Appendix A

Department of Environmental Protection & Resource Management

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1 Department of Environmental Protection and Resource Management

1.1 Agency Overview

The Baltimore County Department of Environmental Protection and Resource Management (DEPRM) is responsible for the protection of the environment and the improvement of the quality of life for the citizens of Baltimore County. DEPRM also implements projects that manage and enhance natural and man-made resources, and that provide environmental guidelines to the County's constituents. Baltimore County's natural resources are managed through strong regulatory programs supplemented by long-term planning efforts with emphasis on land preservation and enhancement, new technologies, and capital restoration projects to improve water quality and habitat. Public and environmental health is protected by regulatory and educational programs in food protection and community hygiene. Lastly, public/private partnering provides educational, monetary and manpower resources to civic groups for environmental enhancement.

DEPRM's many functions are managed by ten separate programs. Five of these programs manage environmental health and natural resource functions, while the other five programs manage development review functions.

<u>Environmental Health and Natural Resource Functions</u>

The following five main programs manage Baltimore County's environmental health and natural resource functions.

Environmental Health is divided into two regions (east and west) and manages multiple functions. This program manages retail food facility inspections, consultative services on community hygiene issues, rodent complaints, private water and sewer complaints, open burning, nuisance dust, indoor air quality, building permit review (asbestos), razing permits, sewage overflow complaints and insect complaints. In addition, Environmental Health also manages Waste Management and Food Plans and Recreational Hygiene. These functions include landfill, recycling facility and trash truck inspections, household hazardous waste program, chemical/medical waste, waste management information, food facility plan review, commercial swimming pool plan review, public swimming pool inspections and recreational water sampling.

The following are programs relating to this study that fall under Environmental Health:

- Environmental Health Inspections
- Environmental Health Outreach

The *Waterway/Capital Improvements* program manages capital projects involving the stabilization and restoration of eroding streams and shorelines. They also implement projects that retrofit stormwater management facilities to enhance water quality. The programs other functions includes shoreline enhancement and protection, waterway and stream complaint investigation, maintenance and inspection of stormwater management ponds, waterway dredging, the submerged aquatic vegetation (SAV) program, the derelict boat program and also the Clean Shores program.

The following are programs relating to this study that fall under Waterway/Capital Improvements:

- Capital Improvement Program
- Operations Program

The Land Preservation program deals mainly with activities dealing with agricultural and rural land management. These activities include agricultural land preservation, rural legacy coordination, rural development review, and agricultural zoning review.

Watershed Management and Monitoring's activities involve the management of natural water sources in addition to some involvement with storm drains. These activities include watershed management, National Pollution Discharge Elimination System (NPDES) permit coordination, illicit connections to storm drains, research grant coordination, watershed monitoring and Total Maximum Daily Load Program (TMDL) coordination.

The following are programs relating to this study that fall under Watershed Management and Monitoring:

- Baltimore Watershed Agreement
- NPDES Program
- TMDL
- Water Quality Monitoring
- Watershed and Water Quality Protection Grants
- Watershed Management Planning (Watershed Restoration Action Strategies – WRAS and Small Watershed Action Plan – SWAP)

The *Policy, Education, Research and Communication* program is involved in environmental education, local Chesapeake Bay program coordination, forest and wetland resource research, reservoir protection, and community reforestation programs. These activities include GIS/GPS support, environmental education programs, Green Schools Program, Tree-mendous Maryland Program, Intergovernmental programs coordination (Reservoir Watershed Agreement, coastal zone management, Chesapeake Bay Program Tributary Strategy), forest resource research/policy (forest sustainability), and master plan/Comprehensive Zoning Map Process (CZMP) coordination.

The following are programs relating to this study that fall under Policy, Education, Research and Communication:

- Builders for the Bay Program
- Community Reforestation Program
- CZMP
- Education and Citizen Participation Program
- Forest Sustainability Initiative
- Policy and Program Coordination
- Public Data Access

<u>Development Review Functions</u>

There are five programs that are involved in Baltimore County DEPRM's development review functions.

- Environmental Impact Review

The *Environmental Impact Review* program is an environmental resource review and enforcement program. This covers wetlands, stream buffers, forests and habitats.

- Development Coordination and Permit Processing

The *Development Coordination* program deals mainly with permit reviews. These activities include coordination of development plan review, building permit review and approval, department representation at development hearings, use and occupancy permits, subdivisions, and zoning variance reviews.

- Stormwater Management

The *Stormwater Management* program involves the design, review and inspection of stormwater management facilities. This also includes site-grading reviews.

- Groundwater Management Program

Groundwater Management activities involve the testing and permitting of issues relating to groundwater and wells. These activities include percolation test approval, sewage disposal design and repair, well permitting, domestic well potability certification, groundwater contamination investigations and residential underground.

- Sediment and Erosion Control Program

The last program that is in the category of development review functions is the *Inspection and Enforcement* Program. This program is involved in sediment control inspection and enforcement, and drainage complaint investigations.

The Department serves many customers including County residents, regulators, businesses, government agencies and elected officials. Some customers are internal to the County, such as supporting the Office of Planning with the CZMP or answering questions from the County Executive. Other customers are external, for example, working with watershed organizations to improve water quality in a stream corridor or the Maryland Department of the Environment (MDE) to ensure compliance requirements are met. Maps and mapping data are frequently key ingredients in successfully working with these customers to communicate issues, determine priorities, understand challenges and make informed decisions.

A main purpose of DEPRM's mission is to support the County by ensuring conformance to legal requirements. Numerous federal and state laws and acts mandate certain activities by Baltimore County and that some of the County's activities meet minimum environmental requirements. In addition, the County has promulgated regulations that are enforced by DEPRM. Also, Maryland has delegated certain responsibilities for regulatory enforcement to the County. These legally-driven requirements and activities have serious implications for non-compliance, including fines and penalties that could total hundreds of thousands of dollars.

1.2 Agency Public Access Programs

Public coordination and education is an important part of executing DEPRM's mission. For example, meeting NPDES requirements specifically mandate public outreach and educational programs and activities. Managing watershed quality is greatly enhanced by coordination with various non-profit watershed organizations; these organizations are an instrumental conduit for information exchange between DEPRM and communities and citizens. A common thread in all these access programs and activities is mapping; maps are frequently used to facilitate discussions, orient the public and enable collaborative decision-making.

Several key DEPRM programs, including stormwater, environmental impact review, development coordination and environmental health, execute activities specially geared towards answering questions and complaints from the public. DEPRM staff alternate "office duty" managing a hotline and desk where phone call and walk-in inquiries are responded to on a daily basis. GIS is a tool used frequently by staff to quickly answer the questions posed and allows them to visualize remote areas of the County in order to make decisions, often without having to perform a costly site visit. In addition, a separate program is hosted by DEPRM GIS staff dedicated to the preparation of data and information for the general public's use. This program works to produce and distribute informational materials via websites, publications and displays at meetings and events and also prepares GIS and tabular data for citizen, non-profit, consultant and inter-agency requests.

DEPRM also has significant mapping resources available to the public maintained on their website, such as subwatersheds, as well as links to the County various ArcIMS sites (also known as MyNeighborhood applications). These resources help to maximize DEPRM staff effectiveness; each question answered through a self-service resource is one less that the staff need to respond to. In addition, the public's overall perception of the County's management and operation is improved. There is an increasing public demand for greater access to accurate and timely data; as a result, DEPRM maintains itself as a transparent organization where community information is readily available to the public.

DEPRM's leaders acknowledge public interaction and access is the greatest future growth area for the department. These leaders envision a future where GIS and web mapping technology is used to a greater extent to enhance partnerships with communities and stakeholders.

1.3 Binding Legal Agreements

There are several Federal, State and local laws, regulations, orders and other similar legal agreements that are relevant to DEPRM; key ones are listed below. In addition, several programs and activities are funded by grants; use of grant dollars is typically constrained by a requirement to meet certain obligations and demonstrate that the grants are being used appropriately. These grants then become binding legal agreements with specific reporting requirements.

- **Clean Water Act** -The cornerstone of surface water quality protection in the United States, the statute employs a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff.
- **Chesapeake Bay Critical Area Act** - Addresses the impacts of land development on habitat and aquatic resources by identifying a "Critical Area" within 1,000 feet of the Chesapeake Bay and its tributaries.
- **Maryland Forest Conservation Act** -Works to minimize the loss of forest resources during land development by making the identification and protection of forests and other sensitive areas an integral part of the site planning process.
- **Baltimore Watershed Agreement** - A Memorandum of Understanding between the City of Baltimore and Baltimore County to address water quality issues including stormwater management, community greening, development and redevelopment, public health and trash.
- **COMAR - The Code of Maryland Annotated Regulations -** set forth numerous requirements for managing issues including well and septic, public heath, stormwater management, forest buffers, groundwater quality, and erosion and sediment control.

1.4 Agency Study Participants

Sixty-one DEPRM staff completed the on-line short form survey developed for this study. These staff represented a cross section of DEPRM, ranging from the Director and Deputy Director of DEPRM, most of the Program managers, engineers, ecologists, environmental scientists and field investigators. A complete list of survey results can be found in Appendix A.

The following thirty-nine individuals, listed alphabetically by first name in the table below, were interviewed in person for this study. A few other individuals provided information to specific follow-up questions, but were not directly interviewed. Additionally, DEPRM's Budget Analyst, as well as OIT staff, participated in the interview process.

Name	Section
Candace Croswell	Capital Programs and Operations
Daniel D. Artley	Stormwater Engineering
David Carroll	Director
David Lykens	Development Coordination
Dennis Genito	Watershed Management and Monitoring - 5683
Donald Outen	Policy Education, Research & Communication
Dorsey Burger	Natural Resource Specialist
Eldon Gemmill	Watershed Management and Monitoring - 5683
Emeka Obilor	Policy Education, Research & Communication

Name	Section
Eugene G. Siewierski	Waste Management
Jerry Siewierski	Environmental Health
Joan Klair	Capital Programs and Operations
John G. Russo	Environmental Impact Review, Critical Areas and Marinas
Keith Kelly	Inspection and Enforcement
Kevin Brittingham	Environmental Impact Review, Critical Areas and Marinas
Kevin Koepenick	Groundwater Management
Kevin Sharbonda	Inspections and Enforcement
Kevin Quelet	Stormwater Engineering
Megan Brosh	Watershed Management and Monitoring - 5683
Michael Doyle	Stormwater Engineering
Michael Moorefield	Inspections and Enforcement
Michael S. Kulis	Environmental Impact Review, Critical Areas and Marinas
Nancy Pentz	Watershed Management and Monitoring
Patricia H. Cornman	Policy Education, Research & Communication
Patricia M. Farr	Environmental Impact Review, Critical Areas and Marinas
Paul Dennis	Environmental Impact Review, Critical Areas and Marinas
Regina Esslinger	Environmental Impact Review, Critical Areas and Marinas
Robert Hirsch	Policy Education, Research & Communication
Robert Schleigh	Finance and Administration
Scott Porter	Capital Programs and Operations
Stephen Adamski	Watershed Management and Monitoring
Steve Bevard	Stormwater Engineering
Steve Stewart	Watershed Management and Monitoring - 5683

Name	Section
Thomas Panzarella	Environmental Impact Review, Critical Areas and Marinas
Wade Shelton	Capital Programs and Operations
Wallace S Lippincott, Jr.	Agricultural Preservation
William Clarke	Environmental Health
Yuly Lipsits	Environmental Health
Yvonne Deloatch	Environmental Health

Table 1 - Interviewees

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2 Cost/Benefit Information

This section outlines the costs and benefits that are associated with GIS use and maintenance within DEPRM. The total benefits and costs have been summarized in the table below, which are discussed in further detail in the remainder of this section.

Summary – Total Annual GIS Benefits	
Time Benefits:	**$1,339,076.27**
Other Benefits:	**$400,000.00**
Total Annual Benefits:	**$1,739,076.27**
Summary - Total Annual GIS Costs	
Total Annual Cost:	**$292,628.26**
Summary - Total GIS Cost/Benefit	
Total GIS Cost/Benefit:	**+$1,446,448.01**

Table 2 - Annual Agency Cost and Benefit Summary

This table only includes benefits that are associated with capital returns and does not consist of other benefits such as more accurate information, faster response times, etc. A detailed review of all qualitative benefits realized by GIS users will be documented and analyzed in the Enterprise volume of the report.

2.1 Annual Agency Cost

DEPRM contributes a moderate amount of resources to the cost of supporting the Enterprise GIS for Baltimore County. This agency maintains a substantial amount of GIS datasets, holds few operational costs, and carries less than one fulltime-employee-equivalent. The total agency cost to support all of these elements is $292,628.26, as detailed below.

Total Agency GIS Cost: $292,628.26

2.1.1 Annual Operational Costs

DEPRM supports the external training cost for two personnel, Rob Hirsch and Emeka Obilor, to attend the Towson GIS Conference each year. All other training is performed in-house at no additional cost to the agency.

Type of Training	Estimated Cost	# of Staff Attending	Total Annual Cost
Towson GIS Conference	$200	2	**$400**

Table 3 - Annual GIS Training Costs

In addition, DEPRM spends operational dollars on miscellaneous administrative supplies to support GIS activities across the agency. These annual costs are presented in the table below.

Administrative / Supply Items	Annual Cost
Plotter paper and supplies	$750
Color laser printer paper and supplies	$1,500
Miscellaneous	$83
Total Administrative/Supply Cost:	**$2,333**

Table 4 - Annual Administrative/ Supply Cost

2.1.2 Annual Resources (GIS Staff)

DEPRM includes two full-time GIS staff that perform activities to support or enable effective use of GIS within the agency. $35,004 is spent annually for GIS maintenance activities, which is based the salary and overhead of each personnel multiplied by the percentage of time performing GIS maintenance activities. These individuals are listed in the table below, along with the percentage of their time allocated to GIS maintenance activities.

GIS Personnel	% Allocated to GIS Maintenance Activities
Rob Hirsch	38%
Emeka Obilor	25%
Total GIS Personnel Cost:	**$35,004**

Table 5 - Annual GIS Personnel Costs

2.1.3 Annual Enterprise Costs

Each of the costs for providing the enterprise GIS have been totaled for the County and distributed among each of the County agencies relative to the number of users in each agency. These costs have been categorized as operating cost, or the cost that is expended to provide GIS support and resources, and capital costs, which reflect the cost of purchasing the GIS data (such as Orthophotography or

Contours). The total annual operating cost for the County GIS enterprise is $859,717.21 and the total annual capital cost is $272,000.00. DEPRM has a large number of GIS users, 50 (or 22.52% of the total users in the County). Annual enterprise costs have been proportionately distributed to DEPRM based on this 22.52% factor. These costs are calculated as $193,630.00 in operating costs and $61,261.26 in capital costs, totaling $254,891.26. These figures are summarized in the table below.

# of Users	% of Total Users	Factor of Operating Cost Applied to Agency	Factor of Capital Cost Applied to Agency	Total Enterprise Cost Applied to Agency
50	22.52%	$193,630.00	$61,261.26	$254,891.26

Table 6 – Annual Enterprise GIS Costs

2.2 Agency Benefit Assessment

DEPRM realizes many benefits from GIS usage in relation to the size of the Department and in comparison to other agencies within the County of similar magnitude. The extensive use of GIS, both in terms of the number of activities taking advantage of the system and the level of usage for each activity, has increased the benefits realized within each of the programs in the agency. Generally, GIS seems to be used with relative efficiency, providing expected benefits in areas where applications and data are being used.

Although there are many benefits that have been realized, there are several areas that can be improved, as discussed in Section 3.

2.2.1 Existing GIS Benefits

The benefits realized by DEPRM have been estimated for each activity by analyzing the effort needed to perform a task with GIS in comparison to the time spent without GIS. This analysis allows each activity to be measured in terms of time (hours), which is then multiplied times a flat rate of $33.95 per hour. All benefits have been computed on an annual basis. Benefits are summarized by program below and are discussed in more detail in Section 4.1.

Program	**Agricultural Preservation**
Description	The comprehensive management of nationally recognized land preservation programs in Baltimore County, including, but not limited to the administration of the Maryland Agricultural Land Preservation Program, Rural Legacy Program, the Baltimore County Program, and RC 4 Watershed Conservancy Easements. The Program is also responsible for the protection of rural land resources on agricultural and watershed zoned lands, and the enhancement of agricultural industry in Baltimore County.
Activities	• Agricultural Industry Support • Annual Application Ranking and Optimization • Annual Report to MALPF • Evaluating Farm Land • Grant Applications - TEP and FRPP • Inspections, Monitoring and Stewardship • Local Land Trust Support • Record Keeping and Reporting • Zoning and Environmental Regulations Review • Rural Legacy Program - Grant Applications
Time Benefits (Annual)	$42,793.98 (1260.5 hours)
Other Benefits (Annual)	$400,000
Total Benefits	**$442,793.98**
Program	**Baltimore Watershed Agreement**
Description	This program supports the implementation of the Baltimore Watershed Agreement. First signed in 2002 and recently updated in 2006, this agreement recognizes that natural resource protection and restoration can be greatly enhanced with better coordination among jurisdictions. Baltimore County shares common goals for the management of natural resources, shared watersheds, water quality, restoration of forest resources, and to manage air, land, water resources for the environmental, economic, recreational and aesthetic benefits of the citizens.
Activities	• Coordination with City and Watershed Associations • Prepare Biennial Report and Conference
Time Benefits (Annual)	$159,565 (4700 hours)
Other Benefits (Annual)	$0
Total Benefits	**$159,565**

Program	**Builders for the Bay**
Description	A first-of-its-kind program aimed at reducing environmental impacts from residential and commercial construction within the Chesapeake Bay watershed. Under the leadership of the Alliance for the Chesapeake Bay, the Center for Watershed Protection and the National Association of Home Builders, Builders for the Bay will encourage the voluntary adoption of 22 better site design principles that reduce the environmental effects of residential and commercial development.
Activities	Watershed Planning Process
Time Benefits (Annual)	$5567.80 (164 hours)
Other Benefits (Annual)	$0
Total Benefits	**$5567.80**
Program	**Capital Improvement Program**
Description	The Capital Projects component funded by the Waterway Improvement Program is a major effort to address water quality issues along the 219 miles of subestuarine shoreline of the Chesapeake Bay and the 2,145 miles of upland streams in the County. The goals of the program are to improve the water quality and increase the recreational value of the County's waterways, and to enhance the economic and aesthetic qualities of communities. Integrates and prioritizes capital projects.
Activities	• Citizen Complaints • Dredging Projects • Shoreline Enhancement Projects • Stormwater Retrofits • Stream Erosion Investigations • Stream Restoration Projects • Submerged Aquatic Vegetation Inventory
Time Benefits (Annual)	$155,592.85 (4583 hours)
Other Benefits (Annual)	$0
Total Benefits	**$155,592.85**

Program	**Community Reforestation Program**
Description	The Section administers DEPRM's program to expend developer fees-in-lieu of mitigation under the Forest Conservation Act. Reforestation is also performed as required for capital projects of other County agencies. This Program provides a continuing source of labor for planting, monitoring, and maintaining community reforestation projects.
Activities	• Planting, Monitoring, and Maintenance of Reforestation Projects • Site Planning and Assessment for Reforestation Projects
Time Benefits (Annual)	$4,786.95 (141 hours)
Other Benefits (Annual)	$0
Total Benefits	**$4,786.95**
Program	**Comprehensive Zoning Map Process**
Description	Comprehensive review of CZMP log of zoning issues for environmental and natural resource impacts.
Activities	Review for Natural Resource Impacts
Time Benefits (Annual)	$92,564.68 (2726.5 hours)
Other Benefits (Annual)	$0
Total Benefits	**$92,564.68**

Program	**Development Coordination and Permit Processing**
Description	This program is responsible for logging, distributing and tracking all plans and documents related to Phase I and Phase II of the development review process, and reviewing for compliance with the Master Water and Sewer Plan. This Program compiles department comments and attends all pre-concept plan conferences, concept plan conferences, development plan conferences and hearing officer hearings, during which comments are presented and explained. The Project Manager also represents the department at the development review committee meetings, wherein it is determined which process a development must follow. The program also ensures that all subdivision plats meet all State and County development regulations and policies.
Activities	• Citizen Assistance • Permit Processing • Preliminary Site Analysis • Presentation of Comments and Analyses
Time Benefits (Annual)	$104,525.26 (3078.8 hours)
Other Benefits (Annual)	$0
Total Benefits	**$104,525.26**
Program	**Education and Citizen Participation Program**
Description	Staff assists in the development and implementation of public awareness, education, and community outreach programs and initiatives
Activities	Education/Outreach Green Schools Program
Time Benefits (Annual)	$21,456.40 (632 hours)
Other Benefits (Annual)	$0
Total Benefits	**$21,456.40**

Program	**Environmental Health Inspections Program**
Description	This program, mandated by Baltimore County Code, provides for the inspection and enforcement of the Code of Baltimore County Regulations (COBCR) 1.01.01 - Food Service Facilities. This section also has delegated authority and responsibility from the Secretary of the Maryland State Department of Health and Mental Hygiene (DHMH) for food establishments regulated under COMAR 10.15.03 – Food Service Facilities.
Activities	• Community Hygiene Inspections • Environmental Site Assessments • Food Facility Inspections • Recreational Hygiene Inspection • Sanitary Sewage Overflow Monitoring and Response • Sanitary Survey of TNC Facilities • Waste Management Facility Inspection and Monitoring
Time Benefits (Annual)	$6,664.39 (196.3 hours)
Other Benefits (Annual)	$0
Total Benefits	**$6,664.39**
Program	**Environmental Health Outreach**
Description	This program, mandated by Baltimore County Code, provides for the inspection and enforcement of the Code of Baltimore County Regulations (COBCR) 1.01.01 - Food Service Facilities. This section also has delegated authority and responsibility from the Secretary of the Maryland State Department of Health and Mental Hygiene (DHMH) for food establishments regulated under COMAR 10.15.03 – Food Service Facilities.
Activities	• Community Hygiene Outreach • Recreational Water Monitoring • Waste Management Education, Outreach and Assistance
Time Benefits (Annual)	$1,358 (40 hours)
Other Benefits (Annual)	$0
Total Benefits	**$1,358**

Program	**Environmental Impact Review Program**
Description	Environmental Impact Review evaluates and regulates the impact of land development proposals on watercourses, wetlands, water quality, forests, shorelines, threatened and endangered species, and fish, plant and wildlife habitat by the Baltimore County Development Regulations, Regulations for the Protection of Water Quality, Streams, Wetlands and Floodplains; and State-mandated Regulations for Forest Conservation and Chesapeake Bay Critical Area Regulations.
Activities	• Citizen Assistance • Development Review and Management • Environmental Enforcement Inspections • Environmental Enforcement Complaints
Time Benefits (Annual)	$206,212.30 (6074 hours)
Other Benefits (Annual)	$0
Total Benefits	**$206,212.30**
Program	**Forest Sustainability Initiative**
Description	The Section develops and implements the County's forest sustainability program, an element of the Green Renaissance initiative. Staff coordinates the County's participation as one of three U.S. County pilots for the Linking Communities to the Montreal Process Criteria and Indicators project. Staff coordinates the implementation of the Forest Sustainability Strategy drafted in 2005. Staff coordinates with the USDA Forest Service, MD DNR, and American Forests for the implementation of the 2005 Forest Sustainability Memorandum of Understanding. Staff participates in the national Roundtable on Sustainable Forests.
Activities	• Forest Health Assessments and Management Plans • Forest Sustainability Research • Growing Home Campaign • Rural Residential Stewardship Initiative
Time Benefits (Annual)	$9,030.70 (266 hours)
Other Benefits (Annual)	$0
Total Benefits	**$9,030.70**

Program	**Groundwater Management Program**
Description	The mission of Groundwater Management is to protect and manage the County groundwater resources.
Activities	• Enforce State OSDS Regulations • Enforce State Well Regulations • Implement Groundwater Management and Protection Strategy • Notify Residents of Groundwater Contamination Occurrences
Time Benefits (Annual)	$11,865.53 (349.5 hours)
Other Benefits (Annual)	$0
Total Benefits	**$11,865.53**
Program	**NPDES Program**
Description	An EPA mandated program. WMM coordinates the NPDES Inter-Department Management Committee and provides coordination of all operational components. This NPDES permit focuses on non-point pollution loading modeling, storm event and base flow chemical monitoring, biological monitoring, geomorphologic monitoring, and illicit connections monitoring.
Activities	• Annual Report • Illicit Connection Investigations • Watershed Action Planning
Time Benefits (Annual)	$255,236.10 (7518 hours)
Other Benefits (Annual)	$0
Total Benefits	**$255,236.10**
Program	**Operations Program**
Description	Operations Section also manages the County's Waterway Debris Removal Program and the Derelict Boat program. This section also is responsible for the management and inspection of all publicly owned stormwater management facilities in the County.
Activities	• Stormwater Management Facility Inspection and Maintenance • Waterway Debris Removal and Derelict Boat Removal
Time Benefits (Annual)	$13,580 (400 hours)
Other Benefits (Annual)	$0
Total Benefits	**$13,580**

Program	**Policy and Program Coordination**
Description	The Section develops and implements the County's forest sustainability program, an element of the Green Renaissance initiative. Staff coordinates the County's participation as one of three U.S. County pilots for the Linking Communities to the Montreal Process Criteria and Indicators project. Staff coordinates implementation of the Forest Sustainability Strategy drafted in 2005. Staff coordinates with the USDA Forest Service, MD DNR, and American Forests for the implementation of the 2005 Forest Sustainability Memorandum of Understanding. Staff participates in the National Roundtable on Sustainable Forests.
Activities	• Chesapeake Bay Program • Coastal Zone Management • Reservoir Watershed Management • Resource Management Research
Time Benefits (Annual)	$40,536.30 (1194 hours)
Other Benefits (Annual)	$0
Total Benefits	**$40,536.30**
Program	**Public Data Access**
Description	Produce and distribute informational materials via websites, publications, and displays at meetings and events. Prepare GIS and tabular data for citizen, non-profit, consultant, and inter-agency requests.
Activities	There are no activities associated with this program
Time Benefits (Annual)	$509.25 (15 hours)
Other Benefits (Annual)	$0
Total Benefits	**$509.25**

Program	**Sediment and Erosion Control Program**
Description	Responsible for monitoring the implementation and maintenance of sediment and erosion control practices.
Activities	• Complaint Response • Monitoring, Inspection and Enforcement
Time Benefits (Annual)	$48,378.75 (1425 hours)
Other Benefits (Annual)	$0
Total Benefits	**$48,378.75**
Program	**Stormwater Management**
Description	Responsible for review of stormwater management and grading plans for all new public, residential, commercial, industrial and institutional development. It also coordinates all agency comments pertaining to stormwater management, grading and sediment control.
Activities	• Citizen Assistance • Inspections • Stormwater Management and Grading Plan Review
Time Benefits (Annual)	$103,988.85 (3063 hours)
Other Benefits (Annual)	$0
Total Benefits	**$103,988.85**
Program	**Total Maximum Daily Load – Drainage Areas and Major Watersheds**
Description	Coordination with Maryland Department of the Environment in the development of TMDLs for the impaired water bodies for submittal to US EPA
Activities	There are no activities associated with this program
Time Benefits (Annual)	$16,805.25 (495 hours)
Other Benefits (Annual)	$0
Total Benefits	$16,805.25

Program	**Water Quality Monitoring**
Description	Monitor chemical, physical, and biological water quality data to fulfill obligations under NPDES and TMDL programs, and develop policy, regulations, and initiatives.
Activities	• Biological Water Quality Monitoring • Chemical Water Quality Monitoring • Stream Geomorphic Monitoring
Time Benefits (Annual)	$18,638.55 (549 hours)
Other Benefits (Annual)	$0
Total Benefits	**$18,638.55**
Program	**Watershed and Water Quality Protection Grants**
Description	Enhance protection of water quality by securing outside funding for specific projects.
Activities	• Grant Implementation
Time Benefits (Annual)	$19,419.40 (572 hours)
Other Benefits (Annual)	$0
Total Benefits	**$19,419.40**

The table below summarizes the benefits realized from each of the programs presented above. These numbers represent the total hours and dollars that have been saved by the agency as a result of utilizing GIS.

Total Annual GIS Benefits Summary			
Time Benefits Summary (By Program):	**Hours Saved**	**Labor Rate (Avg)**	**Annual Time Benefits**
Agricultural Preservation	1260.5	$33.95	$42,793.98
Baltimore Watershed Agreement	4700	$33.95	$159,565.00
Builders for the Bay	164	$33.95	$5,567.80
Capital Improvement Program	4583	$33.95	$155,592.85
Community Reforestation	141	$33.95	$4,786.95
Comprehensive Zoning Map Process	2726.5	$33.95	$92,564.68
Development Coordination and Permit Processing	3078.8	$33.95	$104,525.26
Education and Citizen Participation Program	632	$33.95	$21,456.40
Environmental Health Inspections Program	196.3	$33.95	$6,664.39
Environmental Health Outreach	40	$33.95	$1,358.00
Environmental Impact Review	6074	$33.95	$206,212.30
Forest Sustainability Initiative	266	$33.95	$9030.70
Groundwater Management Program	349.5	$33.95	$11,865.53
NPDES Program	7518	$33.95	255,236.10
Operations Program	400	$33.95	$13,580.00
Policy and Program Coordination	1194	$33.95	$40,536.30
Public Access Data	15	$33.95	$509.25
Sediment and Erosion Control	1425	$33.95	$48,378.75
Stormwater Management	3063	$33.95	$103,988.85
Total Maximum Daily Load	495	$33.95	$16,805.25
Water Quality Monitoring	549	$33.95	$18,638.55
Watershed and Water Quality Protection Grants Grant Applications	572	$33.95	$19,419.40
Total Time Benefits:	**39442.6**	**$33.95**	**$1,339,076.277**
Other Benefits Summary (By Program):			**Annual Other Benefits**
As part of the Agricultural Preservation program, the Annual Application Ranking and Optimization activity provides an addition $400,000 worth of land preservation per year.			**$400,000**
Total Other Benefits:			**$400,000**
Grand Total Annual Benefits:	**$1,739,076.27**		

Table 7 – Total Annual GIS Benefits

Each of the benefits for these programs have been depicted in the figure below, which provides a clear picture of the areas that are receiving the most benefits from GIS usage.

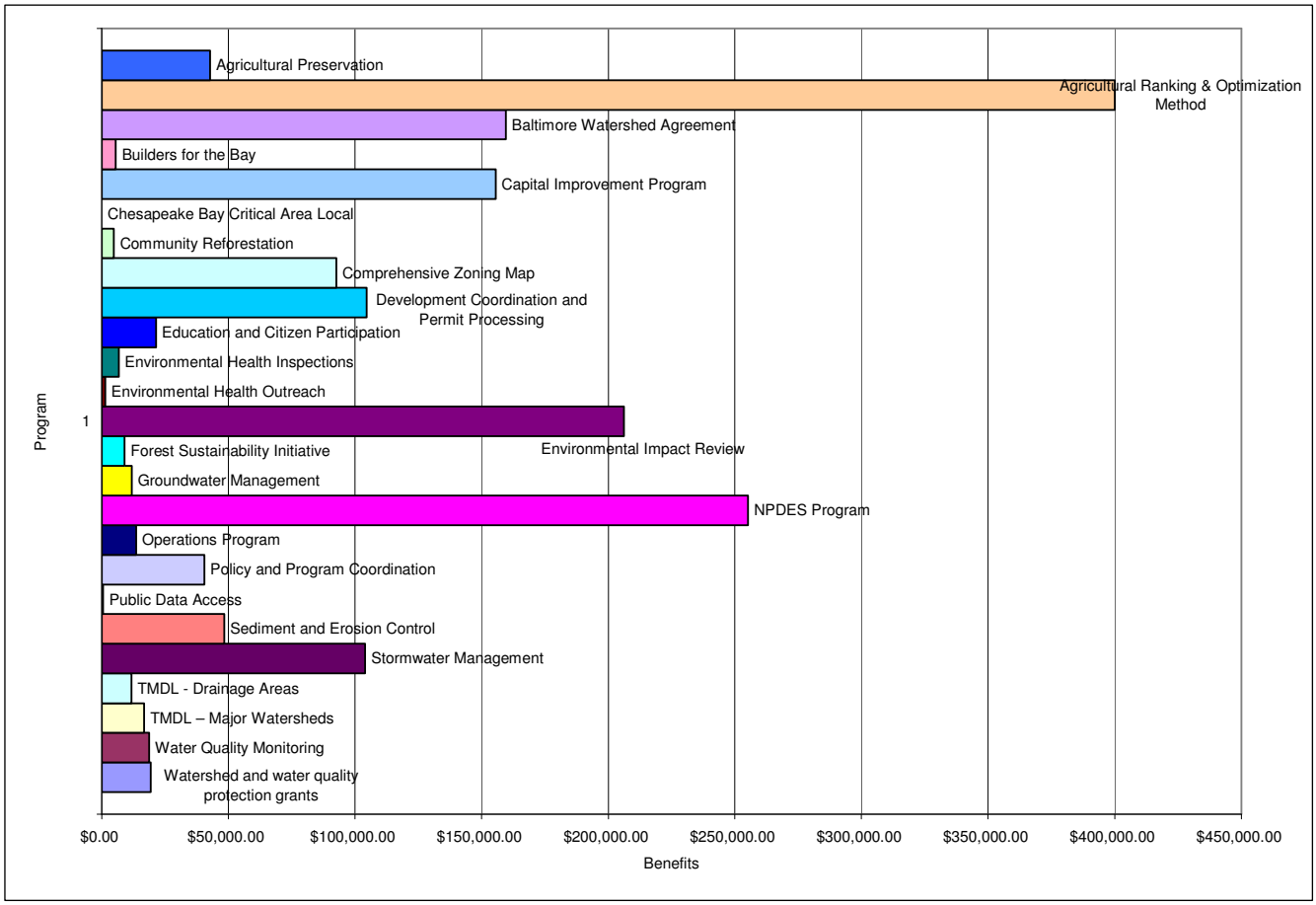

Figure 1 - Agency Benefits by Program

The Agricultural Preservation Program has developed a repeatable GIS modeling application that can be utilized annually to enable Baltimore County to optimize property purchase selections. The Annual Application Ranking and Optimization activity facilitates and largely automates the site selection process providing an additional $400,000 worth of land preservation per year. This advanced, analytical GIS model provides legitimacy to the ranking and optimization process by generating defensible, consistent and repeatable results. This recurring benefit, determined to be $400,000 last year, will be realized annually by Baltimore County by using the GIS modeling application.

When examining the benefits of the use of GIS within DEPRM, several common themes arise. These themes appear in numerous programs and activities as benefits, yet they are not directly summed in the table above. These benefits are difficult to quantify in terms of tangible savings (dollars saved, turnaround time reduced, staff downsizing), but are nonetheless important to consider when determining the overall effectiveness and benefit of the Department's actions. Some of these less-tangible benefits include:

1. **Improved communication with the public and other stakeholders**. This benefit flows in to virtually every aspect of the Department's business, be it a routine day-to-day task or a high-level multi-year, multi-million dollar grant.
2. **Ability to make better decisions.** This benefit takes several forms; for example, performance of more accurate assessments, using tools necessary to analyze complex relationships, avoiding legal action and/or have data that helps support a defensible legal position.
3. **Manage environmental and natural resources more effectively**. This yields intangible benefits such as protection of drinking water resources, safe food, improved air quality, proper waste disposal, reduced flooding, mosquito control and preservation of scenic rivers and viewsheds, just to name a few.
4. **Establish a strong reputation for being a credible leader among County governments**. This is a particularly significant benefit when working with regulatory authorities (EPA, MDE, USACE for example) who operate best in a collaborative proactive situation, as opposed to a confrontational enforcement action. It also helps to attract watershed organizations and citizen action groups who provide vital free labor and a local presence to support community projects.

3 GIS Utilization and Recommendations

3.1 GIS Utilization Analysis

GIS has excellent concentration within DEPRM programs. Nearly every aspect of the Department's operation has a strong reliance on GIS data, applications and/or products to operate efficiently, support decision making, enhance business processes and communicate with stakeholders.

3.1.1 GIS Personnel

Two individuals within DEPRM are dedicated to GIS operation and maintenance as well as providing specialized GIS support to other DEPRM employees. These employees seem to strike a reasonable balance between performing GIS-related activities themselves and creating datasets or templates that can be handed off to subject matter experts for further processing or analysis. In addition, where analyses are performed on a recurring basis, past results are maintained and utilized to improve future assessments. These individuals are well-known and respected throughout DEPRM and are sought out regularly to answer GIS questions large and small.

DEPRM has already invested in providing GIS training through the Computer Training Center in the Office of Information Technology for its staff. The following shows a breakdown of the levels of training and the number of staff that have received training at that level:

Basic Training (DataQuery, ArcView)	Mid-Level (ArcGIS Intro)	Advanced (ArcGIS 8x or higher)
97	5	15

Most of the training provided has been more basic GIS usage. These personnel that have been trained are not necessarily using GIS at the present time.

3.1.2 GIS Data Usage

DEPRM uses many of the GIS datasets provided by OIT's ArcSDE services via the County WAN. These datasets are used in a variety of ways. The datasets used by 15 or more of the agency's programs are listed below.

GIS Data Layer	Used by this number of Programs
Tax Parcel	25
Hydrology	24
Orthophotography (2005)	24
Roads	24
Streams and Ponds	24
Buildings	23
Impervious Polygons	23

GIS Data Layer	Used by this number of Programs
Street Centerlines	22
Contours	21
Government Lands	21
Subwatersheds	21
County Boundary	20
Publicly Owned Land	20
Soils	20
AddressPoints (View)	19
Facilities	19
Urban Rural Demarcation Line (URDL)	19
Wetlands	19
Wetlands - NWI	19
Monitoring—Various Programs	18
Watersheds - Major	18
Wetlands - Special Area Management	18
Street Centerlines (View)	17
Buffers with forest cover-1996	16
Orchards	16
Orthophotography (2002)	16
Tree Cover	16
Tree Rows	16
Agricultural Preservation	15
Digital Elevation Models	15
Easement	15
Restriction	15
Wooded	15
Zoning	15

3.1.3 GIS Applications Usage

The key GIS application in use at DEPRM is ArcGIS. ArcGIS version 9.0, service pack 3 (SP3) is the current County standard that is deployed throughout the various agencies. Some programs also rely on ArcGIS extensions like Spatial Analyst and 3D Analyst. DataQuery is not commonly used; instead, a "DEPRM.mxd" file is shared to point users to frequently used data layers stored in ArcSDE. Other applications, such as My Neighborhood, are not frequently used by DEPRM with the exception of Property Search, the ArcIMS application specifically launched for DEPRM.

3.1.4 GIS Database Maintenance

DEPRM is responsible for maintaining the following layers in support of the enterprise GIS:

Dataset	**Buoys**
Description	Points representing water navigational aid
Update Frequency	As-needed
Location	Local
Complete	Yes
Programs Using Data	• Capitol Improvement Program
Dataset	**Capitol Improvement Projects**
Description	Points representing the location of former, current and planned projects
Update Frequency	As needed
Location	SDE
Complete	On-going
Programs Using Data	• Baltimore Watershed Agreement • Builders for the Bay Program • Capitol Improvement Program • Comprehensive Zoning Map Process (CZMP) • Database Maintenance • Education and Citizen Participation • Forest Sustainability Initiative • NPDES • Operations • Policy and Program Coordination • Public Data Access • Total Maximum Daily Load (TMDL) • Watershed and Water Quality Protection Grants

Dataset	**Conservation Easements**
Description	Tracks all conservation easements; maintained as a tabular dataset that is joined to the Tax Parcel SDE layer for mapping/presentation purposes.
Update Frequency	As needed
Location	SDE
Complete	On-going
Programs Using Data	• Agricultural Preservation Ranking and Optimization Method Development • Agricultural Preservation • Baltimore Watershed Agreement • Builders for the Bay Program • Community Reforestation • Comprehensive Zoning Map Process (CZMP) • Database Maintenance • Education and Citizen Participation • Forest Sustainability Initiative • NPDES • Policy and Program Coordination • Public Data Access • Total Maximum Daily Load (TMDL) • Watershed and Water Quality Protection Grants
Dataset	**Field Lawns**
Description	Polygons delineating the location of areas covered in herbaceous vegetation, including cropland, pasture, lawn, meadow, etc.
Update Frequency	As needed
Location	Local
Complete	Yes
Programs Using Data	• Information not available

Dataset	**Geology**
Description	Polygons delineating the type of bedrock
Update Frequency	One-time event to capture
Location	SDE
Complete	Yes
Programs Using Data	• Builders for the Bay Program • Capitol Improvement Program • Comprehensive Zoning Map Process (CZMP) • Database Maintenance • Education and Citizen Participation • Environmental Health Inspections • Environmental Health Licensing • Environmental Health Outreach • Forest Sustainability Initiative • Ground Water Management • NPDES • Total Maximum Daily Load (TMDL) • Watershed and Water Quality Protection Grants
Dataset	**Green Schools**
Description	Points representing the location of schools and education centers participating in the Green Schools program
Update Frequency	As needed
Location	Local/same as SDE Layer
Complete	On-going
Programs Using Data	• Database Maintenance • Education and Citizen Participation

Dataset	Health Permits
Description	Tracks the location of all issued health permits; maintained as a tabular dataset that is joined to the Facility SDE layer for mapping/presentation purposes
Update Frequency	As-needed
Location	Local
Complete	On-going
Programs Using Data	• Builders for the Bay Program • Capitol Improvement Program • Comprehensive Zoning Map Process (CZMP) • Database Maintenance • Education and Citizen Participation • NPDES • Operations • Public Data Access • Stormwater Management • Total Maximum Daily Load (TMDL) • Water Quality Monitoring • Watershed and Water Quality Protection Grants

Dataset	Hydrologic Stream Order
Description	A copy of the hydrology data layer maintained by other agencies with an additional attribute added to track the associated Strahler stream order
Update Frequency	One time event to capture
Location	SDE
Complete	Yes
Programs Using Data	• Agricultural Preservation Ranking and Optimization Method Development • Agricultural Preservation • Baltimore Watershed Agreement • Builders for the Bay Program • Capitol Improvement Program • Chesapeake Bay Critical Area Local Program • Community Reforestation • Comprehensive Zoning Map Process (CZMP) • Database Maintenance • Development Coordination and Permit Process • Education and Citizen Participation • Environmental Health Inspections • Environmental Health Licensing • Environmental Health Outreach • Environmental Impact Review Program • Forest Sustainability Initiative • Ground Water Management Program • NPDES • Operations • Policy and Program Coordination • Stormwater Management • Total Maximum Daily Load (TMDL) • Water Quality Monitoring • Watershed and Water Quality Protection Grants

Dataset	**Jacksonville**
Description	Several feature classes compiled in response to a major soil/groundwater contamination investigation, including wells, petroleum storage and septic systems
Update Frequency	One time event to capture
Location	Local
Complete	Yes
Programs Using Data	• Information not available
Dataset	**RC6 Primary Conservancy Forest Patches**
Description	Polygons representing forest conservancy areas; also known as the "forest patch map"
Update Frequency	As-needed
Location	Local
Complete	On-going
Programs Using Data	• Agricultural Preservation Ranking and Optimization Method Development • Agricultural Preservation • Chesapeake Bay Critical Area Local Program • Database Maintenance • Environmental Impact Review Program • Forest Sustainability Initiative • Public Data Access

Dataset	Rural Legacy Program Areas
Description	Polygons delineating the location of areas eligible for conservation easement purchases funded through the rural legacy program
Update Frequency	As-needed
Location	SDE
Complete	On-going
Programs Using Data	• Agricultural Preservation Ranking and Optimization Method Development • Agricultural Preservation • Baltimore Watershed Agreement • Comprehensive Zoning Map Process (CZMP) • Database Maintenance • Education and Citizen Participation • Forest Sustainability Initiative • NPDES • Policy and Program Coordination • Public Data Access • Stormwater Management • Total Maximum Daily Load (TMDL) • Watershed and Water Quality Protection Grants

Dataset	**Soil**
Description	Polygons delineating the USDA soil survey mapping units
Update Frequency	One time event to capture
Location	SDE
Complete	Yes
Programs Using Data	• Agricultural Preservation Ranking and Optimization Method Development • Agricultural Preservation • Builders for the Bay Program • Capitol Improvement Program • Chesapeake Bay Critical Area Local Program • Community Reforestation • Comprehensive Zoning Map Process (CZMP) • Database Maintenance • Development Coordination and Permit Process • Education and Citizen Participation • Environmental Health Inspections • Environmental Health Licensing • Environmental Health Outreach • Environmental Impact Review Program • Forest Sustainability Initiative • Ground Water Management Program • NPDES • Stormwater Management • Total Maximum Daily Load (TMDL) • Watershed and Water Quality Protection Grants

Dataset	Stormwater Management Facility Drainage Areas
Description	Polygons delineating land areas which contribute to the drainage area associated with a particular stormwater management facility
Update Frequency	As-needed
Location	Local
Complete	On-going
Programs Using Data	• Builders for the Bay Program • Capitol Improvement Program • Comprehensive Zoning Map Process (CZMP) • Database Maintenance • Education and Citizen Participation • Environmental Health Inspections • Environmental Health Licensing • Environmental Health Outreach • NPDES • Operations • Stormwater Management • Total Maximum Daily Load (TMDL) • Water Quality Monitoring • Watershed and Water Quality Protection Grants

Dataset	**Stormwater Management Facility Locations**
Description	Point locations for stormwater management facility
Update Frequency	As-needed
Location	Local
Complete	On-going
Programs Using Data	• Builders for the Bay Program • Capitol Improvement Program • Comprehensive Zoning Map Process (CZMP) • Database Maintenance • Education and Citizen Participation • Environmental Health Inspections • Environmental Health Licensing • Environmental Health Outreach • NPDES • Operations • Stormwater Management • Total Maximum Daily Load (TMDL) • Water Quality Monitoring • Watershed and Water Quality Protection Grants
Dataset	**Stream Buffer**
Description	Polygons delineating a 100-foot buffer surrounding perennial streams
Update Frequency	One time event to capture, annually
Location	Local
Complete	Yes
Programs Using Data	• Information not available

Dataset	Submerged Aquatic Vegetation
Description	Polygons delineating the location of underwater vegetation
Update Frequency	One time event to capture
Location	Local
Complete	Yes
Programs Using Data	• Information not available
Dataset	**Water Quality Monitoring Sites**
Description	Points representing the location of a water quality monitoring locations
Update Frequency	As-needed
Location	SDE
Complete	On-going
Programs Using Data	• Agricultural Preservation Ranking and Optimization Method Development • Agricultural Preservation • Baltimore Watershed Agreement • Builders for the Bay Program • Capitol Improvement Program • Community Reforestation • Comprehensive Zoning Map Process (CZMP) • Database Maintenance • Education and Citizen Participation • Environmental Impact Review Program • Forest Sustainability Initiative • Ground Water Management Program • NPDES • Policy and Program Coordination • Public Data Access • Total Maximum Daily Load (TMDL) • Water Quality Monitoring • Watershed and Water Quality Protection Grants

Table 8 - Agency Data Maintenance

3.1.5 Assessment of Business Process with GIS

GIS is effectively used across DEPRM programs. It has been used for several years and a mature and robust GIS program has evolved within DEPRM. Some DEPRM employees use GIS daily as a tool to support decision making and other employees benefit from and utilize GIS products on a daily basis. There are two full-time GIS staff in-house; they are a key reason for DEPRM's success with GIS. The staff is readily accessible to answer user questions, support special projects and meet recurring activity needs.

There are several common themes as to how and why DEPRM is using GIS. When asked about accomplishing tasks without the benefit GIS, most staff responded with incredulity, "we simply couldn't do it" or something to that effect. When pressed, these responders are able to envision how their activities could possibly be accomplished without GIS technology (and certainly some were doing just that before GIS became widely used). However, when these "without GIS" scenarios were explored, just how important the data and tools were to enabling successful program management was revealed and quantified. Further, it was readily apparent that many now-routine activities would simply not be performed without GIS technology, due to time, data and resource constraints.

GIS involvement in each of these programs' business processes are discussed in the table below.

Program	Business Process Assessment
Agricultural Preservation	GIS is used to: • Perform spatial analyses, • Web based applications to support programs and activities • Create project-specific maps, and • Supplement tabular reports.
Baltimore Watershed Agreement	GIS is used to: • Perform spatial analyses, • Create project-specific maps, • Supplement reports, • Provide information to citizens and other County agencies, and • Perform database maintenance.
Builders for the Bay Program	GIS is used to: • Develop GIS-based decision support tools and set policy using said tools for protection of trout resources and drinking water resources. • Overlay subwatersheds within the planning areas on a variety of GIS data layers to extract information and analyze impacts, sources of pollution, mitigating factors and restoration opportunities. • Maps are produced to summarize and present this information to stakeholders involved in the planning process.

Program	Business Process Assessment
Capitol Improvement Program	GIS is used to: • Perform spatial analyses, • Create project-specific maps, and • Supplement reports.
Chesapeake Bay Critical Area Local Program	GIS is used to: • Perform spatial analyses, • Create project-specific maps, • Supplement reports, • Provide information to citizens and other County agencies, and • Perform database maintenance.
Community Reforestation Program	GIS is used to: • Perform spatial analyses, • Integrate with GPS • Create project-specific maps, and • Supplement reports.
Comprehensive Zoning Map Process	GIS is used to: • Perform spatial analyses, • Web based applications to support programs and activities • Create project-specific maps, and • Supplement reports.
Development Coordination and Permit Processing	GIS is used to: • Perform spatial analyses, • Create project-specific maps, • Provide effective communication to consumers and county agencies • Supplement reports, and • Perform database maintenance.
Education and Citizen Participation Program	GIS is used to: • Perform spatial analyses, • Create project-specific maps, • Supplement reports, and • Perform database maintenance. Maps and related products are output from the GIS for integration with outreach and educational materials. Maps are a key deliverables, and are used to illustrate results in the reports, and to inform the public.
Environmental Health Inspections	GIS is used to: • Perform spatial analyses, • Create project-specific maps, • Supplement reports, and • Perform database maintenance.

Program	Business Process Assessment
Environmental Health Outreach	GIS is used to: • Perform spatial analyses, • Create project-specific maps, • Supplement reports, and • Perform database maintenance.
Environmental Impact Review Program	GIS is used to: • Perform spatial analyses, • Create project-specific maps, and • Supplement reports. Protection of water quality, streams, wetlands, floodplains throughout the County during the development review process.
Forest Sustainability Program	GIS is used to: • Perform spatial analyses and GPS integration, • Create project-specific maps, • Supplement reports, and • Perform database maintenance.
Ground Water Management	GIS is used to: • Perform spatial analyses, • Create project-specific maps, • Supplement reports, • Web based applications to support programs and activities • Perform database maintenance.
NPDES Program	GIS is used to: • Perform spatial analyses, • Facilitate field visits • Create project-specific maps, • Supplement reports, and • Perform database maintenance. An EPA mandated program. NPDES permit focuses on non-point pollution loading modeling, storm event and base flow chemical monitoring, biological monitoring, geomorphologic monitoring, and illicit connections monitoring.
Operations Program	GIS is used to: • Perform spatial analyses, • Facilitate field visits • Create project-specific maps, • Supplement reports, and • Perform database maintenance. GIS is used to support management and inspection of all publicly owned stormwater management facilities in the County.

Program	Business Process Assessment
Policy and Program Coordination	GIS is used to: • Perform spatial analyses, • Create project-specific maps, • Track program progress • Supplement reports, and • Perform database maintenance.
Public Data Access	Produce and distribute informational materials via websites, publications, and displays at meetings and events. Prepare GIS and tabular data for citizen, non-profit, consultant, and inter-agency requests.
Sediment and Erosion Control Program	GIS is used to: • Perform spatial analyses, • Create project-specific maps, • Supplement reports, • Facilitate site inspections GIS provides data that is used in court or to help avoid a legal action by demonstrating convincing evidence of pre-disturbance conditions.
Stormwater Management	GIS is used to: • Perform spatial analyses, • Facilitate field visits • Create project-specific maps, • Supplement reports, and • Perform database maintenance.
Total Maximum Daily Load (TMDL) Program	GIS is used to test and validate or propose modification to MDE models for calculating existing TMDL loads. These data also feed into proposal preparation and to target potential opportunities for water quality improvement projects. Maps are output to support field investigations.
Watershed and Water Quality Protection Grants	GIS is used to: • Perform spatial analyses, • Create project-specific maps, and • Supplement reports.

Table 10 - GIS Integration with Business Processes, by Program

3.2 GIS Needs Assessment

3.2.1 Applications

DEPRM does not currently use many applications outside of ArcGIS and a few associated extensions; the Property Search ArcIMS site is a notable exception. There is at least one in-house application developed by a contractor; it is a GIS modeling routine (programmed in Visual Basic and operated within ArcGIS) for evaluating and selecting land areas for conservation easements. This model uses a complex formula to weigh a number of variables to provide an output designed to assist in the decision making process for prioritizing land purchases and protection.

At the time interviews were conducted, the latest version of DataQuery was just released and DEPRM was relying on various work-arounds. Once the new version of DataQuery is available, it will likely be used by DEPRM staff; in fact, it may be worth implementing a slightly different version of DataQuery specifically geared towards the data layers most frequently used by the agency. The priority need for future GIS applications needed by the agency is for additional MyNeighborhood ArcIMS sites. DEPRM expends significant resources interfacing with land developers, grantors, the County Executive, regulatory authorities, watershed organizations and the public on programs including stormwater, Chesapeake Bay Critical Area Limit and Environmental Impact Review, agricultural preservation, public lands and environmental health. These interactions typically revolve around a map or series of maps and information is exchanged and issues discussed in this spatial context. By making raw data available to stakeholders, the effectiveness of these interactions is maximized. Due to legal and regulatory implications, not all data layers may be appropriate for unrestricted distribution; however, "down-sampled" (e.g., a generalized/merged data set or one where sensitive attributes have been removed) or otherwise sanitized data sets would still be beneficial.

3.2.2 Data

Creation of new data layers is the area where DEPRM currently has the greatest need. Several identified layers, where the Department is the appropriate author/owner, are listed below.

Data Layer	Comments	Programs That Could Benefit From Data
Chesapeake Bay Critical Area	Intense development, limited development, resource conservation, buffer management areas and tidal wetlands.	• Agricultural Preservation Ranking and Optimization Method Development • Agricultural Preservation • Builders for the Bay Program • Capitol Improvement Program • Chesapeake Bay Critical Area Local Program • Community Reforestation • Comprehensive Zoning Map Process (CZMP) • Forest Sustainability Initiative • Sediment and Erosion Control Program
Environmental Easements	There is no current GIS data layer or method for evaluating environmental easements in a GIS-context.	• Capitol Improvement Program • Community Reforestation • Comprehensive Zoning Map Process (CZMP) • Development Coordination and Permit Process • Environmental Health Inspections • Environmental Health Licensing • Environmental Health Outreach • Environmental Impact Review Program • Forest Sustainability Initiative

Data Layer	Comments	Programs That Could Benefit From Data
Wells and Septic Systems	Geocoded locations. Well and septic system feature classes will primarily be realized within the Groundwater Management program	• Capitol Improvement Program • Comprehensive Zoning Map Process (CZMP) • Development Coordination and Permit Process • Environmental Health Inspections • Environmental Health Licensing • Environmental Health Outreach • Environmental Impact Review Program • Watershed and Water Quality Protection Grants
Stormwater Management Facilities	Perhaps scanned and georeferenced as-built drawings) and associated drainage basins	• Capitol Improvement Program • Chesapeake Bay Critical Area Local Program • Community Reforestation • Comprehensive Zoning Map Process (CZMP) • Ground Water Management Program • NPDES • Stormwater Management • Total Maximum Daily Load (TMDL) • Watershed and Water Quality Protection Grants
Percent Slope	Percent-slope could be beneficial to predicting and understanding development constraints and erosion and sediment control issues.	• Agricultural Preservation Ranking and Optimization Method Development • Agricultural Preservation • Builders for the Bay Program • Capitol Improvement Program • Chesapeake Bay Critical Area Local Program • Community Reforestation • Comprehensive Zoning Map Process (CZMP) • Forest Sustainability Initiative • Sediment and Erosion Control Program • Watershed and Water Quality Protection Grants
Leaf-on-Imagery	To support forest assessments	• Capitol Improvement Program • Community Reforestation • Comprehensive Zoning Map Process (CZMP) • Forest Sustainability Initiative
Erosion and Sediment Control Permits and Violations	Improved water quality, management of erosion issues	• Agricultural Preservation • Builders for the Bay Program • Ground Water Management Program • NPDES • Sediment and Erosion Control Program • Stormwater Management
Bathymetry	Support Chesapeake Restoration	• Builders for the Bay Program • Chesapeake Bay Critical Area Local Program • Sediment and Erosion Control Program

Data Layer	Comments	Programs That Could Benefit From Data
Elevation Models	LiDAR-derived products could be created and used to support virtually every water-related DEPRM program	• Agricultural Preservation • Baltimore Watershed Agreement • Builders for the Bay Program • Ground Water Management Program • NPDES • Sediment and Erosion Control Program • Total Maximum Daily Load (TMDL) • Water Quality Monitoring • Watershed and Water Quality Protection Grants
Environmental Site Assessments	Project boundaries and point locations of "recognized environmental conditions", take input from health, septic, contamination and waste management complaints	• Capitol Improvement Program • Comprehensive Zoning Map Process (CZMP) • Development Coordination and Permit Process • Environmental Health Inspections • Environmental Health Licensing • Environmental Health Outreach • Environmental Impact Review Program • Watershed and Water Quality Protection Grants
Tree Inventory	Support community reforestation	• Community Reforestation • Forest Sustainability Initiative • Sediment and Erosion Control Program

In addition to the layers listed above where DEPRM has the expertise and authority, there are several important utility network data layers that another County agency should be the owner. These layers already exist in varying degrees of accuracy, completeness and currency; their questionable quality is well known to DEPRM staff and they are used daily with caution and frustration. These issues have been acknowledged and plans are already in motion to create complete and accurate datasets. In order for DERPM to maximize the effectiveness of these datasets, they should be constructed using a geometric network schema.

- **Sanitary sewer** (pipes, manholes, pumps, etc.). This effort is already underway and expected for completion in early 2007.
- **Stormwater sewer** (inlets, manholes, pipes, etc.). In order to create a complete and usable network, these features should be constructed along with natural features (streams, rivers, ponds, etc.).
- **Potable water** (pipes, valves, pumps, tanks, etc.)

3.2.3 Training

Overall, DEPRM is well trained on GIS and the associated technology. Because there are two full-time GIS personnel and several advanced part-time GIS analysts/users on-staff, the Department has ready access to getting basic questions answered. Also, employees are encouraged to obtain training and use GIS to support their programs. This training could be provided specific to the needs of each program,

specifying datasets and application tools that could be of use based on best practices. Of course, training is never complete and the Department needs to continue their learning activities, but in general the staff has above-average GIS skills. In addition, there is a need to share information, data and lessons learned among DEPRM employees.

3.2.4 Best Practices

During the interview process, the need for integration of best practices was identified for several items, including these listed below:

- **Remote assessment using leaf-on photography**
  Performance of remote assessment of forest and agricultural easements and potential violations using leaf-on photography. This photography would not necessarily replace field inspections, but it could certainly be used to prioritize sites for field visits. It would also create a permanent record of the status of an easement at a moment in time. A needs assessment would be required to order to determine specific requirements regarding coverage, format (satellite, multi-spectral, infrared, etc.) and resolution.
- **Integration of a digital permit and development plan review process**
  This would not replace the existing paper-based process, but complement it. By ingesting applications electronically, proposed plans could be reviewed within the GIS and compared with key datasets to fully visualize the project area. In addition, when new plans are approved that impact existing GIS data, having these data already in a digital format would save scanning and (possibly) digitizing time. As well, a digital record could be maintained to simplify file storage and retrieval efforts. This effort relies on PDM for supplying these datasets.
- **Modification of data layer maintenance practices for duplicated features.**
  Three data layers were identified that are copied from SDE and modified; these layers are Green Schools, Hydrologic Stream Order and Rural Legacy Areas. Each of these layers has a corresponding SDE layer (schools, hydrology and easements, respectively) that was used as the original data source. The layer was then modified to add new attributes. These new attributes should be submitted to OIT for consideration and possible integration with the master enterprise dataset. This way the data can be shared throughout the enterprise, duplication (and disconnection, where one dataset is modified spatially, but not the other) is eliminated and maintenance is consolidated.
- **Direct GPS integration**
  For the Environmental Site Assessment activity, cease use of GPS integration with PDF files. GPS data should be integrated with the GIS directly and maps output from the GIS. Also related to this activity, require consultants to deliver assessment mapping results presented using a quality, georeferenced base map source, preferably the County GIS. Refer to Section 4.1.9.2 for additional information regarding best management practices for this activity.
- **Mobile application for Waste Management Inspector**
  The waste management inspector needs a GIS-enabled laptop or other mobile application to take to the field. The inspector would use this resource in order to identify a potentially responsible party by reviewing tax parcel information and initiate enforcement immediately instead of returning to office.

- **Development of ArcSDE and metadata business processes**
  In addition to sharing and collaboration of information, data and lesson learned, DEPRM should focus on developing business processes that focuses on utilizing centralized data management through ArcSDE and metadata, not local datasets.

3.2.5 Communication and Agency Coordination

DEPRM staff interact daily with other County agencies on a wide variety of topics. GIS products and services are often exchanged as part of this interaction. For example, the Office of Planning collaborates with DEPRM during master planning and zoning activities. DPW receives support from environmental health personnel with the identification of institutions who create or manage fats, oils and greases (FOG). This FOG collaboration is a particularly good example of successful communication and coordination; meeting FOG requirements is required by the EPA and MDE Consent Decree, which carries serious fines for non-compliance. DPW and DEPRM also coordinate on requirements including:

- Chesapeake Bay restoration
- Development review and permit processing
- Floodplain management
- Food facility reviews (including the FOG requirement described above)
- Groundwater management
- Sanitary sewer management
- Solid waste management
- Stormwater management
- Stream and shoreline management
- Water quality monitoring
- Watershed management

GIS-centric communication and coordination is facilitated by the DEPRM GIS staff. These GIS-dedicated personnel have a broad and deep understanding of DEPRM's GIS data and resources and are able to answer questions quickly or direct inquires to the appropriate individual. These personnel are known by County employees outside of DEPRM and are sought out when needed. DEPRM can continue to facilitate information sharing opportunities by regularly attending GIS Committee meetings and lunch workshop sessions.

3.3 Recommendations

DEPRM could further benefit from GIS in several ways. This section outlines recommendations that can be implemented in the short-term and mid-term to enhance the agency's GIS usage and further take advantage of the enterprise system provided by the County. These will in turn reduce time and money spent on activities performed by DEPRM and increase the level of service provided to customers.

3.3.1 Short-term Recommendations & Potential Benefits

There are several undertakings that should be implemented in the near term to improve GIS usage within the agency and meet the needs that were outlined in the previous section. These recommendations are categorized by activities that can be quickly deployed with little effort (Quick Deployment) and by activities that require a greater investment but are greatly needed (Additional Investment Opportunities). Each of these recommendations is discussed below. See Section 4 for more detailed recommendations to support individual activities.

3.3.1.1 Quick Deployment

Data Layer Development

Because of the broad use and understanding of GIS within DEPRM, investment in new data is a sound one. Properly scoped, developed and deployed, new data layers would be used immediately by numerous staff and integrated into multiple programs. The return on this investment would be realized almost immediately and yield new and perhaps unanticipated benefits. The most critical data layers for creation are described in Section 3.3.1.2; other that are less critical, but could be created for less cost are described below.

Opportunity 1: Create & Implement LiDAR-derived elevation products

Opportunity 1: Create & Implement LiDAR-derived elevation products	
Description:	Use the 2005 LiDAR-derived elevation products for analysis of every County (and Baltimore City) watershed, including: 1. Hydro-enforced digital elevation models (DEMs, ESRI TinGrids). These might possibly also be created to incorporate stream cross-sectional data captured as part of the Stream Geomorphologic Monitoring activity, depending on the need, format and quality of these data. These may need to be purchased as a derivative product. 2. Triangular irregular networks (TIN) 3. HillShades (to be constructed from the DEM, not the TIN)
Software Requirements:	ArcGIS QT Modeler (possibly an additional expense - $1,500.00/ seat)
Hardware Requirements:	GIS computers

Opportunity 1: Create & Implement LiDAR-derived elevation products	
Data Requirements:	Deliverables for the 2005 County wide LiDAR project include: 1. FASE generated surface model using LiDAR data supplemented with photogrammetrically compiled breaklines and masspoints. 2. The FASE DTM is produced with an approximate 8' spacing in areas where mass points and breaklines are not present. 3. Photogrammetric masspoints and breaklines derived from existing and new aerial imagery compiled in 3D environment. 4. 2' contours, ASPRS Class 1: interpolated from TIN (using FASE DTM comprised of interpolated LiDAR points, new photogrammetric data and existing breaklines and mass points) 5. Hillshades – will be delivered to the County as a QC tool. **All data is hydro enforced
Training Requirements:	Minimum 40 - 80 hours of training to become familiar with workflow processes and data generation techniques. Follow up on training as required to streamline production processes. Investigate how to integrate LiDAR products into the business process and train directly on specific usage.
Timeframe:	6 months
Additional Costs:	Possibly consider the deployment of specialized LiDAR manipulation software. Specialized tools help streamline LiDAR processing and product development. Products such as QT-Modeler should be considered @ $1,500.00/ seat.
Potential Benefits:	The County's 2005 LiDAR dataset is currently underutilized by DEPRM. With a minimal scoping effort, the LiDAR-derived products listed above could be used to support virtually every water-related DEPRM program.

Opportunity 2: Create percent-slope and slope-aspect feature classes

Opportunity 2: Create percent-slope and slope-aspect feature classes	
Description:	Create percent-slope and slope-aspect feature classes (polygons) for all land areas within the County.
Software Requirements:	ArcGIS 3D Analyst Spatial Analyst
Hardware Requirements:	GIS computers
Data Requirements:	Created from the LiDAR-generated TIN proposed above
Training Requirements:	40 hours minimum in developing an understanding of work flow processes and products.
Timeframe:	6 months
Additional Costs:	Minimal scoping would be needed to identify appropriate groupings (using subtypes would likely be the most efficient schema) and refine the approach to ensure the most usable product is created. Estimate 40 hours level of effort (LOE).
Potential Benefits:	These datasets would be used to support forest and agricultural programs (slope aspect plays a role in how well vegetation will grow and percent-slope identifies areas that are too steep to be planted). Percent-slope could also be beneficial to predicting and understanding development constraints and erosion and sediment control issues.

Opportunity 3: Create a GIS-based tracking mechanism and data development process

Opportunity 3: Create a GIS-based tracking mechanism and data development process	
Description:	Create a GIS-based tracking mechanism and data development process to support and enhance the Environmental Site Assessment activity.
Software Requirements:	ArcGIS
Hardware Requirements:	GIS computers
Data Requirements:	NA
Training Requirements:	Minimum 40 hours to research all of the potential data layers that need to be included in this tracking tool.
Timeframe:	6 months
Additional Costs:	None
Potential Benefits:	This activity generates a wealth of data that could be of use to other activities within DEPRM and across other County agencies. Creating a 'recognized environmental condition' data layer or database would yield new efficiencies and opportunities. Refer to Section 4.1.9.2 for additional information regarding this activity and proposed new opportunities.

Opportunity 4: Use GIS to track, display and analyze water quality trends

Opportunity 4: Use GIS to track, display and analyze water quality trends	
Description:	Use GIS to track, display and analyze trends of water quality (chemical concentrations and other pollutant loads) trends at USGS stream gauging stations.
Software Requirements:	ArcGIS
Hardware Requirements:	GIS computers
Data Requirements:	• Hydro feature dataset • USGS Stream Gauge Stations • National Hydrograph Dataset (NHD)
Training Requirements:	Minimum 40 hours to research all of the potential data layers that need to be included in this tracking tool.
Timeframe:	6 months
Additional Costs:	None
Potential Benefits:	These data are publicly available and DEPRM already has the needed skills to begin utilizing the data. This would benefit existing programs such as NPDES and Water Quality Monitoring.

Opportunity 5: Satellite imagery analysis of forest cover

Opportunity 5: Satellite imagery analysis of forest cover	
Description:	Obtain a sample satellite imagery dataset of a forest easement and/or reforestation area during leaf-on conditions.
Software Requirements:	ArcGIS
Hardware Requirements:	GIS computers
Data Requirements:	Digital Satellite Imagery
Training Requirements:	20 hours minimum to become familiar with rudimentary satellite imagery manipulation.
Timeframe:	6 months
Additional Costs:	Satellite imagery providers may be willing to offer lower cost ($500.00) archived imagery for this analysis. Should current imagery on higher quality resolution or positioning be required; a budget of ($2,000.00 - $5,000.00) should be considered.
Potential Benefits:	Use this sample to determine if it meets requirements to support remote assessment of easement inspections and/or forest health monitoring. Due the anticipated cost for procurement of suitable orthophotography, performing a test using a small set of high-resolution satellite imagery may help to determine if this approach is feasible. Based on the results of this sample test, additional recommendations regarding area, format (color, panchromatic, multispectral, etc.) and resolution can be explored and used to produce a detailed cost/benefit analysis.

Opportunity 6: Training

Opportunity 6: Training	
Description:	The most frequent need expressed by staff who filled out the on-line short form survey was for additional training. Based on the level of GIS experience at OIT and DEPRM, the County should be able to create and host GIS training classes using in-house resources.
Software Requirements:	Full suite of ArcGIS tools as required by the training.
Hardware Requirements:	GIS computers
Data Requirements:	All relevant data layers should be available.
Training Requirements:	Onsite Computer Training Center Facility with ArcGIS rollout image.
Timeframe:	6 months
Additional Costs:	None
Potential Benefits:	Using internal resources should help to keep costs down, schedule classes soon and offer information that is directly applicable to student's needs and daily work-flows. The training provided should illustrate basic and advanced skills for the students.

Opportunity 7: Improve Communication and Coordination

Opportunity 7: Improve Communication and Coordination	
Description:	Another way to offer indirect, yet beneficial training is through the implementation of a regular 'brown bag GIS luncheon' session, held in a County conference room over the typical lunch hour. The sessions would be hosted by a different volunteer each month that would be responsible for the session content. The content would be on a specific GIS-centric project, application, dataset or case study that the host is familiar with. The intent of these sessions is to initiate discussion of GIS data and applications, share lessons learned, educate co-workers and get people thinking about how they might use GIS to improve their own programs. It also serves as a dedicated time and place to be discussing and brainstorming about GIS and related technologies.
Software Requirements:	Full suite of ArcGIS tools as required
Hardware Requirements:	GIS computers
Data Requirements:	N/A
Training Requirements:	N/A
Timeframe:	Immediate
Additional Costs:	None
Potential Benefits:	Employees tend to get caught up with daily activities, schedules and deadlines. It is helpful to have time set aside to learn about how their peers are successfully using the technology. It also became apparent during the interview process that there is room for improvement in communication regarding new datasets, what's new with ArcGIS and some of the freely-available tools and applications. The proposed brown bag sessions, or a similar mechanism (new employee orientation program, regular emails or an intranet web page, for example) could also be employed to improve internal communication.

3.3.1.2 Additional Investment Opportunities

The following recommendations have the potential to provide additional benefits to the agency and can be implemented with the investment of additional resources. There are three opportunities presented in this section:

1. Chesapeake Bay Critical Area Limit (CBCA)
2. Environmental Easements
3. Wells and Septic Systems

Opportunity 1: Chesapeake Bay Critical Area Limit

Description
The Chesapeake Bay Critical Area (CBCA) limit is a set of mapping products used to delineate and enforce development constraints proximal to the Chesapeake Bay. Baltimore County is mandated and authorized by COMAR to manage activities and constrain development within the CBCA. There are five areas (polygons) related to the CBCA:

- Intense development
- Limited development
- Resource conservation
- Buffer management areas
- Tidal wetlands

DEPRM currently relies on paper maps created at various scales and based on different sources (circa 1970 and not orthorectfied) and a single digital GIS data layer of questionable accuracy. Legally binding in-out determinations are made daily by DEPRM staff to answer questions from developers, landowners and concerned citizens. Issues along CBCA boundary are unclear and become contentious because of the high-stakes involved. Due to the format, varying scale and bases, line thickness and age, these maps are difficult and time consuming to use. Further, the fact that there are limited copies of the paper maps that become yellowed, torn and dog-eared, represents a threat to the continued success of the program, not to mention the complication in sharing or distribution of the data. Having this data in a GIS format would eliminate these issues and greatly simplify and expedite in-out determinations.

Other benefits resulting from a CBCA layer are:

- Improved service to citizens and Government Officials resulting from increased availability of information.
- Permanent retention and increased accuracy of mapped information mandated by State Critical Area law.
- Improve effectiveness of State-mandated Critical Area law by increasing public awareness of regulatory requirements on their properties.
- Improved service to citizens and Government Officials resulting from increased availability of information.
- Improved communication with State regulatory agencies.

Preliminary Cost/Benefit Analysis
A preliminary estimate of the costs and anticipated benefits in one year, resulting from creation of a CBCA dataset is summarized in the table below. This includes the cost to develop the data, as well as the costs for maintaining the dataset for two years. The benefits that are expected to be realized over the following two years are also included. Additional details regarding costs and benefits are broken out in the subsequent subsections.

Preliminary Cost/Benefit for CBCA Feature Classes Development				
Development Costs	**Maintenance Cost (2 Years)**	**Total Cost**	**Benefits (2 years)**	**Cost/Benefit Difference**
$182,575	$7469	$190,044	$204,720	$14,676

Table 9 - Preliminary Cost/Benefit for CBCA Feature Classes Development

Preliminary Cost Estimate
Development costs have been determined by using the level of effort previously calculated by the Baltimore County OIT for these data layers; as well as industry knowledge. Each level of effort was multiplied by a standard rate of $67.00 (contractor rate) to give the cost associated with developing the layer for the County. It was determined that the County lacked the necessary resources at this time to fully develop these data layers. These development costs have been broken down by task according to the table below:

CBCA Data Development Costs		
Task	**Estimated Hours**	**Cost**
Develop Requirements	300	$20,100
Data Compilation (create shoreline and buffer, digitize management areas and wetlands, etc.)	2200	$147,400
Project Management, Meetings	225	$15,075
	Total Cost	**$182,575**

Table 10 - CBCA Data Development Costs

Since the CBCA data are anticipated to be relatively static once complied, routine data maintenance costs were estimated as being 5% of the initial data compilation cost or approximately 110 hours at $33.95 totaling $3,734.50 per year.

Preliminary Benefit Estimate
Benefits for developing and utilizing the CBCA feature classes will primarily be realized within the Environmental Impact Review program; however, there are numerous tasks in several programs that would benefit. The benefits realized for each of these tasks are shown in the tables below. These benefit estimates were based on efficiency gained by incorporating a CBCA GIS layer and are derived based on the difference between the time it currently takes to perform the task, compared with the estimated time that would be spent with the new layer.

CBCA Benefit Details Buffer Management Areas, Tidal Wetlands, Critical Area						
Task	**Staff Hours w/out CBCA Layer**	**Staff Hours w/CBCA Layer**	**Difference**	**Annual # Iterations Per Year**	**Total Hours Saved Using GIS**	**Annual Savings Benefit (Based on $33.95/hr)**
Environmental Impact Review Development Project Review	.5	.08	.34	4700	1958	$66,485
Environmental Impact Review Development Project Enforcement	.25	.08	.17	900	150	$5,092.5
Environmental Impact Review Citizen Assistance (walk-ins and phone calls)	.08	.05	.03	4500	225	$7638.75
Environmental Impact Review Environmental Enforcement Complaints	.25	.08	.17	588	262.5	$8,The 911 Center.87
State Agency (CAC, MDE) Data Requests	1	.25	.75	350	150	$5,093
Federal Agency Data Requests	1	.25	.75	100	75	$2,546.25
Private Engineer/Consultant Data Requests	1	.25	.75	200	150	$5092.50
				Total	**2971**	**$100,860**

Table 11 - CBCA Benefit Details

CBCA Benefits Summary		
Data Layer	**Total Hours Saved Using Layer**	**Annual Time Savings Benefit (Based on $33.95/hr)**
Buffer Management Areas, Tidal Wetlands, Critical Area	2971	$100,860
Public Data Sales	-	$1,500
Total Annual Benefits	**2971**	**$102,360**
	Total Benefits Anticipated Over Two Years	**$204,720**

Table 12 - CBCA Benefits Summary

There are other activities outside DEPRM that would likely benefit from having the CBCA layers available, increasing the return significantly on the development expenditure. These activities are listed in the table below. This gives an idea of the significance of the data layers and the impact that its development could have on County activities outside of DEPRM.

Non-DEPRM Activities Providing Additional Benefits from CBCA Feature Classes	
Agency	**Activity**
Public Works	• Bridge Management • Building Permit Review • Engineering Management • Floodplain Management • Master Plan Development • Metropolitan District Financing and Petitions
Recreation and Parks	• CIP Project Planning • Mapping required for permits and approval process
Permits and Development	• Zoning Item Reviews
Office of Planning	• Adequate Public Facilities • Community Planning • Development Review • Historic Preservation • Land Use Analysis / Vacant Land Analysis • Master Planning • Rezoning
Community Conservation	• Community Planning and Development, Revitalization Projects • UDAT Project Management
Economic Development	• Decreased Time in Determining Property Status

Table 13 - Non-DEPRM Activities Providing Additional Benefits from the CBCA Feature Classes

Recommendation
The CBCA data layers will save significant effort within DEPRM, justifying the creation of these layers. The development costs should be easily offset in less than two years, giving a comfortable rate of return in the potential investment. These layers should also provide benefits to other activities throughout the County, providing an additional reason and justification to develop the dataset. In addition, the recompilation the layer will improve the accuracy of a layer required by COMAR.

Opportunity 2: Environmental Easements

Description
In accordance with the Baltimore County Code, DEPRM routinely tracks and manages a variety of perpetual environmental easements across the County. These easements are mandated by environmental law and serve to protect water quality (floodplains and wetlands) and forests. Currently, DEPRM staff seeking information regarding the location and nature of environmental easements review multiple sources including plats stored in paper and electronic files at DEPRM and land deeds stored electronically and on microfiche in the County Courts Building. There is no current GIS data layer or method for evaluating environmental easements in a GIS-context.

PDM is the authority for County-owned property and development of an easement layer has been recommended as part of their GIS Strategic Business Plan. If an easement layer were created, PDM would take ownership for creation and maintenance of such. However, DEPRM is the subject matter expert for environmental issues and would realize significant benefit from creation of an easement layer that included environmental considerations. Therefore, please refer to PDM's Plan for details regarding the cost and benefit of creating an easement layer. The anticipated benefits from creation of an environmental easement data layer are presented below.

Preliminary Benefit Estimate
Benefits for developing and utilizing an environmental easement feature class will primarily be realized within the Environmental Impact Review program; however, there are numerous tasks in several programs that would benefit. The benefits realized for each of these tasks are shown in the table below. These benefit estimates were provided by OIT and are derived based on the difference between the time it currently takes to perform the task, compared with the estimated time that would be spent with the new layer.

Environmental Easement Benefits Details						
Task	**Staff Hours w/out GIS**	**Staff Hours w/GIS**	**Difference**	**# of Iterations Per Year**	**Time Savings**	**Savings**
Development Project Review	0.5	.335	.165	4,160	686.4	$23,303
Development Project Enforcement	1	.67	.33	960	316.8	$10,755
Citizen Assistance (walk-ins)	0.5	.335	.165	250	41.3	$1,400
Citizen Assistance (phone calls)	0.5	.335	.165	400	66	$2,241
State Agency (CAC) Web Access	1	0	1	100	100	$3,395
Citizen Web Access	1	0	1	400	400	$13,580
Private Engineer/Consultant Web Access	1	0	1	100	100	$3,395
Public Meetings/Education	3	1.5	1.5	25	37.5	$1,273
Land Use Planning	3	1.5	1.5	50	75	$2,546
				Total Annual Benefit	**1,823**	**$61,889**

Table 14 - Environmental Easement Benefits Details

Recommendation
The easement feature class recommended for creation by PDM requires significant development costs, which does not provide the return necessary from the one activity analyzed in the PDM GIS Strategic Business Plan. However, there are additional benefits realized by DEPRM, estimated above, that would leverage the PDM investment and help improve the overall return on investment. Note this estimate, $61,889, would be realized annually. Based on the needs assessment performed, the data layer would certainly be useful, but further analysis should be performed before a dataset is determined to be a good return on investment.

Opportunity 3: Wells and Septic Systems

Description
DEPRM is mandated and authorized by COMAR to permit and track all potable water wells and septic systems within Baltimore County. Applications for well and septic permit are currently submitted on paper maps to the County for approval. When questions regarding the specific location or configuration of wells or septic systems are raised, DEPRM staff typically perform a site visit and

hand-annotate paper base maps generated from the County GIS. An inventory of recently approved wells and septic systems is maintained in a non-spatial database. Approximately one-third of all existing wells and septic systems within the County are recorded on subdivision master plans and well plats that are maintained on file at DEPRM.

Preliminary Cost/Benefit Analysis

A preliminary estimate of the costs and anticipated benefits resulting from creation of a well and septic system dataset is summarized in the table below. This includes the cost to develop the data, as well as the costs for maintaining the dataset for two years. The benefits that are expected to be realized over the following three years are also included. Additional details regarding costs and benefits are broken out in the subsequent subsections.

Preliminary Cost/Benefit for Well/Septic Feature Classes Development				
Development Costs	**Maintenance Cost (2 Years)**	**Total Cost**	**Benefits (3 years)**	**Cost/ Benefit Difference**
$610,591	$2,377	$612,968	$12,933	-$600,034

Table 15 - Preliminary Cost/Benefit for Wells/Septic Feature Classes Development

Preliminary Cost Estimate

Development costs have been determined using the level of effort previously calculated by the Baltimore County OIT for these data layers. Each level of effort was multiplied by a rate of $33.95 to give the cost associated with developing the layer within the county agency (as opposed to having the work performed by a contractor). These development costs have been broken down by task according to the table below:

Well and Septic System Data Development Costs		
Task	**Hours**	**Cost**
Develop Requirements	840	$28,518
Data Compilation (research permits, GPS units/features)	14,450	$490,578
Quality Control	2138	$72,585
Project Management, Meetings	557	$18,910
	Total Cost	**$610,591**

Table 16 – Well and Septic System Data Development Costs

Data maintenance costs have been estimated based on the assumption that one week per year would be needed to maintain the dataset, once created. Maintenance efforts would be significantly streamlined because processes would be put in place to capture (and validate) new wells and septic system locations when permitted and to update locations when repaired or field verified by County inspectors. Assuming a 35 hour week and an hourly rate of $33.95, this is a total of $1,188 per year or $2,377 over two years.

Preliminary Benefit Estimate

Benefits for developing and utilizing the well and septic system feature classes will primarily be realized within the Groundwater Management program. The Groundwater Management program staff

engage in several tasks would benefit from use of this dataset. These benefit estimates were provided by OIT and are derived based on the difference between the time it currently takes to perform the task, compared with the estimated time that would be spent with the new layer.

Well and Septic System Benefits Details						
Task	**Staff Hours w/out GIS**	**Staff Hours w/GIS**	**Difference**	**# of Iterations per Year**	**Time Savings**	**Savings**
Field Location of Wells	1	.9	.1	500	50	$1,698
Field Location of Sanitary Systems	0.5	.45	.05	50	2.5	$85
Percolation Repairs	1	.9	.1	300	30	$1,019
Minor Subdivision Review	2	1.8	.2	200	40	$1,358
Underground Storage Tank Investigations (leaks)	1	.9	.1	30	3	$102
Fuel Savings Based on Reduced Number of Trips						$50
					Total Annual Benefit	**126**	**$4,311**
					Total Benefits Anticipated Over Three Years	**$12,933**

Table 17 - Well and Septic System Benefits Details

There are other activities within DEPRM that would likely benefit from having the well and septic layers available; however, these benefits are mostly intangible and difficult to quantify in terms of efficiencies gained, dollars saved or costs avoided. Even if these other benefits were quantified, it is unlikely that they would contribute sufficiently to offset the initial data capture investment significantly.

Recommendation

Based on the estimates provided by OIT and summarized above, creation of a well and septic system data layer does not yield a beneficial return on investment. One of the major challenges to create this proposed dataset is the number of and geographic disparity of the features to be located. Also, since the majority of the features reside on private property, accessing them for survey would be excessively time consuming and logistically difficult to coordinate. However, the need for such a dataset is acknowledged, despite the apparently small financial benefit. In fact, DEPRM has already attempted compilation of these data in the past, with varying degrees of success, completion and accuracy. For example, all permits since the mid 1980s have included latitude/longitude data and this information has been used to geocode features.

Alternative Recommendation Approach

Based on this, the following process is recommended in order to create a low cost, higher quality dataset.

1. Continue with compiling latitude/longitude data from all newly submitted permits. Geocode each permit and perform a quality review of the submitted latitude/longitude (compare result with the indicated parcel number and/or street address) before final approval of the permit is granted.
2. Include a description attribute (for example, "30 feet from the southeast corner of the shed") for how to locate each newly permitted feature. This data would come from newly submitted permits and entered into the database at the time the permit was approved.
3. Validate and complete the current well and septic dataset based on the following process:
    a. Obtain a current list of the street address for all public water and sewer customers.
    b. Add all the street addresses for known (permitted) and already geocoded wells and septic systems.
    c. Join the combined list to the new address point data layer being created to support The 911 Center activities.
    d. Create a well and sewer point for every address that does not join to the combined list. The assumption is that if there is a valid address that is not connected to the public water or sewer utility, then they must have a well or septic system.

    This process would create a complete inventory of all known and assumed well and septic systems for the entire County. Each feature created using the address point should have a feature-level metadata tag documenting this data capture process so that data users would know that each point represents a general or assumed location, not the actual feature position.
4. Equip the field inspectors with a GPS-enabled mobile GIS application to support field inspections. Periodically, as each well or septic system is visited by DEPRM staff, this application would be used to edit the assumed feature location and update it with its actual, GPS'ed location. Feature-level metadata would also be updated accordingly upon field confirmation.

The estimated cost for this proposed process is significantly lower than that of the comprehensive research/GPS survey process. Steps 1 and 2 above could be accomplished as part of the routine permitting process and not result in a significant additional cost increase. Step 3 could likely be accomplished in approximately one week (35 hours); assuming an hourly rate of $33.95, this is a total of $1,188. Step 4 is potentially the most expensive portion and could total $12,000 for equipment, software and training for a single inspector. However, this cost could be shared with other activities that would benefit from the use of this equipment. The cost may also be defrayed by using existing equipment (DEPRM currently owns at least one functional GPS unit), purchasing used equipment or by seeking grants or donations.

3.3.2 Mid-term Recommendations & Potential Benefits

There are several recommendations that can be planned and scheduled for implementation in the mid-term to improve GIS usage within the agency. These are summarized below and would necessitate performance of a detailed requirements analysis to determine individual specifications.

Opportunity 1: Create additional web applications

Such as developing new MyNeighborhood websites. A significant component to DEPRM's programs is providing citizen inquiry and complaint support. As an example, DEPRM could use a MyNeighborhood application to show all of the department's activities and projects as part of the Community Outreach Program. This is the next big challenge on the horizon– making data readily available in a usable format to the public (i.e., showing public lands to the community). If implemented correctly, this program could significantly reduce the number of inquiries and complaints that need to be directly addressed by DEPRM staff.

Opportunity 2: Require digital development plan submittal

Where appropriate, this would include stormwater facilities (and associated drainage areas) and development plans. A mandate could be developed that requires applicants to submit concept and development plans in digital format instead of, or in addition to, the hardcopies that are currently provided. This would enable these plans to be easily ingested, georeferenced and routed for review within a GIS context. A website could be established to facilitate the application process, where on-line forms are completed and application files uploaded. Having permit application and associated mapping electronically would facilitate some reviews and enable an all-digital permit review file, with digital as-built records set as hyperlinks. Also, if the permit is approved and it affects GIS data, the impacted feature classes could be updated with increased accuracy and efficiency.

Opportunity 3: GPS and Mobile GIS Technologies

Many of DEPRM's activities require significant field investigations, analysis and follow-up site visits. These activities are usually coordinated with paper maps produced prior to site visits. There may be advantages to researching mobile GIS technologies deployment in several programs with the goal to reduce travel time between office and investigation sites. Programs including water quality sampling, well/septic system management, environmental site assessment, stormwater facility inspection and forest conservation could benefit from an increased use of GPS and mobile GIS.

Opportunity 4: Improve WAN performance and reliability

This would likely take a variety of forms, including new PCs, increased WAN bandwidth, higher-performance servers and migration to ArcServer and Image Server.

Opportunity 5: Develop New Feature Classes

These new feature classes were identified as a lower priority in the short-term, including:

- Stormwater management facilities (including perhaps scanned and georeferenced as-built drawings) and associated drainage basins
- Leaf-on orthophotography to support forest assessments (modified depending on results of the suggested satellite imagery test)

- Erosion and sediment control permits and violations
- Bathymetry
- Tree inventory

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4 Programs and Activities

Each of the interviews conducted with agency officials and personnel were used to compile information about the business processes used for each program within the agency, as well as look at how GIS is being used and benefits are being realized.

Each program is described below, listed with GIS-related funding and mandates, as well as any social or political benefits that are being seen as a result of using GIS. The associated products, customers served, and data/ applications used are also discussed. Activities have also been included under their associated programs, along with the process with and without GIS used to complete this activity, benefits that have been realized, and recommendations for additional GIS implementation where appropriate.

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4.1 Agriculture Preservation

Program: Agricultural Preservation
Primary Point of Contact:
Wally Lippincott, Rob Hirsch
Overview:
The comprehensive management of nationally recognized land preservation programs in Baltimore County, including, but not limited to the administration of the Maryland Agricultural Land Preservation Program, Rural Legacy Program, the Baltimore County Program, and RC 4 Watershed Conservancy Easements. The Program is also responsible for the protection of rural land resources on agricultural and watershed zoned lands, and the enhancement of agricultural industry in Baltimore County.
Funding:
State grants (Maryland Agricultural Land Preservation Fund) and Federal grants (Transportation Enhancement Program and Farm and Ranchland Protection Program).
Mandates:
Grant requirements, COMAR.
Political Benefits:
Mandatory legal compliance.
Social Benefits:
Preservation of rural, agricultural and environmentally sensitive lands knitting together many local efforts together to form a comprehensive Countywide program.
Products/Services:
A GIS modeling application was developed by a consultant to analyze the feasibility of reaching County goals and optimize property purchase selections. This application (a series of visual basic scripts) facilitates and improves the overall decision making process. In addition, the program generates maps (including the Land Preservation Accomplishment map), tabular reports and mapping data to support agricultural conservation, easements and inspections.
Customers:
• Agricultural industry • Land preservation trusts • County residents • Businesses • Government agencies • Elected officials

Data (Enterprise Layers are Listed in Bold):

- **AddressPoints (View)**
- Agricultural Preservation
- Buffers with Forest Cover-1996
- **Buildings**
- Congressional Districts (2002)
- Conservation Easements
- **Contours**
- Councilmanic Districts (2002)
- County Boundary
- County Historic Districts
- CZMP Zoning Issues (1996)
- CZMP Zoning Issues (2000)
- Development Plans
- Digital Elevation Models
- Easement
- Election Districts
- **Facilities**
- Flood Insurance Maps (FEMA)
- Forest Conservation Management Areas
- Forest Corridors
- Forest Harvest
- Government Lands
- Historic Districts
- **Hydrology**
- Impervious Polygons
- Index Grid - 200 Scale (BCMD) Index Grid - 200 Scale (MCS)
- Index Grid - 600 Scale
- Index Grid - ADC Map
- Index Grid - Digital Orthophoto Quadrangles
- Index Grid - MrSID Tiles
- Index Grid - VARGIS Orthophoto (1998)
- Index Grid - VARGIS Orthophoto (2000)
- Land Management Areas
- Legislative Districts (2002)
- Master Plan - Sewer
- Master Plan - Water
- Metropolitan District Line
- Monitoring—Various Programs
- Multiple Ecological Use Forest Model
- Orchards
- **Orthophoto (1995)**
- **Orthophoto (1996)**
- **Orthophoto (1997)**
- **Orthophoto (1998)**
- **Orthophoto (2000)**
- **Orthophoto (2001)**
- **Orthophoto (2002)**
- **Orthophoto (2005)**
- **Orthophoto Quarter Quads - (1994)**
- Parcel Based Land Use
- Priority Funding Areas
- Publicly Owned Land
- Reservoirs
- Restriction
- **Roads**
- Rural Legacy
- Scenic Routes
- **SimComFrstDiv**
- **SimCon**
- Soils
- State Legislative District
- Streams and Ponds
- **Street Centerlines**
- **Street Centerlines (View)**
- Subwatersheds
- Tax Maps (Images)
- **Tax Parcel**
- Trails
- Trails - Walkways
- Tree Cover
- Tree Rows
- Urban Rural Demarcation Line (URDL)
- Use Class - Streams
- Watersheds - Major
- Wetlands
- Wetlands - NWI
- Wetlands - Special Area Management
- Wooded
- Zip Codes
- Zoning
- Zoning Overlay Districts

Applications Used:

- ArcGIS (Standard)
- ESRI Extensions
- ArcGIS DataQuery

Associated Activities:
4.1.1 Agricultural Industry Support
4.1.2 Annual Application Ranking and Optimization
4.1.3 Annual Report to MALPF
4.1.4 Evaluating Farm Land
4.1.5 Grant Applications - TEP and FRPP
4.1.6 Inspections, Monitoring, and Stewardship
4.1.7 Local Land Trust Support
4.1.8 Record Keeping and Reporting
4.1.9 Zoning and Environmental Regulations Review
4.1.10 Rural Legacy Program - Grant Applications

4.1.1 Agricultural Industry Support

Activity: Agricultural Industry Support

Primary Point of Contact:

Wally Lippincott, Rob Hirsch

Overview:

The Department works with the agricultural sectors in resolving issues and fostering the industry. GIS is used for policy analysis and planning of agricultural facilities, such as the planning of the agricultural resource center.

Interviewee(s) Providing Information:

Rob Hirsch; Emeka Obilor

Process with GIS:

Mapping products are created to support and enhance program activities. Specialized data layers such as easements and soils help visualize agriculturally significant properties. Areas are quantified by creating and querying polygons.

Process without GIS:

Analytical processes would be performed by photocopying and overlaying paper maps. Areas would be calculated manually using a planimeter. Maps would be drawn by hand and used less frequently due to the time required for preparation. Results would be less accurate than those developed using GIS.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- More-informed decision-making based on accurate and current data
- Faster map creation
- Time savings

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
125	25	100	1	100	$3,395.00

Other Benefits:

Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data.

Total Annual Benefit: $3,395.00

Areas for Improvement:
None noted
New Opportunities:
Publish data through a MyNeighborhood application to reduce customer data inquires and make project information readily available.
Benefits of Pursuing New Opportunities:
Stakeholders have ready access to program data and are empowered to: • Perform their own analyses • Make their own maps • Answer questions without directly impacting DEPRM staff time • Understand program priorities

4.1.2 Annual Application Ranking and Optimization

Activity: Annual Application Ranking and Optimization

Primary Point of Contact:

Wally Lippincott, Rob Hirsch

Overview:

Systematic analysis, ranking and optimization of applications to MALPF and Baltimore County programs to ensure best use of conservation easement funding. Properties are evaluated in light of program goals and are considered for protection.

Interviewee(s) Providing Information:

Wally Lippincott, Rob Hirsch

Process with GIS:

This process is greatly enhanced with the use of GIS. Recently, a consultant was hired to create a GIS modeling application to analyze the feasibility of reaching County goals and optimize property purchase selections. This application (a series of visual basic scripts) facilitates and largely automates the site selection process. By using this process, an additional $400,000 worth of land was protected when compared with previous years.

Process without GIS:

Analytical processes would be performed by photocopying and overlaying paper maps (including soils and tax) and aerial photos. Areas would be calculated manually using a planimeter and distances to other sites were computed by hand. Sites would be ranked and selected. These results would be less accurate than those developed using GIS.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Improves the site selection process
- Optimizes County dollars spent for agricultural protection
- Facilitates communication of program goals and accomplishments

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
140	21	119	1	119	$4,040.05

Other Benefits: $400,000
An additional $400,000 worth of land was protected by using the site selection modeling application. Provides legitimacy to ranking and optimization process by generating defensible, consistent and repeatable results.
Total Annual Benefit: **$404,040.05**
Areas for Improvement:
None noted This is likely the most advanced GIS application currently in use by DEPRM.
New Opportunities:
Share this success with other programs and agencies; other County divisions are making site selection decisions and could benefit from a similar application.
Benefits of Pursuing New Opportunities:
Leverage DEPRM's experience to the benefit of other County agencies and activities

4.1.3 Annual Report to MALPF

Activity: Annual Report to MALPF

Primary Point of Contact:

Wally Lippincott, Rob Hirsch

Overview:

MALPF, a statewide farmland protection program, requires participating counties to submit an annual certification report. Data summary and analysis as well as map making is required.

Interviewee(s) Providing Information:

Wally Lippincott, Rob Hirsch

Process with GIS:

This process is greatly enhanced with the use of GIS by using the modeling application described in 4.1.1.2. Once sites are selected, GIS is used to create mapping products to be included in the annual report.

Process without GIS:

Analytical processes would be performed by photocopying and overlaying paper maps (including soils and tax) and aerial photos. Areas would be calculated manually using a planimeter and distances to other sites were computed by hand. Sites would be ranked and selected. Maps would be drawn by hand and used less frequently due to the time required for preparation. Results would be less accurate than those developed using GIS.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Facilitates communication of program goals and accomplishments
- Reliable and repeatable analytical results
- High quality report graphics
- Report is more organized and professional
- Improves the site selection process

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
35	4	31	1	31	$1,052.45

Other Benefits:

Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data.

Total Annual Benefit: $1,052.45
Areas for Improvement:
None noted
New Opportunities:
Publish data through a MyNeighborhood application to reduce customer data inquires and make project information readily available.
Benefits of Pursuing New Opportunities:
Stakeholders have ready access to program data and are empowered to: • Perform their own analyses • Make their own maps • Answer questions without directly impacting DEPRM staff time • Understand program priorities

4.1.4 Evaluating Farm Land

Activity: Evaluating Farm Land

Primary Point of Contact:

Wally Lippincott, Rob Hirsch

Overview:

Evaluating farmland for eligibility and competitiveness for preservation programs. Evaluating farmland to provide recommendations to the Zoning Office on agricultural issues such as tenant buildings, reduce acreage farms and agricultural zoning complaints.

Interviewee(s) Providing Information:

Wally Lippincott, Rob Hirsch

Process with GIS:

Farm land fact sheets are created and enhanced with maps and data created using GIS. These mapping products also support bi-monthly meetings with the Zoning Office.

Process without GIS:

Analytical processes would be performed by photocopying and overlaying paper maps (including zoning, soils and tax) and aerial photos. Sites would be ranked and selected and areas would be calculated manually using a planimeter. Maps would be drawn by hand and used less frequently due to the time required for preparation. Results would be less accurate than those developed using GIS.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Facilitates communication of program goals and accomplishments
- Quality mapping products are created

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
3	1	2	40	80	$2,716.00

Other Benefits:

- Preparation time required for regular meetings is reduced
- Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data

Total Annual Benefit: **$2,716.00**

Areas for Improvement:
None noted
New Opportunities:
None noted
Benefits of Pursuing New Opportunities:
None noted

4.1.5 Grant Applications - TEP and FRPP

Activity: Grant Applications - TEP and FRPP

Primary Point of Contact:

Wally Lippincott, Rob Hirsch

Overview:

TEP (transportation enhancement program) and FRPP (farm and ranch land protection program) are two federal grant programs which fund conservation easement purchases. DEPRM studies these program's requirements, identifies owners of appropriate properties who may be interested in selling a conservation easement, evaluates which properties make the most appealing application to each program, and prepares and submits applications to each program.

Interviewee(s) Providing Information:

Wally Lippincott, Rob Hirsch

Process with GIS:

This process is greatly enhanced with the use of GIS by using the modeling application described in 4.1.1.2. Areas are examined remotely using GIS and evaluated for inclusion with this activity. When grants are being sought, maps are created to help support the grant application and demonstrate why the proposed property is a good option for easement protection.

Process without GIS:

Paper maps would be created manually, where time and resources permit. Ability to obtain and track grants would be limited.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

Obtaining more grant dollars enabling preservation of more land areas and better-suited land areas. Analyses are more current and accurate. GIS supports a higher win rate on grant proposals. GIS helps develop a more powerful proposal when competing for these grants. Baltimore County is recognized nationally for their ability to compete and win these grants–due in large part to the use of GIS.

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
140	28	112	1	112	$3,802.40

Other Benefits:

- Improved site selection process
- Optimizes County dollars spent for agricultural protection

Total Annual Benefit $3,802.40
Areas for Improvement:
None noted
New Opportunities:
None noted
Benefits of Pursuing New Opportunities:
None noted

4.1.6 Inspections, Monitoring and Stewardship

Activity: Inspections, Monitoring and Stewardship

Primary Point of Contact:

Wally Lippincott, Rob Hirsch

Overview:

Inspections, monitoring and other stewardship activities are required by funding sources and to ensure compliance with easement restrictions. GIS is used to produce field maps, route inspectors, perform aerial photo inspections from the office, and record the locations of evidence photographs.

Interviewee(s) Providing Information:

Wally Lippincott, Rob Hirsch

Process with GIS:

Areas for inspection/monitoring are identified and the GIS is consulted. Sites are identified and sequenced to facilitate field inspections. Maps are printed from the GIS to route inspectors and optimize time on-site. Violations can sometimes be identified and documented in orthophotography.

Process without GIS:

Without GIS, sites would be manually plotted on a street map book. Inspectors would use case files and other sources of dated information to take along to assist with on-site inspections. Findings would be documented with hand-drawn maps and ground-level photography.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Increase quality of inspections
- Catch problems early and correct them
- Reduce possibility for litigation

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
14	2	12	25	300	$10,185.00

Other Benefits:

None noted

Total Annual Benefit: **$10,185.00**

Areas for Improvement:
Maintain an inspection record in a format that can be integrated with the GIS.
New Opportunities:
Obtain and use leaf-on (and/or possibly multi-spectral) orthophotography. Create polygons representing preservation areas. Perform remote site inspection to identify violations or potential problems; prioritize areas for field visit to maximize inspector resources. Automate comparison of preservation area polygons against land use/land cover polygons as an initial filtering tool.
Benefits of Pursuing New Opportunities:
Maximize inspector's time and effectiveness to prioritize areas that need immediate attention.

4.1.7 Local Land Trust Support

Activity: Local Land Trust Support

Primary Point of Contact:

Wally Lippincott, Rob Hirsch

Overview:

GIS support for local land trusts - work map creation, maps for application exhibits, maps for record keeping.

Interviewee(s) Providing Information:

Wally Lippincott, Rob Hirsch

Process with GIS:

GIS is used to zoom to sites of interest, layers are rendered and overlaid, text and marginalia placed to create electronic and hard-copy map output.

Process without GIS:

Maps would be drawn by hand and used less frequently due to the time required for preparation. Base mapping data would be derived from multiple hard-copy sources such as aerial photographs and tax maps. Scales, dates and quality would vary and require reduction/enlargement on a photocopier and transference using a light table and manual cartographic techniques. Results would be less aesthetically pleasing, professional and accurate than those developed using GIS.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data
- Facilitates communication of program goals and accomplishments

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
10	2	8	25	200	$6,790.00

Other Benefits:

None noted

Total Annual Benefit: $6,790.00

Areas for Improvement:
None noted
New Opportunities:
Make data available through a MyNeighborhood application and allow stakeholders to create their own maps.
Benefits of Pursuing New Opportunities:
Reduce DEPRM staff hours by empowering others to create their own mapping products.

4.1.8 Record Keeping and Reporting

Activity: Record Keeping and Reporting

Primary Point of Contact:

Wally Lippincott, Rob Hirsch

Overview:

Record keeping and reporting on an annual basis to MALPF, and periodic basis for other programs, is required for funding. GIS feature classes are used to aid in the retrieval and reporting of land preservation/conservation easement holdings.

Interviewee(s) Providing Information:

Rob Hirsch; Emeka Obilor, Wally Lippincott

Process with GIS:

GIS features are created to document the location and nature of easements. Maps are created using these and other GIS data to report program goals and accomplishments.

Process without GIS:

A database list or index would be used to inventory sites and individual paper case files for each easement would be prepared for each site. Requests for detailed information would have to go thorough a manual paper-based process.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- Medium

Benefits to Using GIS for this Activity:

- Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data
- Facilitates communication of program goals and accomplishments

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
35	4	31	1	31	$1,052.45

Other Benefits:

None noted

Total Annual Benefit: $1,052.00

Areas for Improvement:

None noted

New Opportunities:
None noted
Benefits of Pursuing New Opportunities:
None noted

4.1.9 Zoning and Environmental Regulations Review

Activity: Zoning and Environmental Regulations Review
Primary Point of Contact:
Wally Lippincott, Rob Hirsch
Overview:
Program Administrator is also responsible for implementing County environmental regulations regarding agricultural and other resource protection. This includes review of Resource Conservation Agricultural (RC 2) and Watershed Protection (RC 4) Zones for impact of projects on prime and productive soils. Administration involves plan review, site visits, meetings with landowners and representatives, and submission of comments. Plan review, site visit planning, and field/exhibit maps all use GIS.
Interviewee(s) Providing Information:
Rob Hirsch, Wally Lippincott
Process with GIS:
Proposed zoning changes and environmental regulation issues are overlaid in the GIS and compared with agricultural preservation sites. Plans are reviewed, analyses are performed and determinations rendered using GIS data. Results are illustrated using maps which are created to explain complex spatial relationships and facilitate public meetings and site visits.
Process without GIS:
Maps would be drawn by hand and used less frequently due to the time required for preparation. Base mapping data would be derived from multiple hard-copy sources such as aerial photographs and tax maps. Scales, dates and quality would vary and require reduction/enlargement on a photocopier and transference using a light table and manual cartographic techniques. Results would be less aesthetically pleasing, professional and accurate than those developed using GIS.
Benefits Assessment: (High, Medium, Low) Identify confidence level
• Medium
Benefits to Using GIS for this Activity:
• Zoning data (including proposed changes) is maintained in the GIS; performing these analyses within the GIS is a logical extension for accuracy and efficiency • Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data • Facilitates communication of program goals and accomplishments

Annual Time Savings from Use of GIS:					
Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
6	2	4	15	60	$2,037.00
Other Benefits:					
None noted					
Total Annual Benefit: $2,037.00					
Areas for Improvement:					
None noted					
New Opportunities:					
None noted					
Benefits of Pursuing New Opportunities:					
None noted					

4.1.10 Rural Legacy Program - Grant Applications

Activity: Rural Legacy Program - Grant Applications

Primary Point of Contact:

Rob Hirsch

Overview:

Rural legacy grant applications to the State of Maryland for funding for the preservation of properties within specific areas named "rural l as". Evaluation of status, properties, and proposed cost of those acquisitions, as well as progress that can be expected from other preservation programs. Reports require narrative, maps, and data tables of analyses.

Interviewee(s) Providing Information:

Rob Hirsch

Process with GIS:

This process is greatly enhanced with the use of GIS by using the modeling application described in 4.1.1.2. Land values are calculated based on a formula and data in the GIS. Areas are examined remotely using GIS and evaluated for inclusion with this activity. When grants are being sought, maps are created to help support the grant application and demonstrate why the proposed property is a good option for easement protection.

Process without GIS:

Paper maps would be created manually, where time and resources permit. Ability to obtain and track grants would be limited.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- Medium

Benefits to Using GIS for this Activity:

- Obtaining more grant dollars enabling preservation of more land areas and better-suited land areas. Analyses are more current and accurate.
- GIS supports a higher win rate on grant proposals.
- GIS helps develop a more powerful proposal when competing for these grants.
- Baltimore County is recognized nationally for their ability to compete and win these grants–due in large part to the use of GIS.

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
350	122.5	227.5	1	227.5	$7,723.63

Other Benefits:
None noted
Total Annual Benefit: **$7,723.63**
Areas for Improvement:
None noted
New Opportunities:
None noted
Benefits of Pursuing New Opportunities:
None noted

4.2 Baltimore Watershed Agreement

Program: Baltimore Watershed Agreement
Primary Point of Contact:
Steven Stewart
Overview:
This program supports the implementation of the Baltimore Watershed Agreement. First signed in 2002 and recently updated in 2006, this agreement recognizes that natural resource protection and restoration can be greatly enhanced with better coordination among jurisdictions. Baltimore County shares common goals for the management of natural resources, shared watersheds, water quality, restoration of forest resources, and to manage air, land, water resources for the environmental, economic, recreational and aesthetic benefits of the citizens.
Funding:
There is no funding for this program.
Mandates:
MOU with Baltimore City
Political Benefits:
The political benefits of this program relate to enhance compliance with the County NPDES – MS4 Permit. Additional benefits are accrued through the ability to get grant funding to further environmental restoration. Grant agencies are currently looking for proposals that emphasis partnerships in conducting environmental restoration. Baltimore County currently has a proposal submitted to the National Fish and Wildlife Foundation – Targeted Watershed Grant program for $750,000. The fact that Baltimore County is able to partner with other organizations will enhance their ability to be selected for funding.
Social Benefits:
Monitoring and management of surface and groundwater quality from a watershed perspective. Also annual report (becomes biannual in 2007), educational and citizen action programs, watershed planning, monitoring and clean up. Coordination with Watershed Associations; allows for citizen hands-on participation.
Products/Services:
Annual report and associated mapping
Customers:
• County residents • Businesses • Government agencies

Data (Enterprise Layers are Listed in Bold):

- **AddressPoints (View)**
- Agricultural Preservation
- Basic Services - Water
- Buffers with Forest Cover-1996
- **Buildings**
- Capital Improvement Projects
- **Census Block Groups (1990)**
- **Census Block Groups (2000)**
- **Census Blocks (1990)**
- **Census Blocks (2000)**
- **Census Tracts (1990)**
- **Census Tracts (2000)**
- Congressional Districts (2002)
- Conservation Easements
- Councilmanic Districts (2002)
- County Boundary
- Discharge Permits
- Easement
- Election Districts
- **Facilities**
- Government Lands
- **Hydrology**
- Impervious Polygons
- Land Use 1994
- Land Use 1997
- Land Use 1998
- Land Use 2002
- Legislative Districts (2002)
- Master Plan - Sewer
- Master Plan - Water
- Monitoring—Various Programs
- Multiple Ecological Use Forest Model
- Orchards
- **Orthophoto (2002)**
- **Orthophoto (2005)**
- Parcel Based Land Use
- Priority Funding Areas
- Publicly Owned Land
- Reservoirs
- Restriction
- **Roads**
- Rural Legacy
- Save Our Streams (SOS)—Monitoring Sites
- Streams and Ponds
- **Street Centerlines**
- Subwatersheds
- **Tax Parcel**
- Tree Cover
- Tree Rows
- Urban Rural Demarcation Line (URDL)
- Watersheds - Major
- Wetlands
- Wetlands - NWI
- Wooded
- Zoning
- Zoning - 1999
- Zoning Overlay Districts

Applications Used:

- ArcGIS (Standard)
- ArcGIS DataQuery

Associated Activities:

4.2.1 Coordination with City and Watershed Associations
4.2.2 Prepare Biennial Report and Conference

4.2.1 Coordination with City and Watershed Associations

Activity: Coordination with City and Watershed Associations

Primary Point of Contact:

Steven Stewart

Overview:

Coordinate City/County planning, monitoring, education and restoration programs, assist in establishing a committee of principles, assist in conducting meetings of the principles (one per year with watershed associations)

Interviewee(s) Providing Information:

Steven Stewart, Rob Hirsch

Process with GIS:

GIS technology is used to visualize watersheds and map relevant features within. Areas of interest are retrieved and maps are generated based on data captured by other programs (NPDES water quality sample location and results, for example).

Process without GIS:

Products would be largely limited to tabular data and static maps.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data
- Facilitates communication of program goals and accomplishments

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
4750	190	4560	1	4560	$154,812.00

Other Benefits:

None noted

Total Annual Benefit: $154,812.00

Areas for Improvement:

None noted

New Opportunities:
Make data available through a MyNeighborhood application and allow stakeholders to create their own maps and grant access to current program data.
Benefits of Pursuing New Opportunities:
Reduce DEPRM staff hours by empowering others to access current data and create their own mapping products.

4.2.2 Prepare Biennial Report and Conference

Activity: Prepare Biennial Report and Conference

Primary Point of Contact:

Steven Stewart

Overview:

Collect and analyze data to write report, organize conference, including presentation materials.

Interviewee(s) Providing Information:

Steven Stewart, Rob Hirsch

Process with GIS:

GIS is used to zoom to sites of interest, layers are rendered and overlaid, text and marginalia placed to create electronic and hard-copy map output. Maps are a key deliverable for this activity and are used to illustrate results in the report and inform the public at the conference. GIS is also used to monitor and track program progress which feeds into the reporting and presentation process.

Process without GIS:

Maps would be drawn by hand and used less frequently due to the time required for preparation. Base mapping data would be derived from multiple hard-copy sources such as aerial photographs and watershed boundaries. Scales, dates and quality would vary and require reduction/enlargement on a photocopier and transference using a light table and manual cartographic techniques. Results would be less aesthetically pleasing, professional and accurate than those developed using GIS.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- This activity would be significantly limited without GIS; for example, the report would include significantly fewer maps and the conference would have fewer graphics.
- Streamlines and enhances the report development process
- Ensures a high quality report
- Serves as an effective communication mechanism

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
140	70	70	2	140	$4,753.00

Other Benefits:

None noted

Annual Benefit: $4,753.00
Areas for Improvement:
None noted
New Opportunities:
Make data available through a MyNeighborhood application and allow stakeholders to create their own maps and grant access to current program data.
Benefits of Pursuing New Opportunities:
Reduce DEPRM staff hours by empowering others to access current data and create their own mapping products.

4.3 Builders for the Bay

Program: Builders for the Bay
Primary Point of Contact:
David Carroll
Overview:
A first-of-its-kind program aimed at reducing environmental impacts from residential and commercial construction within the Chesapeake Bay watershed. Under the leadership of the Alliance for the Chesapeake Bay, the Center for Watershed Protection and the National Association of Home Builders, Builders for the Bay will encourage the voluntary adoption of 22 better site design principles that reduce the environmental effects of residential and commercial development.
Funding:
There is no funding for this program. The roundtable process for Builders for the bay is complete (a portion of the project was funded by the County). The County may also fund a portion of the implementation phase. The process itself had outside funding, but the exploration of the recommendations will not.
Mandates:
This program is voluntary. No specific mandates were identified.
Political Benefits:
The political benefits result from the County effort to evaluate its development regulations to determine if any changes can be made resulting in greater environmental protection. Because the Builders for the Bay Program included representatives from the development community, the environmental community, and multiple County agencies, the recommendations have the support of the various groups that should result in greater acceptance of any changes made.
Social Benefits:
Encouragement of environmentally-sensitive/responsible construction practices; improved water quality brook trout habitat preservation.
Products/Services:
The specific product was a Baltimore County Builders for the Bay consensus document that outlines specific recommendations to be explored in the future (1-3 years).
Customers:
• Citizens of Baltimore County and Baltimore City • Trout fishermen • Stream-side property owners

Data (Enterprise Layers are Listed in Bold):		
• **AddressPoints (View)** • Agricultural Preservation • Buffers with Forest Cover-1996 • **Buildings** • Capital Improvement Projects • Conservation Easements • **Contours** • County Boundary • Digital Elevation Models • Discharge Permits • Easement • **Facilities** • Flood Insurance Maps (FEMA) • Geology • Hydrologic Facilities • **Hydrology** • Impervious Polygons • Land Use 2002	• Monitoring—Various Programs • Multiple Ecological Use Forest Model • Orchards • Outfall—Major Drainage Areas • Outfall—Minor • Parcel Based Land Use • Parks and Recreation • Publicly Owned Land • Reservoirs • Restriction • **Roads** • Save Our Streams (SOS)—Monitoring Sites • Soils • Storm Drains (Geodatabase) • Storm Water Management Facilities	• Stormwater (Geodatabase) • Streams and Ponds • **Street Centerlines** • **Street Centerlines (View)** • Subwatersheds • **Tax Parcel** • Tree Cover • Tree Rows • Urban Rural Demarcation Line (URDL) • Use Class - Streams • USGS Streams Gages • Watersheds - Major • Wetlands • Wetlands - NWI • Wetlands - Special Area Management • Wooded
Applications Used:		
• ArcGIS (Standard)		
Associated Activities:		
4.3.1 Watershed Planning Process		

4.3.1 Watershed Quality Analysis and Mapping

Activity: Watershed Planning Process

Primary Point of Contact:

David Carroll

Overview:

A first-of-its-kind program aimed at reducing environmental impacts from residential and commercial construction within the Chesapeake Bay watershed. Under the leadership of the Alliance for the Chesapeake Bay, the Center for Watershed Protection and the National Association of Home Builders, Builders for the Bay will encourage the voluntary adoption of 22 better site design principles that reduce the environmental effects of residential and commercial development. Develop GIS-based decision support tools and set policy using said tools for protection of trout resources and drinking water resources.

Interviewee(s) Providing Information:

David Carroll, Steven Stewart, Rob Hirsch

Process with GIS:

Overlay subwatersheds within the planning areas on a variety of GIS data layers to extract information and analyze impacts, sources of pollution, mitigating factors and restoration opportunities. Maps are produced to summarize and present this information to stakeholders involved in the planning process.

Process without GIS:

Use a light table to overlay the subwatersheds on paper copies of the data of interest and then manually analyze data of interest. For example, a planimeter would be used to measure acreage (e.g., land use), a measurement wheel would be used to determine length (e.g., sewer line), or points would be counted (e.g., NPDES permit holders). Maps for public display would have to be hand drawn and colored.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data Facilitates communication of program goals and accomplishments
- Reliable and repeatable analytical results
- High quality report graphics
- Report is more organized and professional

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
205	41	164	1	164	$5,567.80

Other Benefits:
None noted
Annual Benefit: $231,708.75
Areas for Improvement:
None noted
New Opportunities:
For the watershed based TMDL offset program, GIS will be used to produce maps for discussion purposes. The committee that will be dealing with extra protection of trout resources will use GIS to explore the relationship between trout populations and impervious cover on a subwatershed basis as well as other factors (both impact and mitigating). In addition, a build out analysis will be needed to assess future impact to trout resources from new development.
Benefits of Pursuing New Opportunities:
Enhanced protection of Baltimore County's natural resources.

4.4 Capital Improvement Program

Program: Capital Improvement Program
Primary Point of Contact:
Candy Croswell
Overview:
The Capital Projects component funded by the Waterway Improvement Program is a major effort to address water quality issues along the 219 miles of subestuarine shoreline of the Chesapeake Bay and the 2,145 miles of upland streams in the County. The goals of the program are to improve the water quality and increase the recreational value of the County's waterways, and to enhance the economic and aesthetic qualities of communities. Integrates and prioritizes capital projects.
Funding:
Grants and County bonds and funds ($4,000,000 expected for 2008), DNR Improvement Funds
Mandates:
COBCR, COMAR, Chesapeake Bay Critical Area Program.
Political Benefits:
Legal compliance.
Social Benefits:
Management and execution of major projects to improve the water quality, increase the recreational value of the County's waterways, and to enhance the economic and aesthetic quality of the County.
Products/Services:
Capital Projects, dredging areas, bathymetry, SAV and buoys GIS data layers.
Customers:
• CIP stakeholders/owner agencies • County residents • Businesses • Government agencies • Elected officials

Data (Enterprise Layers are Listed in Bold):

- **AddressPoints (View)**
- **Buildings**
- Bulkheads
- Capital Improvement Projects
- Chesapeake Bay Critical Area
- Congressional Districts (2002)
- **Contours**
- Councilmanic Districts (2002)
- County Boundary
- CZMP Zoning Issues (1996)
- CZMP Zoning Issues (2000)
- Digital Elevation Models
- Election Districts
- **Facilities**
- Flood Insurance Maps (FEMA)
- Floodwalls
- Geology
- Government Lands
- Hydrologic Facilities
- **Hydrology**
- Impervious Polygons
- Index Grid - ADC Map
- Land Use 2002
- Legislative Districts (2002)
- Monitoring—Various Programs
- Multiple Ecological Use Forest Model
- Orchards
- **Orthophoto (2002)**
- **Orthophoto (2005)**
- Outfall—Major Drainage Areas
- Outfall—Minor
- Parcel Based Land Use
- Publicly Owned Land
- Pumping Stations
- Reservoirs
- Restriction
- **Roads**
- Save Our Streams (SOS)—Monitoring Sites
- Sewer
- Soils
- State Legislative District
- Storm Drains (Geodatabase)
- Storm Water Management Facilities
- Stormwater (Geodatabase)
- Streams and Ponds
- **Street Centerlines**
- **Street Centerlines (View)**
- Subwatersheds
- **Tax Parcel**
- Tree Cover
- Tree Rows
- Urban Rural Demarcation Line (URDL)
- Use Class - Streams
- Watersheds - Major
- Wetlands
- Wetlands - NWI
- Wetlands - Special Area Management
- Wooded

Applications Used:

- ArcGIS (Standard)
- ArcPad
- ESRI Extensions
- ArcGIS DataQuery

Associated Activities:

4.4.1 Citizen Complaints
4.4.2 Dredging Projects
4.4.3 Shoreline Enhancement Projects
4.4.4 Stormwater Retrofits
4.4.5 Stream Erosion Investigations
4.4.6 Stream Restoration Projects
4.4.7 Submerged Aquatic Vegetation Inventory

4.4.1 Citizen Complaints

Activity: Citizen Complaints

Primary Point of Contact:

Candy Croswell

Overview:

This activity supports complaints that are either delivered by phone or office visits. All stream and waterway complaints go through the Capital Program and Operations Section. These complaints concern trash and other debris, erosion and capital infrastructure problems.

Interviewee(s) Providing Information:

Candy Croswell, Rob Hirsch

Process with GIS:

Once a complaint is registered, the area of concern is reviewed in the GIS to help identify, quantify and resolve problem. If a field visit is warranted, a site map is printed to optimize time spent on-site. Orthophotography is used to help identify if the problem is relatively new.

Process without GIS:

A field visit would be required for virtually every complaint that sounded legitimate. Enforcement staff would likely visit the site without the benefit of pre-planning or access to recent orthophotography. Any mapping required based on site inspection findings would have to be done manually.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- Medium

Benefits to Using GIS for this Activity:

- Using GIS has cut in half the time spent addressing complaints
- GIS allows for better planning before visiting the site of the complaint

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
4	2	2	520	1040	$35,308.00

Other Benefits:

None noted

Annual Benefit: $35,308.00

Areas for Improvement:

None noted

New Opportunities:
Create a GIS data layer tracking citizen complaints by location and the nature of the complaint.
Benefits of Pursuing New Opportunities:
Help identify and prioritize specific problem areas throughout the County and plan larger-scale, more effective Capital Improvement Projects.

4.4.2 Dredging Projects

Activity: Dredging Projects

Primary Point of Contact:

Candy Croswell

Overview:

GIS is used to plan and present dredging projects to the community. The system is used for environmental assessments, engineering design, ownership and effectiveness evaluation.

Interviewee(s) Providing Information:

Wade Shelton, Candy Croswell, Rob Hirsch

Process with GIS:

Planning and design is performed easily and from the desktop. Staff are able to integrate various data layers (such as bathymetry) quickly and identify affected property owners using tax maps. Staff can easily perform preliminary planning and design tasks, reducing the reliance on contractors. GPS is used in the field to obtain/confirm locations where conventional surveying techniques are impractical.

Process without GIS:

Because of the complexity, this activity would likely be out-sourced to a consultant. If managed in-house, maps would be photocopied and hand drafted from a variety of sources including bathymetry and aerial photography.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Brought design work in-house
- Obtained dredging permits by proving dredging activity would not disturb submerged aquatic vegetation (SAV)
- Reduced number of field trips and maximized time on-site when field trip was required
- Enhanced proposal process
- Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
502	251	251	1	251	$8,521.45

Other Benefits:

None noted

Annual Benefit: $8,521.45
Areas for Improvement:
None noted
New Opportunities:
Obtain an integrated digital topographic/bathymetry dataset.
Benefits of Pursuing New Opportunities:
Would enhance dredging project identification, scoping and progress tracking.

4.4.3 Shoreline Enhancement Projects

Activity: Shoreline Enhancement Projects

Primary Point of Contact:

Candy Croswell

Overview:

GIS is used for environmental assessments, engineering design, land acquisition, construction, equipment, maintenance, and effectiveness evaluation.

Interviewee(s) Providing Information:

Candy Croswell, Wade Shelton, Rob Hirsch

Process with GIS:

Planning and design is performed easily and from the desktop. Staff is able to integrate various data layers quickly and identify affected property owners using tax maps. 3D models are created and alternatives evaluated.

Process without GIS:

Analytical processes would be performed by photocopying and overlaying paper maps (such as floodplains and wetlands) and aerial photos. Areas would be calculated manually using a planimeter and distances computed by hand. Sites would be ranked and selected. Maps would be drawn by hand and used less frequently due to the time required for preparation. Results would be less accurate than those developed using GIS.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- Medium

Benefits to Using GIS for this Activity:

- More efficient planning
- Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
35	7	28	12	336	$11,407.20

Other Benefits:

None noted

Annual Benefit: $11,407.20

Areas for Improvement:
None noted
New Opportunities:
Better integration of 3D modeling capability. 3D models are currently used only sparingly due to the difficult and time consuming model creation process. Using LiDAR data, the County could create 3D models of all watersheds and post to SDE. Also, an integrated digital topographic/bathymetry dataset would greatly enhance coastal modeling.
Benefits of Pursuing New Opportunities:
Enhanced program capabilities, improved analyses and more accurate results.

4.4.4 Stormwater Retrofits

Activity: Stormwater Retrofits

Primary Point of Contact:

Candy Croswell

Overview:

GIS is used for environmental assessments, engineering design, land acquisition, construction, equipment, maintenance, and effectiveness evaluation.

Interviewee(s) Providing Information:

Candy Croswell, Wade Shelton, Rob Hirsch

Process with GIS:

A preliminary plan is created to show the existing conditions and affected land owners. The plan relies on a variety of GIS layers including stormwater facilities, orthophotography, topography, 3D model, proximal property owners (tax map) and easements. This preliminary plan is then annotated to illustrate the proposed retrofit details.

Process without GIS:

Analytical processes would be performed by photocopying and overlaying paper maps (such as floodplains and stormwater facilities) and aerial photos. Areas would be calculated manually using a planimeter and distances computed by hand. Maps would be drawn by hand and used less frequently due to the time required for preparation. Results would be less accurate than those developed using GIS.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- Medium

Benefits to Using GIS for this Activity:

- Preliminary planning and site evaluation is accomplished efficiently from the desktop by the County. When outside design work is needed, maps and other information already compiled by the County can be easily transferred and used by an outside consultant.

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
42	10.5	31.5	36	1134.0	$38,499.30

Other Benefits:

None noted

Annual Benefit: $38,499.30

Areas for Improvement:
None noted
New Opportunities:
Better integration of 3D modeling capability. 3D models are currently used only sparingly due to difficult and time consuming model creation process. Using LiDAR data, the County could create 3D models of all watersheds and post to SDE.
Benefits of Pursuing New Opportunities:
Enhanced program capabilities, improved analyses and more accurate results.

4.4.5 Stream Erosion Investigations

Activity: Stream Erosion Investigations

Primary Point of Contact:

Candy Croswell

Overview:

Responds to citizen inquiries and complaints concerning stream erosion. GIS is used to determine site conditions, ownership and watershed characteristics.

Interviewee(s) Providing Information:

Candy Croswell, Rob Hirsch

Process with GIS:

Once a complaint is registered, the area of concern is reviewed in the GIS to help identify, quantify and resolve problem. Sites are evaluated to determine if a Capitol Improvement Project has already been initiated or proposed. If a field visit is warranted, a site map is printed to optimize time spent on-site. Orthophotography is used to help identify if the problem is relatively new.

Process without GIS:

A field visit would be required for virtually every complaint that sounded legitimate. Enforcement staff would likely visit the site without the benefit of pre-planning or access to recent orthophotography. Any mapping required based on site inspection findings would have to be done manually.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- GIS allows for better planning before visiting the site of the complaint
- Coordination with other on-going projects is improved

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
8	2	6	208	1248	$42,369.60

Other Benefits:

None noted

Annual Benefit: $42,369.60

Areas for Improvement:

None noted

New Opportunities:
Create a GIS data layer tracking citizen complaints by location and the nature of the complaint.
Benefits of Pursuing New Opportunities:
Help identify and prioritize specific problem areas throughout the County and plan larger-scale, more effective Capital Improvement Projects.

4.4.6 Stream Restoration Projects

Activity: Stream Restoration Projects

Primary Point of Contact:

Candy Croswell

Overview:

GIS is used for environmental assessments, engineering design, land acquisition, construction, equipment, maintenance, and effectiveness evaluation. Come from complaints or watershed projects. Require public meetings and contacting the public, JPA (joint permit application) to the MDE and Fish and Wildlife Service.

Interviewee(s) Providing Information:

Candy Croswell, Joan Klair, Rob Hirsch

Process with GIS:

Perform analysis to identify streams needing restoration at the watershed level. Create a map with relevant data (layers including soils, hydrography, topography, orthophotography and cadastral). This mapping data is taken to the field to expedite and enhance project planning.

Process without GIS:

Analytical processes would be performed by photocopying and overlaying paper maps (such as floodplains and stormwater facilities) and aerial photos. Areas would be calculated manually using a planimeter and distances computed by hand. Maps would be drawn by hand and used less frequently due to the time required for preparation. Results would be less accurate than those developed using GIS.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Providing relevant GIS data layers to design consultants lowers design cost
- Reduces field time by providing efficient office planning capabilities
- Provided for better communication: swapping digital information is easier than hard-copy sources
- Data analysis is more comprehensive, repeatable and faster

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
175	35	140	4	560	$19,012.00

Other Benefits:

None noted

Annual Benefit: $19,012.00

Areas for Improvement:
None noted
New Opportunities:
Better integration of 3D modeling capability. 3D models are currently used only sparingly due to the difficult and time consuming model creation process. Using LiDAR data, the County could create 3D models of all watersheds and post to SDE. Also, an integrated digital topographic/bathymetry dataset would greatly enhance coastal modeling.
Benefits of Pursuing New Opportunities:
Enhanced program capabilities, improved analyses and more accurate results.

4.4.7 Submerged Aquatic Vegetation Inventory

Activity: Submerged Aquatic Vegetation Inventory

Primary Point of Contact:

Candy Croswell

Overview:

DEPRM has developed an SAV GIS to determine trends in presence, density and diversity of SAV.

Interviewee(s) Providing Information:

Candy Croswell, Rob Hirsch

Process with GIS:

A consultant performs a boat survey to create a data layer documenting SAV within the County. Small project areas are periodically completed by the County utilizing orthophotography.

Process without GIS:

This would be outsourced entirely to a consultant. If the County were to attempt it, it would be accomplished by field survey using GPS to locate and map SAV areas. Comparison of temporal change time would be accomplished by overlaying hard copy survey maps on a light table.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- The mapping of SAV includes an historical record of vegetation distribution since the 1980s. They had the SAV lines digitized in 1996 and this is now a valuable data layer. This historical data has provided DEPRM with the ability to address State and Federal questions concerning dredging operations which ultimately resulted in proving that dredging was not affecting SAV, saving significant County dollars
- SAV is documented electronically
- This is now inherently an GIS activity

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
21	7	14	1	14	$475.30

Other Benefits:

None noted

Annual Benefit: $475.30

Areas for Improvement:

None noted

New Opportunities:
Post the SAV data layer to SDE.
Benefits of Pursuing New Opportunities:
This County resource could be leveraged through out the enterprise.

4.5 Community Reforestation Program

Program: Community Reforestation Program
Primary Point of Contact:
Don Outen
Overview:
The Section administers DEPRM's program to expend developer fees-in-lieu of mitigation under the Forest Conservation Act. Reforestation is also performed as required for capital projects of other County agencies. This Program provides a continuing source of labor for planting, monitoring, and maintaining community reforestation projects.
Funding:
Forest Conservation Act. Funding is $17,400.00 per acre ($0.40/sq foot) paid by developers to support reforestation program. Other County grants and private gifts.
Mandates:
Forest Conservation Act
Political Benefits:
Legal compliance
Social Benefits:
Management of forest resources, creation of new forests, and overall improved health of the ecosystem.
Products/Services:
Polygons representing reforestation areas maintained in a GIS format.
Customers:
• County residents • Businesses • Government agencies • Elected officials

Data (Enterprise Layers are Listed in Bold):

- **AddressPoints (View)**
- Agricultural Preservation
- Buffers with Forest Cover-1996
- **Buildings**
- Community Associations
- Conservation Easements
- **Contours**
- County Boundary
- Digital Elevation Models
- Easement
- Flood Insurance Maps (FEMA)
- Forest – 1996 Image Polys
- Forest Corridors
- Government Lands
- **Hydrology**
- Impervious Polygons
- Index Grid - ADC Map
- Multiple Ecological Use Forest Model
- Orchards
- **Orthophoto (1995)**
- **Orthophoto (1996)**
- **Orthophoto (1997)**
- **Orthophoto (1998)**
- **Orthophoto (2000)**
- **Orthophoto (2001)**
- **Orthophoto (2002)**
- **Orthophoto (2005)**
- **Orthophoto Quarter Quads - (1994)**
- Parks and Recreation
- Publicly Owned Land
- Restriction
- **Roads**
- Soils
- Streams and Ponds
- **Street Centerlines**
- **Street Centerlines (View)**
- Subwatersheds
- **Tax Parcel**
- Trails
- Trails - Walkways
- Tree Cover
- Tree Rows
- Urban Rural Demarcation Line (URDL)
- Watersheds - Major
- Wetlands
- Wetlands - NWI
- Wetlands - Special Area Management
- Wooded

Applications Used:

- ArcGIS (Standard)
- ArcPad
- ArcGIS DataQuery

Associated Activities:

4.5.1 Planting, Monitoring and Maintenance of Reforestation Projects
4.5.2 Site Planning and Assessment for Reforestation Projects

4.5.1 Planting, Monitoring and Maintenance of Reforestation Projects

Activity: Planting, Monitoring and Maintenance of Reforestation Projects

Primary Point of Contact:

Don Outen

Overview:

Planting, monitoring, and maintenance of reforestation projects. More than 100 acres of reforestation have been planted to date.

Interviewee(s) Providing Information:

Don Outen, Patricia Cornman, Rob Hirsch

Process with GIS:

Planting plans are created in the GIS to identify site boundaries and the location of trees to be planted. Layers including soils, topography, orthophotography, cadastral boundaries and streams are used to create a base map for the planting plan. Maps are printed and are used to help guide the tractors actually planting the trees and to facilitate field visits. GPS is used to identify proposed planting areas and confirm conformance with plans during monitoring period.

Process without GIS:

Maps were drawn by hand and multiple field visits were required to confirm and refine plans. Analytical processes would be performed by photocopying and overlaying paper maps (such as topography) and aerial photos. Areas would be calculated manually using a planimeter and distances computed by hand. Maps would be drawn by hand and used less frequently due to the time required for preparation. Results would be less accurate than those developed using GIS.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Integration with GPS enables mapping of areas that are otherwise difficult using conventional techniques
- Efficient planning
- Effective communication of planting plans
- Validation of planting activities
- Large reduction in number of field visits

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
20	5	15	7	105	$3,564.75

Other Benefits:
None noted
Annual Benefit: $3,564.75
Areas for Improvement:
Create a steep slopes layer from LiDAR data and use to help determine suitable planting locations.
New Opportunities:
Obtain and use leaf-on (and/or possibly color infrared, multi-spectral) orthophotography. Create polygons representing planting areas. Perform remote site inspection to monitor planting health, vermin/insect infestations, identify violations or potential problems; prioritize areas for field visit to maximize inspector resources. Automate comparison of preservation area polygons against land use/land cover polygons as an initial filtering tool.
Benefits of Pursuing New Opportunities:
Maximize inspector's time and effectiveness to prioritize areas that need immediate attention. Increase effectiveness in managing investments in planting projects.

4.5.2 Site Planning and Assessment for Reforestation Projects

Activity: Site Planning and Assessment for Reforestation Projects

Primary Point of Contact:

Don Outen

Overview:

Identify and perform ecological assessments of potential reforestation sites; develop planting plans and methodologies for planting, monitoring, and maintenance of reforestation projects; and provide training in forest functions and management topics for the reforestation crew.

Interviewee(s) Providing Information:

Don Outen; Patricia Cornman, Rob Hirsch

Process with GIS:

Planting plans are created in the GIS to identify site boundaries and the location of trees to be planted. Layers including soils, topography, orthophotography, cadastral boundaries and streams are used to create a base map for the planting plan. Maps are printed and are used to help guide the tractors actually planting the trees and to facilitate field visits. GPS is used to identify proposed planting areas and confirm conformance with plans during monitoring period.

Process without GIS:

Maps were drawn by hand and multiple field visits were required to confirm and refine plans. Analytical processes would be performed by photocopying and overlaying paper maps (such as topography) and aerial photos. Areas would be calculated manually using a planimeter and distances computed by hand. Maps would be drawn by hand and used less frequently due to the time required for preparation. Results would be less accurate than those developed using GIS.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- Medium

Benefits to Using GIS for this Activity:

- Integration with GPS enables mapping of areas that are otherwise difficult using conventional techniques
- Efficient planning
- Effective communication of planting plans
- Validation of planting activities
- Large reduction in number of field visits

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
24	6	18	2	36	$1,222.20

Other Benefits:
None noted
Annual Benefit: $1,222.20
Areas for Improvement:
Create a steep slopes layer from LiDAR data and use to help determine suitable planting locations.
New Opportunities:
Obtain and use leaf-on (and/or possibly color infrared, multi-spectral) orthophotography. Create polygons representing planting areas. Perform remote site inspection to monitor planting health, vermin/insect infestations, identify violations or potential problems; prioritize areas for field visit to maximize inspector resources. Automate comparison of preservation area polygons against land use/land cover polygons as an initial filtering tool.
Benefits of Pursuing New Opportunities:
Maximize inspector's time and effectiveness to prioritize areas that need immediate attention. Increase effectiveness in managing investments in planting projects.

4.6 Comprehensive Zoning Map Process (CZMP)

Program: Comprehensive Zoning Map Process (CZMP)
Primary Point of Contact:
Don Outen
Overview:
Comprehensive review of CZMP log of zoning issues for environmental and natural resource impacts.
Funding:
There is no funding for this program, it is authorized by the County Code.
Mandates:
COBMR
Political Benefits:
Legal compliance
Social Benefits:
Zoning plans align with environmental and natural resource considerations.
Products/Services:
Input to zoning process spearheaded by Office of Planning.
Customers:
• Office of Planning • County land owners • County residents • Businesses • Government agencies • Elected officials

Data (Enterprise Layers are Listed in Bold):

- Agricultural Preservation
- Basic Services - Water
- Buffers with Forest Cover-1996
- **Buildings**
- Bulkheads
- Capital Improvement Projects
- Chesapeake Bay Critical Area
- Conservation Easements
- **Contours**
- CZMP Zoning Issues (1996)
- CZMP Zoning Issues (2000)
- Development Plans
- Digital Elevation Models
- Easement
- **Facilities**
- Flood Insurance Maps (FEMA)
- Floodwalls
- Government Lands
- Greenways
- **Hydrology**
- Impervious Polygons
- Land Management Areas
- Light Rail
- Master Plan - Sewer
- Master Plan - Water
- Metro Railroad
- Metropolitan District Line
- Monitoring—Various Programs
- Multiple Ecological Use Forest Model
- Orchards
- **Orthophoto (2005)**
- Outfall—Major Drainage Areas
- Outfall—Minor
- Publicly Owned Land
- Railroads
- Reservoirs
- Restriction
- **Roads**
- Rural Legacy
- Save Our Streams (SOS)—Monitoring Sites
- **SimComFrstDiv**
- **SimCon**
- Soils
- Storm Drains (Geodatabase)
- Storm Water Management Facilities
- Stormwater (Geodatabase)
- Streams and Ponds
- **Street Centerlines**
- **Street Centerlines (View)**
- Subwatersheds
- **Tax Parcel**
- Tree Cover
- Tree Rows
- Urban Rural Demarcation Line (URDL)
- Use Class - Streams
- Watersheds - Major
- Wetlands
- Wetlands - NWI
- Wetlands - Special Area Management
- Wooded
- Zoning - 1999
- Zoning Overlay Districts

Applications Used:

- ArcGIS (Standard)
- ArcIMS

Associated Activities:

4.6.1 Review for Natural Resource Impacts

4.6.1 Review for Natural Resource Impacts

Activity: Review for Natural Resource Impacts
Primary Point of Contact:
Don Outen
Overview:
Review rezoning requests in relation to natural resource concerns.
Interviewee(s) Providing Information:
Don Outen, Patricia Cornman, Rob Hirsch
Process with GIS:
Areas proposed for rezoning are identified by OP, digitized and posted on-line in an internal MyNeighborhood ArcIMS website. OP then tasks DEPRM to review the proposed change in light of environmental and natural resource constraints. This review occurs on-screen using the GIS application. Overlays and buffers are created, a determination is made and returned to OP for action. In certain cases, a field visit is warranted to confirm site conditions and a map is printed from the GIS to expedite and simplify this field visit.
Process without GIS:
Technically, this activity could not be accomplished without GIS since the legal zoning boundary is required to be maintained within the GIS. However, assuming OP had GIS and DEPRM did not, OP would plot proposed zoning changes and route a paper map for review. DEPRM would then compare the proposed change against other paper map resources to identify natural resource constraints. This would be difficult and time consuming as multiple sources at different scales would be retrieved, reduced/enlarged and compared on a light table. In addition, a time-consuming site visit would be required in most instances.
Benefits Assessment: (High, Medium, Low) Identify confidence level
• High
Benefits to Using GIS for this Activity:
• Since the legal zoning boundaries are maintained in the GIS, performing this review in a GIS environment is essential to effectively feed into the overall zoning review process • Increased efficiency and accuracy (digital review puts multiple data sources in a geographic context for simplified evaluation) • Enhanced collaboration among County agencies • Reduced field visits

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
5	0.25	4.75	574	2726.5	$92,564.68

Other Benefits:

None noted

Annual Benefit: $92,564.68

Areas for Improvement:

None noted

New Opportunities:

Continue to track natural resources issues using GIS. Create and maintain feature classes representing constraints or sensitive areas.

Benefits of Pursuing New Opportunities:

CZMP review process would be optimized and possibly automated; simply compare natural resource constraints and proposed zoning change. Also, these data would empower others to make better planning decisions and possibly avoid proposing a zoning change where not environmentally feasible.

4.7 Development Coordination and Permit Processing

Program: Development Coordination and Permit Processing
Primary Point of Contact:
David Lykens
Overview:
This program is responsible for logging, distributing and tracking all plans and documents related to Phase I and Phase II of the development review process, and reviewing for compliance with the Master Water and Sewer Plan. This Program compiles department comments and attends all pre-concept plan conferences, concept plan conferences, development plan conferences and hearing officer hearings, during which comments are presented and explained. The Project Manager also represents the department at the development review committee meetings, wherein it is determined which process a development must follow. The program also ensures that all subdivision plats meet all State and County development regulations and policies.
Funding:
There is no funding for this program.
Mandates:
The Department reviews permits and plans for compliance with State and County mandated programs (Stormwater Management, Critical Area Regulations, Well and Septic Regulations, Stream and Wetland Regulations, Forest Conservation Regulations) means that our Department is mandated to review these mandates.
Political Benefits:
Legal compliance is maintained and enforced before projects are approved for construction. Politicians with development interests are able to go to a single point-of-contact for information regarding current and proposed plans.
Social Benefits:
The public can rest assured that all new construction is completed in accordance with relevant environmental and natural resource laws and constraints at the federal, state and local levels. Additionally, the public can get information and have questions answered regarding the environmental and natural resource constraints regarding proposed projects.
Products/Services:
Permits are granted, hearings are conducted, analysis of data identifies if other DEPRM departments need to intercede, citizens are being assisted, councilmen and County official meetings are conducted using information generated or gathered.

Customers:

- Permit applicants
- Internal DEPRM sections
- Other County Agencies – mostly PDM
- Citizens
- Developers

Data (Enterprise Layers are Listed in Bold):

• **AddressPoints (View)** • **Buildings** • **Contours** • Flood Insurance Maps (FEMA) • **Hydrology** • **Orthophoto (1995)** • **Orthophoto (1996)**	• **Orthophoto (1997)** • **Orthophoto (1998)** • **Orthophoto (2000)** • **Orthophoto (2001)** • **Orthophoto (2002)** • **Orthophoto (2005)** • **Orthophoto Quarter Quads - (1994)**	• **Roads** • Soils • Streams and Ponds • **Tax Parcel** • Wetlands • Wetlands - NWI • Wetlands - Special Area Management

Applications Used:

- ArcGIS (Standard)
- ArcGIS DataQuery

Associated Activities:

4.7.1 Citizen Assistance
4.7.2 Permit Processing
4.7.3 Preliminary Site Analysis
4.7.4 Presentation of Comments and Analyses

4.7.1 Citizen Assistance

Activity: Citizen Assistance

Primary Point of Contact:

David Lykens

Overview:

Advise public of development rules and restrictions generally or as it pertains to a particular property.

Interviewee(s) Providing Information:

David Lykens, Jeff Livingston, Kimberly Wilson, Rob Hirsch

Process with GIS:

The public makes a request for information telephonically or in person; these requests are directed to the on-duty staff ("office duty"). Typically, these are site-specific questions in which case the GIS is consulted to identify local constraints or circumstances. As needed, maps are printed to help document the situation or answer the citizen question. Where required, GIS mapping data is printed to facilitate and expedite a site visit.

Process without GIS:

Staff would respond generally to questions based on the information provided. Where warranted, a site visit would be required in order to make specific determinations. Paper maps would be consulted to determine site conditions.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Able to give site-specific answers
- Increased consumer confidence
- Minimize field visits and maximize time on-site where field visits are unavoidable

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
0.75	0.08	0.67	780	522.6	$ 17,742.27

Other Benefits:

None noted

Annual Benefit: $17,742.27

Areas for Improvement:
None noted
New Opportunities:
Make data available through a MyNeighborhood application and allow stakeholders to create their own maps and grant access to current program data.
Benefits of Pursuing New Opportunities:
Reduce DEPRM staff hours by empowering others to access current data and create their own mapping products.

4.7.2 Permit Processing

Activity: Permit Processing

Primary Point of Contact:

David Lykens

Overview:

All grading, stormwater, management, building and razing permits are distributed by the Development Coordination and Permit Processing Section.

Interviewee(s) Providing Information:

David Lykens, Jeff Livingston, Kimberly Wilson, Rob Hirsch

Process with GIS:

Paper copies of permits are transmitted to DEPRM for review. The permit is reviewed, the site identified in the GIS and environmental issues evaluated. Based on the data presented in the GIS a determination to approve or deny the permit is rendered. Where required, GIS mapping data is printed to facilitate and expedite a site visit.

Process without GIS:

Paper maps (topography, for example) would be consulted to determine if any environmental issues or natural resource constraints existed. A time-consuming field visit would be required to support most permit reviews. Any mapping required based on site inspection findings would have to be done manually.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Able to give site-specific answers from the office
- Increased efficiency and accuracy
- Enhanced collaboration among County agencies
- Reduced field visits

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
0.75	0.08	0.67	260	174.2	$5,914.09

Other Benefits:

None noted

Annual Benefit: $5,914.09

Areas for Improvement:
None noted
New Opportunities:
Permitting authority should move to a digital submission process to complement (not replace) the paper-based routing and review process.
Benefits of Pursuing New Opportunities:
Having permit application and associated mapping electronically would facilitate some reviews and enable an all-digital permit review file. Also, if the permit is approved and it affects GIS data, the impacted feature classes could be updated with increased accuracy and efficiency.

4.7.3 Preliminary Site Analysis

Activity: Preliminary Site Analysis

Primary Point of Contact:

David Lykens

Overview:

Prepare maps and analyze site plans to determine extent and kind of environmental restrictions likely to apply to a particular property.

Interviewee(s) Providing Information:

David Lykens, Jeff Livingston, Kimberly Wilson, Rob Hirsch

Process with GIS:

The site of interest is identified in the GIS and environmental issues and natural resource constraints evaluated. Based on the data presented in the GIS a determination is made. Where required, GIS mapping data is printed to facilitate and expedite a site visit. As needed, maps are printed to help document the situation or answer questions.

Process without GIS:

Base mapping data would be derived from multiple hard-copy sources such as aerial photographs and topographic maps. Scales, dates and quality would vary and require reduction/enlargement on a photocopier and transference using a light table and manual cartographic techniques. Results would be less aesthetically pleasing, professional and accurate than those developed using GIS. Maps would be drawn by hand and used less frequently due to the time required for preparation.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Able to give site-specific answers from the office
- Increased efficiency and accuracy
- Enhanced collaboration among County agencies
- Reduced field visits
- Quality mapping products are created

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
7	0.08	6.92	360	2491.2	$84,576.24

Other Benefits:

None noted

Annual Benefit: $84,576.24
Areas for Improvement:
None noted
New Opportunities:
None noted
Benefits of Pursuing New Opportunities:
None noted

4.7.4 Presentation of Comments and Analyses

Activity: Presentation of Comments and Analyses

Primary Point of Contact:

David Lykens

Overview:

Compilation of comments and analysis to be used for presentations

Interviewee(s) Providing Information:

David Lykens, Jeff Livingston, Kimberly Wilson, Rob Hirsch

Process with GIS:

GIS is used to zoom to sites of interest, layers are rendered and overlaid, text and marginalia placed to create electronic and hard-copy map output. Maps are used to support hearings, make informed decisions and answer questions. Occasionally, GIS data is sufficient to avoid a hearing entirely.

Process without GIS:

Arguably, this activity would not be done without GIS due to time and manpower constraints and all issues would be referred to a hearing. However, if it were attempted without GIS, maps would be drawn by hand. Base mapping data would be derived from multiple hard-copy sources such as aerial photographs and topographic maps. Scales, dates and quality would vary and require reduction/enlargement on a photocopier and transference using a light table and manual cartographic techniques. Results would be less aesthetically pleasing, professional and accurate than those developed using GIS.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Costly and time consuming hearings are occasionally avoided
- Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data
- Facilitates communication of complex spatial relationships

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
0	0.42	-0.42	260	-109.2	-$3,707.34

Other Benefits:

None noted

Annual Benefit: -$3,707.34

Areas for Improvement:
None noted
New Opportunities:
None noted
Benefits of Pursuing New Opportunities:
None noted

4.8 Education and Citizen Participation Program

Program: Education and Citizen Participation Program
Primary Point of Contact:
Don Outen
Overview:
Staff assists in the development and implementation of public awareness, education, and community outreach programs and initiatives.
Funding:
There is no funding for this program.
Mandates:
Clean Water Act (NPDES, MS4 Permit)
Political Benefits:
Legal compliance
Social Benefits:
Public education and increased awareness about environmental (e.g., Green Schools, water quality, watershed management, forests) projects and initiatives.
Products/Services:
Mapping data and products to support various community activities, awareness and education.
Customers:
• County residents • Businesses • Government agencies • Elected officials

Data (Enterprise Layers are Listed in Bold):

- **AddressPoints (View)**
- Agricultural Preservation
- Buffers with Forest Cover-1996
- **Buildings**
- Capital Improvement Projects
- Community Associations
- Congressional Districts (2002)
- Conservation Easements
- **Contours**
- Councilmanic Districts (2002)
- County Boundary
- County Historic Districts
- Digital Elevation Models
- Easement
- **Facilities**
- Flood Insurance Maps (FEMA)
- Floodwalls
- Geology
- Government Lands
- Greenways
- Historic Districts
- **Hydrology**
- Impervious Polygons
- Index Grid - ADC Map
- Land Management Areas
- Land Use 1994
- Land Use 1997
- Land Use 1998
- Land Use 2002
- Landfills
- Legislative Districts (2002)
- Light Rail
- Master Plan - Sewer
- Master Plan - Water
- Metro Railroad
- Metropolitan District Line
- Monitoring—Various Programs
- Multiple Ecological Use Forest Model
- National Register Historic Districts
- Orchards
- **Orthophoto (2005)**
- Parcel Based Land Use
- Parks and Recreation
- Railroads
- Reservoirs
- Restriction
- **Roads**
- Rural Legacy
- Scenic Routes
- Schools—Point Location
- Sewer
- **SimComFrstDiv**
- **SimCon**
- Soils
- State Legislative District
- Storm Drains (Geodatabase)
- Storm Water Management Facilities
- Stormwater (Geodatabase)
- Streams and Ponds
- **Street Centerlines**
- **Street Centerlines (View)**
- Subwatersheds
- Tax Maps (Images)
- **Tax Parcel**
- Trails
- Trails - Walkways
- Tree Cover
- Tree Rows
- Urban Rural Demarcation Line (URDL)
- Use Class - Streams
- Watersheds - Major
- Wetlands
- Wetlands - NWI
- Wetlands - Special Area Management
- Wooded
- Zip Codes
- Zoning
- Zoning - 1999

Applications Used:

- ArcGIS (Standard)
- ArcGIS DataQuery

Associated Activities:

4.8.1 Education/Outreach
4.8.2 Green Schools Program

4.8.1 Education/Outreach

Activity: Education/Outreach
Primary Point of Contact:
Don Outen
Overview:
Staff assists the Director and other DEPRM sections in the development and implementation of public outreach materials and events. This includes preparation of fact sheets and brochures, lobby and festival displays, educational presentations and workshops, website pages, and recognitions. The County's annual Pitch in for Progress events, Household Hazardous Waste collection days, special projects, community watershed association partnerships, and local and regional conferences and workshops. DEPRM seeks and maintains partnerships with local businesses and non-profit organizations to provide support for environmental initiatives in local schools and communities. In support of community and school landscape projects, staff participates in evaluation of local conservation landscaping programs and in workgroups seeking to provide high-quality technical assistance.
Interviewee(s) Providing Information:
Rob Hirsch, Don Outen
Process with GIS:
GIS is used to zoom to sites of interest, layers are rendered and overlaid, text and marginalia placed to create electronic and hard-copy map output. These maps and related products are output from the GIS for integration with outreach and educational materials. Maps are a key deliverable for this activity and are used to illustrate results in the report and inform the public at the conference. GIS is also used to monitor and track program progress which feeds into the reporting and presentation process.
Process without GIS:
Maps would be drawn by hand and used less frequently due to the time required for preparation. Base mapping data would be derived from multiple hard-copy sources such as aerial photographs and watershed boundaries. Scales, dates and quality would vary and require reduction/enlargement on a photocopier and transference using a light table and manual cartographic techniques. Results would be less aesthetically pleasing, professional and accurate than those developed using GIS.
Benefits Assessment: (High, Medium, Low) Identify confidence level
• High
Benefits to Using GIS for this Activity:
• Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data • Facilitates communication of complex spatial relationships

Annual Time Savings from Use of GIS:					
Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
616	28	588	1	588	$19,962.60

Other Benefits:

None noted

Annual Benefit: $19,962.60

Areas for Improvement:

None noted

New Opportunities:

Make data available through a MyNeighborhood application and allow stakeholders to create their own maps and grant access to current program data.

Benefits of Pursuing New Opportunities:

Reduce DEPRM staff hours by empowering others to access current data and create their own mapping products.

4.8.2 Green Schools Program

Activity: Green Schools Program
Primary Point of Contact:
Don Outen
Overview:
DEPRM assists schools in their efforts to model environmental best management practices (BMPs) in their building and grounds and develop and maintain community partnerships. Staff also participates in local and regional educational conferences, workshops, and teacher training. Staff serves on the Board of Directors of Maryland Association for Environmental and Outdoor Education (MAEOE) and co-chair MAEOE's Green School Committee.
Interviewee(s) Providing Information:
Rob Hirsch, Don Outen
Process with GIS:
Schools participating in the Green School Program are tracked in a GIS data layer and provided individual GIS support in the form of special and customized maps. GIS is used to zoom to sites of interest, layers are rendered and overlaid, text and marginalia placed to create electronic and hard-copy map output. These maps and related products are output from the GIS for integration with outreach and educational materials. Maps are a key deliverable for this activity and are used to illustrate results in the report and inform the public at the conference. GIS is also used to monitor and track program progress which feeds into the reporting and presentation process.
Process without GIS:
Participating schools would be tracked in a database. Maps would be drawn by hand and used less frequently due to the time required for preparation. Base mapping data would be derived from multiple hard-copy sources such as aerial photographs and watershed boundaries. Scales, dates and quality would vary and require reduction/enlargement on a photocopier and transference using a light table and manual cartographic techniques. Results would be less aesthetically pleasing, professional and accurate than those developed using GIS.
Benefits Assessment: (High, Medium, Low) Identify confidence level
• High
Benefits to Using GIS for this Activity:
• Spatial tracking of participating schools • Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data • Facilitates communication of complex spatial relationships

Annual Time Savings from Use of GIS:					
Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
88	44	44	1	44	$1,493.80

Other Benefits:
None noted
Annual Benefit: $1,493.80
Areas for Improvement:
None noted
New Opportunities:
Make data available through a MyNeighborhood application and allow stakeholders to create their own maps and grant access to current program data.
Benefits of Pursuing New Opportunities:
Reduce DEPRM staff hours by empowering others to access current data and create their own mapping products.

4.9 Environmental Health Inspections Program

Program: Environmental Health Inspections Program
Primary Point of Contact:
Bill Clarke and Yvonne Deloatch
Overview:
This program, mandated by Baltimore County Code, provides for the inspection and enforcement of the Code of Baltimore County Regulations (COBCR) 1.01.01 - Food Service Facilities. This section also has delegated authority and responsibility from the Secretary of the Maryland State Department of Health and Mental Hygiene (DHMH) for food establishments regulated under COMAR 10.15.03 – Food Service Facilities.
Funding:
There is no funding for this program.
Mandates:
COBCR, COMAR, Consent Decree
Political Benefits:
Legal compliance
Social Benefits:
Management of various potential health threats including water recreation, indoor air quality, insect infestation, illegal disposal of wastes, release of hazardous chemicals or petroleum products, nuisance dust from construction sites, open burning of trash, problems with public and private water and septic systems (including TNC), and keeping of animals.
Products/Services:
Health inspection jurisdiction boundaries GIS data layer.
Customers:
• Diners (people who eat in County restaurants) • Businesses (including restaurants, waste transportation/generation/storage facilities) • County residents • Government agencies • Elected officials

Data (Enterprise Layers are Listed in Bold):

- **AddressPoints (View)**
- Basic Services - Water
- **Buildings**
- Commercial Pools
- **Contours**
- County Boundary
- **Facilities**
- Geology
- Government Lands
- Hydrologic Facilities
- **Hydrology**
- Impervious Polygons
- Index Grid - ADC Map
- Landfills
- Light Rail
- Master Plan - Sewer
- Master Plan - Water
- Metro Railroad
- Metropolitan District Line
- Monitoring—Various Programs
- **Orthophoto (1995)**
- **Orthophoto (1996)**
- **Orthophoto (1997)**
- **Orthophoto (1998)**
- **Orthophoto (2000)**
- **Orthophoto (2001)**
- **Orthophoto (2002)**
- **Orthophoto (2005)**
- **Orthophoto Quarter Quads - (1994)**
- Outfall—Major Drainage Areas
- Outfall—Minor
- Publicly Owned Land
- Pumping Stations
- Railroads
- Refuse Collection Routes
- **Roads**
- Sanitary Sewer Overflow
- Sewer
- Sewer Relief Points
- Soils
- Storm Drains (Geodatabase)
- Stormwater (Geodatabase)
- Streams and Ponds
- **Street Centerlines**
- **Street Centerlines (View)**
- Subwatersheds
- **Tax Parcel**
- Urban Rural Demarcation Line (URDL)
- Zip Codes
- Zoning
- Zoning - 1999
- Zoning Overlay Districts

Applications Used:

- ArcGIS (Standard)

Associated Activities:

4.9.1 Community Hygiene Inspections
4.9.2 Environmental Site Assessments
4.9.3 Food Facility Inspections
4.9.4 Recreational Hygiene Inspection
4.9.5 Sanitary Sewage Overflow Monitoring and Response
4.9.6 Sanitary Survey of TNC Facilities
4.9.7 Waste Management Facility Inspection and Monitoring

4.9.1 Community Hygiene Inspections

Activity: Community Hygiene Inspections

Primary Point of Contact:

Bill Clarke and Yvonne Deloatch

Overview:

This involves routine inspections of hotels/motels, and mobile home parks. Response to and investigation of complaints related to insect infestation, illegal disposal of wastes, release of hazardous chemicals or petroleum products, nuisance dust from construction sites, open burning of trash, problems with private water and septic systems, keeping of animals, and miscellaneous nuisances. Corrective action, as required under County law and/or regulation, is initiated by the person(s) responsible for the problem or by private contractors authorized by DEPRM and under DEPRM oversight. Complaints are made by County residents, businesses, and government agencies and elected officials.

Interviewee(s) Providing Information:

Yvonne Deloatch, Jerry Siewierski, Rob Hirsch

Process with GIS:

Inspection jurisdictional boundaries are created, analyzed and maintained using GIS. Inspector workloads are mapped and jurisdictional boundaries adjusted to balance workloads. Maps are printed to illustrate and inform inspectors of these boundaries.

Process without GIS:

Adjusting jurisdictional boundaries would be performed manually using paper maps and anecdotal data. It would also be performed less frequently due to the complexity and time consuming nature.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Maximizes allocation of inspection resources
- Simplifies maintenance of jurisdictional boundaries

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
15	1.5	13.5	1	13.5	$458.33

Other Benefits:

None noted

Annual Benefit: $458.33

Areas for Improvement:
None noted
New Opportunities:
Integrate facilities data layer update process currently in process with OIT.
Benefits of Pursuing New Opportunities:
If coordinated correctly, would reduce cost of updating this data layer.

4.9.2 Environmental Site Assessments

Activity: Environmental Site Assessments

Primary Point of Contact:

Bill Clarke

Overview:

Environmental site assessments to support of the County's land acquisition and property development efforts. These assessments are important to reduce County environmental liability, and reduce the potential environmental impact of on-site hazardous substances. Any transaction with a property requires an environmental site assessment (by 3rd party) If no environmental conditions, project closed. If environmental conditions, project goes to phase 2. Review the environmental site assessment reports and make recommendations to the appropriate County agencies. Environmental site assessments are conducted primarily through contractually-engaged consultants, but some are conducted by DEPRM staff.

Interviewee(s) Providing Information:

Yuli Lipsits, Rob Hirsch

Process with GIS:

GIS is used sparingly to support this activity. It is used only once or twice a year to create mapping products to illustrate the results of a site assessment. Occasionally, GPS is used in the field to map wells, borings, and suspected or "recognized environmental conditions". GPS coordinates are downloaded and integrated with GIS maps that have been exported to PDF. Most site assessments are performed by consultants who are periodically supplied with GIS data layers to support their project.

Process without GIS:

This process would change very little without GIS. Any GIS related activity would likely be performed by a consultant. These consultants would also not have access to GIS data layers to support the site assessment process.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Able create mapping products to report assessment results to other County agencies including Land Acquisition, DPW, Community Conservation, Recreation and Parks, and the County Executive Office
- Output of PDF GIS maps enables integration with GPS data

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
3	1	2	2	4	$135.80

Other Benefits:

None noted

Annual Benefit: $135.80

Areas for Improvement:

- Cease use of GPS integration with PDF files. GPS data should be integrated with the GIS directly and maps output from the GIS. Also, a software package called Fugafi is used to support this activity and is not needed since ArcGIS has sufficient functionality to replace this software.
- Require consultants to deliver assessment mapping results presented using a quality, georeferenced base map source, preferably the County GIS. This would simplify integration with other County mapping data. Preferably, these map results would be digital GIS data, but at a minimum, something beside hand-drawn maps from questionable base mapping sources.

New Opportunities:

- Track all "recognized environmental conditions" identified in the GIS. Many of these features are already tracked in other GIS data layers (facilities, for example) and could be simply indexed (as opposed to recreated or duplicated and stored in a new data layer).
- Track the location of all completed environmental assessments in the GIS, preferably with hyperlinks to report documents.
- Obtain GPS coordinates for all subsurface investigation points (soil borings and groundwater monitoring wells) and attribute data for associated geological and analytical parameters.

Benefits of Pursuing New Opportunities:

- This effort would enable the creation of a master Countywide recognized environmental conditions database. One of the first steps in performing a site assessment is to query a variety of Federal and State databases for these sites (e.g., facilities permitted under the Resource Conservation and Recovery Act). Typically, several hundred dollars are spent by the consultant to pay for a records research firm to conduct this query. Results are often inaccurate, outdated and misleading. A dataset maintained by the County could mean avoiding this recurring charge and obtaining higher-quality results. This would also enable County agencies to perform a 'pre-screening' site selection process, where high-risk sites are avoided entirely before time, money and effort are expended. It can also feed into Master Planning and CZMP processes to support proactive land management/site reuse efforts such as brownfields.
- The County would have a spatial inventory of and ready access to past reports and investigations. These data could then easily be shared with other County agencies (perhaps through an internal MyNeighborhood application). This would allow a 'pre-screening' site selection process, where high-risk sites are avoided entirely before time, money and effort are expended. It can also feed into Master Planning and CZMP processes to support proactive land management/site reuse efforts such as brownfields.
- Wells are already supposed to be permitted, logged and tracked; this process would leverage County dollars being spent and make the data readily accessible. In addition, having geological and analytical attribute data would feed into other County activities (geological mapping, for example) and assist with the site selection process. It would also create a permanent record of 'baseline' conditions at a site which could assist with proximal site assessments or determining past conditions at a location.

4.9.3 Food Facility Inspections

Activity: Food Facility Inspections
Primary Point of Contact:
Yvonne Deloatch
Overview:
COBCR 1.01.01 compliance inspections of over 2,800 annually permitted facilities currently in operation in the County. Investigations of food borne disease outbreaks, citizens' complaints, product recalls, and any other food-related matters. Furthermore disaster and/or emergency investigations of food service facilities are conducted on a twenty-four hour basis which includes response to requests concerning fires in food service facilities, food borne disease outbreaks, and outages of water, electricity, floods and similar crisis-related incidents. Appropriate enforcement activities related to food and drug recalls, facilities' liquor license transfer request inspections.
Interviewee(s) Providing Information:
Yvonne Deloatch, Rob Hirsch
Process with GIS:
GIS is used to locate facilities for inspections, tracking of violations, illnesses and complaints and to support emergency response efforts (such as visiting restaurants to enforce a "boil water" notice). Inspection jurisdictional boundaries are created, analyzed and maintained using GIS. Inspector workloads are mapped and jurisdictional boundaries adjusted to balance workloads. Maps are printed to illustrate and inform inspectors of these boundaries.
Process without GIS:
Without GIS, several changes would likely occur. A consultant would be employed to accomplish certain tasks. Many activities would be performed using paper maps or street atlases. Other actions simply wouldn't be performed due to the complexity and needed time and labor resources. Also, adjusting jurisdictional boundaries would be performed manually using paper maps and anecdotal data. It would also be performed less frequently due to the complexity and time consuming nature.
Benefits Assessment: (High, Medium, Low) Identify confidence level
• High
Benefits to Using GIS for this Activity:
• Helps to conforms with consent decree requirements • Better organized; supports better management of inspections staff • Allows linking a location with inspector • Provides data analysis required by budget • Provides a means to communicate data easily • Provides rapid response to water outages or other emergency response conditions

Annual Time Savings from Use of GIS:					
Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
52	3.5	48.5	1	48.5	$1,646.58
Other Benefits:					
None noted for DEPRM; however, note that DPW realizes significant cost avoidance/savings (monetary benefit) though compliance with consent decree requirements					
Annual Benefit: $1,646.58					
Areas for Improvement:					
None noted					
New Opportunities:					
Integrate facilities data layer update process currently in process with OIT.					
Benefits of Pursuing New Opportunities:					
If coordinated correctly, would reduce cost of updating this data layer.					

4.9.4 Recreational Hygiene Inspection

Activity: Recreational Hygiene Inspection

Primary Point of Contact:

Bill Clarke

Overview:

This includes providing a safe and healthy arena for water related recreational activities in accordance with the Baltimore County Code, State and County promulgated regulations. Inspections of camps, bathing beaches and swimming pools including any applicable day care pool inspections.

Interviewee(s) Providing Information:

Bill Clarke , Kimberly Wilson, Rob Hirsch

Process with GIS:

A GIS data layer was created to map all pool facilities within the County and it took 50 hours to locate 367 pools. The output of the layer is used to support routine inspections on an as-needed basis. Plans call for data layer to be updated every 3-5 years and it is estimated that these updates will take about 5 hours.

Process without GIS:

It would take an estimated 150 hours to manually create a map of all County pools. This process would require using hard copy aerial photos and ADC road maps to locate each pool and to consolidate and present it on a Countywide map.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Improved efficiency during inspection execution

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
150	50	100	1	100	$3,395.00

Other Benefits:

None noted

Annual Benefit: $3,395.00

Areas for Improvement:

None noted

New Opportunities:
None noted
Benefits of Pursuing New Opportunities:
None noted

4.9.5 Sanitary Sewage Overflow Monitoring and Response

Activity: Sanitary Sewage Overflow Monitoring and Response

Primary Point of Contact:

Bill Clarke and Yvonne Deloatch

Overview:

Whenever a sanitary sewage overflow occurs which may negatively impact public health or the environment, samples of publicly accessible natural water bodies are collected for bacteriological analysis to ascertain the level of contamination. Public warning signage may be posted when appropriate.

Interviewee(s) Providing Information:

Yvonne Deloatch, Rob Hirsch

Process with GIS:

Location of overflows are mapped in the GIS and downstream affected water bodies are identified. Sample data locations and analytical results are tracked and managed in the GIS. Location of signage postings are identified and mapped and used to support posting efforts. These data and products feed into the legally-required public notification and reporting requirements.

Process without GIS:

Activity would be accomplished using paper maps. Analytical results would be tracked in a database.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Maintain compliance with Consent Decree which requires use of GIS
- Improved response time and effectiveness to public health threats
- Increased operational efficiency

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
1	0.5	0.5	19	9.5	$322.53

Other Benefits:

None noted for DEPRM; however, note that DPW realizes significant cost avoidance/savings (monetary benefit) though compliance with consent decree requirements

Annual Benefit: $322.53

Areas for Improvement:
None noted
New Opportunities:
Make data available through a MyNeighborhood application and allow stakeholders to create their own maps and grant access to current program data.
Benefits of Pursuing New Opportunities:
Expedite and simplify public notification of potential health risks. Reduce DEPRM staff hours by empowering others to access current data and create their own mapping products.

4.9.6 Sanitary Survey of TNC Facilities

Activity: Sanitary Survey of TNC Facilities

Primary Point of Contact:

Yvonne Deloatch

Overview:

The Maryland Department of the Environment (MDE) has delegated to the County the responsibility for quarterly monitoring of food service facilities' and small businesses' private water supplies for bacteriological and limited chemical analyses (nitrate and nitrite). The designated private water systems are self-monitored, but are required to report to DEPRM, under a Transient Noncommunity Water System (TNC) Agreement. These facilities' sewage disposal systems are also surveyed during the required inspections. Every five years a sanitary survey is conducted on each facility's water and sewage disposal systems as required by applicable federal and state regulations.

Interviewee(s) Providing Information:

Yvonne Deloatch, Rob Hirsch

Process with GIS:

GIS is used to identify facilities (220 TNCs in within the County) and residents impacted by a spill. When a spill is identified, notify all residents and business owners within a half-mile radius of the spill are notified. This is accomplished by buffering the spill location and intersecting the buffer with the tax layer to identify property owners and their mailing address.

Process without GIS:

This would be done using paper tax maps. A spill location would be manually drawn, buffered and affected property owners identified.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Improved response time and effectiveness to public health threats
- Increased operational efficiency

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
7	3	4	0.2	0.8	$27.00

Other Benefits:

None noted

Annual Benefit: $27.00
Areas for Improvement:
None noted
New Opportunities:
Make data available through a MyNeighborhood application and allow stakeholders to create their own maps and grant access to current program data.
Benefits of Pursuing New Opportunities:
Expedite and simplify public notification of potential health risks. Reduce DEPRM staff hours by empowering others to access current data and create their own mapping products.

4.9.7 Waste Management Facility Inspection and Monitoring

Activity: Waste Management Facility Inspection and Monitoring

Primary Point of Contact:

Bill Clarke and Yvonne Deloatch

Overview:

This involves routine inspections of landfills and recycling facilities. This includes the review of data from the analyses of water and soil samples collected from landfills and recycling facilities. Water samples are collected from residential wells located adjacent to some of these facilities. Response to and investigation of complaints related to illegal disposal of wastes and the release of hazardous chemicals or petroleum products. Corrective action, as required by County law and/or regulation, is conducted by person(s) responsible for the problem or by private contractors authorized by and under the supervision of this Section.

Interviewee(s) Providing Information:

Jerry Siewierski, Rob Hirsch

Process with GIS:

Permitted facilities are tracked in the GIS and help route inspectors. Maps are produced to support public hearings involving landfill contamination problems. Also used for public outreach to help citizens understand how landfill impacts communities, streams and drinking water wells. Hazardous material releases are mapped and potentially responsible parties identified using the tax layer.

Process without GIS:

Facilities would be tracked on paper maps and/or a database. Mapping products need to support public meetings would likely be created by consultants. Releases would be mapped manually and potentially responsible parties identified from paper tax maps and owner databases.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
20	10	10	2	20	$679.00

Other Benefits:

None noted

Annual Benefit: $679.00
Areas for Improvement:
Bring GIS to the field (laptop or similar) to support inspectors in responding to dumping complaints and hazardous material releases. This would enable identification of potentially responsible parties while still in the vicinity of the incident and initiate enforcement activity immediately.
New Opportunities:
Track dumping complaints and other releases as a GIS data layer.
Benefits of Pursuing New Opportunities:
Would help identify dumping patterns and/or chronic offenders. Also would feed into the recognized environmental conditions data layer proposed under the Environmental Site Assessment activity.

4.10 Environmental Health Outreach

Program: Environmental Health Outreach
Primary Point of Contact:
Bill Clarke and Yvonne Deloatch
Overview:
This program, mandated by Baltimore County Code, provides for the inspection and enforcement of the Code of Baltimore County Regulations (COBCR) 1.01.01 - Food Service Facilities. This section also has delegated authority and responsibility from the Secretary of the Maryland State Department of Health and Mental Hygiene (DHMH) for food establishments regulated under COMAR 10.15.03 – Food Service Facilities.
Funding:
No funding identified
Mandates:
COBCR and COMAR 10.15.03
Political Benefits:
Legal compliance
Social Benefits:
Public education and awareness of important public health issues including rodent and mosquito control, household hazardous waste, maintenance of private well/septic, restaurant and pool facility management, recreational water quality monitoring and recycling.
Products/Services:
None identified
Customers:
• Office of Planning • Diners (people who eat in County restaurants) • Businesses (including restaurants, waste transportation/generation/storage facilities) • County residents • Government agencies • Elected officials

Data (Enterprise Layers are Listed in Bold):

- **AddressPoints (View)**
- Basic Services - Water
- **Buildings**
- Commercial Pools
- **Contours**
- County Boundary
- **Facilities**
- Geology
- Government Lands
- Hydrologic Facilities
- **Hydrology**
- Impervious Polygons
- Index Grid - ADC Map
- Landfills
- Light Rail
- Master Plan - Sewer
- Master Plan - Water
- Metro Railroad
- Metropolitan District Line
- Monitoring—Various Programs
- **Orthophoto (1995)**
- **Orthophoto (1996)**
- **Orthophoto (1997)**
- **Orthophoto (1998)**
- **Orthophoto (2000)**
- **Orthophoto (2001)**
- **Orthophoto (2002)**
- **Orthophoto (2005)**
- **Orthophoto Quarter Quads - (1994)**
- Outfall—Major Drainage Areas
- Outfall—Minor
- Publicly Owned Land
- Pumping Stations
- Railroads
- Refuse Collection Routes
- **Roads**
- Sanitary Sewer Overflow
- Sewer
- Sewer Relief Points
- Soils
- Storm Drains (Geodatabase)
- Stormwater (Geodatabase)
- Streams and Ponds
- **Street Centerlines**
- **Street Centerlines (View)**
- Subwatersheds
- **Tax Parcel**
- Urban Rural Demarcation Line (URDL)
- Zip Codes
- Zoning
- Zoning - 1999
- Zoning Overlay Districts

Applications Used:

- ArcGIS (Standard)

Associated Activities:

4.10.1 Community Hygiene Outreach
4.10.2 Recreational Water Monitoring
4.10.3 Waste Management Education, Outreach and Assistance

Total Annual Benefits – Captured at the Program Level instead of the Activity Level

Program: Basic Services **- Annual Time Savings from Use of GIS:**

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
14	4	10	4	40	$1,358.00

Other Benefits:

None noted

Annual Benefit: $1,358.00

4.10.1 Community Hygiene Outreach

Activity: Community Hygiene Outreach

Primary Point of Contact:

Bill Clarke and Yvonne Deloatch

Overview:

This activity involves conducting programs to educate communities about rodent and mosquito control and prevention, the proper handling and disposal of household chemical wastes, and the use and maintenance of private water and septic systems. This section also organizes community clean-up projects using local organizations and volunteers.

Interviewee(s) Providing Information:

Yvonne Deloatch, Rob Hirsch

Process with GIS:

GIS is used to zoom to sites of interest, layers are rendered and overlaid, text and marginalia placed to create electronic and hard-copy map output. Maps are a key deliverable for this activity and are used to illustrate results to inform and educate the public. GIS is also used to monitor and track program progress which feeds into the presentation process.

Process without GIS:

Likely, this program would make do without mapping data to illustrate program goals and support educational projects. However, if maps were created, they would be drawn by hand and used less frequently due to the time required for preparation. Base mapping data would be derived from multiple hard-copy sources such as aerial photographs and road maps. Scales, dates and quality would vary and require reduction/enlargement on a photocopier and transference using a light table and manual cartographic techniques. Results would be less aesthetically pleasing, professional and accurate than those developed using GIS.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- Medium

Benefits to Using GIS for this Activity:

- Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data
- Facilitates communication of program goals and accomplishments

Annual Time Savings from Use of GIS: Captured at the Program Level

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)

Other Benefits:
None noted
Areas for Improvement:
None noted
New Opportunities:
None noted
Benefits of Pursuing New Opportunities:
None noted

4.10.2 Recreational Water Monitoring

Activity: Recreational Water Monitoring

Primary Point of Contact:

Bill Clarke

Overview:

Staff conducts routine microbiological sampling of the County's recreational waters and permitted natural bathing waters.

Interviewee(s) Providing Information:

Rob Hirsch

Process with GIS:

GIS technology is used to visualize watersheds, identify, recover and document sampling locations, plan sample events and generate associated mapping products. Areas of interest are retrieved and maps are generated to present results of sampling events. GPS technology is used to collect position data, visualize results, plan sample events and navigate to sample locations.

Process without GIS:

Products would be largely limited to tabular data and static maps. Sampling locations would be estimated on topographic maps. GPS technology could still be used to collect position data and navigate to sample locations, but not for visualization or presentation.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- Medium

Benefits to Using GIS for this Activity:

- Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data
- Integration of GPS data to enhance accurate decision making and produce accurate mapping products
- Facilitates communication of program goals and accomplishments

Annual Time Savings from Use of GIS: Captured at the Program Level

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)

Other Benefits:

None noted

Areas for Improvement:
Move GPS data (sample locations) to SDE for improved data management and distribution.
New Opportunities:
Make data available through a MyNeighborhood application and allow stakeholders to create their own maps and grant access to current program data.
Benefits of Pursuing New Opportunities:
Expedite and simplify public notification of potential health risks and routine sampling results. Reduce DEPRM staff hours by empowering others to access current data and create their own mapping products.

4.10.3 Waste Management Education, Outreach and Assistance

Activity: Waste Management Education, Outreach and Assistance
Primary Point of Contact:
Bill Clarke and Yvonne Deloatch
Overview:
This involves conducting programs to educate communities about the proper handling and disposal of household chemical wastes. Part of this program includes the operation of a facility for the collection, recycling and/or proper disposal of household chemical wastes, such as flammable solvents, paints, automotive fluids, pesticides, pool chemicals, acids, caustics, and other material that cannot be handled through the routine solid waste collection system. This includes providing technical assistance concerning the disposal of wastes and chemicals from sites operated by various County agencies. This assistance may include the review of sample data and/or the collection of soil and water samples from County owned properties. Providing support for the drafting and finalizing of annual reports to be submitted to State agencies. Upon request, technical assistance may be provided to private companies.
Interviewee(s) Providing Information:
Yvonne Deloatch, Rob Hirsch
Process with GIS:
GIS is used to zoom to sites of interest, layers are rendered and overlaid, text and marginalia placed to create electronic and hard-copy map output. Maps are a key deliverable for this activity and are used to illustrate results to inform and educate the public. GIS is also used to monitor and track program progress which feeds into the presentation process.
Process without GIS:
Likely, this program would make do without mapping data to illustrate program goals and support educational projects. However, if maps were created, they would be drawn by hand and used less frequently due to the time required for preparation. Base mapping data would be derived from multiple hard-copy sources such as aerial photographs and road maps. Scales, dates and quality would vary and require reduction/enlargement on a photocopier and transference using a light table and manual cartographic techniques. Results would be less aesthetically pleasing, professional and accurate than those developed using GIS.
Benefits Assessment: (High, Medium, Low) Identify confidence level
• Medium
Benefits to Using GIS for this Activity:
• Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data • Facilitates communication of program goals and accomplishments

Annual Time Savings from Use of GIS: Captured at the Program Level					
Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
Other Benefits:					
None noted					
Areas for Improvement:					
None noted					
New Opportunities:					
None noted					
Benefits of Pursuing New Opportunities:					
None noted					

4.11 Environmental Impact Review Program

Program: Environmental Impact Review Program
Primary Point of Contact:
Patricia Farr
Overview:
Environmental Impact Review evaluates and regulates the impact of land development proposals on watercourses, wetlands, water quality, forests, shorelines, threatened and endangered species, and fish, plant and wildlife habitat by the Baltimore County Development Regulations, Regulations for the Protection of Water Quality, Streams, Wetlands and Floodplains; and State-mandated Regulations for Forest Buffer, Forest Conservation and Chesapeake Bay Critical Area Regulations.
Funding:
There is no funding for this program.
Mandates:
Baltimore County Development Regulations, Regulations for the Protection of Water Quality, Streams, Wetlands and Floodplains; and State-mandated Regulations for Forest Buffer, Forest Conservation and Chesapeake Bay Critical Area Regulations.
Political Benefits:
Legal compliance.
Social Benefits:
Evaluation of land development project impacts on environmental issues, answer citizens' questions.
Products/Services:
Protection of water quality, streams, wetlands, floodplains throughout the County during the development review process.
Customers:
• County residents • Businesses • Government agencies • Elected officials

Data (Enterprise Layers are Listed in Bold):

- **AddressPoints (View)**
- Agricultural Preservation
- Basic Services - Water
- Buffers with Forest Cover-1996
- **Buildings**
- Bulkheads
- Chesapeake Bay Critical Area
- Congressional Districts (2002)
- **Contours**
- Councilmanic Districts (2002)
- County Boundary
- CZMP Zoning Issues (1996)
- CZMP Zoning Issues (2000)
- Development Plans
- Easement
- Election Districts
- **Facilities**
- Flood Insurance Maps (FEMA)
- Floodwalls
- Forest Conservation Management Areas
- Forest Harvest
- Government Lands
- Hydrologic Facilities
- **Hydrology**
- Impervious Polygons
- Index Grid - 200 Scale (BCMD)
- Index Grid - 200 Scale (MCS)
- Index Grid - 600 Scale
- Index Grid - ADC Map
- Legislative Districts (2002)
- Master Plan - Sewer
- Master Plan - Water
- Orchards
- **Orthophoto (1995)**
- **Orthophoto (1996)**
- **Orthophoto (1997)**
- **Orthophoto (1998)**
- **Orthophoto (2000)**
- **Orthophoto (2001)**
- **Orthophoto (2002)**
- **Orthophoto (2005)**
- **Orthophoto Quarter Quads - (1994)**
- Publicly Owned Land
- **Roads**
- **SimComFrstDiv**
- **SimCon**
- Soils
- Spot Elevations
- State Legislative District
- Streams and Ponds
- **Street Centerlines**
- **Street Centerlines (View)**
- Subwatersheds
- **Tax Parcel**
- Tree Cover
- Tree Rows
- Urban Rural Demarcation Line (URDL)
- Watersheds - Major
- Wetlands
- Wetlands - NWI
- Wetlands - Special Area Management
- Wooded
- Zoning
- Zoning - 1999
- Zoning Overlay Districts

Applications Used:

- ArcGIS (Standard)
- ArcGIS DataQuery

Associated Activities:

4.11.1 Citizen Assistance
4.11.2 Development Review and Management
4.11.3 Environmental Enforcement Inspections
4.11.4 Environmental Enforcement Complaints

4.11.1 Citizen Assistance

Activity: Citizen Assistance

Primary Point of Contact:

Patricia Farr

Overview:

This responds to citizen inquiries and complaints concerning water pollution, wetland filling, forest clearing and stream erosion, initiating enforcement action for violations of County environmental regulations, and providing recommendations for the correction and/or abatement of these problems. This task includes handling of citizen walk-ins to the Department.

Interviewee(s) Providing Information:

Patricia Farr, Rob Hirsch

Process with GIS:

The public makes a request for information telephonically or in person; these requests are directed to the on-duty staff ("office duty"). Typically, these are site-specific questions in which case the GIS is consulted to identify local constraints or circumstances. As needed, maps are printed to help document the situation or answer the citizen question. Where required, GIS mapping data is printed to facilitate and expedite a site visit.

Process without GIS:

Staff would respond generally (instead of site-specifically) to questions based on the information provided. Where warranted, a site visit would be required in order to make specific determinations. Paper maps would be consulted to determine site conditions.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- Medium

Benefits to Using GIS for this Activity:

- Able to give site-specific answers
- Increased consumer confidence
- Minimize field visits and maximize time on-site where field visits are unavoidable
- Coordination with other on-going projects is improved

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
0.22	0.08	.14	4500	630	$21,388.50

Other Benefits:

None noted

Annual Benefit: $21,388.50
Areas for Improvement:
Chesapeake Bay Critical Areas must be digitized, orthorectified and maintained in the GIS. Not only would this improve the accuracy and ease of determinations, but would also greatly expedite it. The authoritative and legal source being maintained on a limited and aging set of paper maps presents a threat to this program and process.
New Opportunities:
1. Wetland and stream buffers should be created in the GIS to simplify the in/out determination process 2. A digital submission of proposed development plans should be incorporated. This would supplement (not replace) the current paper map submittal process. 3. Publish data through a MyNeighborhood application to reduce customer data inquires and make project information readily available.
Benefits of Pursuing New Opportunities:
1. Greatly expedite and improve the accuracy of the in/out determination process 2. Greatly expedite and improve the accuracy of the plan review process. This would also expedite and simplify the creation/maintenance of new/revised GIS features that are impacted by the proposed development. 3. Stakeholders have ready access to program data and are empowered to: • Perform their own analyses • Make their own maps • Answer questions without directly impacting DEPRM staff time • Understand program priorities

4.11.2 Development Review and Management

Activity: Development Review and Management
Primary Point of Contact:
Patricia Farr
Overview:
Reviewing plans, conducting field evaluations, providing recommendations for revisions to avoid or minimize impacts, and attending development meetings. This task includes follow up inspections of mitigation plans, regular inspections of County easements, preparation of revisions to Code and policy and database management. Regular coordination with Federal, State and County agencies occurs to resolve development-related issues.
Interviewee(s) Providing Information:
Patricia Farr, Rob Hirsch
Process with GIS:
Proposed development plans are transmitted to DEPRM for review. The project is reviewed, the site identified in the GIS and environmental issues evaluated. Based on the data presented in the GIS a determination is rendered and a field visit often avoided. Where required, GIS mapping data is printed to facilitate and expedite a site visit. On-going projects are tracked and managed using the GIS.
Process without GIS:
Since Chesapeake Bay critical area boundaries are not maintained in the GIS, the development review process is performed using paper maps. The official Chesapeake Bay critical area boundaries are mapped on a series of paper maps. These maps (at different scales, based on different base mapping sources) are retrieved and the site of interest plotted. Using manual cartographic techniques, reduction/enlargement with a photocopier and lift-up on a light table, a site determination is made. Hard copy maps are copied and taken to the field to assist with a site walk. A field visit would be required for virtually every proposed project. Paper maps (topography, for example) would be consulted to determine if any environmental issues or natural resource constraints existed and would be impacted by the proposed project. A time-consuming field visit would be required. Any mapping required based on site inspection findings would have to be done manually.
Benefits Assessment: (High, Medium, Low) Identify confidence level
• Medium
Benefits to Using GIS for this Activity:
• Able to give site-specific answers from the office • Increased efficiency and accuracy • Enhanced collaboration among County agencies • Reduced field visits

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
1.5	0.5	1	4700	4700	$159,565.00

Other Benefits:

None noted

Annual Benefit: $159,565.00

Areas for Improvement:

Chesapeake Bay Critical Areas must be digitized, orthorectified and maintained in the GIS. Not only would this improve the accuracy and ease of determinations, but it would also greatly expedite it. The authoritative and legal source being maintained on a limited and aging set of paper maps presents a threat to this program and process.

New Opportunities:

1. Wetland and stream buffers should be created in the GIS to simplify the in/out determination process
2. A digital submission of proposed development plans should be incorporated. This would supplement (not replace) the current paper map submittal process.
3. Publish data through a MyNeighborhood application to reduce customer data inquires and make project information readily available.

Benefits of Pursuing New Opportunities:

1. Greatly expedite and improve the accuracy of the in/out determination process
2. Greatly expedite and improve the accuracy of the plan review process. This would also expedite and simplify the creation/maintenance of new/revised GIS features that are impacted by the proposed development.
3. Stakeholders have ready access to program data and are empowered to:
    - Perform their own analyses
    - Make their own maps
    - Answer questions without directly impacting DEPRM staff time
    - Understand program priorities

4.11.3 Environmental Enforcement Inspections

Activity: Environmental Enforcement Inspections

Primary Point of Contact:

Patricia Farr

Overview:

Inspection and enforcement pertaining to all local and State-mandated regulatory programs implemented by Environmental Impact Review. Specifically, staff responds to citizen complaints, issue citations, attend and testify at legal hearings and court cases, and issue fines involving enforcement actions. This task also includes setting up inspection schedules.

Interviewee(s) Providing Information:

Patricia Farr, Rob Hirsch

Process with GIS:

Development sites are reviewed in the GIS to determine their location and proximal environmental constraints. If an enforcement inspection field visit is warranted, a site map is printed to optimize time spent on-site. Orthophotography is used to help identify or document relatively new problems and occasionally used to prove violations in court.

Process without GIS:

A field visit would be required for virtually every active site. Enforcement staff would likely visit the site without the benefit of pre-planning or access to recent orthophotography. Any mapping required based on site inspection findings would have to be done manually.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- Medium

Benefits to Using GIS for this Activity:

- Evidence for legal proceedings is available to support enforcement actions
- Able to give site-specific answers from the office
- Increased efficiency and accuracy
- Reduced field visits

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
0.75	0.25	.5	900	450	$15,277.50

Other Benefits:

None noted

Annual Benefit: $15,277.50
Areas for Improvement:
Chesapeake Bay Critical Areas must be digitized, orthorectified and maintained in the GIS. Not only would this improve the accuracy and ease of determinations, but it would also greatly expedite it. The authoritative and legal source being maintained on a limited and aging set of paper maps presents a threat to this program and process.
New Opportunities:
1. Wetland and stream buffers should be created in the GIS to simplify the in/out determination process 2. A digital submission of proposed development plans should be incorporated. This would supplement (not replace) the current paper map submittal process. 3. Publish data through a MyNeighborhood application to reduce customer data inquires and make project information readily available.
Benefits of Pursuing New Opportunities:
1. Greatly expedite and improve the accuracy of the in/out determination process 2. Greatly expedite and improve the accuracy of the plan review process. This would also expedite and simplify the creation/maintenance of new/revised GIS features that are impacted by the proposed development. 3. Stakeholders have ready access to program data and are empowered to: • Perform their own analyses • Make their own maps • Answer questions without directly impacting DEPRM staff time • Understand program priorities

4.11.4 Environmental Enforcement Complaints

Activity: Environmental Enforcement Complaints

Primary Point of Contact:

Patricia Farr

Overview:

Inspection and enforcement pertaining to all local and State-mandated regulatory programs implemented by Environmental Impact Review. Specifically, staff responds to citizen complaints, issue citations, attend and testify at legal hearings and court cases, and issue fines involving enforcement actions. This task also includes establishment and maintenance of an enforcement database and coordination with County, State and Federal agencies.

Interviewee(s) Providing Information:

Patricia Farr, Rob Hirsch

Process with GIS:

Once a complaint is registered, the area of concern is reviewed in the GIS to help identify, quantify and resolve problem. If a field visit is warranted, a site map is printed to optimize time spent on-site. Orthophotography is used to help identify or document relatively new problems and occasionally used to prove violations in court.

Process without GIS:

A field visit would be required for virtually every complaint that sounded legitimate. Enforcement staff would likely visit the site without the benefit of pre-planning or access to recent orthophotography. Any mapping required based on site inspection findings would have to be done manually.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- Medium

Benefits to Using GIS for this Activity:

- Evidence for legal proceedings is available to support enforcement actions
- Able to give site-specific answers from the office
- Increased efficiency and accuracy
- Reduced field visits

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
0.75	0.25	.5	588	294	$9,981.30

Other Benefits:

None noted

Annual Benefit: $9,981.30
Areas for Improvement:
Chesapeake Bay Critical Areas must be digitized, orthorectified and maintained in the GIS. Not only would this improve the accuracy and ease of determinations, but it would also greatly expedite it. The authoritative and legal source being maintained on a limited and aging set of paper maps presents a threat to this program and process.
New Opportunities:
1. Wetland and stream buffers should be created in the GIS to simplify the in/out determination process 2. A digital submission of proposed development plans should be incorporated. This would supplement (not replace) the current paper map submittal process. 3. Publish data through a MyNeighborhood application to reduce customer data inquires and make project information readily available.
Benefits of Pursuing New Opportunities:
1. Greatly expedite and improve the accuracy of the in/out determination process 2. Greatly expedite and improve the accuracy of the plan review process. This would also expedite and simplify the creation/maintenance of new/revised GIS features that are impacted by the proposed development. 3. Stakeholders have ready access to program data and are empowered to: • Perform their own analyses • Make their own maps • Answer questions without directly impacting DEPRM staff time • Understand program priorities

4.12 Forest Sustainability Initiative

Program: Forest Sustainability Initiative
Primary Point of Contact:
Don Outen
Overview:
The Section develops and implements the County's forest sustainability program, an element of the Green Renaissance initiative. Staff coordinates the County's participation as one of three U.S. County pilots for the Linking Communities to the Montreal Process Criteria and Indicators project. Staff coordinates the implementation of the Forest Sustainability Strategy drafted in 2005. Staff coordinates with the USDA Forest Service, MD DNR, and American Forests for the implementation of the 2005 Forest Sustainability Memorandum of Understanding. Staff participates in the National Roundtable on Sustainable Forests.
Funding:
Grants- EPA, NFWF, US Forest Service's Growing Home campaign; NFW Foundation
Mandates:
Forest Sustainability Memorandum of Understanding
Political Benefits:
Strategic use of forest cover data and meeting water quality requirements.
Social Benefits:
Management of forest resources, overall improved health of the ecosystem, improved water and air quality.
Products/Services:
Leaf-on color infrared orthophotography and associated GIS data to support a urban canopy analysis project; database tracking coupon results documenting tree plantings.
Customers:
• County residents • Businesses • Government agencies • Elected officials

Data (Enterprise Layers are Listed in Bold):

- Agricultural Preservation
- Buffers with Forest Cover-1996
- **Buildings**
- Capital Improvement Projects
- Chesapeake Bay Critical Area
- Conservation Easements
- **Contours**
- County Boundary
- Digital Elevation Models
- Easement
- Flood Insurance Maps (FEMA)
- Forest – 1996 Image Polys
- Forest Conservation Management Areas
- Forest Corridors
- Forest Cover – 1996 and 2000
- Forest Harvest
- Geology
- Government Lands
- **Hydrology**
- Impervious Polygons
- Land Use 2002
- Monitoring—Various Programs
- Multiple Ecological Use Forest Model
- Orchards
- **Orthophoto (2005)**
- Parcel Based Land Use
- Publicly Owned Land
- Reservoirs
- Restriction
- **Roads**
- Rural Legacy
- Soils
- Streams and Ponds
- **Street Centerlines**
- Subwatersheds
- **Tax Parcel**
- Tree Cover
- Tree Rows
- Urban Rural Demarcation Line (URDL)
- Use Class - Streams
- Watersheds - Major
- Wetlands
- Wetlands - NWI
- Wetlands - Special Area Management
- Wooded
- Zoning
- Zoning - 1999

Applications Used:

- ArcGIS (Standard)
- ESRI Extensions
- ArcGIS DataQuery

Associated Activities:

4.12.1 Forest Health Assessments and Management Plans
4.12.2 Forest Sustainability Research
4.12.3 Growing Home Campaign
4.12.4 Rural Residential Stewardship Initiative

4.12.1 Forest Health Assessments and Management Plans

Activity: Forest Health Assessments and Management Plans

Primary Point of Contact:

Don Outen

Overview:

Staff manages a pilot consultant project to conduct a forest health assessment of the nearly 900 acres of forests at Oregon Ridge Park and to prepare a forest management plan to guide actions needed to maintain forest health. Planning is conducted for future assessments and management plans for other large County-owned forest areas.

Interviewee(s) Providing Information:

Rob Hirsch; Emeka Obilor; Donald Outen

Process with GIS:

Forest health, site boundaries and the location of trees is monitored using orthophotography in the GIS. Layers including soils, topography, orthophotography, cadastral boundaries and streams are used to create a base map for future assessments and management plans. Maps are printed and are used to help present and document activity progress.

Process without GIS:

If the County wanted to prepare these maps, they would be drawn by hand and field visits would be required to confirm and refine the maps. Analytical processes would be performed by photocopying and overlaying paper maps (such as topography) and aerial photos. Areas would be calculated manually using a planimeter and distances computed by hand. Maps would be drawn by hand and used less frequently due to the time required for preparation. Results would be less accurate than those developed using GIS.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- Medium

Benefits to Using GIS for this Activity:

- Effective communication of activity goals and accomplishments
- Validation of planting activities

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
12	7	5	1	5	$169.75

Other Benefits:

None noted

Annual Benefit: $169.75
Areas for Improvement:
None noted
New Opportunities:
Obtain and use leaf-on (and/or possibly multi-spectral) orthophotography to identify potential problems and prioritize areas for field visit to maximize inspector resources.
Benefits of Pursuing New Opportunities:
Perform remote assessments of forest health and present aesthetically pleasing mapping products.

4.12.2 Forest Sustainability Research

Activity: Forest Sustainability Research
Primary Point of Contact:
Don Outen
Overview:
Staff works on projects and pilot studies in Baltimore County in support of implementation of the Forest Sustainability Strategy and Forest Health Monitoring. Projects include the development of a Countywide forest health monitoring network, the development of models of economic sustainability of public and private forests, studies in support of strengthening forest products markets, and valuation models of the ecological services provided by the County's urban forest canopy. Staff conducts landscape assessments of forest patch characteristics to enhance understanding of the vulnerability of forest areas and to identify opportunities to enhance forest sustainability. Work is also performed on the development and use of ecological and economic sustainability indicators and preparation of the County's biannual report on progress toward forest sustainability.
Interviewee(s) Providing Information:
Rob Hirsch; Emeka Obilor; Donald Outen
Process with GIS:
A unique urban forest canopy project was accomplished using leaf-on orthophotography and GIS technology. Forest health, site boundaries and the location of trees is monitored using orthophotography in the GIS. Layers including soils, topography, orthophotography, cadastral boundaries and streams are used to create a base map for future assessments and management plans. Maps are printed and are used to help present and document activity progress, as well as complement biannual reports.
Process without GIS:
The urban forest canopy project would not have been attempted without the County's demonstrated GIS capabilities. Maps needed to support reporting activities would be drawn by hand and field visits would be required to confirm and refine the maps. Analytical processes would be performed by photocopying and overlaying paper maps (such as topography) and aerial photos. Areas would be calculated manually using a planimeter and distances computed by hand. Maps would be drawn by hand and used less frequently due to the time required for preparation. Results would be less accurate than those developed using GIS.
Benefits Assessment: (High, Medium, Low) Identify confidence level
• Medium

Benefits to Using GIS for this Activity:

- The urban forest canopy project would not have been awarded. These types of nationwide projects gain positive attention for the County and further it's reputation as a leader in this area.
- Effective communication of activity goals and accomplishments
- Validation of planting activities
- Increased efficiency and accuracy (digital review puts multiple data sources in a geographic context for simplified evaluation)
- Reduced field visits

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
27	8	19	1	19	$645.05

Other Benefits:

The County was invited to participate in a national initiative from the US Forest Service, due in large part of their successful program and GIS capabilities. This enabled access to Forest Service consultants and experts expertise to help enhance programs.

Annual Benefit: $645.05

Areas for Improvement:

None noted

New Opportunities:

Obtain and use leaf-on (and/or possibly multi-spectral) orthophotography. Create polygons representing preservation areas. Perform remote site inspection to identify violations or potential problems; prioritize areas for field visit to maximize inspector resources. Automate comparison of preservation area polygons against land use/land cover polygons as an initial filtering tool.

Benefits of Pursuing New Opportunities:

Perform remote assessments of forest health and present aesthetically pleasing mapping products.

4.12.3 Growing Home Campaign

Activity: Growing Home Campaign
Primary Point of Contact:
Don Outen
Overview:
Growing home campaign, $50K grant (NFWF, US Forest Service) plus $30K from corporations ($25k BGE, $5K Weyerhaeuser Foundation). Campaign seeks to educate County homeowners about the benefits to them, their community, and the environment of planting trees. It provides a $10 coupon toward the purchase of each $25+ tree that homeowners plant in their yards. The coupon is cost-shared with the retail industry, resulting in a total 4:1 leverage for the County coupon cost-share. The Campaign has a goal of 10,000 new trees for the Spring 2006 pilot. This project is supported by a one-year grant from the US Forest Service, awarded through the 2004 Chesapeake Bay Small Watershed grant program.
Interviewee(s) Providing Information:
Rob Hirsch; Emeka Obilor; Donald Outen
Process with GIS:
Perform a preliminary analysis of GIS data of forest and urban areas of watersheds to identify the areas of greatest need for Urban Tree Canopy. Coupons are then distributed out to citizens to plant trees. Once the coupons are returned to the County, the address where a tree was planted is geocoded in the GIS. Additional analysis is performed to identify where there is still a need for trees.
Process without GIS:
Paper maps of forests and watershed are used, a planimeter is used for strategic planning. After trees have been planted and coupons are received back, a street map is used to identify addresses and additional maps would be created and the information would then be transposed onto each map, then each point would be manually counted in order to provide analysis of the data.
Benefits Assessment: (High, Medium, Low) Identify confidence level
• High
Benefits to Using GIS for this Activity:
• Was invited to join "Linking Communities" because of GIS capabilities & amount of "rich" data • Has brought in funding & free tech services • Forest Service has provided free assessment method, called "Forest Health Monitoring" • "Growing Home" targets citizens by giving them a tree coupon. In order to get rebate, they have to mail in form, which in turn tracks planted trees • Tree coupon locations were identified allowing tracking of success of "Growing Home"

Annual Time Savings from Use of GIS: Captured at the Program Level					
Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
29	11	18	1	18	$611.10
Other Benefits:					
None noted					
Annual Benefit: $611.10					
Areas for Improvement:					
None noted					
New Opportunities:					
None noted					
Benefits of Pursuing New Opportunities:					
None noted					

4.12.4 Rural Residential Stewardship Initiative

Activity: Rural Residential Stewardship Initiative

Primary Point of Contact:

Don Outen

Overview:

Seeks to educate rural residential lot owners about their role as managers of larger forest and stream systems shared with other lot owners. Landowners are provided an incentive – free tree planting – to convert mowed, "excess" lawn areas to new forests. Landowners agree to monitor and maintain the reforestation areas on their lots. The project is supported by a one-year grant from the US Environmental Protection Agency, awarded through the 2004 Chesapeake Bay Small Watershed grant program.

Interviewee(s) Providing Information:

Patricia Cornman, Rob Hirsch

Process with GIS:

Sites of interest are identified in the GIS and maps are printed to engage and educate the public at neighborhood meetings. GPS is used to map forested areas and these data are integrated with the GIS and mapping products. The tax layer is used to identify tree owners.

Process without GIS:

Base mapping data would be derived from multiple hard-copy sources such as aerial photographs and topographic maps. Scales, dates and quality would vary and require reduction/enlargement on a photocopier and transference using a light table and manual cartographic techniques. Results would be less aesthetically pleasing, professional and accurate than those developed using GIS. Maps would be drawn by hand and used less frequently due to the time required for preparation.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- Medium

Benefits to Using GIS for this Activity:

- Effective public education on forest issues

Annual Time Savings from Use of GIS: Captured at the Program Level

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
168	56	112	2	224	$7,604.80

Other Benefits:

EPA Grant $27,000, although these funds are not directly tied to GIS

Annual Benefit: $7,604.80

Areas for Improvement:
None noted
New Opportunities:
Enhanced used of GPS to identify specific points for reforestation and to monitor the health of the forests. Also, an invasive species data layer would help to identify threats to forest health.
Benefits of Pursuing New Opportunities:
Further enhancement of program goals and increased operational efficiency.

4.13 Groundwater Management Program

Program: Groundwater Management Program
Primary Point of Contact:
Kevin Koepenick
Overview:
The mission of Groundwater Management is to protect and manage the County groundwater resources.
Funding:
Chesapeake Bay Restoration Fund ($900,000 Grant Proposal Pending with MDE)
Mandates:
COMAR (MD Annotated Code Environment Article 4-411.2 passed in 2005- County must notify all well owners within half-mile of detected contamination within 10 days), COBCR, CWA
Political Benefits:
Legal compliance
Social Benefits:
Protection of drinking water resources, management of chemical and sewage releases. Support of public meetings and education regarding threats to the environment and drinking water resources (such as the Jacksonville gasoline contamination incident).
Products/Services:
Potable and monitoring well database and GIS data layers, local contamination data.
Customers:
• County residents • Businesses • Government agencies • Elected officials

Data (Enterprise Layers are Listed in Bold):		
• **AddressPoints (View)** • Basic Services - Water • **Buildings** • **Contours** • County Boundary • Development Plans • **Facilities** • Flood Insurance Maps (FEMA) • Geology • Government Lands • **Hydrology** • Impervious Polygons	• Master Plan - Sewer • Master Plan - Water • Metropolitan District Line • **Orthophoto (2005)** • Publicly Owned Land • **Roads** • Sewer • **SimComFrstDiv** • **SimCon** • Soils • Streams and Ponds • **Street Centerlines**	• **Street Centerlines (View)** • Subwatersheds • **Tax Parcel** • Urban Rural Demarcation Line (URDL) • Watersheds - Major • Wetlands • Wetlands - NWI • Wetlands - Special Area Management • Zoning • Zoning - 1999
Applications Used:		
• ArcGIS (Standard) • ESRI Extensions • ArcGIS DataQuery • ArcIMS		
Associated Activities:		
4.13.1 Enforce State OSDS Regulations 4.13.2 Enforce State Well Regulations 4.13.3 Implement Groundwater Management and Protection Strategy 4.13.4 Notify Residents of Groundwater Contamination Occurrences		

4.13.1 Enforce State OSDS Regulations

Activity: Enforce State OSDS Regulations

Primary Point of Contact:

Kevin Koepenick

Overview:

Performs field evaluations and describes soils to assure compliance with State Code requirements for installation of on-site sewage disposal systems; conducts feasibility studies to remediate area-wide sewage disposal system failures which are in violation of State and County Codes; and designs and provides final review of on-site sewage systems for all proposals involving on-site water and sewer systems to assure compliance with State Code and Baltimore County development regulations.

Interviewee(s) Providing Information:

Kevin Koepenick, Rob Hirsch

Process with GIS:

Scaled site plans created for use in the field during septic system repairs. Septic repairs are documented by imaging a hard copy drawing. Scaled site plans created for completing sanitary surveys for the purpose of evaluating the need to extend sanitary sewer for health reasons. GIS used to verify existing conditions for percolation test applications by evaluating property boundaries, topography, soils, geology, streams and existing structures.

Process without GIS:

Analytical processes would be performed by photocopying and overlaying paper maps. Areas would be calculated manually using a planimeter. Maps would be drawn by hand and used less frequently due to the time required for preparation. Results would be less accurate than those developed using GIS.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Better documentation of field work (scaled plans that tie with the County base map instead of using un-scaled hand sketches)
- Address customers more efficiently because all necessary data is accessible
- Reduces the number of field visits

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
0.5	0.25	0.25	350	87.5	2,970.62

Other Benefits:
• MDE requires gas stations to identify high-risk areas. County would be liable if not in compliance.
Annual Benefit: $2,970.62
Areas for Improvement:
None noted
New Opportunities:
Locate all wells and septic systems as a GIS data layer. Pending approval of Bay Restoration Fund Project will enhance the need to use GIS to identify the location of all septic systems throughout the County and track the construction of all septic systems upgraded with enhanced nutrient removal technology.
Benefits of Pursuing New Opportunities:
Currently the County has to notify everyone in half-mile radius of a spill instead of just the potentially affected well owners. These data would also be beneficial in evaluating new plans and for locating potential groundwater/surface water contamination sources from malfunctioning septic systems.

4.13.2 Enforce State Well Regulations

Activity: Enforce State Well Regulations
Primary Point of Contact:
Kevin Koepenick
Overview:
Issuance of well drilling permits and surveillance of well construction activities. Inspections are conducted in all phases of construction, including initial location approval, grouting, yield testing and bacteriological and chemical sampling for Certificate of Potability, in order to maintain the integrity of groundwater as a resource. Sanitary surveys are conducted by this program to assess the need for the extension of metropolitan water and/or sewer utilities. The program also includes inspection and permitting of scavenger trucks, and site inspections for trailer permits and review of zoning variance requests.
Interviewee(s) Providing Information:
Kevin Koepenick, Rob Hirsch
Process with GIS:
ArcIMS Property Search is used to research site plans to identify older properties that do not have a plat and to locate sewer coverage area. Topography used as a planning tool to identify how to design a solution to a site-specific sewage problem. Maps are used to identify how to fix or extend a sewer, requests that typically originate at DPW. In addition, scaled site plans are created for use in the field to support approval of replacement domestic wells. These plans are scanned and used to update the well data layer. Scaled site plans created for completing sanitary surveys for the purpose of evaluating the need to extend sanitary water for health reasons. In addition, the GIS used to verify existing conditions for consumer questions about water quality testing and groundwater contamination concerns.
Process without GIS:
Without GIS, staff would need to do more field visits. Analysis would be significantly more time consuming. Results would be less accurate. Communication of information would also be significantly impacted because of the time required to prepare hard copy maps. In many cases, these services would not be provided due to staffing resources.
Benefits Assessment: (High, Medium, Low) Identify confidence level
• High
Benefits to Using GIS for this Activity:
• Reduces the number of field visits • Address customers more efficiently because all necessary data is accessible • More efficient response homeowners call • More efficient and confident in decision making • Useful in determining the level of effort associated with tasks

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference Per Year	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
0.5	0.25	0.25	400	100	$3,395.00

Other Benefits:

None noted

Annual Benefit: $3,395.00

Areas for Improvement:

None noted

New Opportunities:

Locate all wells and septic systems as a GIS data layer. Pending approval of Bay Restoration Fund Project will enhance the need to use GIS to identify the location of all septic systems throughout the County and track the construction of all septic systems upgraded with enhanced nutrient removal technology.

Benefits of Pursuing New Opportunities:

Currently the County has to notify everyone in half-mile radius of a spill instead of just the potentially affected well owners. These data would also be beneficial in evaluating new plans and for locating potential groundwater/surface water contamination sources from malfunctioning septic systems.

4.13.3 Implement Groundwater Management and Protection Strategy

Activity: Implement Groundwater Management and Protection Strategy

Primary Point of Contact:

Kevin Koepenick

Overview:

Establishment of a long-term, regional groundwater monitoring program, based upon the results of the 1998 Maryland Geological Survey Report. Research and evaluation of technical and regulatory management solutions to areas not served by public sewer where chronic septic failures are occurring; Hydrogeologic consultation within County government for litigation and development projects; Evaluation of Hydrogeologic Assessments and Water Balance Assessments for commercial development proposals in ground water-dependent areas; Implementation of the County's golf course guidelines pertinent to golf course construction and groundwater monitoring; and Development of a groundwater education program.

Interviewee(s) Providing Information:

Kevin Koepenick, Rob Hirsch

Process with GIS:

GIS is used to create maps to verify existing conditions, track and communicate areas of groundwater quality or water quantity concerns.

Process without GIS:

Without GIS, staff would need to do more field visits. Analysis would be significantly more time consuming and results would be less accurate. Communication of information would also be significantly impacted. In many cases, these services would not be provided due to staffing resources.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Reduces the number of field visits
- Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data
- More efficient and confident in decision making.
- Useful in determining the level of effort associated with tasks

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # of Iterations	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
40	10	30	3	90	$3,055.50

Other Benefits:
None noted
Annual Benefit: $3,055.50
Areas for Improvement:
None noted
New Opportunities:
Locate all wells and septic systems as a GIS data layer. Pending approval of Bay Restoration Fund Project will enhance the need to use GIS to identify the location of all septic systems throughout the County and track the construction of all septic systems upgraded with enhanced nutrient removal technology.
Benefits of Pursuing New Opportunities:
Currently the County has to notify everyone in half-mile radius of a spill instead of just the potentially affected well owners. These data would also be beneficial in evaluating new plans and for locating potential groundwater/surface water contamination sources from malfunctioning septic systems.

4.13.4 Notify Residents of Groundwater Contamination Occurrences

Activity: Notify Residents of Groundwater Contamination Occurrences

Primary Point of Contact:

Kevin Koepenick

Overview:

State law requires that counties be responsible for notifying all residents in rural areas (areas served by well water supplies) that are within half-mile of a detected petroleum ground contamination occurrence.

Interviewee(s) Providing Information:

Kevin Koepenick, Rob Hirsch

Process with GIS:

GIS used to identify all properties within a half-mile radius
Property owner information obtained to establish mailing list
Scaled site plans created for inclusion in mailing
GIS used to track and monitor the testing of individual water supplies as the investigation/remediation of the contamination proceeds

Process without GIS:

Without GIS, staff would need to do more field visits. Analysis would be significantly more time consuming. Results would be less accurate. Communication of information would also be significantly impacted. In many cases, the service/benefits may simply not be provided due to staffing resources.

Benefits Assessment: (High, Medium, Low) Identify confidence level

High

Benefits to Using GIS for this Activity:

- GIS can very quickly identify properties that must be notified
- More efficient response homeowners calls
- More efficient and confident in decision making

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
15	3	12	6	72	$2,444.40

Other Benefits:

None noted

Annual Benefit: $2,444.40

Areas for Improvement:

None noted

New Opportunities:

Note noted

Benefits of Pursuing New Opportunities:

None noted

4.14 NPDES Program

Program: NPDES Program
Primary Point of Contact:
Steven Stewart
Overview:
An EPA mandated program. WMM coordinates the NPDES Inter-Department Management Committee and provides coordination of all operational components. This NPDES permit focuses on non-point pollution loading modeling, storm event and base flow chemical monitoring, biological monitoring, geomorphologic monitoring, and illicit connections monitoring.
Funding:
There is no funding for this program.
Mandates:
CWA (NPDES), Chesapeake Bay 2000.
Political Benefits:
Legal compliance.
Social Benefits:
Monitoring and management of surface and groundwater quality. Also educational and citizen action programs, watershed planning, monitoring and clean up.
Products/Services:
Surface water monitoring locations and analytical results database and GIS data layers
Customers:
• County residents • Businesses • Government agencies • Elected officials

Data (Enterprise Layers are Listed in Bold):

- Agricultural Preservation
- Buffers with Forest Cover-1996
- **Buildings**
- Capital Improvement Projects
- **Census Block Groups (2000)**
- **Census Blocks (2000)**
- **Census Designated Place (2000)**
- **Census Tracts (2000)**
- Conservation Easements
- **Contours**
- County Boundary
- Development Plans
- Digital Elevation Models
- Discharge Permits
- Easement
- **Facilities**
- Forest – 1996 Image Polys
- Geology
- Government Lands
- **Hydrology**
- Impervious Polygons
- Land Use 1994
- Land Use 1997
- Land Use 1998
- Land Use 2002
- Monitoring—Various Programs
- Orchards
- **Orthophoto (2005)**
- Outfall—Major Drainage Areas
- Outfall—Minor
- Parcel Based Land Use
- Publicly Owned Land
- Reservoirs
- Restriction
- **Roads**
- Rural Legacy
- Save Our Streams (SOS)—Monitoring Sites
- **SimComFrstDiv**
- **SimCon**
- Soils
- Storm Drains (Geodatabase)
- Storm Water Management Facilities
- Stormwater (Geodatabase)
- Streams and Ponds
- **Street Centerlines**
- Subwatersheds
- **Tax Parcel**
- Tree Cover
- Tree Rows
- Urban Rural Demarcation Line (URDL)
- Use Class - Streams
- Watersheds - Major
- Wetlands
- Wetlands - NWI
- Wetlands - Special Area Management
- Wooded
- Zoning
- Zoning - 1999

Applications Used:

- ArcGIS (Standard)
- ESRI Extensions

Associated Activities:

4.14.1 Annual Report
4.14.2 Illicit Connection Investigations
4.14.3 Watershed Action Planning

4.14.1 Annual Report

Activity: Annual Report

Primary Point of Contact:

Steven Stewart

Overview:

Analysis and reporting of structural stormwater and sediment control facilities, Countywide source control practices, education, DEPRM capital restoration projects summary, in addition to data on the above mentioned monitoring. Analysis is completed on the County's overall pollutant reduction progress.

Interviewee(s) Providing Information:

Steven Stewart, Rob Hirsch

Process with GIS:

Sites are selected and the GIS is used to create mapping products to be included in the annual report. One week of staff time per year is spent preparing figures for the report.

Process without GIS:

Without GIS, maps would not be included in the annual report. If maps were desired, they would be drawn by hand and used less frequently due to the time required for preparation. Results would be less aesthetically pleasing, professional and accurate than those developed using GIS.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data
- Annual report has a greater impact and is more usable

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Annual # Iterations Per Year	Difference	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
0	35	1	-35	-35	-$1,188.25

Other Benefits:

None noted

Annual Benefit: -$1,188.25

Areas for Improvement:
Although use of GIS to support this activity appears as a cost to the County, it is a relatively small amount and is offset by the non-monetary gains in creating a superior annual report.
New Opportunities:
None noted
Benefits of Pursuing New Opportunities:
None noted

4.14.2 Illicit Connection Investigations

Activity: Illicit Connection Investigations

Primary Point of Contact:

Steven Stewart

Overview:

Field investigation and tracking of stormwater outfalls, to identify illegal connections to stormwater systems, which can impair stream water quality. This activity uses a DPW data layer that took two surveyors one year to collect.

Interviewee(s) Providing Information:

Megan Brosh, Eldon Gemmil, Dennis Genito, Rob Hirsch

Process with GIS:

Areas for investigation are identified and the GIS is consulted to determine the configuration of the stormwater system. Sites are identified and sequenced to facilitate field inspections. Upstream areas are reviewed to identify potential sources. Maps are printed from the GIS to document the location and configuration of violations and to help route inspectors and optimize time on-site.

Process without GIS:

Without GIS, sites would be manually plotted on paper maps of the stormwater network and on street map books. Inspectors would use case files and other sources of dated information to take along to assist with on-site inspections. Findings would be documented with hand-drawn maps.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Expedited and enhanced review of the stormwater network and its relation to streams and topography
- Efficient management of field visits
- Preliminary reconnaissance in the office before field visit

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
28	14	14	52	728	$24,715.60

Other Benefits:

None noted

Annual Benefit: $24,716.00

Areas for Improvement:
Improved data layer that identifies stormwater outfall locations.
New Opportunities:
Create a complete and accurate geometric network of the entire stormwater and surface water system.
Benefits of Pursuing New Opportunities:
Improved response time and effectiveness of proactive management.

4.14.3 Watershed Action Planning

Activity: Watershed Action Planning
Primary Point of Contact:
Steven Stewart
Overview:
Determine how to meet diverse environmental programs, including Chesapeake Bay Program, NPDES, TMDL, and diverse stakeholder goals. Research problems and coordinate the generation of solutions. Coordinate with agencies, watershed associations, business leaders, citizens, and other volunteers that are appropriate for each watershed. Analysis, outreach, education, community program development and whatever else is necessary for implementation of these initiatives. These plans, in conjunction with stakeholder input, will outline activities within each subwatershed unit. The plan will specify goals, itemize projects, calculate the cost/ benefit, and assign stakeholder responsibility. Several meetings conducted with watershed associations will be held to complete the development of these plans.
Interviewee(s) Providing Information:
Steven Stewart, Rob Hirsch
Process with GIS:
GIS data layers are used to plan and prioritize watershed restoration. Stakeholders are informed using maps to present concepts and program progress. Layers including streams, stormwater facilities, land use, geology, soils, topography and orthophotography are used to create a base map for the planning. Analysis such as hydraulic modeling is performed using the GIS. Maps are printed and are used to help educate and inform and to facilitate field visits.
Process without GIS:
Maps would be drawn by hand and multiple field visits would be required to confirm and refine plans. Analytical processes would be performed by photocopying and overlaying paper maps (such as topography) and aerial photos. Areas would be calculated manually using a planimeter and distances computed by hand. Maps would be drawn by hand and used less frequently due to the time required for preparation. Results would be less accurate than those developed using GIS.
Benefits Assessment: (High, Medium, Low) Identify confidence level
• High
Benefits to Using GIS for this Activity:
• Expedite analyses and improve accuracy • Serves as an efficient tool for communicating locations of watersheds • Identify work areas • Communicate events to the public

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
3640	910	2.5	2730	6825	$231,708.75

Other Benefits:

None noted

Annual Benefit: $52,962.00

Areas for Improvement:

None noted

New Opportunities:

Publish data through a MyNeighborhood application to reduce customer data inquires and make project information readily available.

Benefits of Pursuing New Opportunities:

Stakeholders have ready access to program data and are empowered to:

- Perform their own analyses
- Make their own maps
- Answer questions without directly impacting DEPRM staff time
- Understand program priorities

4.15 Operations Program

Program: Operations Program		
Primary Point of Contact:		
Candy Croswell		
Overview:		
The Operations section manages the County's Waterway Debris Removal Program and the Derelict Boat program. This section also is responsible for the management and inspection of all publicly owned stormwater management facilities in the County.		
Funding:		
An annual grant from Maryland Department of Natural Resources in the amount of approximately $30,000 for debris removal and derelict boat removal.		
Mandates:		
COMAR, COBCR		
Political Benefits:		
Legal compliance.		
Social Benefits:		
Management of debris removal from waterways and inspection/enforcement of stormwater management facilities.		
Products/Services:		
Inspection and enforcement database.		
Customers:		
• County residents • Businesses • Government agencies • Elected officials		
Data (Enterprise Layers are Listed in Bold):		
• **AddressPoints (View)** • **Buildings** • Capital Improvement Projects • **Contours** • **Facilities** • Government Lands • **Hydrology**	• Impervious Polygons • **Orthophoto (2005)** • Publicly Owned Land • **Roads** • Storm Drains (Geodatabase)	• Storm Water Management Facilities • Stormwater (Geodatabase) • Streams and Ponds • **Street Centerlines** • **Street Centerlines (View)** • **Tax Parcel**

Applications Used:
• ArcGIS (Standard) • ArcGIS DataQuery
Associated Activities:
4.15.1 Stormwater Management Facility Inspection and Maintenance 4.15.2 Waterway Debris Removal and Derelict Boat Removal

4.15.1 Stormwater Management Facility Inspection and Maintenance

Activity: Stormwater Management Facility Inspection and Maintenance

Primary Point of Contact:

Candy Croswell

Overview:

County is responsible for approximately 2,200 stormwater management facilities. Every three years, each facility must be inspected and maintained as needed. Documentation of proper function of each facility is also required to meet MDE requirements.

Analysis and reporting of structural stormwater and sediment control facilities, Countywide source control practices, education, DEPRM capital restoration projects summary, in addition to data on the above mentioned monitoring. Analysis is completed on the County's overall pollutant reduction progress.

Interviewee(s) Providing Information:

Joan Klair, Scott Porter, Wade Shelton, Rob Hirsch

Process with GIS:

GIS is used for routing, site planning, monitoring and complaint response for the management and inspection of all publicly owned stormwater management facilities in the County and for various community clean-up projects and maintenance of capital projects. Typically, supervisors use GIS to retrieve data regarding stormwater facilities scheduled for review by the inspectors. A hard copy map is printed and used by the inspectors to facilitate the site visit and document violations or maintenance requirements. Inspection results are managed in a database suitable for relation to the stormwater facility data layer. In addition, GIS supports the analysis of the County's overall pollutant reduction progress.

Process without GIS:

Without GIS, maps would be made manually using paper sources. Inspectors would be routed using paper road maps.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- Medium

Benefits to Using GIS for this Activity:

- Increased efficiency during site inspection
- Site sketches are produced on georeferenced and scaled base map data
- Powerful watershed-wide spatial analyses are enabled

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
2.5	0.5	2	100	200	$6,790.00

Other Benefits:
None noted
Annual Benefit: $6,790.00
Areas for Improvement:
None noted
New Opportunities:
An updated, complete and accurate stormwater facility database should be created, with digital as-built records set as hyperlinks. Associated drainage area polygons should be digitized and integrated with workflows.
Benefits of Pursuing New Opportunities:
Improved operational efficiency and greater use by DEPRM and other County agencies. Because the existing data layer is known to be incomplete and somewhat inaccurate, it is used sparingly and with caution. Drainage areas polygons would support discharge and flow calculations.

4.15.2 Waterway Debris Removal and Derelict Boat Removal

Activity: Waterway Debris Removal and Derelict Boat Removal

Primary Point of Contact:

Candy Croswell

Overview:

GIS is used by the Operations Section to assist in the management of the "Clean Shores" and the Derelict Boat Programs. This includes responding to individual complaints, removal of navigational hazards, organizing tributary clean-ups following natural disasters caused by ice and flooding, debris disposal, contract negotiation and management for private marine services, and meeting all necessary documentation for State funding.

Interviewee(s) Providing Information:

Candy Croswell, Rob Hirsch

Process with GIS:

Projects are planned using orthophotography, streams, topography and road data layers. Maps are printed to assist with field visits and to create a hard copy record of clean up activities.

Process without GIS:

Base mapping data would be derived from multiple hard-copy sources such as aerial photographs and topographic maps. Scales, dates and quality would vary and require reduction/enlargement on a photocopier and transference using a light table and manual cartographic techniques. Results would be less aesthetically pleasing, professional and accurate than those developed using GIS. Maps would be drawn by hand and used less frequently due to the time required for preparation.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- Medium

Benefits to Using GIS for this Activity:

- Facilitates communication of program goals and accomplishments
- Quality mapping products are created

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
2.5	0.5	2	100	200	$6,790.00

Other Benefits:

Annually, approximately $30,000 is granted by MDE to maintain waterways, but these dollars are not directly tied to the use of GIS.

Annual Benefit: $6,790.00
Areas for Improvement:
None noted
New Opportunities:
None noted
Benefits of Pursuing New Opportunities:
None noted

4.16 Policy and Program Coordination

Program: Policy and Program Coordination
Primary Point of Contact:
Don Outen
Overview:
The Section develops and implements the County's forest sustainability program, an element of the Green Renaissance initiative. Staff coordinates the County's participation as one of three U.S. County pilots for the Linking Communities to the Montreal Process Criteria and Indicators project. Staff coordinates implementation of the Forest Sustainability Strategy drafted in 2005. Staff coordinates with the USDA Forest Service, MD DNR, and American Forests for the implementation of the 2005 Forest Sustainability Memorandum of Understanding. Staff participates in the national Roundtable on Sustainable Forests.
Funding:
There is no outside funding that contributes to staff time to participate in coordination activities (to attend meetings, review program documents/legislation, etc.), but the programs being coordinated have funding components and bring value added to the County through technical assistance that would very likely not occur otherwise. These grants are from the EPA, NFWF and US Forest Service.
Mandates:
Forest Sustainability Memorandum of Understanding, Forest Conservation Act
Political Benefits:
Legal compliance.
Social Benefits:
Management of forest resources, overall improved health of the ecosystem.
Products/Services:
Coordination of the Chesapeake Bay program, Coastal Zone program, and Reservoir program allows the County to assure that policy, legislation, and implementation programs/funding are consistent with our interests and that local programs are consistent with state and federal efforts.
Customers:
• County residents • Businesses • Government agencies • Elected officials

Data (Enterprise Layers are Listed in Bold):

- **AddressPoints (View)**
- Agricultural Preservation
- Basic Services - Water
- Buffers with Forest Cover-1996
- **Buildings**
- Capital Improvement Projects
- **Census Block Groups (1990)**
- **Census Block Groups (2000)**
- **Census Blocks (1990)**
- **Census Blocks (2000)**
- **Census Tracts (1990)**
- **Census Tracts (2000)**
- Congressional Districts (2002)
- Conservation Easements
- Councilmanic Districts (2002)
- County Boundary
- Discharge Permits
- Easement
- Election Districts
- **Facilities**
- Government Lands
- **Hydrology**
- Impervious Polygons
- Land Use 1994
- Land Use 1997
- Land Use 1998
- Land Use 2002
- Legislative Districts (2002)
- Master Plan - Sewer
- Master Plan - Water
- Monitoring—Various Programs
- Multiple Ecological Use Forest Model
- Orchards
- **Orthophoto (2002)**
- **Orthophoto (2005)**
- Parcel Based Land Use
- Priority Funding Areas
- Publicly Owned Land
- Reservoirs
- Restriction
- **Roads**
- Rural Legacy
- Save Our Streams (SOS)—Monitoring Sites
- Streams and Ponds
- **Street Centerlines**
- Subwatersheds
- **Tax Parcel**
- Tree Cover
- Tree Rows
- Urban Rural Demarcation Line (URDL)
- Watersheds - Major
- Wetlands
- Wetlands - NWI
- Wooded
- Zoning
- Zoning - 1999
- Zoning Overlay Districts

Applications Used:

- ArcGIS (Standard)

Associated Activities:

4.16.1 Chesapeake Bay Program
4.16.2 Coastal Zone Management
4.16.3 Reservoir Watershed Management
4.16.4 Resource Management Research

4.16.1 Chesapeake Bay Program

Activity: Chesapeake Bay Program
Primary Point of Contact:
Don Outen
Overview:
Staff serves on working groups with Federal, State, and local government representatives and non-public organizations, as needed, for development and implementation of programs in support of commitments under the inter-state Chesapeake 2000 Agreement, including Baltimore County's Local Partnership Agreements (1993 and 2000) with the State of Maryland, to address nutrient reduction, habitat enhancement, urban sprawl and watershed planning and restoration. Staff represents Baltimore County on the State's Patapsco/Back River and Upper Western Shore Tributary Strategy Implementation Teams and the Urban Nutrient Management Workgroup.
Interviewee(s) Providing Information:
Don Outen, Rob Hirsch
Process with GIS:
GIS is used to zoom to sites of interest, layers are rendered and overlaid, text and marginalia placed to create electronic and hard-copy map output. Maps are a key deliverable for this activity and are used to illustrate results and inform the public, watershed organizations and other agencies. These maps reflect the results of analyses performed as part of other programs and activities, such as the Baltimore Watershed Agreement. GIS is also used to monitor and track program progress which feeds into the presentation process.
Process without GIS:
Maps would be drawn by hand and used less frequently due to the time required for preparation. Base mapping data would be derived from multiple hard-copy sources such as aerial photographs and watershed boundaries. Scales, dates and quality would vary and require reduction/enlargement on a photocopier and transference using a light table and manual cartographic techniques. Results would be less aesthetically pleasing, professional and accurate than those developed using GIS.
Benefits Assessment: (High, Medium, Low) Identify confidence level
• Medium
Benefits to Using GIS for this Activity:
• Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data • Facilitates communication of program goals and accomplishments

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
1	0.5	0.5	12	6	$203.70

Other Benefits:

None noted

Annual Benefit: $203.70

Areas for Improvement:

None noted

New Opportunities:

Publish data through a MyNeighborhood application to reduce customer data inquires and make project information readily available.

Benefits of Pursuing New Opportunities:

Stakeholders like State agencies and watershed organizations would have ready access to program data and are empowered to:

- Perform their own analyses
- Make their own maps
- Answer questions without directly impacting DEPRM staff time
- Understand program priorities

4.16.2 Coastal Zone Management

Activity: Coastal Zone Management

Primary Point of Contact:

Don Outen

Overview:

Staff serves as the Baltimore County designated government representative to the State's Coastal and Watershed Resources Advisory Committee (CWRAC), as well as the "Western Shore government" representative to the CWRAC Executive Committee. Staff also participates on the Maryland Interagency Review Committee to evaluate funding proposals for Coastal Zone program funds, Chesapeake Bay Implementation Grants and Non-Point Source Pollution Control grants.

Interviewee(s) Providing Information:

Don Outen, Rob Hirsch

Process with GIS:

GIS is used to zoom to sites of interest, layers are rendered and overlaid, text and marginalia placed to create electronic and hard-copy map output. Maps are a key deliverable for this activity and are used to illustrate results and inform the public, watershed organizations and other agencies. These maps reflect the results of analyses performed as part of other programs and activities. GIS is also used to monitor and track program progress which feeds into the presentation process.

Process without GIS:

Maps would be drawn by hand and used less frequently due to the time required for preparation. Base mapping data would be derived from multiple hard-copy sources such as aerial photographs and shoreline boundaries. Scales, dates and quality would vary and require reduction/enlargement on a photocopier and transference using a light table and manual cartographic techniques. Results would be less aesthetically pleasing, professional and accurate than those developed using GIS.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- Medium

Benefits to Using GIS for this Activity:

- Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data
- Facilitates communication of program goals and accomplishments

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
7	0.25	6.75	144	972	32,999.40

Other Benefits:
None noted
Annual Benefit: $32,999.40
Areas for Improvement:
None noted
New Opportunities:
Publish data through a MyNeighborhood application to reduce customer data inquires and make project information readily available.
Benefits of Pursuing New Opportunities:
Stakeholders like State agencies would have ready access to program data and are empowered to: • Perform their own analyses • Make their own maps • Answer questions without directly impacting DEPRM staff time • Understand program priorities

4.16.3 Reservoir Watershed Management

Activity: Reservoir Watershed Management

Primary Point of Contact:

Don Outen

Overview:

Formal political agreement to maintain standards and manage the data providing changes and stressors of watersheds. Staff participates on the Reservoir Technical Group (RTG) of the Reservoir Watershed Management Program, coordinated through the Baltimore Metropolitan Council. The RTG reviews proposed changes to master/comprehensive and community plans, local water and sewer plans, zoning, and development policies in Baltimore and Carroll Counties that would affect the quality of the region's drinking water supplies. The RTG provides technical assistance and recommendations to the reservoir program's inter-jurisdictional Watershed Protection Committee and the signatories to the Agreement regarding actions to protect the reservoirs.

Interviewee(s) Providing Information:

Don Outen, Rob Hirsch

Process with GIS:

GIS is used to zoom to sites of interest and proposed changes are reviewed and evaluated. Data layers are rendered and overlaid, text and marginalia placed to create electronic and hard-copy map output. Maps are used to support this activity and to illustrate proposed projects and their anticipated impacts. GIS is also used to monitor and track program progress which feeds into the reporting and presentation process.

Process without GIS:

Maps would be drawn by hand and used less frequently due to the time required for preparation. Base mapping data would be derived from multiple hard-copy sources such as aerial photographs and watershed boundaries. Scales, dates and quality would vary and require reduction/enlargement on a photocopier and transference using a light table and manual cartographic techniques. Results would be less aesthetically pleasing, professional and accurate than those developed using GIS.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- Medium

Benefits to Using GIS for this Activity:

- Streamlines and enhances the plan evaluation and impact process
- Serves as an effective communication mechanism

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
80	4	76	1	76	$2,580.20

Other Benefits:
None noted
Annual Benefit: $2,580.00
Areas for Improvement:
None noted
New Opportunities:
None noted
Benefits of Pursuing New Opportunities:
None noted

4.16.4 Resource Management Research

Activity: Resource Management Research

Primary Point of Contact:

Don Outen

Overview:

Staff initiate, coordinate, and assist in the implementation of miscellaneous environmental research projects and programs. Staff also review research proposals and prepare letters of support for state, federal, and non-profit research projects conducted in Baltimore County and the region. In addition, staff works with research organizations and universities to develop cooperative research projects and to provide internship opportunities for students. Staff participates in policy and program development and evaluation roundtables.

Interviewee(s) Providing Information:

Don Outen, Rob Hirsch

Process with GIS:

This process varies with each research project. Essentially, a new geoprocessing technique is learned and applied against the Countywide dataset. Analysis results and data are then summarized on the applicable extent (for example, a neighborhood or watershed).

Process without GIS:

Again, this process would vary based on the intent of each research project, but they would all follow a similar manual process. This would include overlaying different maps at various scales and using a planimeter to quantify areas. Calculations would be summarized manually and transferred to other paper maps which would then be used to create new and additional analysis and summary maps.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- Medium

Benefits to Using GIS for this Activity:

- Improved operational efficiency
- Opportunity to learn new geoprocessing techniques that are applied to other programs and activities

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
175	35	140	1	140	$4,753.00

Other Benefits:

None noted

Annual Benefit: $4,753.00

Areas for Improvement:
None noted
New Opportunities:
None noted
Benefits of Pursuing New Opportunities:
None noted

4.17 Public Data Access

Program: Public Data Access

Primary Point of Contact:

Robert Hirsch

Overview:

Produce and distribute informational materials via websites, publications, and displays at meetings and events. Prepare GIS and tabular data for citizen, non-profit, consultant, and inter-agency requests.

Funding:

There is no funding for this program.

Mandates:

Freedom of Information Act

Political Benefits:

Legally mandated compliance with Freedom of Information Act

Social Benefits:

Communication regarding environmental and natural resources; access to County datasets

Products/Services:

Various mapping and tabular datasets.

Customers:

- Scientists
- County residents
- Businesses
- Government agencies
- Elected officials

Data (Enterprise Layers are Listed in Bold):

- Agricultural Preservation
- Buffers with Forest Cover-1996
- Capital Improvement Projects
- Chesapeake Bay Critical Area
- Conservation Easements
- Digital Elevation Models
- Discharge Permits
- Easement
- Forest Conservation Management Areas
- Forest Harvest
- Monitoring—Various Programs
- Outfall—Major Drainage Areas
- Outfall—Minor
- Restriction
- Rural Legacy
- Storm Water Management Facilities
- Subwatersheds
- Watersheds - Major
- Wetlands - Special Area Management

Applications Used:

- ArcGIS (Standard)

Associated Activities:

There are no activities associated with this program.

Process with GIS:

Sites of interest are displayed in the GIS, features of interest are selected and deliverables are created. These deliverables include maps and data tables in hard copy and electronic format. Because data resources are typically centralized in the GIS, these data requests can be quickly and easily filled by using GIS.

Process without GIS:

Without GIS, data requests would be prepared in the original source format (tables exported from databases or hard copy maps photocopied).

Benefits Assessment: (High, Medium, Low) Identify confidence level

- Medium

Benefits to Using GIS for this Activity:

- Improved quality of deliverables
- Increased stakeholder confidence

Program: Basic Services **- Annual Time Savings from Use of GIS:**

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
3	0.5	2.5	6	15	$ 509.25

Total Annual Benefits:

$509.25

Areas for Improvement:

None noted

New Opportunities:

None noted

Benefits of Pursuing New Opportunities:

None noted

4.18 Sediment and Erosion Control Program

Program: Sediment and Erosion Control Program		
Primary Point of Contact:		
Mike Moorefield		
Overview:		
Responsible for monitoring the implementation and maintenance of sediment and erosion control practices. Construction has to be permitted, approved and must have a grading permit. Follow-up monitoring is performed every two weeks.		
Funding:		
MDE		
Mandates:		
COMAR		
Political Benefits:		
Legal compliance		
Social Benefits:		
Improved water quality, management of erosion issues		
Products/Services:		
Permits and requirement enforcement		
Customers:		
• Permit Applicants • Project Developers and Contractors • County Citizens • State Inspectors • County Councilmen • County Executive Office		
Data (Enterprise Layers are Listed in Bold):		
• **AddressPoints (View)** • **Contours** • **Orthophoto (1995)** • **Orthophoto (1996)** • **Orthophoto (1997)**	• **Orthophoto (1998)** • **Orthophoto (2000)** • **Orthophoto (2001)** • **Orthophoto (2002)** • **Orthophoto (2005)**	• **Orthophoto Quarter Quads - (1994)** • **Roads** • Storm Water Management Facilities • **Tax Parcel**

Applications Used:
• ArcGIS (Standard) • ArcGIS DataQuery • ArcIMS
Associated Activities:
4.18.1 Complaint Response 4.18.2 Monitoring, Inspection and Enforcement

4.18.1 Complaint Response

Activity: Complaint Response
Primary Point of Contact:
Mike Moorefield
Overview:
Citizen complaints regarding sediment control, wetland violations and/or drainage problems resulting from improper grading in new developments are inspected and processed by the enforcement personnel.
Interviewee(s) Providing Information:
Mike Moorefield, Kevin Sharbonda, Kevin Kelley, Rob Hirsch
Process with GIS:
When complaints are received, the GIS is consulted by supervisors to review orthophotography and topography to determine existing conditions. Hard copy maps are printed to facilitate site inspections and document to-scale observations. Periodically, the GIS provides data that is used in court or to help avoid a legal action by demonstrating convincing evidence of pre-disturbance conditions.
Process without GIS:
Inquiries could seldom be addressed efficiently and would typically require that inspectors visit sites without data regarding pre-disturbance conditions. Details describing the complaint are used to perform investigations using hard copy maps, aerial photographs, cadastral information and numerous other data sources. Analysis of the complaint would be a manual process of overlaying and identifying spatial extents of conditions and evaluating the validity of the complaint. Also, without orthophotography, the only evidence of illegal grading would be the inspector's memory of how the site looked prior to grading which is hard to prove in court.
Benefits Assessment: (High, Medium, Low) Identify confidence level
• Medium
Benefits to Using GIS for this Activity:

• Despite a 17% increase in workload, the same number of staff are able to manage the increase due to increased operational efficiency
• Convincing evidence of pre-disturbance conditions
• Avoidance of court proceedings and effective regulatory enforcement
• Increased efficiency in preparation for and execution of site inspections
• Site sketches are produced on georeferenced and scaled base map data
• Can develop documentation for reports and for court (inspectors are in court several times a month for civil citations)
• Court Hearings – some cases may be tried in court of law which requires inspectors testimony
  ° Use legacy photos to show differences in inspection sites.
  ° Need GIS aerials for evidence
  ° Need paper trail to track inspection

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
2.5	0.5	2	25	50	$1,697.50

Other Benefits:

None noted

Annual Benefit: $1,697.50

Areas for Improvement:

Permit data is stored in mainframe and is consequently difficult to extract or interact with. Tried this once and it took several weeks just to get a simple tabular listing. These data should be moved to the GIS to free up access and add spatial component.

New Opportunities:

None noted

Benefits of Pursuing New Opportunities:

None noted

4.18.2 Monitoring, Inspection and Enforcement

Activity: Monitoring, Inspection and Enforcement
Primary Point of Contact:
Mike Moorefield
Overview:
Monitor and inspect sediment and stormwater control practices as they are installed and used during construction projects. Enforcement activities related to the Sediment Control and Grading Ordinance. Documentation and reporting of violations.
Interviewee(s) Providing Information:
Mike Moorefield, Kevin Sharbonda, Kevin Kelley, Rob Hirsch
Process with GIS:
The GIS is consulted by supervisors to review orthophotography and topography to determine pre-development conditions. Hard copy maps are printed to facilitate site inspections and document to-scale observations. Periodically, the GIS provides data that is used in court or to help avoid a legal action by demonstrating convincing evidence of pre-disturbance conditions.
Process without GIS:
Enforcement actions would seldom be addressed efficiently and would typically require that inspectors visit sites without data regarding pre-disturbance conditions. Details describing the situation are used to perform investigations using hard copy maps, aerial photographs, cadastral information and numerous other data sources. Analysis of the site would be a manual process of overlaying and identifying spatial extents of conditions and evaluating the validity of the complaint.
Benefits Assessment: (High, Medium, Low) Identify confidence level
• Medium
Benefits to Using GIS for this Activity:

• Despite a 17% increase in workload, the same number of staff are able to manage the increase due to increased operational efficiency
• Convincing evidence of pre-disturbance conditions
• Avoidance of court proceedings and effective regulatory enforcement
• Increased efficiency in preparation for and execution of site inspections
• Site sketches are produced on georeferenced and scaled base map data
• Can develop documentation for reports and for court (inspectors are in court several times a month for civil citations)
• Court Hearings – some cases may be tried in court of law which requires inspectors testimony
  ° Use legacy photos to show differences in inspection sites.
  ° Need GIS aerials for evidence
  ° Need paper trail to track inspection

Annual Time Savings from Use of GIS:					
Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
3.75	2.5	1.25	1100	1375	$46,681.25
Other Benefits:					
None noted					
Annual Benefit: $46,681.25					
Areas for Improvement:					
None noted					
New Opportunities:					
None noted					
Benefits of Pursuing New Opportunities:					
None noted					

4.19 Stormwater Management

Program: Stormwater Management
Primary Point of Contact:
Al Wirth
Overview:
Responsible for review of stormwater management and grading plans for all new public, residential, commercial, industrial and institutional development. Also coordinates all agency comments pertaining to stormwater management, grading and sediment control.
Funding:
No funding identified.
Mandates:
CWA (NPDES, MS4), Chesapeake Bay. The MS4 permit requires the inspection of 150 outfalls per year.
Political Benefits:
Legal compliance.
Social Benefits:
Management of surface water quality by ensuring proper construction techniques and use of BMPs.
Products/Services:
Inspection database; plan review database
Customers:
• Developers • Citizens • Public and private organizations

Data (Enterprise Layers are Listed in Bold):		
• **AddressPoints (View)** • **Buildings** • **Contours** • County Boundary • Development Plans • Digital Elevation Models • **Facilities** • Flood Insurance Maps (FEMA) • Floodwalls • Government Lands • Hydrologic Facilities • **Hydrology** • Impervious Polygons	• Index Grid - ADC Map • **Orthophoto (1995)** • **Orthophoto (1996)** • **Orthophoto (1997)** • **Orthophoto (1998)** • **Orthophoto (2000)** • **Orthophoto (2001)** • **Orthophoto (2002)** • **Orthophoto (2005)** • **Orthophoto Quarter Quads - (1994)** • Outfall—Major Drainage Areas • Outfall—Minor • Publicly Owned Land	• Reservoirs • **Roads** • Soils • Spot Elevations • Storm Drains (Geodatabase) • Storm Water Management Facilities • Stormwater (Geodatabase) • Streams and Ponds • **Street Centerlines** • **Street Centerlines (View)** • **Tax Parcel**
Applications Used:		
• ArcGIS (Standard) • ArcGIS DataQuery		
Associated Activities:		
4.19.1 Citizen Assistance 4.19.2 Inspections 4.19.3 Stormwater Management and Grading Plan Review		

4.19.1 Citizen Assistance

Activity: Citizen Assistance

Primary Point of Contact:

Al Wirth

Overview:

Technical assistance to private citizens, and public and private organizations related to stormwater runoff, drainage and site grading.

Interviewee(s) Providing Information:

Michael Doyle, Kevin Quelet, Rob Hirsch

Process with GIS:

The public makes a request for information telephonically or in person; these requests are directed to the on-duty staff ("office duty"). Typically, these are site-specific questions in which case the GIS is consulted to identify local constraints or circumstances. As needed, maps are printed to help document the situation or answer the citizen question. Where required, GIS mapping data is printed to facilitate and expedite a site visit. Determinations are made through a review of orthophotography, tax parcel information and a variety of surface water and stormwater datasets. An average of 24 inquires are received each week and approximately 15 minutes of staff time is spent interfacing with the GIS to address the inquiry roughly 25% of the time.

Process without GIS:

Staff would respond generally (instead of site-specifically) to questions based on the information provided and/or hard copy plans would be retrieved. Where warranted, a site visit would be required in order to make specific determinations. Paper maps would be consulted to determine site conditions. On average, these inquiries would take approximately three hours each to respond to.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Able to give site-specific answers
- Increased consumer confidence
- Minimize field visits and maximize time on-site where field visits are unavoidable
- Coordination with other on-going projects is improved
- More reliable decisions based upon better organized and current data

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
3	0.25	2.75	312	858	$29,129.10

Other Benefits:
None noted
Annual Benefit: $29,129.10
Areas for Improvement:
None noted
New Opportunities:
An updated, complete and accurate stormwater facility database should be created, with digital as-built records set as hyperlinks. Associated drainage area polygons should be digitized and integrated with workflows.
Benefits of Pursuing New Opportunities:
Improved operational efficiency and greater use by DEPRM and other County agencies. Because the existing data layer is known to be incomplete and somewhat inaccurate, it is used sparingly and with caution. Drainage areas polygons would support discharge and flow calculations.

4.19.2 Inspections

Activity: Inspections

Primary Point of Contact:

Al Wirth

Overview:

Post-construction inspections to ensure compliance with stormwater management "As-Built" requirements. One year maintenance and triennial inspections of public and private stormwater management facilities for compliance with Baltimore County and State stormwater management regulations.

Interviewee(s) Providing Information:

Michael Doyle, Kevin Quelet, Rob Hirsch, Dan Artley, Steve Bevard

Process with GIS:

GIS is used for owner identification, inspector routing, site planning, monitoring and complaint response for the management and inspection of all publicly owned stormwater management facilities in the County. Typically, supervisors use GIS to retrieve data regarding stormwater facilities scheduled for review by the inspectors. A hard copy map is printed and used by the inspectors to facilitate the site visit and document violations or maintenance requirements. Inspection results are managed in a database suitable for relation to the stormwater facility data layer. In addition, GIS supports the analysis of the County's overall pollutant reduction progress.

Process without GIS:

Without GIS, maps would be made manually using paper sources. Inspectors would be routed using paper road maps. Property owners would be identified by street address from non-spatial databases.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Increased efficiency during site inspection
- Site sketches are produced on georeferenced and scaled base map data
- GIS reduces down-time and supports a more efficient work flow process
- Efficient project management
- More reliable analysis of spatial distribution of field investigations and associated problems

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
13.5	2.25	11.25	52	585	$19,860.75

Other Benefits:
None noted
Annual Benefit: $19,860.75
Areas for Improvement:
None noted
New Opportunities:
An updated, complete and accurate stormwater facility database should be created, with digital as-built records set as hyperlinks. Associated drainage area polygons should be digitized and integrated with workflows.
Benefits of Pursuing New Opportunities:
Improved operational efficiency and greater use by DEPRM and other County agencies. Because the existing data layer is known to be incomplete and somewhat inaccurate, it is used sparingly and with caution. Drainage areas polygons would support discharge and flow calculations.

4.19.3 Stormwater Management and Grading Plan Review

Activity: Stormwater Management and Grading Plan Review

Primary Point of Contact:

Al Wirth

Overview:

Review of stormwater management and grading plans for all new public, residential, commercial, industrial and institutional development.

Interviewee(s) Providing Information:

Michael Doyle, Kevin Quelet, Rob Hirsch, Dan Artley, Steve Bevard

Process with GIS:

Orthophotography and tax parcel data are used to identify the proposed project location. The GIS provides ready access to information regarding stormwater, easements, property ownership and environmental data. Users can quickly overlay and integrate these data sets for analysis and determination of the proposed project.

Process without GIS:

Without GIS this process would rely on manual overlay analysis requiring multiple sources of hard-copy maps, photographs and other spatial data. A hard-copy version of each tile would be used to add the construction drawings and drainage areas to for analysis. This manual and paper-based process would be significantly more time-intensive. Most evaluations would require evaluators refer to a soils book and travel across the street from the office to retrieve topography information prior to performing their analyses.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:
- Increased efficiency during plan review
- More reliable analysis of spatial distribution of site conditions and restrictions

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
1800	180	1620	1	1620	$54,999.00

Other Benefits:

None noted

Annual Benefit: $54,999.00

Areas for Improvement:
Floodplain data should be integrated with project review.
New Opportunities:
Digital plans should be submitted by project owners to complement the paper submission. An updated, complete and accurate stormwater facility database should be created, with digital as-built records set as hyperlinks. Associated drainage area polygons should be digitized and integrated with workflows.
Benefits of Pursuing New Opportunities:
Digital plans would eliminate scanning, enhance record keeping and enable an all-digital review process if appropriate to the situation. Improved operational efficiency and greater use by DEPRM and other County agencies. Because the existing data layer is known to be incomplete and somewhat inaccurate, it is used sparingly and with caution. Drainage areas polygons would support discharge and flow calculations.

4.20 Total Maximum Daily Load (TMDL) Program – Drainage Areas and Major Watersheds

Program: Total Maximum Daily Load (TMDL) Program – Drainage Areas and Major Watersheds
Primary Point of Contact:
Steven Stewart
Overview:
Coordination with Maryland Department of the Environment in the development of TMDLs for the impaired water bodies for submittal to US EPA.
Funding:
EPA Grant.
Mandates:
CWA (NPDES, MS4), Chesapeake Bay
Political Benefits:
Legal compliance
Social Benefits:
Monitoring and management of surface water quality.
Products/Services:
Surface water monitoring locations and analytical results database and GIS data layers, impaired river maps.
Customers:
• County residents • Businesses • Government agencies • Elected officials

Data (Enterprise Layers are Listed in Bold):

- Agricultural Preservation
- Buffers with Forest Cover-1996
- **Buildings**
- Capital Improvement Projects
- **Census Block Groups (2000)**
- **Census Blocks (2000)**
- **Census Designated Place (2000)**
- **Census Tracts (2000)**
- Conservation Easements
- **Contours**
- County Boundary
- Development Plans
- Digital Elevation Models
- Discharge Permits
- Easement
- **Facilities**
- Forest – 1996 Image Polys
- Geology
- Government Lands
- **Hydrology**
- Impervious Polygons
- Land Use 1994
- Land Use 1997
- Land Use 1998
- Land Use 2002
- Monitoring—Various Programs
- Orchards
- **Orthophoto (2005)**
- Outfall—Major Drainage Areas
- Outfall—Minor
- Parcel Based Land Use
- Publicly Owned Land
- Reservoirs
- Restriction
- **Roads**
- Rural Legacy
- Save Our Streams (SOS)—Monitoring Sites
- **SimComFrstDiv**
- **SimCon**
- Soils
- Storm Drains (Geodatabase)
- Storm Water Management Facilities
- Stormwater (Geodatabase)
- Streams and Ponds
- **Street Centerlines**
- Subwatersheds
- **Tax Parcel**
- Tree Cover
- Tree Rows
- Urban Rural Demarcation Line (URDL)
- Use Class – Streams
- Watersheds – Major
- Wetlands
- Wetlands – NWI
- Wetlands – Special Area Management
- Wooded
- Zoning
- Zoning – 1999

Applications Used:

- ArcGIS (Standard)
- ESRI Extensions

Process with GIS:

GIS is used to test and validate or propose modification to MDE models for calculating existing TMDL loads. These data also feed into proposal preparation and to target potential opportunities for water quality improvement projects. Maps are output to support field investigations.

Process without GIS:

Models prepared by MDE would have to be accepted without question or input of the improved local data/knowledge. Mapping would be performed using paper maps, photocopies and manual overlay analysis. Results would be more difficult to obtain and they would have a lower confidence level.

Benefits Assessment: (High, Medium, Low) Identify confidence level

Medium

Benefits to Using GIS for this Activity:

- Only the best water quality improvement projects are selected
- MDE models are fine-tuned to meet local conditions and priorities
- Optimizing time for field visits
- Analysis of spatial distribution of field investigations and associated problems.

Total Annual Benefits – Captured at the Program Level – There are no activities identified as being part of this program.

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
995	500	495	1	495	$16,805.25

Other Benefits:

None noted

Annual Benefit: $16,805.25

Areas for Improvement:

None noted

New Opportunities:

None noted

Benefits of Pursuing New Opportunities:

None noted

4.21 Water Quality Monitoring

Program: Water Quality Monitoring

Primary Point of Contact:

Steven Stewart

Overview:

Monitor chemical, physical, and biological water quality data to fulfill obligations under NPDES and TMDL programs, and develop policy, regulations, and initiatives.

Funding:

Stream Restoration has to meet requirements in order to get grant funding.

Mandates:

CWA (NPDES, MS4), Chesapeake Bay 2000.

Political Benefits:

Legal compliance.

Social Benefits:

Monitoring and management of surface water quality.

Products/Services:

Surface water monitoring locations and analytical results database and GIS data layers. Annual "State of Our Watershed" conference and website.

Customers:

- County residents
- Businesses
- Government agencies
- Elected officials

Data (Enterprise Layers are Listed in Bold):

- **AddressPoints (View)**
- **Contours**
- Digital Elevation Models
- Discharge Permits
- **Facilities**
- Government Lands
- Hydrologic Facilities
- **Hydrology**
- Impervious Polygons
- Index Grid - ADC Map
- Monitoring—Various Programs
- **Orthophoto (2002)**
- **Orthophoto (2005)**
- Outfall—Major Drainage Areas
- Outfall—Minor
- **Roads**
- Save Our Streams (SOS)—Monitoring Sites
- Storm Drains (Geodatabase)
- Storm Water Management Facilities
- Stormwater (Geodatabase)
- Streams and Ponds
- **Street Centerlines**
- **Street Centerlines (View)**
- Subwatersheds
- **Tax Parcel**
- Use Class - Streams
- Watersheds - Major
- Wetlands
- Wetlands - NWI
- Wetlands - Special Area Management

Applications Used:
• ArcGIS (Standard) • ESRI Extensions
Associated Activities:
4.21.1 Biological Water Quality Monitoring 4.21.2 Chemical Water Quality Monitoring 4.21.3 Stream Geomorphologic Monitoring

4.21.1 Biological Water Quality Monitoring

Activity: Biological Water Quality Monitoring

Primary Point of Contact:

Steven Stewart

Overview:

Field investigation and laboratory analysis of stream water and habitat quality data.

Interviewee(s) Providing Information:

Steven Stewart, Rob Hirsch

Process with GIS:

GIS is used to identify and document optimum locations for new and past monitoring sites, evaluate watershed drainage areas and generate maps to support field investigations. Locations are identified on maps and digital orthophotography and these locations are then integrated into the GIS to be used to guide project planning and analysis. Land owner data is obtained from cadastral layers and used to gain right-of-entry to private property. GPS position data are integrated to facilitate this process. Analytical results are integrated with mapping data to examine and present spatial relationships among sample locations, events and results for trend analysis and reporting.

Process without GIS:

Products would be largely limited to tabular data and static maps. Sampling locations would be estimated on topographic maps and overlays performed to transfer various datasets. GPS technology could still be used to collect position data and navigate to sample locations, but not for visualization or presentation.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data
- Integration of GPS data to enhance accurate decision making and produce accurate mapping products
- Facilitates communication of program goals and accomplishments

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
495	80	415	1	415	$14,089.25

Other Benefits:

None noted

Annual Benefit: $14,089.25
Areas for Improvement:
None noted
New Opportunities:
More efficient and reliable ways of finding homeowner/landowner information.
Benefits of Pursuing New Opportunities:
Would support more efficient investigations in locating possible sources of pollution.

4.21.2 Chemical Water Quality Monitoring

Activity: Chemical Water Quality Monitoring

Primary Point of Contact:

Steven Stewart

Overview:

Field investigation and laboratory analysis of chemical stream water quality. Baseflow and storm event monitoring.

Interviewee(s) Providing Information:

Steven Stewart, Rob Hirsch

Process with GIS:

GIS is used to identify and document optimum locations for new and past monitoring sites, evaluate watershed drainage areas and generate maps to support field investigations. Locations are identified on maps and digital orthophotography and these locations are then integrated into the GIS to be used to guide project planning and analysis. Landowner data is obtained from cadastral layers and used to gain right-of-entry to private property. GPS position data are integrated to facilitate this process. Analytical results are integrated with mapping data to examine and present spatial relationships among sample locations, events and results for trend analysis and reporting.

Process without GIS:

Products would be largely limited to tabular data and static maps. Sampling locations would be estimated on topographic maps and overlays performed to transfer various datasets. GPS technology could still be used to collect position data and navigate to sample locations, but not for visualization or presentation.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Increased stakeholder satisfaction and program successes using quality cartographic products and timely, accurate GIS data
- Integration of GPS data to enhance accurate decision making and produce accurate mapping products
- Facilitates communication of program goals and accomplishments

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
28	14	14	1	14	$475.30

Other Benefits:

None noted

Annual Benefit: $475.30
Areas for Improvement:
None noted
New Opportunities:
More efficient and reliable ways of finding homeowner/landowner information.
Benefits of Pursuing New Opportunities:
Would support more efficient investigations in locating possible sources of pollution.

4.21.3 Stream Geomorphic Monitoring

Activity: Stream Geomorphic Monitoring

Primary Point of Contact:

Steven Stewart

Overview:

Field investigation and laboratory analysis of stream dimension measurements, which respond to erosion, etc.

Interviewee(s) Providing Information:

Megan Brosh; Eldon Gemmil; Dennis Gerito; Rob Hirsch

Process with GIS:

Stream cross-sectional surveys are integrated with GIS and the associated drainage area is delineated. These results are overlaid with other datasets such as impervious cover. Monitoring points are identified in the GIS, access logistics are planned and landowners contacted to obtain right-of-entry for private property. To-scale field sketches are prepared using paper output from the GIS.

Process without GIS:

Would require paper maps, photocopies and manual overlay analysis; this effort would take approximately four times longer without GIS.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- Efficient project planning
- Helps trace the root causes of problems
- Reduces field investigation time
- Analysis time is reduced

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
16	4	12	10	120	$4,074.00

Other Benefits:

Avoidance of penalties for non-compliance in accordance with the MS4 permit.

Annual Benefit: $4,074.00

Areas for Improvement:

Use ArcHydro tools to support and enhance analyses.

New Opportunities:
Use LiDAR data to create "base" digital elevation model (DEM) and revise stream channel geometry based on surveyed cross-sectional data. Develop a complete and accurate geometric network of the entire stormwater and surface water system.
Benefits of Pursuing New Opportunities:
Create an accurate DEM for watershed modeling, analysis of geomorphological changes and trends and presentation of results. A highly-accurate accurate stream centerline could be used to 'burn' a channel into the DEM and create a hydro-enforced DEM. The geometric network would support automated flow analyses and tracing.

4.22 Watershed and Water Quality Protection Grants

Program: Watershed and Water Quality Protection Grants
Primary Point of Contact:
Steven Stewart
Overview:
The goal of this activity is to support effective grant applications which are available to fund the watershed restoration projects. WRAS – Watershed Restoration Action Strategies (funded by MDE) is designed to look at necessary watershed planning and restoration actions. This program is currently focusing on the Prettyboy Watershed and is supported at 29 hours/week, contract employee, not FTE, role funded from federal dollars, down to state and local.
Funding:
Water Quality Cooperative Assistance Grant from US EPA – Region III. There is currently a Water Quality Cooperative Assistance Grant from US EPA – Region III in the amount of $200,000. This grant is provided for the development of two Small Watershed Action Plans.
Mandates:
There are several mandates that drive this program. • The **NPDES – MS4 Permit** requires the County to conduct watershed planning for restoration activities and requires the County to involve stakeholders in the planning process. • With the development of **Total Maximum Daily Loads** for pollutant reduction, there is a need to determine how the County will be able to meet the pollutant load reductions and how it will maintain the cap on pollutant loads. • **The Chesapeake Bay Program** – Nutrient and Sediment Reduction goals are addressed through Tributary Strategies developed by each State. Baltimore County has watersheds in two different Tributary Strategy Basins. By next April the County is supposed to develop an implementation plan on what the County will do to meet nutrient and sediment reduction goals.

Political Benefits:

- Legal compliance – meeting MS4 Permit requirements
- Avoidance of third party lawsuits associated with MS4 violations. Technically, once a water body is listed as impaired, further addition of pollutants to the waterway is prohibited. This would mean that a proposed development project could be legally challenged by a third party. If the County has taken steps to address the TMDL and has a plan(s) on how the TMDL will be met, along with the caps, then the courts would be hard pressed to find for the third party. Since all of our waterways are listed as impaired, all development could be called into question.
- Supports multi-state initiatives and establishes positive political visibility for the County and its programs.
- Effect action through regulatory agencies to support their mission requirements (SCS doesn't have GIS, so Baltimore provides them mapping data to help them identify problem sub watersheds)
- Following the EPA A-I watershed planning criteria, the County and it's partner stakeholders are better positioned to receive grant funding in the future to accelerate the restoration work

Social Benefits:

Monitoring and management of surface and groundwater quality. Also educational and citizen action programs, watershed planning, monitoring and clean up. Opportunity for hands-on citizen participation-data entry at DEPRM by volunteers. Improvement in the water quality of our streams and tidal waters, protection of drinking water source for over 1.8 million people

Products/Services:

- A plan that showing how the County will meet the requirements of the MS4 Permit, any TMDL, and the Tributary Strategies, along with an estimated cost. The plan then serves as the blueprint on achieving water quality goals and includes actions by the stakeholders, as well as, the County.
- WRAS (final document)
- Maryland Stream Survey: stream corridor assessment
- Maps and associated analysis results to support for public hearings

Customers:

- County residents
- Businesses
- Government agencies
- Elected officials

Data (Enterprise Layers are Listed in Bold):

- **AddressPoints (View)**
- Agricultural Preservation
- Buffers with Forest Cover-1996
- **Buildings**
- Capital Improvement Projects
- **Census Block Groups (2000)**
- **Census Blocks (2000)**
- **Census Designated Place (2000)**
- **Census Tracts (2000)**
- Conservation Easements
- **Contours**
- County Boundary
- Development Plans
- Digital Elevation Models
- Discharge Permits
- Easement
- **Facilities**
- Forest – 1996 Image Polys
- Geology
- Government Lands
- Hydrologic Facilities
- **Hydrology**
- Impervious Polygons
- Index Grid - ADC Map
- Land Use 1994
- Land Use 1997
- Land Use 1998
- Land Use 2002
- Monitoring—Various Programs
- Orchards
- **Orthophoto (2002)**
- **Orthophoto (2005)**
- Outfall—Major Drainage Areas
- Outfall—Minor
- Parcel Based Land Use
- Publicly Owned Land
- Reservoirs
- Restriction
- **Roads**
- Rural Legacy
- Save Our Streams (SOS)—Monitoring Sites
- **SimComFrstDiv**
- **SimCon**
- Soils
- Storm Drains (Geodatabase)
- Storm Water Management Facilities
- Stormwater (Geodatabase)
- Streams and Ponds
- **Street Centerlines**
- **Street Centerlines (View)**
- Subwatersheds
- **Tax Parcel**
- Tree Cover
- Tree Rows
- Urban Rural Demarcation Line (URDL)
- Use Class - Streams
- Watersheds - Major
- Wetlands
- Wetlands - NWI
- Wetlands - Special Area Management
- Wooded
- Zoning
- Zoning - 1999

Applications Used:

- ArcGIS (Standard)
- ESRI Extensions

Associated Activities:

4.22.1 Grant Implementation

4.22.1 Grant Implementation

Activity: Grant Implementation

Primary Point of Contact:

Steven Stewart

Overview:

Use of GIS in support of grants. Implement of planning, restoration, and monitoring projects. Provide support to watershed associations for restoration, planning, and monitoring grants awarded by Baltimore County.

Interviewee(s) Providing Information:

Steven Stewart, Dorsey Berger, Rob Hirsch

Process with GIS:

GIS is used to support a broad range of activities associated with watershed restoration projects. Specifically for WRAS, it is used to perform analysis to characterize watershed through physical attributes and human interaction (land use). It is also used to pinpoint sources of violation of TMDL requirement. Current requirements call for a 54% reduction, GIS is used to determine additional sources for reduction.

Process without GIS:

Products would be largely limited to tabular data and static maps. Watershed data would be estimated on paper topographic maps and overlays performed to transfer various datasets.

Benefits Assessment: (High, Medium, Low) Identify confidence level

- High

Benefits to Using GIS for this Activity:

- GIS supports high quality grant applications
- Functions as a very effective tool for collaboration and communication
- Support efficient project planning
- Helps in pursuing land-use actions that result in long-term restoration
- Edge-matching used to update stream layers in PA (Carroll County) to mirror the resolution of Baltimore County's data

Annual Time Savings from Use of GIS:

Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on $33.95/hr)
40	29	11	52	572	$19,419.40

Other Benefits:
• A $40,000 Grant (EPA 319 grant funds), but these dollars are not directly tied to the use of GIS • Proactive compliance on anticipating CWA impaired waterways • Not so much enforcement threat, but opportunity for improvement • Carrot (funding opportunities) approach versus stick (fines) • Analysis of watershed use • Enhanced environmental quality • Dovetails with Chesapeake Bay restoration initiatives • Protection of agricultural areas/uses, biological heritage, flora/fauna, recreational uses, threatened/endangered (listed) species protection (e.g., brook trout)
Annual Benefit: $19,419.40
Areas for Improvement:
None noted
New Opportunities:
None noted
Benefits of Pursuing New Opportunities:
None noted

5 Short-form Online Questionnaires

Agency DEPRM

Name Al Wirth

Job Title Manager

Briefly, what activity(s) do you perform within your department?

Stormwater Engineering and how it relates to site grading and land development in Baltimore County

Approximately what percentage of your work week do you spend for each activity identified in question #9?

100%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes, Evaluate site and its impact on adjacent property using orthophotos(landuse), topography (Hydrology), Soil Types, Measure Distances , property infro.Location of sites. In Lieu of a field trip. Verify consultant's topo.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

yes.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes, to have a permanent record and to take to meetings at preliminary stages.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Developers, Consultant Engineers, Communities and Public Officials.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Maps to evaluate development sites

What activities do you think could benefit from use of (or increased use of) GIS?

Generation of Hydrology and Location of infrastructure

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

The use of GIS gives my section ready access to locations in Baltimore County. It sometimes saves a field trip. An accurate view of the 'Big Picture'. We can have preliminary discussions about sites from the office and we can discuss them over the phone saving meetings.

Agency DEPRM

Name Brian Lindley

Job Title Natural Resource Specialist III

Briefly, what activity(s) do you perform within your department?

Supervisor for environmental compliance section. Regulate three laws regarding forest conservation, water quality and Chesapeake critical area. Check site for compliance, review development plans, conduct easement inspections.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

at least 90%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes, I use ArcMap/GIS data on a daily basis. I need aerial photos for citizen calls and complaints. I need GIS data for locating areas of concern. Use GIS to collect previous years data in order to regulate compliance and provide details for testimony in hearings.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Yes, again for citizens as walk-ins and over the phone and for compliance issues.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

Yes, more involved for collecting data when preparing for a hearing, collecting evidence etc.

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes, I need to in order to finds areas during field visits, also to verify environmental resources. Use to confirm with development plans in order to make sure properties in compliance. Need as evidence for trials.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes, on duty as citizens/other agencies etc. walk-in or call for details.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No.

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Handling citizen/agency walk-ins and phone calls. Used for locating properties, verifying environmental resources, checking for easements/compliance. Create maps for hearings/testimony as evidence and or verification. Use to locate streams, forest, houses, etc. for field visits and development plan comparisons. Used to locate where an address is relative to resources.

What activities do you think could benefit from use of (or increased use of) GIS?

Speed up process for reviewing development plans, building permits, site visits etc. The more we can view from the desktop the less we have to go through several other sources taking more time and creating more cost. Makes overall job more efficient. The more data I can gather using GIS the more productive I can be and review more work quicker.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

GIS is essential for my Department particularly my group. Without GIS capabilities we are literally blind making jobs longer, enforcement actions more difficult due to less evidence, and making harder to answer public questions overall. If we can see an aerial and gather data from GIS as were talking to someone it makes things much easier during discussions, reviews and questions. Daily job functions require GIS capabilities. The more technology the better the Department.

Agency DEPRM

Name bryce

Job Title ea4

Briefly, what activity(s) do you perform within your department?

review engineers plans

Approximately what percentage of your work week do you spend for each activity identified in question #9?

100

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

yes. to determine topo, ownership, soil types, location of physical features, hydrology.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

no

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

no

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

no

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

no

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

site location and topo

What activities do you think could benefit from use of (or increased use of) GIS?

don't know, has all that I need at this time

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

Agency DEPRM

Name Candace Croswell

Job Title Manager

Briefly, what activity(s) do you perform within your department?

Administer the Waterway Improvement Capital Program - includes all environmental restoration projects (stream restoration, dredging, shoreline enhancement and water quality projects) Administer the Operations Program to maintain and inspect all public owned stormwater management facilities. Interact with citizens, federal, state and local officials, community groups, consultants, and contractors.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

Waterway Program 65% Operations Program 25% Other 10%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes - research ownership and existing conditions for a capital project or ownership of a stream, or stormwater management area.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Yes - DataQuery look at water courses, drainage areas (topo) and property lines/ownership for a specific project.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

no

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

yes. print orthophotos with layers of information.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

products - plan sheets for federal and state permit applications, and maps for community meetings.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

#NAME?

What activities do you think could benefit from use of (or increased use of) GIS?

additional layers - infrastructure - storm drains, stormwater facilities, etc. updated aerial photography we need to continue to update information

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

GIS has greatly increased efficiency in this section.

Agency DEPRM

Name Carmela M. Iacovelli

Job Title Natural Resource Specialist I

Briefly, what activity(s) do you perform within your department?

1) Support the Agricultural Preservation Program 2) Data management 3) Meetings with other departments, agencies, and/or appointed members of the Ag Board 4) Ag Easement inspections 5) Write reports

Approximately what percentage of your work week do you spend for each activity identified in question #9?

1) 50% 2) 25% 3) 10% 4) 5% 5) 10%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

yes. I must make tax maps, topo maps, ortho photo maps, and soil maps for each property in, or that applied to our program. I also need to make large poster size maps of the county showing where easement properties are located.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

yes. I also occasionally use various applications. I have used both DataQuery and myneighborhood to find properties. I will also be using the GIS based program using the Frontline software to do our Agricultural Easement rankings every year.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

no

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

yes. I produce both hardcopies and digital maps for each property that either applies or must be inspected in our program. This year we had 63 applicants to our program. Also, when requests for buildings/structures come in to our department I must produce a map of the property.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

yes. I produce tax maps, aerial maps, soil maps, and sometimes ortho maps to the State of Maryland's Ag Preservation program, to our planning, zoning departments, and also to members of the public, or any other agency that needs information about any of our preserved properties. I will also be using a GIS database

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Create maps for presentations, for applicants to the Ag program. Locate properties using addresses/map and parcel/ or other identifier. Create lists of property owners and their ranking in our Ag pres easement program.

What activities do you think could benefit from use of (or increased use of) GIS?

All of my activities ultimately depend on using GIS. I must be able to accurately depict every property that we maintain or that applies to our program. Our maps have that ability. Also, I am learning to use the GIS based program to help in the yearly ranking of applicants to our Ag program.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

I would like to have available additional training opportunities in GIS. Whenever I bring a map to any public or other agency meeting I hear compliments about our GIS program. It has become an essential tool for me in my job.

Agency DEPRM

Name Charles R. Davis

Job Title Eng. Assoc. 4

Briefly, what activity(s) do you perform within your department?

Review Storm Water Management and Grading Plans for compliance wit all Regulations

Approximately what percentage of your work week do you spend for each activity identified in question #9?

100%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

look at topographic and orthophotos, saving time in not having to make field trips

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

no

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

no

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

no

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

no

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Look at orthophotos and topographic images to help with plan review

What activities do you think could benefit from use of (or increased use of) GIS?

do not know

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

none

Agency DEPRM

Name clare brunner

Job Title sanitarian 2

Briefly, what activity(s) do you perform within your department?

soil evaluation, plans review, design of onsite wastewater disposal systems, office duty, special projects

Approximately what percentage of your work week do you spend for each activity identified in question #9?

soil evaluation= 30 plans review=20 design=20 office duty=20 special projects-10

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

yes to retrieve info for use for field work or to completely review plans or to give info as requested to the public

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

no

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

no

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

no

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

yes, perc data as part of the development, redevelopment process

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

info on existing properties as part of dev or redev review, checking info for repairs, giving info to the public as requested, review of perc applications- We're looking at soils, topo, parcels, owners, geology, water bodies

What activities do you think could benefit from use of (or increased use of) GIS?

zoning clarification, ortho

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

Vital to our group/ have had problems with it going down, my colleague can't get it on his computer and needs it

Agency DEPRM

Name Daniel D. Artley

Job Title Engineering Associate 4

Briefly, what activity(s) do you perform within your department?

I review storm water management (swm) and grading submittals for compliance with Baltimore County and State regulations/code. I inspect swm facilities for compliance, safety and code. I manage two employees who inspect privately maintained swm facilities on a three year basis for compliance to regulations/code/safety. I also perform office duty, meeting w/ the public/engineers on subjects relating to complaints, submittals, etc. in relation to grading and

Approximately what percentage of your work week do you spend for each activity identified in question #9?

Reviews: 75% SWM three year program: 20% Office duty: 5%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes. Photo/topo/cadastral is regularly used to verify drainage paths, drainage areas, general flow patterns, land use, all for swm review and often for swm facility inspection, ownership for writing letters to facility owners. Soils, districts, roads, hydrology also provide useful information.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

I believe I use DataQuery for cadastral, ownership information, elevations so close that it's difficult to read, and distances on topography. Other queries may be useful, but I feel that I don't know enough about how to use GIS to get that information.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

I'm not sure what that is.

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

I regularly print out, and sometimes save the file for my use in review or inspection. I can locate an existing or proposed facility, or drainage area, select the necessary layers, usually photo, topo and cadastral, set it to a measureable scale and print it out for comparison to plans or in the absence of plans.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

As part of our office duty we may print out the same basic information relating to an swm inquiry for engineers or the public. I sometimes make an additional copy to return to the engineer with his reviewed submittal as an research tool or item that may express a point.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No.

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

I regularly use it to view a location that I'm researching, or print out a version of same for reference during reviews or inspections. See my other answers for other uses.

What activities do you think could benefit from use of (or increased use of) GIS?

The photos and topography that we see are generally 5-10 years old. Although it is good to see what was out there prior to development, It would be advantageous to see a more contemporary view. My knowledge base does not include how to bring up the newer photos or topo that, though not having been brought to the fore, are available through other world connection folders. I've also been waiting for facility information to come on line, i.e., storm drains, sanitary sewers, manholes, road grades and lateral data. These applications would not be used regularly, but would provide useful information when needed.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

I would like to be trained with a bit more hands on use. Our last updated training was with a newer version of GIS that wasn't really available to us for more than two months after the training. We were not able to practice what we had just learned and few in our department have been able to make good use of that training.

Agency DEPRM

Name David Carroll

Job Title Director

Briefly, what activity(s) do you perform within your department?

Director of the department. Oversight of all operations, policy, contact with other agencies, the Executive Office, Council and public.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

Dept. management 30% Contact with outside groups, depts, etc. 40%Dev. of policy, implementation, response to inquiries 30%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

yes, from discussions about site specific issues, e.g. Critical Areas, subdivisions, etc. to illustration of large scale projects; e.g. waterfront access, purchase of easements, area wide

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

websites of specific organizations; e.g. LNG issues, Chesapeake Bay Foundation, State of MD for specific departments or agencies, etc.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

not directly

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

yes, to illustrate specific projects; e.g. aerial photos with property boundaries of the Ag. Center, Essex Skypark, Shell station in Towson, etc.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes, maps to community organizations related to specific projects.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Do not create work.

What activities do you think could benefit from use of (or increased use of) GIS?

greater online capability available for community organizations. upgrading technical capacity of individuals within the departments to give great flexibility to GIS staff.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

Upgrading in other departments, especially in PDM to give capacity consistency.

Agency DEPRM

Name David Lykens

Job Title Manager

Briefly, what activity(s) do you perform within your department?

Responsible for logging, distributing and tracking plans and documents related to Phase I and Phase II of the development review process. Responsible for representing DEPRM at meetings. Responsible for answering questions via phone, e-mail and in person regarding the status of all of the above-referenced plans and hearings.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

20% Logging etc. 33% Meetings etc. 20% Answering Questions

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes, when looking for the location of a property, or to see the surrounding land use. Also in preparation for meetings and in answering questions regarding a properties development

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

I use MyNeighborhood to quickly review zoning or forest cover.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

not usually

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Most of the time, I print what I make either for the file, the citizen or to take to the meeting.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

To the public as in #14.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Create maps.

What activities do you think could benefit from use of (or increased use of) GIS?

Referencing data that is already known from past approvals to compare to current conditions.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

GIS has saved many hours of having to field verify everything! It provides real time feedback.

Agency DEPRM

Name David Riter

Job Title Waterway Restoration Supervisor

Briefly, what activity(s) do you perform within your department?

As Waterway Restoration Supervisor I oversee planning, design, permitting and construction for the dredging program, shoreline enhancement, SAV monitoring and stormwater retrofit program. Additionally, I assist with stream complaints and restoration issues.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

Dredging-60% Shoreline Enhancement-15% Stormwater Retrofit-15% SAV Monitoring-2% Stream Complaints/Restoration-8%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes-When evaluating watershed drainage patterns I access the GIS database for topography, property ownership, hydrology, tax parcels and land use.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Yes-Prior to conducting a community meeting for the Dredging program I will use GIS applications to identify waterfront property owners. Based on this DataQuery a mailing list will be generated to notify these individuals.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

Yes-Spatial analysis is used when calculating the size(acres)of drainage areas within a watershed.

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes-Hard copy and digital maps are prepared and included in the files when research various issues and when planning dredging projects. Theses maps are used in reports and powerpoint presentations.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes-Data products such as maps displaying navigation channels and private spurs are provided to various agencies such as Maryland Department of Environment and the Army Corps of Engineers with permit applications.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

n/a

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

See the previous responses- Create a wide variety of maps to address dredging, SAV, stormwater retrofits, presentation materials, property ownership, mailing list, etc.

What activities do you think could benefit from use of (or increased use of) GIS?

A picture (map) is worth a thousand words. The GIS products help improve communication in the office, various government agencies, businesses and the citizens of Baltimore County.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

I would like to see more courses provided to GIS users to help maximize this valuable tool.

Agency DEPRM

Name Dennis Genito

Job Title Environmental Associate

Briefly, what activity(s) do you perform within your department?

stream pollution investigation, storm monitoring, stream biological data collection

Approximately what percentage of your work week do you spend for each activity identified in question #9?

collectively, 100%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes. To determine location of sampling points, landowner information, best access points

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

No

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

No

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

No

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

To determine location of sampling points, landowner information, best access points

What activities do you think could benefit from use of (or increased use of) GIS?

None

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

Agency DEPRM

Name Diana Cohen

Job Title Coordinator, Growing Home Campaign

Briefly, what activity(s) do you perform within your department?

Coordinate all aspects of the Growing Home Campaign, a program to increase tree canopy in the urban areas of Baltimore County.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

100%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

No, not to perform my daily job. However, the GIS data (orthophotos, etc.) is an important tool for tree canopy interpretation that helps us set goals for the Growing Home Campaign.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

No.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No.

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

No.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes. GIS information is used to evaluate the tree canopy of the County. This information is shared with the public, US Forest Service, and other agencies involved with efforts to increase tree canopy.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No.

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Use GIS to analyze existing and future tree canopy in Baltimore County. Maps have been and are currently in the process of being created that show existing tree canopy. GIS maps allow us to target areas where there is tree canopy deficit and future maps will show progress of trees

What activities do you think could benefit from use of (or increased use of) GIS?

Public outreach and education about the need for increasing the urban tree canopy would benefit from the use of GIS maps. The visual nature of the information allows the general public to easily understand the need for increasing tree canopy.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

GIS technology is a very important tool for the Dept. of Environmental Protection and Resource Management as well as the County. Also, the GIS support staff members in DEPRM are always very helpful when explaining GIS information to the rest of us and it is a pleasure to work with them.

Agency DEPRM

Name Donald Outen

Job Title Natural Resource Manager

Briefly, what activity(s) do you perform within your department?

1. Serve as County's policy and program representative to intergovernmental programs for reservoir protection, coastal zone management, and Chesapeake Bay restoration. 2. Manage the development and implementation of the County's Forest Sustainability Program. 3. Provide program management for DEPRM's Community Reforestation program. 4. Assist other DEPRM sections and County agencies in the development, coordination, and review of projects and programs as needed (e.g., master Plan, CZMP, legislation, grants), and supervise Policy, Education, Research and Communications Section.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

1. 30% 2. 40% 3. 15% 4. 15%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

I use GIS to assess reforestation projects and document project progress (sites are GPS'ed and mapped after planting). I use GIS to conduct analyses of land development trends (e.g., land cover and buildout) for the reservoir program. I use GIS for landscape level analysis of the distribution of forest cover. I use GIS to capture land cover characteristics for presentations (Power Point). Layers typically used include orthophotos, streams, URDL, property records/cadastral, watersheds, land cover, and land ownership. I use GIS for review of zoning reclassification petitions for the CZMP. I use these GIS data but do not perform anything more complex than basic data queries myself. Our GIS Analyst creates special applications that I further query.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

As needed, I use DataQuery and My Neighborhood to locate parcels and selected attributes. As an example, I use My Neighborhood extensively during the CZMP review period.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

Our GIS Analyst uses spatial analyst and other extensions to create applications that I further query. I extract data and export maps and data for reports and presentations. An example

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

I create and export maps for use in reports and Power Point presentations. We also produce a large number of poster sized maps for presentations and displays, and for field tours for resource professionals. These are used/produced rather frequently, not daily.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes. An actual example is a series of maps and data tables used in our Forest Sustainability Strategy, including distribution of forest cover, interior and edge forest, forest ownership, forest fragmentation (forest patches by acreage), forest parcelization (number of owners per forest patch), and distribution of forests in riparian buffers. This report was released to citizens and agencies locally and across the U.S., including the MD Dept of Natural Resources, the USDA Forest Service, and member organizations of the national Roundtable on Sustainable Forests.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

NO

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

As described above: create maps and data in support of the regional reservoir program, forest sustainability program, Chesapeake Bay (restoration) Program, CZMP, and Community Reforestation Program. These programs assess land use and natural resource conditions, trends, and vulnerability; develop management policies; and implement action programs.

What activities do you think could benefit from use of (or increased use of) GIS?

DEPRM is embarking on new projects to monitor forest health, an uncommon activity for local government. GIS will be a central tool to accomplish this work successfully. At least every 5 years (ideal would be 3 years), a forest cover layer should be captured for more accurate trends assessment. Also, the County has little in the way of a formal street tree program, and GIS could help with an inventory and tracking system to help manage urban canopy. A County-wide effort needs to be undertaken to define and use community sustainability indicators and GIS can help manage data and communicate conditions and progress for our citizens and elected officials. Our programs are important for the County's compliance with environmental regulatory programs as well as quality of life, and GIS will increasingly be a critical tool for

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

As a 'user' of GIS and not a GIS technician, I would feel as though I'm in the Dark Ages without GIS. OK, I'm also a geographer, so what do you expect? All human activity takes place 'in space' so to speak. Therefore, County functions are inherently spatial and GIS is the widely-accepted and used tool for capturing, storing, manipulating, and displaying spatial data. The County has invested millions is developing state-of-the-practice GIS capabilities and agencies are moving increasingly to their use. It seems unfortunate that, after development and diffusion of the technology, that agencies must continually 'justify' their need for GIS (at least that's what it seems this is all about). The decision to invest in GIS should not be based only on cost-savings for agency functions but should also be considered for how our services to our citizens are improved. Information is power and all activity has an opportunity cost. We can all take action in this world with or without the benefit of the best understanding possible about issues and their causes and the consequences of decision choices. For me, GIS is essential for this understanding. As my forest friends say, 'better data - better dialogue - better decisions.'

Agency DEPRM

Name Dorsey Burger

Job Title Natural Resource Specialist 2

Briefly, what activity(s) do you perform within your department?

Prettyboy watershed planning-related activities

Approximately what percentage of your work week do you spend for each activity identified in question #9?

100

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

yes, e.g. to locate and characterize natural resources in the watershed

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

??

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

yes, to analyze the natural resources of the watershed

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

yes, to provide field maps and for reports

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes, for reports that are public, e.g. the Prettyboy WRAS

Do you perform any GIS data maintenance activities? If yes, please provide an example.

yes, e.g. stream digitizing

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

many 'activities' related to watershed analysis and planning

What activities do you think could benefit from use of (or increased use of) GIS?

I'm not sure what you're asking.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

It has become an indispensable tool, and will certainly become more so.

Agency DEPRM

Name Edward Schmaus

Job Title Engineer III

Briefly, what activity(s) do you perform within your department?

I review stormwater and grading plans for compliance with the applicable Baltimore County regulations.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

90%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes. When reviewing SWM plans the suitability of the outfall is very important. By using the orthophotos and topography it is possible to determine what is downstream of an outfall.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

No

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes. Sometime I will print a copy of downstream information to put in our file, especially if it differs from what was submitted to us.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

No

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Check information provided by engineers Study suitability of outfalls Identification of property owners

What activities do you think could benefit from use of (or increased use of) GIS?

checking of submitted data

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

GIS is a good tool.

Agency DEPRM

Name Eldon Gemmill

Job Title NRS III

Briefly, what activity(s) do you perform within your department?

Supervise watershed & stream monitoring Watershed Manager

Approximately what percentage of your work week do you spend for each activity identified in question #9?

90% 10%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes, occasionally to find or characterize stream locations, or drainage areas.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

no

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

no

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

yes, stream or watershed maps that show scale, position, and other information.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Occasional stream or watershed maps to citizens or consultants. These maps are produced by others at DEPRM.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

as given above

What activities do you think could benefit from use of (or increased use of) GIS?

interactive gis available to others on the internet allowing map production, printing etc.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

Agency DEPRM

Name Eugene G. Siewierski

Job Title Supervisor

Briefly, what activity(s) do you perform within your department?

A. Manage household hazardous waste collection program. B. Permit and regulate solid waste facilities. C. Respond to some complaints and requests involving waste materials and chemicals

Approximately what percentage of your work week do you spend for each activity identified in question #9?

A. 50% B. 30% C. 20%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes. Use property maps to identify dumping sites and locate streams and residential properties which may be affected. Use maps to monitor groundwater investigations around county landfills and private recycling facilities

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

No

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes. Example would be map of residential properties around Parkton Landfill.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Not GIS data products.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

A. create maps which show location and ownership of dump sites and adjacent properties B. create maps which show locations of residential properties, streams, etc around county landfills and private recycling facilities.

What activities do you think could benefit from use of (or increased use of) GIS?

complaint investigation.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

don't have any additional comments

Agency DEPRM

Name Glenn Shaffer

Job Title Natural Resource Specialist III

Briefly, what activity(s) do you perform within your department?

A. Supervise 3 Natural Resource Specialist IIs who review development plans for compliance with environmental laws and enforce these laws. B Review same types of plans as NRS IIs C. Perform same field duties as NRS IIs including verifying wetland delineations, forest stand delineations, & forest buffer delineations prepared by developers' consultants. D Address public and other County agencies' land use and environmental inquiries.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

A.30% B 40% C.20% D 10%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes. Example: Routinely use orthophotos overlain with soils, topography, cadastral, & hydrology layers to evaluate potential resource impacts of development proposals and to answer citizen, dept. administration, and interagency inquiries regarding existing conditions and associated regulatory ramifications.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Yes. Example: Use My Neighborhood to view zoning and orthophotos in preparing for field work and answering aforementioned inquiries.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes. Example: Routinely print scaled, black & white copies of orthophotos overlain with soils, topo, cadastral, etc. to use for verifying wetland delineations, reviewing Chesapeake Bay Critical Area permits, etc. or to hand out to office duty 'walk-ins'.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes. Example: Frequently provide orthophotos to other agencies to assist in their preparation of conceptual plans for capital projects or enforcing other land use regulations such as zoning setbacks for piers. Print colored copies for planning sessions/interagency meetings or public and/or hearing presentations.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Review development plans for compliance with County-enforced environmental laws. Produce maps for hearings and presentations Conduct field work with hard copies of maps. Perform large scale land use planning activities

What activities do you think could benefit from use of (or increased use of) GIS?

1. Enforcement of recorded environmental easements using orthophotos updated annually or biannually 2.Ches. Bay Critical Area reviews would be easier with the addition of a land use designation layer and outer Critical Area boundary as well as aforementioned orthophoto updates. 3. If possible, the digitizing of DEPRM-approved wetland delineations done for private development and County capital projects as well as digitizing environmental easements and reservations as they are recorded in Baltimore County's Land Records. This would help with idea 1 above as well as with land use planning and subsequent environmental reviews.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

Agency DEPRM

Name Jeanne Armacost

Job Title Natural Resource Specialist

Briefly, what activity(s) do you perform within your department?

1. Environmental Education and Outreach, initiatives and materials. Target audience: citizens and organizations, public and independent schools. 2. Represent Baltimore County at regional organization meetings and boards.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

1. 85% 2. 15%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes. As part of the outreach to schools and the Green Schools Program, GIS aerial maps of school properties with site analysis data are provided to schools with whom we are working. Watershed maps, maps showing location of the county's Green Schools, impervious by watershed, etc are used in public presentations and displays.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

No

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes. Please see the examples listed in question #11

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes. Maps of school sites as described above are provided to public and private schools, and those citizens and organizations who partner with the schools. They are used in teacher training sessions.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

The maps are created by DEPRM's GIS Program staff. I use them at public presentations and events.

What activities do you think could benefit from use of (or increased use of) GIS?

Availability for use as planning tools by citizen organizations and schools.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

I have found that the general public and the local schools really appreciate having the maps depicting their areas of concern. It is a valuable resource.

Agency DEPRM

Name Jeff Livingston

Job Title Natural Resource Specialist

Briefly, what activity(s) do you perform within your department?

- review development plans (GIS is useful during the review) - answer questions from the public relating to development plans/development potential from DEPRM's point of view (GIS is extremely useful during this review) - other non-GIS related activities

Approximately what percentage of your work week do you spend for each activity identified in question #9?

- variable, but probably 5-7 hours per week (total)

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

- GIS helps detect streams, forests, structures, property lines etc. that do not appear on development plans (but should). So yes, I do use the GIS data and databases. - GIS is also useful for answering development related questions that citizens have

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Yes. See answer 11.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

no.

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

See answer 11

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

no.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no.

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

See answer 11.

What activities do you think could benefit from use of (or increased use of) GIS?

The GIS system is useful in it's current state.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

Agency DEPRM

Name Joan Klair

Job Title Civil Engineer II

Briefly, what activity(s) do you perform within your department?

Project Manager for water quality projects including stream restoration and stormwater retrofits. Respond to citizen stream complaints. Conduct watershed assessments.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

75%, 20%, 5% respectively.

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes. Pinpoint properties for stream complaints and evaluate placement within watershed and drainage areas. Identify project limits, construction constraints, land use, and property ownership. Determine topography and channel type. Print maps/aerial photos to accompany monitoring reports, grant applications, and field assessments. Track stream complaint and capital project locations.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Yes. Identification of stream order, watersheds, property ownership, floodplains etc.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No, do not know how. But I can see why this would be an important tool.

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes, to take in the field for assessment and provide to design consultants. Accompany grant applications and reports.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes, sharing of information with DPW and environmental regulatory agencies. Provide maps, figures, and data for reports and publications

Do you perform any GIS data maintenance activities? If yes, please provide an example.

Nope

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Create maps for capital projects, identify stream complaint properties, and characterize watersheds.

What activities do you think could benefit from use of (or increased use of) GIS?

Further characterize project sites by identifying adjacent utilities, have a complete stream complaint database to pinpoint problem areas, flag areas of development to evaluate impacts on adjacent streams, tie locations of DEPRM's capital activities into other departments construction projects so that efforts aren't duplicated or conflicting.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

While the current GIS is an integral part of my duties as a project manager, it is very difficult to do more than basic functions because it seems that data layers and methods for retrieval change periodically and without warning. I would like to get into the more in-depth applications but little training is available. Also data that one would think should be available, like accurate utilities, isn't.

Agency DEPRM

Name John G. Russo

Job Title Natural Resource Specialistic

Briefly, what activity(s) do you perform within your department?

Conduct field visits, review plans, write letters and inter office memos for plans, permits, complaints regarding compliance with Critical Area Regulations, Water Quality Protection Regulations and Forest Conservation Regulations

Approximately what percentage of your work week do you spend for each activity identified in question #9?

80%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

On daily basis I use orthophotos of current and past years, tax map, soils, hydro, topography for initial review and follow up review on almost all projects.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Development coordination for status of projects

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

no

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

make hard copy plans daily for critical area and other properties and permits daily

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

use GIS several days a week with walk-ins

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

make maps daily for my field and office review of permits, plans, complaints and potential violations.

What activities do you think could benefit from use of (or increased use of) GIS?

A CBCA line and BMA designation

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

past orthophotos

Agency DEPRM

Name Karen Ogle

Job Title Natural Resources Specialist II

Briefly, what activity(s) do you perform within your department?

Manage design & construction of capital environmental restoration projects

Approximately what percentage of your work week do you spend for each activity identified in question #9?

90%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes. I use GIS as the first tool in site recon, site assessment, and project planning using orthophoto, watersheds, hydro data, topo, cadastral. Currently researching extent & availability of utility info

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

I have used MyNeighborhood in the past, but found it too limiting. I do not know how to use DataQuery.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

NO, I don't know how.

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes, I will create a map to take with me in the field, to aid with field assessment, and aspects of early design, property ownership, project access, etc.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes, I will use the maps I produce for meetings and/or field discussions with property owners and consultants, contractors

Do you perform any GIS data maintenance activities? If yes, please provide an example.

NO

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

preliminary site assessment for capital projects, and complaints property research for capital projects, and complaints create maps for field use, and discussions with design engineers, contractors, permitting agencies, and private property owners

What activities do you think could benefit from use of (or increased use of) GIS?

ability to access utility information in a GIS form, with links to design/asbuilt drawings for the specified utilities Property information, link to plats, and complete property listings (many null entries still exist, especially for public property)

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

Data paths seem to change, so that what once worked, doesn't work the next time. Our GIS Program staff have provided a path or link on my desktop for GIS data that I most often use. Beyond that I don't want to 'bother' our GIS Program staff, to assist me with the less frequent applications. They are ALWAYS VERY BUSY, and therefore, I often do not ask for assistance. My suggestions are keep it simple, and user friendly. Provide easy access for those who are not 'power users'. Improve staffing of AGENCY GIS Programs!

Agency DEPRM

Name Kevin

Job Title Geohydrologist II

Briefly, what activity(s) do you perform within your department?

I supervise the Groundwater Management Section which regulates the sanitary use of well water, and septic systems throughout the county. We review building permits, development plans, address resident concerns, and requests for information. We also track and investigate groundwater quality in rural areas of the county

Approximately what percentage of your work week do you spend for each activity identified in question #9?

Approximately 30% on building permits and plan reviews; 30% on Public Request for Info; and 30% on groundwater investigations.

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes, Virtually everyday I refer to the orthophotos, topography, cadastral, streams, roads, and buildings data layers. In reviewing building permits, and/or discussing resident concerns on the phone it is very helpful to look at the property information to determine the accuracy of permit information, or whether a site inspection is necessary.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

I use the Property Search Arc/Ims application

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

Occasionally, I use the measurement tool in Property Search to determine distances from one map feature to another

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes, Occasionally, I will print a map from Property Search to use as a field map for a site inspection. Maps are generated by our GIS staff on a regular bases for sanitary surveys used for assessing problem septic areas. Maps are also requested on a regular bases to delineate groundwater contamination areas.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes, The results of our sanitary surveys are provided to public works and the general public. Maps for Groundwater Contamination case study areas are provided to the public through open meetings.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Assist residents with questions about water quality. Create maps to document field inspection findings Create maps to document sanitary survey findings Create maps to delineate areas of groundwater contamination.

What activities do you think could benefit from use of (or increased use of) GIS?

By using GIS, and continuing to build datalayers, improve user friendliness, and accuracy of the data, I sincerely believe that building permits and development plans will be able to be reviewed more quickly, and help diminish the need to perform field inspections. Specifically, know the location of all domestic water supplies, and septic systems throughout the county will be extremely helpful in evaluating new development, and assessing potential groundwater contamination impacts

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

GIS should be a major focus for the county which will ultimately allow us, as county employees, to assist residents, more quickly and with more accurate information.

Agency DEPRM

Name Kevin

Job Title Natural Resource Specialist II

Briefly, what activity(s) do you perform within your department?

review development plans, identify resources, citizen assistance, field visits

Approximately what percentage of your work week do you spend for each activity identified in question #9?

60%,15%,10%,15%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

yes, soils, floodplain, topo, tax maps, hydrology, street names

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

yes, address locator, zoning classification

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

no

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

yes, print maps, site aerials

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

yes, citizen assistance with property aerials, resource locations

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

site maps for development, resource identification, property location with tax map and street locator, site elevations, topo maps

What activities do you think could benefit from use of (or increased use of) GIS?

resource identification, CBCA identification

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

valuable tool that saves time

Agency DEPRM

Name Kevin Quelet

Job Title Project Engineer

Briefly, what activity(s) do you perform within your department?

1) Review of plans and computations. 2)Coordinate with engineers and the public as necessary. 3) Perform engineering analyses.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

1) 75% 2) 12% 3) 13%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes. Whenever I review a project, I look the site features up on GIS. Property info often as well.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Not familiar enough as yet.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

Not at this time

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Map copies are typically printed for my use/file.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

On occasion I might do so.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Analyze sites using GIS for drainage impacts; property info.

What activities do you think could benefit from use of (or increased use of) GIS?

GIS is a very powerful tool for doing in-depth engineering analyses or studies over a considerable study area

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

Similar to the above, GIS offers advantages in working with data for tracking or analyses that make it invaluable to large agencies/counties such as Baltimore.

Agency DEPRM

Name Lee A. Dregier, II

Job Title Project Engineer

Briefly, what activity(s) do you perform within your department?

SWM plan reviews Grading Plan reviews Pond inspections, meetings, reports and letters.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

33% 33% 33%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes, grading and drainage plan reviews

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Yes

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes, prints of drainage area maps.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes, copies

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

overall view of surrounding areas, locate addresses, drainage patterns and concerns.

What activities do you think could benefit from use of (or increased use of) GIS?

more detail of property lines, utilities, contours, buildings

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

great tool, love it.

Agency DEPRM

Name megan brosh

Job Title environmental associate

Briefly, what activity(s) do you perform within your department?

Monitor outfalls, investigate complaints, biological sampling, geomorphology, assist with street sweeping research

Approximately what percentage of your work week do you spend for each activity identified in question #9?

20 20 20 20 20

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

not daily, but maybe a couple times a week

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

no, I might if I knew how to use those

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

no, I might if I knew how to use those

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

not daily, but maybe a couple times a week

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

no

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

create maps for fieldwork, outfall monitoring program

What activities do you think could benefit from use of (or increased use of) GIS?

finding homeowner/landowner information, investigations (locating possible sources of pollution)

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

Agency DEPRM

Name Michael Doyle

Job Title Engineering Associate III

Briefly, what activity(s) do you perform within your department?

Private Storm Water Management Facility Inspector. Assess conditions of facilities and determine appropriate repair/maintenance work required, write to owners for compliance.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

Field inspections 50% Research ownership & write letters 50%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

I locate subject property on GIS, using imagery/ortho, topo, CADASTRL, legislative and councilmatic district layers

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Just as described in #11

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes. To assist in property locations. I print imagery, property lines, street layers.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

No

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

As described above.

What activities do you think could benefit from use of (or increased use of) GIS?

Don't know

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

None

Agency DEPRM

Name Michael Moorefield

Job Title Engineering Program Manager

Briefly, what activity(s) do you perform within your department?

Coordinate and manage staff work. Consultation with citizens, engineers, contractors. Review construction related design changes. Preparation of charging documents. Mandated training and certification program.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

30 30 20 10 10

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

YES-- Staff in this section inspects and will issue violation notices for tree clearing and grading actives occurring without a permit. Orthophotos, topography and property maps are used for each one of these inspections so the investigating inspector knows what pre-violation condition existed and who owns the property.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

YES--DataQuery is used on a daily basis to match ownership with land parcel.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

NO

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

YES-- Inspectors take hard copy of orthophotos and property maps in field to perform investigation.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

NO

Do you perform any GIS data maintenance activities? If yes, please provide an example.

NO

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

This section uses GIS for existing data.

What activities do you think could benefit from use of (or increased use of) GIS?

No comment

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

No Comment

Agency DEPRM

Name Michael S. Kulis

Job Title Natural Resource Specialist II

Briefly, what activity(s) do you perform within your department?

Review development plans, building permits & grading permits for compliance w/ environmental laws (Critical Area, Forest Conservation, Forest Buffer and Grading). Review mitigation, planting and restoration plans. Perform land use/ development planning activities. Assist telephone callers and walk-ins w/ their development questions/issues.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

100%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes. Use orthos (multiple years), soils, topo, tax, hydrology and council district W/ most activities listed in #9. Used to assess development proposal impacts to natural resources and/or to direct development to be more environmentally sensitive. Used to check ex. and historic site uses and to verify natural res./environ. constraints of a site.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Yes. My neighborhood - zoning to verify allowed uses and determine Forest Conservation requirements.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

Yes. Geocoding/address locator is very helpful w/ reviews due to aiding in locating a specific site.

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes. Typically produce 8.5' x 11' prints for the file as a baseline office review prior to field investigation (if required at all based on initial findings). Used for Building permit reviews (esp. Ches Bay Critical Area house, pier and bulkhead issues). Produce scale copies for site design/engineering purposes.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes. Scale orthos w/ topo, soils, approx property lines for building permit reviews and enforcement actions. Depending upon the issue, request or type of review 8.5" X 11' prints may be given to Permits and Development Management staff, citizens, developers or engineers.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No.

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Review development plans. Create maps for enforcement actions. Hard copy to determine need or assist w/ field review. Assist public w/ constraints and development potential.

What activities do you think could benefit from use of (or increased use of) GIS?

It would be an asset to have accurate critical area boundary and land use designation areas. Accurate property lines. Accurate state tidal wetland limits. Extents of forest buffer easements, forest conservation easements and critical area easements. DEPRM, PDM, Maryland Dept. of the Environment, and U.S. Army Corps of Engineers, citizens, the general public, developers and engineers would benefit further.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

It is a great asset and numerous layers are utilized. Also use historic info to check land use over many years, to check for violations or to simply provide information to make determinations. I note marked increase in available info w/ a decrease in collection time. GIS has reduced the number of unnecessary site visits. Shifting of data locations and manipulations of data layers resulting in them not working at the desktop level from time to time is a burden (ex. address

Agency DEPRM

Name Nancy Pentz

Job Title Natural Resource Specialist III

Briefly, what activity(s) do you perform within your department?

Develop watershed plans to determine strategies for meeting several mandates for reducing non-point source pollution that Baltimore County must comply. Assist locally based watershed associations to engage citizens in activities that provide restoration or enhancement of our streams and other natural resources. Prepare and update web page information for citizens about watersheds and water quality monitoring and watershed restoration and environmental education. Prepare data for NPDES municipal stormwater permit requirements.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

Watershed plans, 20% Assist watershed associations 50% Update web information 10% Prepare NPDES data 20%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes. We use GIS in our watershed plans to evaluate the County's stormwater pollution reduction efforts. We frequently use impervious surfaces and other land cover characteristics to perform pollution reduction estimates within watersheds. We can run different scenarios to evaluate the best management practices that will meet our water quality goals. We also use GIS to prioritize areas for restoration. We may create a map of areas most susceptible to erosion by querying the attributes from the soils data and overlaying it with land use. We also prepare maps to take into the field to perform assessments and investigations. Specifically our Stream Watch program is a citizen 'adopt-a-stream' program. We or a citizen volunteer digitally mark the stream segments and then incorporate the results of the assessment into the GIS database. Some stream segments are based on road crossings for access purposes and in the rural areas the segments are demarcated based on property lines. We use GIS to present the findings of our field assessments by querying a particular attribute (e.g. streams without forested buffers within 100 feet, fish barrier locations, neighborhoods with intensive lawn fertilizers).

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

No.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

I don't directly do the geocoding, however I sometimes have the need for data to be geocoded. If we are investigating potential pollution sources e.g. certain commercial businesses with

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes. I provide maps for citizen groups so that they can perform their stream investigations. I make presentations at meetings and use maps. I include maps in watershed planning reports. I insert maps into Power Point presentations.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes. We prepare watershed management and monitoring data for reports, presentations, web page. Some can be in the form of requests or requirements from other agencies or the public.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

Yes. I frequently update data related to watershed assessments. This data may come from field investigations (e.g. stream stability assessments, neighborhood source assessments) or from

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Generate data, analyze scenarios, show natural resource information in spatial context.

What activities do you think could benefit from use of (or increased use of) GIS?

We could account for many of the pollution reduction activities that are occurring. We could better target restoration projects if we had better property easement data, better GPS locations of problem areas, and better natural resource data in a spatial context.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

Our department could greatly benefit from additional well trained GIS staff.

Agency DEPRM

Name obilor Chukwuemeka

Job Title natural resource specialist

Briefly, what activity(s) do you perform within your department?

I am a Natural Resource Specialist. I use GIS in map production, data analysis data development and other related services such as GIS support to staff.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

Map Production 30% Data analysis and data development 50% GIS support and others 10%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes A good example is map production

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Yes Arc pad, Arc Editor, Arc Info and the various extensions.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

yes a good example is in water shed generation

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes Watershed maps Rural Residential Initiative maps

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes Watershed Organizations

Do you perform any GIS data maintenance activities? If yes, please provide an example.

Yes Easement

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Create maps to support departmental needs and other non departmental needs Analyze and generate data for departmental needs Support other GIS users

What activities do you think could benefit from use of (or increased use of) GIS?

Gis could be involved in virtually anything that the department is involved.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

GIS development and applications Training. This will help GIS users to understand how the total GIS package works.

Agency DEPRM

Name Patricia H. Cornman

Job Title Natural Resource Specialist

Briefly, what activity(s) do you perform within your department?

1. Design planting plans and monitoring protocols for reforestation projects. 2. Promote citizen participation in increasing urban tree canopy in a range of programs. 3. Participate in sustainable forestry initiatives and educational outreach. 4. Technical support and reports to

Approximately what percentage of your work week do you spend for each activity identified in question #9?

1. 35% 2. 20% 3. 30% 4. 10%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes. I use topo and property maps as resources while conducting site assessments for reforestation projects.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

No.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No.

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes. Numerous hardcopy maps and digital data tables are critical to the success of our reforestation and forest analysis efforts. Typically, I have requested maps and data tables from our GIS staff. I have GIS software and have made some very simple maps, however I rely upon the GIS staff for the bulk of my GIS needs.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

No.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No.

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

None currently. I would like to develop better skills to use my software for analysis and report preparation.

What activities do you think could benefit from use of (or increased use of) GIS?

GIS products greatly increase the efficiency of targeting reforestation to areas where forest can provide the greatest environmental benefits. It also serves as an important tool in providing educational outreach on the values of forest restoration for the County's human and wildlife communities.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

GIS has made an enormous difference in data handling and analysis for multiple purposes. I cannot imagine carrying out the level of production that we now have without GIS.

Agency DEPRM

Name Patricia M. Farr

Job Title Natural Resource Manager

Briefly, what activity(s) do you perform within your department?

A. Manage Natural Resource Specialists who review development plans for compliance with environmental laws, and enforce these laws B. Update laws, regulations, policies C. Review development/technical plans D. Perform land use planning activities

Approximately what percentage of your work week do you spend for each activity identified in question #9?

A. 25% B. 40% C. 30% D. 5%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes. Example: Routinely use orthophotos and soil, topography, cadastral layer, hydrology layers; and occasionally floodplain, forest, impervious surface, and SAMP wetland layers; to evaluate potential natural resource impacts of development proposals.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Yes. Example: Use DataQuery to verify existing or historical site uses, and to verify natural resource information on development plans. Example: Use MyNeighborhood Zoning to verify boundaries of existing zoning on properties.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

Yes. Example: Geocoding of addresses/pumping station names was used to map pumping stations so that environmental regulatory requirements could be determined.

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes. Example: Commonly produce hardcopy maps to aid in explaining development-related or enforcement situations to the Department Director.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes. Example: An orthophoto showing existing impervious surface areas and calculations for Wilson Point Park was shared with the Dept. of Recreation and Parks Capital Improvement Program staff.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No.

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Review development plans for compliance w/ laws Produce maps for hearings or presentations Conduct field work w/hardcopies of maps Perform large-scale land use planning activities

What activities do you think could benefit from use of (or increased use of) GIS?

Environmental Impact Review staff, consultants, other regulatory agencies, and the public would benefit greatly from the following GIS layers: Chesapeake Bay Critical Area outer boundary line and land use categories, Chesapeake Bay Critical Area Buffer Management Areas, and State tidal wetlands. Environmental enforcement efforts would be greatly enhanced with a GIS layer showing perpetual environmental easements established during the regulatory process. If orthophoto information was gathered more frequently, efforts to assess whether easement violations have occurred would be much easier.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

GIS technology has greatly improved Environmental Impact Review staff ability to verify presence/absence of natural resources, evaluate potential natural resource impacts, and assess whether violations of laws have occurred. Staff have been able to shorten field visits related to development review, and provide professional-looking documentation at hearings and court cases. Additional layers mentioned above would greatly enhance both development review and enforcement efforts.

Agency DEPRM

Name Paul Dennis

Job Title Natural Resource Specialist

Briefly, what activity(s) do you perform within your department?

Review, write reports, & correspondence Re: plans, permits, complaints for compliance with Critical Area, Forest Conservation, and Water Quality Protection Regulations

Approximately what percentage of your work week do you spend for each activity identified in question #9?

100%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Use orthophotos of various years, tax info, topo, soils, hydro, watershed, council district, FEMA, and other info to conduct initial reviews and follow ups for all projects on a daily basis

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Utilize ArcMap SDE set-up

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

Yes, Use Smallscale.centerline geocoder for address locator

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Produce hard copy maps daily concerning critical area permits. Produce hard copies for other projects depending on need...probably several a week

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Utilize GIS daily with citizen walk-ins to discuss natural resources and possible issues with sites

Do you perform any GIS data maintenance activities? If yes, please provide an example.

Only on files I create on my computer.

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Create photo maps for projects as requested by Supervision, create maps for daily field/office review for permits, plans, complaints

What activities do you think could benefit from use of (or increased use of) GIS?

Accurate shapefiles for critical area designations, forest buffer easements, forest conservation easements, critical area easements

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

We use historic orthophotos on a daily basis

Agency DEPRM

Name Powell, James Robert

Job Title Supervisor, Soil Evaluation Section

Briefly, what activity(s) do you perform within your department?

Conduct soil tests Supervise repair of septic systems Supervise staff Review and approve subdivision plans Review and approve septic system designs Respond to questions from public

Approximately what percentage of your work week do you spend for each activity identified in question #9?

Soil tests - 20% Repair of Septic systems - 20% Supervise staff - 10% Review and approve Sub. Plans - 15% Review and approve Septic system designs - 15% Respond to questions from

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes- use GIS to prepare plans used for review and approval of repair of septic systems. Plans are attached to permits for septic contractor use and for an accurate representation of the site for our records. Plans include numerous layers such as; topo, image, property lines, roads, buildings, soil boundaries, streams, ponds, etc.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

DataQuery and property search. For examples, see number 11.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

no

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes, see Item #11

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes, see Item #11

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

See Item # 11

What activities do you think could benefit from use of (or increased use of) GIS?

not sure at this time. What are the capabilities?

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

Agency DEPRM

Name Regina Esslinger

Job Title Natural Resources Specialist III

Briefly, what activity(s) do you perform within your department?

I manage 3 natural resource specialists who review development plans for compliance with environmental regulations. I also review development plans, update laws/regulations/policies, and do land use planning.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

Managing employees - 25% Reviewing plans - 40% Updating laws - 30% Land use planning - 5%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes. I use orthophotos, soils, topo, cadastral and hydrology layers. I also use impervious surface, floodplain, forest, and SAMP wetland layers on occasion. I am a new employee, so I am still learning what is available and how to use it.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Yes. I use MyNeighborhood zoning to verify zoning boundaries of properties and I use DataQuery to verify existing site use and natural resources information on development plans.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

Yes. Geocoding of pumping stations was used to map pumping stations for evaluation of environmental regulations.

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes. I routinely use hardcopy maps to help explain development and enforcement situations to the Department Director.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes. We provided the Department of Recreation and Parks an orthophoto of Wilson Point Park showing existing impervious surfaces.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Reviewing development plans for compliance with environmental laws; producing maps for presentations; doing fieldwork using maps; performing large-scale land use planning.

What activities do you think could benefit from use of (or increased use of) GIS?

At this point, I haven't been with the County long enough to be able to assess this.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

So far I have found the GIS technology to be extremely helpful in my work.

Agency DEPRM

Name Robert Hirsch

Job Title GIS Analyst

Briefly, what activity(s) do you perform within your department?

GIS support and analysis Graphics support Computer support Forest sustainability initiative

Approximately what percentage of your work week do you spend for each activity identified in question #9?

90% GIS 1% Graphics 5% Computer support 4% Forest sustainability initiative

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes. Coordinate creation of data table linking Food Permit database to Facilities geodatabase: geocode addresses from permit database; create mapbook with orthophotos, road names, and geocoded food permits; use field data collected by food permit staff (recorded in mapbooks) to add Facilities geodatabase unique ID to table of Food Permits; use Cadastral geodatabase, roads, ADC grids, orthophotos to fill in gaps in field work.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Yes. Use ArcMap, ArcInfo license with Spatial Analyst extension to delineate drainage areas for stream monitoring program, from Digital Elevation Models and stream monitoring point location feature classes.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

Yes. Perform ArcInfo license level overlay operations to create land evaluation and site analysis for potential land purchases (conservation easement interests) - using the following

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes. Prepare small scale, large format hardcopy color site maps for reforestation planning. Create various maps for powerpoint presentations.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes. Produce hardcopy and digital maps for local land trusts in their planning, administration, and public outreach, showing natural and historic resources, overlain with conservation easements and tax parcels, labeled with tax parcel information. These maps aid the local land trusts in their planning, administration, and public outreach activities.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

Yes. Maintain conservation easements cadastral layer, which participates in topology and resides in a multi-user SDE spatial database.

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

The list is not brief, but here is a sampling from winter, 2006: Perform lawn layer/ownership status overlay analysis Prepare maps for Herring Run Watershed Assoc. Annual Meeting Update county-wide Green Schools map Prepare MDE groundwater spill notification mailing list and map Update well and septic data layers in Jacksonville Area Site maps for Kimberly Reforestation Plantings Pre-delivery update of data layers for Ag Land Prioritization Tool consultants Establish locations of dredging channel buoys using GPS

What activities do you think could benefit from use of (or increased use of) GIS?

Routing of inspections and pond or reforestation maintenance. GPS for field work. Many activities that already use gis would be enhanced by the creation of new geodatabases to fill gaps in our list of business geodatabases.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

Without GIS, our department would be far slower to process permits, be less responsive to public requests for information, and be less effective at most of our core functions. Development of new data layers (environmental easements, CBCA, wells and septics, public lands, etc) will increase DEPRM's efficiency and allow us to do more with the same staffing we currently have. Environmental rules would be better enforced, government credibility would increase, and better resource management decisions would be made.

Agency DEPRM

Name robert ryan

Job Title nrs III

Briefly, what activity(s) do you perform within your department?

supervise stream restoration program manage capital projects

Approximately what percentage of your work week do you spend for each activity identified in question #9?

90%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes, for stream analysis and property identification

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

sometimes with property info

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

sometimes with certain watershed basin and stream segment data

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

no

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

no

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

checking property ownership, topographic information, and technical stream data. This includes morphological characteristic for the design and construction of environmental restoration

What activities do you think could benefit from use of (or increased use of) GIS?

location of natural resource layered information combined with property information and the County's infrastructure.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

Agency DEPRM

Name Robert Schleigh

Job Title DEPRM Finance & Admin. Supv.

Briefly, what activity(s) do you perform within your department?

Managed the fiscal activities of the Department and provide administrative support to agency staff.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

100%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

No

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

No

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes, GIS map products are used in analysis and development of a deer management plan, and for Phase I/II environmental assessments of property.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

No

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

None

What activities do you think could benefit from use of (or increased use of) GIS?

n/a

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

Agency DEPRM

Name Robert T. Wood,Jr.

Job Title Engineer III

Briefly, what activity(s) do you perform within your department?

Stormwater Management and Grading Plan Review, Field Inspection and Development Plan Review for Land Development/Construction projects in Baltimore County

Approximately what percentage of your work week do you spend for each activity identified in question #9?

Stormwater Management Plan Review(75%) Grading Plan Review(20%) Other Activities(5%)

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes. The first thing I do when I receive a new project is to pull up GIS orthophoto, topography, hydrology, property boundary, etc., to get a 'good feel' for the project areas existing conditions and the proposed project conditions which is to be constructed. I also use GIS to verify site conditions prior to performing field inspections and site visits.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Yes.(See question#11)

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No. I've not used this feature. But I'd be interested in learning more about this because it may be another GIS tool I can use. I am scheduled to take a GIS training course in November, so maybe

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes.(See question #11).I routinely get a hard copy for every project .

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes. On occasion we provide the public with info based upon request.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No.

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

See above responses

What activities do you think could benefit from use of (or increased use of) GIS?

Everything that we do can benefit from the knowledge and understanding of GIS technology.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

I'm glad that I have access to this powerful tool and I believe this tool is the wave of the future. GIS makes my job easier. You can probably tell from my responses that I'm excited about

Agency DEPRM

Name Samuel Gorse

Job Title Sanitarian II

Briefly, what activity(s) do you perform within your department?

Collect water samples for bacteria from bathing and recreational areas in Baltimore County. Post water results on the Department's web site. Also involved in the Department's response to a Consent Decree to eliminate Fat, oil and grease (FOG) sources from food facilities entering the Public Sewer System in the County.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

Water Samples April through November (30%) FOG Program 70%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

No

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

No

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

No

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

I provide data to our County OIT staff to enter the data on a County Web Site for our Department.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

No

What activities do you think could benefit from use of (or increased use of) GIS?

unknown

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

unknown

Agency DEPRM

Name scott porter

Job Title Operations Supervisor

Briefly, what activity(s) do you perform within your department?

1.Supervise Environmental Operations Staff 2.Inspect Stormwater Management Facilities 3.Supervise Clean Shores Program 4.Coordinate Derelict Boat and Shoreline Debris removal program

Approximately what percentage of your work week do you spend for each activity identified in question #9?

1. 30% 2. 30% 3. 20% 4. 20%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes. locate swm facilities and check property status

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

no

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

no

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

yes, swm facilities, drainage area maps, property location maps

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes, swm facility locations throughout the County

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

locate facilities related to stormwater runoff and control, drainage areas, Create maps of swm facility types and locations

What activities do you think could benefit from use of (or increased use of) GIS?

Stormwater retrofit identification,

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

It is a useful tool to quickly narrow down property issues using the Cadastral feature as well as locating utilities and related features in conjunction with field research. Allows ability to print out maps of these features for hard reference.

Agency DEPRM

Name Sharon B arger

Job Title Office Assistant

Briefly, what activity(s) do you perform within your department?

Clerical duties - phones, letters, filing, data entry, typing, attendance, computer updates, scanning-imaging, validating documents, indexing

Approximately what percentage of your work week do you spend for each activity identified in question #9?

Anywhere from 5% to 100% depending on the work load and priorities each day and week

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

I do not personally, but others within my dept use it frequently

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Same as #12

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

No

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

No

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

I use the Property Search database, but no GIS databases

What activities do you think could benefit from use of (or increased use of) GIS?

Not sure

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

As stated, I do not personally use the GIS system, but I know that a lot of people in my section along with rest of the department benefits from and uses the GIS system frequently and it makes things a lot easier for them.

Agency DEPRM

Name Sheldon Brill

Job Title NRS II

Briefly, what activity(s) do you perform within your department?

Subnet LAN Administrator and primary PC support tech

Approximately what percentage of your work week do you spend for each activity identified in question #9?

100

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Rarely

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Assist department staff in solving problems with GIS applications, install GIS application software

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

No

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

No

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Provide technical support to GIS users, attempt to perform GIS tasks in an emergency

What activities do you think could benefit from use of (or increased use of) GIS?

If the learning curve can be reduced, it could be a useful tool in environmental impact review.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

Much of it seems to be used to provide maps to be used as background 'wallpaper' for political functions.

Agency DEPRM

Name Stephen Adamski

Job Title Natural Resource Specialist

Briefly, what activity(s) do you perform within your department?

My primary use of GIS is preparing maps to use in field investigations and surveys, particularly the USSR Hot-Spot and Neighborhood Source Assessments. Maps are also prepared for more specific follow-up activities, including referrals to other agencies. I also make maps for local watershed protection groups on an as needed basis. A few maps are requested, usually every 3-4 months.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

I spend an estimated 35% of my time using the GIS in conjunction with my field work.

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes, all three of them. Community groups need to verify land ownership for conducting cleanup activities, tree plantings, etc. Topographic information is needed to determine steepness for installing rain gardens and for determining drainage areas. Orthophotos are a mainstay of nearly every map I produce and are used to document and assess pollution sources throughout neighborhoods and industrial or commercial areas, to document complaints and pollution hot-spots, to determine the location of old trails, right-of ways, and access points, and to investigate pollution problems.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Not usually.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No.

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes, I prepare and print out maps for nearly all of my field work. Poster sized maps are printed on a plotter. All maps are stored digitally.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

I sometimes provide maps for community and watershed preservation groups to be used for a specific purpose. I also prepare presentation maps for meetings, stream maps for geocoding sampling points, as well as maps showing vegetation, pervious areas, feature proximities, etc.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No.

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

See questions 11 and 15.

What activities do you think could benefit from use of (or increased use of) GIS?

Project maps can be used for long periods. However, my involvement with community maps often comes in surges, making it more difficult to keep up on the most appropriate layers to use, and secondly, knowing their locations in the databases.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

I would like to see a specific and up-to-date directory of all the new and existing layers that should be used. This directory should not contain all layer that ever existed, only the ones to be used. Older and alternate sources should be separated, even if just within a directory. A brief explanation of the salient features or specific limitations could be included when needed (e.g. orthos may only cover part of the county, better for printing at certain projections, impervious layer may not include driveways, etc.). With the increase in interjurisdictional activities, I would like to see a combined watershed base map for the City-County. Eventually layers could be made more compatible, including labeling.

Agency DEPRM

Name Steve Bevard

Job Title Engineering Associate III

Briefly, what activity(s) do you perform within your department?

Three year maintenance inspections of storm water management ponds.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

85%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes, I use the GIS to locate ponds using ortho photos and cadastral layer to locate ponds, also use this information to find the owners and tax pin info.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

no

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

no

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes, print out pond areas with roads, property line, and topo to help locate ponds

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

no

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

create maps of pond areas with roads, property line, and topo to help locate ponds

What activities do you think could benefit from use of (or increased use of) GIS?

A data layer with SWM pond locations in the form of a centroid placed near the control structure that has the pond data associated with each pond .

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

Agency DEPRM

Name Steve Stewart

Job Title Natural Resource Manager

Briefly, what activity(s) do you perform within your department?

1. Oversee meeting the NPDES - MS4 Permit requirements, including the preparation of the Annual Report. 2. Prepare Small Watershed Action Plans to meet water quality goals. 3. Prepare grant applications to support water quality initiatives 4. Oversee research projects 5. Coordinate with County, State, and Federal Agencies in regards to water quality issues.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

1. 30% 2. 30% 3. 10% 4. 20% 5. 10%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes. The county is required to submit GIS information as part of the Annual NPDES Report, including; Stormwater Management Facility location and drainage areas, monitoring locations, watershed restoration project locations and drainage areas, storm drain system location, impervious surfaces.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Yes. During the 4-year comprehensive zoning review, I use the MyNeighborhood website to assess the zoning proposals for potential impacts to water quality and natural resources. The Watershed Management and Monitoring Section works with citizen based Watershed Associations and other interested citizens regarding water quality issues. As part of this we are in the process of developing a MyNeighborhood website for use by citizen groups to produce maps and answer questions regarding water quality. Currently we must do the analysis for each citizen query, prepare any maps or response and get back to the citizen.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

Yes. One aspect of the NPDES Permit is reporting on spills. The spill database from the Fire Department is geocoded to provide the location, so we can determine which watershed the spill

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes. As part of the development of Small Watershed Action Plans, we assess stormwater management facilities for possibility of conversion to water quality facilities. Maps are produced to expedite location of the facilities in the field.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes. The data for the Small Watershed Action Plans is displayed as maps for public meetings. The monitoring locations are annually sent to the state for display on a website of all monitoring activities that are occurring in the state.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

Yes. I, among others, update location and the drainage areas for stormwater management facilities and capital improvement projects.

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

1. Prepare data layers for submission to Maryland Department of the Environment as part of the NPDES Permit requirements. 2. Use GIS for both analysis and to prepare maps in the development of Small Watershed Action Plans. 3. Use GIS to produce maps in support of grant applications. 4. Use GIS in the analysis of the relationships between landscape factors and biological or chemical condition of streams.

What activities do you think could benefit from use of (or increased use of) GIS?

Virtually all of the activities conducted by the Watershed Management and Monitoring Section are supported in some fashion by GIS. As an example, the recent ability to access stormwater management facility design drawings as tif files has increased our productivity and accuracy in digitizing drainage areas, as required by our NPDES Permit. The enhanced analysis capabilities of the current GIS permits us to more effectively analyze actions needed to meet water quality goals and is essential to developing Small Watershed Action Plans. Our Illicit Connection Program has benefited from GIS by enabling us to locate the sources of illicit connections. Research projects, such as, the current Pollution Removal Effectiveness of Street Sweeping and Inlet Cleaning, have been enhanced by GIS. The inlets in the study were randomly selected using GIS, thereby meeting statistical requirements to extrapolate the data county wide. The analysis of biological data and chemical data in relation to landscape factors allows us to create models that will predict the consequences of future land use changes and the ability of the county to meet water quality standards.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

The advancement of GIS over the last decade has permitted this section to meet NPDES Permit requirements, conduct watershed planning, conduct monitoring, and analyze proposed zoning changes in a more efficient manner than was possible previously. Consequently, the Section has been better positioned to meet mandates with little increase in staff. The environmental requirements at the local, state and federal level continue to increase. Without GIS we would be hard pressed to meet those requirements.

Agency DEPRM

Name Susan Farinetti

Job Title Sanitarian III, Supervisor

Briefly, what activity(s) do you perform within your department?

1.) review and approve well sites, building permits, development plans. 2.) Maintain the well data base and other drinking water related databases, 3.) process well permits and U&O info.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

1. 40% 2. 30% 3. 30 %

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes, to locate properties, get topography, property lines, geological info etc

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

no

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

no

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

just to print out a property map for my use

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

no

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Locate properties for well sites and sanitary surveys

What activities do you think could benefit from use of (or increased use of) GIS?

put locations of wells and septic systems and other data on a data layer so we could use it in future planning.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

Agency DEPRM

Name Thomas Bodrogi

Job Title Registered Environmental Sanitarian

Briefly, what activity(s) do you perform within your department?

conduct field inspections for removal and installation of residential underground storage tanks. conduct soil evaluations for proposed development of property and for design of on-site sewage disposal systems for new construction and for repair of existing failing systems. review proposed development plans for properties with wells and septics.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

UST's 25% soil evaluation 30% inspection and design of SDS (sewage disposal systems) 30% paperwork related to above 15%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes aerials for locating properties topo maps to design sewage disposal systems and to locate geographical features.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

no

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

no

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

no

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

no

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

locate topography and geograhical features in order to locate and design wells and onsite sewage disposal systems

What activities do you think could benefit from use of (or increased use of) GIS?

unsure

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

NC

Agency DEPRM

Name Thomas Panzarella

Job Title Natural Resource Specialist II

Briefly, what activity(s) do you perform within your department?

1.) Environmental Impact Review of Development Plans, Building Permits and Environmental Studies. 2.) Field verification of submittals by consultants (e.g., developers, engineers, etc.) 3.) Meet in office and field with private citizens and consultants to provide guidance and assistance regarding proposed or ongoing land development with respect to, primarily, Baltimore County environmental laws and regulations specific to their projects (Forest Conservation, Water Quality, and Critical Area Regulations).

Approximately what percentage of your work week do you spend for each activity identified in question #9?

Respectively, corresponding to enumeration of question 9: 1.) 70%-75% 2.) 15%-20% 3.) 10%-15%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes- This is routinely utilized as part of the environmental impact review of submittals for verification of information contained there-in and as preparation for field data verification. The use of this technology is a valuable time saver while providing for a more thorough review, thereby increasing the overall accuracy of the final work product.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

I would provide the same answer as is provided for Question #11

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes, as part of preparation for field inspections, as part of the plan review process in the office, and as a comparative tool with submittals assigned to me for review

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes, GIS is used on a daily basis to better serve the public, in the office or on the telephone, with concerns or questions regarding their property or project- We also share this technology with other agencies within Baltimore County Government. An example would be our use of Orthophotos as a necessary part of the pier permit review process.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Referencing and verification of watercourses, hydrology, soils, zoning classifications, roadways, tax map and property boundary information, topography, orthophotos, land use and vegetative cover. My position requires the utilization of GIS on many occasions each day as one tool to ensure the thorough review that is required. A valuable, additional GIS feature would be the Chesapeake Bay Critical Area boundary, as a majority of our office duty walk-ins would be much better assisted if this capability were available.

What activities do you think could benefit from use of (or increased use of) GIS?

Please refer to my answer to question #17

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

I would stress the need for the addition of the Critical Area boundary. This would be most helpful to our staff and to the public, at large.

Agency DEPRM

Name Thomas Vidmar

Job Title Deputy Director

Briefly, what activity(s) do you perform within your department?

Manage section managers and oversee department programs and initiatives. Represent the department at meetings inside and outside County government.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

Management and oversight 75% Department representation 15% Other 10%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Occasionally. Primarily in review of environmental and drainage issues associated with public or private land development projects and/or citizen complaints.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

No.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No.

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Occasionally. See #11. Also in presentations outside the department.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

No.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No.

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Review sites proposed for development. Review drainage complaints. Review surplus property requests from Land Acquisition.

What activities do you think could benefit from use of (or increased use of) GIS?

Complete, accurate layers showing drainage infrastructure, soil classifications, and wetlands, as well as property plat and right of way plat reservations and easements, would expedite review of development projects, permit applications and complaints. Accurate Chesapeake Bay Critical Area limits would be very helpful in assessing project and permit issues.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

Although I do not utilize it to the extent that most of our staff do, I observe that it is an invaluable tool in assessing environmental and resource issues. We use it extensively to provide info to the public(we provide 8-4:30 walk-in service daily). In fact, there is now an expectation that this info will be available to our constituents. DEPRM is very much dependent on GIS to accomplish our mission.

Agency DEPRM

Name tom regulski

Job Title inspector

Briefly, what activity(s) do you perform within your department?

inspect new developments

Approximately what percentage of your work week do you spend for each activity identified in question #9?

100

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

not on a daily basis

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

only if there is a neighborhood dispute

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

no

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

no

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

no

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

I use aerial maps to see what the property looked like before compares to the present

What activities do you think could benefit from use of (or increased use of) GIS?

solves neighbor problems when pictures are shown to the two parties involved

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

none

Agency DEPRM

Name tony okechukwu ezirike

Job Title engineer 111

Briefly, what activity(s) do you perform within your department?

Review of storm water management and grading plans, as-built plans, as-built inspections, field meetings, response to complaints.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

60%- swm and grading plans review 25%- as-builts plans review and as-built inspections. 10%-Writing as-built letters 5%--Answering duty calls and responding to complaints.

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

GIS provides topographical maps, hydrologic and soil maps with which I verify and review drainage area maps for vegetation, stream lines, impervious surface covers(imagery). These informations feature prominently in storm water Management review.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

I have used GIS DataQuery in the past to pull out tax information, length, distance and area of a particular parcel or subdivision, and to manipulate other useable statistics.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

Most of the work I do involves geocoding and routing. We use engineering softwares such as TR-55 and TR-20 to accomplish these. Any such program embedded in GIS will be very

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

No, but that's a capability that will be welcome. Right now our office digitizing is handled by MIS support.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

We provide developer's consultants with documents, maps and data from previously approved plans for development of adjacent properties or other properties of equivalent hydrologic characteristics.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No.

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

I use GIS to locate topographic maps, site surface cover, stream lines crossing site or reviewing site runoff, building envelopes, tax ID numbers and account numbers, etc.

What activities do you think could benefit from use of (or increased use of) GIS?

_We are now in desperate need of filing and storage space, digitizing and storage of site plans and maps _ More precise measurement of area and distance _ As-built inspections by GIS could save the county a bundle.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

The problem I have experienced with GIS in the past is the fact that it is a continuously changing technology. I am not exposed to up-dated training to keep up with the changes. What I learned 5 years ago is now obsolete.

Agency DEPRM

Name Wade Shelton

Job Title Natural Resource Specialist II

Briefly, what activity(s) do you perform within your department?

I manage Capital Improvement Projects such as dredging, stormwater retrofit and shoreline enhancement projects, assist with stream complaints and stream restoration projects, and provide GIS support (e.g. - maps and analysis) for everyone within the Capital Improvement and Operations Section.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

Project Management - 60% Stream Complaints / Restoration - 10% GIS - 30%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes. If I am given a stream complaint to investigate, I will use the tax parcel database in order to identify the property in question, determine ownership and adjacent property information. I will use orthophotos, topography, hydrology, and infrastructure (roads, storm drains, etc.) data in order to construct a basemap of the property in question for use in the field.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Yes. While I do not use DataQuery (my knowledge of ArcGIS is extensive enough that I do not need to use the program), I regularly use GIS to select specific attributes, identify and select overlapping attributes and determine drainage patters (3-D modeling).

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

I do not use spatial analysis on a daily basis, but I do perform them regularly, such as using 3-D modeling to help determine drainage patters.

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes. I make aerial and property maps for other people in my section that are performing field work or need them for a presentation. Generally, I export these maps as a .PDF document so it can be printed in color or on the plotter.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes. I provide maps and GIS data to consultants that are working on Capital Improvement projects and to permitting agencies (e.g. - Maryland Department of the Environment, Army Corps of Engineers).

Do you perform any GIS data maintenance activities? If yes, please provide an example.

Yes. I maintain the data that I have created for the Capital Improvement Section, making sure that everything has adequate descriptions, isn't redundant to existing data, etc.

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Create / Edit maps / plans for Dredging Projects Create maps for permit applications Incorporate GPS data in order to monitor navigation buoys Create maps for stream complaints, stormwater retrofits, public meetings and presentations Locate customer addresses for public meetings and project mailings Analyze drainage patters

What activities do you think could benefit from use of (or increased use of) GIS?

Stream complaints. It would be useful to have a data layer which identifies the location all of the stream complaints in the Capital Improvement Program database. This way when we get a new stream complaint, we can simply turn that layer on in order to see if there are other complaints nearby. This will make it easier for us to determine if a complaint is part of a larger problem that is affecting a larger number of people.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

GIS technology is an integral part of DEPRM. It is used daily throughout the department and makes us all more effective.

Agency DEPRM

Name Wallace S Lippincott, Jr.

Job Title Natural Resources Manager

Briefly, what activity(s) do you perform within your department?

Administer land preservation conservation programs. Review development plans in the rural resource areas. Develop strategies for preserving land. Work with the Agricultural community. Work with the Land Trust community on implementation of Rural Legacy Plan. Work with conservation donation programs, etc. Assist in managing lands acquired by DEPRM.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

Land Preservation - 40% Development review -20% Management of lands - 10% Work with Ag Community - 5% Work with land trusts -10% Constituent services related to above - 15%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes, Review of properties for eligibility to programs. Review GIS data for implementing development regulations. Review of GIS to respond to constituents.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

My Neighborhood - quick look at the land conditions of a property to see what adjacent uses there are and general land cover.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

no

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

My neighborhood maps for review of development project and for submittal on short notice of land use of a property for easement amendment considerations.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Typically for my use but occasionally for required documentation by State about a project or for the Citizen Ag Board members to review in order to make a recommendation.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

see above

What activities do you think could benefit from use of (or increased use of) GIS?

Putting land preservation information on the web in a manner like myneighborhood so public could access.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

na

Agency DEPRM

Name william clarke

Job Title natural resource manager

Briefly, what activity(s) do you perform within your department?

supervisory duties of professional field staff (sanitarians), management of environmental site assessments (ESA)on call contract, programmatic control of fats ,oils and grease reduction (FOG) program per requirements of County/USEPA/DOJ Consent Decree and other special projects; recreational waters/sanitary sewage overflows(SSO) program; plans review program; response to county employee /workplace environmental issues

Approximately what percentage of your work week do you spend for each activity identified in question #9?

Management of field staff = 30%; ESA management = 30%; FOG = 10%; recreational waters/SSO programs =20%; workplace environmental health issues 10%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

aerial photo often with topo and or other features represented are often used for ESA presentations; information displays are frequently required though not on a daily basis. for instance we are often required to do briefings on special County ESA projects requiring aerials depicting site boundaries related topo, and sampling or investigation data.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

most GIS work is done to support special projects

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

no

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

no

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

yes, as related to special projects

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

most of this is done by the departmental GIS section

What activities do you think could benefit from use of (or increased use of) GIS?

recreational waters program

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

although I do not personally utilize GIS system routinely, it is invaluable as a support function

Agency DEPRM

Name Yuly Lipsits

Job Title Hydrologist

Briefly, what activity(s) do you perform within your department?

Environmental site assessment

Approximately what percentage of your work week do you spend for each activity identified in question #9?

100

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

No

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

No

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Aerial photos necessary for presentations

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

No

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Aerial photos for presentations

What activities do you think could benefit from use of (or increased use of) GIS?

Do not know

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

No comments

Agency DEPRM

Name Yvonne DeLoatch

Job Title Natural Resource Manager

Briefly, what activity(s) do you perform within your department?

Provide oversight of regulated programs, and inspection and enforcement activities associated with: commercial food service operations; community hygiene; recreational hygiene; recreational waters monitoring; solid waste facilities; the Transient Noncommunity and NonTransient Noncommunity water systems monitoring; SSO Consent Decree Compliance with respects to Fats, Oils, and Greases (FOG), as well as management of Environmental Health database systems and other programmatic duties.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

Manage daily staff code enforcement activities in all programs regulated by this Section -30%; Oversight of the design, creation, and management of software database systems use to track,

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes, the GIS information is invaluable in assigning work load, explaining to the citizenry affected areas of concern in any regulated programs i.e. maps depicting food facilities, rodent complaints, sewage overflows, etc.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

Yes, data queries are used in assigning staff to different geographical areas in the County; determining the areas of the County on private water and sewer services; and a host of other

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

All facilities regulated by this Section are geocoded. Geocoding allows use to develop to spatial diagrams of the County infrastructures.

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Digital maps are produce to depict the different Environmental Health geographical areas, food service facilities locations, recreational waters monitoring sites and numerous other

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes, maps are provided for public and intra-agency meetings, i.e. the geographical areas of the different communities are provided to assist in explaining environmental problems and proposed solutions.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No.

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Creating maps that depict the environmental issues existing in different communities, using GIS to obtain a visual descriptions of communities topographical layers in order to allocate

What activities do you think could benefit from use of (or increased use of) GIS?

GIS allows an agency to determine the areas of concerns/problems throughout the County and allocate resources to these areas.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.