

Appendix M

Office of Information Technology



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1 Office of Information Technology

1.1 Agency Overview

The Office of Information Technology (OIT) is organized into four operating units: Business Applications, Network and Systems Management, Customer Support Services, and Business Operations. The Office is responsible for a wide array of services provided to other County agencies as well as the public, including information systems, telephones, radio communications, records management and printing services.

Business Applications

OIT's Business Applications Unit is responsible for maintaining and supporting over 145 computer applications including the County's financial systems, human resource information system, criminal case management system, online time and attendance system, property tax system, and e-government systems. This Unit is charged with managing all application development and installation of new computer systems in the County. Business Applications is also responsible for the County's geographic information system (GIS), which includes property, planimetrics, orthophotography, topographic, and various small scale data elements.

Network and Systems Management

The Network and Systems Unit is responsible for maintaining and supporting the County's application platforms that include IBM Mainframe, IBM AS400, IBM RS6000 (Unix), Novell Netware, and Microsoft NT/2000. The Unit supports and maintains 210 centralized and distributed servers and all network infrastructures connecting the County's main network with 112 wide-area network (WAN) sites. This group is also responsible for maintaining and supporting shared services such as GroupWise, Internet access, remote dial-in access, and Citrix service.

Customer Support Services

The Customer Service and Support Unit is responsible for first and second level support for the County's 3,200 personal computers. The Helpdesk and Desktop Support groups provide assistance to support end-user problems, handling approximately 14,000 calls per year.

The Computer Training Center provides computer and software training services to County agencies and employees, training over 3,200 students in fiscal year 2006. The Unit also is responsible for the County's Data Center, supporting computer room operations 24 hours a day, 365 days per year.



Business Operations

The Business Operations Unit is responsible for operational support for the Office of Information Technology including budgeting, contract administration and the Project Management Office. This Unit is also responsible for providing printing services to County agencies, printing over 12.5 million sheets in fiscal year 2006. Additionally, the Unit supports and maintains all phone and radio communication systems serving County agencies.

1.2 Agency Public Access Programs

OIT supports the entire county in making GIS information available to the public. This takes the form of information provided through the county's web site such as static maps and other static information (e.g., forms, reports, etc.); interactive GIS maps provided via the MyNeighborhood series of ArcIMS applications; and other web-based applications. In addition to providing information through the web, OIT makes county GIS data layers available to the public, using a Fee structure and License Agreement, set by administrative policy, that prescribes what the licensee may and may not do with the data.

1.2.1 Static Maps

Static maps are published map products that are available for downloading and printing. Generally, these maps are found in reports, publications, or presented at public meetings. Some of the maps are intended for viewing only. The viewable maps vary in size from 11x17 inches to 36x54 inches. All maps are in Adobe .pdf format. The following static maps and/or map series are provided by OIT to the public:

- Political Districts (countywide)
- Election Districts (countywide)
- Congressional District Maps (5)
- Councilmanic District Maps (7)
- State Legislative District Maps (6)
- Basic Services 2006 – Sewer
- Basic Services 2006 – Transportation
- Basic Services 2006 – Water
- Project Map Check Mission Plan
- Baltimore County Towson Campus Map
- Hurricane Isabel Map Series (10)

It should be noted that many of the other county agencies provide static maps and/or lists of locations with links to MapQuest that provide on-line mapping. These are summarized in the individual agency chapters. OIT's Web Services group assists agencies in posting information on the county's web pages, but the individual agencies are responsible for the content of those pages.



1.2.2 MyNeighborhood

The County’s series of MyNeighborhood ArcIMS applications allow the user to display and query map data, and perform certain functions such as zooming, panning, identifying, etc. MyNeighborhood assists the user to:

- Determine where a feature is located
- Provide more information about the feature (name, address, etc.)
- Analyze relationships with other features

All of the MyNeighborhood applications are similar in look and feel, and all share the same base map data, which is the same data contained in the County’s GIS databases. MyNeighborhood was designed to provide citizens access to the same data used by County personnel. However, each MyNeighborhood application is tailored to a specific set of data and was built with a specific user in mind.

The following MyNeighborhood applications are currently available. Each of these applications is described in greater detail in the Enterprise discussion of the County’s Public Access programs.

- MyNeighborhood: Commercial Revitalization
- My Neighborhood: Draft Bicycle Plan
- My Neighborhood: Enterprise Zones
- My Neighborhood: Facilities
- My Neighborhood: Historic
- My Neighborhood: Planimetric/Topographic
- My Neighborhood: Zoning

Several of the MyNeighborhood applications rank among the top 400 County web pages based on web visits. These include the MyNeighborhood: Zoning and MyNeighborhood: Facilities applications. The summary statistics for 2006 are shown in the table below.

2006 Summary Statistics	Visits	% of Total County Website Visits:
MyNeighborhood Zoning	54,658	0.74%
MyNeighborhood Facilities	27,511	0.37%
Total Hits:	82,169	1.12%

Table 1 – MyNeighborhood Web Visit Summary Statistics

Baltimore County’s OIT GIS Unit was recognized for excellence in the GIS field with a 2006 Special Achievement in GIS (SAG) award at the Twenty-sixth Annual ESRI International User Conference in San Diego, California. ESRI presents the award to organizations and agencies that display dedication and commitment through their use of GIS technology. The winners of the award are chosen out of



more than 150,000 organizations worldwide. Baltimore County was nominated and received the award because of the innovative enterprise GIS program offered to county agencies and the public through its MyNeighborhood Internet Mapping applications.

1.2.3 Other Web-Based Applications

OIT has developed a number of other web-based GIS applications that are provided to the public via the County’s web site. These include the following applications. Each of these applications is described in greater detail in the Enterprise discussion of the County’s Public Access programs.

- Community Crime Profile
- Find Tile
- Rural Water
- Land Survey Control Points
- Voter Mapping Application “Where Do I Vote”

1.2.4 Data Requests

Baltimore County provides public access to the County's GIS maps, data, and services. This fee-based program is designed to provide printed copies of published maps, access to the digital data, and services for the creation of custom products based on customer specifications. Digital data is available in several standard GIS and computer aided drafting and design (CADD) export formats to support multiple uses, including shapefiles, .e00, and .dxf. Services are available to create custom products using the County's available data. All customers obtaining products are required to sign a License Agreement for GIS Data. GIS maps and data are given to consultants at no cost for use in design projects if the projects are county, state, or federal projects.

The following is a summary of data requests filled by OIT, including the type of requestor, value of the data, and the number of tiles or products provided. It should be noted that the trend in data requests has been decreasing in the last few years, perhaps due to the fact that larger requesters may have received all of the data they will need until the next county update of the orthophotography, elevation data, or planimetric data. The table below presents statistics on data requests from FY2002 through FY2006.

Year	Total Count	Public	Internal	Free	Paid
FY02	1,343	1,161	182	\$298,510	\$73,507
FY03	926	721	205	\$920,205	\$136,937
FY04	1,029	815	214	\$2,151,033	\$137,377
FY05	928	758	170	\$1,575,122	\$145,369
FY06	761	611	150	\$1,784,599	\$124,186
Total	4,987	4,066	921	\$6,729,469	\$617,376

Table 2 - Historic Data Requests



1.2.5 Products and Fees

The following common products and services are provided by Baltimore County GIS through the public access program.

Product Name	Standard Product Layers
LiDAR	1 st & Last Returns Bare Earth Gridded Bare Earth Intensity Imagery DTM (MassPoints & Breaklines)
Planimetric/Topographic	Examples: Buildings Roads Hydrology Contours
Orthophotography	Orthophotos Raw Scans Photo Centers
Cadastral (Property)	TaxParcel Simultaneous Conveyence Simultaneous Conveyence First Division Boundary Encumbrance Annotation
Large Scale County-Wide	Street Centerlines Zoning ZipCodes Administrative Layers Census Boundaries Political Districts
Small Scale County-Wide	Examples: Regional Planning Districts School Districts Traffic Analysis Zones Basic Services
Services	Description
Custom Service	Analysis Map Production

Table 3 - Public Access Products



The following fee structure for data requests, set by Administrative Policy, went into effect on December 27, 2005.

Products – Restricted Use	Price (Per Tile)
LiDAR (4 tiles)	\$90
Planimetric/Topographic	\$90
Orthophoto	\$80
Cadastral (Property)	\$140
Large Scale County-Wide	\$150
Small Scale County-Wide	\$85
Products – Unrestricted Use	Price (Countywide Dataset)
LiDAR	\$15,048
Planimetric/Topographic	\$60,192
Orthophoto	\$53,504
Cadastral (Property)	\$13,104
Large Scale County-Wide	\$1,500
Renewal Fee	20% Current Fee
Services	Price
Custom Service	\$25/hour + Product(s)

Table 4 - Public Access Fees

Notes:

1. Prices are per tile, per published product or as otherwise indicated.
2. Additional copies of the paper map are available for \$10.00 each.
3. Countywide data sets can be purchased at a 20% discount.
4. Digital data is available in .dxf, .e00, and shapefile format.
5. Unrestricted Use License must be a countywide purchase with no option for per tile.
6. Renewal fee is 20% of the entire database cost per update.

1.2.6 License Agreements

All customers obtaining products are required to sign a License Agreement for GIS Data. The County has two types of License Agreements: one for Restricted Use and one for Unrestricted Use. The Restricted Use License Agreement data can be purchased by tile and prohibits the licensee from providing the requested data to anyone not included in the License Agreement and from deriving revenue from the data or products created from the data. Under the terms of the Unrestricted Use License Agreement, the licensee can only use the data for purposes described to the County, but the sale of derived products is not prohibited. However, the County can require the licensee to provide the County access to any products derived from the County’s data. Customers receive a 20% discount on county wide planimetric, orthophotography or cadastral data regardless of the licensing type.



1.3 Agency Services

OIT provides numerous services to the general public, to other county agencies, and in support of the overall enterprise. These services are summarized in the tables below.

1.3.1 Application Development and Support

OIT personnel include two GIS applications programmers that spend 95% of their time developing and supporting applications for the Baltimore County Enterprise. This includes developing and maintaining integrated applications, ArcGIS productivity toolbars, Desktop ArcGIS applications, and MyNeighborhood and other ArcIMS websites. OIT application development support includes managing upgrades and the development environment. Most new applications development is in Visual Basic .NET. OIT staff also provide technical support contact and solutions for any problems that occur with custom applications.

GIS Application	Description
Domain Editor Tool	The DomainEditor tool simplifies the process for uploading and updating tables in a database.
MapDiscrepancy Tool	The MapDiscrepancy tool provides an interface for different agencies to report discrepancies between physical property and the database map. This tool automates the work flow and tracks user activities.
Cadastral Tools	The Cadastral tools are collected into a custom ArcGIS toolset designed to enhance the editing and QC of cadastral layers.
Data Query	The Data Query is a custom ArcGIS toolbar designed for non-GIS users to more easily perform GIS analysis.
Facilities Application Tools	The Facilities Application tools are customized forms and tools designed to assist in the management of the Facilities geodatabase.
Field Verification Scripts	The Field Verification scripts are a series of custom scripts designed to perform QC on the Centerline data.
QC Ortho Tools / Scripts	The QC Ortho tools are a set of custom scripts for QC-ing orthophoto layers.
Utilities Editing Application	VB.NET productivity tool in ArcGIS 9.0
CASS WORKS to ArcSDE 9.0 Triggers	Oracle Triggers - Synchronizes ArcSDE BCDPW Sewer Data with CASS WORKS
CASSView 3.0 (build 39)	Integrated Mapping Application with CASS WORKS
LACQuire	The “Lacquire” application was developed for PDM to extract property owner information from the parcels that overlaid potential ROWs. This application needs to be upgraded from ArcView 3.2 to ArcGIS 9.x.



GIS Application	Description
Agricultural Preservation Model	Developed for DEPRM, the Agricultural Preservation Program is 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.
MyNeighborhood: Bicycle Plan	The Bicycle Plan site provides research bicycle recommendations of the Draft Baltimore County Pedestrian and Bicycle Access Plan using this interactive mapping application.
MyNeighborhood: Commercial Revitalization	The Commercial Revitalization site explores Baltimore County's commercial revitalization districts and allows users to research property information with this interactive mapping application.
MyNeighborhood: Enterprise Zones	The Enterprise Zones site assists with determining whether a specific property is located within the County Enterprise Zones. Users can also search out property information.
MyNeighborhood: Facilities	The Facilities site provides information to the public for locating public schools, libraries, parks and other government facilities in their neighborhood with this interactive mapping application.
MyNeighborhood: Historic Properties	The Historic Properties site provides information to the public about the location and allows users to research historic properties and districts using this interactive mapping application.
MyNeighborhood: PlanTopo	The PlanTopo site allows for information research into the County's property database. Users can get a detailed report containing owner, location, legal description, value, and transfer information.
MyNeighborhood: Zoning/CZMP	The Zoning/CZMP site is posted as part of Baltimore County's Department of Planning. This site is used to present zoning information.
Community Crime Report	The Community Crime Report site is posted by the Baltimore County Police Department allowing Baltimore County crime statistics to be readily accessed by citizens. The user has the ability to display three-year average crime statistics in a half-mile area around a location. This location can be obtained by clicking on a point on the map, drawing a rectangle or polygon, or typing in an address. The selected area is highlighted, the statistics are displayed, and the user can zoom to that area. Additional tools are supplied for the user to interact with the map.



GIS Application	Description
Find Tile	The Find Tile site is posted as part of Baltimore County GIS Public Access Service. This site finds the desired area(s) determined by Baltimore County Tax Map, 200 scale grid, CD-Images Grid, VARGIS Imagery Index, or through ADC Indexing. The desired area may be determined visually by selecting an area, querying a map, or by location an address inside the county.
Property Search	The Property Search site allows the user to view a current map of Baltimore County. Users can obtain visual information on the location of the county boundary, as well as streams, and highway locations in the county.
Rural Water Supplies	The Rural Water Supplies site allows the user to obtain visual information on the location of the county boundary, as well as major roads and rural water supplies locations in the county. However, this application was developed using an out of date dataset and does not appear to be currently available to the public.
Engineering Records	Out of the Box - ArcIMS site used by DPW Engineering Records staff to identify manhole #'s in the Sanitary Sewer layer (and used to research drawing #'s by feature location).
Master Road	The Master Road intranet application will allow users to search for road name and range information. The application will also manage the workflow for adding new road names and changing road names.
Survey Control	The Survey Control web application allows the public to search and find out information about survey control points in Baltimore County. The public can also submit reports on the condition of the control points. The web application allows those with proper access rights to manage the recovery condition reports.
Voter Mapping Application "Where Do I Vote"	The Baltimore County Board of Elections provides an ArcIMS online polling place locator to help citizens identify their polling place as well as their councilmanic, legislative, and congressional districts. Citizens are directed to MapQuest for directions to their local Precinct and Polling Place.

Table 5 GIS Applications

1.3.2 Database Administration

OIT personnel include one GIS Database Administrator whose support to the Baltimore County Enterprise includes managing the county’s database licenses (e.g., ArcSDE and ArcGIS), managing ArcSDE production and development databases, managing Cassworks database and user accounts, performance monitoring, providing software support, managing enterprise ArcSDE database compressions, managing user accounts, loading data into databases, SQL scripting, reporting and providing other database support.



Database Administration Services	Description
Manage ArcSDE and ArcGIS Licenses	Maintain and update licenses for ArcGIS software. Includes moving agency ESRI license to core OIT/GIS license (8922), validating support and maintenance agreements, getting license quotes, and updating server license file.
Manage ArcSDE Development Databases	Maintain development Oracle/ArcSDE databases to test new data models, applications, and code. Provides a safe environment for testing, reducing the risk to existing production databases and datasets.
Software Support	Install Oracle and ArcGIS software. Typically the GIS Unit installs software on a test PC, validates the install and functionality of the software, installs software with the Desktop Services Group, and Desktop Services images the software installation and installs software on GIS users' PCs. Install supporting software/extensions on GIS machines.
Database Support	Support OIT/GIS Services Unit in the development of GIS layers. <ul style="list-style-type: none"> • Manage the Oracle/ArcSDE installations, maintaining a high level of performance and connectivity; • Manage user accounts; • Grant and revoke access to databases and data layers; • Maintain production and development databases; • Build, test and document new data models; • SQL scripting and reporting • Load GIS data into databases; • Load tabular data in support of GIS databases or processes; • Troubleshoot application issues, verifying issue as database or software related.

Table 6 - Database Administration Services

1.3.3 Database Maintenance

In addition to maintenance of the Enterprise GIS data layers, which is discussed in section 3.1.4, OIT staff also manage the database edits made by other county agencies, working with the data editors in those agencies to reconcile differences if conflicting edits are made by different users. OIT staff maintain topology between data layers that participate in shared topologies (e.g., Cadastral and Facilities). The complexity of the topology rules and the number of layers participating in the topology can make it difficult for new or inexperienced editors of the database to fully understand and maintain the proper topological relationships. OIT helps to provide direction across agencies to ensure that topological relationships are maintained. OIT staff also coordinate compressions of ArcSDE databases.



Database Maintenance Services	Description
Cadastral Datasets - Cadastral Topology (coincidence between layers)	Management of the edits made by multiple cadastral editors in order to preserve the coincidence between the cadastral layers that participate in the cadastral topology.
Interdepartmental Coordination - Preservation of Real-World Layer Dependencies	A layer maintained by a given agency can have a real-world geographic dependency on a layer that is maintained by a separate agency (e.g., Landuse is dependant upon Parcel linework). OIT helps to provide direction across agency boundaries for these edits, in order to preserve these real-world dependencies in the GIS data.

Table 7 - Database Maintenance Services

1.3.4 Emergency Operations Center (EOC) Support and Staffing

In conjunction with the other county agencies that support the EOC (including DPW, Fire, and Health), upon activation of the EOC, the OIT team provides support and staffing for the center. OIT support includes running some of the more complex GIS modeling applications such as plume modeling, evacuation modeling, and storm surge modeling. OIT staff also prepare maps and other materials as requested and provide external back-up of County GIS data to provide coverage in case the existing systems are not available.

EOC Support and Staffing Services	Description
On-the-fly Mapping Support	Provide support to EOC agency representatives in the form of on-site, real-time mapping and geocoding at the request of the EOC representatives.
Plume Modeling	Provide capability to run applications to support the EOC activities. CAMEO is a plume modeling software product.
Evacuation Modeling	Provide capability to run applications to support the EOC activities. HURREVAC is a hurricane and storm track modeling software product that can evaluate historical and projected hurricane tracks.
Storm Surge Maps (LiDAR)	Perform GIS analysis using LiDAR elevation data to simulate various storm surge scenarios at 1-foot intervals. Spatial Analyst is used for modeling the data.
Map/Data Preparation - Maps for specific EOC-GIS exhibits/presentations as requested	Preparation of many different map products at the request of the EOC representatives. In addition, the team demonstrates the functionality and capability of GIS technology in emergency response in the form of presentations showing several scenarios of disaster recovery in which GIS analysis would provide substantial assistance.
Updated Information Backup (external)	Up-to-date backups of the county's main base layers in the event of activation of the EOC, to provide coverage in case the county network is not available.

Table 8 - EOC Support and Staffing Services



1.3.5 Public Access

OIT provides public access to the County's GIS maps, data, and services to the public. This fee-based program is designed to provide printed copies of published maps, access to the digital data, and services for the creation of custom products based on customer specifications. Digital data is available in several standard GIS and computer aided drafting and design (CADD) export formats to support multiple uses, including shapefiles, .e00, and .dxf. Services are available to create custom products using the County's available data. All customers obtaining products are required to sign a License Agreement for GIS Data. GIS maps and data are given to consultants at no cost for use in design projects if the projects are County projects or State projects.

Public Access Services	Description
Government Projects - Federal, State, County Government	Provide countywide data, maps, and customer service support to government entities including federal, state, local governments; public boards of education; government contractors; and organizations chartered by governments.
Internal - County Wide Agency Support	Provide countywide data, maps, and custom service support to county agencies. Examples include: <ul style="list-style-type: none"> • Department of Budget and Finance/Land Management - Provide Site Inventory/Analysis Map Display • Baltimore County State Attorneys Office - Provide Legal Exhibits Maps used for Criminal/Civil Trials • Peoples' Counsel - Provide Legal Exhibits Maps • Baltimore County Law Office - Provide Legal Exhibits Maps and Data • County Executives Office - Provide Custom Maps for Display • Office of Planning - Community Conservation (UDAT) • 911 Training Center - Training Center Map Display • Liquor Board - License Mapping • Maps for display/presentations at public meetings • Maps for display/presentations to county agencies • AT&T Lawsuit - GIS Map/Data Exhibits • Hurricane Isabel - Map/Data Analysis • Police - Joseph Palzinski Hostage Situation • Department of Social Services (DSS) - Foster Home Mapping • Owings Mills Trail Network GIS Mapping • Department of Economic Development Study Area Maps • Board of Elections - Maps
External – County Wide Agency Support	GIS Seminars and Workshops - Deliver seminars and teach workshops at user conferences such as TUGIS, URISA, and ESRI conferences (Regional and National). Slide presentations, sample data, and additional lecture resources are made or developed for these conferences.



Public Access Services	Description
Public Assistance - Constituent Assistance	Public Access center for the County GIS. Maps, data, and services are provided. The GIS Data is available in hardcopy and digital formats. Digital data is provided in several formats to support multiple uses. Services are also provided to create custom products using the County's available data. The FindTile Tool is made available on the County GIS website in support of the Public Access program. The GIS data and service provided is fee based.
Public Assistance - Private Company/Organization	Public Access center for the County GIS. Maps, data, and services are provided. The GIS data is available in hardcopy and digital formats. Digital data is provided in several formats to support multiple uses. Services are also provided to create custom products using the County's available data. The FindTile Tool is made available on the County GIS website in support of the Public Access program. GIS data and Maps made available to a wide range of private companies and contractors. The GIS data and service provided is fee based except for government entity contractors.
Standardized Map Production	Standardized maps are made for hardcopy public access requests. The most common maps are: Basic Services Maps, Zoning Maps, Election Districts, Cadastral tax maps, Planimetrics, Orthophotos, and Soils.
Technical Support - Staff Resources	Provide ArcGIS editor support to assist other county agencies by request. Example: assisted the Office of Planning with the update of the CZMP Data layer.
Technical Support - Informal Inter-Agency Software Training and Support	Technical support provided through informal and impromptu software training, trouble shooting, general Q & A, and basic introduction to using GIS data for County employees.
Technical Support - User Support - Q & A ("GIS Help Desk")	Internal and external user support in the use and functionality of GIS software and data, GIS website navigation, explanation of the data collection and update process, and general Q & A.
ArcGIS Map Books	ArcGIS Map Books prepared and maintained for map distribution: <ul style="list-style-type: none"> • Cadastral • PlanTopography • Orthophotography

Table 9 - Public Access Services



1.3.6 Spatial Analysis and Support

OIT provides spatial analysis and support to the Baltimore County Enterprise including Model Builder support, 3D Modeling, and ArcGIS Analysis. The County LiDAR data is usually the base for creating 3D models.

Spatial Analysis and Support Services	Description
3D Modeling - Line of sight	3D modeling is used to determine objects that can be seen from a certain vantage point along a straight line. This activity will be performed on a 10-year maintenance cycle and will use the most updated LiDAR products.
3D Modeling - Slope Analysis	A slope analysis layer is created and maintained using 3D modeling by processing the LiDAR data. This activity will be performed on a 10-year maintenance cycle and will use the most updated LiDAR products.
3D Modeling - Viewshed	A viewshed is created and maintained using 3D modeling by processing point data and LiDAR data. This will be performed by processing LiDAR data. This activity will be performed on a 10-year cycle and will use the most recent LiDAR data.
3D Modeling - Visibility Analysis	3D modeling is used to determine a viewshed from a specific point. This activity will be performed on a 10-year maintenance cycle and will use the most updated LiDAR products
3D Modeling - Watershed	A watershed layer is created and maintained using 3D modeling by processing the LiDAR data. This activity will be performed on a 10-year maintenance cycle and will use the most updated LiDAR products.

Table 10 - Spatial Analysis and Support Services

1.4 Agency Study Participants

Agency personnel contributed to the study by completing the short form online survey, participating in interviews, and providing miscellaneous data to support information provided throughout the report.

Ten people completed the online short form survey, which was used to determine each person’s role within the department and determine if these individuals were using GIS to support their activities. Each of the short form responses has been included in the appendix of this document. The following personnel completed the online short form survey:

Short Form Respondents
Doug Adams
Greg Vukov
Jonathan Curtis
Melinda Frost
Richard A. Bohn



Short Form Respondents
Rob Livermore
Scott Messier
Steve Foley
Steve Rollins
Tunde Oyinloye

Table 11 - Short Form Respondents

There were a total of nine individuals that participated in interviews conducted on February 12, 2007 and February 22, 2007. These individuals are:

Interviewees
Doug Adams
Greg Vukov
Jonathan Curtis
Richard A. Bohn
Rob Livermore
Scott Messier
Steve Foley
Steve Rollins
Tunde Oyinloye

Table 12 – Interviewees



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2 Cost/Benefit Information

This section outlines the annual costs and benefits that are associated with GIS use and maintenance within OIT. 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:	\$0
Other Benefits:	\$124,186.00 Revenue collected from data request fees (based on FY2006)
Total Annual Benefits:	\$124,186.00
Summary - Total Annual GIS Cost	
Total Annual Costs:	\$66,271.73
Summary - Total GIS Cost/Benefit	
Total GIS Cost/Benefit:	+\$57,914.27

Table 13 – 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

OIT contributes more significantly than any other county agency to the cost of supporting the Enterprise GIS for Baltimore County. This agency maintains a significant number of the enterprise GIS datasets and carries approximately nine fulltime employee equivalents devoted to GIS database maintenance. The total annual agency costs to support each of these elements is \$66,271.73.

It should be noted that additional costs incurred by the agency for training, programmers, database administration, hardware, and software, and certain data sets that support the county are discussed in detail in the Enterprise Architecture chapter. As described there, for the purposes of this study these costs have been distributed among the county agencies based on the number of GIS users in each agency.

Total Agency GIS Cost: \$66,271.73



Details of each of the cost issues are discussed in the sections below.

2.1.1 Annual Operational Costs

All of OIT’s training costs have been captured in the Enterprise costs and distributed among all of the county agencies that use GIS. These costs are summarized in the Enterprise Operational Costs chapter.

Type of Training	Estimated Cost	# of Staff Attending	Total Annual Cost
All OIT training costs are reflected in Enterprise Operational Costs	\$0		\$0

Table 14 – Annual GIS Training Costs

2.1.2 Annual Resources (GIS Staff)

The agency currently contains eight staff members that perform some activity that supports GIS for the enterprise, and has two allocated additional positions that are currently vacant. This assistance includes application development and support, database administration, GIS database maintenance, providing public access to county dataset and mapping products, and spatial analysis and support. The costs spent annually to support the personnel associated with GIS maintenance activities are spread among all of the county agencies, since OIT staff maintain enterprise data and provide enterprise support. The data layers that are maintained by OIT are listed in section 3.1.4). The individuals in OIT who maintain GIS database layers 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
Melinda Frost	95%
Vacant Programmer	95%
Rob Livermore	80%
Doug Adams	25%
Jeff Tirschman	95%
Scott Messier	100%
Jon Curtis	100%
Steve Foley	100%
Tunde Oyinloye	100%
Vacant Technician	100%

Table 15 – GIS Database Maintenance Personnel



2.1.3 Annual Enterprise Costs

Each of the costs for providing the enterprise GIS has 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 costs, or the costs that are expended to provide GIS support and resources (such as database management, infrastructure, software licensing etc.), 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. OIT has a moderate number of GIS users - approximately thirteen users (or 5.86% of the total users in the county). Annual enterprise costs have been proportionately distributed to OIT based on this 5.86% factor. These costs are calculated as \$50,343.80 in operating costs and \$15,927.93 in capital costs, totaling \$66,271.73. Each of these figures has been provided 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
13	5.86%	\$50,343.80	\$15,927.93	\$66,271.73

Table 16 – Annual Enterprise GIS Costs

2.2 Agency Benefit Assessment

OIT sees relatively few hourly benefits from GIS usage in relation to the size of the department and in comparison to other agencies within the county of similar magnitude. This is due to the nature of OIT as a county support agency. Most of the GIS support activities OIT is involved with would not be done without GIS, since the responsibilities are directly related to maintaining the GIS Enterprise. And, most of the benefits realized through OIT’s efforts are actually realized by other agencies. For instance, the production benefits that are realized through development of an application are realized by the agency for which it was developed. Thus, while OIT uses GIS daily for many of its activities, few hourly benefits can be calculated using the methodology of this study.

2.2.1 Existing GIS Benefits

The existing benefits realized by OIT have been determined for each activity by analyzing the effort needed to perform a task with GIS in comparison to the time spent without GIS. This examination allows each activity to be measured in terms of time, which has been then recomputed to dollars that are realized annually. Each of the existing benefits that is currently being realized has been summarized by program below and has been aggregated to give an annual dollar figure. These benefits are discussed in more detail in section 4. All dollar amounts are based on a flat rate of \$33.95 per hour.



Service	Application Development and Support
Description	Develop custom applications for use by OIT staff and other Baltimore County agencies to simplify processes, improve workflow, enhance QC procedures, and streamline operations. Create ArcIMS web mapping applications used by the public through the County’s web site. Create ArcIMS web mapping applications used by Baltimore County agencies through the Internet/Intranet.
Activities	GIS Applications include: <ul style="list-style-type: none"> • Domain Editor Tool • MapDiscrepancy Tool • Property Discrepancy Tool • Cadastral Tools • Data Query • Facilities Application Tools • Field Verification Scripts • QC Ortho Tools / Scripts • Technical Support Contact • Utilities Editing Application • CASS WORKS to ArcSDE 9.0 Triggers • CASSView 3.0 (build 39) • LACQuire • Agricultural Preservation Model • MyNeighborhood: Bicycle Plan • MyNeighborhood: Commercial Revitalization • MyNeighborhood: Enterprise Zones • MyNeighborhood: Facilities • MyNeighborhood: Historic Properties • MyNeighborhood: PlanTopo • MyNeighborhood: Zoning/CZMP • Community Crime Report • Find Tile • Property Search • Rural Water Supplies • Engineering Records • Master Road • Survey Control • Voter Mapping Application “Where Do I Vote”
Time Benefits (Annual)	N/A
Other Benefits (Annual)	N/A
Total Benefits	\$0



Service	Database Administration
Description	Database Administration of the county's GIS licenses and databases ensures that they can be deployed throughout all county agencies. Managing user accounts and privileges ensures that users have access to the data they need but cannot harm data that are sensitive.
Activities	Database Administration Services include: <ul style="list-style-type: none"> • Manage ArcGIS Licenses • Manage ArcSDE Production and Development Databases • Software Support • Database Support • Application Support • SQL Scripting and Reporting • Data Modeling
Time Benefits (Annual)	N/A
Other Benefits (Annual)	N/A
Total Benefits	\$0
Service	Database Maintenance
Description	Maintain enterprise GIS data layers and enforce topology among data layers that require it.
Activities	Database Maintenance Services include: <ul style="list-style-type: none"> • Cadastral Datasets - Cadastral Topology (coincidence between layers) • Interdepartmental Coordination - Preservation of Real-World Layer Dependencies
Time Benefits (Annual)	N/A
Other Benefits (Annual)	N/A
Total Benefits	\$0



Service	EOC Support and Staffing
Description	Provides support and staffing to assist the EOC with GIS functionality, including data, maps, and analysis.
Activities	EOC Support and Staffing Services include: <ul style="list-style-type: none"> • On-the-fly Mapping Support • Plume Modeling • Evacuation Modeling • Storm Surge Maps (LiDAR) • Map/Data Preparation - Maps for specific EOC-GIS exhibits/presentations as requested • Updated Information Backup (external)
Time Benefits (Annual)	N/A
Other Benefits (Annual)	N/A
Total Benefits	\$0
Service	Public Access
Description	Provide access to GIS data, maps, and analysis.
Activities	Public Access Services include: <ul style="list-style-type: none"> • Government Projects - Federal, State, County Government • Internal - County Wide Agency Support • External – County Wide Agency Support • Public Assistance - Constituent Assistance • Public Assistance - Private Company/Organization • Standardized Map Production • Technical Support - Staff Resources • Technical Support - Informal Inter-Agency Software Training and Support • Technical Support - User Support - Q & A ("GIS Help Desk") • ArcGIS Map Books
Time Benefits (Annual)	N/A
Other Benefits (Annual)	\$124,186
Total Benefits	\$124,186



Service	Spatial Analysis and Support
Description	Provides spatial analysis and support to the Baltimore County Enterprise including Model Builder support, 3D Modeling, and ArcGIS Analysis. The county LiDAR data is usually the base for creating 3d models.
Activities	Spatial Analysis and Support Services include: <ul style="list-style-type: none"> • 3D Modeling – Line of Sight • 3D Modeling – Slope Analysis • 3D Modeling – Viewshed • 3D Modeling – Visibility Analysis • 3D Modeling – Watershed
Time Benefits (Annual)	N/A
Other Benefits (Annual)	N/A
Total Benefits	\$0

Table 17– Existing GIS Benefits by Service

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 Service):	Hours Saved	Labor Rate (Avg)	Annual Time Benefits
Application Development and Support	0	\$33.95	\$0
Database Administration	0	\$33.95	\$0
Database Maintenance	0	\$33.95	\$0
EOC Support and Staffing	0	\$33.95	\$0
Public Access	0	\$33.95	\$0
Spatial Analysis and Support	0	\$33.95	\$0
Total Time Benefits:		\$33.95	\$0
Other Benefits Summary (By Program):			
			Annual Other Benefits
Revenue collected from data request fees (based on FY2006)			\$124,186.00
Total Other Benefits:			\$124,186.00
Grand Total Annual Benefits:		\$124,186.00	

Table 18- Total OIT Annual Benefits



3 GIS Utilization and Recommendations

3.1 GIS Utilization Analysis

GIS is used and/or supported throughout most of OIT’s units. Many units touch GIS in one way or another, whether through direct support of the geographic information system by the Business Applications unit, maintenance of the networks that support its distribution throughout the county by the Network and Systems Management unit, and GIS training provided through the Computer Training Center within the Customer Support Services unit. Despite its significant use and widespread support within OIT, there are areas within OIT that could further benefit from increased use of GIS, including the Network and Systems Management Unit and the radio communications group.

3.1.1 GIS Personnel

Some of the County’s most experienced GIS specialists and its most highly GIS-trained personnel work in OIT. However, the agency also includes a large number of personnel devoted to non-GIS information technology services. Overall, the agency relies heavily on a relatively small number of individuals to meet the enterprise GIS needs of the County.

OIT has already invested in providing GIS training through the Computer Training Center in the Office of Information Technology for a large number of its staff. OIT staff also help prepare and present the GIS training classes offered by the county to the Computer Training Center. The following shows a breakdown of the levels of training and the number of staff that have received training at that level:

Basic Training (Data Query, ArcView)	Mid-Level (ArcGIS Intro)	Advanced (ArcGIS 8x or higher)
10	1	32

Table 19 – GIS Training

3.1.2 GIS Data Usage

OIT, in its role of providing GIS support to the entire County, at one time or another makes use of all of the GIS datasets provided by its ArcSDE services via the County WAN. These datasets are used in a variety of ways. The most important datasets used by the department are summarized below, along with some of the most frequent uses.

Dataset	Assessment of Agency Use
LiDAR data	<ul style="list-style-type: none"> • Manage data acquisition and QC of LiDAR data and ancillary elevation data products on a ten-year cycle • Perform 3D modeling • Perform storm surge modeling



Dataset	Assessment of Agency Use
Cadastral datasets	<ul style="list-style-type: none"> • Perform data maintenance on TaxParcels, Plats, and Subdivisions • Manage edits made by multiple cadastral editors to preserve coincidence between cadastral layers and participate in cadastral topology • Develop custom ArcGIS toolset for editing and QC of cadastral layers • Develop tools for agencies to report discrepancies between database and map layers • Develop tools for agencies to report discrepancies between state and county databases • Develop Property Search mapping application • Develop and maintain MyNeighborhood: Commercial Revitalization and MyNeighborhood: Enterprise Zones ArcIMS sites
Orthophotos	<ul style="list-style-type: none"> • Manage data acquisition and QC of orthophotos on a three-year cycle • Develop custom scripts for QC of orthophotos • Develop and maintain all ArcIMS sites • Develop and maintain DataQuery application
Planimetric/Topographic datasets	<ul style="list-style-type: none"> • Manage data acquisition and QC of planimetric and topographic data layers on a three-year cycle, including Buildings, Hydrology, Roads, and Two-Foot Contours • Develop and maintain all MyNeighborhood ArcIMS web sites
Facilities Geodatabase	<ul style="list-style-type: none"> • Manage data acquisition and QC of AddressPoints and Road Centerlines data • Develop customized forms and tools to assist in management of the Facilities Geodatabase • Perform database maintenance on data layers that are extracted from the Facilities Geodatabase (e.g., AddressPoints, Billiard Clubs, Facilities, Health Centers, Hydrologic Facilities, Installations, Movie Theaters, PAL Centers, Skating Rinks, Street Centerlines) • Develop field verification scripts designed to perform QC on the road centerline data • Perform database maintenance on 911 datasets • Develop and maintain MyNeighborhood: Facilities and MyNeighborhood: Bicycle Plans ArcIMS web sites • Develop and maintain Master Road Intranet application
Sanitary Sewer geodatabase	<ul style="list-style-type: none"> • Develop and maintain Utilities Editing Application • Synchronize Sewer data with CASS WORKS • Synchronize Sewer data with CASS View • Develop and maintain Engineering Records ArcIMS site
Right of Way (LACQ)	<ul style="list-style-type: none"> • Develop and maintain LACQuire application used by PDM



Dataset	Assessment of Agency Use
Tile Grids	<ul style="list-style-type: none"> • Develop and maintain Find Tile application that accesses Baltimore County Tax Map Grid, 200-Grid, CD-Images Grid, VARGIS Imagery Index, and ADC Index.
Crime data	<ul style="list-style-type: none"> • Develop and maintain Community Crime Report ArcIMS web site
Zoning	<ul style="list-style-type: none"> • Develop and maintain MyNeighborhood: Zoning ArcIMS web site
Rural Water Supplies	<ul style="list-style-type: none"> • Develop and maintain Rural Water ArcIMS web site
Bicycle Plans	<ul style="list-style-type: none"> • Develop and maintain MyNeighborhood: Bicycle Plan ArcIMS web site
Commercial Revitalization Districts	<ul style="list-style-type: none"> • Develop and maintain MyNeighborhood: Commercial Revitalization ArcIMS web site
Enterprise Zones	<ul style="list-style-type: none"> • Develop and maintain MyNeighborhood: Enterprise Zones ArcIMS web site
Historic Properties, County Historic Districts, National Register Districts, African American Survey Districts	<ul style="list-style-type: none"> • Develop and maintain MyNeighborhood: Historic Properties ArcIMS web site
Survey Control Points	<ul style="list-style-type: none"> • Develop and maintain Survey Control ArcIMS site
Administrative Boundaries (Councilmanic, Legislative, and Congressional districts)	<ul style="list-style-type: none"> • Develop and maintain Voter Mapping Application “Where Do I Vote”

Table 20 - Data Usage

3.1.3 GIS Applications Usage

OIT makes use of all of the ArcGIS applications that are available to the county, including those used for conducting the most complex analysis and editing available within the county. Additionally, OIT staff have developed custom GIS applications used throughout the county’s agencies and by the public on the County’s web site. These custom applications include the MyNeighborhood series of ArcIMS sites, other ArcIMS sites, DataQuery, and many customized production tools as listed in Section 1.3.

3.1.4 GIS Database Maintenance

OIT’s GIS data maintenance responsibilities are significant. OIT maintains over eighty different data layers at varying scales and maintenance intervals. When necessary, OIT staff also manage the database edits made by other county agencies, working with the agencies to reconcile differences if two conflicting edits are made by different users. For instance, up to four different agencies may perform editing and maintenance of different components of the Cadastral database: PDM maintains the Encumbrance ROW layer along with standard Cadastral data, OP maintains Landuse (attributes on TaxParcel), DEPRM maintains a parcel-based Restrictions Layer, and OIT maintains overall Cadastral topology and database management.



With this evolved situation of distributed editing among multiple agencies, there are both pros and cons. The topological structure of the data is essential for maintaining data integrity. And distributing maintenance responsibility to the agency with the subject matter experts for each layer allows them to focus specifically on their respective layer. However, OIT is responsible for coordination of the editing/editors across the various agencies which can be quite time-consuming. The complexity of the topology rules and the number of layers participating in the topology can make it difficult for new or inexperienced editors of the database to fully understand and maintain the proper topological relationships. The following table presents the feature classes with shared topology and editors spread among multiple agencies:

SDE	Database	Feature Class Layers	Editing Agency (# of Editors)	Agency Responsible For Database Mgmt (Versions, Topology)
5154	Cadastral	TaxParcel	OIT (2) PDM (1)	OIT
5154	Cadastral	Encumbrance	OIT (2) PDM (1)	OIT
5154	Cadastral	Simultaneous Conveyance	OIT (2)	OIT
5154	Cadastral	Sim Con First Division	OIT (2) PDM (1)	OIT
5154	Cadastral	Land Topology (Coincidence)	OIT (2) PDM (1) DEPRM (2) OP (9)	OIT
5154	Cadastral	Restriction	DEPRM (2)	OIT
5154	Cadastral	Land Use (attributes)	OP (9)	OIT
5154	Zoning	Zoning	OP (4)	OIT
5154	Zoning	Overlay	OP (4)	OIT
5154	Zoning	Zoning Overlay	OP (4)	OIT
5154	Zoning	Zoning Topology (Coincidence)	OP (4)	OIT
5152	Sewer	ssCleanout	DPW (5) OIT**	DPW/OIT
5152	Sewer	ssControlValve	DPW (5) OIT**	DPW/OIT
5152	Sewer	ssFitting	DPW (5) OIT**	DPW/OIT
5152	Sewer	ssGravityMain	DPW (5) OIT**	DPW/OIT



SDE	Database	Feature Class Layers	Editing Agency (# of Editors)	Agency Responsible For Database Mgmt (Versions, Topology)
5152	Sewer	ssLateralLine	DPW (5) OIT**	DPW/OIT
5152	Sewer	ssManhole	DPW (5) OIT**	DPW/OIT
5152	Sewer	ssMeter	DPW (5) OIT**	DPW/OIT
5152	Sewer	ssNetworkStructure	DPW (5) OIT**	DPW/OIT
5152	Sewer	ssPressurizedMain	DPW (5) OIT**	DPW/OIT
5152	Sewer	ssPump	DPW (5) OIT**	DPW/OIT
5152	Sewer	ssSystemValve	DPW (5) OIT**	DPW/OIT

Table 21 - Shared Topological Editing

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

Layer Name	Description	Update Frequency	Location	Complete
Abandoned Railroads	Visible rail centerlines no longer in use.	N/A	ArcSDE	Yes
AddressPoints (View)	A snapshot of the AddressPoints database at a moment in time	As Required	ArcSDE	Yes
Athletic Fields	Outline of athletic fields	N/A	ArcSDE	Yes
Billiard Clubs (View)	A snapshot of the Billiard Clubs database at a moment in time	Annually	ArcSDE	Yes
Buildings	Outline of permanent structures over 100 sq. ft. Compiled from stereo orthoimagery. Annotation derived from Baltimore County ADC Map book.	3 Year Cycle	ArcSDE	Yes
Bulkheads	Bulkheads	3 Year Cycle	ArcSDE	Yes
Cemetery	Cemetery outlines	N/A	ArcSDE	Yes
Commercial Pools	Commercial swimming pools	N/A	ArcSDE	Yes



Layer Name	Description	Update Frequency	Location	Complete
Communication Towers	800 Mhz towers	N/A	ArcSDE	Yes
Contours	Two-foot contours interpolated from LiDAR data	10 Year Cycle	ArcSDE	Yes
County Boundary	Master county boundary outline	3 Year Cycle	ArcSDE	Yes
County Facilities	Point file containing location of county owned facilities	Annually	No	Yes
Dams	Dam structures as polygons. Does not include reservoir being embanked.	3 Year Cycle	ArcSDE	Yes
Digital Elevation Models	DEMs created from 1995, 1996, 1997, and 2001 contours	10 Year Cycle	R Drive	Yes
Easement	Parcel Easements	Monthly	ArcSDE	Yes
Facilities	A snapshot of the Facilities database at a moment in time	Annually	ArcSDE	Yes
Fire Stations	Point Location of Fire Stations	Annually	R Drive	Yes
Fire Stations Boundary	Boundaries of each fire station with the station number attribute used for dispatching	As Required	ArcSDE	Yes
Floodwalls	Visible floodwalls and headwall	3 Year Cycle	ArcSDE	Yes
Golf Courses	Outline of golf courses	N/A	ArcSDE	Yes
Health Centers	Point locations of Health Centers	Annually	ArcSDE	Yes
Hydrologic Facilities	Point locations of hydrologic facilities	Monthly	ArcSDE	In-Progress
Hydrology	Hydrologic features. Includes: streams, ponds, reservoirs. Compiled from stereo orthoimagery.	3 Year Cycle	ArcSDE	Yes



Layer Name	Description	Update Frequency	Location	Complete
Index Grid - 200 Scale (BCMD)	Grids for the old Baltimore County 200 scale cadastral maps (1986). Each cadastral map is subdivided into nine grids, 6,000 feet by 4,000 feet.	N/A	ArcSDE	Yes
Index Grid - 200 Scale (MCS)	Grids for the old Baltimore County 200 scale cadastral maps. Each cadastral map is subdivided into nine grids, 6,000 feet by 4,000 feet.	N/A	ArcSDE	Yes
Index Grid - 600 Scale	Grids for the Baltimore County 600 scale maps. Each grid is 18,000 feet by 12,000 feet.	N/A	ArcSDE	Yes
Index Grid - ADC Map	The ADC index grid.	N/A	ArcSDE	Yes
Index Grid - Digital Orthophoto Quadrangles	Index grid for the digital ortho quarter quads - 1994	N/A	R Drive	Yes
Index Grid - MrSID Tiles	Index Grid for MrSID Orthophoto tiles	N/A	ArcSDE	Yes
Index Grid - Phase I	Grid indicating original mapping phases	N/A	ArcSDE	Static
Index Grid - Phase II	Grid indicating original mapping phases	N/A	ArcSDE	Static
Index Grid - Phase III	Grid indicating original mapping phases	N/A	ArcSDE	Static
Index Grid - VARGIS Orthophoto (1998)	Index grid of 1998 VARGIS orthophoto delivery CDs	N/A	ArcSDE	Yes
Index Grid - VARGIS Orthophoto (2000)	Index grid of 2000 VARGIS orthophoto delivery CDs	N/A	ArcSDE	Yes
Installations	A snapshot of the Installations database at a moment in time	Annually	ArcSDE	Yes
Junkyards	Junkyard outlines	N/A	ArcSDE	Yes
Landfills	Landfill outlines	N/A	ArcSDE	Yes



Layer Name	Description	Update Frequency	Location	Complete
LiDAR Bare Earth	LiDAR Bare Earth data represents the true ground and is the base data for contour creation.	10-Year Cycle	ArcSDE	Yes
LiDAR First/Last Returns	The first and last returns are the original LiDAR data captured before any processing takes place.	10-Year Cycle	ArcSDE	Yes
LiDAR Gridded Bare Earth	Bare Earth data processed to create a solid grid with 5-foot grid cells. The cell values are created by performing an interpolation of all elevation values that fall in the grid cell.	10-Year Cycle	ArcSDE	Yes
LiDAR Intensity Imagery	The intensity imagery is a tif file showing the first return datasets, which are most representing of all ground features.	10-Year Cycle	ArcSDE	Yes
Light Rail	Centerline of Light Rail lines	3 Year Cycle	ArcSDE	Yes
Metro Railroad	Centerline of Metro rail lines	3 Year Cycle	ArcSDE	Yes
Movie Theaters	A snapshot of the Movie Theaters database at a moment in time	Annually	ArcSDE	Yes
Orchards	Location of Orchards according to orthophotography	N/A	ArcSDE	Yes
Orthophoto (1995)	1995 orthophotos	3 Year Cycle	R Drive	Yes
Orthophoto (1996)	1996 orthophotos	3 Year Cycle	R Drive	Yes
Orthophoto (1997)	1997 orthophotos	3 Year Cycle	R Drive	Yes
Orthophoto (1998)	1998 orthophotos	3 Year Cycle	R Drive	Yes
Orthophoto (2000)	2000 orthophotos	3 Year Cycle	R Drive	Yes
Orthophoto (2001)	2001 orthophotos	3 Year Cycle	R Drive	Yes
Orthophoto (2002)	2002 orthophotos	3 Year Cycle	ArcSDE	Yes
Orthophoto (2005)	2005 orthophotos, 1-foot pixel, true color image	3 Year Cycle	ArcSDE	In Progress



Layer Name	Description	Update Frequency	Location	Complete
Orthophoto Quarter Quads - 1994	Digital orthophoto quarter quads - 1994 in NAD27, 4' pixel size	N/A	R Drive	Yes
PAL Centers	A snapshot of the PAL Centers database at a moment in time	Annually	ArcSDE	Yes
Parks and Recreation	Boundaries of miscellaneous recreational areas including public and private parks	N/A	ArcSDE	Yes
Pipelines	Major utility pipelines visible on aerial photography	N/A	ArcSDE	Yes
Playgrounds	Outlines of public playgrounds and "tot lots" that are visible on the aerial photography	N/A	ArcSDE	Yes
Police Stations	Point locations of Police stations	Annually	R Drive	Yes
Post Offices	Point locations of Post Offices that have their own zip code	Annually	ArcSDE	Yes
Power Stations	Outlines of substations	N/A	ArcSDE	Yes
Quarries	Man-made quarries	N/A	ArcSDE	Yes
Racetracks	Outer boundary of racetracks	N/A	ArcSDE	Yes
Railroads	Centerlines of railroads, including marshaling yards	As Required	ArcSDE	Yes
Restriction	Parcel Restrictions	Monthly	ArcSDE	Yes
Roads	Polygons covering the edge of pavement. Compiled from stereo orthophotography.	3 Year Cycle	ArcSDE	Yes
Sand & Gravel Pits	Outlines of sand/gravel pits larger than 0.1 acre	N/A	ArcSDE	Yes
Schools—Point Location	School point locations	N/A	R Drive	Yes
Sheriff Boundaries	Boundaries of each Sheriff district with the district number	As Required	R Drive	Yes



Layer Name	Description	Update Frequency	Location	Complete
SimConFrstDiv	Simultaneous Conveyance First Division (plat layer). Plat boundaries are entered by COGO and linked to a URL with a digital image of the source material.	Monthly	ArcSDE	Yes
SimCon	Simultaneous Conveyance (subdivision layer). Subdivision boundaries are the extents of all plats associated with a given subdivision, linked to a URL with development plans where available.	Monthly	ArcSDE	Yes
Skating Rinks	A snapshot of the Skating Rinks database at a moment in time	Annually	ArcSDE	Yes
Spot Elevations	Spot elevations to the nearest tenth of a foot	N/A	ArcSDE	Yes
Street Centerlines (View)	A snapshot of the Street Centerlines database at a moment in time.	Annually	ArcSDE	Yes
Tax Parcel	Tax Parcel Boundaries. Each lot on a plat is entered by COGO and assigned its Tax Account number.	Monthly	ArcSDE	Yes
Taxmaps (Images)	Scanned Tax Map images.	Annually	R Drive	Yes
TaxParcel	Cadastral features including parcels, lots, rights-of-ways, and subdivision boundaries. Each parcel contains an Account Identifier that links to the Real Property database.	Monthly	ArcSDE	Yes
Tennis Courts	Boundaries of community, outdoor tennis courts. Does not show private tennis courts in residential areas.	N/A	ArcSDE	Yes



Layer Name	Description	Update Frequency	Location	Complete
Trails	Centerlines of bike/hike trails in the County	Annually	ArcSDE	Yes
Transmission Lines	Cross country power transmission lines	N/A	ArcSDE	Yes
Tree Rows	Location of Tree rows greater than 50' wide according to orthophotography	N/A	ArcSDE	Yes
USGS Quadrangles (Images)	Scanned images of USGS quadrangles	N/A	R Drive	Complete
Wooded	Outlines of stands of coniferous and deciduous trees greater than 5 acres	N/A	ArcSDE	Yes
Zip Codes	Zip Code boundaries	Quarterly	ArcSDE	In Progress

Table 22 - Agency Data Maintenance

The costs of maintaining each of these data layers are discussed in the Enterprise Cost chapter of this report. The personnel associated with performing these database maintenance activities are identified in section 2.1.2.

3.1.5 Assessment of Business Process with GIS

OIT uses GIS for all of the services it provides to other county agencies. GIS involvement in each of OIT's business processes are discussed in the table below.

Service	Business Process Assessment
Application Development and Support	<p>GIS is used to:</p> <ul style="list-style-type: none"> • Develop custom applications for use by Baltimore County agencies to simplify processes, improve workflow, enhance QC procedures, and streamline operations • Create MyNeighborhood web mapping applications used by the public through the County's web site • Create ArcIMS web mapping applications used by Baltimore County agencies through the Internet/Intranet.
Database Administration	<p>Database Administration of the county's GIS licenses and databases ensures that they can be deployed throughout all county agencies. Managing user accounts and privileges ensures that users have access to the data they need but cannot harm data that are sensitive.</p>



Service	Business Process Assessment
Database Maintenance	GIS is used to: <ul style="list-style-type: none"> • Maintain enterprise GIS data layers • Enforce topology among data layers that require it.
EOC Support and Staffing	GIS is used to: <ul style="list-style-type: none"> • Provide support to the EOC through on-site, real-time mapping and geocoding • Develop plume modeling • Develop HURREVAC modeling • Develop storm surge modeling • Create disaster recovery scenarios • Back-up the county's main GIS data layers
Public Access	GIS is used to provide countywide data, maps, and services to public entities including: <ul style="list-style-type: none"> • Federal, State, and county governments • Educational institutions • Baltimore County government contractors • Private entities • Other internal county agencies
Spatial Analysis and Support	GIS is used to develop ancillary data layers from the County's LiDAR datasets. GIS-based 3D modeling techniques are used to create the following: <ul style="list-style-type: none"> • Line of sight • Slope • Viewsheds • Visibility analysis • Watersheds

Table 23 - GIS Integration with Business Processes, by Service

There are several ways that GIS could be used to integrate the system more fully into business processes, which are discussed in detail in section 3.3.

3.2 GIS Needs Assessment

3.2.1 Applications

No additional custom applications were identified as needing to be developed to support the business processes of OIT. All additional applications requirements are discussed in individual agency chapters, in the Enterprise Assessment of Public Access chapter, and in the Enterprise Recommendations.



3.2.2 Data

No additional datasets were identified as needing to be developed to support the business processes or programs of OIT. All additional data requirements are discussed in individual agency chapters and in the Enterprise Data chapters.

3.2.3 Training

OIT staff are already well-trained in the use of GIS. However, they could benefit from continuous updates to their technical knowledge. GIS is a rapidly evolving technology, and OIT staff need to remain well-versed in the latest technology in order to provide the most benefits to other county agencies. This can be accomplished through OIT staff attending GIS conferences (notably the ESRI International Conference), ESRI roll-out workshops (e.g., What's New with ArcGIS 9.2), on-line virtual courses, database administration training, programming training, and other specialized training courses.

3.2.4 Best Practices

There was one way that was initially determined for OIT to take advantage of best practices that have been implemented by other agencies or counties with similar business processes. This method is to:

- **Hire a GIS Program Manager** – OIT, and the county as a whole, could greatly benefit from hiring a dedicated GIS Program Manager. This position would be responsible for coordination with each of the county's agencies on a regular basis (e.g., monthly) to determine what each agency is doing, what GIS needs they have, and what GIS tools or data they could benefit from. Additionally, the GIS Program Manager could inform the agencies of upcoming OIT or countywide efforts that they should know about. Having a single point of focus for GIS that all agencies could contact regarding their ideas and needs who would see how they fit together countywide would be very beneficial.

3.2.5 Communication and Agency Coordination

OIT coordinates with all of the Baltimore County agencies through a number of means. These include the following:

GIS Oversight Committee – this group meets monthly and is chaired by the OIT Business Applications, Business Analyst - Land Management and GIS. The meeting is a gathering of liaisons from the agencies. Discussions about the project status, current activities in the agencies, and information sharing is the focus of this group. Minutes are published and posted on the web. Attendance is not consistent and the communication from the meeting to the liaisons users is generally not a refined process.



Information Technology Advisory Committee – The Information Technology Advisory Committee (ITAC) was formed to provide the county with effective and efficient information technology systems and services that support delivery of quality government. The ITAC is chaired by Robert Stradling, Director of OIT, and representatives from the following agencies sit on the committee:

- Administrative Office
- Aging
- Budget and Finance
- Circuit Court
- Community Conservation
- Corrections
- Economic Development
- Employment and Training
- Environmental Protection and Resource Management
- Fire
- Health
- Law
- Libraries
- OIT Managers
- Planning
- Permits and Development Management
- Police
- Public Schools
- Public Works
- Recreation and Parks
- Sheriff
- Social Services

The ITAC meets monthly and reviews major projects. This forum provides opportunities for sharing information about GIS Enterprise Technology and status on a monthly basis to help facilitate integration and ensure the technology is visible to County agencies and management...

ArcGIS Support – OIT serves as the GIS “Help Desk” for the County. OIT staff provide support for application specific or general questions about GIS functionality and data manipulation.

Training – OIT provides general education and information about ArcGIS, specifically with some of the more advanced concepts such as:

- Geodatabases
- Topologies
- Editing with ArcGIS and Topologies
- Analysis with GIS

Coordination of Versioned Geodatabases – OIT provides support to the GIS Enterprise by coordinating the compression cycles, topologies, and conflict resolution in ArcSDE for the large enterprise geodatabases such as Cadastral, Facilities, Sewer, and Zoning.

General Agency Support – OIT has provided assistance to support agency-specific deadlines by working to support agency goals and mandates, such as Utilities support to meet Consent Decree deadlines and CZMP support.

External Coordination – OIT was responsible for coordinating with USGS and negotiating an Interagency Memorandum of Agreement Partnership for Digital Orthophoto Imagery of Baltimore County in September 2005. This allowed for the county to cost-share with USGS for \$15,000 towards the production of the county’s 2005 orthophotography. OIT staff served as a Local Government



representative on the Geospatial One-Stop Standards Harmonization efforts and on the FGDC Homeland Security Working Group for Symbology to develop a standard set of symbols for use by the Emergency Management and First Responder communities. They also actively participate in MSGIC, Maryland State Geographic Information Committee, and are working to design, develop, and deploy state-wide database and compilation standards.

Despite all of the coordination efforts outlined above, more could be done.

3.3 Recommendations

OIT could further benefit from GIS in many ways. This section outlines recommendations that can be implemented in the short-term and long-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 PDM 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 and by activities that require a greater investment but are greatly needed. Each of these recommendations are discussed below. See section 4 for more detailed recommendations to support individual activities.

3.3.1.1 Quick Deployment

The following recommendations have the potential to provide additional benefits to the agency and can be implemented with few additional resources:

Opportunity 1: Pursue Participation in the MD Statewide Orthophoto Fly-Over

The county should actively pursue participation in the statewide orthophoto fly-overs. If the data will indeed meet the county's needs, there would be up to 20-40% cost savings due to economies of scale and reduced duplication of overlapping tiles (tiles that overlap into adjoining counties). Additionally, participation in this program might allow the county to selectively fly areas of high growth more frequently with the funds saved by participation in this program.

Opportunity 2: Develop a More Clearly Defined Role for OIT Support

Agencies that have GIS staff should be able to make their own maps. However, smaller agencies may not have the resources to perform more complex GIS functions or to maintain their own data. A more well-defined policy in this regard should be developed and implemented. The policy should discuss issues such as OIT's role in supporting the enterprise including data development, application development, and other support. It should also address how OIT prioritizes competing requests for assistance from other agencies, and agency roles in supporting their own GIS business processes, taking into account the variable resources of the different agencies. Development of such a policy should lead to increased accountability by



agencies for their own GIS functions, to the extent that they can participate. Additionally, continued education for agencies in how to negotiate the process to successfully request a significant GIS project is needed. The GIS Oversight Committee could assist with this, particularly in areas such as providing advice on how to navigate the System Development Life Cycle document, what the county's requirements are for metadata, and other technical issues such as this.

Opportunity 3: Develop More Formal Data Standards and Procedures

More formally documented data standards and procedures should be developed to identify the requirements for metadata, data accuracy, topology rules, and data storage that need to be followed by all county agencies. This would apply to all countywide data layers developed within agencies as well as to enterprise data layers.

3.3.1.2 Additional Investment Opportunities

The following recommendations have the potential to provide additional benefits to the agency and can be implemented additional resources:

Opportunity 1: Support PDM in Development of Easement Feature Class

An easement feature class has been identified as one that will greatly benefit multiple agencies within the county. PDM has been working on the development of this feature class for approximately four years and it is not yet complete. OIT should evaluate what support could be provided to PDM to speed up the completion of this data layer. The easement feature class will reduce the amount of time currently spent by personnel looking at hardcopy and digital tax parcel maps to research ownership and easement locations. The types of research that will see benefits from the research include:

- Police Department can use the easement layer to settle civil disputes.
- Public Works can use the layer to locate existing easements for new construction projects.
- Department of Environmental and Resource Management could use the layer for storm drain easements location.
- Office of Planning could use the layer for new projects, such as streetscapes.

This will also allow more complex analysis to be performed on the features, such as calculating the total acreage of easements within the county.



3.3.2 Mid-term Recommendations & Potential Benefits

There are several undertakings that can be implemented in the mid-term to improve GIS usage within the agency. These are summarized below.

Opportunity 1: Hire a GIS Program Manager

OIT, and the county as a whole, could greatly benefit from hiring a dedicated GIS Program Manager. This position would be responsible for coordination with each of the county's agencies on a regular basis (e.g., monthly) to determine what each agency is doing, what GIS needs they have, and what GIS tools or data they could benefit from. Additionally, the GIS Program Manager could inform the agencies of upcoming OIT or countywide efforts that they should know about. Having a single point of focus for GIS that all agencies could contact regarding their ideas and needs who would see how they fit together countywide would be very beneficial. This position should meet with agency heads on a regular basis, should have the authority to make decisions about priorities among agencies, should help refine business processes where necessary (e.g., PDM), should meet regularly with other counties in the region to share information about best practices and regional data sharing opportunities, and should meet with other quasi-county entities (e.g., the Board of Education, community colleges, etc.) regarding mutual GIS opportunities.



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4 Short-form Online Questionnaires

Agency Information Technology

Name Douglas Adams

Job Title Business Analyst

What county programs do you manage or support?

I manage Land Management application development and maintenance. I also manage the County's enterprise GIS.

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

1. applications requirements gathering and design 2. database modeling 3. GIS database requirements gathering and modeling 4. GIS application requirements gathering and design

Approximately what percentage of your work week do you spend for each activity identified in question #3?

1. 10 2. 5 3. 15 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, public inquiry in applications design in database design

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

Yes, Data Query, My Neighborhood XALL, FindTile Mostly public inquiry or agency consulting

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

Geocoding - to find location (usually to help with inquiry

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

Not generally

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

Yes, I work with the agencies to develop applications

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

No, but I manage the staff that performs the maintenance on the enterprise databases

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

Public Access - providing GIS products and services to county constituents.

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

Program/activity specific applications Use of routing for inspections, code enforcement, health or any other agency that sends staff into the field

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

I believe more of the databases required by federal, state or county code need to be recompiled to fit the basemap to improve overall accuracy and to decrease counties liability from use of existing data. I think GIS needs to be more widely available to agencies without dedicated GIS staff.



Agency Information Technology

Name Greg Vukov

Job Title Network Supervisor

What county programs do you manage or support?

Enterprise network infrastructure, enterprise servers for the County.

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

day to day oversight of the operations, maintenance, upgrade, and expansion of the County's enterprise data network.

Approximately what percentage of your work week do you spend for each activity identified in question #8?

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, the use of topo, facility, and other mapping is used for the expansion research for new sites, technology, and installations of equipment, poles, and wireless.

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

MyNeighborhood mainly, but would like to use a higher level GIS program, if I could receive some basic training.

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

again, yes, but not to the level that I could

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

yes, topo and land usage for figuring out routing of radio transmission, and overlay of underground and overhead data transmission lines.

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 and overlays for determining cabling routes and wireless paths.

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

more training available, as well as knowledge of, the available GIS products in the County.

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



Agency Information Technology

Name Jonathan Curtis

Job Title GIS Technician

What county programs do you manage or support?

1) Baltimore County Field Verification - Project Map Check - Field verification of all county addresses, address ranges, and facilities. 2) Facilities Geodatabase Maintenance - Currently involves testing custom application tools designed for the Facilities GDB. As data is acquired from project map check, maintenance will have to start on areas that are complete.

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

Geodatabase maintenance.

Approximately what percentage of your work week do you spend for each activity identified in question #8?

100% of my time is spent on these two projects. Both projects are related.

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

My job is maintaining GIS data and databases.

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

I use the Arc 9.0 software package and the Facilities Geodatabase tools as well as several other small custom applications for QA/QC.

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. We are in charge of Public Access to GIS data for both public and government data requests as well as providing some basic GIS services or help to other agencies as requested.

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

Yes. Maintenance of the Facilities GDB.

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

My only activities are data maintenance.

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

All of my activities currently use GIS.

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



Agency Information Technology

Name Melinda Frost

Job Title GIS Programmer

What county programs do you manage or support?

Master Roads ArcIMS Web Application Survey Control ArcIMS Web Application Field Verification ArcGIS Tools Facilities Geodatabase and Maintenance ArcGIS Tools Cadastral ArcGIS Tools GroupLink ContractWise Rolodex Data Query ArcGIS Tools Agriculture Land Use/Preservation Model Other ArcGIS Tools Maintenance and Development Other ArcIMS Maintenance and Development

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

GIS Programmer for the county. I assist design, develop, and maintain both desktop GIS applications and GIS web applications. I work with MS Visual Studio VB.NET, ASP.NET, python scripting, Model Builder, and occasionally C# for the majority of the projects I'm involved in. I also fill a technical position to Groupwise Rolodex software. My duties also include assisting with software upgrades concerning GIS.

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

The percentage of my work week varies depending on whether the projects in #9 are in development and implementation phase OR in maintenance phase. I think it would be more beneficial to say I spend about 95% on GIS projects.

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

Well, all of my code and projects (except as the tech lead for Contactwise) is focused on accessing, manipulating, extracting, and analyzing GIS data.

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

I provide maintenance for this applications. And, yes I use Data Query daily (I love the bookmarking tool) and usually have hit at least one of the ArcIMS websites daily- mainly to test or to verify I'm utilizing the data layers correctly.

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

All the ArcIMS websites employ geocoding. In Master Roads and Survey Control, I have a couple of canned queries that especially utilize geocoding.

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

No- but I'm the last resort for manning Public Access. Though luckily no one has come in when I am on duty.

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

Both. Recently Survey Control has been launched on as a link on the internet for the public's usage. For internally, the majority of the projects are for other agencies. An example, MasterRoads is for PDM.

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

Yes I provide maintenance for ArcIMS applications, ArcIMS software, and ArcGIS desktop tools. Examples are assisting upgrading our ArcIMS webserver.



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

Mainly I do programming- and in the process I use ArcGIS libraries to access all sorts of tools and commands of ArcGIS- querying, selecting, editing, modifying, intersecting, locating, and creating tables, feature layers, & maps. And probably more. Anything you can think ArcGIS can do- I have done it. And in the process I create usefully tools, commands, and reports for both GIS and non-GIS users in both web or desktop applications or as plugins. I just wait for someone to say can you make it do this- and then I go to work to make it happen for them.

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

Well, I think anything you can spatially enable- whether data or some type of analytical process. Even if the spatial component is only part of the whole process/project- then I think it can benefit from using GIS. Putting something on a map is just another way to help analyze and make a better decision (hopefully that also means saving the county money and keeping the tax payers happy).

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

I think stressing that GIS can be used as a decision support tool is another tact to use in promoting GIS to other agencies.



Agency Information Technology

Name Richard A. Bohn

Job Title Chief

What county programs do you manage or support?

Electronic Services/Telecommunications Tower Review Committee

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

Manager

Approximately what percentage of your work week do you spend for each activity identified in question #8?

EST 95% TRC 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

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

Yes, My Neighborhood for tower siting.

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

Perform radio propagation studies for both line of site and rf coverage.

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

Yes Print maps of RF coverage, microwave path and fresnel zone clearance of microwave path profiles.

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.)

Produce maps for Tower Review Committee. Perform analysis of proposed construction of facilities that could block protected microwave paths between county communications sites.

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

I would like to plot existing cellular sites and use the information planning new sites for the tower review committee

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 be interested in any available training or access I could be granted to current or future systems.



Agency Information Technology

Name Rob Livermore

Job Title DBA

What county programs do you manage or support?

Manage and support the ArcGIS/ArcSDE Enterprise data layers and Oracle databases, along with the ESRI and Oracle software.

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

Manage the ArcSDE and Oracle applications and databases. Manage the ESRI software environment.

Approximately what percentage of your work week do you spend for each activity identified in question #8?

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

Do you use GIS applications (e.g., Data Query, 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.

Yes, sheriff district project, determine which roads and addresses fall within each district.

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. Database exports, help in database design, versioning workflow, and application support.

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

Yes. Reload production databases with updated data, i.e. cadastral, fire/police boundaries, imagery, plan/topo, zoning, landuse.

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

SQL queries, Public Access

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

Inspection routing, master planning, Emergency response, locator applications, Qualitative/Quantitative Analysis, Utilities maintenance/repair.

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

Underutilized



Agency Information Technology

Name Scott Messier

Job Title GIS Technician

What county programs do you manage or support?

Cadastral Database maintenance Plan/Topo Public Access EOC GIS Support

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

Cadastral Database maintenance Plan/Topo Public Access EOC GIS Support

Approximately what percentage of your work week do you spend for each activity identified in question #8?

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, on-going maintenance of GIS layers that OIT/GIS is responsible for maintaining, particularly layers in parcel database.

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

My Neighborhood - Find Tile is most commonly used although all MyNeighborhood apps.

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

Yes, any public access or internal request that requires spatial analysis. Ex. - Liquefied Natural Gas Map & Storm Surge Map for EOC support. These requests are fairly common, at least once a week.

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

yes, plats and printed maps are used as source information as well as spatial analysis. Ex. Plats for cadastral source info & Use of Index layers to display progress in maintenance by tile#.

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

Provide data for public and internal requests. Encompasses requests for all layers maintained by OIT/GIS as well as various layers maintained by other agencies but distributed by OIT/GIS. Ex. Plan/Topo, Zoning for public constituents and county funded projects

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

Maintain the various layers that comprise the cadastral dataset as well as the edits within database (BCCAD) where this data is edited and updated and the database itself.

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

Maintain data, display maps, use for analysis, emergency support

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

In my particular job position, the most room for improvement in GIS is in optimizing systems for the county's GIS users, and creating interagency mechanisms that streamline the county's GIS ambitions. That is to say, GIS efforts of individual agency's would likely be improved with a greater level of inter-agency coordination regarding GIS data and development.



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 coordination in GIS related efforts across the county. My experience with BC is that in many areas the benefit of GIS is evident to the users. However, under the current division of power, each individual agency's efforts towards GIS can often be disjointed from what would be most ideal for the county as a whole. Ultimately, this stems from the lack of a coordinating GIS agency. Without proper direction from a central GIS agency, each individual agency is limited to the GIS resources and knowledge within that agency. In many cases, my experience has shown that this leads to different levels of GIS expertise from agency to agency and thus different levels of GIS sophistication and data. The solution, to me, is an easy one. GIS is a relatively new technology and the best practices in GIS are often times still evolving. In my mind, the county would benefit greatly from some sort of GIS agency that could provide direction, knowledge and experience across the board ANY county agency that sees the need for GIS and GIS data. This would take advantage of the county's employees who have the GIS technical and conceptual expertise (knowledge of best practices) that would be of aid to the less savvy GIS users of the county. To do so would essentially provide a centralized agency that would provide leadership, direction, and organization to the county's GIS efforts as a whole; as opposed to the current policy that is fragmented by agency. In short, the lack of GIS coordination is in my mind the largest obstacle facing the county's GIS efforts. This coordination would likely be drastically improved with a new county agency that is devoted specifically to doing so. Without a centralized agency providing direction throughout the county, the various county agencies that use GIS will continue to develop GIS data individually (in some cases unilaterally), according to the constraints inherent to that agency.



Agency Information Technology

Name Steve Foley

Job Title GIS Technician

What county programs do you manage or support?

Orthophotography Planimetrics Public Access Other projects as needed.

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

I support Orthophotography Quality Control, Planimetrics and Elevation database Quality Control, Cadastral maintenance (infrequently) and any other project that needs extra resources. Also support Public Access.

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

99% of my time is spent on the activities in question 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, my responsibility is to QC the above products. These are also used for all public access requests.

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

Not so much, but we do perform walk throughs for customers who are not familiar with these applications.

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

Yes, We geocode different types of databases for internal public access customers. Many agencies ask for maps with a certain activity mapped by address throughout the county. We use the ESRI geocoder service. I also use spatial analysis to assist in Q

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

Both, most public access customers request either type. We provide pdfs and hard copies to most internal customers. For external customers, we provide hard copies or the data in digital format, dxf, shp..

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

yes, Maps for states attorney, office of law, budget office as well as many private companies. We supply data for county consultants free of charge as well. Also assist county users with questions or guidance.

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

Yes, Maintain planimetrics layer. Fix discrepancies. Assist in cadastral reconciliation occasionally.

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

Create public access maps and data orders. Assist other agencies with specific projects. Ex. Survey gdb.

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

All activities we do have benefited through GIS in some way or other. All activities have been streamlined using the latest GIS technologies. QC is easier and faster using tools provided by ESRI. Use of SDE has localized data storage and helps prevent data redundancy on local hard drives and networks. most public access maps are created from Templates which helps produce maps in a much quicker fashion.

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



Agency Information Technology

Name Steve Rollins

Job Title Disaster Recovery/BCP Coordinator

What county programs do you manage or support?

I am directly responsible for contingency planning for OIT's response to major network outages and ensuring our disaster recovery plans are current.

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

See above

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

Fully most of my time is directly devoted to the documentation of or seeking related updated docs. This includes many meetings, etc.

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

Currently, I don't but would be interested in the future as we start to use technology for outbound dialing. GIS mapping would be very helpful.

Do you use GIS applications (e.g., Data Query, 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.

Not currently

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.)

N/A

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

If we use the IVR system or the proposed ENS to perform outbound dialing in the event of an emergency, I think it would be helpful to have updated maps showing the demographics of a geographic area to ensure we're reaching all citizens we need to.

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



Agency Information Technology

Name Tunde Oyinloye

Job Title GIS Cadastral Technician

What county programs do you manage or support?

Cadastral Database Maintenance - Construct, edit and maintain the several components of the Cadastral Database e.g. Annotation, Taxparcel, Simconfirstdivision, Simultaneous conveyance, Development Plans. Public Access Support: Provides access to Geographic Information Systems data, maps and analysis.

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

1. Database Maintenance - Cadastral Datasets * Simultaneous Conveyance (Subdivision Layer) * Simultaneous Conveyance First Division (Plat Layer) * Tax Parcel including Annotation and Development Plan 2. Public Access - Government Projects * Internal - County Wide Agency Support (Data/Map/Q & A) * Public Assistance - Constituent Assistance * Public Assistance - Private Company/Organization 3. Public Access - Special Projects: * Owings Mills Trail Network GIS Mapping * Standardized Map Production (Repeated by Activity) * AT&T Lawsuit - GIS Map/Data Exhibits * Department of Social Services (DSS) - Foster Home Mapping * Hurricane Isabel - Map/Data Analysis * GIS Seminars and Workshops - Deliver seminars and teach workshops at user conferences such as TUGIS, URISA, and ESRI conferences (Regional and National). Slide presentations, sample data, and additional lecture resources are made or developed for these conferences 4. Public Access - Technical Support: * Technical Support - Informal Inter-Agency Software Training and Support * Technical Support - CZMP - Staff Resource * Technical Support - User Support - Q & A ('GIS Help Desk') * Technical Support - Utility - Sewer Update * Technical Support - Project Map Check (GIS Field Verification) * Technical Support - Orthophoto, Planimetric and Topographic Data Delivery (QA-QC Support) * Technical Support - Data Query Assistant instructor.

Approximately what percentage of your work week do you spend for each activity identified in question #3?

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. 1. Map products for the public, County Agencies and custom Map services. 2. Databases mentioned above are used during the course of editing and maintenance of the cadastral and Utility Sewer edits.

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

Data Query Support - Provide assistance, walk through, impromptu support for new users of the data query application. MyNeighborhood websites - Answer public QA and assist the public in navigating and using the sites.

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

Yes In the course of Editing/Maintaining/Analysis of GIS data and in rendering Assistance to Customers.

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

Yes 1. Maps to Customers 2. Custom Map for the Law Department, Office of Budget (Land Management), State Attorneys Office, Public Defenders Office.

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

Yes 1. Public Access - Government Projects -Internal - County Wide Agency Support (Data/Map/Q & A) -Public Assistance - Constituent Assistance -Public Assistance - Private Company/Organization 2. Public Access - Special Projects



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

Yes Construct, edit and maintain the several components of the Cadastral Database e.g. Annotation, Taxparcel, Simconfirstdivision, Simultaneous conveyance, Development Plans.

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

1. Edit and maintain data layers. 2. Create Custom Maps 3. GIS Analysis 4. Technical Support 5. Public Access 6. Special Projects

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

PDM would benefit from more increased use of GIS. All activities countywide would benefit from increased use and integration of GIS.

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