

# **The Western Branch Watershed Restoration Action Strategy Plan**



**Final Report  
Submitted by the City of Bowie  
June 30, 2004**

**DNR WRAS Contract #:** 14-03-875 CZM 049  
**Project Title:** Western Branch WRAS  
**Project Term:** April 1, 2003 – June 30, 2004  
**Submitted By:** City of Bowie  
**Reporting Term:** April 1, 2004---June 30, 2004

Financial assistance for the development of the Western Branch Watershed Restoration Action Strategy has been provided by the Maryland Department of Natural Resources and the Office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration (NOAA). The views expressed herein are those of the author(s) and do not necessarily reflect the views of NOAA or any of its sub-agencies.



# Table of Contents

Table of Contents .....	3
Project Abstract.....	4
Product/Outcomes.....	5
1. Watershed Characterization and Assessment .....	5
2. Public Involvement .....	6
3. Committee Formation .....	8
4. Management Strategy .....	8
5. Implementation Components of the Strategy .....	10
Problems/Challenges: .....	14
Appendixes .....	15

# Project Abstract

Prince George's County and the City of Bowie, through cooperative efforts with the Department of Natural Resources, will develop a Watershed Restoration Action Strategy for the Western Branch watershed. The goal of the Western Branch WRAS is to minimize the impacts to surface and groundwater from land use cover changes in the Western Branch watershed. The objectives of this WRAS include:

- Revision of the County building codes,
- Revision of both County and City SWM regulations, and the
- Identification of up to five Green Building and Low Impact Development, (LID) demonstration projects.

Although zoning authority lies with Prince George's County, the City of Bowie has been aggressive in implementing programmatic changes throughout City operations. Staff has revised the City of Bowie Development Review Guidelines, the Bowie Wildlife Habitat Guidelines, the Stormwater Management Ordinances, and the City's standard Request for Proposals to include language promoting Green Building and LID. The City has also adopted an innovative policy, Resolution R 15-03, mandating that all municipal capital improvement projects will incorporate Green Building, LID, renewable energy and conservation landscaping whenever feasible.

The responsibilities of Prince George's County Department of Environmental Resources Low-Impact Development include: identifying opportunities BMP retrofits and LID implementation; conducting public education/outreach; and biological monitoring. The responsibilities of the City of Bowie were to identify potential pilot projects and conduct public education and outreach. The City has developed an inventory of potential Green Building and LID project sites. The primary demonstration project for which this grant contract provided funding for was the design of the City's first Leadership in Energy Efficient Design (LEED™) certified building. The City of Bowie awarded the design contract to Terra Logos in February 2004. A pre-design meeting was held with staff, design team, and project partners on March 24, 2004 to review the project goals and discuss LEED™ credits. The design team was introduced, along with an overview of LEED™ criteria. Project Partners include: Prince George's County Department of Environmental Resources, the Maryland-National Capital Park and Planning Commission, the Maryland Energy Administration, Maryland's Department of Natural Resources Environmental Design Division, the U.S. Department of the Interior's Fish and Wildlife Service BayScapes Program, and the Center for Chesapeake Communities who will be developing a case study to be disseminated nationally. The Schematic Design has just been completed. Once reviewed by Project Partners and approved by Bowie City Council, the final design will be produced by September 2004.

The City of Bowie has created the Green Page which can be accessed by logging onto [www.cityofbowie.org/green/green.htm](http://www.cityofbowie.org/green/green.htm) and the *GREEN Initiatives: Public Information Presentation* series in order to educate the public on watershed protection measures such as the WRAS program.

# Product/Outcomes

## 1. *Watershed Characterization and Assessment*

All available historic data on water quality, physical habitat conditions and biological integrity will be synthesized to provide a broad-brush baseline on current conditions where feasible. In addition, a land use and land cover evaluation will be performed using geographic information system (GIS) data bases developed by Prince George’s County, the City of Bowie and DNR. Expertise from within local and State agencies will be drawn upon to address any identified data gaps, resulting in a listing of data needs and potential data collection activities. A visual on-site reconnaissance will be completed by conducting a stream corridor assessment within the major subwatersheds of the Western Branch Watershed area using DNRs Stream Corridor Assessment (SCA) methodology, a metric-based, rapid approach. The final data products from the SCA provide a broad overview of stream channel and riparian area conditions. Aquatic habitat, water quality and biological conditions will also be evaluated during this assessment through implementation of synoptic water quality surveys focused on dissolved nutrient loadings and benthic macroinvertebrate and fisheries surveys as an indicator of overall biological condition. Combined, these efforts will result in an integrated assessment that links overall landscape conditions with in-stream conditions. In addition, the watershed characterization will be used to assist County and City staff in evaluating potential locations for Low Impact Development/BayScapes retrofit sites, Green Building sites, preservation and habitat restoration sites, potential land acquisition areas, forest mitigation and stream and wetland restoration sites for future implementation activities. The identified Low Impact Development sites and Green Building sites will be used in the demonstration projects. The final report will document project progress over the entire contract period and will include any deliverables.

**Non-Program Change:** GIS covers/maps

**Status:**

Overall, the City has provided DER/DNR Bowie Property owner data bases, a preliminary GIS layer of stormwater management facilities, and the HOA and Civic Association data bases. The City is finalizing the GIS layer to include not only all stormwater management facilities, but also stormwater inlets and outputs, as well as all locations known to have living roofs, grass swales, bioretention cells, and other LID technology. SWM ponds were located, including those maintained by Home Owners Associations. Staff has geocoded 1642 of the 2242 stormwater inlets on record. The 600 remaining inlets will have to be manually recorded using the Beacon On the Belt, (BOB). The City was able to obtain the data pertaining to inlets on State Highways from Maryland State Highway Administration, (SHA). Storm drain outputs will also be recorded in a GIS layer. In order to track LID/SWM facilities as a BMP tool using GIS data base, staff will also be collecting locations where living roofs, grass swales, bioretention cells, and other LID technology have been constructed. Also, staff intends

indicate City owned versus privately owned/maintained facilities. This data will be available no later than June 30, 2006.

The City received a grant from Maryland State Highway Administration for the purchase of a Beacon on the Belt (BOB). This purchase has been delayed due to administrative issues. The Bob should be purchased within the next few months as this issue is resolved. The available GIS data is included on the electronic submission only.

The City's HOA and Civic Association data base has also been updated.

## **2. Public Involvement**

Prince George's County and the City of Bowie are determined to make public outreach and education an integral part of this WRAS project. Several local municipalities, watershed groups, and planning committees are committed to assist the County and the City in identifying watershed stakeholders for both education and outreach opportunities and to provide assistance in conducting the study. The outreach strategy will include contacting property owners of lands targeted for stream assessment, holding public meetings and workshops to present characterization information and to solicit input into WRAS priorities, seeking comment on the final action strategy and developing a means for landowners to assist in implementing components of the action strategy. Specific public involvement activities conducted over the duration of the grant contract will be identified in the final report. Copies of any public meetings or workshop materials will be provided.

**Non-Program Change:** General Education/Outreach

### **Status:**

Public meetings have been conducted in accordance with City policy and this grant contract through out the duration of this agreement. Stakeholder meetings and steering committees which involved multiple public agencies, but few local residents, were conducted monthly. Public Outreach and Education has also been conducted by the development of the City's website. A GREEN Page has been developed that includes a section on Project Partners as well as on Initiatives. The Initiatives includes projects as well as legislation, guidelines and policies for the City, County, State and federal governments. A funding section is also provided in order to encourage environmental projects for the benefit of the watershed. Please refer to **Attachment A** for copies of the GREEN Page as well as the GREEN Initiatives Calendar posted on the website, and fliers made available for public distribution. Articles that appeared in the City's newsletter or local newspapers are also included in this appendix.

This City of Bowie conducted extensive public outreach to other local governments and to building industry professionals. City staff consulted or presented on sustainable practices and the City's GREEN Initiatives, which includes watershed strategies. The City has offered technical advice to the City of Baltimore, the City of Annapolis, Prince

George's County, and corporate and residential developers on the development of sustainable policies, Programs, and projects. The City of Bowie reviewed and commented on the City of Baltimore's proposed Cool Baltimore Project, the City of Annapolis Green Building/LID policy by resolution, and Prince George's County Department of Environmental Resources' (DER) proposed Green Building Certification Checklist for Existing Buildings. The City has also encouraged the City of Gaithersburg who already has an Environmental Design Program but no policy/resolution to adopt a municipal policy mandating sustainable developing at least on all city projects.

Local governments and businesses have been invited to the GREEN Initiatives meetings. Bowie sponsored the Randall Arendt presentation held in October 2003 and DNR's Green Building Network Meeting in December 2003. Both events had over 60 attendees. Copies of the GREEN Initiatives Calendar is included in *Attachment A*.

A proposed residential housing development concept plan has been submitted to the City for review and approval. This concept plan proposes that LID be used throughout the project site. Twenty homes are planned. The LID suggested is intended to eliminate the need for a stormwater management pond. Staff also encouraged the developer to consider incorporating Green Building and LID techniques into the design of the homes as this location has a high water table and all roof run off should be completely eliminated if possible. The proposal goes before Bowie City Council July 6, 2004 for approval.

For the past year, City Planners have been working with Buchanan Partners, a corporate developer building an office complex on MD Route 197. The City challenged them to build Green and to use LID techniques in their site development. They have since decided to build according to LEED™ criteria and may even be chosen to serve as a commercial pilot project for the US Green Building Council, (USGBC).

The City of Bowie continues to promote environmental projects and concepts through its *GREEN Initiatives: Public Information Presentation* series. Part of the City's commitment to protect the watershed, staff is considering additional measures which will promote clean air and contribute to healthier overall water quality. As a Rebuild America partner, the City is working with Maryland Energy Administration to organize a public presentation series on renewable energy. The series is expected to begin late fall 2004 and run through early Spring 2005. Alternative Fuel Vehicles will be one of the topics.

Staff submitted a grant to the Chesapeake Bay Trust for additional funding that will allow DER and staff to conduct a presentation and hands on work shop for residents and for Public Works and Parks and Grounds staff to gain internal capacity regarding rain gardens. The City was awarded this funding request. The workshop will be held in April 2005 and has been included in the final Strategy. Additional grants may be sought for future workshops and for things such as the creation of a Backyard Habitat handbook to be distributed to residents.

Several other projects have been developed over the last year to further demonstrate LID techniques in urban retrofit situations. Besides the Parks and Grounds Facility's Sustainable Development and LID Demonstration Project and the demonstration projects to be conducted at Allen Pond next Spring, the City is also embarking on the Gallant Fox

Lane LID Urban Retrofit and Wetland Restoration Project. This project falls within the Upper Patuxent WRAS. Although not a LEED™ certification project, the City's Streets utility Building is being renovated and expanded using Green Building and LID concepts where feasible. These projects will be promoted on the GREEN page.

### **3. Committee Formation**

A stakeholder's committee will be formed to lead the WRAS initiative. Committee structure and size will be defined, and will minimally include representatives from Prince George's the City of Bowie, Maryland State Highway, Maryland-National Capital Park and Planning Commission and Prince George's County Soil Conservation District. It is anticipated that the Patuxent River Commission, municipalities and the local citizen and environmental groups will also participate in this stakeholder's committee. The Department of Natural Resources' Environmental Design Program will assist in the identification of Low Impact Design and Green Building opportunities. Additional committees and subcommittees may be formed based on the needs identified by the Stakeholder's Committee and the public involvement process. Activities related to all committees and subcommittees will be summarized in the final report.

**Non-Program Change:** Meetings

#### **Status:**

Public meetings have been conducted in accordance with City policy and this grant contract through out the duration of this agreement. Stakeholder meetings and steering committees which involved multiple public agencies, but few local residents, were conducted monthly. The last two Stakeholders Meeting were held on April 15, 2004 and May 20, 2004 at Bowie City Hall. These meetings consisted of participants defining specific programmatic changes and final strategies in the areas of:

- Urban forestry;
- Wildlife habitat restoration and enhancement;
- TMDL; and
- Low Impact development and Green Building potential project locations.

### **4. Management Strategy**

Prince George's County and the City of Bowie staff will cooperatively develop the final management strategy. This strategy will be designed to address and mitigate observed problems, taking into account cost, technical feasibility, political practicality, acceptability, and ease of implementation. This strategy will build on information gathered through the watershed characterization, stream corridor assessment, public involvement and additional data collection efforts conducted in both the County and the City of Bowie. The draft strategy will be routed for internal and external agency review. Public comment and input into strategy development is paramount, therefore the revised



final strategy will be made available for public review and comment. The final WRAS report will include an implementation component. The final action strategy will include a methodology and timeline for implementing a local level program change as required by Section 309 of the Coastal Zone Management Act. For this project, the program change will support and augment a number of current planning and watershed management activities in Prince George's County and the City of Bowie. For example, Prince George's County will use the final WRAS in the Commission 2000's Biennial Growth Plan, incorporate it into the General Plan (policy plan for environment, flooding, and development issues), will incorporate the WRAS into the Countywide watershed management planning activities and use it to assist with master planning for the Western Branch Watershed areas. Zoning authority for the City of Bowie resides with The Maryland-National Capital Park and Planning Commission, (MNCPPC). The Environmental Planning and Permits Section of MNCPPC will use implemented demonstration projects identified in the strategy to facilitate changes in the building codes and SWM and transportation regulations for LID, Green Building and BayScapes programs. The final action strategy will be incorporated into and guide implementation of the 2000 Development Review Guidelines (policy plan for comprehensive development) and the Wildlife Management Guidelines (guidelines for developers in considering wildlife habitat management for development proposals). Programmatic changes will be describes in the final report.

**Program Change:** Local Plan

**Status:**

The City of Bowie has been aggressive in implementing programmatic changes throughout City operations. Documents which have been revised to include support for LID and Green Building include:

- City of Bowie Development Review Guidelines;
- City of Bowie Wildlife Habitat Guidelines;
- Stormwater Management Ordinances; and the
- Standard Request for Proposals.

Documents which have been created, or are being created that promote watershed protection, urban forestry, and wildlife habitat protection, LID and/or Green Building include:

- City of Bowie Strategic Master Plan;
- City of Bowie Resolution R-15-03 (Green Building/LID Policy)
- City of Bowie Resolution R16-03 (Rebuild America Partnership)
- City of Bowie Bike Trail Master Plan; and
- City of Bowie Greenway Infrastructure Strategy Plan.

The City provided 30 acres on the Hohensee property for Maryland State Highway Administration to conduct forest mitigation associated with the SHA Woodrow Wilson bridge project within the Patuxent River Critical area. Additional policies or programs to

be considered by the City Manager's Office in the future may include an Urban Forestry Program, Green Housekeeping Policy, and a Clean Cities Program which would include the purchase of Alternative Fueled Vehicles and renewable/green energy, as well as the creation of a telecommuting policy. Some of these documents can be found in *Attachment B*.

The City is trying to build internal capacity by conducting these demonstration projects. With increased knowledge of these environmental sensitive land use practices and technologies, staff is beginning to promote them aggressively when reviewing a development proposals. Due to the City's aggressive promotion and public outreach, several developers have submitted proposals to the City which already include LID or Green Building in the concept plans. Currently, staff is reviewing a small residential proposal that will incorporate an extensive amount of LID techniques through the entire site both in the public right-of-way as well as on the individual lots. Planning staff is further encouraging the developer to consider building "Green" incorporating renewable energy and local, recycled, nontoxic building materials and whole site energy efficient design. This would be the first housing developer Bowie has influenced to incorporate LID and Green Building to this extent.

Bowie has already been working with Buchanan Partners, a corporate developer building an office compound in Bowie. Staff had learned that they 'dapple' with Green technology and challenged them (the most we can do without zoning authority) to construct this building totally Green, and post their green projects on their website which they did with in two weeks. They are presently considering the LEED<sup>TM</sup> pilot project for commercial buildings.

## **5. Implementation Components of the Strategy**

The Western Branch WRAS will specifically address the implementation of activities and projects. Implementation components will include a prioritization of projects, a timeline for implementation, funding opportunities, and policy opportunities and requirements. In addition, the strategy will include a detailed monitoring effort to measure progress in the watershed before and after development and restoration projects. The strategy will detail how the priorities will be reached. Finally, the strategy will include activities leading to the identification and development of the City of Bowie Green Building and LID Demonstration Project. This project will include design workshops and development. This demonstration project will provide a template which can be used by the City of Bowie, Prince George's County and other jurisdictions in the identification of LID sites. Activities will be summarized in the final report. Materials pertinent to the City of Bowie Green Building and LID Demonstration Project will submitted at this time.

**Program Change:** Local Plan

**Status:**

In February of 2002, with the main objective to leverage additional funds for the proposed Parks and Grounds Facility, the City of Bowie made the decision to investigate the benefits and cost feasibility of building this municipal facility using environmentally sensitive design and construction methods. The process included educating staff, establishing community partnerships, and Bowie City Council's approval to:

- Reuse the existing site,
- Allocate \$50,000 to be used as the City's match in grant applications,
- Allow staff to establish partnerships with non profit organizations,
- Implement the design and construction of the Parks and Grounds Facility as a demonstration project,
- Apply for LEED<sup>TM</sup> accreditation at a minimum of Silver rating, and to
- Adopt by resolution legislation mandating Green Building, Low Impact Development, (LID), Renewable Energy, and Conservation Landscaping be incorporated into all capital projects whenever feasible.

As a demonstration project, the proposed project will be used to encourage code revision, promote Green Building, renewable energy, LID, conservation landscaping/BayScapes, and raise grant funds. In February, 2003, Bowie City Council adopted by resolution a policy mandating Green Building, Low Impact Development, Renewable Energy, and Conservation Landscaping be incorporated into all capital projects whenever feasible. Since then, the City has begun to incorporate LID into street improvement Community Development Block Grant funded projects in Old Town Bowie where there exists a stormwater management problem. Staff has also begun to identify several other LID and Green Building projects, some of which will be used as demonstration projects. Staff is presently seeking funding for those projects as well.

In order to promote the Parks and Grounds project, as well as other local and regional green initiatives, the City has developed a Green Page on the City's website, and has embarked on a public outreach program entitled *GREEN Initiatives: Public Information Presentations*.

To date, the City of Bowie has acquired partnerships with several multi-sector agencies all of which are pivotal to the successful implementation of this sustainable demonstration project and others. Project Partners include:

<b>Partner</b>	<b>Contribution</b>	<b>Sector</b>
Maryland Energy Administration	Technical Assistance, Funding	State
Department of Natural Resources --Environmental Design Program --Chesapeake and Coastal Watershed Service	Technical Assistance Technical Assistance, Funding	State
Maryland-National Capital Park and Planning Commission --Environmental Review Section --Development Review Division	Technical Assistance	County
Prince George's County --Department of Environmental Resources	Technical Assistance, & Access to Funding	County
United States Fish and Wildlife Service --BayScapes Program	Technical Assistance	Federal
The National Fish and Wildlife Foundation	Funding	Private
The Patuxent River Commission	Technical Assistance	Private
The Center for Chesapeake Communities	Access to funding, development and national dissemination of a sustainable operations and development guidebook for local governments with populations of 50,000 or below using this project as case study.	Private

Due to partnerships with these agencies and organizations, the City of Bowie has leveraged \$79,000 towards the design phase of the proposed Parks and Grounds Facility, which is estimated to cost \$210,000. This show of support for our proposed demonstration project has encouraged Bowie City Council to allocate the remaining funds required for the design phase. Grants that have been awarded to date include:

<b>Grant Program</b>	<b>Grantor</b>	<b>Award</b>	<b>Conditions of Award</b>
Local Government Energy Initiatives	Maryland Energy Administration	\$30,000	To cover costs associated with achieving a Silver LEED™ Certification.
Local Government Energy Initiatives	Maryland Energy Administration	\$65,000	To include the inclusion of energy efficient building materials, renewable energy, and efficient appliances and systems.
Small Watershed Grant Program	National Fish and Wildlife Foundation	\$25,000	The design of Low Impact Development features.
Watershed Restoration Action Strategy	Maryland Department of Natural Resources	\$24,000	The sustainable design of the municipal facility that will incorporate Green Building and Low Impact Development.
<b>TOTAL:</b>		<b>\$79,000</b>	

Grants will be sought for the construction phase as well, mainly to provide gap financing for energy conserving features. As the grant process is lengthy, and the construction costs are estimated at \$1,646,800, City staff has already begun to seek funding for the construction phase. Maryland Energy Administration has already awarded the City \$65,000 towards the construction phase. This capital fundraising campaign may include additional applications to:

Grant Program	Grantor	Request	Conditions of Award
Watershed Restoration Action Strategy/Non Point Funding	Maryland Department of Natural Resources	\$200,000	The installation and/or construction of Green Building and LID features.
Environmental	StEPP Foundation	\$100,000	The installation and/or construction of Green Building and LID features.
Capital Challenge Grant	Kresge Foundation	\$350,000	The installation and/or construction of Green Building and LID features.
Environmental	Rockefeller Foundation	\$100,000	The installation and/or construction of Green Building and LID features.
Constellation Fund	Baltimore Gas and Electric	\$150,000	The installation and/or construction of Green Building and LID features.
Environmental	Meyer Foundation	\$ 50,000	The installation and/or construction of Green Building and LID features.
<b>TOTAL:</b>		<b>\$1,050,000</b>	

The City of Bowie contracted the design award to Terra Logos in February 2004. A pre-design meeting was held with staff, design team, and project partners on March 24, 2004 to review the project goals and discuss LEED™ credits. The design team was introduced, along with an overview of Leadership in Energy Efficient Design (LEED™). Project Partners in attendance were introduced and preliminary strategies for meeting LEED™ requirements were discussed. Project Partners who attended the meeting included: Prince George’s County Department of Environmental Resources, the Maryland-National Capital Park and Planning Commission and the U.S. Department of the Interior’s Fish and Wildlife Service BayScapes Program. Notes of that meeting are provided in *Attachment D*. A meeting, intended to be held by the end of May (now rescheduled for July 1, 2004), will allow project partners the opportunity to review preliminary plans and make recommendations. A copy of the Schematic Design Submission is also included in the appendix. The Final Design Plan will include partner contributions and is due to be completed by September 2004.

The Center for Chesapeake Communities will develop a case study to be disseminated nationally once the commissioning report is completed and the LEED™ certification is awarded.

An Inventory of Potential Green Building and LID sites in Bowie has been created and submitted to DNR and DER. From this Inventory and with established partnerships, several other Green Building and LID retrofit projects are underway. The City also compiled and submitted to DNR and DER the *Funding Environmental Projects: Grant Directory for Regional Projects* which provides prospect sheets on approximately 35 grantors.

# Problems/Challenges:

It has been a challenge to get significant and broad participation in the WRAS stakeholders meetings, particularly from local residents regardless of the promotion conducted. Significant contributions were made however by multiple state agencies.

Also, it has proven difficult for the City of Bowie Sustainable Development Demonstration Project to remain on schedule due to delays in revising the City's standard RFP, setting up meeting for partners to review preliminary designs due to conflicting schedules and summer vacations, and bureaucratic issues at MSHA which delayed the purchase of GIS software needed to more precisely collect data pertaining to stormwater inlets and outputs.

Unanticipated results from this project/process are:

- The City now proposes all project concepts to City Council using Power Point Presentations which consolidate photos, plans, spread sheets, and GIS maps in one highly visible medium.
- The City is considering the purchase of CAD software in order to enhance concept plan presentations via Power Point to City Council.
- City Engineers, and possibly even a Planner, are obtaining LEED™ certification.
- The City contract A&E firm due to our influence now has LEED™ certified staff.
- DER originally was only promoting LID/bioretenion, focusing mostly on site development rather than the building. They are now developing a Green Building Program.
- All the major sustainable development grants had been cut. City staff convinced several watershed grantors that Green Building as well as LID is a pollution prevention measure or the overall benefit of the Chesapeake Watershed. They have since altered their funding parameters to include Green Building, but only for projects related to code revision or policy change.

Since partnering with MCNPPC, they have contracted a report on which parts of the existing codes will need to be revised and how they might be restructured to incorporate GB/LID. Although our not having zoning authority actually was the impetus for us to seek partners, which in turn led to funding, a chain reaction of program changes have occurred region wide. This has been a powerful and replicable approach. The case study provided by the Center for Chesapeake Communities will be completed after the project is completed, LEED™ commissioning results collected and certification awarded.

# Appendixes

**Attachment A:** Public Outreach and Education Supplements

**Attachment B:** Programmatic Changes

**Attachment C:** City of Bowie Sustainable Development and Low Impact  
Development Demonstration Project Documents

# Appendixes



**Attachment A: Public Outreach and Education Supplements**



## MEMORANDUM

**TO:** Bowie City Council, Prince George's County Council, Bowie's Sustainable Development Demonstration Project Partners, Residents and Stakeholders.

**FROM:** David Deutsch  
City Manager

**SUBJECT:** GREEN Initiatives: Public Information Presentation

**DATE:** August 7, 2003

Members of City and County Council, as well as Bowie's Sustainable Development Demonstration Project Partners, residents and stakeholders are invited to participate in the City's first GREEN Initiatives: Public Information Presentation. This presentation will be held at Bowie City Hall, 2614 Kenhill Drive in the Multi-Purpose Room from 7-9 PM on September 3, 2003.

The term "Green" denotes that which is environmentally friendly. Green building is defined as resource-efficient, site-sensitive construction method using sustainable design concepts, which ultimately offer life cost savings and a safer, healthier environment. As part of the City's objective to promote responsible land use through sustainable development, public education and outreach is being provided through a series of public information presentations, Green Building Workshops, and stakeholders meetings to be offered by staff and Project Partners over the next several years. Many of the City's Green demonstration projects will be supported by grant funds, or are part of an overall local watershed strategy. Therefore, the City's GREEN initiatives are supported by an array of multi-sector partners, and seek to provide local governments, developers and residents with a variety of concrete examples of how to build and operate more sustainably for the overall benefit of improving environmental quality within watershed.

In order to provide further impetus for community wide awareness and change, City staff has created a public resource to promote its Green initiatives, as well as those of its project partners. The City's new GREEN Page is intended to inform and educate citizens and community stakeholders on sustainable or Green activities and resources. The site can be accessed at [www.cityofbowie.org/green/green.htm](http://www.cityofbowie.org/green/green.htm) .

# The Western Branch Watershed Restoration Action Strategy (WRAS)



## Assessing, Restoring and Protecting Maryland's Watersheds



# The City of Bowie



## GREEN Initiatives: Public Information Presentations

### Building “GREEN” in the City of Bowie

**To be Televised on the City of Bowie Government Channel 71B**

**Sunday, December 7th at 7 pm**

**Monday, December 8th at 7 pm**

Contact the studio at (301) 809-3057 for additional information.





December 30, 2003

Dear Resident and/or Business Professional:

On Tuesday, January 6, 2003, at 7:30 p.m., the City of Bowie will conduct a Stakeholders Meeting on the proposed construction of a new Parks and Grounds Facility that will continue to be located at its current location of 3106 Mitchellville Road. City staff has occupied the current location since 1996. In accordance with the City's policy, residents who live within a 500-foot radius of the facility are being contacted by mail to advise you of this activity.

The meeting will include a brief history of the project, a review of the scope of the project, timing and proposed costs. It is the City's intention to build an environmentally sensitive 'Green' building and to achieve a Leadership in Energy Efficient Design (LEED) Silver building certification. This is to be achieved by incorporating an environmentally sensitive design, using recycled and green materials and Low Impact Development strategies and conservation landscaping when feasible. Several project partners have been established with the Prince George's County Government, the Maryland State Department of Natural Resources, the Maryland Energy Administration, the Maryland-National Capital Park and Planning Commission and the U.S. Department of the Interior's Fish and Wildlife Service. Attendance at this meeting is optional. Questions from attendees will be taken following the presentation.

For more information on Green Initiatives, please feel free to visit us at [www.cityofbowie.org](http://www.cityofbowie.org) and go to the F.A.Q. prompt, and then to the Green Initiatives Calendar. If you would like to discuss this project further, please feel free to contact me at 301-809-3004, or by email at [lpierce@cityofbowie.org](mailto:lpierce@cityofbowie.org) at your convenience.

Sincerely,

Lawrence E. Pierce  
Director  
Department of Community Services

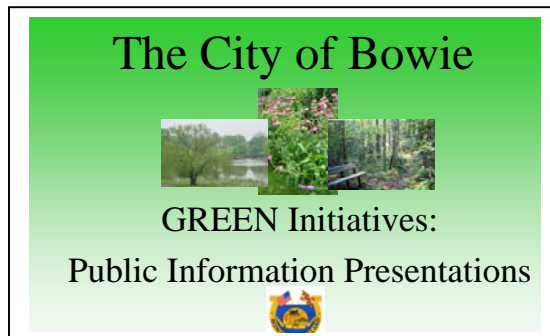
## City of Bowie Sustainable Development Demonstration Project Overview

In the last ten years, the City of Bowie has grown rapidly in population and landmass. As the City continues to grow, natural and wildlife habitat areas within the City show a noticeable reduction. As the nature of development is detrimental to environmental protection, the City of Bowie is committed to promoting a more environmentally sensitive approach to land use and site design. ‘Green’ building has proven itself a viable method of sustainable development as it provides a method of designing, constructing, and operating buildings with sensitivity towards: resource conservation, environmental quality, and human health. As the City of Bowie acknowledges that critical decisions concerning land use must begin to consider the environmental disturbances inherent in development, policies were adopted that mandate all capital projects incorporate Green Building, Low Impact Development (LID) and conservation landscaping when feasible.

Zoning authority for the City of Bowie lies with Maryland-National Capital Park and Planning Commission, (M-NCPPC). It is, however, difficult for the County’s Planning Board to revise ordinances without examples of how Green techniques could work. Approvals for Green projects may also be difficult to obtain because they may not meet the existing code. In order to remove this unfortunate paradox, a demonstration project that is supported by all the agencies involved with creating or revising codes such as the proposed City of Bowie Sustainable Development Demonstration Project serves to illustrate HOW and WHY Green Building can and should be approved. Conducting this demonstration pilot project would then provide a necessary ‘example’ that can be used to revise County codes.

The *City of Bowie Sustainable Development Demonstration Project* will reuse the present Bowie Parks and Grounds site to construct the City’s first environmentally sensitive ‘Green’ building, and will attempt to achieve a Leadership in Energy Efficient Design (LEED™) Silver green building certification. The Parks and Grounds Division plows, paves, mows, and landscapes City facilities, as well as provides stormwater facility maintenance. The Parks and Grounds Division presently occupies a 2,000 square foot 1950’s brick rambler, deemed an inadequate public facility. This structure does not meet current health, safety, or accessibility codes. The proposed facility will be 12,000 square feet, and will incorporate environmentally sensitive design, recycled and green materials, resource conserving appliances, Low Impact Development, and BayScaping.

Project promotion and public information will occur through the City’s Green Page, and through the GREEN Initiatives: Public Information Presentation.



## ***Bowie Spotlight***

*March-April 2004*



The term “Green” denotes that which is environmentally friendly. Green building is defined as resource-efficient, site-sensitive construction methods using sustainable design concepts, which ultimately offer life cost savings and a safer, healthier environment. As part of the City’s objective to promote responsible land use through sustainable development and to provide further impetus for community wide awareness and change, public education and outreach is being provided through a series of public information presentations, Green Building Workshops, and stakeholders meetings to be offered by staff and Project Partners over the next several years. Many of the City’s Green demonstration projects will be supported by grant funds, or are part of an overall local watershed strategy. Therefore, the City’s GREEN initiatives are supported by an array of multi-sector partners, and seek to provide local governments, developers and residents with concrete examples of how to build and operate buildings more sustainably for the overall benefit of improving environmental quality within watershed.

Please check the GREEN Initiatives calendar on the City’s Green Page at [www.cityofbowie.org/green/initiatives/presentations.htm](http://www.cityofbowie.org/green/initiatives/presentations.htm) for an updated listing of events.



## MEMORANDUM

**TO:** Parks And Grounds Facility Design Team and Project Partners

**FROM:** Michael F. Schramm  
Engineering Supervisor

**SUBJECT:** Parks And Grounds Facility Preliminary Design Kick Off Meeting

**DATE:** March 24, 2004

The City of Bowie will be hosting a kick off meeting with the Project Team, which will include project partners, City staff, and the design team. The partners include: The Maryland Department of the Environment, The Maryland Energy Administration, Prince George's County Department of Environmental Resource, U.S. Fish and Wildlife BayScape Program, and the Center of Chesapeake Community.

The City of Bowie will be constructing new Parks and Grounds Maintenance Facility located at 3408 Mitchellville Road. As directed by the Bowie City Council, this project will meet or exceed a LEEDS™ Silver rating for the sustainable design and construction of this facility. The project's programming will utilize whole site design principles, and include renewable energy technology and LID techniques -as appropriate. BayScaping will replace traditional landscaping throughout the project site. This project is intended to provide data that will influence regional policy change, and documentation for a case study to be disseminated nationally to other mid-sized local governments.

**This meeting will be held at the City of Bowie, City Hall located at 2614 Kenhill Drive, Bowie, MD in room 204 on Wednesday, March 24<sup>th</sup> from 10:00 AM to 1:00 PM.** We will be discussing the sustainable, resource conserving and pollution preventing concepts, materials, and techniques that may be incorporated in the site planning and architectural design of the Parks and Grounds Maintenance Facility. Project partners are encouraged to participate in this meeting in order to ensure the desired results of this highly visible demonstration project. Thank you for your continued interest in this regionally significant environmental demonstration project.



# Tributary Teams Annual Meeting

“The Time is Now: Moving from Commitment to Action”

Saturday - March 13, 2004

Maryland Department of the Environment

Baltimore, Maryland

Draft Outline for Panel from 11:30 – 12:30

Tentative Session Title: From Plans to Projects: Funding Options for Watershed Restoration Projects

**Moderator: Teresa Moore, Director**

**Technical and Planning Services Division**

**Watershed Services Unit**

**Maryland Department of Natural Resources**

- The C2K Agreement calls for development of watershed plans in 2/3 of the Chesapeake Bay’s watersheds.
- DNR is assisting local sponsors in the development of at least 5 Watershed Restoration Action Strategies each year.
- Some counties and watershed associations are developing watershed plans with their own resources.
- Watershed plans are being adopted each year, but are we poised for implementation?
- Will the plans be embraced and cooperatively supported so that they result in meaningful restoration of watersheds?
- The cost of restoration projects is high:
  - Some estimates show stream restoration costs statewide of over \$4 billion.
  - Wetland restoration estimates are more than \$1.5 billion.
- What resources are available for funding restoration projects, and how do we align the funding with the projects and goals identified in watershed plans?

**Panelists: Keith Bowers, RLA, PWS (confirmed)**  
**President and Founder**  
**Biohabitats, Inc.**

Biohabitats, Inc. is an environmental consulting and design firm specializing in ecological assessment, planning, and restoration. Keith has experience in taking a project from the planning/assessment phase through implementation and is familiar with the process in many counties and states.

- How are watershed restoration projects selected and funded in Maryland?
  - Are plans driving projects?
  - Who are the key implementers and where is the funding?
  - Are there obvious “disconnects” between plans and projects?
- Is there a difference in focus and/or effectiveness between counties that primarily fund restoration through Public Works agencies and those that have a dedicated budget item for restoration?
- What jurisdictions (in or out of state) are doing a good job of prioritizing and funding watershed restoration projects?
- What are the benefits of having a more orchestrated approach to watershed restoration?

**Sandy Coyman (confirmed)**  
**Director, Worcester County Department of Comprehensive Planning**

- What kinds of watershed restoration projects have been implemented in Worcester County?
  - Were these projects identified in the Coastal Bays Master Plan or one of the Watershed Restoration Action Strategies?
- What challenges do you face in identifying funds for restoration projects identified in watershed plans?
- Whose job is it to implement a watershed plan/strategy when the document is completed?
- What sources of funding have you used for restoration projects and who are your typical partners?
- Does having a plan/strategy help you in obtaining project funding? Do the plans actually drive funding decisions?
  - If not, what does drive funding decisions in your experience?
- Are some types of projects easier to find funding/support for than others?

**Ronald Bowen (confirmed)**  
**Director, Anne Arundel County Department of Public Works**

- What kinds of restoration projects does your agency sponsor?
  - What is your annual restoration budget?
  - Does your agency fund entire projects, or do you partner with others? If you partner, who are they likely partners/fund sources?
- How do Public Works agencies typically identify watershed restoration projects?
  - Do watershed plans factor into project selection or capital budget?
- Are public works agencies generally aware of Tributary Strategy goals, and if so, do they incorporate these goals into project planning and selection?
- How does the public works agency interact with the county planning agency, and what agency typically has the lead on implementation of watershed or other large-scale conservation/restoration plans?
- What additional sources of funds does your agency utilize for watershed restoration projects?
  - Transportation Enhancement funds
  - 319 monies
  - MDE
  - Soil Conservation District or NRCS funding
  - Others?

**Ruth Newell (invited)**  
**Grants Coordinator, City of Bowie**

- What kinds of watershed restoration projects were contained in the WRAS and what funding sources are you targeting for implementation?
  - What have been the most challenging aspects of implementation of the WRAS?
  - What components of the WRAS have been most beneficial and shown the most results?
- What benefits do you see in having a designated person to raise funds for a watershed plan?

**Final 15-20 minutes available for comments/questions from the audience.**

The copies of newspaper articles about Bowie's "Green Initiatives" public information workshops are not included in the online version of this document.

**Attachment B: Programmatic Changes**

The copy of the newspaper article about the Bowie City Council vote to include green building techniques in its guidelines for developers is not included in the online version of this document.

# RESOLUTION

## OF THE COUNCIL OF THE CITY OF BOWIE, MARYLAND FOR THE ADOPTION OF GREEN BUILDING, LOW IMPACT DEVELOPMENT, WASTE MANAGEMENT, AND CONSERVATION LANDSCAPING REQUIREMENTS FOR MUNICIPAL CONSTRUCTION, RENOVATION AND DEMOLITION PROJECTS.

**WHEREAS**, Executive Order 13123 requires the Federal Government with more than 500,000 buildings to lead the Nation in energy efficient building design, construction, and operation, and to promote energy efficiency, and water conservation, to demonstrate the use of renewable energy products, and to help foster markets for emerging technologies by constructing, renovating, and deconstructing Federal buildings to a minimum United States Green Building Council's Leadership in Energy and Environmental Design (LEED™) Green Building Rating System; and

**WHEREAS**, the State of Maryland through Executive Order 01.01.2001.02 requires that eligible buildings be constructed, renovated, and deconstructed by the State shall meet at a minimum LEED™ Silver Green Building standard; and

**WHEREAS**, the economy, health, and quality of life of the City of Bowie are dependent on the careful stewardship of its environmental resources; and

**WHEREAS**, Green Buildings result in lower operating and maintenance costs, increased worker productivity, reduced absenteeism, and greater return on invested dollars spent for construction; and

**WHEREAS**, pollutants resulting from developmental practices, standard building methods and materials contribute to detrimental human health, and contribute to environmental impacts effecting soil and water quality; and

**WHEREAS**, buildings throughout the world consume one-quarter of the planet's wood harvest, and in the United States comprise fifty-four percent of the nation's energy consumption and thirty five percent of the country's CO<sub>2</sub> emissions; and

**WHEREAS**, Green Building is a philosophy of building design and construction which uses natural resources efficiently, considers environmental impact, reduces building footprint size, allows ecosystems to function naturally, conserves and reuses water, treats storm water on-site, maximizes the use of local materials, optimizes climactic conditions through site orientation and design, integrates natural day-lighting and ventilation, and minimizes construction waste by reducing, reusing and recycling materials during all phases of construction and deconstruction; and

**WHEREAS**, the Chesapeake 2000 Agreement reaffirms the commitment of governing bodies to lead by example by promoting clean vehicle and green building technology, and other energy efficient approaches; and

**WHEREAS**, Green Building, Low Impact Development (LID), Waste Management, and Conservation Landscaping are consistent with the Chesapeake 2000 Agreement goals of Vital Habitat Protection, and Restoration, Water Quality Protection and Restoration, Sound Land Use and Maryland's Smart Growth and Neighborhood Conservation Initiatives; and

**WHEREAS**, the City of Bowie has consistently demonstrated a commitment to preserve and enhance natural resources through the development and adoption of the Wildlife Habitat Management Guidelines, the Bowie Development Review Guidelines, and the Forest Mitigation Policies and City-owned Sites Inventory complementing both the Maryland Forest Conservation Act (FCA), and the Prince George's County Woodland Conservation/Tree Preservation Ordinance; and

**WHEREAS**, the City of Bowie is a Tree City USA, Maryland PLANT Community, and an EPA designated "**Green**" level community, and



**WHEREAS**, the City received the Maryland Municipal League (MML) 'Award for Excellence' for conducting a pilot project with scientists from Virginia Polytechnic Institute to become the nation's first Biological Nutrient Removal (BNR) Program participant; and

**WHEREAS**, the City was one of four local jurisdictions across the State of Maryland to receive the Chesapeake Bay Partner Community 'Gold' Award for its outstanding conservation programs; and

**WHEREAS**, as the fourth largest City in Maryland, the City of Bowie has the ability to demonstrate for the general public and private sector alternative design, building and development principles and techniques that enhance the environment while realizing economic savings.

**NOW, THEREFORE, BE IT RESOLVED THAT**, the Council of the City of Bowie, Maryland hereby endorses the requirement that all municipal facilities, City funded projects, and infrastructure projects be constructed, renovated, operated, maintained and deconstructed using Green Building, LID, Waste Management, and Conservation Landscaping principles and practices to the fullest extent possible.

**AND BE IT FURTHER RESOLVED THAT**, the City of Bowie shall provide leadership and guidance to encourage the application of practices in private sector development.

**AND BE IT FURTHER RESOLVED THAT**, the City shall evaluate all land purchases and future development on the basis of reducing environmental impacts.

**AND BE IT FURTHER RESOLVED THAT**, copies of this Resolution be sent to the County Executive of Prince George's County, and the Environmental Planning Section of the Maryland National-Capital Park and Planning Commission.

**INTRODUCED AND PASSED** by the Council of the City of Bowie, Maryland at a Regular Meeting on February 3, 2003.

**RESOLUTION**  
**OF THE COUNCIL OF THE CITY OF BOWIE, MARYLAND**  
**APPROVING A REBUILD AMERICA PARTNERSHIP AGREEMENT BETWEEN**  
**THE UNITED STATES DEPARTMENT OF ENERGY AND THE CITY OF BOWIE**

**WHEREAS**, the United States Department of Energy (DOE) through the Maryland Department of Energy (MDE) has expressed a desire to enter into a Rebuild America Partnership Agreement with the City of Bowie (City); and

**WHEREAS**, the City will benefit from the creation of this partnership agreement by having a program representative assigned to the City from DOE to assist the City in developing energy efficiency programs; and

**WHEREAS**, City Council has expressed a desire to reduce energy consumption in City operations; and

**WHEREAS**, the City would become the first municipal partner under the Rebuild America program in the State of Maryland.

**NOW, THEREFORE, BE IT RESOLVED**, by the Council of the City of Bowie, Maryland, in legislative session assembled:

**Section 1.** That participation in the Rebuild America Program by the City of Bowie is in the public interest and will benefit the citizens of the City of Bowie.

**Section 2.** That the City Manager is hereby authorized to enter into agreement with DOE to become a Rebuild America partner.

**INTRODUCED AND PASSED** by the Council of the City of Bowie, Maryland at a Regular Meeting on February 3, 2003.

**[PROPOSED REVISIONS TO:]**

**CHAPTER 21B**

**STORMWATER MANAGEMENT CONTROL**

**[Proposed revisions are indicated as follows: (1) Text with a single strikethrough is existing text to be deleted, (2) Shaded text is proposed text to be added.]**

**Sec. 21B-1 Definitions.**

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Design Manual - The "2000 Maryland Stormwater Design Manual Volumes I and II." that serves as the official guide for stormwater management principals, methods and practices modified from time to time by the Administration. The "Prince George's County DER Stormwater Management Design Manual Chapter 5 – Low Impact Development " shall be the official guide for Low Impact Development (LID) stormwater management practices.

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Environmentally Sensitive Development — a whole site design and construction method that maximizes resource efficiency and minimizes environmental impact.

Integrated Management Practice (IMP) — ~~A~~An LID practice that manages stormwater runoff at or near the source by uniformly integrating and strategically distributing controls runoff measures from throughout a site at or near the source, is integrated within the development, and is distributed uniformly and strategically throughout the site

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Low impact development (LID) — ~~E~~environmentally sensitive development, redevelopment and retrofit approach that employs whole site design and construction method that maximizes resource efficiency and minimizes environmental impact . These site design techniques are intended to minimize the environmental impacts associated with traditional land use. that LID techniques incorporate include chiefly nonstructural, terrestrial based, source control, BMP's or IMP's such as bio-retention, as well as methods that reduce or detain roof runoff from buildings and prevent non-point pollution through the use of less toxic building materials and renewable energy. LID uses decentralized, uniformly distributed, integrated stormwater management practices in addition to design techniques that retain the maximum amount of existing vegetation and reduce the amount of impervious surfaces.

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Retrofitting - The construction of a structural BMP/IMP in a previously developed area, the modification of an existing structural BMP/IMP, or the implementation of a nonstructural practice to improve water quality over current conditions.

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**Section 21B - 1A. 2000 Maryland Stormwater Management Design Manual, Volumes I and II, and Maryland 378 Pond Code and Prince George's County DER Stormwater Management Design Manual Chapter 5 – Low Impact Development.**

The documents titled "Maryland 378 Pond Code" and "2000 Maryland Stormwater Design Manual, Volumes I and II" are hereby incorporated by reference in the City Code and shall serve as the official guide for stormwater management principles, methods and practices. Until such time as the City of Bowie develops and incorporates ~~low-Low impact-Impact development-Development~~ (LID) stormwater design guidelines into its "General Specifications and Standards for Storm Drain and Street Design and Construction" manual, Chapter 5 of the Prince George's County DER "Stormwater Management Design Manual" shall hereby be incorporated by reference in the City Code and shall serve as the official guide for LID stormwater management principles, methods and practices.

(Sec. 21B-1A amended by O-4-03 adopted 3/17/03 and effective 4/16/03).

**Section 21B - 2. Purpose and Authority.**

A. The provisions of this article Chapter pursuant to Environmental Article, Title 4, Subtitle 2, Annotated Code of Maryland, 1996 Replacement Volume, are adopted under the authority of the City of Bowie Code and shall apply to all development occurring within the boundary area of the City of Bowie.

B. The application of this Chapter and the provisions expressed herein shall be the minimum stormwater management requirements and shall not be deemed a limitation or repeal of any other powers granted by State statute.

C. The Department shall be responsible for the coordination and enforcement of the provisions of this article Chapter.

D. The purpose of this Chapter is to protect, maintain and enhance the public health, natural environment, safety and general welfare by establishing minimum requirements and procedures to control the adverse impacts associated with increased stormwater runoff. Proper management of stormwater runoff will minimize damage to public and private property, reduce the effects of development on land and reduce stream channel erosion, assist in the attainment and maintenance of water quality standards, and reduce local flooding and maintain after development, as nearly as possible, the predevelopment runoff characteristics.

**Section 21B - 3 Final Stormwater Plan Approval.**

Final Stormwater Plan approval will not be granted by the City until the proposed development has satisfied one (1) of the following conditions:

A. The applicant has submitted the necessary drawings, calculations and documentation that show the types of stormwater management systems proposed, the location at which it will be provided, and dimensions. The documentation shall be of sufficient detail to meet the approval of the City. In addition, a maintenance agreement in accordance with Section 21B- 20 shall be executed prior to issuance of stormwater management permits.

B. The proposed development will utilize an off site stormwater management facility and the necessary agreements, easements and approvals have been obtained.

C. The proposed development has been granted a waiver of the stormwater management requirements.

D. The proposed development has been determined by the Department to be exempt from the provisions of this article Chapter, as defined in Section 21B-5.

### **Section 21B-4 Applicability.**

The provisions of this article shall be applicable to any site with development or redevelopment activity. The stormwater management measures must be designed consistent with the Design Manual, City of Bowie Standards and Specifications for Stormwater Management Design, and constructed according to an approved plan or the provisions of the Redevelopment section of this Chapter. However, any project which has received stormwater management concept approval by July 1, 2001, may be designed and constructed in accordance with the predecessor of this Chapter in the City Code. The July 1, 2001 concept approval will expire if stormwater management permits for said projects are not issued by July 1, 2003 and construction of the site work is not substantially complete by July 1, 2004. (Sec. 21B-4 amended by O-1-04 adopted 3/17/03 and effective 4/16/03).

### **Section 21B - 5 Conformance Required; Exemptions.**

A. No person shall develop any land for residential, commercial, industrial, institutional or governmental uses without having provided stormwater management measures approved by the Department that control or manage runoff from such developments, except as provided within this section.

B. The following development activities are exempt from the provisions of this article and the requirements of providing stormwater management:

1. Agricultural Land Management Activities.
2. Additions or modifications to existing single-family detached residential structures provided condition number 3 below is met.
3. Developments that do not disturb over five thousand (5,000) square feet of land area.
4. Land-development activities, which the Administration determines, will be regulated under specific State laws, which provide for managing stormwater runoff.

C. Multiple exemptions may be granted for B-2 and B-3 noted above for a site provided the total land disturbance has not exceeded 5,000 square feet.

### **Section 21B - 6 Watershed Management Plans.**

A. A watershed management plan developed by the Department, or Prince George's County, for the purpose of implementing alternative stormwater management policies for waivers and redevelopment shall:

1. Include detailed hydrologic and hydraulic analyses to determine hydrographic timing;
2. Evaluate both quantity and quality management;
3. Include cumulative impact assessment of watershed development;
4. Identify existing flooding and receiving stream channel conditions;
5. Be conducted at a reasonable scale;
6. Specify where on-site or off-site quantitative and qualitative stormwater management practices are to be implemented; and

7. Be consistent with the general performances standards for stormwater management in Maryland found in Section 1.2 of the Design Manual.

8. Be approved by the Administration.

B. In the event the City has not established a watershed management plan for a specific watershed, the Department shall refer to other plans applicable to the watershed or to plans and policies established by the City or other government agencies applicable to the watershed.

**Section 21B - 6A Waivers.**

A. Stormwater management quantitative control waivers may be granted only to those projects within areas where watershed management plans have been developed consistent with Section 21B-6a.

B. If Watershed Management Plans consistent with Section 21B-6a have not been developed, then stormwater management quantitative control waivers may be granted to projects when the Department determines that circumstances exist that prevent the reasonable implementation of quantity control practices, provided the requirements of Section H are satisfied; or

C. Stormwater management qualitative control waivers apply only to:

1. In-fill development projects where the Department has determined stormwater management implementation is not feasible provided the requirements of Section H are satisfied.

2. Sites where the Department determines that circumstances exist that prevent the reasonable implementation of quality control practices provided the requirements of Section G are satisfied.

D. Waivers granted must:

1. Be on a case-by-case basis;

2. Consider the cumulative effects of the Department's waiver policy; and

3. Reasonably ensure the development will not adversely impact stream quality.

E. If the Department, or Prince George's County, has established an overall Watershed Management Plan for a specific watershed, then the Department may develop quantitative waiver and redevelopment provisions that differs from Section 21B - 7 Redevelopment.

F. The Department and the City Manager may grant a waiver of quantitative stormwater management requirements for individual developments provided that a written request is submitted by the applicant containing descriptions, drawings, and any other information that is necessary to evaluate the proposed development. A separate written waiver request shall be required in accordance with the provisions of this section if there are additions, extensions, or modifications to a development that previously received a waiver.

G. Practical alternatives to qualitative stormwater management may be considered, including but not limited to:

1. Fees In Lieu of (\$0.50 per square foot of impervious area);

2. Off-Site BMP/IMP implementation for a drainage area comparable in size and percent of increased imperviousness to that of the project;

3. Watershed or stream restoration;
4. Other practices approved by the Department and the Administration.

**Section 21B - 7 Redevelopment.**

A. Stormwater management plans for redevelopment shall be consistent with the Design Manuals and Maryland 378 Pond Code (as required) except that the recharge, channel protection storage volume, and overbank flood protection volume requirements do not apply.

B. : All retrofit and redevelopment projects shall use Low Impact Development techniques and conform with the Prince George’s County’s LID methodology. The LID approach includes the reduction of impervious surface area and water quality measures. The 20% reduction of impervious surface area can be met by using LID methods and includes but is not limited to the use of living roofs, removal of parking areas for bioretention, conservation landscaping, and the narrowing of streets and paved areas. Should there be any increase in impervious surface area, LID techniques shall be used to provide water quality (WQv, REV, and Cpv). All redevelopment projects shall reduce existing site impervious areas by at least 20 percent. Where site conditions prevent the reduction of impervious area, then stormwater management practices shall be implemented to provide qualitative control for at least 20 percent of the site's existing impervious area. When a combination of impervious area reduction and stormwater practice implementation is used, the combined area shall equal or exceed 20 percent of the existing site.

C. Where conditions prevent using LID measures ~~impervious area reduction or on-site Stormwater Management~~, practical alternatives may be considered, including but not limited to:

1. Fees In Lieu of (\$0.50 per square foot of impervious area);
2. Off-Site BMP/IMP Implementation for a drainage area comparable in size and percent of increased imperviousness to that of the project;
3. Watershed or stream restoration;
4. Other practices approved by the Department.

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**Section 21B - 9 Stormwater Management Criteria.**

A. Minimum Control Requirements

1. The minimum control requirements established in this section and the Design Manual are as follows:
  - a. The City shall require that the recharge volume, water quality volume, and channel protection storage volume and overbank flood protection sizing criteria be used to design BMP's/IMP's according to the Design Manual.
  - b. The Department may require more than the minimum control requirements specified in this chapter if hydrologic or topographic conditions warrant or if flooding, stream channel erosion, or water quality problems exist downstream from a proposed project.
2. Stormwater management and development plans where applicable, shall be consistent with adopted and approved watershed management plans or flood management plans as approved by the Maryland Department of the Environment in accordance with the Flood Hazard Management Act of 1976.

## B. Stormwater Management Measures

The structural and nonstructural, and LID stormwater management measures established in this chapter shall be used either alone or in a combination, in developing a Stormwater Management Plan.

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### 3. Low Impact Development (LID) Stormwater Management Measures.

a. The following LID stormwater management measures shall be designed according to the City of Bowie design manual to satisfy the minimum control requirements established in this Division;

- (1) Conservation of existing natural and topographic features
- (2) Minimization of land clearing and impervious surfaces
- (3) Maintenance or lengthening of the pre-existing time of concentration ( $T_c$ )
- (4) Installation of IMPs
- (5) Pollution prevention measures.

b. The use of LID stormwater management practices will mainly be applicable to low-density residential development; however, these practices shall be considered where possible for all new development, whether residential, commercial or institutional, to minimize the reliance on structural BMP's.

c. Public education in the use of, and the importance of permanently maintaining BMPs and IMPs used in LID practices, shall be encouraged and incorporated into Stormwater Management Maintenance Agreements.

d. The use of LID stormwater management practices may not conflict with existing State or local law, ordinances, regulations or policies.

e. BMPs and IMPs used in LID stormwater management practices which are located on private property shall remain unaltered by the property owner and all subsequent property owners. Prior approval from the Director shall be obtained by the property owner before any BMPs and IMPs are altered. Property owners shall be responsible for permanent maintenance of the BMPs and IMPs in order to allow the practices to function as originally intended.

f. All BMPs and IMPs located on privately-owned properties shall be subject to Stormwater Management Maintenance Agreements recorded in the Land Records of Prince George's County.

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### Section 21B -20. Maintenance Responsibilities. (STILL UNDER REVISION)

A. The owner(s) of all stormwater management facilities, including all nonstructural and structural facilities, BMPs and IMPs associated with LID measures, completed pursuant to this Chapter which are to be privately maintained shall execute a maintenance agreement with the City, outlining the owner's responsibilities to the City to maintain all facilities in good working order. No permits for the construction of Stormwater Management facilities shall be released until a maintenance agreement is properly executed and the obligations therein assumed are embodied in a declaration of covenants recorded among the Land Records of Prince George's County so as to bind all present and subsequent owner(s) of the property (ies) served by the stormwater management facility.

B. The owner of any property on which work has been done pursuant to this Chapter, or any other person or agent in control of such property, shall maintain in good condition and promptly repair or restore all grade surfaces, walls, drains, dams and structures, plants vegetation, erosion and sediment control measures and other protective devices. Such repairs or restorations and maintenance shall be



in accordance with approved plans. The City may conduct unscheduled periodic inspections of privately maintained Stormwater Management facilities at any time.

1. The City will assume the maintenance of (i) residential stormwater management facilities upon the City Council's acceptance of the facilities in accordance with Section 21B-21 of this Chapter; or (ii) for multi-use facilities owned by another public entity, upon execution of an agreement which allocates maintenance responsibilities between the City and the public entity which owns the stormwater management facility. However, the City will not accept maintenance responsibility, either by transfer of ownership or by agreement, for County regional stormwater management facilities.

2. Stormwater controls that are associated with commercial, industrial or institutional property will not be dedicated to the City for maintenance, except as provided in Section 21B - 20B.3.

3. Stormwater control systems associated with commercial and industrial, or institutional property and contained within a special taxing district which supports the facility may be dedicated to the City solely at the City's option. Such dedication shall not be affected by any determination by the City to continue or to abolish such special taxing district.

C. Any nonstructural stormwater management measure to include BMPs and IMPs associated with LID as well as any structural LID stormwater management components which resides on a privately owned residential lot shall be maintained and annually inspected by the owner in accordance with Paragraph E of this section. Notification of property owners of the existence of the private facility is the responsibility of the permittee. Property owners shall be notified prior to the issuance of a Use and Occupancy permit. The permittee shall provide evidence of such notification upon request of the Director or the Director's designee. The City of Bowie shall be granted access to all privately owned stormwater management measures, including those associated with LID, for the purpose of inspection of the facilities.

C.D. A maintenance schedule shall be developed for the life of any stormwater management structure and shall be printed on the approved plan. This schedule shall contain, but is not limited to:

1. When maintenance will be done.
2. What maintenance will be done.
3. Who will perform the required maintenance.
4. Estimated sediment loading and dredging schedule.

D.E. An annual inspection by a qualified registered professional engineer shall be commissioned on each structure by the owner, developer, agent or other person in control of the property with a copy of the inspection report going to the Department and the District. It shall contain, but not be limited to:

1. The condition of vegetation, fences, principal spillway; emergency spillway, embankment, reservoir area, outlet channel, underground drainage, sediment load or any other item which could affect the proper function of the stormwater management structure system, including all nonstructural and structural stormwater management facilities, and BMP's and IMPs associated with LID measures.
2. Description of needed maintenance or repairs.
3. When the repairs are to be completed.

E.F. An inspection report form will be made available by the City to fulfill the requirements of this section.

~~F.G.~~ If any maintenance or annual inspection required by this chapter is not done, the person responsible shall be notified. The required work shall be performed within a reasonable time not to exceed thirty (30) days maximum. In the event of an immediate danger or nuisance to the public health, safety or welfare of the community, a violation notice shall be given by the most expeditious means, and the violations shall be corrected immediately. In the event that the person responsible fails to take corrective action, the City may do the required work. The cost of such work by the City shall be paid to the City by the person who failed to take corrective action and shall be a debt due the City. Failure of the person responsible to honor the demands of the City for the costs incurred shall automatically terminate all permits issued by the City to the permittee, his predecessors, successors, and assigns in interest until the debt is paid in full. Furthermore, said assessment shall be a lien against all properties served by the system whose owners have received notice of their maintenance obligations pursuant to a maintenance agreement and/or declaration of covenants executed and recorded in accordance with this Chapter. Said lien may be placed on the real property tax bill of the properties subject to the assessment and collected as ordinary tax from the City.

**Attachment C:** City of Bowie Sustainable Development and Low Impact  
Development Demonstration Project Documents



## REQUEST FOR PROPOSAL

The City of Bowie, Maryland is soliciting qualified firms to furnish proposals for full Architectural / Engineering services for the design and construction of a 9,500 +/- SF Parks and Grounds Facility & Sustainable Development Demonstration Project with 3,000 +/- SF of attached open-air storage, located on the site of the current Parks and Grounds Facility at 3106 Mitchellville Road, Bowie, Maryland. The project will be required to follow the guidelines set forth by the U. S. Green Building Council (USGBC) to obtain a Silver Certification under the Leadership in Energy and Environmental Design (LEED™) rating system and incorporate Green Building, renewable energy, Low Impact Development (LID) and conservation landscaping as stated in the City's Resolution 15-03.

Qualified Design Teams will be required to include a LEED™ Accredited Professional who will work in conjunction with the City and its Sustainable Development Demonstration Project Partners at various points throughout the process. Teams will be required to register the project with the USGBC at the beginning of the project, maintain a file record suitable for submission and scoring by the USGBC following completion of the project. Teams must understand that as a "demonstration" project must incorporate Green Building and LID methods, as well as renewable technology in a highly visible way, where possible, in order to serve as a model for other community agencies, businesses, and citizens, and to illustrate responsible land use, habitat protection and resource conservation through sustainable design.

The City reserves the right to reject any and all proposals or portions thereof which in the City's sole and absolute discretion will be to the best advantage of the City, and to reduce or modify the scope of the project in order to meet funding limits and budget constraints. By submission of a proposal, the bidder represents that they have the ability to comply with all requirements contained in the documents.

All proposals must be received in the City Manager's Office, Bowie City Hall, 2614 Kenhill Drive, Bowie, Maryland 20715 by           , **2003** @   :   **AM**. All proposals must be submitted in triplicate, all originals, in a sealed envelope indicating the name of the proposal (Architectural/Engineering Services - Parks and Grounds Facility & Sustainable Development Demonstration Project), and the date and time of opening in the lower left corner.

All blanks on each and every form provided by the City in connection with this RFP must be filled in and no changes shall be made either in the phraseology of, or in the items mentioned in the form. All proposals must be signed in ink by the bidder, with signature in full. When a firm is a bidder, the agent who signs the firm name shall, in addition, state the names and addresses of the individuals comprising the team.

A bid security is not required to be submitted with the bid. Performance and Payment bonds will not be required.

No bidder may withdraw their bid within sixty (60) days after the actual opening of the bid.

A pre-bid meeting will be held on \_\_\_\_\_, 2003 @ \_\_:\_\_ AM at the \_\_\_\_\_, \_\_\_\_\_, Bowie, Maryland. All questions should be directed to Mike Schramm at 301-809-2341 or Beth Bell at 301-809-2339.

# TABLE OF CONTENTS

REQUEST FOR PROPOSAL	p. 1
TABLE OF CONTENTS	p. 3
PART I - <b>INSTRUCTIONS TO BIDDERS</b>	p. 4
PART II - <b>GENERAL CONDITIONS</b>	p. 4
PART III - <b>CONTRACT FORMS</b>	p. 4
PART IV - PROJECT INFORMATION	p. 4
PART V - PROGRAM	p. 4
PART VI - PROJECT ADMINISTRATION	p. 4
PART VII - INSURANCE	p. 4
PART VIII - INDEMNIFICATION	p. 4
PART IX - NON-DISCRIMINATION STATEMENT	p. 4
PART X - OTHER CONDITIONS AND REQUIREMENTS	p. 4
PART XI - DESIGN AND CONSTRUCTION SCHEDULE	p. 4
PART XII - FEE PROPOSAL	p. 4
PART XIII - SELECTION CRITERIA	p. 4
PART XIV - GRANT REQUIREMENTS	p. 4
EXHIBIT I - PROPOSED CONCEPTUAL PLAN	p. 4
EXHIBIT II - <b>FEE PROPOSAL FORMS</b>	p. 4
EXHIBIT III - <b>COMMERCIAL INSPECTION PROCEDURE</b>	p. 4

## **PART IV – PROJECT INFORMATION**

The existing facility is located on a 1.4-acre lot, zoned as RR, in a former 1950's single-family home at 3106 Mitchellville Road, near Allen Pond Park. The site is partially paved with three (3) out-buildings. The first of these buildings is a permanent structure originally designed for storage and equipment repair. The second is a shed structure located along the northern property line and the third is a prefabricated "gazebo" that was enclosed for additional storage.

This redevelopment will require the removal of the existing septic system, buildings, pavement, etc. to make provisions for the new facility, parking and a public sewer connection. The consultant shall include a site plan suitable for the application and the issuance of a Building and Site Development Permit through Prince George's County Department of Environmental Resources, Maryland National Parks and Planning Commission and the Washington Suburban Sanitary Commission.

The site plan must include all relevant details, notes, specifications, etc. needed to support the site development, engineering, sediment and erosion control, non-traditional stormwater management, building design, building construction, utility connection, etc. for this project.

The City has partnered with the United States Fish and Wildlife Service's BayScapes Program to provide their technical expertise in designing the entire site's landscape plan using Conservation Landscape Techniques. Partnership with Prince George's County Department of Environmental Review will provide guidance to replace the standard stormwater management pond with LID techniques. Maryland Energy Administration will assist the Project Team in achieving optimum energy efficiency in the final design plan.

## **PART V – PROGRAM**

**The proposed facility is to be a 9,500 +/- SF Parks and Grounds Facility and Sustainable Development Demonstration Project with 3,000 +/- SF of attached open-air storage. The following is the City's best estimate of necessary spaces to be used for planning purposes and is subject to change:**

- One maintenance bay, heated, separate & closest to building @ 1,400 SF.
- Two maintenance bays, heated and unseparated @ 2,800 SF total.
- Mechanic & Assist. Supervisor's Offices @ 100 SF each.
- Tool Storage for the Mechanic @ 400 SF.
- Five attached, open-air storage bins @ 2,800 SF total.
- Storage room @ 300 SF
- Future storage / miscellaneous use area @ 400 SF.
- Supervisor's Office @ 300 SF
- Crew bullpen & lunch area @ 500 SF

- Men’s Locker room with a minimum of 40 lockers with shower and restroom facilities.
- Women’s Locker room with a minimum of 8 lockers with shower and restroom facilities.
- Kitchen area attached to the Crew bullpen @ 150 SF.
- File storage / Administration area @ 175 SF.
- Other areas:
  - Copy area.
  - Reception / Waiting area.
  - Mechanical room.
  - Additional ADA compliant restroom facilities.
  - Circulation space.

## **PART VI – PROJECT ADMINISTRATION**

As previously stated, this project will be required to achieve a Silver level LEED™ Certification from the USGBC. The City and its Project Partners will comprise the Project Team. Through this demonstration project, the Project Team intends to illustrate the feasibility and affordability of sustainable development for other local governments. The Project Team will gather throughout the process in a series of pre-design meetings, site visitations and final design meetings. The City will serve as liaison between the Project Team and the contracted Design Team.

### **Project Partners:**

- Department of Natural Resources (DNR)
  - Environmental Design Program
- Chesapeake and Coastal Watershed Service
- Maryland-National Parks and Planning Commission (M-NCPPC)
  - Environmental Planning Section
  - Development Review Division
- Prince George’s County
  - Department of Environmental Resources (DNR)
- United States Fish and Wildlife Service
  - BayScapes Program
- The National Fish and Wildlife Foundation
- Maryland Energy Administration (MEA)
  - Rebuild America Program
- Center for Chesapeake Communities
- The Patuxent River Commission

The City’s GREEN Initiatives can be viewed on the City’s Web Page at <http://www.cityofbowie.org>.

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## PART XI – DESIGN AND CONSTRUCTION SCHEDULE

- Receipt of Proposals: \_\_\_\_\_, 2003 @ \_: \_ AM
- Award of Contract: **August 1, 2003**
- 100% Schematic Design Submission: \_\_\_\_\_, 2003
- City and MEA Review: \_\_\_\_\_, 2003 - \_\_\_\_\_, 2003
- 100% Design Development Submission: \_\_\_\_\_, 2003
- City and MEA Review: \_\_\_\_\_, 2003 - \_\_\_\_\_, 2003
- 95% Construction Document Submission: \_\_\_\_\_, 2003
- City Review: \_\_\_\_\_, 2003 - \_\_\_\_\_, 2003
- 100% Const. Document & Cost Est. Submission: **January 1, 2004**
- Permit Acquisition & Code Comments: **January 1, 2004 - \_\_\_\_\_, 2004**

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## PART XII – FEE PROPOSAL

The fee proposal submitted shall stipulate a fee for the entire services to be provided by the Architectural / Engineering, as specified in this RFP. The project proposal should be submitted on the proposal form included in this RFP.

Quoted fee proposal shall include all incidental costs including, but not limited to; travel, printing, binding, phone calls and photographs.

All Inspection, LEED Registration and Certification, Permitting and Review fees will be directly reimbursed by the City of Bowie.

The Consultant shall provide an Add Alternate for providing construction inspection per Prince George’s County’s Commercial Inspection Procedure (CIP). (See EXHIBIT III)

The City reserves the right to further negotiate with the selected firm to define a mutually agreeable fee.

## PART XIV – GRANT REQUIREMENTS

Design Teams should be aware that this demonstration project is in part, grant funded. Although the project is not entirely contingent on receiving grant funding, additional resources have been acquired to absorb the costs inherent with the LEED™ Certification process and the monitoring necessary for the documentation of project results that will be instrumental in establishing a sound basis for future code revisions.

The City has committed to incorporate LID Techniques, BayScapes / Conservation Landscaping and eliminate the previously proposed stormwater management pond. The City has also agreed to reduce energy consumption over ASHRAE/IESNA Standard 90.1-1999 and to illustrate resource efficiency and responsible land use. An additional objective of this demonstration project is to provide a case study and incentive for governmental policy revision. Community outreach and public education is, however, the primary grant requirement. The City of Bowie will be responsible for meeting these requirements.

**ADDENDUM #1 – PARKS & GROUNDS FACILITY & SUSTAINABLE  
DEVELOPMENT PROJECT**

**October 27, 2003**

**BID DUE DATE EXTENDED TO 11/10/03 BY 4:00 PM**

RE: Pre-bid conference October 21, 2003, professional services pre-bid inquires.

1. The City of Bowie has partnered with various Federal, State, and local governmental agencies seeking their technical expertise regarding architectural design and site redevelopment. The comments are advisory only. The City will critique each comment, and if appropriate incorporate the suggestions into the sustainable design. The City will be responsible for all intergovernmental review correspondence.

2. Professional Liability Insurance must be submitted with the minimum limits of liability stated on the Certificate of Insurance (COI) of one million dollar (1 million dollars) per occurrence and NOT per claim. The COI must state the City of Bowie is Additional Insured. Separate COI documentation must be submitted for all Insurance requirements as listed within the Bid documents. All Insurance must be valid for the full term of the Contract.

3. Complete all forms as provided within the Bid package. Page 9. The Design and construction Schedule provided on page P-9, was generic in nature. Construction times can be assumed to be 12 months from the date of award of the Construction Contract.

4. The Consultant is responsible for full site development plans of sufficient quality to satisfy the City of Bowie, Maryland National Capital Park and Planning Commission (MNCPPC), Prince Georges Department of Environmental Resources (PGDER), Prince Georges Soil Conservation Service (PGSCD), Washington Suburban Sanitary Commission (WSSC), and any other regulatory agency having permitting authority.

5. The City of Bowie will review and approve the storm water management concept plan and the detailed design plan. PGSCD will review and approve the sediment control plans. With the exception of the public utilities plans, PGDER and MNCPPC will review and permit all other plans.

6. Although additional time will be required for partnered agency to review and comment on the designs, the reviews by these partnered regulatory agencies is not expected to adversely affect the design develop schedule. The permitting agencies will expedite the permit review and issuance. The City will be the lead for all county, state, federal, and utility commission reviews, comments, and permitting.

7. The existing buildings with the exception of the freestanding pole building are to be removed. Deconstruction or recycling of the existing materials not to be considered at this time.

8. The budget for all work is approximately \$1.9 million including full design, development and construction documents, commission, inspections, permits, utilities, BGE relocations, etc. The budget page will NOT be included with this Addendum as previously stated during the Pre-bid Meeting.
9. The City of Bowie will conduct independent assessments of the buildings and grounds for hazardous materials. Any materials determined to be hazardous or of a controlled nature will be removed by the City prior to construction.
10. The Consultant is accountable for the accuracy of the site development plan and the constructability of all the site improvements. All plans must be signed and sealed by the appropriate professionals registered in the State of Maryland.
11. The City will provide the Consultants with a boundary; however, the Consultant is responsible to verify all information. The Consultant is encourage to perform a detailed topographical and land survey of the project site prior to design.
12. All cost associated with printing and or delivering development review or architectural plans for agency reviews is a direct reimbursable. However, a third party invoice MUST document all reimbursable cost. The city will not reimburse any cost(s) that are not justified by supporting third party payments.
13. Page 11, paragraph 2, strike the last sentence.
14. The Consultant should supply an **Add Alternate Price** for the 'Life Cycle Cost Account' on a Time and Materials basis with an estimated not to exceed price.
15. The Consultant is not responsible for an as built (AKA) Field Measurement Plan for site construction.
16. The Consultant is not to consider on-site renewable energy sources for EA Credits 2.1, 2.2, and 2.3 at this time. The City is evaluating these credits and their impact to the program. Additional compensation will be negotiated with the Consultant if the City opts to obtain these credits.
17. This project is NOT a design build project.
18. The Pre-bid attendees sign in sheet is attached.
19. Minority Business Enterprise participation is encouraged.
20. **The Bid Due date has been extended until Monday, November 10, 2003 by 4:00 pm.**



## MEMORANDUM

**TO:** Parks And Grounds Facility Design Team and Project Partners

**FROM:** Michael F. Schramm  
Engineering Supervisor

**SUBJECT:** Parks And Grounds Facility Preliminary Design Kick Off Meeting

**DATE:** March 24, 2004

The City of Bowie will be hosting a kick off meeting with the Project Team, which will include project partners, City staff, and the design team. The partners include: The Maryland Department of the Environment, The Maryland Energy Administration, Prince George's County Department of Environmental Resource, U.S. Fish and Wildlife BayScope Program, and the Center of Chesapeake Community.

The City of Bowie will be constructing new Parks and Grounds Maintenance Facility located at 3408 Mitchellville Road. As directed by the Bowie City Council, this project will meet or exceed a LEEDS<sup>TM</sup> Silver rating for the sustainable design and construction of this facility. The project's programming will utilize whole site design principles, and include renewable energy technology and LID techniques -as appropriate. BayScaping will replace traditional landscaping throughout the project site. This project is intended to provide data that will influence regional policy change, and documentation for a case study to be disseminated nationally to other mid-sized local governments.

**This meeting will be held at the City of Bowie, City Hall located at 2614 Kenhill Drive, Bowie, MD in room 204 on Wednesday, March 24<sup>th</sup> from 10:00 AM to 1:00 PM.** We will be discussing the sustainable, resource conserving and pollution preventing concepts, materials, and techniques that may be incorporated in the site planning and architectural design of the Parks and Grounds Maintenance Facility. Project partners are encouraged to participate in this meeting in order to ensure the desired results of this highly visible demonstration project. Thank you for your continued interest in this regionally significant environmental demonstration project.

# Meeting Notes



TERRALOGOS  
ECO ARCHITECTURE, PC

1014 West 36<sup>th</sup> Street  
Baltimore, Maryland 21211

P: 410 467 7300  
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E: info@terralogos.com  
W: www.terralogos.com

**DATE:** 3.24.04

**PROJECT:** Bowie Parks and Grounds Facility

**PURPOSE OF MEETING:** Kick-Off Workshop

**ATTENDEES: NAME – ORGANIZATION – EMAIL – PHONE NUMBER**

Lawrence E. Pierce	City of Bowie Dir Commun’y Svcs	lpierce@cityofbowie.org	301-809-3004
Michael F. Schramm	City of Bowie Parks & Grounds	mschramm@cityofbowie.org	301-809-2341
George Jamar	City of Bowie Parks & Grounds	gymar@cityofbowie.org	240-508-5059
Ruth Newell	City of Bowie	rnewell@cityofbowie.org	301-809-3009
John Markovich	MNCPPC	john.markovich@ppd.mncppc.org	301-952-5404
Sharon Meigs	PG County DER	slmeigs@co.pg.md.us	301-883-5898
Rey de Guzman	PG County DER/PRD		301-883-5905
Stan Wildesen	PG County PRD	sewildesen@co.pg.md.us	301-883-5924
Britt Slattery	U.S. Fish & Wildlife		410-573-4581
Paul Clarke	Clarke Associates		410-268-3378
Tom Federline	RMF Engineering, Inc.	federlin@rmf.com	410-576-0505
Kris Baker	EMO Energy Solutions	kbaker@emoenergy.com	703-255-6674
Kim Schaefer	TerraLogos eco architecture PC	kims@terralogos.com	410-467-7300
Julie Gabrielli	TerraLogos eco architecture PC	julieg@terralogos.com	410-467-7300

**GOALS AND BARRIERS**

1. Constructability and maintainability are essential. No finicky, high-end equipment. Longevity of materials and components is important.
2. Educational mission. Project will be visited by “outsiders,” so building must present solutions and systems that are practical and can be duplicated.
3. Will consider life cycle cost and return on investment for certain aspects, but prefer shorter time horizon for paybacks.
4. Emphasis on whole site design, with building as integral part. Bioretention, innovative stormwater management, water reuse, green roofs, and other strategies may be considered. Note that PG County will require conventional stormwater management design. Encourage MDE to see this as a demonstration project and work with project team to get State to allow LID for quantity as well as quality treatment.
5. Strategic partners: DER goals: reduce water consumption; reduce runoff; reduce impervious pavement. MEA goals: energy efficiency; renewable energy.

## Meeting Notes

**PROJECT:** Bowie Parks and Grounds Facility

**PAGE:** 2 OF 2

**DATE:** 4/16/04

6. Define as a “demonstration project.” This project must help to build internal capacity in Bowie for design, construction, and maintenance of early-friendly facilities. Also demonstrate that “going green” is cost-effective for local governments.

### **BUILDING PROGRAM**

1. Occupancy. Park crews are out all day, between 7:00 a.m. and 3:30 p.m. Mechanic is there all day. Eventually, one admin / logistics / support person will also be there full time. Two people are in and out all day. Deliveries are made throughout the day. Currently have 28 full-time employees with 10 more in the summer.
2. Site logistics. Need to be able to get in and out easily, with trucks and other heavy equipment. Need to get gas on location. One or two 1,000 gallons tanks will be located above ground.

### **LEED GREEN BUILDING RATING SYSTEM DISCUSSION**

1. **SITES** Credit SSc4.1, Public Transit. Bus lines currently do not stop close enough to site for this credit. However, Bowie can talk with the bus line and see about moving bus stops. Credit SSc4.3, Alternative Fuels. Ruth is working with Rebuild America and MEA for funding for demonstration projects. Electric vehicles (golf carts) may be considered. Biodiesel (B-20) may work in the current Toro diesel mowers.
2. **WATER** Rainwater collection is strongly encouraged. This will help both with water conservation and site stormwater management. If it's made visible, it's also educational. Question about whether greywater can be considered for vehicle washing. This would mean recycling wash water and sending through filtration etc.
3. **ENERGY** Smart planning mitigates energy use. This includes building shape and orientation, and good insulation in the walls and roof. Building likely to be external-load dominant, so high insulation levels may make sense (as with strawbale construction, for instance). Minimize internal loads with efficient lighting, use of daylighting, and right-sized HVAC equipment. Should be able to daylight entirely and have no lights on during the day. MEA is willing to fund energy efficiency measures, as a 30% energy use reduction is targeted by the grant from them. Renewable energy – consider building-integrated photovoltaics on a metal roof. Too many trees for wind power to be effective.

### **FOLLOW UP AND NEXT STEPS**

1. Need updated soils report for the site. Also need existing conditions survey and topo for the site, including accurate site boundary.
2. Project team and strategic partners to reconvene for a Site Design Workshop once site base information is documented.
3. Parks Department is working on a transportation package to increase efficiency and reduce fuel consumption. This may be applicable for a LEED Innovation Credit, especially if eco mowers are used.
4. Need info on current water use for vehicle washing.

LEED SCORECARD PHASE: 10% Design Charrette Submittal					KEY: Indicates Pre-Requisite - must be implemented to file for certification	KEY: Indicates no possibility of achieving credit	Primary Responsible Party for Credit	RATING KEY: Tot Points:69 Platinum 52 Silver 33 Gold 39 Certified 26	Cost Impact OR Savings
LEED Credit No.	CRITERIA	AVAIL	YES (1) or NO (0)	MAYBE	INTENT/REQUIREMENTS	SUBMITTALS V2.1		CURRENT STATUS or Action Required	
<b>Section 1</b>	<b>SUSTAINABLE SITES</b>								
<b>SSp1</b>	<b>Erosion &amp; Sedimentation Control</b>	<b>R</b>	<b>R</b>	<b>R</b>	Control erosion to reduce negative impacts on water and air quality, follow EPA Document 832-R-92-005	1) ECP highlighting erosion control measures + topsoil stockpile location 2) List of measures implemented			No cost increase
<b>SSc1</b>	<b>Site Selection</b>	<b>1</b>	<b>1</b>		Avoid development of inappropriate sites and reduce the environmental impact from the location of a building on a site	Declare that the project is not 1) farmland, 2) in floodplain 2) endangered/threatened species 4) wetland 5) parkland	<b>Y</b>	<b>Assume it's not parkland</b>	No cost increase
<b>SSc2</b>	<b>Urban Redevelopment</b>	<b>1</b>	<b>0</b>		Increase localized density to conform to existing or desired density goals by utilizing sites that are located w/in an existing min. dvlpmt. density of 60,000 SF/acre	Provide density for the project and for the surrounding area, and area plan		<b>Not applicable to this project</b>	Cost Impact not known at this time.
<b>SSc3</b>	<b>Brownfields</b>	<b>1</b>	<b>0</b>		Develop on a site documentaed as contaminated OR on a site classified as a brownfield by local, state or federal agency. Effectively remediate.	1) Confirm project is a brownfield 2) Provide narrative of remediation measures		<b>Not applicable to this project</b>	Cost Impact not known at this time.
<b>SSc4</b>	<b>Alternative Transportation</b>	1-4							
<b>SSc 4.1</b>	Public Transportation Access	<b>1</b>		<b>1</b>	Locate project w/in 1/2 mile of a commuter rail, light rail or subway station or 1/4 mile of two or more public or campus bus lines usable by building occupants	Provide area drawing highlighting building, rail stations, bus lines and indicate distances, include a scale bar		<b>This one is close, but not within 1/4 mile. City will work on request to get bus stops moved closer to site.</b>	No cost increase to get credit

<b>SSc 4.2</b>	Bicycle Storage + Changing Rooms	1	1	Provide bicycle storage w/ shower facilities (w/in 200 yards of bldg) for 5% of reg. bldg. occupants.	1) Provide bike racks to accommodate 5% of building occupants, showers 1 for every 8 bikes 2) Provide plan showing both				Minimal increase for bike racks, may be an add'l shower.
<b>SSc 4.3</b>	Alternative Fuel Vehicles	1		Provide AFV for 3% of occupants AND preferred parking, OR install AF-refueling stations for 3% of total parking capacity	Provide proof of ownership of , or 2 year lease agreement & calculations OR Provide specs and dwgs. highlighting AF-refueling stations and calcs			Possibility if using Biodiesel as a pilot program; requirement may be too strict, though.	Cost Impact not known at this time.
<b>SSc 4.4</b>	Parking Capacity	1	1	Size parking to meet, not exceed, local zoning AND provide carpool spaces for 5% of occupants OR no new parking for rehab projects AND preferred parking	NEW copy of zoning rqmts., state number of spaces, show carpool spaces. EXIST add no new parking, show carpool spaces				Minimal impact for design/installation of signage
<b>SSc5</b>	<b>Reduce Site Disturbance</b>	1-2		Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity					
<b>SSc 5.1</b>	Protect or Restore Open Space	1	1	RESTORE/LIMIT For previously developed sites, restore open space; for new sites limit disturbance	GREEN limit disturbance of earthwork OR DEVELOPED restore 50% of site area, provide landscaping plan				Modest inc. for materials & design May offset SWM
<b>SSc 5.2</b>	Development Footprint	1	1	OPEN SPACE/DESIGNATE Reduce development footprint to exceed local zoning's open space requirement, or designate space adjacent to building	ZONING Exceed zoning's open space rqmt. by 25% OR NO ZONING designate open space equal to building footprint				Cost impact minor due to more planting materials
<b>SSc6</b>	<b>Stormwater Management</b>	1-2		Limit disruption and pollution of natural water flows by managing stormwater runoff					
<b>SSc6.1</b>	Rate + Quantity	1	1	Limit stormwater runoff from existing to developed conditions.	1) Provide SWM Plan, imperviousness less than 50% OR 2) 50% impervious exist., provide SWM Plan with a 25% decrease in runoff				Cost Impact not known at this time. May offset SWM costs
<b>SSc6.2</b>	Treatment	1	1	Limit disruption of natural water flows by eliminating stormwater runoff, increasing on-site infiltration + eliminating contaminants	1) Comply with EPA's BMPs for removal of TSS and TP 2) Provide calculations demonstrating treatment methods				Cost Impact not known at this time. May offset SWM costs



<b>SSc7</b>	<b>Heat Island Reduction</b>	1-2			Reduce heat islands to minimize impact on microclimate and human and wildlife habitat.					
<b>SSc7.1</b>	Non-roof	1		1	Increase shaded areas, light-colored, highly reflective materials, place parking underground, use an open grid pavement	1) Shade w/in 5 yrs on 30% site OR 2) Light colored surfaces for 30% OR 3) Open grid pavement for 30% OR 4) 50% parking underground OR 5) Open grid pavement for 50% parking			This one is difficult to get, especially w/ the way the tree canopy is calculated. Open grid pavement might be an option; would also help w/ stormwater management.	Moderate cost increase due to add'l planting or structure.
<b>SSc7.2</b>	Roof	1	1		Use ENERGY STAR Roof compliant OR install a vegetated roof	1) Energy Star roof for 75% roof surface OR 2) Green roof for 50% of roof OR 3) Combination of both for 75% of roof				Additional cost for higher grade roofing material.
<b>SSc8</b>	<b>Light Pollution Reduction</b>	1	1		Eliminate light trespass from the building + site, improve night sky access + reduce development impact on nocturnal environ.	1) Exterior lighting to be shielded 2) Meet Cutoff Rqmts.3) Maximum candela value w/in property			Security is an issue, but not in conflict w/ Dark Sky requirements. Cut-off fixtures will light site more efficiently, which will help w/ energy costs.	No additional cost. Savings for reduced energy
<b>TOTALS</b>	<b>Section 1 - Site</b>	<b>14</b>	<b>9</b>	<b>3</b>						
<b>Section 2 WATER EFFICIENCY</b>										
<b>WEc1</b>	<b>Water Efficiency</b>	1-2			Limit or eliminate the use of potable water for landscape irrigation					
<b>WEc1.1</b>	Reduce by 50%	1	1		Use high-efficiency irrigation or captured rain water	1) High efficiency irrigation technology OR 2) No permanent system, native landscape OR 3) Rain or recycled water			No irrigation is feasible in our climate, w/ native plants, etc.  No irrigation	Moderate increase for cisterns+pumps.
<b>WEc1.2</b>	No Potable Use or Irrigation	1	1		Use captured rain water or no irrigation	1) Use rain or recycled water OR 2) No permanent system, native landscaping				Reduce or no additional cost.
<b>WEc2</b>	<b>Innovative Wastewater Treatment</b>	1		1	Reduce the generation of wastewater and potable water demand while increasing the local aquifer recharge.	1) Reduce use of potable water for building sewage conveyance by 50% OR 2) Treat 100% of wastewater			Most easily achievable by using composting toilets. Rainwater collection for toilet flushing can reduce use of potable water for sewage conveyance.	No cost information available

<b>WEc3</b>	<b>Water Use Reduction for potable water</b>	1-2			Maximize water efficiency within buildings to reduce the burden on municipal supply and wastewater systems.	Provide baseline and design case calculations demonstrating water-consuming fixtures reduce water consumption					
<b>WEc3.1</b>	20% reduction	1	1								Cost Impact not known at this time.
<b>WEc3.2</b>	30% reduction	1		1						Achievable if using rainwater collection.	
<b>TOTALS</b>	<b>Section 2 - Water</b>	<b>5</b>	<b>3</b>	<b>2</b>							
<b>Section 3</b>	<b>ENERGY and ATMOSPHERE</b>										
<b>EAp1</b>	<b>Fundamental Building Commissioning</b>	R	R	R	Verify & ensure that fundamental building elements & systems are designed, installed and calibrated to operate as intended.	1) Engage a Comm. Authority 2) Collect/review design intent 3) Comm. Plan 4) Verification 5) Complete Report					Additional fee. Access to units post-occ?
<b>EAp2</b>	<b>Minimum Energy Performance</b>	R	R	R	Establish the minimum level of energy efficiency for the base building and systems.	Provide calculation demonstrating that building meets or exceeds ASHRAE/IESNA 90.1-1999					Energy analysis completed by MEP
<b>EAp3</b>	<b>CFC Reduction in HVAC&amp;R Equip.</b>	R	R	R	Reduce ozone depletion.	Provide equipment that does not use CFC-based refrigerants					No cost impact
<b>EAc1</b>	<b>Optimize Energy Performance</b>	2-10	4	2	Achieve increasing levels of energy performance above the prerequisite	Provide energy simulation and calculations demonstrating energy savings				With funding help from MEA, the 2 maybe points are more likely.	Additional fee for energy modeling
<b>EAc2</b>	<b>Renewable Energy</b>	1-3			Encourage & recognize increasing levels of on-site renewable energy self-supply	Supply 5% of building's total energy through on-site renewable resources.					Cost impact not known at this time
<b>EAc2.1</b>	5%	1		1						Owner to verify - any renewable partners?	
<b>EAc2.2</b>	10%	1	0								
<b>EAc2.3</b>	20%	1	0								
<b>EAc3</b>	<b>Additional Commissioning</b>	1		1	Verify + ensure that the bldg. is designed, constructed and calibrated to operate as intended	Designate a 3rd Party Commissioning Agent to provide additional reviews, manuals, and training				Considered an Alternate for RFP for Commissioning Agent	Additional fee and additional cost for testing.

<b>EAc4</b>	<b>Eliminate All HCFCs</b>	<b>1</b>		<b>1</b>	Reduce ozone depletion and support early compliance with the Montreal Protocol.	Provide equipment that does not use HCFC or Halon based refrigerants		<b>Have to see what HVAC system we are using. This one is likely though.</b>	Cost impact not known at this time
<b>EAc5</b>	<b>Measurement &amp; Verification</b>	<b>1</b>	<b>0</b>		Provide for the ongoing accountability and optimization of building energy and water consumption performance over time.	1) M+V Plan following IPMVP 2001 2) Schedule of instrumentation and controls 3) Cutsheets of sensors + systems		<b>Too complex for this project.</b>	Cost impact not known at this time
<b>EAc6</b>	<b>Green Power</b>	<b>1</b>		<b>1</b>	Encourage the development and use of grid source, renewable energy technologies	Provide 50% of building's electricity from renewable resources with a two-year contract		<b>Depends on Owner commitment</b>	Cost impact not known at this time
<b>TOTALS</b>	<b>Section 3 - Energy</b>	<b>17</b>	<b>4</b>	<b>6</b>					
<b>Section 4</b>	<b>MATERIALS and RESOURCES</b>								
<b>MRp1</b>	<b>Storage &amp; Collection of Recyclables</b>	<b>R</b>	<b>R</b>	<b>R</b>	Facilitate the reduction of waste generated by building occupants that is hauled to and disposed in landfills	Provide a plan highlighting recycling + sorting areas			No additional cost
<b>MRc1</b>	<b>Reuse Structure</b>	1-3			Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings. All new construction	Provide a existing and new floor plan and calculations demonstrating the amount of building reused			
<b>MRc1.1</b>	Maintain 75% of Shell	<b>1</b>	<b>0</b>					<b>Not applicable</b>	
<b>MRc1.2</b>	Maintain 100% of Shell	<b>1</b>	<b>0</b>						
<b>MRc1.3</b>	Maintain 100% Shell + 50% Non-Shell	<b>1</b>	<b>0</b>						
<b>MRc2</b>	<b>Construction Waste</b>	1-2			Divert construction, demolition, and land clearing debris from landfill disposal. Redirect recyclable material back to the manufacturing process.	Provide a Waste Management Plan and calculations demonstrating amount of material diverted and by what means it was diverted			
<b>MRc2.1</b>	Divert 50%	<b>1</b>	<b>1</b>					<b>Should consider "deconstruction" of structures</b>	Moderate increase, may be lower due to location of project
<b>MRc2.2</b>	Divert 75%	<b>1</b>	<b>1</b>					<b>This is achievable w/ cooperative builder and subs</b>	

<b>MRc3</b>	<b>Resource Reuse</b>	1-2			Reuse building materials and products in order to reduce demand for virgin materials and to reduce waste	List and describe each material salvaged and reused 2) Provide details showing their reuse 3) Calculations showing their cost related to project cost				Cost impact not known at this time.
<b>MRc3.1</b>	Specify 5%	1	0							
<b>MRc3.2</b>	Specify 10%	1	0						Not likely on this project.	
<b>MRc4</b>	<b>Recycled Content</b>	1-2			Increase demand for building products that incorporate recycled content materials	1) Provide contractor submittals highlight recycled content 2) Provide calculations demonstrating percentages of recycled content material used in project				Cost impact not known at this time. Should be modest, if any.
<b>MRc4.1</b>	Specify 5% (p.c. + 1/2 p.i.)	1	1							
<b>MRc4.2</b>	Specify 10% (p.c. + 1/2 p.i.)	1		1					Potential, depending on materials chosen.	
<b>MRc5</b>	<b>Regional Materials</b>	1-2			Increase demand for building products that are extracted + manufactured within the region					Neutral cost impact
<b>MRc5.1</b>	20% Manufactured Regionally	1	1			1) Provide contractor submittals 2) Spreadsheet showing cost, distance				
<b>MRc5.2</b>	of 20% in MRc5.1, 50% Extracted Regionally	1		1		1) Provide contractor submittals 2) Spreadsheet showing cost, distance			Should be achievable, depending on materials used	
<b>MRc6</b>	<b>Rapidly Renewable Materials</b>	1		1	Reduce the use and depletion of finite raw materials + long-cycle renewable materials by replacing with rapidly renewable	1) Provide documentation from manufacturer 2) Contractor submittals 3) Calculations demonstrating 5% usage			Depends on materials used.	May add cost depending on what specified.
<b>MRc7</b>	<b>Certified Wood</b>	1		1	Encourage environmentally responsible forest management	1) Provide vendor's FSC certification number 2) Contractor submittals 3) Calculations for 50% of wood to be FSC			This is a cost issue. But if not much wood is used, it is possible.	Might be a major cost increase for the mid-atlantic
<b>TOTALS</b>	<b>Section 4 - Materials</b>	<b>13</b>	<b>4</b>	<b>4</b>						
<b>Section 5</b>	<b>INDOOR ENVIRONMENTAL QUALITY (IEQ)</b>									
<b>EQp1</b>	<b>Minimum IAQ Performance</b>	<b>R</b>	<b>R</b>	<b>R</b>	Establish minimum indoor air quality (IAQ) performance.	Describe procedure employed to meet ASHRAE 62-1999				Should be minimal cost impact

<b>EQp2</b>	<b>Environmental Tobacco Smoke (ETS) control</b>	<b>R</b>	<b>R</b>	<b>R</b>	Prevent exposure of building occupants and systems to ETS	1) Certify building is non-smoking 2) Designate exterior smoking				No cost impact
<b>EQc1</b>	<b>CO2 Monitoring</b>	<b>1</b>	<b>1</b>		Provide capacity for IAQ monitoring to help sustain long-term occupant comfort	1) Provide summary of CO2 monitor installation 2) Operational design and calcs for max levels 3) Summary of controls and zones 4) Calculate CO2 levels for each separate activity + use				Modest increase for sensors + monitoring Increase for annual re-calibration
<b>EQc2</b>	<b>Increase Ventilation Effectiveness</b>	<b>1</b>	<b>0</b>		Provide for the effective delivery and mixing of fresh air to support the safety, comfort and well-being of occupants	1) Mechanically ventilated buildings, that meet ASHRAE 129-1997 OR 2) Naturally ventilated spaces demonstrate a distribution and laminar flow pattern that involves not less than 90% of the room or zone area in the direction of air flow for at least 95% of hours of occupancy.			<b>Underfloor air or "displacement ventilation" required for this credit.</b>	Not sure of cost impact at this time
<b>EQc3</b>	<b>Construction IAQ Plan</b>	1-2			Prevent indoor air quality problems resulting from the construction/renovation process					Modest increase for plan, more labor to ensure plan carried out.
<b>EQc3.1</b>	During Construction	<b>1</b>	<b>1</b>		SMACNA Guidelines for IAQ program during construction	1) Provide a Construction IAQ Plan 2) Provide 18 photographs, or declare five approaches of SMACNA IAQ used				
<b>EQc3.2</b>	Before Occupancy	<b>1</b>	<b>1</b>		2 week flush out prior to occupancy	1) Describe building flush-out procedure OR 2) Provide documentation that reference IAQ standards were followed				Changes schedule + moderate inc. for filtration media.
<b>EQc4</b>	<b>Low Emitting Materials</b>	1-4			Reduce the quantity of indoor air contaminants that are odorous or potentially irritating					Minimal cost impact
<b>EQc4.1</b>	Adhesives + Sealants	<b>1</b>	<b>1</b>		Must meet or exceed the VOC limits	1) Provide a list of all adhesives, sealants, carpet, paint, and composite wood and list their VOC levels 2) Provide cutsheets and				

<b>EQc4.2</b>	Paints	1	1	Paints & coatings exceed the VOC a& chemical component limits of Green Seal	MSDS for each product used			
<b>EQc4.3</b>	Carpet	1	1	Carpet systems exceed the Carpet and Rug Institute (CRI) Green Label				
<b>EQc4.4</b>	Composite Wood	1	1	Composite wood & agrifiber products must contain no added urea-formaldehyde resins.				
<b>EQc5</b>	<b>Indoor Chemical Pollutant Source Control</b>	1	1	Avoid exposure of building occupants to potentially hazardous chemicals that adversely impact air quality.	Provide drawings 1) permanent entryway systems 2) deck to deck partitions 3) plumbing system separation			May be minor increase for ducting or piping
<b>EQc6</b>	<b>Individual Control</b>	1-2		Provide a high level of ind. occ. control of thermal, ventilation, & lighting sys. to support health, productivity, & comfort				Should be minimal cost impact, operable windows to meet FP may increase cost
<b>EQc6.1</b>	Perimeter	1	1	Provide at least an average of one operable window and one lighting control zone per 200 SF for all reg. occupied areas w/in 15 feet of perimeter wall	1) Provide drawing highlighting reg.occ. perimeter spaces 2) Calculations showing correct number of controls		Depends on building design and owner commitment	
<b>EQc6.2</b>	Non-Perimeter	1	1	Provide controls for each individual for airflow, temp, and lighting for at least 50% of occupants in non-perimeter, reg. occupied spaces	1) Provide drawings highlight controls 2) Calculations showing correct number of controls		Depends on building design and owner commitment	
<b>EQc7</b>	<b>Thermal Comfort</b>	1-2		Provide for a thermally comfortable environment that supports the productive and healthy performance of the occupants.				Cost increase not known at this time
<b>EQc7.1</b>	Comply with ASHRAE 55-1992	1	1		1) Mech. ventilated, provide table + narrative demonstrating that rqmts. were met OR 2) Naturally vent., project complies w/ 90% acceptability of rqmt.		Not possible in our region without adding humidity in winter, which adds to complexity of HVAC system and maintenance issues.	

<b>EQc7.2</b>	Permanent Monitoring System	1		1	Temperature and humidity monitoring system will operate throughout all seasons to permit control of the building zones within the seasonal thermal comfort ranges as defined in ASHRAE 55-1992	Provide drawings, cutsheets showing the installed temperature and humidity monitoring system			These two depend on HVAC design. Owner is willing to consider humidification for improved wintertime comfort.	
<b>EQc8</b>	<b>Daylight and Views</b>	1-2			Provide a connection btwn. indoor & outdoor environments thru the introduction of sunlight & views into occupied areas					Should be minimal cost impact
<b>EQc8.1</b>	Daylight 75% of Spaces	1	1		Achieve a minimum Daylight Factor of 2% in 75% of all space occupied for critical visual tasks	Provide area calculation defining daylight zone and provide prediction calculations or daylight simulation			Should be achievable, but credit calculation is pretty strict.	
<b>EQc8.2</b>	Views for 90% of Spaces	1	1		Achieve a line of sight to vision glazing for bldg. occupants in 90% of all regularly occupied spaces	Provide drawings + calcs. (direct line of sight to vision glazing - below 7'-6")				
<b>TOTALS</b>	<b>Section 5 - IEQ</b>	<b>15</b>	<b>10</b>	<b>4</b>						
<b>Section 6</b>	<b>INNOVATION CREDITS and DESIGN/BUILD PROCESS</b>									
<b>IDc1</b>	<b>LEED Innovation Credits</b>	1-4			To provide projects the opportunity to be awarded points for exceptional perf. or innovative perf. in categories not addressed	1) Provide intent, requirement, proposed submittals, and design approach for proposed credit 2) Provide narrative + supporting documentation that supports the proposed credit 3) Include information that demonstrates the sustainable benefits of each measure			Defined w/ Owner Defined w/ Owner Defined w/ Owner	
<b>IDc1.1</b>	Innovation in Design	1	1							
<b>IDc1.2</b>	Innovation in Design	1	1							
<b>IDc1.3</b>	Innovation in Design	1		1						
<b>IDc1.4</b>	Innovation in Design	1								
<b>IDc2</b>	<b>LEED Accredited Professional</b>	1	1		To support & encourage design integration required by a LEED project & to streamline the application & certification process.	Provide a copy of LEED certificate				If not available in-house, could be substantial increase in fee.
<b>TOTALS</b>	<b>Section 6 - Innovation</b>	<b>5</b>	<b>3</b>	<b>1</b>						
	<b>TOTAL POINTS</b>		<b>Y</b>	<b>M</b>						

<b>GRAND TOTAL</b>	<b>All Sections</b>	<b>69</b>	<b>33</b>	<b>20</b>					
	Certified	26 - 32 points							
	Silver	33 - 38 points					<b>52</b>		
	Gold	39 - 51 points					<b>39</b>		
	Platinum	52 - 69 points					<b>33</b>		



**LEED SUMMARY Scorecard Bowie Parks & Grounds Facility**

SECTION	NAME	DESCRIPTION	POINTS Avail	POINTS Achiev-able	POINTS Possible (maybes)
<b>Section 1</b>	<b>SUSTAINABLE SITES</b>				
<b>SS</b>	<b>Sub-total</b>	<b>Subtotal Section 1: Sites</b>	<b>14</b>	<b>9</b>	<b>3</b>
<b>Section 2</b>	<b>WATER EFFICIENCY</b>				
<b>WE</b>	<b>Sub-total</b>	<b>Subtotal Section 2: Water</b>	<b>5</b>	<b>3</b>	<b>2</b>
<b>Section 3</b>	<b>ENERGY and ATMOSPHERE</b>				
<b>EA</b>	<b>Sub-total</b>	<b>Subtotal Section 3: Energy</b>	<b>17</b>	<b>4</b>	<b>6</b>
<b>Section 4</b>	<b>MATERIALS and RESOURCES</b>				
<b>MR</b>	<b>Sub-total</b>	<b>Subtotal Section 4; Materials</b>	<b>13</b>	<b>4</b>	<b>4</b>
<b>Section 5</b>	<b>INDOOR ENVIRONMENTAL QUALITY (IEQ)</b>				

<b>EQ</b>	<b>Sub-total</b>	<b>Subtotal Section 5: IEQ</b>	<b>15</b>	<b>10</b>	<b>4</b>
<b>Section 6</b>	<b>INNOVATION CREDITS &amp; DESIGN/BUILD PROCESS</b>				
<b>ID</b>	<b>Sub-total</b>	<b>Subtotal Section 5: IEQ</b>	<b>5</b>	<b>3</b>	<b>1</b>
			<b>Pos.</b>	<b>Definite</b>	<b>Maybe</b>
<b>GRAND TOTAL</b>	<b>All Sections</b>	<b>ALL SECTIONS</b>	<b>69</b>	<b>33</b>	<b>20</b>
	<b>RATING:</b>		<b>PTS</b>		
	<b>Platinum</b>		<b>52</b>		
	<b>Gold</b>		<b>39</b>		
	<b>Silver</b>		<b>33</b>		
	<b>Certification</b>		<b>26</b>		

**LEED Documentation ABBREVIATIONS & NOTES**

<b>ABBRV.</b>	<b>Name</b>
AoR	Architect of Record
Arch	Architect or design firm
SDD	For LEED means Sustainable Design and Development
SD Coor	Sustainable Design Coordinator - designated person to manage SD documentation
LEED Coor	Party responsible for LEED coordination, LEED Consultant
CE	Civil Engineer
LA	Landscape Architect or designer
Struct	Structural Engineer
SpecW	Specification writer
IA	Interior Architect
Cost E	Cost Estimator
PM	Project Manager
CEM	Certified Energy Manager or Energy Consultant
ME	Mechanical Engineer
PI E	Plumbing Engineer
EE	Electrical Engineer
FP	Fire Protection Engineer
O+M	Operations and Maintenance
ComX or Cx	Commissioning Agent or Authority
CM	Construction Manager or CM firm handling project
A/E	Architect/Engineering firm
GC	General Contractor
Sub-con	GC's sub-contractors working on the project
<a href="#">Military or other government projects:</a>	
CMD	Command as on a military base
A/E Contr	The design contractor, generally the A/E firm that does initial work.
CONTRACTOR	Design Build contractor awarded the project which should include the Architect of Rec and the General Contractor for construction, followed by other disciplines needed.

Within the body of the LEED matrices, common terms include:			
add'l	additional	matl's	materials
alt	alternative	mfg	manufacturing
Base	Military installation, station or base	min	minimum
bldg	building	mtce	maintenance
calc's	calculations	nar	narrative
chem	Chemical	occ.	occupants, occupancy
Commiss'g	Commissioning		
CWM	Construction Waste Management		
develop	Development	perim	perimeter,
doc	documentation	perm	permanent
dwgs	drawings	prelim	preliminary
ed.	education	PreReq	Prerequisite
elim	eliminate	qty	quantity
equip	equipment		
est	estimate, estimation		
ext	exterior		
FSC	Forest Stewardship Council	reg	regular, regularly
		rel	relative, relationship
		renov	renovation
incl	Include		
ind	indicating		
innov	Innovation	sed	sediment
int	Interior	spec's	specifications
Irriga	Irrigation	SWM	Stormwater Management
Is	Island	sys	system
loc	locally		
		temp	temperature
		transpo	transportation

# Memorandum



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**TO:** Bowie Parks & Grounds Project Team

**FROM:** Julie E. Gabrielli

**DATE:** 6.21.04

**RE:** Site Design and Stormwater Management

In a recent meeting (25 May), our civil engineer raised a number of concerns about low-impact site design. The concerns centered on performance in wintertime, long-term maintenance, initial construction cost, and overall practicality for the owner. We have done some research and have the following information to report.

## BACKGROUND

At the initial goal-setting workshop on 24 March, emphasis was placed on whole site design, solutions that are restorative to the site and integral with the building. Several Strategic Partners are involved with both technical expertise and grant monies. This points to a low-impact development (LID) approach to stormwater treatment. Bioretention, innovative stormwater management, water reuse, green roofs, and other strategies are to be considered. Typically, Prince George's County requires conventional stormwater management design. The project team will work to encourage the County and the Maryland Department of the Environment (MDE) to see this as a demonstration project. One thought is to get State to allow LID for quantity as well as quality treatment.

The 2000 Maryland Stormwater Design Manual Chapter 5 deals with nonstructural practices – essentially what we call “Best Management Practices,” or BMPs. There is a three-pronged approach to design: 1) avoidance (resource conservation); 2) minimization (using nonstructural practices); and 3) mitigation (using structural practices).

## TERMINOLOGY

Low Impact Development (or LID) is a specific method developed by Prince George's County to more effectively provide runoff control. The premise is to capture and treat a certain volume of water determined by a somewhat complicated method. The results are remarkably similar to the storage volumes required by Maryland in its Stormwater Design Manual. The bottom line is to use alternatives to imperviousness and to more closely mimic natural hydrology.

Bioretention is nothing more than a modified sand filter that allows plants to grow in it. The method originated in the early 1990's as an attempt to allow developers to combine landscaping and stormwater management requirements. It is important not to overemphasize the role of the plants in nutrient and/or pollutant removal. They are properly considered as icing on the cake. (Further discussion of role of plants, see “concerns” below.)

# Memorandum

PROJECT: Bowie Parks & Grounds Building – Site Design

PAGE: 2 OF 4

DATE: 6/21/04

Structural solution refers to a traditional stormwater management technology, such as piping and detention ponds. The typical approach here is to collect water through area drains, pipe it together, and send it into centralized treatment structure(s). As a result, the natural hydrology of the site is disturbed. Rain is no longer allowed to filter back into the watertable, but is instead sent offsite via concentrated point discharges, often at high flow rates and temperatures, to a local stream or waterway.

## CONCERNS ABOUT BIORETENTION

### PLANTS PERFORMANCE IN WINTERTIME

The civil engineer raised the concern that plants in our region are mostly dormant during cold months. Therefore, they don't perform the function of filtering sediments and absorbing nutrients and pollutants for at least a quarter of the year.

Both Stewart Comstock, P.E., Water Resources Engineer at MDE, and another civil engineer at McCrone, Inc. in Annapolis offer this information: There is indeed a seasonal variation in pollutant uptake, which would certainly be a concern if plants were the primary removal mechanism. Pollutant removal from plant uptake is an *added benefit* to the proven method of filtration in properly-design bioretention systems.

Constructed wetlands systems for wastewater treatment are in use all over the county, including northern New England where there is a significant winter. If they can do their job treating sewage year-round, we can certainly put our faith in bioretention, grassed swales, and constructed wetlands.

### DESIGN

Another concern is that bioretention takes up more land area than traditional structural solutions. While this is true, it is important to remember that stormwater design is best considered in concert with other site design goals. Restoration of damaged habitat areas, provision of green space, and other landscaping goals can be combined with stormwater areas to actually save space. Since installation and maintenance of landscaping happens on a project regardless of what stormwater management strategy is implemented, bioretention can be designed so that landscaping features and budgets can do double duty as stormwater management. In short, good design results from the design team thinking of the whole site as a system, rather than working in discreet individual areas.

The engineer mentioned that bioretention areas located too near parking can undermine paving, because of standing water in the filtering medium. This emphasizes the fact that good design and construction are critical. There are numerous examples of sites that got it right, including the Heritage Office Park on Riva Road. There are also examples of sites that have failed, due to some poor-quality aspect of the design or construction. At the Naval Academy Stadium parking lot, a foot of stockpiled topsoil washed into a newly-installed LID area during a heavy rain, effectively clogging it with sediment. (See also, "maintenance" below.)

### MAINTENANCE

Both the civil engineer and the owner are concerned that LID and bioretention require high levels of maintenance. One of the primary goals of green design is to work in concert with natural systems, not to fight them. When

# Memorandum

PROJECT: Bowie Parks & Grounds Building – Site Design

PAGE: 3 OF 4

DATE: 6/21/04

properly designed and installed, these systems should over time require *less* maintenance than structural solutions. The Heritage Office Park example given above requires very little, if any, maintenance. It is easy to tell when a bioretention area needs maintenance, and easier to replace some topsoil and/or plants than to repair or replace a structural solution. Maintenance can be done with a landscaping crew, while many structural systems require special training for proper maintenance.

One design flaw that has been identified recently is the filter fabric between the gravel bed and the top layer of sand. The filter fabric overly slows the rate of water infiltration, which can cause water to back up on the surface. One practical solution is to transition from the sand to a small gravel and then to the larger gravel, eliminating the filter fabric layer.

## AVAILABLE CONTRACTORS / EXPENSE OF INSTALLATION

Any reputable landscape contractor should be qualified to install a bioretention structure. The key, again, is in proper design documentation and quality details. Because of the growing interest, more and more contractors are getting into this type of work. That should create sufficient competition in the marketplace to keep their pricing in line.

## STRUCTURAL SOLUTION

For this project, the civil engineer recommends using “Bay Saver” or “Storm-ceptor,” both underground tanks that create a vortex of water flow, forcing sediment to fall to the bottom of the tank. The water then discharges to a storm drain system or to daylight over a berm. Temperature of the water would not be changed; therefore, in summer, it would be quite warm coming off an asphalt parking lot. The owner would be required to pump out this sludge periodically. Although the first-cost to install is more expensive than other solutions, the civil engineer represented that these work better and are more “user-friendly” for maintenance than bioretention.

Stewart Comstock, of MDE, has this response. In addition to being quite expensive first-cost, these tanks are not approved for new construction because they do not meet the State’s regulations for water quality. Since this is a redevelopment project, approval may not be a barrier. However, it must be noted that these systems fail on all three criteria of the State’s performance specifications: pollutant removal; maintenance; and longevity. They have to be vacuumed out every two to three months, thereby presenting a continued maintenance headache for the owner. They *will not work* unless properly maintained. The sludge has to be taken to a proper disposal site, and, because the soils have automotive pollutants in them, many landfills do not accept them. Being underground (“out of sight, out of mind”), there is no way to truly monitor or assess their performance. In short, a solution that relies on continued maintenance and produces an unusable waste product is not environmentally or fiscally smart.

## DEMONSTRATION PROJECT APPROACH

There is a tendency with green buildings to illustrate various techniques, in order to educate the general public. While well-intentioned, this approach tends to prevent the design team from thinking of the building and site as an integrated system. The best site design reduces impervious area, increases times of concentration (in drainage models), and replicates natural hydrology. The idea is to try to do as good a job as nature does because traditional

# Memorandum

**PROJECT:** Bowie Parks & Grounds Building – Site Design

**PAGE:** 4 OF 4

**DATE:** 6/21/04

structural practices have been proven to be far inferior unless utilizing very expensive technology and ongoing maintenance. We do not recommend installing many different stormwater treatment practices, solely in order to demonstrate them to the public. This “one of each” approach results in higher construction costs and increased complexity of maintenance over time.

## RAINWATER COLLECTION

This is one strategy that should not be overlooked. Rainwater collection helps to offset the stormwater quantity management costs by removing volumes of water from the calculation. Collection of rainwater is highly recommended, particularly on a site with limited stormwater treatment options. Sizing the tank should take into consideration two things: (1) the volume of rainwater generated, and (2) the amount of water to be used by the building. If the roof generates a lot more water than the building needs, the tank can be smaller because internal water use is less likely to empty the tank between storms.

Given a roof area of 13,700 sf, and an annual average rainfall of 40 inches, the total potential water collection is 253,632 gallons. If the storage tank was sized to hold two months’ worth of rainwater, that yields a harvest of 42,272 gallons. This gives the ability to go two months without rain, which may be overly pessimistic for the mid-Atlantic region. Sizing for one month would perform almost as well with a tank half the size.

TerraLogos is researching public works departments that utilize collected rainwater for their vehicle wash. This is a common practice in arid parts of the country, such as Texas, and may even be in use in Harford County, Maryland.

The main strike against rainwater collection is that it is an unusual technique in this area. Consequently, installed costs for underground tanks can be high. It might be wise to consider above-ground storage as a way of making rainwater collection more affordable. It is important to evaluate these pros and cons as a full team before making any final decisions.

## IMPERVIOUS SURFACE

The Maryland regulations for redevelopment of an existing site *require* that existing imperviousness be reduced by 20%, OR the design must provide treatment for the equivalent of water coming off that 20%. It should be noted that LEED Site Credit SSc6.1 is very similar, although it requires a 25% reduction of imperviousness.

Unfortunately, LEED does not offer an alternative, the way Maryland does. Since satisfying this particular LEED credit would also satisfy the State, it seems sensible to make it happen. We highly recommend reconsideration of the viability of achieving this credit.