

**NSDI Cooperative Agreements Program**  
***Geographic Information Integration and Analysis***  
**Final Project Report**

Cooperative Agreement Number:           **05HQAG0135**

Project Title:                               **Maryland Large-Scale Digital  
Orthophoto Data for *The National  
Map***

Project Start and End Dates:           **September 30, 2005 - August 31, 2006  
(Project extension until October 31)**

Lead Project Organization:           **Towson University Center for GIS**

Project Lead:                              **Matthew S. Felton, TU-CGIS Director**

USGS Mapping State Liaison:       **Roger Barlow**

Collaborating Organizations:       **Maryland State Geographic  
Information Committee (MSGIC), the  
Maryland Department of Natural  
Resources (DNR), Howard County,  
and the Eastern Shore Regional GIS  
Cooperative (ESRGC)**

Data Themes:                              **Orthophotography**

Project Summary

Through National Spatial Data Infrastructure (NSDI) Cooperative Agreement Program (CAP) grants, the Center for Geographic Information Sciences (TU-CGIS), in partnership with the Maryland State Geographic Information Committee (MSGIC), has become Maryland's portal to *The National Map*. Since 2000, TU-CGIS and MSGIC have been coordinating development and delivery of geospatial resources through a series of USGS/NSDI/FGDC CAP Grants

The 2005-2006 CAP Category 4 Award has allowed TU-CGIS to work with MSGIC, the Maryland Department of Natural Resources (DNR), the Eastern Shore Regional GIS Cooperative (ESRGC), and a number of Maryland counties to strengthen Maryland's orthoimagery contribution to *The National Map* by overcoming technical and policy barriers to data sharing.

Technical barriers include lack of hardware, software, and specific technical expertise to share data to *The National Map*. Policy barriers include conflicting

guidelines at various government levels, such as licensing agreements, cost recovery policies, and concerns of liability from misuse of the data. The outcome of this project is an increased ability to share data to *The National Map* and a repeatable process that other agencies can follow to contribute orthoimagery to data-sharing efforts.

On completion of this project, approximately half of Maryland's counties will be sharing orthoimagery to *The National Map*. In addition, TU-CGIS has fostered a collaborative partnership with the counties on the Eastern Shore and Western Maryland to develop an appropriate method to share data for their jurisdictions.

Concurrently, TU-CGIS and MSGIC are the project leaders for the Fifty States Initiative to develop strategic and business plans for GIS coordination in Maryland. As this effort matures and statewide coordination improves, it is anticipated that Maryland's counties that are not yet sharing data to *The National Map* will participate more actively.

Figure 1 (attached) illustrates the Maryland counties to date that have agreed to share data to *The National Map*.

### Project Objectives

The following is a list of primary project objectives.

1. Inventory the readiness and completeness of Maryland counties' large-scale digital orthophotography data throughout the state for incorporation into *The National Map*.
2. Work with local governments to determine specific data distribution policies and data sharing concerns to determine a satisfactory method for contributing data to *The National Map*.
3. Assist DNR and ESRGC with database development and documentation to prepare the data for *The National Map*.
4. Create Web Map Server (WMS) for Maryland imagery and catalog the imagery in the Maryland Mapping Resource Guide (MMRG) at [www.marylandgis.net](http://www.marylandgis.net), which is harvested by the Federal GOS.
5. Update the white paper resource for Maryland state and local government agencies called "Deploying Maryland Data to *The National Map*."
6. Participate in current MSGIC efforts toward data and technology interoperability.

### Project Accomplishments

Throughout this grant, TU-CGIS worked on outreach and awareness to increase county involvement. The geographic nature of Maryland divides the state into four main regions:

- Western Maryland (Washington, Allegany, and Garrett Counties)
- Central Maryland (Frederick, Carroll, Howard, Montgomery, Baltimore, Harford, Cecil Counties, and Baltimore City)
- Southern Maryland (Anne Arundel, Prince George's, Calvert, Charles, and St. Mary's Counties)
- Eastern Shore (Kent, Queen Anne's, Caroline, Talbot, Dorchester, Wicomico, Worcester, and Somerset Counties).

Each region shares common interests and concerns. The USGS has been working with Central Maryland and a portion of Southern Maryland to collect orthoimagery and post the data to *The National Map* for homeland security purposes. Since USGS has been very successful in these areas, TU-CGIS has focused on the Eastern Shore, Western Maryland, and Southern Maryland as the primary areas of concern during this grant period. TU-CGIS participation at regional GIS user group meetings where staff conducted presentations on the importance of sharing data to *The National Map* was central to these efforts. The meeting forum permitted open discussion, which generated support for the project and allowed TU-CGIS to address questions and concerns.

TU-CGIS has been involved with the Maryland Imagery Acquisition Partnership (MIAP), which is coordinated by the Maryland State Highway Administration (SHA). The MIAP project attempts to implement a cost-sharing plan among several Maryland State Government agencies, county and municipal governments, utilities, and the private sector to obtain a consistent, statewide orthophotography dataset. Since there will be a considerable contribution from USGS and other public agencies, the data obtained will be available in the public domain. This effort will further strengthen Maryland's contribution to *The National Map* by providing high resolution, seamless data for the entire state. Once the data are collected, they will be hosted by TU-CGIS and served to *The National Map* as well as to Maryland partners.

In order to understand the readiness of local counties to share data to *The National Map*, TU-CGIS developed a survey to inventory the data available in Maryland counties and to identify the data sharing policies within each county (Appendix A). The responses to this survey provided a starting point to develop a process that enables local governments to contribute data to *The National Map*. Follow-up phone calls were made to all counties after the allotted amount of time to complete the survey had passed. The phone conversations opened communication between TU-CGIS and the counties. We were able to begin working in earnest with counties to identify and to overcome their impediments to sharing data to *The National Map*.

In addition to outreach, we worked to define a repeatable technical process to assist counties with sharing data to *The National Map*. Many counties do not have adequate technical capability for data-sharing. With resources provided by this USGS grant, counties were made aware that TU-CGIS can and will assist

with the technical barriers. A Memorandum of Understanding (MOU) was developed to establish an agreement between TU-CGIS/MSGIC and the counties that want to allow TU-CGIS to serve their data to *The National Map* (Appendix B). The agreement specifies the Towson University Center for Geographic Information Sciences and the Maryland State Geographic Information Committee as facilitator. By signing the MOU, the participating county agrees to share the data layers outlined by the document to *The National Map*. A copy of the MOU has been sent out to all of each county GIS office and TU-CGIS is in the process of formalizing this effort with each county.

The Eastern Shore Regional GIS Cooperative (ESRGC) located at Salisbury University provides geographic information systems (GIS) services to the local governments of Maryland's Eastern Shore. ESRGC expressed interest in posting Eastern Shore orthoimagery data to *The National Map*. TU-CGIS provided the guidance and technical support ESRGC needed. TU-CGIS has laid the foundation for the Eastern Shore orthoimagery being hosted at Salisbury University. ESRGC expects to have the server operational by January 2007. Somerset and Worcester Counties, whose data are owned by Maryland Department of Natural Resources, will be the first to be hosted by ESRGC.

To date, TU-CGIS has successfully worked with Harford, St Mary's, and Calvert Counties to obtain agreements to share orthoimagery data and for TU-CGIS to host the data. St Mary's County (the first county to agree to share data) provided TU-CGIS with the MrSID compressed imagery on a DVD. This imagery was converted to Tiff format and moved to a cluster of servers dedicated to serving NSDI data.

Harford County data were already stored in SDE. We tried to define a method for copying the Harford County database and importing it into the TU-CGIS SDE database, but Harford County was not comfortable with the copying process. Instead, the county freely provided the data on nine DVDs in Tiff format.

Calvert County has agreed to share data but prefers to wait until new imagery arrives.

We are still working with the counties in Western Maryland that are currently awaiting the arrival of their data. Since this data acquisition was funded through Emergency 911 Numbers Board funding (participants in MAIP), it is anticipated that Western Maryland counties will sign the MOU and allow their data to be hosted by TU-CGIS.

As previously stated, the TU-CGIS/MSGIC partnership is leading Maryland's effort to develop strategic and business plans for statewide GIS coordination. As this effort matures, enhanced coordination will greatly improve Maryland jurisdictions' ability to contribute data to *The National Map*.

Figure 2 (attached) depicts the data hosts for Maryland.

### Challenges

The challenge of communicating with multiple stakeholders and coordinating hectic schedules has caused some difficulty. Working with this group of stakeholders also involves a high degree of coordination and discussion to determine the best outcome for everyone involved. Communication about data-sharing began on an advanced level because of the previous success of Maryland's county-level centerline contributions to *The National Map*. The current project's focus—orthophotography—is more difficult for local governments to share due to policy barriers discussed earlier in this report. In particular, unlike centerline data, in which attributes can be removed for sharing to the public domain, imagery is a raster product that does not have this capability. As such, efforts to honor data licensing issues have involved resampling, watermarking, and view-only sharing. Through steady interaction with the stakeholders, via a booth at TUGIS and our participation in user group meetings and MSGIC quarterly meetings, we have been able to communicate the benefits and possibilities of sharing orthoimagery to *The National Map*.

### Framework Data

As the details previously discussed in this report show, our contribution has been toward the Orthophotography layer. TU-CGIS is currently working with the counties that have agreed to participate to determine a suitable method for their datasets to become publicly available. All county participants have been presented with an MOU to make their orthophotography publicly available. Policy barriers and data sharing concerns will be addressed to the satisfaction of participants before any data are made available.

The dataset and map service will be catalogued in the Maryland FGDC clearinghouse node. The associated metadata will be made available through the Maryland Mapping Resource Guide (MMRG). Contents of MMRG are harvested into the Federal GOS.

### Relationship with USGS

Cross-organizational partnerships are crucial to incubate a data sharing cooperative. Since 2000, TU-CGIS and MSGIC have worked with the USGS through a series of USGS/NSDI/FGDC CAP Grants. TU-CGIS was recently awarded a Category 3 Fifty States Initiative grant for 2006 to develop and implement a Strategic and Business Plan to advance Maryland in the NSDI Future Directions Fifty States Initiative. TU-CGIS also continues to be proactively involved with MSGIC to ensure that we are representing and assisting with the needs of the state's GIS community.

Matt Felton, TU-CGIS Director, can be reached at 410-704-3887 or at [mfelton@towson.edu](mailto:mfelton@towson.edu) for any comments, questions, or concerns about the **Maryland Large-Scale Digital Orthophoto Data for *The National Map*** project.

# Maryland Counties Sharing Orthoimagery to The National Map

As of October 2006

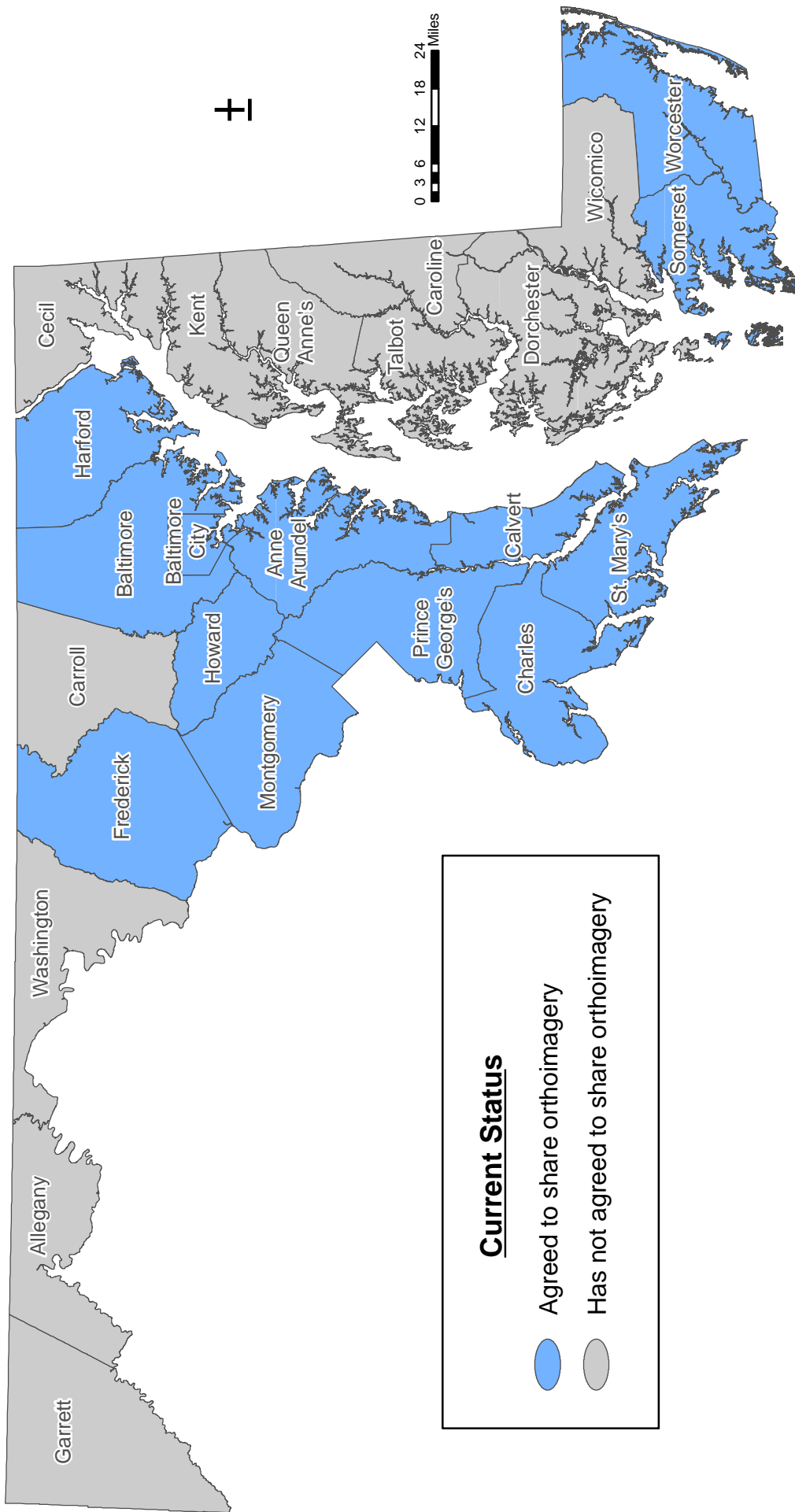
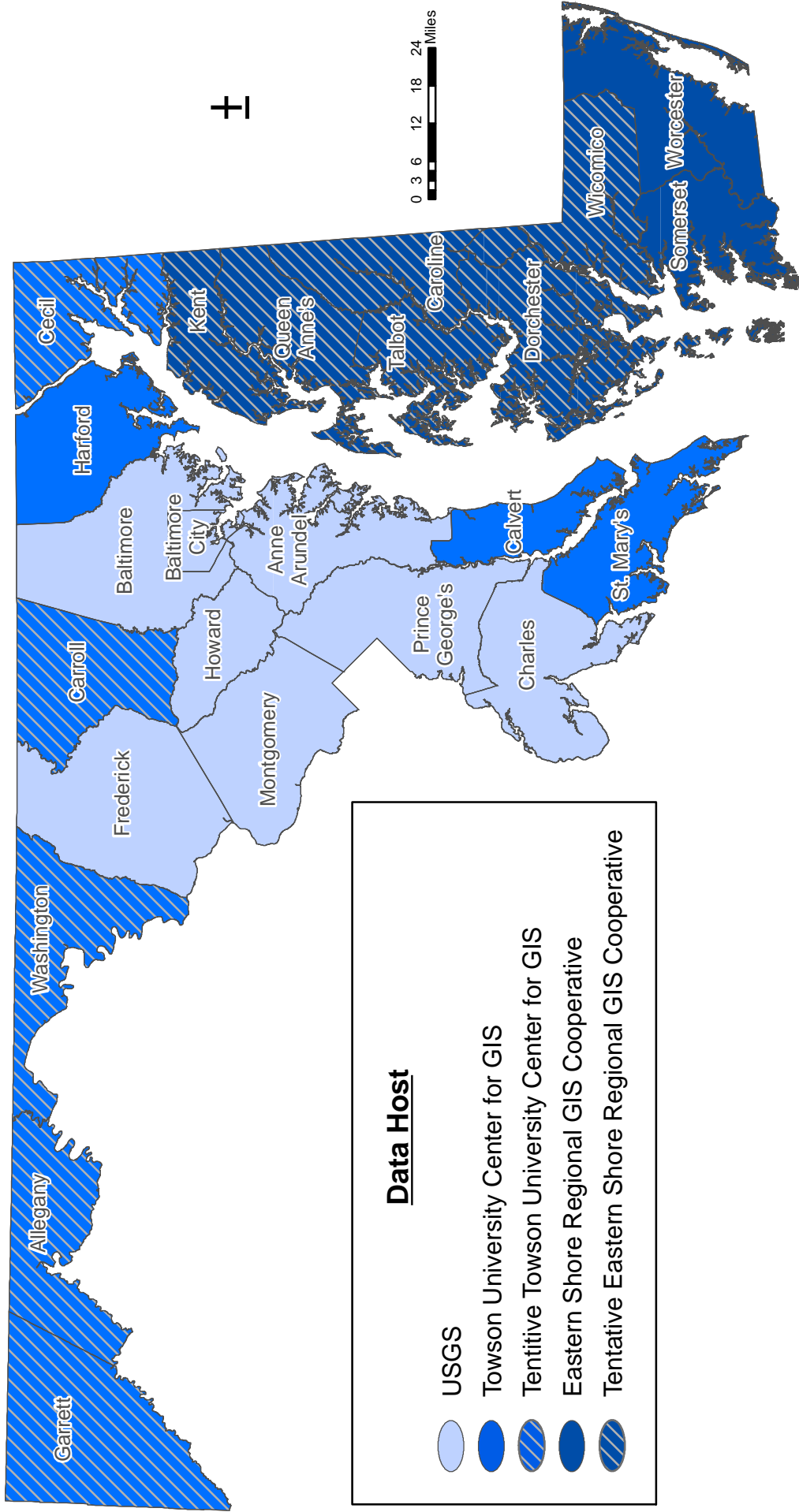


Figure 1

# Hosting Maryland Orthoimagery to The National Map

As of October 2006



**Data Host**

- USGS
- Towson University Center for GIS
- Tentative Towson University Center for GIS
- Eastern Shore Regional GIS Cooperative
- Tentative Eastern Shore Regional GIS Cooperative

Figure 2