a local ordinance. Their involvement at this time is rather insignificant.

#### Operation and Maintenance.

A lot of bad stuff has been built and is there now. A big problem is how to fix it. After LID/ESD structures are built, must maintain or bad things will happen. We must incorporate principles now that are easy for developers to do that will prevent problems in the future. The things can go in local ordinances. Developers only ask that local jurisdiction tell them up front what to do and they will do it. All jurisdictions need a storm-water utility but with the stipulation that people who own property can redevelop own house and get reimbursement or a tax credit. Homeowner Associations don't like to collect funds to go back and correct previous mistakes. HOAs most often will not increase fees like elected officials will.

#### Policy Changes.

In groundwater sensitive areas, we need a regulation dealing with water budgets. Need performance standards for developers that give the developer many options to meet the standards. Need a model rule for these guidelines including technical aspects of hydrology and policy to implement performance standards. With respect to retrofit a big question will be who pays for the retrofit. Local jurisdictions need to write own ordinances but assistance is needed from state agencies and others.

### **MD/DC Construction and Design/Operations and Maintenance**

#### Statements by Participants:

##### Land Space.

In DC, all available land is already covered. Therefore, LID/ESD concerns must focus on redevelopment and retrofit.

In some cases, the developer wants to cover the entire land area. Therefore, the concern must be on LID/ESD techniques (such as roof gardens) instead of on land practices.

##### Knowledge of LID/ESD.

In many cases people don't understand LID/ESD but they generally know what they want such as vegetated parcels. Landscaping generally is not integrated into planning and development at the local level. Maryland has a fragmented process with agencies in conflict with each other. Sometimes fragmentation exists in same

department such as planning and public works. Oftentimes the leadership doesn't understand the LID/ESD concept.

#### Staff Training.

Staff training is an important concept. Oftentimes, the locality doesn't have funding to provide the staff training. Staff has a desire to learn specifics about LID/ESD.

A major objective should be to provide training for the staff using available experts and then with the staff decide who to train next. The staff can and will promote the concepts.

There is always a question about how much promotion needs to come from the bottom up and how much from the top down. Some regional level training is needed so that staff can learn from each other and learn how to get more integrated systems.

#### Age of Infrastructure.

As we push new techniques and practices and try to incorporate into existing and sometimes very old infrastructure, we often cause major problems with the old systems. Another key variable is who will pay for upgrading to the existing infrastructure.

#### Federal Knowledge Gap.

The federal government controls and manages large amounts of land in DC and the states. Oftentimes top management and lower management understands the concepts of LID/ESD and supports use of the techniques. However, middle management seems not to share in this knowledge. Therefore, LID/ESD implementation is impeded.

#### Homebuilder Loopholes.

Homebuilders often make a practice of finding loopholes in legislation. When the homebuilder appeals a decision to the local officials and that requirement is not clearly on the books, the appeal will be granted. Consequently, we need clear laws and regulations.

We need to first get to the regulatory staff and elected officials in order to get enforceability. Elected officials/regulators must get requirements on the books.

#### Integration of Programs.

Middle level management must integrate LID/ESD with other programs such as storm-water management and erosion and sediment control. Somebody needs to provide information on how to get the integration. Expert panels may help provide this information. We must learn how to integrate.

#### Need for Top Level Knowledge.

Top-level management is primarily interested in cost and benefits and how LID/ESD techniques impact the budget. Maintenance cost over time is their next concern.

Officials want to know first whether it really works. Are the techniques as good or

better than what we are using. Sand filters are an example. In DC, sand filters do function and covenants are written for maintenance. Will alternative techniques such as roof gardens perform as well as sand filters and can enforceable covenants be written for maintenance?

#### Time Period.

Many LID/ESD techniques are designed around a 15-year storm event. What happens when the storm event exceeds the 15-year design. Maybe we should be looking at the 25-year or 100-year storm event.

#### Development Community Interest.

The development community is driven by profit. Someone must show development community that LID/ESD can be economical systems. For instance, oftentimes on-site systems are better than the traditional storm-water system. Must show the development community that it cost more the old way. Value engineering could be used to convince development community.

#### Consulting Community.

The consulting community generally will do what their client asks for. They can suggest and see if client will pay for LID/ESD but eventually they do what the client asks.

#### Pre-qualify Developers and Consultants.

Localities should consider pre-qualifying consultants and developers on LID/ESD knowledge. The qualifying would be based on data knowledge and exposure to techniques and practices. These entities would get preferential treatment for plan approval. Such a procedure could lead to a certification program on LID/ESD. It could improve the entire process. Someone needs to develop criteria for the qualifying and certification programs. Submitted plans would be more complete.

#### Complete Vision.

The Bay Program should consider enunciation of an integrated vision for environmental quality of the Bay that is integrated with other programs such as drought management, the West Nile issue, etc. The information could include statements as to why push LID/ESD based on its relationship to the other issues. This process could provide some needed leadership for accomplishment of the C2K commitments.

#### LID/ESD Efficiency Rates.

Knowledge of efficiency rates is needed for all LID/ESD techniques and practices. While most persons are somewhat familiar with the techniques and practices, very few have sufficient information on efficiency rates. There needs to be an available manual on these rates. It was generally agreed that considerable information exists on these efficiencies. However, the information is not generally available to the staff level where it is needed.

The Urban Workgroup of the Bay Program recently developed a summary of efficiency rates for use in the Bay models. The models do contain placeholders for LID/ESD techniques and practices. However, this data is not in a suitable form for use by others. Someone should utilize the information that is available and prepare a manual for use by local staff. As part of the efficiency question we must determine the benefits and costs of the proposed systems. As part of the efficiency question, we need for the experts to test the techniques and practices to bring them into compliance with regulatory requirements. We also need to know the transferability of techniques and practices to other areas.

#### Time is a Major Component.

Time is needed to change public perception.

Time is needed to change the regulatory process.

Time is needed to develop packages and distribute to those who need it.

#### Reviewers Role.

Reviewers are having a difficult time interpreting and understanding the new storm-water manual in Maryland. In many cases, each jurisdiction has a different interpretation of the regulations. For instance just the definition of an area is often interpreted in a different way. The new regulations have provisions for environmental credits. Yet, the section is difficult to understand and more difficult to implement. There seems to be a disconnect between the experts and the users of the manual and the public.

#### Use of Local Government TV Channels.

Every local jurisdiction owns a TV channel or has access to a TV channel. The channels are always looking for good programs. If somebody will prepare a good program, they will use it. The Bay Program should provide resources to support this effort.

#### Bureaucracy of Bay Program.

The Bay Program is heavy with bureaucracy. It should try to devote many more resources to activities that actually solve problems. For instance, in DC a developer has some financial assistance to develop a show place with LID/ESD on Capital Hill and at a nearby school. These types of show places can be used as educational tools.

#### Redevelopment Policy.

A uniform policy is needed on redevelopment. Maryland requires implementation of storm-water quantity management on only 20 percent of the land area being redeveloped.

On the other hand, DC requires storm-water management on 100 percent of land redevelopment area in excess of 50 sq. ft. – basically must do on everything.

#### Dealing with Proprietary Property.

The state of Maryland has a web page on LID/ESD. However, the state will not include information on any proprietary property owned by the private sector. Maybe the Chesapeake Bay web page could provide information on LID/ESD even in cases where it is proprietary property. Someone needs to make it easier for local staffs to do their job.

#### Leadership Needed.

In many cases, local officials refuse to take a leadership role. They often wait for the federal or state government to make a decision that they can implement and enforce.

#### Citizens and Homeowners.

For some things we must educate the general citizenry and homeowners. Oftentimes a public relations campaign will help get the information trickled up to politicians. One important area is to educate homeowners on maintenance cost for some structures and the need to maintain the systems such as rain barrels, sand filters, etc. In some cases, the only way to get compliance is to have government enforce the maintenance requirements.

#### Funding Issues.

Money for maintenance and cleaning must be identified up front. Also, the question of who pays for maintenance of old infrastructure as that part of the system is brought into the overall system.

#### Unwanted Consequences.

Quite often a new system such as a water impoundment will bring unwanted consequences. Oftentimes, ducks will come into the area. At some point they may be too many ducks from the health perspective or just a nuisance perspective. Other health problems such as West Nile disease, etc. occur. Look at existing systems and their relationship to streams.

### **PA Construction and Design/Operation and Maintenance**

#### Statements by Participants:

From the state perspective, impediments to LID/ESD are attitudes, lack of science-based education and present level knowledge of local officials. Two important categories of local officials are often left off the list of persons with a need to know: they are the fire chief and the road master. Both of these groups must be included in the education process.

The developer must work with the site design up front. Need to get everybody involved early in the process.



Existing storm-water regulations need to be changed to allow for a much faster process to approve LID/ESD than the existing cookie-cutter process. This must be done at the local level but with leadership coming from the state level. Waivers for such things as streets should be eliminated and put into ordinances.

Because of their size, small developers are generally at a disadvantage. Bigger developers are more willing to try something new. Smaller developers aren't willing to take a risk. If guidance is provided statewide, then all developers are put on the same level.

One suggestion is to make "Growing Greener" practices the norm as a way to level the playing field among developers.

May need same regulations and standards statewide for all developers. Better for all concerned. Example: A small developer wanted to put in 20 lots with all entering onto the main road as only way to do development on a limited budget.

Need changes in ordinance to help developer see a better design.

Need incentives to help developers try something new. Need local government officials who are willing to walk developers through the process to get new techniques incorporated.

The question of who has authority on land use is a major issue. Not everyone at the state level is operating from the same page or the same interpretation. The same can be said about the state and local relationship.

A message is needed from the state.

Model principles and standards for LID/ESD are needed from the state with the same words used by everybody. This should be the case for both construction and maintenance of LID/ESD. Local officials and staff would use LID/ESD if they had the model principles and standards.

A major question remains whether the state should require plans, ordinances, etc. that conform to the principles and standards or whether the state would provide the principles and standards and then provide review and recommendations for the local plans, ordinances, etc.

In any case, the local jurisdiction should assume responsibility for the education process for itself and its citizens.

ACT 537 provides authority for municipal authority boards. These boards can deal with health issues as well as some environmental issues.

A remaining issue is who will do the "Environmental Futures Planning?" Some participants suggested DER. Others suggested watershed groups. Whoever does the planning, storm-water management planning and agricultural activities must be a part of the planning process. Ultimate implementation will rest with local government. The state needs to provide the tools and resources including funding but let the locals do the planning.

Considerable information is available on efficiencies of LID/ESD tools and techniques. LID/ESD information exists for new development, redevelopment and for retrofit. Likewise, considerable information is available on costs and benefits of LID/ESD relative

to traditional tools and techniques. Someone should pull together this information and make it available to appropriate persons at both the state and local level.

The Bay Program should prepare the information and make available. Then the state and local government should make sure the efficiencies and cost and benefits become part of the initial sketch plan. This packet should be made available to municipalities for all related issues.

## Market Forces

### **VA Market Forces**

#### Panel Statements:

Must compare costs, buyer preferences and incentives provided by local government as they relate to LID/ESD.

Low-density, conventional development has been the preference for many years. People like their cul-de-sacs.

Must consider amenities versus a higher density for LID/ESD.

Homeowner preferences could impede use of LID/ESD.

Taxes are based on land values as well as value of housing structures. Therefore, a change of density will impact ability of developer to build houses on speculation. There will be some risk involved.

The low-density conventional house generally pays most of the cost of local government services. In many cases, cluster development does not pay as high a percentage of these service costs. Therefore, there may not be an overriding desire of local officials to bring in high-density development associated with LID/ESD.

Oftentimes, the higher density of LID/ESD is near the center of the community. In these cases, one must be concerned about some buyers' ability-to-pay the higher price for the amenities.

Many other economic drivers associated with LID/ESD must be studied and understood.

#### Statements by Participants:

##### Real Estate/Builders.

In some communities there are a large number of small builders, oftentimes a single individual. In other cases, there are large groups of multi-builders. Each approach is vastly different. Therefore, localities should consider a decentralized approach to LID/ESD in order to include all stakeholders. Need knowledge and expertise at each level.

Time associated with LID/ESD is perceived as a real cost.

Oftentimes there is no credit for improvements from LID/ESD.

Must consider home owner preferences based on demographics.

We must help developers and builders become more sensitive to LID/ESD for specific development forms.

Developers need incentive to use LID/ESD.

Local people and local leaders don't care about LID/ESD features.  
Growth management should not be used to counter LID/ESD efforts.

#### Education.

There is a perception that LID/ESD is too costly. Builders need to know that they can still make money by using LID/ESD.

#### Elected/Appointed Officials.

Members of zoning boards, planning commissions and other decision-making boards do not know the environmental impacts of their decisions. They get elected on a platform such as slow growth and then cave in to political pressures without thinking about environmental impact.

#### Performance Standards.

We need to know costs of higher performance standards for LID/ESD that go beyond meeting other minimum BMP standards.

#### Development Companies.

Development companies must be willing to jump through more hoops to apply sophisticated development. It is more difficult to draw unique lines for drain fields or find ways to keep old trees.

We do not have to shift forms of development like going from single-family dwellings to cluster. We can make existing development more environmentally positive. The challenge is working with developers. Consumers do not typically care about curbs and gutters or grass swales – they care about cul-de-sacs and large open areas.

#### Enforcement of Existing Rules.

There seems to be little enforcement of existing rules. The major problem is getting a higher BMP standard and tools to reach that standard. Any new standard needs to become law.

#### Develop Existing Building Lots First.

There should be incentives to develop existing building lots first rather than developing on green lands.

#### Multi-county Impacts.

Impacts need to be evaluated on a multi-county basis. Oftentimes, decisions have major impacts on a regional basis.

#### Multiple Players.

Often there are multiple builders/contractors for a development. There needs to be some sort of financial agreement on LID/ESD for all parties working on a development.

#### Incentives.

There should be incentives for responsible building.

We need a system of credits that create incentives for builders' use of LID/ESD.  
We need a credit system for amount of water that does not have to go to the town's storm-water reservoir.  
Developers need some room to negotiate with governments to do LID/ESD.

Clear Explanation.

There needs to be a clear explanation of LID/ESD and then market it in an attractive and positive manner.

**MD/DC Market Forces**

Statements by Participants:

Buyers/Homeowners.

Must consider perception/preference of homebuyers.  
Must consider site design.  
    Do people notice new site design?  
Need education because of the existing lack of knowledge.  
LID/ESD might be viewed as low cost development (squeezing on a site?)  
Must consider impact on low/medium income families.  
Perception is more related to short-term costs, but benefits are more long-term.  
Must consider accommodating the car.  
    Parking.  
    Power of convenience.  
Must consider long-term maintenance.  
    Convenience.  
    Responsibility.

Developers.

Uncertainty exists with use of LID/ESD.  
    Does it work?  
    Will it be approved?  
    Marketability such as can I sell this to others?  
Time is important.  
    Time is money and cost of upfront hassle of LID/ESD approval might seriously impede the use of LID/ESD.  
There is a lack of information on economic benefits.  
    Need more clear-cut success stories.  
Must consider construction cost of new development.  
Must consider construction costs of retrofits.  
What is market access for small design firms?  
    LID/ESD might not be first on their list of recommendations and they might not be able to acquire the expertise.

### Community.

- Perceptions as seen by existing homeowners.
- Property values might decrease with use of LID/ESD.
- LID/ESD might look different.
- What are the economic externalities with LID/ESD?

### Local Government.

- Knowledge base is difference between staff and elected officials.
- What are road costs and other growth issues associated with LID/ESD?
- Need more positive fiscal incentives to get adoption of LID/ESD.
- LID/ESD will require increased staff time.

### Financial Institutions.

- There are perceived lending risks to LID/ESD.
- Unknowns.
- Market demand.
- There are financial uncertainties with LID/ESD.
- What is time until return on investment?
- There are no “comparables” for LID/ESD comparisons.

### Incentives for Overcoming Impediments.

- Consider use of storm-water fees.
- Must link dollars to design features.
- Need more effective education on linking storm-water management to larger issues.
- Need more research /data/ analysis on LID/ESD and storm-water issues.
- Must do better job of publicizing success stories.
- Local government must reduce permitting/design costs/uncertainty.
- Must use fast track options.
- Local government must lead by example.
- Must be early adapter.
- Must make awards to developers and builders who use LID/ESD.
- Could provide certification of development.
- One program is “Leadership in Energy and Environmental Design.”
- Could use “brand identity.”
- Should use tax code to remove existing incentives for larger lots.
- Should use federal cost share to encourage LID/ESD activities.

## **PA Market Forces**

### Statements by Participants:

The developer is concerned with the cost of change to the process. Approval cost of the lot has gone up by approximately 5 times in the past 10 years whereas the actual cost of construction has gone up only about 15 percent. Ultimately these costs go to the consumer or the community.

For the developers' perspective, not everybody is clear on where the various communities want to go. For example, a given development company must deal with 150 jurisdictions. It is very difficult to understand where all these jurisdiction want to go. Each has its own expectation with respect to LID/ESD issues. LID/ESD uncertainties involve many different communities, many different methods, and lack of any consensus on a clear vision on the part of communities and citizens.

Developers are often seen as being on the other side of the table from the community. Not much information has been provided to the development community. Staff engineers, staff planners and elected officials need to be educated on how to tie their concerns to the larger Bay issues and then relay this information to the development community.

Issues surrounding storm-water management are often misunderstood throughout the community. In this context, a fear of LID/ESD exists, a fear of density exists and there seems to be no political will to deal with impediments.

There is a lot of fear when one tries to sell the idea of LID/ESD based primarily on more density. More density is seen as poor quality of life and doesn't carry cost of services coming from local government.

Everybody should sell the idea of LID/ESD based on more efficient use of the ground (land).

We should tie LID/ESD to increased housing values and increased community values.

Progressive communities use LID/ESD tools and techniques to increase value of on-the-ground activities. In this case, we get additional development in the progressive communities instead of where it should go in a more regional context.

LID/ESD often provides a new product. How does this link to the builders' efforts? How do builders and financial institutions handle this new product? The market place still puts primary value on size of lot and size of house not on quality of life. For instance, the general appraisal form does not even allow for LID/ESD as part of the financial valuation. Banks and other financial institutions control the housing and development market, yet they do not have information on value and benefits of LID/ESD.

Need model communities as a way to remove fear. We need to educate, innovate and celebrate. We should take what we like and put that into codes and ordinances and replicate those features. It is extremely important to reward good behavior. If there is a market and a financial reward, builders will respond.

Willing developers find it difficult to try something new. It is easier to get something through the system if they follow the traditional cookie-cutter development. To try to do something new, developers have to ask for a waiver to the existing ordinances. Waivers take time and cost money.

Some areas of Pennsylvania have experienced rapid growth. Sometimes there seems to be an attitude: now that I am here keep everybody else out. Oftentimes, the laws, ordinances and practices in Maryland force builders to come into Pennsylvania to develop homes because it is less expensive to operate in Pennsylvania. There needs to be more land use study on an interstate, regional basis.

Developers do not make the market. They only respond to the market. Therefore, we must pay attention to what the buyer is presently interested in.

Cost of lot.

Value of property and homes.



## **Appendices**

List of Attendees at Fredericksburg, VA

List of Attendees at New Carrollton, MD

List of Attendees at Carlisle, PA

**List of Attendees  
Fredericksburg, VA  
October 10, 2002**

<u>Name</u>	<u>Affiliation</u>
Andrea Ambrose	Gloucester County Planning Department
Mark Askin	Chesterfield County Parks and Recreation Dept.
Robert Bainbridge	Prince William County Office of Planning
Raj Bidari	Prince William County
Joe Bushey	Clark Nexsen
Perry Cabot	Christopher Lester Associates
Kyle Conboy	King George County
Stuart Connock	Chesterfield County Parks and Recreation
Jim Dossett	Stafford County
Anne Ducey-Ortiz	Gloucester County Planning Department
Christy Dunkle	Town of Berryville
Chris Edwards	Spotsylvania County
Jules Elliott	Spotsylvania County
Marybeth Espiritu	Prince William County
Andrew Gault	Peterson Cos.
Larry Gavan	DCR
Pam Gibson	Virginia Tech
Harvey Gold	Fredericksburg Area Builders Association
Frank Graziano	Wetland Studies and Solutions, Inc.
Jack Green	King George County
Mike Haggerty	Draper Aden Associates
Jerry Halsor	Bell Alton, MD
Brian Henshaw	Northern Shenandoah Valley Regional Comm.
Shelby Hertzler	DCR-DSWC-Potomac Watershed
Bruce Holley	Prince William County
Brain Hooten	Town of Colonial Beach
Chris Hornung	Silver Companies
Courtney Jones	New Kent County
Larry Kaufman	Prince George County, MD
Waldon Kerns	Virginia Tech
David Kovacs	CBLAD
R. V'lent Lassiter	DCR
Mike Lee	DCR-Rappahannock Watershed Office
Joan LeLacheur	WMATA
Madan Mohan	Prince William County
Shep Moon	CBLAD
Judy Moore	Olde Colony Homes, Inc.
Bill Nell	Wetland Studies and Solutions, Inc.
Rico Perando	Prince William County
John Pruitt	Pruitt Company
Kelly Ramsey	DCR

Jesse Richardson  
Mark Rinaldi  
David Rowe  
Doug Salyers  
Kurt Stephenson  
Richard Street  
Pat Stuntz  
Gary Switzer  
Richard Tremblay  
Wes Tyree  
Jennifer Wampler  
Diana Wilkinson  
James Williams

Virginia Tech  
Landmark Design Group, Inc.  
Christopher Lester Associates  
Chesterfield County Parks and Recreation  
Virginia Tech  
VDOT  
Chesapeake Bay Commission  
DCR – Potomac Watershed Office  
Silver Companies  
DewBerry  
Chesterfield County Parks and Recreation  
Gloucester County  
Rockingham County

**List of Attendees  
New Carrollton, MD  
October 17, 2002**

<u>Name</u>	<u>Affiliation</u>
Tita Acupanda	St. Mary's County
Nykia Barnes	DC Department of Health
Vince Berg	Berg Engineering
Alexi Boado	DC Department of Health
Earl Bradley	---
Catherine Broad	GSA
Richard Brush	Montgomery Co. Dept. of Permitting Services
Craig Carson	Montgomery Co. Dept of Environmental Protection
Chein-Chi Chang	DC Water and Sewer Authority
Jay Charland	Assateague Coastal Trust, Inc.
Michael Clar	Ecosite, Inc.
Martha Corrozi	CRC/Chesapeake Bay Program
Kehinde Dawodu	DC Government
Theresa Dent	Saint Mary's County
Charles Edwards	DC Department of Health
Daine Evans	Maryland Department of Natural Resources
Bill Fiske	Carroll County Health Department
Matthew Fleming	Maryland DNR
Pam Gibson	Virginia Tech
Edward Graham	MWCOG
Larry Green	DC Department of Health
Oscar Guzman	Prince William County
Melissa Bernardo Hess	URS Corporation
Nicole Hinds	DC Department of Health
Mark Jascewsky	Howard County
Waldon Kerns	Virginia Tech
Gerrit Knapp	University of Maryland
Matt Kropp	Hartford County
Mona Cheri	DC Office of Planning
Sean McGuire	MD DNR
MonaCheri McCoy	DC Office of Planning
Mike Mirtaghvai	Landplan Associates
Abid Musse	DC Government
Doug Nataluk	NAHB Research Center
Michael Novy	Ben Dyer Associates, Inc.
Abiodun Oladokun	DC Government
Ellen Rader	Montgomery County
Jesse Richardson	Virginia Tech
Melvin Ross, Jr.	DMC Engineering, Inc.
Edward Schmaus	DEPRM
Mary Searing	Anne Arundel County

Jim Shabelski  
James Slater, Jr.  
Jennifer Smith  
Kurt Stephenson  
Pat Stuntz  
Eva Szabat  
Bindu Taylor  
Mark Thompson  
Jan Townshend  
Sue Veith  
Christopher Victoria  
Mary Vogel  
Morgan Walubita  
Jim Woodworth

DC Water and Sewer Authority  
Carroll County Government  
Howard County Government  
Virginia Tech  
Chesapeake Bay Commission  
DC Water and Sewer Authority  
Neighborhood Design Center  
ICMA  
Neighborhood Design Center  
St. Mary's County  
Anne Arundel County  
Prince George County  
Bendyer  
NRDC

**List of Participants**  
**Carlisle, PA**  
**October 24, 2002**

<u>Name</u>	<u>Affiliation</u>
Eric Bartolicci	Monroe County Planning Commission
Thomas Beauduy	Chesapeake Bay Commission
Dawn Blanchard	Pasadena, MD
Christopher Blount	City of Harrisburg
Rob Bowman	Charter Homes, PA
E. Drannon Buskirk, Jr.	Paxton Creek Watershed
Edwin Calvert	Conewago Township, Adams County
Bob Christoff	Dauphin County Conservation District
Sue Cipperly	Adams County
Pat Devlin	Alliance for the Chesapeake Bay
Christine Dunham	Chesapeake Research Consortium
Brian Fischbach	RETTEW Associates Inc.
Pam Gibson	Virginia Tech
Waldon Kerns	Virginia Tech
Neil Kinsey	Governor's Center for Local Gov. Services
Jay Little, Sr.	Mount Joy Township, Adams County
Russell Martin	Paxton Creek Watershed
Andrew McAllister	Dauphin County Conservation District
Gwenn Miller	South Central Assembly for Effective Governance
Robert Miller	Adams County
Christian Mostert	(@cityothby)
Ken Murin	Div. Waterways, Wetland and Erosion Control
John Orr	Dauphin County Conservation District
Roger Steele	Mount Joy Township
Andy Weaver	Lancaster County
Kerry Wilson	Govs Center Park LGS