GISette
Email Newsletter

# May 2009

**W**elcome to the thirty-seventh edition of the **MassGIS GISette**, a bi-monthly newsletter e-mailed to more than 1,700 of our users and partner agencies to keep them informed of data updates, GIS events, and on-going technology developments. This newsletter will not replace more focused e-mails that many of you currently receive. A page on our website has been created for the GISette. There you will find back issues of the GISette and an online subscription form.

While our primary intent in publishing the GISette is to disseminate information related to MassGIS initiatives and data development in particular, we also see the GISette as a means of communicating public agency GIS news. So we encourage readers to send in updates or announcements concerning public agencies that they would like included in the GISette. We particularly want to encourage submission of announcements concerning data development projects. Announcements should be sent to Paul Nutting at **paul.nutting@state.ma.us**.

## MASSGIS SUPPORTS TWO PATRICK INITIATIVES

Expediting the development permitting process and the development of renewable energy resources are key goals for the Patrick administration. In this article, we highlight how data developed by MassGIS and its partner agencies is being used with sophisticated GIS tools to provide maps and data analyses in support of these two initiatives.

### Chapter 43D Permitting Process

Massachusetts General Law Chapter 43D offers communities incentives for targeted economic development. Under Chapter 43D, administered by the Executive Office of Housing and Economic Development (EOHED), municipalities are guaranteed that local permitting decisions on so-called "priority development sites" (PDS) will be made within 180 days. In addition, communities may be offered grant money and receive other benefits such as online marketing of their sites. As part of its application process, a city or town must identify and describe a qualifying parcel as a priority development site, including maps of the area(s) – in many cases RPA's or consultants are working with communities and using GIS to do this. On the receiving end, MassGIS is working with EOHED to screen proposed sites for environmental concerns. The EEA maps are reviewed by the Interagency Permitting Board and others examining the sites.

MassGIS has developed a model to overlay many different data layers for each site and produce a map we call the "shades of green" map, detailing the resources present. The cartographic challenge is, in fact, the number of layers that may be present. The data layer inputs, as selected and weighted by an EEA working group, are divided into two groups. Tier I data include those which have regulatory or legal status: permanently protected open space, DEP Zone I and Zone A, NHESP Priority Habitats of Rare Species, DEP wetlands and their 100-foot buffers, Rivers Protection Act 100-foot buffers, Areas of Critical Environmental Concern, and prime agricultural land. Tier II data in the GIS analysis have no regulatory status but are considered important to environmental stewardship of public water supplies, natural habitats, land resources, or working land. These layers include: DEP Zone II, Interim Wellhead Protection Areas, DEP Zone B, high- and medium-yield and EPA Sole Source Aquifers, 100-foot zones around NHESP Certified Vernal Pools, NHESP BioMap Core Habitats, NHESP Living Waters Critical Supporting Watersheds, natural habitat reserves (ten large un-fragmented blocks of land targeted for

preservation as one of Gov. Patrick's conservation priorities), Coastal Estuarine Land Conservation Program areas, Greenway Vision areas and trails, 100-year floodplains, NHESP BioMap Supporting Natural Landscape, prime forest land, and interior forest areas. Again, the challenge is presenting all this information in a meaningful way. Michael Trust has developed a labeling system and a cartographic presentation that identifies the unique combination of resources present at each location in a very user-friendly format.

The combined ("unioned") data layer of all inputs (both geometry and attributes), when mapped, often identifies "high priority" areas within the PDS that may be subject to further environmental review before a community's application is approved. Besides the printed maps, MassGIS is developing an online map viewer for interactive access to the combined data as well as to the individual inputs.

### Identifying Prospective Sites for Wind Turbines

The Patrick administration's strong interest in developing clean renewable energy sources for the Commonwealth has kept GIS staff busy from very early in the governor's term. Specifically, MassGIS and others have conducted a number of analyses to assist in identifying sites that have potential for wind energy development, both onshore and offshore. The MassGIS database includes many spatial variables related to site suitability for wind turbines. These GIS data have enabled MassGIS staff and other GIS users, notably the Renewable Energy Resource Lab at UMASS, to provide decision makers with information about positive factors and also resources that might be impacted.

Most recently, MassGIS staff looked at Cape Cod for prospective wind turbine locations. This area has some of the best onshore wind resources to be found anywhere in the state. However, it is also fairly developed, making the issue of proximity between wind turbines and residential areas an important consideration. Fortunately, every single community in Barnstable County has some form of digital parcels and associated assessor records – otherwise, effective analysis would not have been possible. The parcel mapping enabled us to determine which properties are residential, and combined with impervious surfaces (e.g., paved areas, roof tops) derived from automated classification of the digital orthophotos, we were able to exclude areas within a given distance of residential structures. Furthermore, we were able to buffer the property lines themselves such that any candidate site had a suitable setback from abutters. Other absolute constraints included wetlands and zone I's.

All the remaining land was evaluated in terms of environmental constraints, such as priority habitat, proximity to airfields. Each scenario produced a set of locations where additional development constraints are not present, and we were able to calculate an estimate for region-wide wind-generated megawatts. These models provide a benchmark for administrators, and should influence the direction of renewable energy policy discussions for Cape Cod. As the administration continues to advance its' goals for developing alternative energy, MassGIS expects to continue providing analytical support.

## Federal/State Partnership Completes Statewide Orthoimagery

In spring of 2008, the US Geological Survey contracted for orthoimagery of the Boston Urban Area, one of 133 areas nationwide for which the USGS has been funded by the National Geospatial-Intelligence Agency. These images were originally acquired in true color at a pixel resolution of 30cm or approximately 12". MassGIS now distributes that imagery.

MassGIS is pleased to announce that in April 2009, a USGS contractor obtained imagery to complete 30 cm resolution orthoimagery for the remaining 2/3 of the state through a cooperative state/federal project that "piggy-backed" on the existing plan to complete two more Urban Areas, Worcester and Springfield. The new imagery has a fourth, near-infrared band as well as true color, which will facilitate the creation of products like the impervious surface layer from 2005 with image classification software. Fortunately, MassGIS was able to go back and get the near-infrared layer for last year's mission, which was archived by the contractor when we were not able to pay for it. Extending the limited area of the USGS project to the rest of Massachusetts was made possible through financial support from the Executive Office of Public Safety, the Executive Office of Transportation, the Executive Office of Energy and Environmental Affairs (MassGIS' parent agency), and the Division of Capital Asset Management. MassGIS staff managed the agreement with the USGS and coordinated arrangements to pool the funding from the participating agencies (not something state accounting systems were designed to support!) MassGIS is extremely

grateful for the support of these state agencies, and for the outstanding cooperative effort by USGS staff in working through the technical and administrative challenges involved in these two projects.

## MassGIS Coordinates Orthoimagery "Buy-Up" for 14 Cities and Towns

As a further enhancement of this year's USGS project, described above, MassGIS staff brokered an arrangement whereby 14 municipalities within the two Urban Areas, as well as Westover Air Reserve Base, were able to "buy-up" to higher resolution four-band imagery with a pixel size of six inches. These communities collectively saved an estimated $100,000 as well as the costs associated with developing the procurement specifications and managing the related contract.

## Progress Made On the Protected Open Space & Recreation Data Layer

Our open space mapping staff continues to incorporate the large amount of data that has been received from municipalities, land trusts, and regional planning agencies into the open space data layer. While a significant amount of time is spent evaluating and automating the data, with four full-time staff people working on this task, great progress has been made and we anticipate incorporating all data received by the end of the fiscal year, July 1, 2009. Please visit this map to see our progress.

Staff also continues to add Conservation Restrictions (CRs) to the open space data layer at a quick pace. In the past eight months, 782 CRs were added or identified. However, while a total of 1,979 CRs have been compiled into the open space data layer to date, 3,887 CRs are known to exist.

Additionally, there have been several other notable accomplishments and activities by the open space mapping staff since January, 2009:

- Added 6,648 acres of permanently protected open space to the open space data layer.
- Performed editing in 201 municipalities affecting 31,065 acres.
- Continued to hold GIS training sessions for MACMAPP grant participants.
- Edited 1,788 fee-owned municipal open space features affecting 21,972 acres.
- Enabled increased access to the open space data layer by registering for the Protected Areas Database data portal, a nationally-recognized organization.
- Edited 269 individual features fee-owned by various land trusts, affecting 6,435 acres.

## Database Updates

- **Schools Layer Updated** - 4/23/2009

This dataset, with points representing pre-kindergarten through secondary schools, has been updated based on MA Dept. of Education database listings as of February 2009. Along with the addition of new schools and the removal of closed facilities, MassGIS undertook an extensive review and adjusted the placement of many points based on 2005 and 2008 color ortho imagery. Thanks to our intern, David White, for completing this.

- **Updates to DEP Public Water Supply Layers** - 4/23/2009

The MassDEP GIS Group has updated the following layers:

- Public Water Supplies
- Zone IIs, IWPA
- Surface Water Supply Protection Areas (Zone A, B, C)
- Surface Water Supply Watersheds

- **Ferry Routes Layer Updated** - 4/21/2009

This layer, representing passenger and freight routes off the coast of Massachusetts has been updated (as of December 2008) by the Executive Office of Transportation.

- **Areas of Critical Environmental Concern Layer Updated** - 4/16/2009

The polygon and arc datalayers have been updated to include the Three Mile River Watershed and the Upper Housatonic River ACECs.

- **OpenSpace Updated** - 4/7/2009

The MassGIS Protected and Recreational OpenSpace Datalayer has been updated with various edits to 62 towns affecting almost 11,200 acres statewide. Look for numerous enhancements to the spatial accuracy in towns such as Plymouth, Granville, Harvard, and Amherst. A new shapefile and personal geodatabase have been placed on our ftp site.

- **Office of Fishing and Boating Access Sites Layer Updated** - 3/10/2009

This point layer, formerly known as Public Access Board Sites, was updated (minor attribute edits) by GIS staff at the Massachusetts Department of Fish & Game (DFG).

## Online Mapping

### USGS 2008 Orthos On View

An HTML viewer has been created for the 30cm 2008 Orthophotos, which cover dozens of towns in Eastern Massachusetts. Check them out here.
Soon they will be in OLIVER and available with web services.

## Staffing News, Meeting Announcements and a Correction

Welcome to our new **911 GIS Technician, Claire Palmer**. She will be working with Nick Leden on updating and refining the NAVTEQ address geocoding data. Claire is completing a Masters in GIS from Northeastern, and previously worked as a GIS Technician for Cape Cod National Seashore. A native of California, Claire has a B.A. in Philosophy from UC Santa Cruz, and worked for 7 years as a database developer/administrator for a non-profit in Boston.

**Spring NEARC**
The spring 09 NEARC conference will be on Tuesday, May 12, 2009 at The Smith College Campus Center in Northampton, Massachusetts. For more info visit the website.

**Fall NEARC**
The 24th annual NEARC Conference will be held in Nashua, NH on October 4-7, 2009. A call for presentations has been sent and abstracts will be accepted only via the website.

**2009 New York GeoSpatial Summit**

The NYS GIS Association and the NYS Office of Cyber Security & Critical Infrastructure Coordination are pleased to announce the fourth annual NYS GeoSpatial Summit. This will be another great opportunity to hear the perspectives of top geospatial leaders and network with other GIS professionals.

Proctor's Theatre - Schenectady, NY
May 20th 8:00 - 5:00, Evening Reception May 19th 6:30 - 9:30
Registration is now open and the Early Bird Discount registration ends May 5th.

The speaker lineup includes:

Anne Hale Miglarese - Booz Allen Hamilton
im Geringer - Environmental Systems Research Institute (ESRI)
Ronald Beck - U. S. Geological Survey (USGS)
Art Kalinski - Pictometry International
Adam Szofran - Microsoft
David Miller - Professor at SUNY Cortland
Adena Schutzberg - Directions Magazine

**Correction to Certified Vernal Pools Article**

In the last edition we reported on updates to the CVP layer and released some confusing information on where these data are available. This January data update will not be published in a 14th edition, 2009

Massachusetts Natural Heritage Atlas; rather this is merely a web update and the 14th edition will not be published until next year.

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Any comments or suggestions about the GISette are welcome – send to paul.nutting@state.ma.us.

MassGIS-The Commonwealth's Office of Geographic and Environmental Information is located within the Executive Office of Energy and Environmental Affairs and is charged with the collection, enhancement, storage and dissemination of the Commonwealth's geographic data.

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