

Baltimore Watershed Agreement

March 2009

Phase 1 Action Plan



BALTIMORE
WATERSHED AGREEMENT





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Acknowledgements

This Phase 1 Action Plan represents the collective thinking and collaboration of a wide range of interested and committed parties that include staff of several Baltimore City and Baltimore County Departments, Agencies, and Offices and representatives of nongovernmental organizations. In particular, the leadership and dedication of Mr. Bill Stack (Baltimore City), Mr. Steve Stewart and Ms. Nancy Pentz (Baltimore County) were invaluable throughout the process. Biohabitats, Inc. and Mrs. Frances Flanigan provided technical support and stakeholder facilitation during the process.



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EXECUTIVE SUMMARY



TOPIC AREAS OVER-ARCHING GOALS

Development & Redevelopment

Protect existing natural & water resources & meet objectives of the Clean Water Act



Community Greening

Achieve urban tree canopy & stream buffer goals & maximize vegetated areas



Maximizing pervious surface area and vegetating parking lots benefits water quality through slowing, retaining and infiltrating stormwater along with numerous other benefits (e.g. shading, aesthetics, etc.).

INTRODUCTION

The Baltimore Watershed Agreement (BWA) was executed in 2002 to formalize the joint commitments and vision of Baltimore City and Baltimore County to address pollution problems in the region's watersheds. Baltimore City and Baltimore County agreed to improve cooperative inter-agency management of environmental resources. In December 2006, leaders from Baltimore City and Baltimore County signed the second regional watershed agreement, emphasizing the value and importance of cooperation in addressing water quality and regional watershed issues while highlighting progress.

A Committee of Principals, established to oversee the development of specific actions aimed at water quality improvement, created five workgroups organized by topic area to set and refine goals for the shared City and County watersheds by October 2007. The five topic areas include Development and Redevelopment, Community Greening, Stormwater, Public Health and Trash.

This Phase 1 Action Plan reflects agreed upon goals and high-priority, short-term actions for Baltimore City and Baltimore County to pursue. The plan is organized by common categories (Implementation, Policy & Regulation, Planning & Collaboration, Education and Outreach & Awareness) which cross all five topic areas followed by actions specific to each of the five topic areas. Two important areas of concern, sustainable communities and environmental justice, identified by the Committee of Principals and five topic committees are woven into the Plan actions. Each action specifies a lead agency and measure of success within the 2009-2012 Phase 1 timeframe. Future phases are also planned and will include new actions as well as follow-up actions based on Phase 1 results. Phase 1 organization and action summaries include:

1. IMPLEMENTATION

- Create "Baltimore Watershed Agreement Workgroup" to provide oversight for Action Plan Implementation
- BWA workgroup to develop framework for assessment of Action Plan implementation
- Assess adequacy of existing staffing and funding and research what other cities have done to fund watershed management actions

2. POLICY & REGULATION

- Integrate BWA goals and actions into City and County policies and programs
- Ensure that new laws and regulations support the BWA
- Improve regulations to minimize impacts to trees during development and redevelopment
- Strengthen laws and enforcement to meet trash reduction goal
- Ensure environmental justice in the implementation of these environmental initiatives



Stormwater

Achieve pollutant reductions & hydrological control to meet water quality standards in streams and tidal waters by 2020



Public Health

Eliminate bacteria related water quality impairments in the tributary streams to the Harbor and Back River



Trash

Eliminate trash-related water quality impairments in the Harbor, Back River and tributary streams.

3. PLANNING & COLLABORATION

- Create a “Planning Workgroup” to ensure comprehensive watershed planning processes
- Share mapping layers and make available on-line to promote environmental site design, environmental justice and synergies
- Use mapping as a planning tool to protect water quality, address environmental justice and identify synergies
- Develop and implement a training program for all developers, design professionals, plan reviewers and site inspectors

4. EDUCATION

- Ensure that BWA actions are incorporated into school curriculum
- Expand water quality education covering the impacts of water quality on public health in school curricula
- Increase the number of schools achieving green school status

5. OUTREACH & AWARENESS

- Establish and conduct joint public relations efforts
- Establish a BWA web-based program to disseminate and update information
- Expand grassroots efforts by increasing government and NGO partnerships
- Create a branded awareness campaign
- Organize, advertise and conduct one-day awareness blitz programs

6. DEVELOPMENT & REDEVELOPMENT

- Estimate per capita impervious cover and establish targets for reduction
- Coordinate and strengthen development review through the use of water quality related GIS overlays
- Determine the effectiveness of environmental site design efforts to date
- Form partnerships to identify and implement innovative stormwater treatment design in capital projects

7. COMMUNITY GREENING

- Develop inter-agency City and County greening policies where appropriate
- Measure the condition of and develop sustainability indicators for urban tree canopies
- Develop and improve Urban Tree Management programs, including effective inventory methods and conduct urban tree inventories
- Continue collaboration on programs to increase tree planting
- Continue to collaborate on research with others as appropriate in support of City and County urban and community forest management programs
- Implement streetscaping that incorporates stormwater management as appropriate

8. STORMWATER

- Create a cross-jurisdictional “Stormwater Workgroup” to work with MDE on the development and long-term coordination of new MS4 permits and stormwater regulations

- Develop and coordinate joint research and monitoring on new technologies and environmental site design
- Develop a joint planning-level strategy to address Total Maximum Daily Loads (TMDLs)
- Continue pilot-scale testing of new technologies and encourage Nongovernmental Organizations (NGO) participation
- Use school “greening” and parking lot retrofits as model opportunities for water quality improvements

9. PUBLIC HEALTH

- Evaluate efforts and determine success indicators for watershed-based bacteria monitoring
- Develop a program for tracking, prioritizing and eliminate sources of domestic waste water in area waterways
- Develop a reporting protocol to be used by agencies and the public for awareness and reporting on water quality indicators
- Expand public health awareness campaign, inform public of water quality effects on public health

10. TRASH

- Evaluate efforts and determine success measures for watershed-based trash monitoring
- Expand littering and trash awareness campaigns
- Continue pilot-scale testing of new technologies working with Department of the Environment and NGOs
- Determine adequacy of inlet cleaning and street sweeping routes and frequency based on determined effectiveness

INTRODUCTION



The Beginning

The original Baltimore Watershed Agreement was executed in 2002 to formalize the joint commitments and vision of Baltimore City and Baltimore County to address pollution problems in the region’s watersheds, which include Gwynns Falls, Jones Falls, Back River and direct Harbor drainage. Baltimore City and Baltimore County agreed to improve cooperative inter-agency management of environmental resources. The City and County, in partnership with watershed associations and interested organizations, planned to expand development and implementation of coordinated education, restoration programs, and projects.



Topic Areas and Goals



Development/Redevelopment

Goal: Ensure that the policies and practices that govern development and redevelopment are protective of existing natural and water resources and meet objectives of the Clean Water Act.

While new development continues in some of the area outside Baltimore’s urban core, redevelopment of older areas has accelerated in recent years. Many aspects of development and redevelopment, such as increasing impervious surfaces, are detrimental to water quality. Environmental site design techniques reduce the impact of new development and offer wonderful opportunities in redevelopment to mitigate environmental problems and improve water quality.



Community Greening

Goal: Achieve City and County urban tree canopy and stream buffer goals and maximize vegetated areas as appropriate to improve water quality.

Increasing the amount of vegetation - tree canopy, native stream buffers, gardens, and other landscaping - has come to be seen as a major step in improving water quality and quality of life in urban areas. Increased vegetative cover, commonly referred to as “greening”, has many beneficial effects. Green areas reduce and treat stormwater runoff, reduce flooding, protect streams, uptake nutrients from the soil, improve air quality, lower summer air temperatures, increase property values and generally make cities healthier, more livable and vibrant.

Milestone

In December 2006, leaders from Baltimore City and Baltimore County signed the second regional watershed agreement, pledging at that time to continue the cooperative efforts begun four years earlier when the first agreement was signed. The new agreement emphasizes the value and importance of cooperation on regional watershed issues and highlights progress in getting monitoring programs aligned and watershed organizations more fully involved in outreach, citizen action and oversight.



Oversight Established

A Committee of Principals, appointed by the Mayor and County Executive, oversees the task of developing actions covering the five topic areas described below. Key city and county agency staff, nongovernmental organizations, and select representatives from other entities comprise the Committee of Principals. In addition, valuable feedback throughout the process, including the preparation of this Action Plan, was provided by the Watershed Advisory Group (WAG).

Charged with Goal Setting

Under the direction of the Committee of Principals, five ad hoc committees were established to set and refine goals for the shared City and County watersheds by October 2007. The goals were to establish clear connections to water quality; include relevant goals and strategies already adopted by City and County agencies; and find opportunities for the City and County to collaborate and coordinate.



Stormwater

Goal: Achieve the necessary pollutant reductions and hydrological control to meet water quality standards in City and County streams and tidal waters by 2020.

Stormwater, or rainwater which falls on hard, urban surfaces, collecting pollutants from streets, parking areas, lawns, and rooftops as it runs into storm drains and waterways, is a major culprit of deteriorating water quality in the metropolitan region. Implementing effective ways to address and evaluate both the quantity and quality of stormwater is imperative in meeting and sustaining water quality goals in the Baltimore Region.



Public Health

Goal: Eliminate bacteria related water quality impairments as defined by the Clean Water Act by 2020 in the tributary streams to the Harbor and Back River.

Public health ramifications of contact with water in the region's streams as well as the Harbor are cause for serious concern. High bacteria levels are frequently found in the Gwynns Falls, Jones Falls, Herring Run (a tributary to Back River) and the Harbor. Efforts are underway to address long standing problems with the region's old sanitary sewer system. To maintain safe waterways in Baltimore County and City, regional agencies, NGOs, and citizens must pursue information and actions towards water quality improvement.



Trash

Goal: Eliminate trash-related water quality impairments as defined by the Clean Water Act by 2020 in the Harbor, Back River and tributary streams.

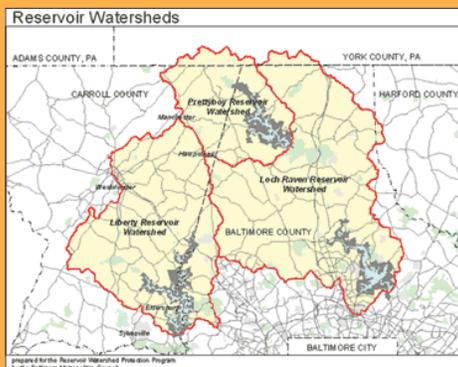
In addition to contributing to water quality impairment and being unsightly, trash has potentially huge economic impacts to Baltimore's tourism and property values. Baltimore has made attempts to address this issue through anti-litter awareness campaigns and by encouraging recycling. Installation of trash collection systems at major Harbor outfalls has highlighted the incredible volume of trash being channeled by way of street inlets and the storm drain system.



Baltimore Reservoir Watershed Management Agreement of 2005

Multi-jurisdictional cooperation to protect regional reservoir watersheds is ensured and structured under the Reservoir Watershed Management Agreement of 2005. This agreement supplanted an earlier 1984 agreement.

Signatories to the 2005 Agreement include Baltimore City, Baltimore and Carroll Counties, the two counties' soil conservation districts, Maryland Department of the Environment, Maryland Department of Agriculture, the Reservoir Watershed Protection Committee, and the Baltimore Metropolitan Council (BMC). BMC provides program coordination under the provisions of the 2005 Agreement, and all signatories participate in aspects of program implementation.



The Baltimore Watershed Agreement and this Phase 1 Action Plan complement the Baltimore Reservoir Watershed Management Agreement. Together, they provide the City and County with integrated and shared responsibilities for managing and protecting their regional water resources.

Cross-cutting Themes

Members of the five committees and Committee of Principals identified two cross-cutting themes to be realized through effective implementation of the Plan – “sustainable communities” and “environmental justice.”

In Sustainable Communities, people and nature are preserved and enhanced by thoughtful planning, careful use of resources and a respectful approach to life. Fundamental to the sustainability of any community is the commitment to provide for future generations. (www.centerforsustainablecommunity.org/).

Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. It will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work (<http://www.epa.gov/oecaerth/environmentaljustice/>).

Plan actions are to be consistent and coordinated with elements of the City and County Sustainability Programs. In addition, an awareness and sensitivity towards environmental justice is to be demonstrated through the implementation of the various actions.

Plan Focus

The Baltimore Watershed Agreement highlights the importance of cooperation on regional watershed issues. Building on that, this Phase 1 Action Plan focuses on addressing water quality issues within the four watersheds shared by Baltimore City and Baltimore County. The shared watersheds are generally characterized as predominantly suburban and urbanized areas. The plan complements the Baltimore Reservoir Watershed Management Agreement of 2005.

The City and County have many complementary and separate initiatives in addition to the actions identified in this Phase 1 Action Plan.

Action Plan

Phase 1 Action Plan

This Phase 1 Action Plan outlines short-term actions to be pursued by Baltimore City and County in their shared watersheds between 2009 and 2012. The Plan is comprised of five categories covering Implementation, Policy and Regulation, Planning and Collaboration, Education, Outreach and Awareness, and five topic areas covering Development/Redevelopment, Community Greening, Stormwater, Public Health and Trash.

Phase 2 and 3 Action Plans

Many actions that will occur after Phase 1 have been identified by various stakeholder groups, including the five committees. These actions will be described in Phase 2 and 3 Action Plans. The implementation of Phase 2 will begin in 2012. The results of many of the actions included in this plan will inform later phase actions.



Measures of Success

Each action includes a lead agency and a measure for initiation and/or completion. Discrete metrics of success for overall goals and individual action items will be developed as actions are carried forward and appropriate targets can be set with respect to existing condition benchmarks. Ultimately, the cumulative result and overall measure of success of the Baltimore Watershed Agreement will be demonstrated through improved water quality by 2020. For successful outcomes to be achieved, an adaptive management approach must be employed, whereby lessons learned and measured outcomes are continuously evaluated and used to improve processes and implementation.

Regulatory Drivers

Phase 1 actions have been developed with consideration for several important regulatory drivers that will aid Baltimore City and County in meeting their water quality goals. These regulatory drivers include the upcoming renewal of the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System Permits (MS4 permits), Clean Water Act mandates including total maximum daily loads (TMDLs), Stormwater Management Act of 2007 and House Bill 1141, requiring local governments to ensure they have adequate and clean water as they develop Comprehensive Plans. It is important to note, these existing and pending regulatory drivers will have a tremendous impact on the way we manage growth and the environment.

Successes to Date

Baltimore City and County have an established history of pursuing watershed restoration initiatives both independently and jointly. These efforts typically involve partnerships with key stakeholder groups such as watershed organizations, community groups, researchers, institutions, large private land owners and federal and state agencies. Examples of City and County completed, initiated and ongoing efforts include:

- Established Committee of Principals
- Created Sustainability Offices
- TreeBaltimore program initiated
- Builders for the Bay process completed in Baltimore County
- Cleaner Greener Baltimore program initiated in Baltimore City
- Conducted joint watershed planning for Gwynns Falls, Lower Jones Falls, and Upper Back River
- Coordinated joint funding initiatives through grant writing
- Coordinated Phase 1 Action Strategy Plan Development with Sustainability Plan development
- Growing Home Campaign implemented as partnership between County, City, local businesses, and residents
- Stream Watch/Adopt a Stream program began by County and Jones Falls Watershed Association
- Street sweeping programs implemented in City and County
- Watershed 263 street sweeping and storm drain clean-out research initiated by City & County
- Continuing pilot trash studies and projects
- Baltimore County Forest Sustainability Strategy completed and implementation initiated
- Baltimore County Clean Shores Program implemented

City Committee of Principals

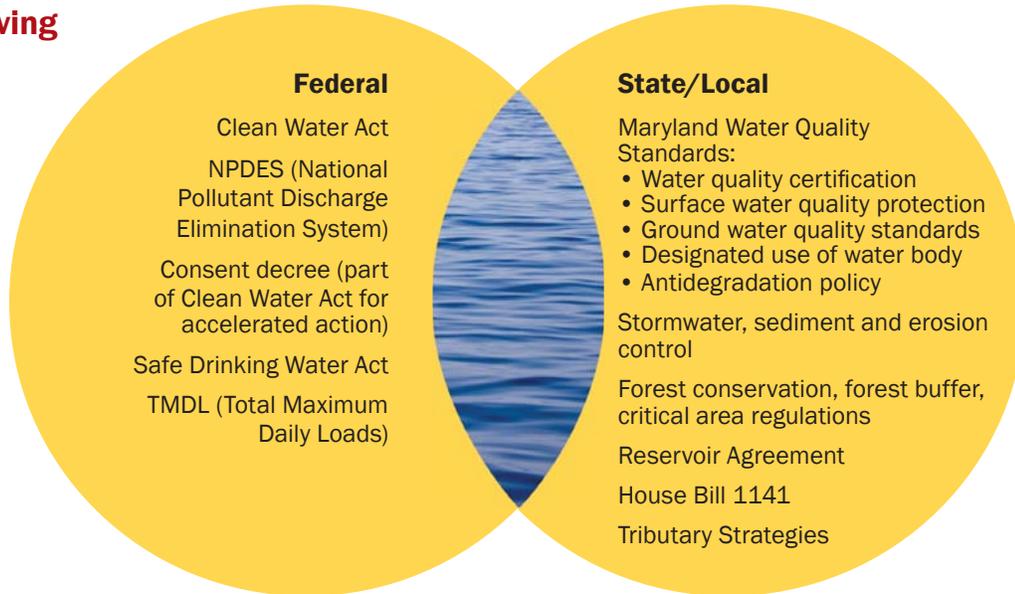
- Department of Planning
- Department of Public Works
- Department of Recreation and Parks
- Mayor's office
- 3 representatives from non-governmental groups

County Committee of Principals

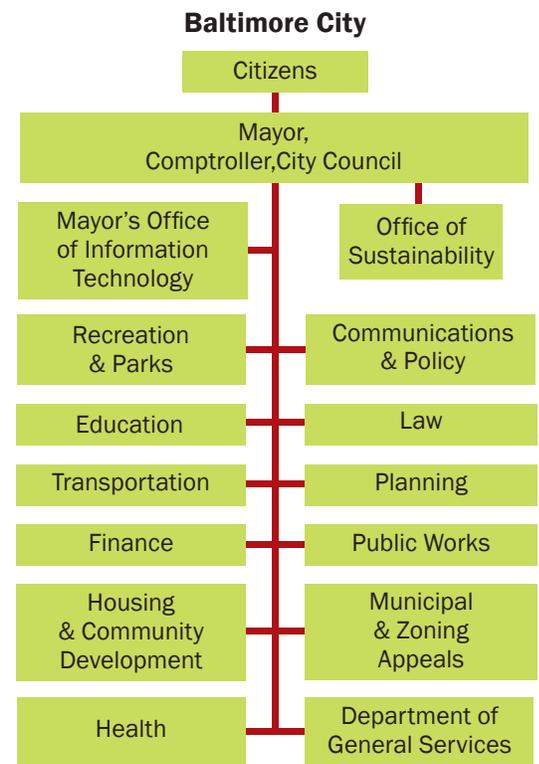
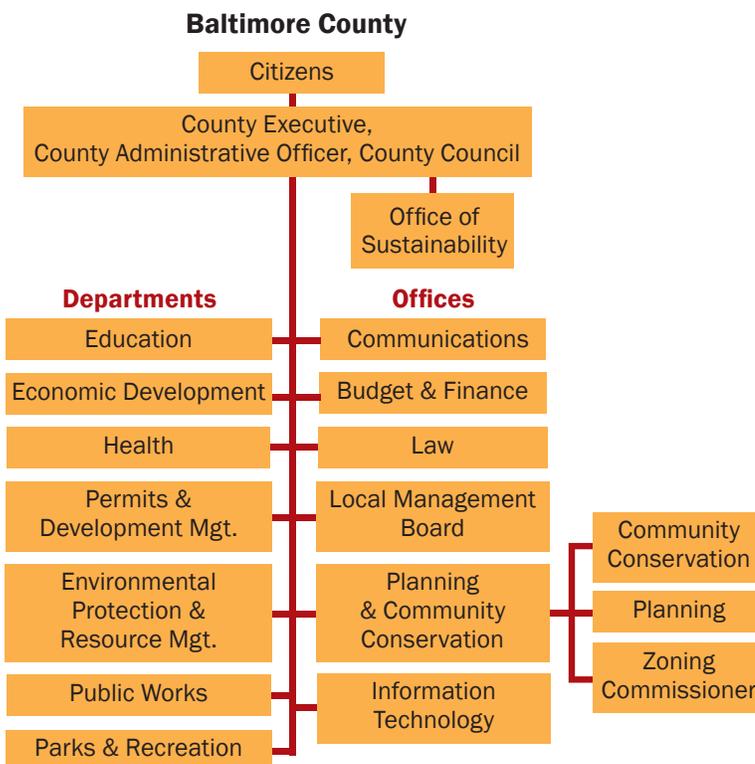
- Department of Environmental Protection and Resource Management
- Department of Public Works
- Department of Recreation and Parks
- Department of Planning
- 3 representatives from non-governmental groups



Drivers for Achieving Clean Water and Healthy Watersheds



Current Organization of Agencies Influencing Water Quality



1. IMPLEMENTATION

Goal: Ensure that there is a reliable framework to assess and report progress on the implementation of actions identified under the Baltimore Watershed Agreement.

Action 1.1

Create a cross-jurisdictional multi-agency Baltimore Watershed Agreement workgroup (BWA Workgroup) that is responsible for overseeing the implementation of the Baltimore Watershed Agreement Action Plan. The BWA workgroup will ensure effective coordination, communication, and dissemination of information across departments, offices, and stakeholder groups.

Lead Agency: Committee of Principals to appoint BWA workgroup members

Measure: BWA workgroup established by July 2009

Action 1.2

Develop a workplan that provides the framework for assessment of the Action Plan implementation, identifies necessary steps within the timeline to carry out action items, identifies data gaps, articulates the methods and frequency of providing progress reports and the timelines and metrics for later phase action plan implementation.

Lead Agency: BWA workgroup

Measure: Develop strategy and timeline by December 2009; Present Phase 1 Action Plan progress report at 2010 Baltimore Watersheds Conference

Action 1.3

BWA Workgroup to assess adequacy of existing staffing and funding resources needed to meet water quality and stormwater goals with costs broken-out by the five topic areas. Research actions by peer communities to meet stormwater and clean water funding needs. Identify and quantify areas of deficit, gaps, efficiencies, and synergism.

Lead Agency: BWA workgroup, City DPW, City Office of Budget and Finance and DEPRM (with input from all relevant agencies)

Measure: Assessment completed by July 2010

Existing Funding Sources

Grants

There are numerous funding opportunities through state, federal, and non-governmental organization grant applications that target nonpoint source pollution, community greening and education and awareness initiatives. Examples of grants and funding entities that Baltimore City, Baltimore County, and local watershed and community groups have historically had success with include:

- The Abell Foundation (www.abell.org)
- The Chesapeake Bay Trust (<http://www.cbtrust.org/>)
- Chesapeake and Atlantic Coastal Bays 2010 Trust Funds (www.dnr.state.md.us)
- The Keith Campbell Foundation (<http://www.campbellfoundation.org/>)
- MDE's 319 (h) Grant Program (<http://www.mde.state.md.us/Programs/WaterPrograms/319NPS/factsheet.asp>)
- Maryland Department of Natural Resources (<http://www.dnr.state.md.us/>)
- National Fish and Wildlife Foundation (NFWF) Chesapeake Bay Stewardship Fund (<http://www.nfwf.org>)

Ballot Measures for Bonds/Loans

Local governments may place a ballot measure before voters, asking them to approve or deny proposed spending in their political jurisdiction when laws prevent them from raising taxes or spending beyond a certain level without voter approval. In the November 4, 2008 election, Baltimore City and County voters overwhelmingly passed the authorization to borrow several million dollars to go towards environmental and open space related improvement projects.

2. POLICY & REGULATION

Goal: Ensure that all existing and new policies, laws and regulations relevant to water quality support Phase 1 Action Plan goals and actions.

Action 2.1

Integrate Baltimore Watershed Agreement Phase 1 Action Plan actions with City and County Sustainability policies and programs.

Lead Agency: Offices of Sustainability

Measure: Compile list of policies and programs and initiate integration by June 2009

Action 2.2

Ensure that new laws and regulations (i.e., local stormwater ordinances) relevant to water quality support these agreement goals and actions.

Lead Agency: Committee of Principals

Measure: Process established by January 2010; review ongoing

Action 2.3

Improve regulations that protect trees and forests, minimize impacts to existing trees during development and redevelopment processes, and mitigate for tree losses, in order to achieve urban tree canopy goals and improve water quality.

Lead Agency: DEPRM, City Parks and Recreation and Offices of Sustainability

Measure: Identify applicable regulations and propose amended regulatory language by December 2011

Action 2.4

Evaluate existing laws and regulations related to meeting pending waterway trash reduction goal. Identify areas of strengthening.

Lead Agency: Committee of Principals

Measure: Propose amended regulatory language by September 2010; increase enforcement actions 10% per year through 2012.

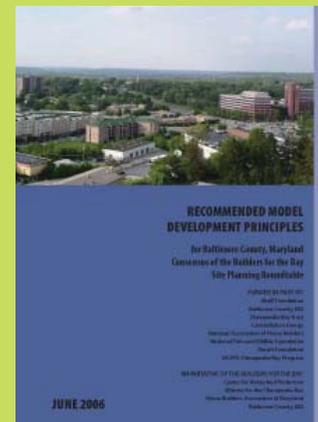
Action 2.5

Develop policies which ensure environmental justice indicators are taken into consideration during major planning efforts (see action 3.1)

Lead Agency: BWA workgroup and Committee of Principals

Measure: Draft initial policies by December 2009. Revise and update annually.

Builders for the Bay



In 2006, “a partnership of the Baltimore County Government, Alliance for the Chesapeake Bay, Home Builders Association of Maryland, and the Center for Watershed Protection initiated a process known as the Local Site Planning Roundtable to systematically examine local codes and ordinances with an eye to promoting more environmentally-sensitive and economically-viable development. This process, known as Builders for the Bay, is a collaborative consensus initiative designed to pull together local government agencies, the development community, neighborhood organizations, engineering and planning firms, and groups interested in environmental and conservation issues.”

(Source: Builders for the Bay, 2006, page i)

3. PLANNING & COLLABORATION

Goal: Improve watershed planning efforts through collaboration across jurisdictions and among agencies. Better integrate watershed plans into planning and zoning processes, review and permitting, enforcement and implementation.

Action 3.1

Create a cross-jurisdictional workgroup to ensure that watershed planning processes are more comprehensive. Include reviews and input from key agencies, stakeholders and citizens. Initiate a schedule of semi-annual coordination meetings. Integrate watershed management planning into comprehensive plans consistent with water resources element of House Bill 1141.

Lead Agency: City DPW and DEPRM, City Planning and Community Conservation and County Planning

Measure: Workgroup formed and meetings initiated by July 2009

Action 3.2

Develop and share comprehensive GIS maps and make available on-line to support developers and site designers in efforts to promote environmental site design. Promote the use of data layers by local, state and federal agencies and major utilities to avoid conflicts, address environmental justice issues and take advantage of synergies that may exist in association with capitol improvement projects (CIP) and other related projects.

Lead Agency: All Relevant Agencies and Departments with lead coordination by City DPW, DEPRM, and Offices of Information Technology

Measure: Overlay mapping completed and accessible by June 2010

Action 3.3

Find opportunities to use comprehensive mapping to depict the location of and management implications to urban natural resources. Focus these efforts on protecting water quality, addressing environmental justice and creating project synergism.

Lead Agency: City DPW and DEPRM

Measure: Public project submittals starting in December 2010

Action 3.4

Develop and implement a joint City and County training program for developers, design professionals, plan reviewers and site inspectors to promote environmental site design and low impact development.

Lead Agency: City DPW, DEPRM, City Planning and Community Conservation and County Planning

Measure: Initiate by December 2010

House Bill 1141 – Water Resources Element

Under the State law enacted in 2006, House Bill 1141, each local government that prepares or maintains a Local Comprehensive Plan must develop a Water Resources Element (WRE) to support that Comprehensive Plan. The first WREs are to be submitted to the State by October 2009.

The Water Resources Element requires local governments to evaluate impacts of all existing and planned development on local water resources.

Example Mapping Layers:

- Natural resources
- Impervious cover/removal opportunities
- Tree canopy
- Target greening areas
- Development projects
- Redevelopment projects
- Monitoring stations & data
- TMDL stream segments
- Bacteria hot spots
- Existing infrastructure
- Groundwater recharge areas
- Street sweeping routes
- Pilot study projects
- Priority funding areas
- Municipal capital projects
- Transportation projects (County & State)
- Environmental justice indicators
- Stormwater retrofit and watershed restoration project opportunities

Beneficial Use of Mapping

Data layers identifying forest area functional value such as riparian habitat, water attenuation, diversity and age can be used by communities to target and cost effectively pursue restoration and greening goals.

Similarly, review of transportation project locations in association with potential stormwater retrofit project locations may yield project synergies that result in cost-effective solutions that improve water quality.

4. EDUCATION

Goal: Better integrate watershed-based water quality education and greening initiatives into school curricula and maximize school participation in the Maryland Green School Awards Program.



Pot Spring Elementary School received an award as a Maryland Green School in 2007.

Current Green School Program Participation by City and County

The Maryland Association for Environmental and Outdoor Education (MAEOE) sponsors the Maryland Green School Awards Program. Under this program, K-12 schools are recognized for incorporating environmental site design and BMPs on their school grounds through building and landscape design as well as operation and maintenance. The program also awards schools which incorporate environmental education into curriculum to prepare them for environmental challenges of the future. The Green School Awards encourage schools to build partnerships with the surrounding community through environmental learning and projects. Baltimore County currently has 38 Green Schools and 4 MD Green Centers. Baltimore City currently has 10 Green Schools and 4 MD Green Centers.

(Source: http://maeoe.org/greenschools/overview/one_pager.php)



Action 4.1

Collaborate with the City and County Departments of Education to ensure integration of Baltimore Watershed Agreement actions into curriculum and facilities planning of County and City schools.

Lead Agency: BWA workgroup, City Department of Education and DEPRM

Measure: Hold initial bi-annual meeting by December 2009

Action 4.2

Continue in the County and initiate in the City watershed based water quality education in public and private school curricula. Initiate education programs focused on the impacts of poor water quality on public health. Involve students whenever possible in greening installation opportunities.

Lead Agency: City Department of Education and DEPRM

Measure: Quantify student participation annually and increase by 10% each year through 2012

Action 4.3

Expand the Maryland Green School Awards program to maximize participation of City and County public and private schools in shared watersheds. Increase the number of students that participate in a meaningful Bay experience.

Lead Agency: City Department of Education and DEPRM

Measure: Quantify school and student participation annually and increase by 10% each year through 2012

Basketball Court with Permeable Asphalt Paving and Gravel Infiltration Border



- Porous asphalt
- Stone aggregate filter
- Stone aggregate subbase/reservoir
- Filter fabric
- Subgrade



At start of rain, water begins infiltrating porous asphalt



During and after rain, water continues down through the subgrade

5. OUTREACH & AWARENESS

Goal: Establish and conduct an effective and coordinated joint City and County public awareness campaign covering development/redevelopment, greening, stormwater, public health and trash, emphasizing water quality.

Action 5.1

Establish and conduct joint public relations efforts to coordinate between Sustainability Offices, City and County agencies, and watershed organizations.

Lead Agency: City Communications and Policy Office and DEPRM with County Office of Communications

Measure: Initiate efforts by July 2009

Action 5.2

Establish a web-based program to disseminate and update all information regarding the Action Plan including status, progress, and successes.

Lead Agency: DEPRM, Offices of Information Technology and Applicable City and County Agencies

Measure: Complete website by September 2009; establish ongoing update schedule

Action 5.3

Expand local efforts by further involving environmental, community and faith based organizations in outreach programs focused on greening activities. Increase and strengthen government and NGO partnerships.

Lead Agency: City Communications and Policy Office, DEPRM with NGOs and Applicable City and County Agencies

Measure: Hold first annual roundtable discussion by July 2009; ongoing annually

Action 5.4

Create a branded awareness campaign building upon the City's Cleaner Greener initiative, that crosses jurisdictions and watersheds.

Lead Agency: Consultant, working with City DPW, DEPRM, City Communications and Policy Office and County Office of Communications

Measure: Complete campaign by July 2010; roll out from July 2010 to July 2012

One Day Blitz Ideas

- Watersheds – What are they and why are they important?
- How does your behavior affect the health of your local waterway?
- TreeBaltimore - Encourage families to plant a tree together on their property
- Value of “greening” (i.e. stream buffers, forest stands, residential greening, etc.)
- Residential “fixes” toward improved stormwater runoff conditions
- Developer training and/or homeowner awareness for environmental site design (ESD)
- Health risk for water contact in bacteria-contaminated water – at the onset of warm weather
- Inform citizens about sources and reporting of bacteria including pet waste, lawn runoff, wildlife, and sewage overflows
- Create an education program for commercial interests, homeowners and children that include information on proper trash collection and minimization, including yard waste, recycling and bulk trash.

Action 5.5

Organize, advertise and conduct one-day awareness blitz programs (quarterly) to increase awareness.

Lead Agency: City Communications and Policy Office and DEPRM with County Office of Communications and NGOs

Measure: Conduct first blitz in 2010

Existing Outreach and Awareness Programs in the City and County

NGO Support

Local watershed associations and other NGOs play an important role in outreach and awareness in the City and County. For example, the Jones Falls Watershed Association (JFWA) partnered with the County Department of Environmental Protection and Resource Management to create the “Stream Watch” program. Volunteers become stewards of their local stream and report any variations in the stream condition. (http://jonesfalls.org/index.php/programs/adopt_a_stream/). Project Clean Stream, another example of NGO contribution, is an annual stream clean up organized by the Alliance for the Chesapeake Bay in Central and Eastern Maryland each April. (www.alliancechesapeakebay.org/cleanstream.cfm)

Cleaner Greener Baltimore

Mayor Shelia Dixon is promoting an initiative to keep the City of Baltimore clean and green. The Cleaner Greener Baltimore program includes adding trees (TreeBaltimore, Growing Home, Growing Greener, and Growing Together campaigns), median planting and trash cans to city streets, planting trees in vacant lots, improvements for parks, trash clean-ups, litter reduction information, recycling improvements, and other educational programs. (www.cleanergreenerbaltimore.com)

6. DEVELOPMENT & REDEVELOPMENT

Goal: Ensure that the policies and practices that govern development and redevelopment are protective of existing natural and water resources, meeting the objectives of the Clean Water Act.

Action 6.1

Develop per capita impervious cover estimates and establish targets for reducing per capita impervious cover.

Lead Agency: DEPRM and City DPW

Measure: Establish targets by December 2009; ongoing tracking

Action 6.2

Coordinate and strengthen development review through the use of water quality related GIS overlays. Find opportunities through use of this data for consistency with water quality goals, meeting multiple objectives and creating project synergies. Document the use of overlays to achieve improved site design outcomes on public projects.

Lead Agency: DEPRM and City DPW

Measure: Public project submittals starting in January 2010

Action 6.3

Determine the effectiveness of environmental site design efforts to date (e.g. “Builders for the Bay”). The workgroup will conduct development and redevelopment code analysis and compare with MDE’s Stormwater Management Act of 2007 and evaluate additional opportunities and impediments (e.g. building codes, technology and public acceptance).

Lead Agency: BWA workgroup

Measure: Develop summaries of finding and opportunities by July 2010

Environmental Site Design and Stormwater Management Techniques



Fulton Avenue looking north

Left: Recently built roadway improvement project



Right: Recommended improvements through the use of environmental site design (ESD) – greening, rainwater capture, water quality enhancement, infiltration, etc.



Monroe Street and Washington Boulevard

Left: Existing parking lot



Right: Parking retrofit using environmental site design (ESD) techniques – greening, reduced impervious surface, infiltration, etc.



Charles Street in Guilford

Left: Recently built roadway improvement project



Right: Recommended improvements through the use of environmental site design techniques (ESD) – greening, rainwater capture, water quality enhancement, infiltration, etc.

Action 6.4

Form partnerships with MDOT, local transportation departments, utility companies, local agencies, State agencies and other public and private partners to identify water quality improvement opportunities for capital projects. Implement innovative stormwater treatment designs on projects that exceed

minimum standards, serving as demonstration projects.

Lead Agency: City DPW, County DPW and DEPRM

Measure: Report on number of demonstration projects completed each year that support this initiative by 2012

7. COMMUNITY GREENING

Goal: Achieve City and County urban tree canopy and stream buffer goals and maximize vegetated areas as appropriate to improve water quality.

Action 7.1

Develop City and County greening targets and guidelines related to tree canopy, stream buffers, and other vegetative cover for increased water quality outcomes. (e.g. Baltimore County Conservation Landscaping)

Lead Agency: Baltimore City Recreation and Parks (BCRP) and DEPRM

Measure: Develop policies by December 2011

Action 7.2

Continue to measure the condition and functional benefits of the City and County urban tree canopies based on initial studies using the Urban Forest Effects (UFORE) model. Collaboratively develop watershed-based indicators of urban canopy health and sustainability.

Lead Agency: BCRP and DEPRM

Measure: Develop measures and indicators by December 2010

Action 7.3

Collaborate on the development and improvement of Urban Tree Management Programs. Identify effective inventory methods for, and conduct, urban tree inventories to manage street tree resources (planting, maintenance, removals and replanting).

Lead Agency: BCRP and DEPRM

Measure: Methods and inventory completed by December 2010

Action 7.4

Continue collaboration with watershed organizations and citizens on programs for increasing tree planting. Provide education and incentives for homeowners to plant trees in residential yards as in the Growing Home Campaign and Tree Baltimore. Encourage community associations to plant trees on public lands and community open spaces through programs such as Tree-Mendous Maryland.

Lead Agency: BCRP and DEPRM

Measure: Increased number of residential trees planted by 10% by December 2010

Action 7.5

Continue to collaborate on research with others as appropriate in support of City and County urban and community forestry programs.

Lead Agency: BCRP and DEPRM

Measure: Report on research by December 2010

Action 7.6

Implement streetscapes (e.g., street trees, planting beds, and other vegetative cover) on City and County road and other capital improvement projects as appropriate. Incorporate stormwater management to the maximum extent practical.

Lead Agency: BCRP, City DOT, City DPW and DEPRM

Measure: Document and map projects annually starting in 2009

Existing Greening Initiatives

Community greening, especially in urban areas void of vegetation, provides multiple benefits beyond improving water quality such as improving public health, balancing environmental justice, carbon sequestration, habitat creation and energy savings. Current Baltimore City and County initiatives to increase urban tree canopy and other vegetation include, among others:

Growing Home Campaign

In order to meet the needs for increased implementation of Chesapeake Bay measures that influence behavior change using market mechanisms, Baltimore County developed the Growing Home Campaign to educate residents about the benefits of planting trees in residential yards by providing a \$10 coupon towards each tree purchase as an incentive. The Campaign meets the goals of Baltimore County's Green Renaissance (2005) initiative to increase urban tree canopy.

Tree Baltimore

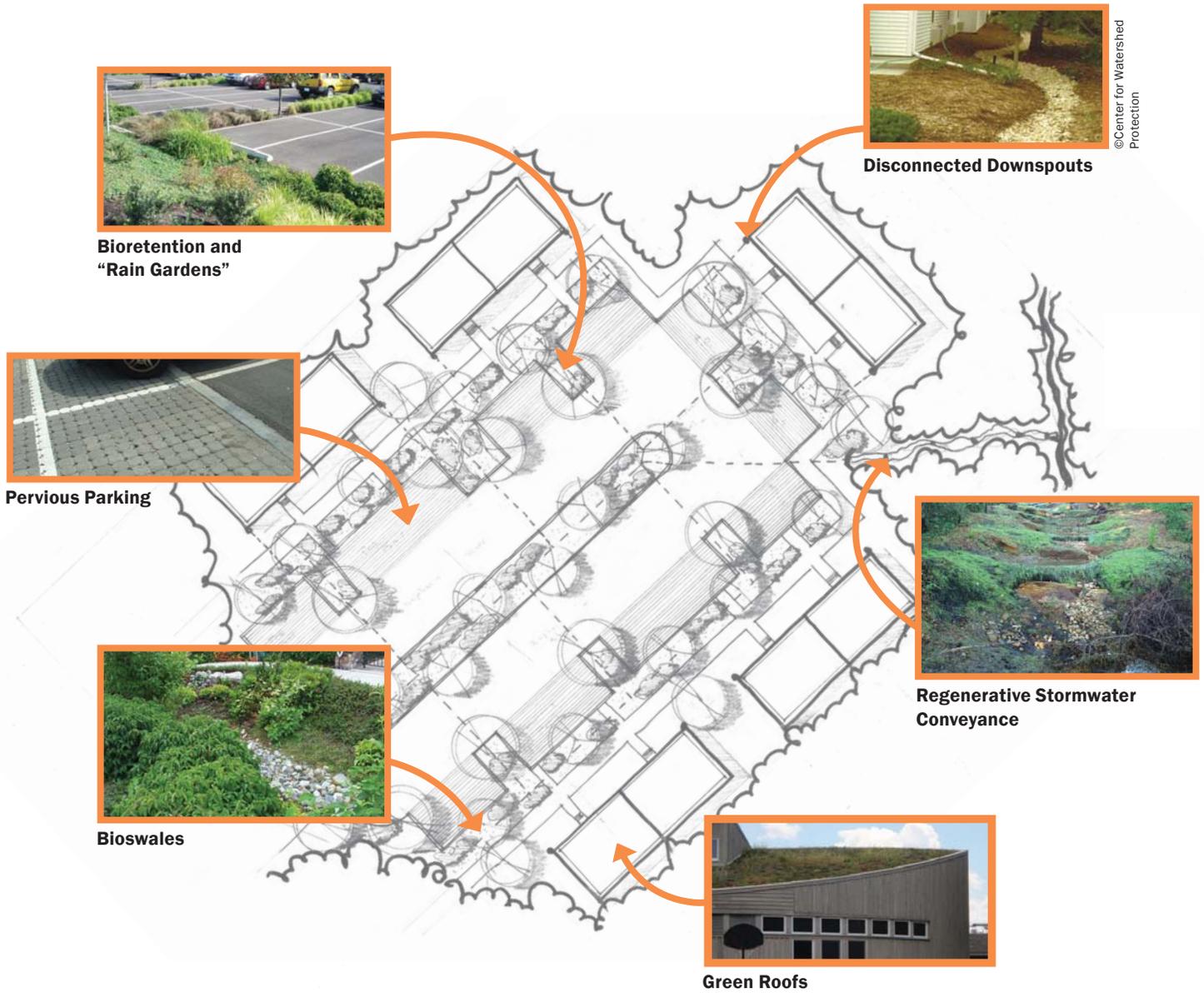
As part of the Mayor's Greener Baltimore initiative, Baltimore City initiated the Tree Baltimore program in 2007. TreeBaltimore is the City's plan to work with residents, businesses, nonprofit partners, schools and institutions to double the tree canopy from 20 percent to 40 percent within 30 years, working towards a sustainable urban forest.

County Conservation Landscaping

The Baltimore County Departments of Environmental Protection and Resource Management, Recreation and Parks, Education, Community Conservation and Public Works collaborated in a process facilitated by the Baltimore County Advisory Commission on Environmental Quality (CEQ) to create the Baltimore County Conservation Landscaping report in April 2007.



Environmental Site Design



Designing or retrofitting parking lots with more vegetation and stormwater management benefits water quality. These techniques help to slow, retain, infiltrate, and filter stormwater runoff, improving regional water quality. Additionally, replacing impervious surfaces with green spaces provides numerous other benefits such as an improved aesthetic value, habitat for birds and beneficial insects, lowering heat island effect, and carbon sequestration.

8. STORMWATER

Goal: Achieve the necessary pollutant reductions and hydrological control to meet water quality standards in City and County streams and tidal waters by 2020.



Action 8.1

Create a cross-jurisdictional “Stormwater Workgroup”. Initiate a schedule of semi-annual meetings and meet jointly with MDE on the development and long-term coordination of new MS4 permits.

Lead Agency: City DPW and DEPRM

Measure: Stormwater workgroup and meeting schedule established by July 2009

Action 8.2

Continue to develop a joint research and monitoring initiative that investigates new technologies and environmental site design and their ability to meet water quality mandates. Include an evaluation of the sustainability of some practices based on homeowner acceptance of the maintenance responsibilities.

Lead Agency: Stormwater workgroup partnering with watershed groups

Measure: Develop a joint framework strategy by December 2009

Action 8.3

Develop a joint strategy to address TMDLs in anticipation of new MS4 permits. Continue joint watershed implementation plans to meet existing and anticipated TMDL load reductions, greening targets, sensitive area protection and enhancement. Evaluate the adequacy of existing plans in doing this and additional needs for revised plans.

Lead Agency: Stormwater workgroup

Measure: Evaluate adequacy of existing plans and develop strategies for each of four major watersheds by December 2010

Action 8.4

Continue pilot-scale testing of new technologies and encourage NGOs to participate in demonstration projects. Implement new technology pilot projects covering stream restoration, outfall repair, and streetscaping projects in each of the four major watersheds (i.e., Gwynns Falls, Jones Falls, Back River, and Baltimore Harbor).

Lead Agency: City DPW, County DPW and stormwater workgroup

Measure: Present and document results of five pilot scale projects by 2012

Action 8.5

Use school “greening” and parking lot retrofits as model opportunities for water quality improvements through impervious cover reduction, greening and innovative stormwater management demonstration.

Lead Agency: City DPW, County DPW and DEPRM

Measure: Initiate two school water quality improvement projects per year from 2009-2012



9. PUBLIC HEALTH

Goal: Eliminate bacteria related water quality impairments as defined by the Clean Water Act by 2020 in the tributary streams to the Harbor and Back River.

Action 9.1

Evaluate watershed-based bacteria monitoring efforts. Determine measures of success in light of pending TMDL mandates. Develop consistent indicators, sampling and analytical methodology among city, county and MDE monitoring programs.

Lead Agency: City DPW, City Health Department and DEPRM

Measure: Monitoring methodology established by December 2009

Action 9.2

Develop a cross-jurisdictional program for tracking, prioritizing and eliminating sources of domestic waste water in area waterways. Fully coordinate with consent decree actions being undertaken by the City and County.

Lead Agency: City DPW, City Health Department and DEPRM

Measure: Create a recommendation document based on this evaluation by March 2010

Action 9.3

Develop a two-way reporting protocol between agencies and the public for awareness and reporting on water quality indicators, especially pertaining to bacteria. Inform the public on ways in which they can report problems related to bacteria and other forms of contamination. Provide a reporting method by which the public can track the remedial action taken.

Lead Agency: City DPW, City Health Department and DEPRM

Measure: Establish reporting system by March 2010

Action 9.4

Expand public health awareness campaigns. Inform the public on ways in which water quality can affect public health.

Lead Agency: City DPW, City Health Department and DEPRM

Measure: Expand awareness campaign by March 2010

Consent Decrees

Baltimore City and Baltimore County have separate Consent Decrees with the Environmental Protection Agency (EPA), Justice Department and Maryland Department of the Environment (MDE) to address sanitary sewer overflows associated with their sewage collection systems. The Consent Decrees define multiple remedial measures and initiatives to be undertaken by the City and County. They also establish interim milestones and deadlines for agreed upon work such as large-scale capital construction projects, equipment and operations improvements, and investigative studies. The remedial measures and initiatives implemented by the City and County will ultimately contribute to better protection of Baltimore's harbor, Maryland streams, the Chesapeake Bay, and the property of the citizens of Baltimore City and Baltimore County.



10. TRASH

Goal: Eliminate trash-related water quality impairments as defined by the Clean Water Act by 2020 in the Harbor, Back River and tributary streams.



Action 10.1



Evaluate watershed-based trash monitoring efforts. Determine measures of success in light of pending TMDL mandates. Develop consistent methodology among city, county and MDE monitoring programs. Develop a cross-jurisdictional program for tracking, prioritizing and eliminating sources of trash in area waterways. Develop a method for determining trash generation rates by land cover with MDE to develop TMDL and monitor improvement.

Lead Agency: City DPW, DEPRM and MDE

Measure: Create a recommendation document based on this evaluation by March 2010

Action 10.2



Expand littering and trash awareness campaigns. Inform the public on ways in which they can report trash sources for enforcement actions.

Lead Agency: City DPW and DEPRM

Measure: Expand campaign and establish reporting system by March 2010

Action 10.3



Continue pilot-scale testing of new technologies working with MDE and NGOs. Encourage participation of NGOs in demonstration projects. Implement new trash reduction and removal technology pilot projects in each of the four major watersheds (I.e., Gwynns Falls, Jones Falls, Back River, and Baltimore Harbor) to determine the best suite of implementation practices.

Lead Agency: City DPW, County DPW, DEPRM and MDE

Measure: Present and document results of pilot scale projects by 2011

Action 10.4



Determine adequacy and frequency of existing street sweeping routes and inlet cleaning based on determined effectiveness of studies. Determine location of potential additional routes and cleaning. Conduct a cost benefit analysis of routes.

Lead Agency: City DPW and County DPW

Measure: Target route coverage and assessment report by 2012

Existing Trash Clean-up Initiatives

Cleaner Greener Baltimore

Mayor Shelia Dixon is promoting an initiative to keep the City of Baltimore clean and green. The Cleaner Greener Baltimore program includes trash clean-ups, litter reduction information, recycling improvements, and other educational programs. (www.cleanergreenerbaltimore.com)

Project Clean Stream

Project Clean Stream is an annual stream clean up organized by the Alliance for the Chesapeake Bay in Central and Eastern Maryland each April. In 2008, 3,047 volunteers helped clean up 186,000 pounds of trash in 116 sites throughout the region (www.alliancechesbay.org/cleanstream.cfm)

Clean Shores Program

Baltimore County initiated the "Clean Shores" Program to improve the water quality, aesthetics, and navigational safety of the tidal waterways of Baltimore County. The program, funded by a Waterway Improvement Fund Grant from the Maryland Department of Natural Resources, uses the County's 20-foot landing craft along the County shoreline to scoop trash and navigational debris from the shore and bottom of waterways. The county also uses two all-terrain amphibious vehicles to access shorelines and mudflats to collect trash. The Clean Shores Program aims to significantly improve long-term water quality, habitat value, and economic and aesthetic value of the County's waterways as well as improve navigational safety for boaters.



